

HP495x Protocol Analyzers

HP495x PC Utilities

User's Guide



Manual Part Number: 5090441
Microfiche Part Number: **5090-4042**

Printed in U.S.A. October 1990
E1090

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Printing History

New editions are complete revisions of the manual. Update packages (formerly known as “Manual Changes”) are issued between editions. They contain additional and replacement pages to be merged into the manual by the customer. The dates on the title page change only when a new edition or a new update is published. No information is incorporated into a reprinting unless it appears as a prior update. The edition does not change when an update is incorporated.

Many product updates and **fixes** do not require manual changes and, conversely, manual corrections may be done without accompanying product changes. Therefore, do not expect one-to-one correlation between product updates and manual updates.

Edition 1October 1990

Problems? Call for Help

If you have problems operating your HP protocol **analyzer** or any of the applications, call the CTD Customer **HelpLine** or use your fax machine to send your questions.

HelpLine • (719) 531-4567

Fax • (719) 531-4505

Syntax Conventions

The following symbols, abbreviations, and other conventions **are** used in this publication.

<u>Symbol</u>	<u>Definition</u>
Setup Menu	A softkey.
Reset	A keyboard command entry.
CTRL U	A control character entry from the keyboard when both the CTRL key and an alphanumeric key are pressed at the same time. To enter CONTROL U press CTRL and U .
Shift softkey	A keyboard entry where both the Shift and a softkey are pressed at the same time to select an auxiliary softkey function .
File Name	Within menus or screens, a parameter that must be entered in the exact format shown.
filename	Within menus or screens, a user-defined parameter.

Warning An operating **procedure**, practice, etc., which, if not correctly followed, could result in personal injury or loss of life.

Caution An operating procedure, practice, etc. which, if not strictly observed, could result in damage to, or destruction of, equipment or software.

Note Explanatory comments or supplementary instructions.

HP495x PC Utilities Basics

The **HP495x** PC Utilities are a set of application programs that run on IBM compatible MS-DOS computers. The PC Utility programs are **5XREMOTE.EXE**, **5XLOAD.EXE**, **5XSTORE.EXE**, **5XDIR.EXE**, **X25.EXE**, **SNA.EXE**, **BOP.EXE**, **COPEXE**, **DATA2EVE.EXE**, **EDITEVE.EXE**, and **EDITMENU.EXE**. They perform the following functions:

- The **5XREMOTE.EXE** program allows you to remotely control an **HP495x** WAN protocol analyzer from a PC. With the **5XREMOTE.EXE** program you can transfer test setups and data.
- The **5XLOