Final Issue 30 June 1989

User's Manual

for the

Portable ASP Work Station (PAWS)

Document Number VCW-01843-10-16

Contract No. N62269-86-D-0125

Requisition No. 7170822



Prepared for Code 7011 Naval Air Development Center Warminster, PA 18974

Prepared by Vitro Corporation

· DESTRUCTION STATEMENT Approved in public sciences Education Tellented

DIN QUALITY INSPECTED L

19950804 060

Terster.

「日本の

1

Section	Description	Page
1.0	Scope	1
1.1	Identification	1
1.2	Purpose	1
1.3	Introduction	4
2.0	Referenced Documents	5
2.1	Commercial Documentation	5
2.2	PAWS Project Documentation	5
3.0	Instructions for Use	6
3.1	General Description	6
3.1.1	Frontview Description	6
3.1.1.1	TU Keyboard	6
3.1.1.2	Flat Panel Display (FPD)	6
3.1.1.3	Flexible Disk Drive (FDD)	9
3.1.1.4	Rigid Disk Drive (RDD)	9
3.1.2	Rearview Description	10
3.1.2.1	Rear Panel Description	10
3.1.2.1.1	AC Power Cord Receptacle	10
3.1.2.1.2	Power On Switch	10
3.1.2.1.3	Modem Inputs	10
3.1.2.1.4	Printer Port	11
3.1.2.1.5	Laboratory Panel Interface (LPI) Connector	
3.1.2.1.6	Air Outlet	11
3.1.2.2	TU Module Description	13 Ity Codes Areal and/os. Specie
	Security and the case	

Table of Contents

.

.

A STREET

1.1

and the second

(Q)))

1 ×,

1.1

P. States

No. of Street, Street,

1

1000

Section	Description	Page
3.1.2.2.1	TU Processor Module	13
3.1.2.2.2	Memory Module	15
3.1.2.2.3	Transition Module	15
3.1.2.2.4	Disk Controller Module	15
3.1.2.2.5	LPI Module	15
3.1.3	Cabling Requirements for the TU	16
3.1.3.1	Installing the AC Power Cord	16
3.1.3.2	Installing the LPI Cable	17
3.1.3.3	Installing the Modem Connections	17
3.1.3.4	Installing the Printer Cable	17
3.2	TU Operation	19
3.2.1	TU Startup Procedure	19
3.2.2	Booting UNIX	19
3.2.3	Using the Shutdown Procedure	21
3.2.4	The System Administrator	22
3.2.4.1	Invoking the System Administrator Software	22
3.2.4.2	Major Functions of the System Administrator	m 22
3.2.4.3	Using the Disk Management Function	25
3.2.4.4	Using the File Management Function	26
3.2.4.5	Exiting the System Administrator Function	26

and the second second

Section	Description	Page
3.2.5	Logging in as a UNIX User	27
3.2.5.1	Using the Flexible Disk Drive in UNIX	27
3.2.5.1.1	Preparing FDD Diskettes	27
3.2.5.1.2	Copying Flexible Disk Drive (FDD) Files in UNIX	28
3.2.5.2	Using the Printer Port	30
3.2.5.2.1	Using Print_On and Print_Off Commands	30
3.2.5.3	Using the Internal Modem	31
3.2.5.3.1	Reconfiguring the Modem	31
3.2.5.3.2	Calling out to another Modem	32
3.2.5.3.3	Disconnecting	32
3.2.5.4	Exiting the UNIX Function	32
3.2.6	Logging in as a PAWSWORK User	33
3.2.6.1	Preparing a Floppy Diskette for PAWSWORK	33
3.2.6.2	Using the PAWSWORK Operator Interface	35
3.2.6.2.1	File Utility Commands	35
3.2.6.2.1.1	CATLIST	37
3.2.6.2.1.2	COPY	38
3.2.6.2.1.3	EXAMINE	39
3.2.6.2.1.4	GENDATA	40
3.2.6.2.1.5	MODIFY	40
3.2.6.2.1.6	PERMIT	41

Section	Description	Page
3.2.6.2.1.7	PRINT	42
3.2.6.2.1.8	PURGE	42
3.2.6.2.2	PAWSWORK Control Commands	43
3.2.6.2.2.1	BYE	43
3.2.6.2.2.2	CONFIGURE	44
3.2.6.2.2.3	HELP	44
3.2.6.2.2.4	RESUME	45
3.2.6.2.3	Global Commands	46
3.2.6.2.3.1	CGLOBAL	46
3.2.6.2.3.2	LGLOBAL	46
3.2.6.2.3.3	SGLOBAL	47
3.2.6.2.4	PAWS Controller Software	49
3.2.6.2.4.1	MTS	49
3.3 MTS	Function Operation	51
3.3.1	Introduction to the MTS Screen	51
3.3.1.1	Status and Control Field	51
3.3.1.2	User Command Entry Field	54
3.3.1.2.1	User Command Character Entry	54
3.3.1.2.2	MTS Command Syntax	54
3.3.1.3	Data Display Field	55
3.3.1.4	Error Message Field	55
3.3.2	MTS Keyboard Definition	56
3.3.3	MTS Command Definition	58
3.3.3.1	MTS Support Commands	58

ţ

1

v

I

Į

Į

Į

Į

Section	Description	Page
3.3.3.1.1	COMMENT	58
3.3.3.1.2	ECP41	59
3.3.3.1.3	END	59
3.3.3.1.4	HELP	60
3.3.3.1.5	HOME	61
3.3.3.1.6	INCLUDE	62
3.3.3.1.7	INTERRUPT	63
3.3.3.1.8	NEXT	63
3.3.3.1.9	REPEAT	64
3.3.3.1.10	REPEAT HARDWARE	65
3.3.3.1.11	SCREEN	66
3.3.3.1.12	SUSPEND	67
3.3.3.1.13	TEST HARDWARE	68
3.3.3.1.14	WAIT	68
3.3.3.1.15	WATCH	69
3.3.3.2	ASP Control and Status Commands	70
3.3.3.2.1	CPSTEAL	70
3.3.3.2.2	DEFINE PRINTER	71
3.3.3.2.3	DISPLAY SYNC STATUS	71
3.3.3.2.4	FORCE	72
3.3.3.2.5	MODE	73
3.3.3.2.6	OVERRIDE	74
3.3.3.2.7	PRINT	75
3.3.3.2.8	PRINT SCREEN	76
3.3.3.2.9	PSREAD	77

Rink Saint

l

I

Section	Description	Page
3.3.3.2.10	RESET	78
3.3.3.2.11	START	79
3.3.3.2.12	START SOC	79
3.3.3.2.13	START SOE	80
3.3.3.2.14	STEP	81
3.3.3.2.15	STOP	81
3.3.3.2.16	SYNC	81
3.3.3.2.17	VERIFY TYPE	82
3.3.3.3	ASP Memory/Register Commands	83
3.3.3.3.1	BASE	83
3.3.3.3.2	CHANGE	84
3.3.3.3.3	CHANGE BLOCK	85
3.3.3.3.4	INSPECT	86
3.3.3.3.5	LOAD	87
3.3.3.3.6	LOAD DISPLAY	89
3.3.3.3.7	MODIFY DISPLAY	90
3.3.3.3.8	SAVE	91
3.3.3.3.9	SEARCH	93
3.3.3.10	+SCROLL	95
3.3.3.3.11	-SCROLL	95
3.3.3.12	VERIFY	96
3.3.3.3.13	VERIFY BLOCK	97
3.4 Prev	ventative Maintenance	98
3.4.1	In Case of a Problem	98

.

· States

Ì

Section	Description	Page
Appendix A	PAWSWORK Operator Interface Command Quick Reference	A-1
Appendix B	MTS Command Quick Reference	B-1
Appendix C	MTS Error Message Summary	C-1
Appendix D	Quick Reference for Modem Commands	D-1
Appendix E	Quick Reference for Debug Commands	E-1
Appendix F	VI Editor Command Summary	F-1

List of Figures

Figure Number	Description	Page
1-1	Portable ASP Work Station (PAWS)	2
1-2	PAWS Controller CSCI Sub-functions	3
3-1	TU Setup	7
3-2	TU Enclosure Frontview	8
3-3	TU Enclosure Rearview	12
3-4	TU VME Slot Usage	14
3-5	TU Cabling Requirements	18
3-6	System Administrator's Menu	23
3-7	PAWS Operator Interface Menu	34
3-8	MTS Display for SPL and CP Mode	50
3-9	MTS Display for AP Mode	56
3-10	TU Keyboard Layout	57
3-11	TU Sample Trouble Report	99

Acronym List

I

J

ļ

Sec.

Name of Street, or other

- ALLESS

AC	Alternating Current
ADCP	ASP Diagnostic Control Program
AECW	Arithmetic Element Control Word
AP	Arithmetic Processor
ASP	Advanced Signal Processor
СМРО	Compare Micro Program Override
СР	Control Processor
CPU	Central Processing Unit
CR	Carriage Return
CS	Control Store
CSAR	Control Store Address Register
CSCI	Computer Software Configuration Items
CW	Control Word
EMI	Electro Magnetic Interface
EST	Eastern Standard Time
EU	Electronics Unit
FDD	Flexible Disk Drive
FPC	Floating Point Coprocessor
FPD	Flat Panel Display
HWCI	Hardware Configuration Item
IC	Instruction Counter
IOM	I/O Monitor Function
LED	Light Emitting Diode
LPI	Laboratory Panel Interface

Acronym List (continued)

MAR	Micro Store Address Register
MC	Machine Check
мско	Machine Check Override
MMU	Memory Management Unit
MS	Micro Store
MTS	Microprogrammable Test Set
MVME	Motorola VME
NADC	Naval Air Development Center
PAWS	Portable ASP Work Station
PS	Program Store
PSW	Program Status Word
RAM	Random Access Memory
RDD	Rigid Disk Drive
RTUX	Real Time UNIX Executive
SCON	System Controller
SDE	Software Development Environment
SIOA	System Input/Output Adapter
SOC	Stop On Compare
SOE	Stop On Error
SPL	Signal Processing Language
SYCS	Sync Control Store
SYMS	Sync Micro Store
SYPS	Sync Program Store
TI	Test Integration
TLCSC	Top Level Computer Software Components

х

Acronym List (continued)

TU Terminal Unit

VAC Volts AC

1

ļ

ļ

VME Versa Module Europa

1.0 Scope

1.1 Identification

This user's manual provides the procedures for the standalone operation of the Portable ASP Work Station (PAWS) Terminal Unit (TU). The TU, shown in Figure 1-1, is one of two Hardware Configuration Items (HWCI) which make up the PAWS system. The second HWCI is Electronics Unit (EU). Together, these two units will support the execution of two Computer Software Configuration Items (CSCI) as follows:

1. Host Computer CSCI - This CSCI provides the PAWS operator with a Software Development Environment (SDE).

2. PAWS Controller CSCI - This CSCI provides the user with special purpose Top Level Computer Software Components (TLCSC) to load and control the Advanced Signal Processor (ASP). The PAWS Controller CSCI consists of five functions as shown in Figure 1-2. These five are:

Microprogrammable Test Set (MTS) Function

System Input/Output (SIO) Adapter Function

Test Integration (TI) Function

ASP Diagnostic Control Program (ADCP) Function

I/O Monitor Function (IOM)

Purpose

1.2

The purpose of this document is to familiarize the user with the operation of the standalone TU. In the standalone environment, the user will have the SDE and the Microprogrammable Test Set (MTS) function, a sub-function of the PAWS controller CSCI, at their disposal. The other four PAWS Controller Functions require the Electronics Unit (EU) and will not be discussed in this document.



10.02

Real Property lies

All second second

TERMINAL UNIT

ELECTRONICS UNIT

Figure 1-1. Portable ASP Work Station (PAWS)



Figure 1-2. PAWS Controller CSCI Sub-functions

3

1.3 Introduction

This document describes the use of the PAWS equipment and the associated software. This manual begins with a general description of the TU to familiarize the operator with the TU controls and indicators. Next, this manual will describe the recommended startup procedure which will take the user to the PAWS login prompt. From this prompt the user will be shown how to use the Shutdown, the System Administration, the RTUSER1 and the PAWSWORK user spaces. The file utility commands of PAWSWORK and the use of the Microprogrammable Test Set (MTS) software commands will be discussed in detail. The final area to be covered in this document will be preventative maintenance.

Several appendices are provided to help the user as follows:

Appendix A is a quick reference for the PAWSWORK commands.

Appendix B is a quick reference for the MTS commands.

Appendix C is a summary of MTS error messages.

Appendix D is a summary of modem commands.

Appendix E is a summary of onboard diagnostic commands.

Appendix F is a summary of the VI editor commands.

2.0	Referenced	Documents
-----	------------	-----------

No. of Concession, Name

Sec. 1

2.1 Commercial Documentation

MVME130DIAG/D2 MVME Diagnostic Firmware User's Manual

MVME130BUG/D4 130Bug Debugging Package User's Manual

MU43815PG/D2 System V/68 Release 3, Programmer's Guide

MU43814PR/D2 System V/68 Release 3, Programmer's Reference Manual

MU43813SAG/D2 System V/68 Release 3, System Administrator's Guide

MU43813SAG/D2 System V/68 Release 3, System Administrator's Reference Manual

N/A 2424STM 2400 Baud Modem Instruction Manual

2.2 PAWS Project Documentation

VCW-01843-10-2 Prime Item B Specification for the Portable ASP Work Station (PAWS) Terminal Unit (TU)

VCW-01843-10-6 Portable ASW Work Station (PAWS) PAWS Controller Computer Software Program Performance Specification (PPS)

Instructions for Use

3.1 General Description

3.0

The Terminal Unit (TU) is a general purpose portable computer. In the standalone mode, a Laboratory Panel Interface (LPI) module will be installed to support the MTS software function. When the TU is received, the TU handle will be in the straight position and the keyboard will be in the closed or folded up position. To release the keyboard for use, the TU handle must be rotated up or down. This can be performed by pressing in on the release buttons on the handle. The handle when rotated down, may be used to support the front of the TU and hold the TU at a 15 degree incline. The two front feet of the TU may be used to serve the same purpose. Once the handle is out of the way, the keyboard may be lowered by pressing in on the two release buttons on the sides of the keyboard enclosure as shown in Figure 3-1. The keyboard may also be removed for further user convenience.

3.1.1 Frontview Description

With the keyboard lowered, the front view of the TU as shown in Figure 3-2 will be visible. The following paragraphs will describe the various components which are visible in this view.

3.1.1.1 TU Keyboard

The keyboard is an 80 position, low profile, full travel membrane keyboard. The keyboard is housed in a fold-down, detachable enclosure with an eight foot, when extended, coiled keyboard cable. The keyboard will serve as the primary input device for the user.

3.1.1.2 Flat Panel Display (FPD)

The FPD is the primary output device for the user interface. The FPD implements electroluminescence technology to provide a 25 row, 80 column display screen. A FPD filter reduces the glare and reflection and also gives the display the amber color. The FPD requires just one third the volume of a conventional CRT display and is much more rugged. Care of this display is described in section 3.4 Preventative Maintenance.



Figure 3-1. TU Setup



.

1.52

Figure 3-2. TU Enclosure Frontview

3.1.1.3 Flexible Disk Drive (FDD)

The FDD is the primary removable media data storage device available to the user. The FDD provides a two density capability of either 655 Kb or 1.2 Mb densities. In the low density, 655 Kb, the user may use readily available doublesided/double density media; however, for high density operation, 1.2 Mb, the user must use quad density type media. The user will want to use the high density mode for backing up data and files on the Rigid Disk Drive (RDD). The lower density will be used primarily for reading diskettes which have been formatted on a Motorola system running UNIX V.2.6.

To operate the FDD, the user must insert a diskette into the FDD slot with the diskette label side to the right. Once installed, the user must turn the FDD handle in the direction of the arrow shown on the drive itself. A LED indicator on the FDD will show the user when the FDD is reading or writing. The diskette must not be removed when this indicator is on.

3.1.1.4 Rigid Disk Drive (RDD)

The TU has a 42 Mb formatted RDD installed inside the TU which is not visible to the user. A LED indicator has been installed in the TU front panel which will indicate the activity of the RDD to the user. The RDD is the primary offline storage device available to the user. The RDD will contain all the operating system and user files. It is recommended that the user make frequent backups of the user area using the FDD. This should be done on a weekly basis and before the TU is transported anywhere.

3.1.2 Rearview Description

Figure 3-3 shows the rearview of the TU. This view will be further divided into a rearpanel and the TU module description. These will be discussed in the following paragraphs.

3.1.2.1 Rear Panel Description

3.1.2.1.1 AC Power Cord Receptacle

The AC power cord receptacle supports/provides three functions. First, it supports the input of 110 VAC 60 or 400 Hz AC power. Second, it provides Electro Magnetic Interference (EMI) filtering. The third function is AC fuse protection. Just below the AC receptacle is a cover which provides access to two AC fuses. The fuse type is 3A/250V. These fuses should not be replaced with any other value.

3.1.2.1.2 Power On Switch

The power on switch is located in the upper corner of the TU rear panel. When off, a "O" will be visable to the user on the side of the switch and the switch will not be illuminated. When turned on, the switch will be illuminated, the "O" will no longer be visable and AC power will be applied to the TU power supply.

3.1.2.1.3 Modem Inputs

The TU has a Hayes compatable modem installed internally. The modem is a 2400 baud autoswitching type modem. The modem is configured to the settings shown in Table 3-1. The user may call out to another computer system or the TU may be called by another computer system. Phone line connections are made via the TU rear panel as shown in Figure 3-3. The upper modem jack is reserved for the line connection. The lower jack can be used to plug in a phone.

Table 3-1. Initial Modem Settings

nction	Setting
to LF/CR	OFF
yboard Echo	OFF
plex	FULL
ud rate	2400
ta Bits Per Character	8
ansmit Parity Enable	OFF
ceive Parity Sense	OFF
rity Bit	SPACE or 0
op Bits	1
ud rate ta Bits Per Character ansmit Parity Enable ceive Parity Sense arity Bit cop Bits	2400 8 OFF OFF SPACE or 1

3.1.2.1.4 Printer Port

The printer port is located on the rear of the TU as shown in Figure 3-3. It is a serial RS232 type connector. The printer port is a connector located on the rear of the TU. When activated the printer is slaved to the FPD. All information printed on the screen will then be outputted to the printer.

The printer port for the TU operates with the following parameters:

interface	type	serial
baud rate		9600
parity		none
data word	length	8 bits
stop bits		one

The recommended printer is the Datasouth DS400 or equivalent. The Datasouth Computer Corporation is located at the address listed below:

> Datasouth Computer Corporation 4216 Stuart Andrew Boulevard Charlotte, North Carolina 28210

3.1.2.1.5

Laboratory Panel Interface (LPI) Connector

A military connector for the LPI is recessed in the rear panel. The LPI external cable should be connected to the ASP and TU when the MTS function is in use. If the MTS environment is entered without the cable installed, an error message will be displayed on the screen of the display.

3.1.2.1.6 Air Outlet

The rear panel provides an outlet to exhaust heat from the TU internal electronics.

11



Figure 3-3. TU Enclosure Rearview

3.1.2.2 TU Module Description

The TU modules may be accessed from the rear of the TU as shown in Figure 3-3. The TU will support a total of seven VME bus compatable modules. When delivered, five of the seven available slots will be filled. Slot 4 is reserved for expansion to the Electronics Unit. Slot 7, while appearing unused, is currently configured to the disk drives internal to the unit. The slot numbering system will be in ascending order from bottom to top as shown in Figure 3-4. Several of the modules have indicators and controls which will be discussed in the following paragraphs.

3.1.2.2.1 TU Processor Module

The TU processor is located in the first VME bus slot. This processor is a MC68020 based processor with onboard Floating Point Coprocessor (FPC), Memory Management Unit (MMU), VME130 Debug Monitor (130bug) and cache memory. The processor will support a multiprocessor environment where it is the bus master and provides the primary user interface support for the display, keyboard and disk drives. The controls and indicators are shown in Figure 3-4 and are described as follows:

Abort Switch (S1) - The Abort switch is a momentary type switch that when pressed, causes a Level 7 interrupt to the MC68020 processor. The 130bug treats Abort as a low level reset. The result is a display of the MC68020 registers on the screen and the return of the program control to 130bug.

<u>Reset Switch (S2)</u> - The Reset switch is a momentary type switch that when pushed will cause the local processor and I/O devices as well as any device tied to the VME bus signal "SYSRESET*" to be reset.

System Configuration DIP switch (S3) - Switch S3 is an eight position piano type DIP switch that is accessible through the processor front panel. These switches are preset prior to delivery and should not be changed. The preset values for Switch S3 are: positions 2,6,7,8 are set and the remainder are cleared.

<u>Fail Indicator</u> - The Fail indicator is a discrete red LED that is illuminated by the processor if a processor failure has occurred. When power is initially applied, the Fail indicator will illuminate briefly.

<u>Halt Indicator</u> - The Halt indicator is a discrete red LED that is illuminated when the MC68020/MMU are in a halted state.

USED FOR INTERNAL CABLING С ŋ 3 F п**и**нЕ 320В OF С DISK DRIVE CONTROLLER Ο REST RECORT O MITE O MITE O MITE C PU C PU 0 LPI MODULE Ο С RESERVED FOR FUTURE USE 0 0 TRANSITION MODULE O UNE 224-1 VNE VNE VNE С TU MEMORY HODULE С TU PROCESSOR MODULE 0

Figure 3-4. TU VME Slot Usage

<u>Run Indicator</u> - The Run indicator is a discrete green LED that is illuminated when the processor is addressing a module on the VME bus.

<u>Scon Indicator</u> - The System Controller (Scon) indicator is a discrete green LED that is illuminated by the TU processor since it is the System Controller.

3.1.2.2.2 Memory Module

The memory module is located in VME bus slot 2 and provides 4 Mb storage capacity. It is a high performance dynamic memory module. The memory module has two indicators as follows:

<u>VME Indicator</u> - The VME indicator is illuminated green when the memory module is being accessed via the VME bus.

<u>VSB Indicator</u> - The VSB indicator is illuminated green when the memory module is being accessed via the VSB bus.

3.1.2.2.3 Transition Module

The transition module is located in VME bus slot 3 and converts the TTL RS232 interfaces from the TU processor to compatable interfaces for the TU display and internal modem. These signals are passed through a ribbon cable that can be seen from the rear of the unit. There are no indicators or controls associated with this module.

3.1.2.2.4 Disk Controller Module

The disk controller module is located in VME bus slot 6 and provides the interface support for the RDD and the FDD. There is one indicator on the controller front panel as follows:

<u>Fail Indicator</u> - The Fail indicator is a discrete red LED that is illuminated by the controller if a controller failure has occurred.

3.1.2.2.5 LPI Module

The LPI module is installed in the VME bus slot 5. This module provides the LPI interface used to communicate with the ASP to support maintenance activity functions. The front panel contains the following controls and indicators. Abort Switch (S1) - The Abort switch stops processing on the LPI module.

<u>Reset Switch (S2)</u> - The Reset switch is a momentary type switch that when pushed will cause the local processor to be reset. This is the equivalent of a warm start.

<u>Halt Indicator</u> - The Halt indicator is a discrete red LED that is illuminated by the processor if a processor failure has occurred. When power is initially applied, the Halt indicator will illuminate briefly.

<u>BusMSTR Indicator</u> - The Bus Master indicator is a discrete red LED that is illuminated when the processor is addressing a module on the VME bus.

<u>Serial Port</u> - A 26 pin serial connector is provided on the front of the module.

3.1.3 Cabling Requirements for the TU

The TU requires very little cabling when in the standalone mode. The user will be required to install the AC power cord, the LPI cable, modem connections, and the printer cable if needed.

3.1.3.1 Installing the AC Power Cord

The TU uses an industry standard AC power receptacle and is delivered with a molded three wire AC power cord. This cable has a standard three prong plug to be plugged into a 110 VAC wall outlet. If the user takes the TU onboard an aircraft, the TU can operate on 400Hz power; however, the user may have to change the three prong plug to an aircraft compatible plug. The TU supports the AC power requirements shown in Table 3-2.

Tal	ole	≥ 3	-2.	AC	Power	Requirements
-----	-----	-----	-----	----	-------	--------------

Volts	Frequency			
115 VAC	60 or 400 Hz			
(90 to 132 VAC)	(47 to 440 Hz)			

3.1.3.2 Installing the LPI Cable

In order to run the Microprogrammable Test Set (MTS) software the TU must be cabled to the ASP via the LPI port. The TU is delivered with a LPI cable for this purpose. The cable is labeled as to which end is installed to which equipment. This cabling requirement is shown in Figure 3-5.

3.1.3.3 Installing the Modem Connections

The modem is connected via standard 6 pin modular jacks. The phone line from the wall should be connected to the modem connector labeled "LINE". A standard phone may be connected to the modem connector labeled "PHONE".

3.1.3.4 Installing the Printer Cable

A printer cable may be installed from the TU printer port located on the rear panel to a serial printer. The location of the TU printer port is shown in Figure 3-3.





The second s

And a second second

18

3.2 TU Operation

The TU startup begins with the application of AC power. This is accomplished by switching the power switch to the "ON" position.

3.2.1 TU Startup Procedure

When power is applied, the TU processor module onboard ROMS are enabled and the following information should be displayed on the FPD.

> FPC passed test PMMU passed test 130Bug>

The 130BUG prompt is the entry point for the onboard debug monitor. The 130BUG supports both a debug and diagnostics mode. The mode can be switched by typing "sd <CR>". The debug monitor is used for the debug of application software being executed in the TU processor and will not be discussed in this document since the software delivered with the TU has already been developed. The 130DIAG will be used to diagnose problems with the TU off-the-shelf modules. These diagnostics are discussed in Appendix E.

3.2.2 Booting UNIX

The UNIX may be booted from the "130Bug>" prompt. The RDD must be up to speed prior to booting UNIX. This will take approximately 15 seconds. When the RDD is up to speed, the head restraint solenoid in the RDD is activated and a "click" can be heard. The RDD is now up to speed.

The user may type "bo<CR>" at the "130Bug>" prompt.

If the user types "bo" prior to the RDD spinning up the following error message is displayed

Boot Error Packet Status 0002 130Bug>

In response to this message, the user should wait a few more seconds and reenter "bo".

The boot process will begin with

IPL loaded at: \$000F0000

System V/68 Release R3V4 68020 Version 871216

Real Mem=4194304 Avail Mem=2920448

Is the date Mon Jan 9 13:34:02 EST 1989 correct?(y or n)

If any key, except "y", entered, the user will be prompted to enter the correct date and time as follows:

Enter the date as MM/DD/YY:hh:mm:ss

The user does not have to enter the "/" or ":", any nonnumeric delimiter will do.

At this point UNIX and other system files will be loaded. The last process to be loaded is the Real Time UNIX Executive (RTUX) used when operating ASP specific software.

The following prompt will now appear

*** Wait for RTUX confirmation before logging in ***

PAWS login:

After a brief delay the display will yield:

PAWS Login: RTUX Executive loaded V3.2+.V Copyright (c) 1985 by Emerge Systems, Inc.

At this point a <CR> entry will display the PAWS Login as follows:

PAWS login:

The booting process is now complete. The UNIX environment has been divided into four user areas as follows: the Unit Shutdown, the System Administrator, the RTUSER1 and the PAWSWORK areas. The capabilities and use of these user areas will be discussed in the following paragraphs.

3.2.3 Using the Shutdown Procedure

The shutdown procedure must be implemented whenever the TU is to be powered down. This will ensure that the file systems are correctly preserved. From the PAWS login prompt enter:

PAWS login: shutdown

This login will invoke the shutdown procedure and the following information will then be displayed.

SYSTEM V/68 Release R3V4 Version 871216 M68020 PAWSv68 Copyright (c) 1984 AT&T Copyright (c) 1985 Motorola, Inc. All Rights Reserved

SHUTDOWN PROGRAM

Thu Apr 13 09:45:24 EDT 1989 Broadcast Message from shutdown (console) on PAWSv68 Thu Apr 13 09:45:24...

System coming down in 10 seconds ! ! !

PLEASE LOG OFF NOW ! ! !

Broadcase Message from shutdown (console) on PAWSv68 Thu Apr 13 09:45:34...

SYSTEM BEING BROUGHT DOWN NOW ! ! !

You may power down the system now - it's been fun computing with you!

The System Administrator

A System Administrator should be assigned to the TU. One of the system administrator's tasks is to assign UNIX working spaces for TU users. Once assigned the user's may assign a password to the working space; however, it is imperative that these passwords are kept in a secure place. This will prevent a situation in which the passwords are misplaced or forgotten resulting in an inability to access the system.

To support the System Administration function, the TU is delivered with a very useful and user friendly software package called the System Administrator Software. It may be used to perform various system administrator functions. Most of these functions have been configured for the TU and will not require reconfiguring. If the user would like to become more familiar with the System Administrator Software, the user should read the System Administrator's Guide listed in the reference documentation.

3.2.4.1 Invoking the System Administrator Software

To invoke the System Administrator Software, the user must login as follows:

PAWS login: sysadm

After logging in, the System Adminstrator's menu will be displayed as shown in Figure 3-6. The user may select the desired system administration task to be performed and the system administrator will be stepped through the selected function until the task has been completed. The system administrator for the TU will primarily be concerned with the Disk Management and File Management functions.

3.2.4.2 Major functions of the System Administrator

Diagnostics

3.2.4

* 1) gives advice on repair of built-in disk errors

* 2) report on built-in disk errors

Disk Management

1) check a removable medium file system for errors

2) make exact copies of a removable medium

* 3) erase data from removable media

4) format new removable diskettes

* 5) hard disk setup

- 6) create a new file system on a removable medium
- 7) mount a removable medium file system
- 8) unmount a removable medium file system

	SYSTEM ADMINISTRATION
1. diagnostics	Sutem diagnostics menu
2. diskmgmt	disk management menu
3. filemgmt	file management meny
4. machinemgmt	machine management menu
5. packagengmt	package management menu
6. softwarengmt	Software management menu
7. syssetup	System management menu
8. ttymgmt	tty monagement menu
9. usermgmt	uSer managment menu
Enter a number, a	name, the initial part of a name, or
? or <number>? for</number>	r HELP, q to QUIT:

Sec. Sec.

ALL DESS

A COLUMN TWO IS NOT

Figure 3-6. System Administrator's Menu

File Management

- backup files from built-in disk to removable media; read files from hard disk
- 2) display how much of the hard disk is being used
- * 3) list file older than a particular date
- * 4) list the largest files in a particular directory

Machine Management

- * 1) stop all running programs then enter firmware mode
- * 2) stop all running programs then turn off machine
- * 3) stop all running programs then reboot the machine
 - 4) print list of users currently logged onto the system

Package Management

* 1) basic networking utilities menu

Software Management

- 1) install new software package onto built-in disk
- 2) list packages already installed
- 3) remove previously installed package from built-in disk

Note: capability to be utilized at future time

System Setup

- 1) assign or change administrative passwords
- 2) set the date, time, time zone and daylight savings time
- 3) set the node name of this machine
- 4) set up your machine the very first time
- 5) assign system passwords

Note: used in assigning passwords

TTY Management

- * 1) show tty line settings and hunt sequences
- * 2) create new tty line settings and hunt sequences
- * 3) show and optionally modify characteristics of tty lines

User Management

- 1) add a group to the system
- 2) add a user to the system
- 3) delete a group from the system
- 4) delete a user from the system
- 5) list groups in the system
- 6) list users in the system
- 7) modify defaults used by adduser
- menu of commands to modify group attributes 8)
- menu of commands to modify a user's login 9)

Not used in normal operation of TU *

3.2.4.3 Using the Disk Management Function

The system administrator will be required to initialize diskettes for use with the TU. This includes diskette preparation for backing up and archiving purposes and diskette preparation for normal TU operation when working in the UNIX environment or when operating PAWSWORK. The system administrator may gain access to the diskette initializing functions through the Disk Management Menu.

When preparing diskettes it is important that the system administrator understand the following terms:

Format - Create tracks and sectors

Make file system - To write identifying labels on

the

what

file

magnetic medium so the system can know is brought on line. Also, to define systems that are removable for reasons of privacy or security.

> Mount/unmount - To bring a file system under operating system control (mount) or to release (unmount).

When Archiving files, the system administrator will use the UNIX command called "cpio". For this command, directories are not required to be put on the diskette. Therefore, the system administrator only needs to format the diskettes and does not have to make a file system nor mount the FDD. Software updates for the TU will be delivered to the system administrator on diskettes using the "cpio" command.
When diskettes are needed for PAWSWORK or when using the UNIX copy (i.e., cp) command, a directory must be created on the diskette once the diskette has been formatted. This will require that all three diskette initialization steps be performed.

- 1) formatted
- 2) filesystem made
- 3) unmounted if necessary

When entering PAWSWORK, the user will be asked if a floppy diskette will be used during the PAWSWORK session. If the user does not have a diskette properly prepared by the system administrator as listed above, the user may prepare a blank diskette in the PAWSWORK by answering "yes" to the appropriate questions.

3.2.4.4 Using the File Management Function

The system administator will use the File Management function to manage the use of the Rigid Disk Drive (RDD). As users work with the TU, such as creating print files in PAWSWORK, the disk space will decrease. The system administrator can view the disk usage from the File Management function and determine the largest files on the RDD. The system administrator may then take the appropriate action to regain disk space. This is normally done by archiving older files and deleting them from the RDD.

3.2.4.5 Exiting the System Administrator Function

To exit the system administrator section enter q'. Similiarly, when in a subsection of the system administrator menu a q' or a <CR> is entered to return to the main menu where the exit command can then be utilized.

Logging in as a UNIX User

For users familiar with the UNIX operating system, the TU is configured with a pre-established user space called RTUSER1. This space may be accessed by logging in as follows:

PAWS login: rtuser1

3.2.5

This working space does not have a password. Though one could be assigned, it is recommended that this space be set aside for general user use. If a user requires a space with password protection, the system administrator may set up user specific working space and the user may then assign a unique password.

Once logged in, the user will have UNIX system V.3 at their disposal. The TU is delivered with a "C" compiler, assembler for the 68010 and 68020, linkers and loaders. The user may access the FDD, the Printer Port, and the Modem with standard UNIX commands. The UNIX commands associated with these peripherals will be discussed in this section. The use of other UNIX commands may be accessed from UNIX referenced documents or by using the UNIX online help fucntion. Online help may be accessed by entering "help"at the UNIX prompt.

3.2.5.1 Using the Flexible Disk Drive (FDD) in UNIX

The UNIX user may use the FDD for backing up and restoring files from the RDD. This activity consists of two steps: preparing FDD diskettes and copying files. Both will be discussed in the following paragraphs.

3.2.5.1.1 Preparing FDD Diskettes

As UNIX user, diskettes may be prepared for archiving (i.e., when using the UNIX CPIO command) or with directories (i.e., when using the UNIX CP command or when using diskettes for PAWSWORK). The following paragraphs summarize the UNIX diskette preparation commands:

Initialize/Format a Diskette

\$/etc/fmtflp -v /dev/rSA/hddiskette1

Make a Filesystem on the Diskette

\$fs /dev/SA/hddiskette1

Label a Diskette

WORKER

A DESCRIPTION OF

\$/etc/labelit /dev/SA/hddiskette1 fd paws

Once initialized, the user must mount the diskette. This will inform UNIX that the FDD is available for use.

Mount a Diskette

Şmnt hdd

Note: When the user is finished with the session, the user must unmount the diskette or files collected during that session may be lost.

Unmount a Diskette

Sumnt hdd

When working in PAWSWORK, the diskette will be mounted automatically when the user answers "yes" to the "Do you wish to use the Floppy?" prompt when entering PAWSWORK. When existing PAWSWORK, the diskettes will be automatically unmounted.

3.2.5.1.2 Copying Flexible Disk Drive (FDD) Files in UNIX

The FDD is the off-line storage device for the TU. Once the user has prepared the diskettes, the user may backup files on the RDD to the FDD or restore files from a FDD diskette back to the RDD. The files may be stored to the diskette using either the UNIX archive command, cpio, or using the UNIX copy command, cp.

The UNIX archive command, cpio, optimizes the amount of information that may be stored on the diskette. To use the CPIO command the diskette only needs to formatted and does not need a file system. There will be no directory available once the files have been archived.

The following cpio command may be used to archive the file 'test1' from the RDD to the FDD.

\$1s test1 | cpio -ocv > /dev/rSA/hddiskette1

The cpio command is an archive function which does not create a directory when executed. The file 'test' must be in the current directory. For example, if the file 'test' is a print file created during a PAWSWORK session, the directory must be changed to pawswork since all files created during pawswork are stored in the pawswork subdirectory. The following command may be used:

\$cd /usr/pawswork

The following cpio command will restore all information archived on the FDD back onto the RDD.

\$cpio -icvd < /dev/rSA/hddiskette1</pre>

The UNIX copy command may be used to copy files from the RDD to the FDD and copy them back. When using this command, a directory will be available to the user which means that the diskette must have been prepared with a file system and mounted prior to use. The following command will copy a file 'test1' from the RDD to the FDD:

\$cp test1 /fd

The following command will copy a file 'test1' from RDD to FDD and rename the file 'test2':

\$cp test1 /fd/test2

The following command will copy all files from one subdirectory on the RDD to the FDD:

\$cp * /fd

The following command may be used to copy a file 'test1' from the FDD to the present directory on the RDD.

\$cp /fd/test1 test1

The following command may be used to copy all files on the FDD to the /usr/pawswork subdirectory on the RDD.

\$cp /fd /* /usr/pawswork

The following command may be used to copy all files on the FDD to the present directory on the RDD.

\$cp /fd* *

3.2.5.2 Using the Printer Port

Prior to turning on the power the printer must first be properly cabled to the printer port as described earlier.

3.2.5.2.1 Using Print_On and Print_Off Commands

The TU is delivered with two print commands "print_on" and "print_off" located in the RTUSER1 user space. Both of these commands are special purpose commands developed to enable/disable the printer port on the Flat Panel Display (FPD). When enabled, all information displayed on the FPD will also be sent to the printer via the RS232 port on the rear panel of the TU. To activate the printer port the user must be in the RTUSER1 subdirectory. At the UNIX prompt, the user should type:

\$ print_on

Note: Do not enable this port unless a printer has been cabled to the printer port, otherwise, the system may hang.

To disable the printer port the following command must be executed.

\$ print_off

To print a file created during a PAWSWORK session, the following steps should be taken:

1. Enter the RTUSER1 user space via login or by changing directory if already logged into a different directory. Enter print_on at the UNIX prompt.

\$ print on

2. Change the directory to the PAWSWORK directory where all files created during a PAWSWORK session are stored by entering the following command at the UNIX prompt.

\$ cd /usr/pawswork

3. Cat the file to be printed to the display. This may be performed by entering the following command:

\$ cat test1

The printer should begin to print as the first characters are displayed.

When printing has been completed, the printer port should be disabled. To disable the printer port the directory must be changed back to the RTUSER1 working space and the print_off command executed.

\$ cd /usr/rtuser1

\$ print off

Printing should now be halted.

3.2.5.3 Using the Internal Modem

To use the modem, the user must login as a UNIX user (i.e., rtuser1). The UNIX CU command is used to establish communication with the modem as follows:

\$ cu -l/dev/tty01<CR>

"CONNECTED" will be displayed which means the user is now communicating directly with the modem. Once connected, the user may use the Hayes command set to continue to talk to the modem. The Hayes command protocol requires that an "AT" to precede each command. By typing simply "AT<CR>", the modem returns the response "OK" to the user. If an "OK" does not appear, the modem echo may be disabled. To enable echo, the user should enter:

ATE1Q0&W<CR>

El - enables echo

Q0 - disables quiet

&W - saves these new values permanently in the modem's memory.

3.2.5.3.1 Reconfiguring the Modem

The user does not need to change the configuration, unless the user is trying to communicate with a modem that has been configured differently than that defined in initial DTE settings Table. The modem may be reconfigured using this same approach described above; however, after entering "AT", the user should enter the new configuration commands. The configuration commands are summarized in Appendix D. If the new configuration is to be the final configuration, the user must end the command string with "&W". 3.2.5.3.2 Calling Out to Another Modem

To call another modem, the user should enter the following command:

ATDT (phone number) < CR>

DT is the Dial Tone command for DTMF tone generator.

Phone Number is the number to be called. Note: If the phone line is not dedicated, a "9," may have to precede the phone number

When connection to the receiving modem has been made, the following prompt will be displayed:

CONNECTED (baud rate)

where the baud rate is the final transmission rate. The TU modem is a 2400 baud modem; however, if the receiving modem has a slower baud rate, the TU modem will switch-down until a compatable baud rate has been established. It is this agreed upon baud rate that will be displayed after the CONNECTED prompt.

3.2.5.3.3 Disconnecting

The user should log off the external system that the user is connected to. This usually causes the modem to disconnect. A "Disconnected" prompt will be displayed. The user will still be connected with the modem. To return to the UNIX prompt enter ".." ("." represents the tilde key on the keyboard and "." represents a period). The following information will be displayed prior to returning to the UNIX prompt.

> ~[PAWSv68]. Disconnected \$

3.2.5.4 Exiting the UNIX Function

To leave the UNIX user space and return to the PAWS login prompt enter :

\$^D or "bye"

3.2.6 Logging in as a PAWSWORK User

To run the PAWS Controller Software the user may login as a PAWSWORK User. This is accomplished by typing "pawswork" at the PAWS login prompt as follows:

PAWS login: pawswork

Upon entry the user will be asked if a floppy diskette will be used. This will be followed by the entry into the PAWSWORK Operator Interface characterized by the PAWSWORK menu shown in Figure 3-7. The use of the floppy diskette and the PAWSWORK Operator Interface will be discussed in the following sections.

3.2.6.1 Preparing a Floppy Diskette for PAWSWORK

When a user answers "no" to the question for using the floppy, the steps for preparing a diskette will be bypassed and the user will be placed directly into the PAWSWORK Operator Interface software.

When a user answers "yes" that a floppy will be used, the user will stepped through a series of prompts which will define the type of media, to format the media and to make a file system. This sequence ends by mounting the floppy for use during this PAWSWORK session.

Selecting the Right Density - The user must select the correct density for the diskette being used. The user will have two choices: normal or high density. Normal density must be selected when using double-sided, double density type diskettes. This media will provide 655 Kbytes of capacity. High density must be selected when using quad density diskettes. This media will provide 1.2 Mbytes of storage capacity. If the wrong density is selected, an error will be detected and the user will be returned to the PAWS login.

Formatting the Diskette - After the density has been selected, the user will be asked, "Do you wish to format the floppy (y/n)?". If the diskette inserted in the disk drive is blank or contains obsolete files, the user should respond with "Y". If a "Y" is entered the format process would begin. The user may have obtained a diskette from the system administrator which has already been formatted. In this case the user may answer "N". When "N" is entered the software will continue onto the next step.

Creating a File System - A file system must be created on the diskette for use with PAWSWORK. This will automatically be performed for the user. The disk will now be initialized.

VERSION 1.0	PAHS AVAILABLE CO	MMANDS	•
config[ure]	he lp	by e	
catlist copy ex[amine]	.genEdata] modElfy] permit	pr[int] purge resume	cg[loba]] g[loba]] sg[loba]]
m t S			
	•		· .
	ş.		

Surger Street

and the state of the

President State

Figure 3-7. PAWS Operator Interface Menu

Mounting the Floppy - With a properly initialized diskette, the floppy must be mounted for use. This again will automatically be performed for the user during this sequence of steps. Once mounted, the diskette must not be removed until the floppy is unmounted.

Unmounting the Floppy - The PAWSWORK user does not have to worry about unmounting the floppy. The unmount will automatically be performed when the PAWSWORK user leaves PAWSWORK.

3.2.6.2 Using the PAWSWORK Operator Interface

Once the PAWSWORK user has set up a FDD diskette, the interface software for the Laboratory panel Interface (LPI) module will be downloaded and PAWSWORK will be entered.

The PAWSWORK user will be able to select any of the sixteen commands listed in the PAWSWORK Operator Interface menu shown in Figure 3-7. The PAWSWORK commands are organized into four command categories as follows:

- 1. File Utility Commands
- 2. PAWSWORK Control Commands
- 3. Global Commands
- 4. PAWS Controller Software

The file utiliy commands comprise the majority of commands available to the user. These Operator Interface commands are sumarized in Appendix A.

3.2.6.2.1 File Utility Commands

To invoke any file utility command, the user must enter a proper command syntax at the **PAWS**? prompt. The proper command syntax is dependent on the command to be executed; however, the user must be familiar with some general rules for using the file utilities. Optional parameters are defined by square brackets[].

Specifying a PATH

Files are organized in tree-structured directories. Directories are themselves files that contain information on how to find other files. A PATH to a file is a text string that identifies a file by specifying a path through the directory structure to the file. Syntactically it consists of individual file name elements separated by the slash character. For example, in /usr/pawswork/test the first slash indicates the root directory tree, called the root directory. The next element, usr/, is a subdirectory of the root, pawswork/ is a subdirectory of usr, and test is a file or subdirectory in the directory pawswork.

In this example, /fd/test, fd/ has been set up in the file utilities as a device path to the Flexible Disk Drive (FDD). Thus test is a file located in the FDD directory.

Defining a File Name and File Access

The NAME for a file is an arbitrary character string composed of upper and lower case alphabetics, numbers, the underscore () and the period (.) characters.

When any PAWS function accepts a user specified filename designated to be written upon, the file utilities function will determine if that filename already exists. If it does not exist, the file will automatically be created with read permission to the user. If the file does exist, the file utilites function will determine if the user has write permission of that file. If not, the file utilities function will display "NO PERMISSION TO WRITE ON EXISTING FILE". If the user does have write permission, the file utilities function will prompt "DUPLICATE FILE NAME XXXXXX" and query the user "REWRITE?". A response of N[0] will invoke the aforementioned error prompt while a response of Y[ES] will permit the user to continue. Access to a file may be changed with the Permit command.

When any PAWS function accepts a user specified filename designated to be read from, the filename must exist and be accessible to the user or "FILE XXXXXX NOT FOUND" message will be displayed.

Specifying a Format Character

The FORMAT Character is a user defined parameter which specifies to the file utilities software the conversion to be performed during the execution of the file utility commands. For the COPY and PRINT commands, the format conversions will be performed on the source data before it is written to the destination. For the EXAMINE command, the format conversions will be performed on the source data prior to examination. For the GENDATA command, the format conversions is applied to the user input before it is written to the destination. The legal parameters for the Format Character are as follows:

- a. U No reformatting performed Default.
- b. C Compressed Text (Blank text lines are deleted)
- c. H Hexidecimal Dump of binary Data

Creating and Editing Files

The user may create and edit files with the file utility commands. In order to perform these tasks, the VI Editor is used to make any changes or additions in the file chosen. These editor commands are located in Appendix F of this document.

3.2.6.2.1.1 CATLIST

Command Description

The CATLIST command will allow a user to display a file, a directory name or selected files using wildcards as specified by the source. If a directory name is specified, a listing containing the names of all files in that directory will be produced on the display. If a file name is specified a listing will be produced on the display containing detailed data on all files in the specified directory. A wild card character (*) may be used in the path to select common files for display. If a source is not specified, the default will be the pawswork directory on the RDD: /usr/pawswork. If a Place is not specified, the default will be the TU display.

Command Syntax

catlist [s[ou]rce=path1] [place=path2]

where the parameters are defined as follows:

Onscreen Help Information

PAWS? help cmd=catlist

Example 1

In this example, catlist by itself is entered which will display all files in the pawswork subdirectory.

PAWS? catlist

demo1.lpi demo2.lpi test1.lpi test2.lpi test3.lpi test1.pdc

Example 2

In this example the wildcard character (*) is used to select only the lpi test files from the pawswork directory.

PAWS? catlist srce=test*.lpi

-rw-rw-rw 1 pawswork real_time 50 Jun22 17:08 test1.lpi -rw-rw-rw 1 pawswork real_time 50 Jun22 17:08 test2.lpi -rw-rw-rw 1 pawswork real_time 50 Jun22 17:08 test3.lpi

Example 3

In this example all files on the floppy diskette will be displayed.

PAWS? catlist srce=/fd

lpitest.10 lpitest.11 lpitest.13 lpitest.14

3.2.6.2.1.2 COPY

Command Description

The COPY command will allow a user to copy files from a source file or device to a destination file or device. The copy operation may be interrupted by pressing the DEL key on the keyboard. The user may also specify a format character which will reformat the data being copied before it is written to the destination. The default source is the pawswork directory on the RDD, the default destination is the pawswork subdirectory of the RDD and the default format character is for no reformatting.

Command Syntax

copy s[ou]rce=path1 dest[ination]=path2 [form[at]=fchar]

where the parameters are defined as follows:

pathl	-	the source filename or device to be copied. (default = /usr/pawswork)
path2	-	<pre>the destination filename or device to be copied to (default = /usr/pawswork)</pre>
fchar	-	reformating specification character (default = u)

Onscreen Help Information

PAWS? help cmd=copy

Example

In this example the file named test1.lpi will be copied from the RDD to the FDD.

PAWS? copy srce=test1.lpi dest=/fd/test1.lpi

3.2.6.2.1.3 EXAMINE

Command Description

The EXAMINE command allows a user to examine a file. When displayed, the user will be able to edit the file using the VI editor as summarized in Appendix E. These changes however, will not be saved when the examine is terminated. If an edited file is necessary, the user should use the modify command.

To use this command, the user must have read permission for the file being examined. In addition, the user may specify a format character which will reformat the file prior to the information being displayed.

Command Syntax

ex[amine] file=path1 [form[at]=fchar]

where the parameters are defined as follows:

path1 - the source filename

fchar - the reformat specification character

Onscreen Help Information

PAWS? help cmd=ex

Example

This example will display the file named test.10 on the screen of the TU display. To page through this file the user may press ^U or ^D keys.

PAWS? ex file=test.10

3.2.6.2.1.4 GENDATA

Command Description

The GENDATA command will allow the user to create or generate a data file. This may be done by specifying a destination where to place the file once created. The default is the pawswork directory of the RDD. A format character may also be specified which will reformat the gernerated file prior to writing the file to the destination. This file may be used to create a batch file for execution when operating in the MTS function. If the destination file specified already exists, an error message is given.

Command Syntax

gen[data] dest[ination]=path2 [form[at]=fchar]

where the parameters are defined as follows:

path2 - the destination filename or directory

fchar - the format parameter

Onscreen Help Information

PAWS? help cmd=gen

Example

In this example the file test.lpi is created to execute batch commands when in MTS.

PAWS? gen dest=test.lpi

Upon entry, the user may use the VI editor to generate this file. These VI editor commands are summarized in Appendix E. When complete, the user must enter ZZ to save text.

3.2.6.2.1.5 MODIFY

Command Description

The MODIFY command will allow the user to modify an existing file as specified by file. The user may also specify the destination if the destination will be different than that specified by file. The user must have write privelege to that file or an error message will be displayed. The default for the source is the pawswork directory on the RDD:/usr/pawswork.

Command Syntax

mod[ify] file=path1 [dest[ination]=path2]

where the parameters are defined as follows:

path1 - the source filename

path2 - the destination filename

Onscreen Help Information

PAWS? help cmd=mod

Example

In this example, the file named test1.lpi will be modified. When editing is complete, the file will be renamed lpitest.1 and stored onto a floppy diskette.

PAWS? mod file=test1.lpi dest=/fd/lpitest.1

3.2.6.2.1.6 PERMIT

Command Description

When a file in pawswork is created, the file will be assigned an initial permission of "read" to that user and inaccesssable to others. The originating user may use the PERMIT command to alter these permissions by specifying an access code. The rw/rw permision must be set to transfer files over the modem line.

Command Syntax

permit file=path1 access=access code

where the parameters are defined as follows:

path1 - the source filename or device for which file permissions are being changed.

access code is one of the following:

rw	Read-Write to user, inaccessable to other	s
rw/r	Read-Write to user, read to others	
rw/rw	Read-Write to all	
r/r	Read to all	
r	Read to user, inaccessable to others	

Onscreen Help Information

PAWS? help cmd=permit

Example 1

In this example the permissions for file lpitest.7 are changed to allow other users to read that file.

PAWS? permit file=lpitest.7 access=r/r

Example 2

In this example the permissions for file lpitest.8 are changed to allow the originating user read/write access while other users have only read.

PAWS? permit file=lpitest.8 access=rw/r

3.2.6.2.1.7 PRINT

The printer port cannot be accessed directly in PAWSWORK. If a hard copy is needed, the user may activate the printer port as described in the RTUSER1 Section where the use of the printer port is described: paragraph 3.2.5.2.

3.2.6.2.1.8 PURGE

Command Description

The PURGE command will accept only a source filename with a path to the user directory or to the FDD. The name may contain one or more wildcard characters (*). The file(s) which match the specified name in all character positions which do not contain * characters will be irreversibly deleted from the directory. When more than one file is to be purged, the user will be required to confirm the removal of each file by entering "y". Disk space occupied by the file(s) will be released.

Command Syntax

purge file=path1

where the parameters are defined as follows:

path1 - the source filename to be purged.

Onscreen Help Information

PAWS? help cmd=purge

Example 1

This example will erase the file test1 from the pawswork directory on the RDD.

PAWS? purge srce=test1

Example 2

This example will erase a file named test2 from the FDD.

PAWS? purge file=/fd/test2

Example 3

This example will erase all files beginning with test from the RDD.

PAWS? purge file=test*

3.2.6.2.2 PAWSWORK Control Commands

There are four PAWSWORK Control Commands which allow the user to exit PAWSWORK, configure the system hardware, resume PAWSWORK activities and to get onscreen help. The use of these commands will be discussed in this section.

3.2.6.2.2.1 BYE

Command Description

The BYE command will end the PAWS Controller Software session and return the user to the "PAWS login" prompt. This command must be executed to exit PAWSWORK and "shutdown" entered at the PAWS login prior to powering down the unit.

Command Syntax

bye

Onscreen Help Information

PAWS? help cmd=bye

Example

PAWS? bye

3.2.6.2.2.2 CONFIGURE

Command Description

The CONFIGURE command allows the user to establish a system configuration for their PAWS session. Since the stand alone TU only supports the MTS function the user is recommended to use config std=9. Typing in "config" with no parameters will allow the user to edit the current configuration. The VI editor must be used to make these changes. See Appendix E.

Note: In order to function properly, the hardware must be configured the same way as the file suggests. Otherwise, the PAWS Controller Software functions will not be looking in the correct place for the interface module, and no communication will be made to the ASP.

Command Syntax

config[ure] [std=stdconf] [op=operation]

where the parameters are defined as follows:

stdconf - A pre-established standard configuration
 identifier.

operation - The req[uest] operation is the default.

Onscreen Help Information

PAWS? help cmd=config

Example

This example sets the standard configuration to 9 which is the standalone MTS function.

PAWS? config std=9

3.2.6.2.2.3 HELP

Command Description

The HELP command provides the user with help information regarding the Operator Interface commands.

Command Syntax

help cmd=xxx

where xxx is the name of a PAWS command.

Onscreen Help Information

PAWS? help

Example 1

This example will display a syntax summary of all the Operator Interface Commands.

PAWS? help

Example 2

This example will display help information for the modify command.

PAWS? help cmd=mod

3.2.6.2.2.4 Resume

Command Description:

The resume command shall allow the user to return to a previously SUSPENDed process and pick up where it left off. The resume command will restore terminal control to the process that was last SUSPENDed.

Command Syntax:

resume

Onscreen Help Information

PAWS? help cmd=resume

3.2.6.2.3. Global Commands

The Global Commands allow the user to set, list and clear global parameters to be used during a PAWSWORK session. When operating in a standalone MTS configuration, these commands are not used but will be used extensively when using future PAWS Controller Software functions.

3.2.6.2.3.1 CGLOBAL

Command Description

The CGLOBAL command clears global parameters which had previously been set by the set global parameter command. Any use of a command which requires the deleted parameter will cause an error unless the deleted parameter is respecified. Any use of a command for which that the deleted parameter is optional will utilize the default value specified for that command. If no parameters are specified, all global definitions will be eliminated.

Command Syntax

cg[lobal] [p1][p2]...[pn]

Where the parameters are defined as follows:

p1, p2, p2 - Optional parameters which define the name of a previously set global parameter.

Onscreen Help Information

PAWS? help cmd=cg[lobal]

Example

In this example, all parameters previously set by set global will be deleted.

PAWS? cg

3.2.6.2.3.2 LGLOBAL

Command Description

The LGLOBAL command lists global parameters and their values for the previously set global parameters.

Command Syntax

lg[lobal] [p1][p2]...[pn]

Where the parameters are defined as follows:

Onscreen Help Information

PAWS? help cmd=lg

Example 1

In this example, all previously defined parameters are displayed.

PAWS? 1g

Example 2

In this example, the global parameters for id and xlat are displayed.

PAWS? lg id xlat

3.2.6.2.3.3 SGLOBAL

Command Description

The SGLOBAL command allows the user to set global parameter value(s). The global values set by this command will be used as the default VALUE for the parameter by all of the procedures entered after the SGLOBAL command.

Command Syntax

sg[lobal] [parameter keyword 1]=[parameter value 1] [parameter keyword 2]=[parameter value 2] ...[parameter keyword n]= [parameter value n]

Where the parameters are defined as follows:

parameter keyword - Name for the global parameter being defined.

parameter value - Value assigned to the parameter keyword.

Onscreen Help Information

PAWS? help cmd=sg

Example 1

This example sets the global default id to the value kk.

PAWS? sq id=kk

Example 2

This example sets the translator specification (i.e., xlat) to "c" and sets the history listing parameter (i.e., hist) to "no".

PAWS? sg xlat=c, hist=no

3.2.6.2.4. PAWS Controller Software

The PAWS Controller Software provides the user with several ASP related functions. In the stand alone TU configuration only the MTS function is available. In the future the user will be able to select from several additional software functions.

3.2.6.2.4.1 MTS

Command Description

The MTS command invokes the MTS software function for controlling, inspecting and changing memory of the ASP. When the MTS function is invoked, the MTS software is initialized, and the MTS display, shown in Figure 3-8, is displayed to the user. The MTS Function supports three operational modes: SPL, CP and AP. The display shown in Figure 3-8 supports both the SPL and CP modes. For the AP mode, a slightly different display is used as shown in Figure 3-9. When the AP mode of operation is invoked, the CSAR and CTL WORD fields will be cleared to reflect AP operation as reflected by the MAR and Arithmetic Element Control Word (AECW) fields.

Section 3.3 will describe the full use of this function.

Command Syntax

mts

This command has no parameters.

Onscreen Help Information

PAWS? help cmd=mts

Example

In this example the MTS function will be invoked. A standard configuration must be entered prior to invoking this function.

PAWS? mts

$\left(\right)$	STATION	/dev C	OMPUTER	<u>x</u>]	HODE	SPL	5V on	SOC ADDR	09000+0	2222 SOE	\int
	CP	AP run	MCKO off	CMPO off	SYPS off	SYCS off	SYMS off	PSREAD	VERIFY bulk	PRINT off (dev/lp	
	HC REG	nc	PSH	IC	SF	L INS	r	CSAR	CTL H	ORD	_
	/	<u></u>					l.				
								анта <u>на страна на ра</u> ло и страна.			_
C											

ं •

Concernance of the local division of the loc

Figure 3-8. MTS Display for SPL and CP Mode

SIMILIN	111-110	OMBUTED 1	51	HODE				
STHITUN	[/dev]L	UNFUIER	<u>×</u>]	NUDE	5V [on]	SOC ADD	R 00008+0	19999 SOE
CP .	AP	ИСКО	CHPO	SYPS S	YCS SYNS	PSREAD	VERIFY	PRINT
run	run	off	off	off of	ff off	allow	bulk	off
[3 (0 p]	5 10 0	on	ôn	·····	*** ***	Inhibi	t Hord	/dev/lp
MC REG	нс	PSH	IC	SPL	INST	MAR	AEC	н
8888	88/88	/8888	XXXXX	XXXXXX	XXXXXX	XXX	XXXXXXXX	XXXXXXX
1								
/								
					- <u></u>			

Figure 3-9. MTS Display for AP Mode

3.3 MTS Function Operation

3.3.1 Introduction to the MTS Screen

The screen display for the MTS function is shown in Figure 3-8. This display is divided into four areas. The top area of the MTS display provides the user with Status and Control information. The second area, is the User Command Entry Field. The third area is the Data Display Field and the fourth area is the Error Message Field. The MTS default information is highlighted in the figures by drawing a rectangle around the selectable information. On the real TU display, this information would be presented as reverse video. Also, the X's shown in the Register subfields represents displayed hexidecimal data that changes during MTS operation.

3.3.1.1 Status and Control Field

The Status and Control Field provides the user with information on the present state of the MTS software and the ASP. Initially the display reflects that to be used for Control Processor (CP) or Signal Processing Language (SPL) modes of operation as designated by the Control Store Address Register (CSAR) and Control (CTL) Word fields. The following paragraphs will summarize the various subfields of the status and control field.

Status/Control Subfields

Station Subfield - The Station subfield contains the device name of the terminal that the operator is logged into. This subfield will be /dev by default.

Computer Subfield - The Computer subfield informs the operator which unit of the ASP is being operated. This subfield will display /dev by default.

Mode Subfield - The Mode subfield informs the operator which computer mode is being operated: SPL, CP or AP.

5V Subfield - The 5V subfield informs the operator whether the 5V from the ASP is present.

SOC Address Subfield - When a Stop On Compare (SOC) address is set, this subfield will display that address and SOC will blink when SOC is enabled.

SOE Subfield - This subfield will blink when Stop On Error (SOE) is enabled by the operator.

CP Subfield - This subfield displays the status of the CP. The CP may be in the RUN or STOP state. When first invoked, the CP will be in the RUN state. The CP may be stopped using the STOP command and restarted with the START command.

Arithmetic Processor (AP) Subfield - This subfield displays the status of the AP. The AP may be in the RUN or STOP state. When first invoked, the AP will be in the STOP state. The AP may be started using the START command and stopped with the STOP command.

Machine Check Overide (MCKO) Subfield - This subfield identifies the present status of the MCKO. The state of this subfield may be changed with the OVERRIDE command.

Compare Micro Program Overide (CMPO) Subfield - This subfield identifies the present status of the CMPO. The state of this subfield may be changed with the OVERRIDE command.

Sync Program Store (SYPS) Subfield - This subfield identifies the state of the PS Sync. The initial state is set to off. The PS Sync may be enabled with the SYNC command. When enabled, the sync address will be displayed in this subfield.

Sync Control Store (SYCS) Subfield - This subfield identifies the state of the CS Sync. The initial state is set to off. The CS Sync may be enabled with the SYNC command. When enabled, the sync address will be displayed in this subfield.

Sync Micro Store (SYMS) Subfield - This subfield identifies the state of the MS Sync. The initial state is set to off. The MS Sync may be enabled with the SYNC command. When enabled, the sync address will be displayed in this subfield.

PSREAD Subfield - This subfield identifies the state of the PSREAD switch. When initialized, PSREAD will be ALLOWED. When PSREAD is enabled with the PSREAD command, the information in the Register Subfields will be displayed when the CP is stopped.

VERIFY Subfield - This subfield is controlled by the VERIFY TYPE command. When initialized, the Verify subfield will be set to BULK. This means that when writing to the ASP, the entire block written will be read back and verified. When changed to WORD, each word written to the ASP will be read back and verified.

PRINT Subfield - When PRINT is ON output written to the data display field will also be written to the associated print file. When PRINT is OFF, data will only be written to the Data Display Field. The PRINT subfield may be changed using the Define Printer and PRINT command.

Register Subfields

Machine Check (MC) Register (REG) Subfield - When PSREAD is ALLOWED, this subfield will display the MC Register when a machine check is detected when a MTS command is executed. When PSREAD is ALLOWED and CPSTEAL is enabled, this subfield will be updated once per second.

MC Program Status Word (PSW) Subfield - This subfield will display MC PSW. When PSREAD is ALLOWED, the MC PSW will be updated when a machine check is detected. If PSREAD is ALLOWED and CPSTEAL is enabled, this subfield will be updated once per second.

Instruction Counter (IC) Subfield - When PSREAD is ALLOWED, this subfield will display the IC Register when the CP has stopped. If PSREAD is ALLOWED and CPSTEAL is enabled, this subfield will be updated once per second.

SPL INST Subfield - This subfield will display the SPL Instruction as designated by the IC Register when PSREAD is ALLOWED, and the CP is stopped. When PSREAD is ALLOWED and CPSTEAL is enabled, this subfield will be updated once per second.

CP Operational Mode (See Figure 3-8)

Control Store Address Register (CSAR) Subfield - When in SPL or CP mode and PSREAD ALLOWED, this subfield will display the CSAR when the CP has stopped. If PSREAD is ALLOWED and CPSTEAL is enabled, this subfield will be updated once per second.

Control (CTL) WORD Subfield - This subfield will display the Control Word (CW) located at the address displayed in the CSAR when PSREAD is ALLOWED and the CP is stopped. When PSREAD is ALLOWED and CPSTEAL is enabled, this subfield will display dashes.

AP Operational Mode (See Figure 3-9)

Micro Store Address Register (MAR) Subfield - When in the AP mode and PSREAD is ALLOWED, this subfield will display the contents of the MAR when the CP is stopped. If PSREAD is ALLOWED and CPSTEAL is enabled, this subfield will be updated once per second.

Arithmetic Element Control Word (AECW) Subfield - This subfield will display the AECW located at the address displayed by the MAR when PSREAD is ALLOWED and the CP is stopped. When PSREAD is ALLOWED and CPSTEAL is enabled, this subfield will be updated once per second.

3.3.1.2 User Command Entry Field

The user may enter a MTS command using one of two techniques. The first approach is in the form of a text line entered in the User Command Entry Field terminated by a carriage return <CR>.

The second approach uses the keyboard numeric and function keys to execute commands that do not require parameters. These keyboard entries are not displayed on the screen and are processed as soon as they are recognized.

3.3.1.2.1 User Command Character Entry

The User Command Entry Field consists of two lines: previous command and present command line. The user may enter a command at the cursor which flashes at the start of the second of the two lines, i.e. the present command line. Those characters entered on the present command line will be parsed as commands by the MTS software and processed after the carriage return has been entered by the user. Once the command has been processed, the entered characters will be moved to the previous command line and the cursor will be reposition to the start of the second data entry line for the next user input. When the user enters a backspace character, the previous (non-function/non-cursor) key will be ignored. If a delete (DEL) character is entered by the user, all user entered characters on present command line will be erased and the cursor will be repositioned to the beginning of the second line. The result or response to the command will be displayed in the Status and Control Field, the Display Data Field or in the Error Message Field.

3.3.1.2.2 MTS Command Syntax

The form for the MTS command syntax is shown below:

(keyword) (sep) (param) (sep) ... (sep) (param)

where (keyword) is any valid command keyword or its abbreviation which will be defined in Section 3.3.3, (sep) is any combination of a single comma and one or more blanks, and (param) is any string of characters (including the null string) not including commas or blanks.

Entering a Command Keyword

The user must enter a valid keyword on the present command line. The MTS keywords may be accessed by using the MTS Onscreen Help Function by entering "help" on the present command line. If the keyword is not a valid command, an error will be displayed in the Error Message Field and the present command line will be cleared. Any command entered on the present command line that requires that the CP be stopped in order to execute the entered command, the MTS function will (if the CP is running) first stop the CP, then perform the specified operation(s), then restart the CP at the rate in which it was running.

Entering a Parameter or a Parameter Keyword

If the parameter is an address, data or a count, the parameters are assumed to be entered in Hexadecimal format. This default may be overidden (by the user) on any parameter by enclosing the numeric quantity in parentheses preceded by the letter "O" for octal or "D" for decimal (i.e., D(139) to be decoded in decimal). Data parameters may be preceded by a unary minus sign and will then be decoded into a two's complement negative binary number. If the parameter can be decoded in the applicable radix, the binary value will be returned; if it cannot be decoded or the value entered is not within a legal range, an error message will be displayed in the Error Message Field.

If the parameter is a file or device name, the parameters will be examined to determine if the string is a syntactically valid qualified file or device name. If invalid, an error will be displayed in the Error Message Field.

If the parameter is a parameter keyword, the parameters will be validated for each MTS command of this type. An example of a command which uses this type of parameter is the "mode cp" command. In this command entry, "mode" is the command keyword and "cp" is the parameter keyword since it is neither an address, data, count, nor filename. If the parameter keyword is invalid, an error will be displayed in the Error Message Field.

3.3.1.3 Data Display Field

The Data Display Field consists of 12 lines (lines 13 through 24) which are dedicated to the display of data retrieved from the ASP. The Data Display Field will be updated whenever a user entered (or repeated) command solicits a data output.

3.3.1.4 Error Message Field

The Error Message Field is located at the bottom of the MTS display. The error messages which may be displayed are summarized in Appendix C.

3.3.2 MTS Keyboard Definition

The TU keyboard is shown in Figure 3-10. It operates similar to any other keyboard; however, when MTS has been invoked, the Numeric and Function keys may be used to enter MTS Commands which do not have parameters associated with the command. To use these keys the user must first press the "ESC" key followed by the function or numeric key. Either the numeric keys on the keypad or the keys accross the top of the keyboard may be used. When these keys are used, no charaters will appear in the User Entry Field. These added key functions and their associated MTS command are listed below. The definition of the MTS commands listed below are defined in Section 3.3.3.

ESC	1	-	REPEAT	ESC	Fl	-	+SCROLL
ESC	2		HOME/WATCH	ESC	F2		-SCROLL
ESC	3	-	PRINT	ESC	F3	-	PRINT_SCR
ESC	4	-	CPSTEAL	ESC	F4	-	START
ESC	5	-	LOAD_DISPLAY	ESC	F5		START_SOC
ESC	6	-	RESET	ESC	F6	-	START_SOE
ESC	7	-	NEXT	ESC	F7	-	STOP/STEP
ESC	8	-	END	ESC	F8	-	Not Used
ESC	9	-	SUSPEND	ESC	F9	-	Not Used
ESC	0	_	Not Used	ESC	F1() -	- Not Used

ESC J - MODIFY DISPLAY After ESC J has been hit, Keys H, J, K, and L will serve as the cursor left, down, up and right, respectively.

DEL - INTERRUPT

თ ω ო • ß 8 പ Ø ы in, ~ BACK SPACE RETURN סבר DGL - IHTERRUPT 1 1 SHIFT n FIG RPT ۲ + .. L F 9 ~ > = I + ... ۵ **^** • 8 0 L σ SUSPEND v . \$10P/ ۲٦ ~ m × H START TOE Σ F6 E HO νœ 7 Þ z START SOC 53 HEXT • • Ι ≻ æ #TART μ RESET **ی** ہے U ⊢ Dist. > PRINT - SCROLL - SCR F 3 ц STEAL. ۲ υ F 2 ⊌ ታ ۵ b ESC J - NODIFY DISPLAY Cursor Left - H Curson VP - K Cursor Richt - L Cursor Doun - J ш × Ľ PRINT ***** m s I ESC UNTCH Ν **٤** N æ ø SHIFT REFEAT -- --CAPS LOCK CTRL TAB

1

and the second se

Figure 3-10. TU Keyboard Layout

3.3.3 MTS Command Definition

The three categories of MTS commands will be described in this section as follows:

1. MTS Support Commands

2. ASP Status and Control Commands

3. ASP Memory/Register Commands

These commands are summarized in Appendix B for quick reference.

During the discussion of the MTS commands in the following paragraphs, references will be made to foreground and background mode. This refers to a feature of the UNIX operating system which allows multiple processes to be operating at the same time; however, only one may be displayed. The process on the screen of the TU is considered to be in the foreground mode while the other process is operating in the background mode. In the stand alone MTS configuration, only the MTS function is available and therefore will always be in the foreground. In the future, addition ASP related software functions will be added which will require the foreground/background capabilities of UNIX.

3.3.3.1 MTS Support Commands

The MTS support commands are provided to help the user with the MTS session. These commands can be executed without the ASP connected. The syntax for the various commands will require mandatory parmeters identified by closed parenthesis (). Optional parameters are defined by square brackets[].

3.3.3.1.1 COMMENT

Command Description

The COMMENT command will allow comments to be put in include files generated with the PAWSWORK File Utilities (i.e., INCLUDE command)or print files (i.e., DEFINE PRINTER command) to assist with documentation of an MTS session. The user should type "* " or "comment" to activate this command.

Command Syntax

comment (dt)

where the parameters are defined as follows:

dt - data and/or text

Example

CP run stop	AP run Stop	.HCKO [off] ⊙n	off on	SYPS off *****	SYCS off ****	SYAS off ***	PSREAD allow Inhlbit	VERIFY bulk Hord	off demo
MC REG	нс	PSH	IC	SP	L INST		CSAR	CTL H	ORD

In this example, a print file named "demo" was created and the print function enabled. The comment "This comment will be seen in the print file" will be added to the "demo" print file.

3.3.3.1.2 ECP41

Command Description

The ECP41 command will inform the MTS software that an ASP with the extended Program Store memory is under test. The MTS software will increase the Program Store memory address range to account for the increased address space in an ASP with an increased Program Store of 256k. There are no changes to the display or user prompt when this command has been executed.

Command Syntax

ecp41

This command does not require any parameter definition.

3.3.3.1.3 END

Command Description

The END command will cause the MTS task to terminate. The ASP(s) will be left in the current state. If one of the SYNC functions had been enabled and still monitoring when the END command is entered, this SYNC functions will also be terminated. Display control will be passed to the next task waiting for foreground use of the display.

The END command may also be activated using the numeric/function key <esc>8.

Command Syntax

end

This command does not require any parameter definition.

3.3.3.1.4 HELP

Command Description

The HELP command will provide the user with on-line information about all the MTS commands. This command will provide a menu of all help available. The HELP files available for the individual commands will provide a command description, command syntax and an example of use.

Command Syntax

help [keyword]

where the parameters are defined as follows:

keyword - MTS command abreviation.

Example 1

STATION /de	V COMPUTER	X	MODESPL	5V on	SOC ADDR	80388+6	8998	SOE
	MCKO off on	CMPO off on	SYPS SY off of	CS SYMS f] off ** ***	PSREAD allom inhibit	VERIFY bulk Hord	PRIN off /dev	IT V/lp
MC REG 8888 88	MC PSH 1/00/00000	IC XXXXX	SPL I XXXXXXX	NST XXXXX	CSAR XXX >	CTL H	IORD XXXXXX	xx
/ / help		•	· · ·					
COMMAND SYN	TAX: helpE#	*] Wher	e [**]= a	IL Synto	ax, filend	me keys	• :	
b[aSe]	he ip	n.+	x t	5	tart	VEerlf	3 dC_2	lock]
c [hange]	home	۵ ۵	Vernide]	5	tart_Soc	Halt	-	
comment	Include	pr	Int	5	tart_soe	watch		
cpS teal	Interrup	t pS	read	· 5	100	+Eseno	117	
ecp41	Enspect] n[epeat]	s	teo	-15000	117	
end	[[oad]		Set		uspend	e Chana	- 15.E	1.447
force	m [ode]	5 [avel	-		TEA-J	73714	. 1 7
d[efine_]o[rinter]		anch	د بر	· y ii c • F = = 1 £ 7		.Jal (5)	, hora na 1
d[Isolau]e	Tune Jelene	שנ ז רשי	alas Jer.	• • • • • • •	renitân	TL#51_	JULGU	анаге.
q[uick_]s[t	op]	vľ	enify_Jtl	ireenj [ype]				

In this example, the keyword for the MTS commands are displayed in the Data Display Field as shown above.

Example 2

STATION /dev	COMPUTER	x	NODESPL	5V on	SOC ADD	R 08888+8	8888	\$0E
CP AP	MCKO off on	CHP0 off on	SYPS SY off of ***** **	rcs syns f off	PSREAD allow Inhibi	VERIFT bulk t word	off /dev	/1p
MC REG MC 8888 88/1	: PSW 30/00000	IC XXXXX	SPL I XXXXXXX	INST XXXXXX	CSAR XXX	CTL K	IORD XXXXXX	xx
1								
/help th		<u></u>						
/help th COMMAND SYNTA This command y Unit. At minis available, a warning area	K: t[est_] performs V mum, a Hal loopback t of the MTS	h Cardwa arious king za est is Screen	are] tests of eros test also per n.	the LPI is perfo formed. R	Nodule b rmed. If esults a	and in t a test c re displa	he Ter able 1 iyed in	minal S the

This example displays help information for the Test Hardware command as shown above.

3.3.3.1.5 HOME

Command Description

This command will cause the cursor to return to the next available position on the present command line. The HOME command will return the cursor to the next available input line even if the cursor has been moved to the Data Display Field using the MODIFY DISPLAY numeric/function key: <esc>j.

Command Syntax

This command will only be activated via the numeric/function key <esc>2.
3.3.3.1.6 INCLUDE

Command Description

This MTS INCLUDE command will access the file specified by the "filename" parameter of the command. The MTS software will then begin reading user commands from this file and processing them until either no commands remain on the file or the user presses the DEL key. As the commands are processed they are displayed in the User Command Entry Field as if they had been entered from the keyboard. The file may contain another INCLUDE command, but no further commands will be processed from the original file (i.e., INCLUDEs are not nestable).

In order to use this command, the user must first create a file using the PAWSWORK File Utilities described in the PAWSWORK Section of this document: Section 3.2.6.

Command Syntax

include (fn)

where the parameters are defined as follows:

fn - file name

Example

STATIO	N /dev C	OMPUTER [রা	HODE	SPI	5V 6.	soc enno	20000+0	2222 005	
CP run stop	AP run Stop	HCKO off on	CMPO off on	SYPS • f f *****	SYCS off ****	SYMS off ***	PSREAD allow Inhibit	VERIFY bulk word	PRINT off /dev/lp	
MC RE	G HC	PSH	IC	SF	L INST	r l	CSAR	CTL H	ORD	1
/ incl / ecp4	ude com 1	mand_file								-
								•		_

In this example the file named "command_file" has been opened and the execution of the MTS files included in "command_file" has begun. The command presently being executed is "ecp41".

3.3.3.1.7 INTERRUPT

Command Description

The command will function only when another command is in progress. In this case, INTERRUPT will cause the command being processed to be terminated prematurely at the next reasonable point in processing. The INTERRUPT command must be entered by the DEL key.

Command Syntax

This command may only be activated via the DEL key.

3.3.3.1.8 NEXT

Command Description

This command will cause the present MTS foreground task to relinquish control of the MTS display and signal the next task waiting for foreground use of the display to assume control and initialize the terminal. The original task, MTS, will continue to run in background mode, monitoring the ASP and maintaining the internal states up to date. When the background task is subsequently signaled, it will once again assume control of the MTS display.

This command may also be activated using the numeric/function key <esc>7.

Command Syntax

next

This command does not require any parameter definition.

3.3.3.1.9 REPEAT

Command Description

The previous command entered will be repeated, once per second, the number of times specified by the count parameter or until the user presses the DEL key. If a negative count is specified, the repetition continues indefinitely and may be terminated only by the DEL key. Commands which may not be repeated are REPEAT, REPEAT HARDWARE, INCLUDE, NEXT, INTERRUPT and END. Commands entered via numeric or function keys will not be repeated.

This command may also be activated using the numeric/function key <esc> 1. When activated using the numeric/function key or when no count is specified in the count parameter, the previous command will be repeated only once.

Command Syntax

r[epeat] [ct]

where the parameters are defined as follows:

ct - count

Example

СР АР И ИСКО						_
run run off Stop Stop on	off on	SYPS SYCS off off ***** ****	SYMS off ***	PSREAD allow Inhibit	VERIFY PRINT bulk off word /dev/	1P
NC REG MC PSH	IC	SPL INST	ſ	CSAR	CTL WORD	

·, .

5 JAN 1989

This example will repeat the execution of the WATCH command ten times. While the commands are being executed, an ACTIVE indicator is displayed on the present command line when the REPEAT command executes. When the WATCH command executes, a time/date indicator toggles in the Data Display Field.

3.3.3.1.10 REPEAT HARDWARE

Command Description

The REPEAT_HARDWARE command will cause the previous command to be repeated with continuous internal looping. If the optional R parameter is specified, a System Reset will be performed between repeated operations. The repetition rate will be a function of the Laboratory Panel Interface operation being performed. This rate will be high enough to permit laboratory test equipment diagnosis on the hardware. The commands which may be repeated are:

-	INSPECT	If the CP is running when one of these 3
-	CHANGE	attempts a REPEAT HARDWARE, the CP is
-	FORCE	stopped and not restarted until looping terminates
	STOP	
-	START	
-	START SOC	
	START SOE	
-	STEP	
-	RESET	

The only way the user may stop the looping operation is via the DEL key. These commands will not write data to or update the MTS display while in the hardware repeat loop.

Command Syntax

r[epeat_]h[ardware] (r)

where the parameters are defined as follows:

r - perform system reset between repeats.

Example

STATION	/dev C	OMPUTER [X	HODE	SPL	5V on	SOC ADDR	88888+8	8888 SOE
CP run Stop	AP run Stop	MCKO ⊙ff ⊘n	CMPO off on	SYPS •ff *****	SYCS off ****	SYMS off ***	PSREAD allon Inhibit	VERIFY bulk Hord	PRINT. off /dev/lp
MC REG	MC I	PSH	IC	SF	L INSI		CSAR	CTL H	ORD
/ bs / ch	8 #18 ACTIVE		L			L.	·····		

Display of inspected data inhibited

This example will continuously send an Inspect Bulk Store command to the LPI Module. As the REPEAT HARDWARE command is executed, an ACTIVE indicator is displayed in the User Command Entry Field.

3.3.3.1.11 SCREEN

Command Description

The SCREEN command will enable or disable the display of information in the Data Display Field. The normal setting of this parameter will be "on", during which all command data will be written to the MTS display. If the screen parameter is set to off, the data from commands displaying results in the Data Display Field will not be shown on the screen. The MTS function will be initialized with the screen parameter set to "on".

Command Syntax

screen [nf]

where the parameters are defined as follows:

nf - "on" enables the Data Display Field

- "off" disables the Data Display Field

Example 1

											_		
STA	TION	/dev C	OMPUTER	X	non	ESPL] ;	5V on	SOC AD	DR [888	98488	8888 5	OE
CP ru st	n] • p	AP run Stop	MCKO off on	CMP off on	0 SYP] [off ***	S SY] [of ** **	/CS f	SYMS	PSREF allor Inhib	ID VEI	RIFY [k] ~d	PRINT off /dev/	l p
нс	REG	MC	PSH	IC		SPL	INST		CSAR	C	CTL HC	RD	
/ / CS CS	seree 1 es 1000 1000	n en 1000 16 234 5 e16	310 a 452f 6 5002	9845 8800	0000 5001	6266 344+	5282 925f	d 146	8886	2156	1180	5116	402
CS	1000	844	e 805f	844e	995f	844.	005f	844.	005f	844e	005f	844e	005 005

In this example, the data from bulk store would be displayed in the Data Display Field.

SYPS SYCS SYMS off off off	PSREAD VERIFY PRINT
****	Inhibit word /dev/lp
SPL INST	CSAR CTL WORD
	SPL INST

In this example, the data from bulk store would NOT be displayed in the Data Display Field. There would be no change in the MTS display or user prompt when this command is executed.

3.3.3.1.12 SUSPEND

Command Description

The SUSPEND command will cause the foreground copy of the MTS Function to relinquish foreground use of the TU display, passing the foreground back to the PAWSWORK Operator Interface. The user may then initiate other subsystems, alter configuration, or execute file utilities. Foreground control of the terminal will return to the suspended MTS function through the "next" or "end" mechanism of other subfunctions initiated or when the user selects the RESUME function of the PAWSWORK Operator Interface.

This command may also be activated using the numeric/function key <esc> 9.

Command Syntax

suspend

This command does not require any parameter definition.

3.3.3.1.13 TEST HARDWARE

Command Description

The TEST HARDWARE command will control the execution of BIT tests for the LPI module. Upon completion of the test, a message shall be returned to the operator indicating successful completion, or an error message will be generated.

Command Syntax

t[est]h[hardware]

This command does not require any parameter definition.

Example

STATION /dev COMPUTER	X	MODESPL	5V (0 n	SOC ADDR	88888+88888 SOE
CP AP MCKO run run off stop Stop on	CMPO off on	SYPS SYCS off off ****	SYMS off ***	PSREAD allow inhibit	VERIFY PRINT bulk off word /dev/lp
MC REG MC PSH	IC	SPL INS	r	CSAR	CTL WORD
/	L				
7 m Chicking				· ·	

In this example, the TEST HARDWARE command has been executed and has passed, signified by the "INTERFACE OK" displayed in the User Entry Field.

3.3.3.1.14 WAIT

Command Description

The WAIT command will cause a delay for the specified number of seconds. When no parameter is specified, the command will wait until the appropriate processor (CP for SPL or CP modes, AP for AP mode) stops. If it is already stopped, the command will have no effect. In either case, no commands will be read or processed from the user (or from an included command file) during the delay; the delay may be prematurely terminated by the DEL key.

Command Syntax

wait [ct]

where the parameters are defined as follows:

ct - count

STATION /dev COMPUTER	X	MODESPL	5V on	SOC ADDR	88888+8	0000 SOE
CPAPMCKOrunrunoffstopstopon	CMPO off on	SYPS SYCS off off. ***** ****	SYMS off ***	PSREAD allon inhibit	VERIFY bulk Hord	PRINT off /dev/lp
NC REG NC PSH	IC	SPL INS	r	CSAR	CTL H	ORD
/ / moit 8 [WAITING]	<u> </u>					

In this example the MTS software will wait 3 seconds. During this wait period, a "WAITING" prompt is displayed in the User Entry Field.

3.3.3.1.15 WATCH

Command Description

The WATCH command will display the current date in the Data Display Field. If this command is executed a second time, the time will be displayed.

This command may also be activated using the numeric/function key <esc> 2.

Command Syntax

watch

This command does not require any parameter definition.

Example

CP A	P	MCKO	CMPO	SYPS	SYCS	SYMS	PSREAD	VERIFY	PRINT
run r	un	off	off	•ff		off	allow	bulk	off
stop s	top	on	on	*****		***	Inhibit	Hord	/dev/lp
MC REG	MC PS	5H	IC	SP	L INST		CSAR	СТЦ И	ORD

5Jan 1989

In this example, the WATCH has been executed to show the date.

3.3.3.2 ASP Control and Status Commands

The ASP Control and Status Commands are used to enable and disable various MTS software functions during a MTS session. The result of using these commands are displayed in the Control/Status Field of the MTS display as described in Section 3.3.1.1.

3.3.3.2.1 CPSTEAL

Command Description

The CPSTEAL command will toggle the cpsteal switch on and off. If the cpsteal switch is on (enabled), a small blinking diamond will be displayed just to the right of the CP "stop" status indicator. If PSREAD has also been Allowed the MTS Function will monitor the MC REG, MC PSW, IC, SPL INST and CSAR and dynamically update the Regsister Subfield at one second intervals even when the CP is running. This requires "stealing" the CP for a small portion of each second. If this is intolerable to the executing code in the ASP, cpsteal will be toggled off (disabled). The cpsteal switch will be initially off (disabled). When it is off, the Register subfields of the MTS display will be cleared whenever the CP is running.

This command may also be activated using the numeric/function key <esc> 4.

Command Syntax

cpsteal

This command does not require any parameter definition.

Example

CP run stop 🔶 [AP run stop	MCKO off	CMPO off	SYPS	SYCS	SYMS	PSREAD	VERIFY	PRINT
MC REG 0000	MC P 88/88/	SH 100000	IC XXXXX	SF	L INS	r xxx	CSAR XXX -	CTL H	ORD

In this example, the CP STEAL command is being executed as indicated by the flashing diamond next to the CP STOP Field.

3.3.3.2.2 DEFINE PRINTER

Command Description

The DEFINE PRINTER command will allow the user to define a print file for the MTS session. The name of the print file will be displayed in the Print subfield of the MTS display. All entries from the TU and responses from the ASP will be recorded in the defined print file for later examination or for printing of a hard copy.

Command Syntax

d[efine_]p[rinter] (fn)

where the parameters are defined as follows:

fn - file name

Example

STATION Very COMPUTE	RX	MODESPL	5V [0 n]	SOC ADDR	05099+9	8888 SOE
CP AP MCK run run off stop Stop on	0 CMP0] [off] on	SYPS SYCS off off ***** ****	SYMS off ***	PSREAD allow inhibit	VERIFY bulk Hord	PRINT off demo
NC REG MC PSH	IC	SPL INS	T	CSAR	CTL H	ORD
/ / dp demo	. <u>l</u>		I.			

This example declares a print file named "demo". The print subfield displays the file name "demo"; however, the "off" indicates that the print has not been enabled. Print must be enabled with the PRINT command.

3.3.3.2.3 DISPLAY SYNC STATUS

Command Description

When SYNC command has been enabled, the SYNC will monitor the specified sync in the background mode. The operator may interrogate the SYNC status by entering the DISPLAY SYNC STATUS command. When queried, the accumulated statistics will be displayed in the Data Display Field of the MTS display.

Command Syntax

d[isplay_]s[ync_]s[tatus]

This command does not require any parameter definition.

STATION /dev C	OMPUTER X	MODECP	5V 💿	SOC ADDR	00388+8	8888 SOE
CP AP <u>run</u> run stop <u>Stop</u>	MCKO CMPO off off on on	SYPS SYCS off off ***** 0F92	SYMS off ***	PSREAD allox inhiblt	VERIFY bulk word	PRINT off /dev/lp
MC REG MC	PSH IC	SPL INS	т	CSAR	СТЦ И	ORD
/ sync cs f92 / dss	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	44 - 12			<u> </u>	
Status of CS sy	nc at address	f92		Sync Cou	nter (He	x):020D
Sync Enabled: Sync Disabled:	Thr 01 05 14:	52:84 1989	***S†il	l Running	***	
Sync Hits: Elapsed Time: Avg Hits/Sec:	525 852 1.49					

In this example, Sync has been enabled and DISPLAY SYNC STATUS has been requested and the Sync information is displayed in the Data Display Field.

3.3.3.2.4 FORCE

I

Command Description

Either CW (CP Micro Control Word) or AECW (Arithmetic Element Control Word) will be user specified, as will the entire instruction word. The ASP will be requested via the LPI module to force execution of the specified instruction. The MTS function will not attempt to ensure that the instruction is valid. No user output will be displayed.

Command Syntax

force (nf) (in)

where the parameters are defined as follows:

- nf cw for Control Word - aecw for Arithmetic Element Control Word
- in an instruction word

3.3.3.2.5 MODE

Command Description

The MODE command allows the user to specify which ASP processor (SPL, CP or AP) will be used during the MTS session. This command will be used to determine the type of instruction to be stepped as a result of the STEP command (SPL instruction, Micro Control Word, or AECW), and the storage type (i.e., PS, CS or MS) when performing a Stop-On-Compare address applies. The MODE subfield in MTS Status and Control Field will be changed to reflect the mode selection; the SOC Address subfield will be set to the SOC address. The default Stop-On-Compare address will be zero.

Command Syntax

m[ode] (nf) [ca]

where the parameters are defined as follows:

- nf spl for Signal Processing Language
 - cp for Control Processor
 - ap for Arithmetic Processor
- ca SOC address

Example 1

	AP cun	MCKO off	CMPO off	SYPS off *****	SYCS off ****	SYMS off ***	alle Inhibi	bulk t word	off /dev/lp
<u>> T • P</u> MC REG 0000	MC 88/88	PSH 1/00000		SF K XXX	PL INS	r xxx	CSAR XXX	CTL W	ORD XXXXXXX

In this example, the MODE command was executed to change from the SPL Mode to the CP mode as indicated by the Mode subfield.

CP run stop	AP run Istop	MCKO off on	CHPO off on	SYPS •ff *****	SYCS •ff ****	SYMS off ***	PSREAD allon Inhibit	bulk Hord	off /dev/lp
NC REG 0000	HC 88/88	PSH /00000	IC XXXXX	SF (XXX)	L INST	r xxx	CSAR XXX	CTL W	ORD XXXXXXXX

In this example, the MODE command was executed to set the mode to SPL as shown in the Mode subfield and to set the SOC address to 17dd0 as indicated by the SOC Addr subfield.

3.3.3.2.6 OVERRIDE

Command Description

This command will allow the user to override Machine Check errors and/or data/address compare errors. These overrides allow a MTS command to complete in spite of an error condition. For example, if part of a block of memory to be changed is protected, the user may override MCK errors in an attempt to change the non-protected addresses within the block. The override flags (i.e., MCKO and CMPO) will be set as defined by the overides parameter. The MCKO and CMPO subfield will be updated to show the present state of the override flags.

Command Syntax

o[verride] (nf)

where the nf parameter is defined as follows:

- nf off to turn overrides OFF
 - mck to turn the MCK override ON
 - cmp to turn CMP override ON
 - both to turn both MCK and CMP overrides ON

CP run stop	AP run stop	MCKO off on	CMPO off on	SYPS SYC off off ***** ****	S SYHS 	PSREAD allow inhibit	VERIFY bulk Hord	PRINI off /dev/lp
MC REG	пс	PSH	IC	SPL IN	ST	CSAR	CTL H	IORD

This example turns the MCK OVERRIDES ON as shown in the MCKO subfield.

Example 2

CP AP	HCKO CHPO	SYPS SYCS	SYMS off ***	PSREAD allow Inhibit	VERIFY bulk Hord	PRINT off /dev/lp
MC REG MC PS	u IC	SPL INS	r	CSAR	CTL H	ORD
/ o mck / o both				<u></u>		

This example turns both the MCK and CMP OVERRIDES ON as shown in the OVERRIDES subfield.

3.3.3.2.7 PRINT

Command Description

The PRINT command allows the operator to toggle the print switch on and off. When the print switch is on, all commands and function keys will be written to the defined print file, as will any data displayed in response to such commands. When the print switch is off, commands will be processed without writing to the defined print file. The print switch must be enabled in order to use the PRINT SCREEN command. The status of the PRINT command is displayed in the Print subfield of the MTS display. The MTS software will be initialized with the print switch set to "off". This command may also be activated using the numeric/function key <esc> 3.

Command Syntax

print

This command does not require any parameter definition.

Example

1977

語を語

CP AP MCKO CHPO SYPS SYCS run run off off off off	SYNS PSREAD VERIFY PRINT
<u>Stop</u> on on ***** ****	off alloн bulk off *** inhibit word demo
MC'REG MC PSH IC SPL INS	ST CSAR CTL HORD

In this example Print has been enabled as indicated by the highlighted "demo" indication in Print subfield.

3.3.3.2.8 PRINT SCREEN

Command Description

This command will cause the current MTS display to be duplicated on the defined data storage device specified in the DEFINE PRINTER command. The FDD or RDD may be used to store the screen display. This duplicate screen will be printer formatted for printout at a later time. Some reformatting of the screen will be necessary since it is not possible to print video character attributes.

This command may also be activated using the numeric/function key <esc> F3.

Command Syntax

p[rint]s[creen]

This command does not require any parameter definition.

CP run stop	AP run Stop	HCKO ₀ff ●n	CHPO off	SYPS •ff *****	SYCS •ff ****	SYMS	PSREAD allow Inhibit	VERIFY bulk Hord	PRINT off /dev/lp
MC REG	nc nc	PSH	IC	SF	L INSI	r	CSAR	CTL N	ORD

This example shows the execution of the PRINT_SCREEN command. During execution, "PRINTING SCREEN" will be displayed on the present command line.

3.3.3.2.9 PSREAD

Command Description

When PSREAD is ALLOWED, the Register subfields of the MTS display will display data when the ASP is stopped. If CPSTEAL has also been enabled, the Register subfields will be dynamically updated once per second. When PSREAD is INHIBITED, no register data will be displayed. The PSREAD subfield will be updated to reflect the status of this switch. The default of the PSREAD mode is ALLOWED.

Command Syntax

psread (nf)

Where the nf parameter is defined as follows:

a[llow] - PSREAD enabled

i[nhibited] - PSREAD disabled

77

STATION /dev COMPUTER	X HODE SPL 5V on	SOC ADDR 00000+00000 SOE
CP AP HCKO	CHPO SYPS SYCS SYHS	BSREAD VERIFY PRINT
run run off	off off off off off	allow bulk off
stop stop on	on ***** **** ***	inhibit word /dev/ip
MC REG MC PSH	IC SPL INST	CSAR CTL HORD
0000 00/00/00000	XXXXX XXXXXXXXXXXX	XXX XXXXXXXXXXXXXXXXX
/ / psread a		

This example enables the PSREAD as shown in the PSREAD Field. Since the CP is in the STOP mode, register information is displayed in the Register subfields.

3.3.3.2.10 RESET

Command Description

RESET will force a System Reset on the ASP. The CP Operational Microcode is forced to the specified reset address. If no reset address is specified (or if the terminal function key is used to invoke this command) the default address for the ASP will be used.

This command may also be activated using the numeric/function key <esc> 6.

Command Syntax

reset (ra)

where the parameters are defined as follows:

ra - reset address in control store

78

3.3.3.2.11 START

Command Description

If the current MODE is SPL or CP, the START command will start the ASP CP. If the current MODE is AP, the START command will start the ASP AP. If the applicable processor is already running, it will continue to RUN. The CP and AP subfields will be updated to indicate the change in processor state.

This command may also be activated using the numeric/function key <esc> F4.

Command Syntax

start

This command does not require any parameter definition.

3.3.3.2.12 START SOC

Command Description

The START SOC command works in conjunction with the MODE command to setup a Stop On Compare operation. The MODE command is used to specify an address which the ASP will stop on when found while fetching instructions. The SOC Address subfield will display the specified address. When the START SOC is activated, the CP and AP subfields will be updated to indicate the change in processor state and the "SOC" in the SOC Address subfield will blink until the next change in run rate. If the CS Stop-On Compare address is reached while the CP is running, the CP will enter CS-Step mode (see STEP).

This command may also be activated using the numeric/function key <esc> F5.

Command Syntax

start soc

This command does not require any parameter definition.

CP AP MCKO CHPO SYPS SYCS SYMS PSREAD VERIFY PRINT run off off off off off older bulk off stop stop on on ***** *** inhibit Hord /dev/	HODE SPL 5V on SOC ADDR 02.16+00000 SOE	۲ [ONPUTER	/dev C	TATION
	SYPS SYCS SYMS PSREAD VERIFY PRINT off off off ollow bulk off ***** **** *** lobibit word /dev/lp	CHPO S	MCKO off on	AP run stop	
MC REG MC PSH IC SPL INST CSAR CTL WORD	SPL INST CSAR CTL HORD	IC	PSH	пс	HC REG

This example will start the CP at the Start SOC rate. The SOC address is shown in the SOC Address subfield. Note that the SOC is also highlighted. This highlighting represents flashing.

3.3.3.2.13 START SOE

Command Description

The START SOE command will start the ASP computer designated by the MODE command. The CP and AP subfields will be updated to indicate the change in processor state and the SOE indicator will blink until the next change in run rate. The processor may subsequently stop if and when a Machine Check error occurs. If the current mode is AP, this command will be considered an error.

This command may also be activated using the numeric/function key <esc> F6.

Command Syntax

start_soe

This command does not require any parameter definition.

Example

ТАТІОН [/dev CO	MPUTER	<u>x</u>	HODE	PL	5V on	SOC ADDR	88888+	88888 SOE
CP run Stop	AP PUD Stop	HCKO ⊙ff ⊙n	CMPO off on	SYPS •ff *****	SYCS off ****	SYMS off ***	PSREAD allox Inhibit	VERIFY bulk Hord	PRINT off /dev/1p
MC REG	MC F	รม	IC	SF	L INS		CSAR	CTL I	HORD

In this example, the SOE indicator in the SOE subfield flashes while the SOE function is enabled.

3.3.3.2.14 STEP

Command Description

The STEP command will step the ASP computer designated by the MODE command one instruction. In SPL mode, PS is stepped, in CP mode, CS is stepped and in AP mode, MS is stepped. When CS is being stepped, the CP subfield will indicate "stopped". CS-Step mode is terminated by the next STOP, START, RESET, or MODE command.

This command may also be activated using the numeric/function key <esc> F7.

Command Syntax

step

This command does not require any parameter definition.

3.3.3.2.15 STOP

Command Description

The STOP command will stop the ASP computer specified in the MODE command. The CP and AP subfield will be updated to indicate the change in processor state.

This command may also be activated using the numeric/function key <esc> F7.

Command Syntax

stop

This command does not require any parameter definition.

3.3.3.2.16 SYNC

Command Description

The SYNC command is used to specify an address that the ASP will monitor and activate an interface line on the LPI interface. The user may monitor one of the following three SYNCs: PS, CS and MS SYNC. The SYNC subfield will display the address of the SYNC activated. Once the command is entered, the MTS software will monitor the sync operation. To display the SYNC status, the user must enter the DISPLAY SYNC STATUS command. If OFF is specified, the appropriate internal switch is set to indicate that SYNC is disabled; the SYNC subfield will be updated to indicate that the specified SYNC is disabled. The associated SYNC monitoring task will be terminated. Though the SYNC monitoring appears to be in the background mode, no other MTS commands may be executed while a SYNC is in progress.

Command Syntax

```
sync (st) (sa)
```

where the parameters are defined as follows:

```
st - storage type (PS/CS/MS)
sa - sync address
OFF - disables the SYNC function
```

Example

STATION /dev COMPUTER	र	NODE SPL	54 on	SOC ADDR	09808+0	2202 SOE
CP AP MCKO	CHPO off	SYPS SYCS off off ***** ØF92	SYMS off ***	PSREAD allow Inhibit	VERIFY bulk word	off /dev/lp
MC REG MC PSH	IC	SPL INS	т	CSAR	CTL 1	IORD
/ / sync es f92			•		,,,,,,	

In this example the MTS software has been setup to Sync on Control Store address f92. To see SYNC status, the Display Sync Status command must be used.

3.3.3.2.17 VERIFY TYPE

Command Description

This command will set the internal verification type flag as specified. When subsequent processing involves modifying an ASP computer store, a verification type of WORD results in each standard unit of that store to be read after it is written for verification. A verification type of BULK results in the entire block of data being written, then the entire block being read back for verification. The Verify subfield will be updated to show the current verification type. Command Syntax

v[erify_]t[ype] (nf)

Where the nf parameter is defined as follows:

B[ULK] - Verify data on a block basis

W[ORD] - Verify data on a word basis

Example

CP run stop	AP run Stop	MCKO ⊙ff ⊙n	CMPO off on	SYPS SYCS	SYMS	PSREAD allow Inhibit	VERIFY bulk Hord	PRINT off /dev/lp
MC REG	нс	PSH	IC	SPL INS	ST	CSAR	CTL H	IORD

In this example, the MTS software has been changed from BULK to WORD as shown in the Verify Field of the MTS display.

3.3.3.3 ASP Memory/Register Commands

3.3.3.1. BASE

Command Description

The internal base address for all references to the specified ASP store shall be set to the specified value. The default value is zero.

Command Syntax

b[ase] (st) [ba]

where the parameters are defined as follows:

st - storage type (PS, CS, BS, RS, MS, WO, W1 and R[EG])
ba - base address

STATION /dev	COMPUTER [. HODE	SPL 5V	on SOC ADD	R 00000+0	0000 SOE
CP AP run run Stop Stop	HCKO off on	CMPO SYPS	SYCS S 6 f f 6 f	(MS PSREAD 11 allow ** Inhibi	VERIFY bulk t Hord	PRINT off /dev/lp
MC REG MC 8000 00/1	C PSH 00/00000	IC S XXXXX XX	SPL INST	CSAR XXX	CTL HO	DRD XXXXXXX
/ base bs 14 / bs 0 10						
35 0+ 0000	0000 0020	2100 0000	8988 882	.0 4000 480	0 8888 81	020 2120

BS 6+ 6c00 0000 0020 6000 0120 0000 0020 2340 0140 0000 0020 7800 BS c+ 0010 0000 0020 2100 2411 0000 1120 4000 BS base = 14

This example sets the base address of Bulk Store Memory to Hexidecimal 14.

3.3.3.3.2 CHANGE

Command Description

The CHANGE command will change the data in the designated memory locations to the specified values. The results will be displayed in the Display Data Field of the MTS display. First the original data in the memory location(s) will be displayed, followed by the new data that has just been changed. Verification will take place on a word by word basis or after the entire user specified block is written, as a function of the VERIFY TYPE command. If verification fails, an error message will be displayed in the Error Message Field of the MTS display.

Command Syntax

c[hange] (st) (fa) (v1) [,v2,v3,...,vn]

where the parameters are defined as follows:

st - storage type (PS/CS/BS/RS/MS/WO/W1/R[EG])

- fa first address (or reg name GP, IC, MAR, CSAR,

5 Clark Street and

/	STR	TION	/dev	Соны	UTER [7]	node	SPL	5V @	SOC A	DDR 00000-	88888 S	OE
	CP ru	<u>n</u>	AP Pun Stop	1 •	ICKO off	CMPO off on	SYPS •ff *****	SYC5	SYM • f f ***	S PSRE allo Inhl	AD VERIF H bulk blt Hord	PRINT off /dev/1	P
	nc 8	REG	r 180	IC PSH 188/88	888	IC XXXXX	SF K XXX	PL IN XXXXX	ST XXXX	CSAR XXX	CTL XXXXXXX	HORD	< .
	1	c bs	28 1	111 2	222 33	333 441	+4					. <u></u>	
	BS	28	oid	0010	0999	8828	2100	2411	0990	1128 48	88		
	BS	29	л∉н	8888	1111	8989	2222	8858	3333	0000 44	44		

This example changes the first 4 locations of Bulk Store to 1111, 2222, 3333 and 4444.

3.3.3.3.3 CHANGE BLOCK

Command Description

The CHANGE BLOCK command will write the single value specified by the user into every address within the specified address range of the specified ASP store (note that the special value ADR assumes the numerical value of the address for each address written). Verification will take place as in CHANGE. This command will periodically indicate its progress during long block changes.

Command Syntax

c[hange_]b[lock] (st) (fa) (la) (vn)

where the parameters are defined as follows:

- st storage type (PS, CS, BS, RS, MS, WO, W1 and R[EG])
- fa first address (or reg name GP, IC, MAR, CSAR)
- la last address (or #count, or reg name)

STATION /dev CON	1PUTER X	HODE	PL 5	5V on	SOC ADDR	00000+00	0000 SOE
CP AP	MCKO off	CMPO SYPS off off on *****	SYCS •ff ****	SYMS off ***	PSREAD allon Inhibit	VERIFY bulk word	PRINT off /dev/1p
MC REG MC P 8888 88/88/	SH 100000	IC SF XXXXX XXXX	YL INST	кх	CSAR XXX	CTL W	ORD XXXXXXXX
/ / cb cs 1000 1	010 9696f	faa					

BEGIN BLOCK CHANGE d(17) storage units changed BLOCK CHANGE COMPLETE

This example changes all the CS locations from 1000 to 1010 to the Hexidecimal value 9696ffaa.

3.3.3.3.4 INSPECT

Command Description

The INSPECT command will fetch data from the specified ASP store, format into hexadecimal, and display it the in the Data Display Field. Each line displayed will have the storage type (i.e., PS, RS, BS, MS, CS, WO, W1, REG) in columns 1-3, the address (of the first data item displayed on the line) in columns 4-9, and 48 hex digits of data in columns 17-80 grouped with 1 space between each 4 hex digits and 2 spaces between each 8 hex digits. If a hardware register (CSAR, MAR, GP, IC, SCG, MIO, MII, AOO, AO1) is to be inspected, only that single register needs to be entered as the first address (ie. no last address needed). The other register mnemonics (GP, IC, MAR) will be usable as synonyms for registers 20-3F, 48, and 60 (hex) respectively. When specified as a "last address", GP will be synonymous with 3f (hex). If a non-zero base is in effect (see BASE) for the specified store, the value of the base will also be displayed at the end of the inspected data display.

Command Syntax

i[nspect] (st) (fa) [la]

where the parameters are defined as follows:

STATION /	dev COMPUTE	RX	HODE SP	<u>L</u> 5V	on soc	ADDR 202	88+58998	OE.
CP f run r stop	AP HCK un off stop on	0 CMPC] [off] on	SYPS off *****	SYCS SY off of **** **	MS PSR f all * Inh	EAD VER	IFY PRINT k off d /dey/	
MC REG	NC PSH	IC	SPL	INST	CSA	R C	TL HORD	
/								
/ cs 1	888 1812			<u> </u>				

In this example CS has been inspected from locations 1000 through 1012. The retrieved data is displayed in the Data Display Field.

Example 2

CP	AP	мско	CMPO	SYPS SYCS	SYMS	PSREAD	VERIFY	PRINT
run Stop	Stop	off	off] on	off off ****	<u>off</u> ***	allon Inhibit	bulk Hord	off /dev/1p
NC REG 0000	MC 80/88	PSH /00000	IC XXXXX	SPL INS	IT XXXX	CSAR XXX X	CTL H	ORD

REG 60 0000 0002

This example retrieves the contents of the MAR register.

3.3.3.5 LOAD

Command Description

The LOAD command will retrieve data from a file that had been saved using the MTS SAVE command and restore the data to the specified ASP store in the memory range specified. The specified storage type, first address, and last address will be validated to ensure there is sufficient data on the file to load the specified storage area (if a smaller area is specified and there is more data on the file, excess data will be discarded and a warning message, with the amount of data discarded, will be written to the user terminal). Verification will take place on a word by word basis or on a block basis as a function of the VERIFY TYPE command. If verification fails, an error will be displayed in the Error Message Field. If the file does not contain a valid binary SAVE format, an error (FILE DOES NOT CONTAIN "SAVED" DATA) will be displayed in the Error Message Field and processing will be abandoned. This command will periodically indicate its progress during long loads.

Command Syntax

l[oad] (fn) [,st] [,fa] [,la]

where the parameters are defined as follows:

fn - file name

st - storage type (PS, CS, BS, RS, MS, WO, W1 and R[EG])

fa - first address (or reg name GP, IC, MAR, CSAR)

la - last address (or #count, or reg name)

Example 1

STATION [/dev CI	OMPUTER	<u>k</u>	HODE	SPL	5V on	SOC ADDI	R 88888+8	8888 SOE
CP	AP	HCKO	CMPO	SYPS	SYCS	SYMS	PSREAD	VERIFY	PRINT
run	run	off	off	•ff	off	off	allow	bulk	off
stop	stop	on	on	*****	****	***	inhibi	t word	/dev/lp
NC REG	NC	PSH	IC	si	PL INST	r	CSAR	CTL H	ORD
8888	88/88	1/80008	XXXX	x xxx		xxx	XXX	XXXXXXXXX	XXXXXXXX
/ / bst	mp1 bs	20 23							

BEGIN LOAD OF 55 FROM 20 TO 23 d(4) storage units loaded LOAD COMPLETE

This example loads the contents of the bstmpl file into bulk store location 20 through 23.

Sec.

CP run	AP run	MCKO [off]	CMPO off	SYPS off	SYCS off	SYMS	PSREAD	VERIFY	PRINT
5 1 0 p	Stop	٥n	øn.	****	****	***	Inhibi	t Hord	/dev/lp
NC REG 0000	NC 80/88	PSH /00000	IC XXXXX	SP XXXX	L INSI	r xxx	CSAR XXX	CTL N XXXXXXXXX	ORD XXXXXXX

BEGIN LOAD OF mar d(1) storage units loaded LOAD COMPLETE

This example loads the contents of regl into the MAR register.

3.3.3.3.6 LOAD DISPLAY

Command Description

The LOAD DISPLAY command is used to complete the MODIFY DISPLAY operation, thus, it may only be used when a MODIFY DISPLAY command has been activated. After modifying the data in the Data Display Field, the user must then either depress the LOAD_DISPLAY function key or depress the HOME function key and enter the LOAD_DISPLAY command on the present command line. The displayed block of memory will be written back into the specified ASP store and verified as in CHANGE. Modification of the display will have no effect upon the corresponding ASP store unless the LOAD_DISPLAY command is processed while the modified data is still displayed.

This command may also be activated using the numeric/function key <esc> 5.

Command Syntax

l[oad_]d[isplay]

This command does not require any parameter definition.

STA	ТІОН	/dev CO	MPUTER	X	HOD	ESPL	51	Von	SOC ADD	R 099	199+99	1888 S	0E
CP ru st	n] • p	AP run stop	MCKO off on	CMP off on	0 SYP:] [off ***	S SY] [<u>•</u> f ** **	CS 9 f 6 **	SYMS	PSREAD allon Inhibi	VER bul t Hor	RIFY k	PRINT off /dey/1	P
МС	REG	MC P	รม	IC		SPL I	NST		CSAR	C	TL HO	DRD	
1	modlfy load_a	y_displ display	ay										
/ / cs	nodify load_a 1888	ydispl display aaaa	ay bbbb		दददद	6966	2989	d 1 4 6	6 8888	2136	1182	5116	400
/ / cs cs	nodlfy load_d 1222 1006	y_dispi dispiay aaaa a166	ay bbbb 5002		4444 3001	6966 344.	2989 2989	d 1 46 3 4 4	5 8996 • 995f	2136 344.	1180 905f	5116 344•	488

In this example, the cursor has been returned to the present command line using the HOME numeric/function key after performing a MODIFY_DISPLAY operation. The LOAD_DISPLAY command must be executed to make the changes to the ASP store.

3.3.3.3.7 MODIFY DISPLAY

Command Description

The MODIFY DISPLAY command will enable the operator to edit the data displayed in the Data Display Field. This command will be valid only if the Data Display Field of the MTS display contains data from a previous INSPECT command. The user will be permitted, when such data is displayed, to move the cursor into the displayed data portion of the Data Display Field written by INSPECT and to modify the data found there. This is accomplished by pressing <esc> j. If during such modification, the user attempts to modify a field other than the data hexadecimal digits or if he attempts to enter a non-hexadecimal digit in a valid field, the character entered will not be displayed and the keystroke will be ignored. Modified digits will be displayed at a higher brightness than the original unmodified digits. If the MODIFY DISPLAY is executed without first performing an INSPECT, an error (inspected storage not currently displayed) will be displayed in the Error Message Field of the MTS display.

This command may also be activated with the numeric/function key <esc> j.

Command Syntax

modify display

This command does not require any parameter definition.

Example

		HUDE SPL SV 6	SOC ADDR 000004	100000 SOE
CP AP HI run run of stop Stop of	CKO CMPO	SYPS SYCS SYF off off off **** **** ***	15 PSREAD VERIFY allow bulk Inhibit word	Y PRINT off /dev/1p
NC REG MC PSH	IC	SPL INST	CSAR CTL	HORD

CS 1000 aaaa bbbb cccc dddd 2066 3080 d146 0006 2136 1180 3146 005f CS 1006 a166 5002 3800 5001 344. 005f 344. 005f 344. 005f 344. 005f CS 100c 344. 005f 344. 005f 344. 005f 344. 005f 344. 005f

In this example, modify_display has been entered on the present command line which moved the cursor into the Data

Display Field. As shown above, four values have been changed to aaaa, bbbb, cccc and dddd. The cursor will remain in the Data Display Field until either the the LOAD-DISPLAY or the HOME numeric/function key has been pressed.

3.3.3.3.8 SAVE

Command Description

The SAVE command allows the user to save an image of the specified ASP store. When invoked, the data within the specified memory range will be fetched from the appropriate ASP store, blocked into binary records, and written to the specified file. This command will periodically indicate its progress during longer SAVEs. Command Syntax

s[ave] (fn) (st) (fa) (la)

where the parameters are defined as follows:

fn - file name

st - storage type (PS, CS, BS, RS, MS, WO, W1 and R[EG])

fa - first address (or reg name GP, IC, MAR, CSAR, SCG, MIO, MI1, AOO, AO1)

la - last address (or #count, or reg name)

Example 1

STATION /dev COMPUTER	MODE SPL 5V	on SOC ADDR 00000+00000 SOE
CP AP MCKO	CMPO SYPS SYCS SY off off off of on ***** **** **	MS PSREAD VERIFY PRINT f allow bulk off h lblit word /dev/lp
MC REG MC PSW 8888 88/08/88888	IC SPL INST XXXXX XXXXXXXXXXXX	CSAR CTL HORD XXX XXXXXXXXXXXXXXXXX
/ / s bstmp1 bs 20 23		
		•

d(4) storage units saved SAVE COMPLETE

This example saves the contents of bulk store from locations 20 through 23 to a file named bstmpl.

CP run stop	AP run Stop	HCKO off on	CHPO	SYPS •ff *****	SYCS •ff ****	SYNS off ***	PSREAD alloH Inhibit	VERIFY bulk Hord	PRINT off /dev/lp
HC REG 8888	нс 00/00	PSH 1/00000	IC XXXXX	si K XXX	PL INST	r KXX	CSAR XXX X	CTL H	IORD XXXXXXXX
1	glr ma	r mar							· · · · · · · · · · · · · · · · · · ·

SAVE COMPLETE

This example saves the contents of the MAR register to a file named regl.

3.3.3.9 SEARCH

Command Description

The SEARCH command will fetch data from the appropriate ASP store beginning at the specified first address. Each unit fetched will be ANDed with the mask and compared with the value specified (also ANDed with the mask). When a match occurs, it will be displayed in the Data Display Field. The output line shall contain the storage type in columns 1-3, the address in columns 4-9, and the data value at that address (4, 8, or 16 hexadecimal digits depending on storage type) in columns 17-36, spaced as in INSPECT. The search will then continue until the number of displayed matches equals the specified count or the last address specified has been fetched and compared. If no match has been found after the data is fetched from the last address specified, "NOT FOUND" will be displayed and the search terminated. The default count will This command will periodically indicate its progress during long searches.

Command Syntax

search (st), (fa), (la), (vn) [,mk] [,ct]

where the parameters are defined as follows:

st - storage type (PS, CS, BS, RS, MS, WO, W1 and R[EG])

fa - first address (or reg name GP, IC, MAR, CSAR, SCG, MIO, MII, AOO, AOI)

la - last address (or #count, or reg name)

vn - value to be searched for

mk - mask value

ct - count

Example

CP AP	MCKO [off]	CHPO SYP	S SYCS	SYMS PS off al	READ VERIF	FY PRINT
Stop Stop	on .	on ***	** ****	*** In	hibit word	/dev/lp
NC REG NO 8888 88/1	: PSW 80/00000	IC XXXXX X	['] SPL INST XXXXXXXXX	x cs	AR ČTL X XXXXXX	_ HORD XXXXXXXXXX

RS 41 bbbb

This example searches Reserve Store for the pattern bbbb from location 30 to 50. A match has been found at location 41.

3.3.3.10 +SCROLL

Command Description

This command will function only if the previous command was INSPECT. The INSPECT command will be repeated with its first address and last address adjusted to display the next block (of the same size and same storage type) of data. No data will be displayed if the previous command was not INSPECT.

This command may also be activated using the numeric/function key <esc> F1.

Command Syntax

+[scroll]

This command does not require any parameter definition.

3.3.3.3.11 -SCROLL

Command Description

This command will function only if the previous command was INSPECT. The INSPECT command will be repeated with its first address and last address adjusted to display the previous block (of the same size and same storage type) of data. No data will be displayed if the previous command was not INSPECT.

This command may also be activated using the numeric/function key <esc> F2.

Command Syntax

-[scroll]

This command does not require any parameter definition.

3.3.3.3.12 VERIFY

Command Description

VERIFY processing will be similar to LOAD processing except the specified ASP store will not be modified but rather compares ASP store to a file saved using the SAVE command. Each address which does not contain the specified value will be displayed in the Data Display Field. Each line shall contain the storage type in columns 1-3, the address in columns 4-9, the word "Expected--" in columns 17-26, the word "Actual----" in columns 50-59, and the hexadecimal expected and actual values (4, 8, or 16 hex digits, depending on the storage type) in columns 28-47 and 61-80 respectively (spaced as in INSPECT). This display will be provided instead of displaying an error in the Error Message Field. If the verify is completely successful, "VERIFY GOOD" will be displayed. This command will periodically indicate its progress during long verifies.

Command Syntax

v[erify] (fn) [st] [fa] [la]

where the parameters are defined as follows:

Example

CP	AP	NCKO	CHPO	SYPS	SYCS	SYMS	PSREAD	VERIFY	PRINT
<u>-un</u>	run	off	off	off	off	off	аllон	bulk	off
5 1 0 p	STOP	¢n.	• n	****	****	***	Inhibi	hord .	/dev/lp
1C REG 8888	NC 88/88	PSH 700000	IC XXXXX	SP XXXX	L INST		CSAR XXX	CTL H	

BEGIN VERIFY d(4) storage units verified VERIFY GOOD

In this example, the VERIFY command is used to compare the contents of Bulk Store locations 20 through 23 with the contents stored in the file bstmp1. The verify operation was successful.

3.3.3.13 VERIFY BLOCK

Command Description

The VERIFY BLOCK command will fetch data from each address within the specified address range of the specified ASP store and compare it with the single value specified by the user (note that the special value ADR assumes the numerical value of the address for each address read). The results of this verification will be displayed in the Data Display Field as described in the VERIFY command.

Command Syntax

v[erify_]b[lock] (st), (fa), (la), (vn)

where the parameters are defined as follows:

st - storage type (PS, CS, BS, RS, MS, WO, W1 and R[EG])

fa - first address (or reg name GP, IC, MAR, CSAR, SCG, MI0, MI1, A00, A01

la - last address (or #count, or reg name)

vn - value to be verified or "adr" (data=address
pattern)

Example

STATION /dev CO	OMPUTER X	HODESPL	5V on	SOC ADDR 00000+	00000 SOE
CP AP run run Istop Istop	MCKO CMF	0 SYFS SYCS] off off ***** ****	SYMS off ***	PSREAD VERIFY allow bulk inhibit word	PRINT off /dev/lp
MC REG MC 1 8000 80/00	PSH IC /00000 XXX	SPL INST XX XXXXXXXXX	(XX	CSAR CTL XXX XXXXXXX	WORD XXXXXXXX
/ / vb bs 20 23	96967777				
BEGIN VERIFY BU					
BS 20 EXPECT	ED 9696 1111	ACTUAL 001	8888 6		
BS 21 EXPECT	ED 9696 1111	ACTUAL 002	8 2100		
BS 22 EXPECT	ED 9898 4444	ACTUAL 241	1 0000		
BS 23 EXPECT	ED 9696 ffff	ACTURL 112	3 4888		

This example compares the data located in Bulk Store locations 20 thorugh 23 with the specified constant 9696fff. All compares failed.
Preventative Maintenance

The TU is a very reliable work station. The components implemented in the design of the TU were selected to reduce the amount of preventative maintenance required. The only component that requires any preventative maintenance is the TU display. The TU display is an electroluminent flat panel display which has an amber polarized filter on the front to prevent reflection and glare. It is very important not to scratch the viewing area. When cleaning is required, clean with non-abrasive mild glass cleaner.

Other than the periodic cleaning of the display, there is no other preventative maintenance required.

3.4.1 In Case of a Problem

3.4

In the event of a problem, it is very important to record all conditions leading up to the event. Figure 3-11 shows a sample Trouble Report that can be used to record and keep track of system problems. Appendix E contains a list of debug commands which can be executed to further locate a problem area.

TROUBLE REPORT

Machine
Program Running
Symptoms
Scope
Error Messages
Person Reporting
Location
Phone

0.14

and the second

1000

Figure 3-11. TU Sample Trouble Report

Appendix A

PAWSWORK Operator Interface

Command Quick Reference

PAWSWORK Operator Interface Commands

R.

in the second second

Heine States Sal

Command Syntax	Page
bye	43
catlist [s[ou]rce=path1] [place=path2]	37
cg[lobal] [p1] [p2] [p3] [pn]	46
config[ure] [std=stdconf] [op=operation]	44
copy s[ou]rce=path1 [dest[ination]=path2] [form[at]=	fchar] 38
ex[amine] [file=path1] [form[at]=fchar]	39
gen[data] dest[ination]=path2 [form[at]=fchar]	40
help cmd=PAWSWORK command	44
lg[lobal] [p1] [p2] [p3] [pn]	46
<pre>mod[ify] file=path1 [dest[ination]==path2]</pre>	40
mts	49
permit file=path1 access=access code	41
pr[int] file=path1 [place= path2] [form[at]=fchar]	42
purge file=path1	42
resume	45
sg[lobal] [parameter keyword 1=parameter value 1] [parameter keyword 2=parameter value 2] [parameter keyword n=parameter value n]	47

The parameters shown in brackets are optional.

Appendix B MTS Command Quick Reference

for the second s

MTS Commands

The user may enter a command in the form of a text line terminated by a carriage return in the User Entry Field. The user may also enter commands which have no parameters by pressing a numeric or function key on the TU keyboard.

MTS Support Commands

Numeric/ Function Key	Command Syntax		Page
	COMMENT	(4+)	

			58
		ECP41	59
ESC	8	END	59
		HELP	60
ESC	2	HOME	61
		INCLUDE (fn)	C 2
ESC	0	INTERRUPT	62
ESC	7	NEXT	63
ESC	, 1	RIEDERATI LOTI	63
200	÷		64
		R[EPEAT_JR[ARDWARE] [R]	65
n	~	SCREEN [NI]	66
ESC	9	SUSPEND	67
		T[EST_]H[ARDWARE]	68
		WAIT [ct]	68
ESC	2	WATCH	69

ASP Control and Status Commands

Numeric/	Command
Function	Syntax
Key	-

ESC	4	CPSTEAL	70
		DEFINE PRINTER	70
		DITSPLAY ISING ISIMATUSI	71
		FORCE (OW (AROW) (Aro)	/1
		FORCE (CW/AECW) (1n)	72
		M[ODE] (SPL/CP/AP) [ca]	73
		O[VERRIDE] (OFF/MCK/CMP/BOTH)	74
ESC	3	PRINT	75
ESC	F3	PIRINT ISICPEENI	75
			76
TRO	~	PSREAD [A[LLOW]/I[NHIBIT]]	77
LSC	6	RESET [ra]	78
ESC	F4	START	70
ESC	F5	START SOC	79
ESC	F6	STADT SOF	79
FSC	- U - F7		80
DDC	r /	STEP	81
ESC	F.1	STOP	81
		SYNC (st) (sa/OFF)	01
		VIERTEV ITIVERI (BUILTVI (MICODI)	01
		([[[[[[[[[[[[[[[[[[[82

Page

ASP Memory and Register Commands

Numeric/ Command Function Syntax Key

湯湯

Salar Salar

122.5

	B[ASE] (st) [ba]	83
	C[HANGE] (st) (fa) (vl) [v2 v3 vn]	84
	C[HANGE]B[LOCK] (st) (fa) (la) (vn)	85
	I[NSPECT] (st) (fa) [la]	· 86
	L[OAD] (fn) [st] [fa] [la]	87
ESC 5	L[OAD]D[ISPLAY]	89
	MODIFY DISPLAY (dt)	90
	S[AVE] (fn) (st) (fa) (la)	91
	SEARCH (st) (fa) (la) (vn) [mk] [ct]	93
ESC F1	+[SCROLL]	95
ESC F2	-[SCROLL]	95
	V[ERIFY] (fn) [st] [fa] [la]	96
	VIERIFY IBILOCKI (st) (fa) (la) (vn)	97

Page

where the parameters are defined as follows:

	st	-	storage type PS, CS, BS, RS, MS, WO, W1 and R[EG]
	fa	-	first address (or reg name GP, IC, MAR, CSAR, SCG,
			MIO, MII, AOO, AOI
	la	-	last address (or #count, or reg name)
	vn		value to be stored/verified or "ADR" (data=address
			pattern)
	fn		file name
•	mk		mask value
	sa	-	sync address
	in	-	an instruction word
	ca	-	compare address for stop-on-compare
	ba		base address
	dn	-	device name
	ct		count
	ra	-	reset address in control store
	pa	-	program store address
	qc	-	quick stop class
	dt	-	data
	nf	-	on or off

Appendix C

State and state

Contraction of the local division of the loc

MTS Error Message Summary

MTS Error Message Summary System Error Unimplemented command Token inconsistency No maintenance channels configured Configuration inconsistency Cannot open maintenance channel Too many parameters specified Too few parameters specified Invalid key depression Invalid command Unacceptable file/device name File name too long; max char's = Invalid mode · Invalid ASP storage type Invalid address Address exceeds available storage Invalid count First address exceeds last Count exceeds available storage Previous command not repeatable Previous command not valid inspect Try \"help\" - No help available for Invalid override class Invalid psread class

Ç.

MTS Error Message Summary (Continued) Invalid verify type Invalid mode Value too large for specified store Invalid value Stop-On-Error only valid in SPL mode Range may not include a hardware register Base may not be set to hardware register Inspected storage not currently displayed File not in \"save\" format Specify both FWA/LWA or neither - base not zero Rewrite not confirmed for Range may not include both Local and Primary register Maintenance Panel Interface - No Power! ASP Computer - No Power! Power restored to Warning - Change does not verify invalid sync storage type Sync type not compatible with mode Invalid quick stop action Unknown error code

Note: When a message listed above is shown in the Error Message Field it is preceded by the computer type and the time of day.

Appendix D

and a state

incentration of

and the second

1

and the second se

Quick Reference

for

Modem Commands

Command Description

100

Section 4

1000004

Sec. Sec.

Sec. 1

Comman	ıd	Description (* denotes the factory setting)
AT A/		Attention Code (Command Sequence Prefix) Repeat Preceding Command Sequence
A		Answer Call Immediately
B0 B1	*	CCITT Answer Tone BELL Answer Tone
Dn		Dial Telephone Number (n)
	*	<pre>Additional Dial Modifier Commands: T = Touch Tone Mode P = Pulse Dial Mode R = Reverse To Answer Mode After Dialing S = Dial Stored Number W = Wait For Dialtone , = Pause (2 Seconds) ; = Return To Command State After Dialing @ = Wait For Quiet Answer (5 Seconds Of Silence After Detecting Ringbacks) ! = Flash (1/2 Second On-Hook)</pre>
EO E1	*	Command Character Echo Disabled Command Character Echo Enabled
FO Fl	*	Half-Duplex (On-Line Local Echo) Full-Duplex Mode (Normal)
H0 H1	*	Force Modem On-Hook (Off-Line) Force Modem Off-Hook (Make Busy)
I0 I1 I2 I9		Output Product Code To DTE Output Product Checksum To DTE Product Checksum Calculation (Result Code = OK Output Product Identifier To DTE
L0 [L1 L2	L3 Speaker Volume Commands Not Supported - Result Code = OK
MO	M1 M2	M3 Speaker Control Commands Not Supported - Result Code = OK
00 01		Return To On-Line Communication Return To On-Line Communication And Initiate Retrain
Q0 Q1	*	Result Code Messages Sent To DTE Result Code Messages Not Sent To DTE

Command Summary (Cont'd)

1

ALL STORY

E all

Contract of

Command		Description (* denotes the factory setting)
Sr?		Read And Display Contents of Register (r)
Sr=n		Set Register (r) To Value (n)
vo		Numeric Result Code Message Format
Vl	*	Verbal Result Code Message Format
		in the search in
XO		Basic Status Set/Blind Dialing
X1		Extended Status Set/Blind Dialing
X2		Extended Status Set/Dialtone Detection
Х3		Extended Status Set/Blind Dialing/Busy Tone
		Detection
X4	*	Extended Status Set/Dialtone & Busy Tone
		Detection
YO	*	Disable Long Space Disconnect
Yl		Enable Long Space Disconnect
Z		Reset - Load User Stored Settings
+++	*	Escape Code From On-Line To Command State
&C0	*	Force DCD Active
&C1		DCD Indicates On-Line Data Carrier Detected
&C9		Force DCD Active Except Turn Off for
		One Second After Hang-Up
500	ж	Ferrer DWD batt
۵D0 د ص	^	Force DTR Active
۵D1 درم ک		Enter Command State when DTR Turns Off
a DZ		off
٤D3		Reset To Usor Stored Settings When DWD Three a
425		Off
&D8		DTR Controlled Dial Stored Number & Hang Un
		(Async Mode)
&D9		DTR Controlled Data/Talk Switching (Async Mode)
		induction and a second s
&F		Load Factory Settings
		· · · · · · · · · · · · · · · · · · ·
&G0,	&G1,	&G2 Guard Tone Commands Not Supported-Result
		Code = OK
0T&	*	RJ-11 Telephone Interface Jack
&J1		RJ-12/13 Type Jack Not Supported - Result
		Code = OK
&L0	*	Dial Line Mode
&L1		Leased Line Mode

Command Summary (Cont'd)

419 X 10 10 10 10 10 10 10

and the second

a second

10.00

and the second second

٠.

Com	mand		Description (* denotes the factory setting)
			A Communications Mode
	&M0 &M1 &M2	*	Async Command & Async Communications Mode Async Command & Sync Communications Mode DTR Controlled Dial Stored Number & Hang-Up (Sync Mode)
	&M3		DTR Controlled Data/Talk Switching (01
	&P0 &P1	*	39% Make, 61% Break Pulse Dial Ratio (UK) 33% Make, 67% Break Pulse Dial Ratio (UK)
	&R0 &R1 &R9	*	CTS Tracks RTS (Sync Only) Ignore RTS (CTS Turns Off Only During Proto.) Force CTS Active & Ignore RTS
	&S0 &S1	*	Force DSR Active DSR Indicates On-Line in Data Mode
	&T0 &T1 &T3 &T4	*	Terminate Test In Progress Enter Local Analog Loopback Test Mode Enter Local Digital Loopback Test Mode Respond To Remote Digital Loopback Request Signal
	&T5 &T6 &T7 &T8		Ignore Remote Digital Loopback Roquest Mode Initiate Remote Digital Loopback W/Self-Test Initiate Remote Digital Loopback W/Self-Test Enter Local Analog Loopback W/Self-Test
	&W		Write User Configuration To Non-Volatile Mem.
	&X0 &X1 &X2	*	Internal Synchronous Timing External Synchronous Timing Slave Synchronous Timing
	&Zr	n	Write Telephone Number (n) To Non-Volatile Memory
	\A \A \A \A	0 1 2 3	64 Character Maximum MNP Stream Size 128 Character Maximum MNP Stream Size 192 Character Maximum MNP Stream Size * 256 Character Maximum MNP Stream Size
	ت/ ت/	0 1	* Switched DTE Baud rate Fixed DTE Baud Rate
	H/ /	KO K1 K2	* Normal MNP Break Type Expedited MNP Break Type Destructive Expedited MNP Break Type

Command Summary (Cont'd)

T

1

1

Col	mmand		Description (* denotes the factory setting)
	\L0 \L1	*	Stream MNP Link Mode Block MNP Link Mode
	\N0 \N1 \N2 \N3	*	Standard Connections Only Standard Connections Only Reliable-Only Connections Auto-reliable Connections
	\0 \Q0 \Q1 \Q2 \Q3	*	Initiate reliable Link XON/XOFF (Software) Flow Control XON/XOFF (Software) Flow Control CTS Signal (Hardware) Flow Control CTS Signal (Hardware) Flow Control
	∖s		Status: Configuration & Command Listing
	\Tn		Inactivity Timer (n = 0* to 15, 5 Minutes Per Count)
	\X0 \X1 \X2	*	XON/XOFF Processed/Not Passed Through XON/XOFF Processed & Passed Through XON/XOFF Passed Through/Not Processed
	עש		Accept Reliable Link
	$\setminus \lambda$		Switch To Reliable Link

S Register Summary

L

				Pange	Units	
Re	gister	Default	Function	Range	Pings	
	S0	000	Number Of Rings To Detect Before Autoanswering	000-255	KIIIG2	
	C1	000	Ring Counter	000-255	Rings	
	SI	043	Escape Character Code	000-127	ASCII	
	S2	045	Remains Return Character	000-127	ASCII	
	S3	013	Code			
	S4	010	Line Feed Character Code	000-127	ASCII	
	S5	008	Backspace Character Code	000-127	ASCII	
	56	002	Wait Time For Dialtone	000-255	Second	•
	57	060	Wait Time For Carrier	001-060	Second	L
	50	002	Pause Command Time	000-255	5 Second	1
	S9	006	Carrier Detect Response Time	001-255	5 0.1 Second	з
	S10	014	Loss-Of-Carrier Disconne Time-Delay	ect 001-25	5 0.1 Secon	a
	S11		Not Used			-
	S12	050	Escape Code Guard Time	020-25	5 0.02 Secor	nđ
	S13		Not Used			
	S14	170) Bit Mapped Options Regi	ster		
	S15	5	Not Used			
	S10	6 00	0 Modem Test Options Regi	ister		
	Sl	7	- Not Used			
	S1	8 00	0 Test Timer	000-2	55 Secor	nds
	S1	.9	- Not Used			
	S2	20	Not Used			

S Register Summary (cont'd)

T

1	Register	Default	Function	Range	Units
	S21 S22	000 118	Bit Mapped Options Reg Bit Mapped Options Reg	gister gister	
	S23	007.	Bit Mapped Options Red	gister	
	S24		Not Used		
	S25	005	Delay To DTR (Synchronous Modes On	000-255 ly)	Seconas
	S26	001	RTS/CTS Time-Delay (Synchronous Modes Or	001-255 nly)	0.01 Seconds
	S27	064	Bit Mapped Options Re	egister	
	S36	000	Bit Mapped Options R	egister	
	S37	192	Bit Mapped Options R	egister	
	S 38	000	Bit Mapped Options R	egister	
	S39	000	Bit Mapped Options R	Register	

Appendix E Quick Reference for

IJ

Debug Commands

1.0 TU Diagnostics

1. Turn power switch ON, verify the following prompt on the display:

FPC passed test PMMU passed test 130Bug>

2. Enter "SD" on the keyboard, hit enter and verify the following prompt on the display:

130Diag>

3. Perform the following diagnostic tests:

Final System Acceptance Test

FATPKG1

Passed _____

VME Bus and VSB Bus Tests

BUS A	Passed
BUS B	Passed
BUS C	Passed
BUS D	Passed
BUS E	Passed
BUS F	Passed
BUS P	Passed
BUS Q	Passed
BUS R	Passed
BUS S	Passed
BUS T	Passed

Processor (On Board) Cache Tests

CA20 1	F	Passed
CA20 (G	Passed
CA20 I	H	Passed
CA20	I	Passed

CIO (Counter/Timer) Test

CIO A	Passed
CIO B	Passed
CIO C	Passed
CIO D	Passed
CIO F	Passed

Memory Management Unit (MMU) Tests

4.,

Ĵ

1.1.2

ALC: NO

MMU A MMU B MMU C MMU D MMU E MMU F MMU G MMU H MMU I MMU J MMU K MMU L MMU M MMU P MMU Q MMU R MMU S MMU T MMU U MMU V MMU W MMU X MMU Y MMU Z MMU ZO MMU Z1

Passed	
Passed	
Passed	
Passed	
Passed	.
Passed	
Passed	. <u> </u>
Passed	<u></u>
Passed	

RAM (Off Board) Tests

MMU Z2 MMU 0

MT	Α	Passed
MT	В	Passed
MT	c	Passed
MT	D	Passed
MT	Е	Passed
MT	F	Passed
MT	G	Passed
MT	Н	Passed
MT	I	Passed
MT	J	Passed

Appendix F

٩.,

VI Editor Command Summary

VI EDITOR COMMAND SUMMARY

Sample commands arrow keys move the cursor hjkl insert text abc itextESC change word to new **cwnewESC** pluralize word easESC delete a character х delete a word dw delete a line aa ... 3 lines 3 d d undo previous change u exit vi, saving changes $\mathbf{Z}\mathbf{Z}$ quit, discarding changes :q!CR search for text /textCR scroll up or down ^U ^D any ex or ed command :ex cmdCR Counts before vi commands Numbers may be typed as a prefix to some commands. They are interpreted in one of these ways. ZG line/column number ^D ^U scroll amount most of the rest repeat effect Interrupting, canceling end insert or incomplete cmd ESC (delete or rubout) interrupts ^? reprint screen if ^? scrambles it ^L reprint screen if ^L is -> key ^R File manipulation write back changes :wCR quit :qCR quit, discard changes :q!CR edit file name :e nameCR reedit, discard changes :e!CR edit, starting at end :e + nameCR edit starting at line n :e + nCR edit alternate file :e #CR synonym for :e # write file name :w nameCR overwrite file name :w! nameCR run shell, then return :shCR run cmd, then return :!cmdCR edit next file in arglist :nCR specify new arglist :n argsCR show current file and line ^G to tag file entry tag :ta tagCR :ta, following word is tag ^]

In general, any ex or ed command (such as substitute or global) may be typed, preceded by a colon and followed by

a CR.

<pre>Positioning</pre>	<pre>within file forward screen backward screen scroll down half screen go to specified line (end default) next line matching pat prev line matching pat repeat last / or ? reverse last / or ? nth line after pat nth line before pat next section/function previous section/function beginning of sentence end of sentence beginning of paragraph end of paragraph find matching () { or } </pre>
Adjusting 1 ^L ^R zCR z-CR z.CR z.CR /pat/z-	the screen clear and redraw retype, eliminate @ lines redraw, current at window top at bottom at center pat line at bottom

scroll window down 1 line ^E scroll window up 1 line ^Y

Marking and returning

/pat/z-CR

zn.CR

larking al	na recurning
11	move cursor to previous concerc
	at first non-white in line
mx	mark current position with letter x
`x	move cursor to mark x
' <i>X</i>	at ilrst non-white in ime

use n line window

Line positioning

н	top line on screen
τ.	last line on screen
M	middle line on screen
+	next line, at first non-white previous line, at first non-white
CR	return, same as +
j k	next line, same column previous line, same column
	-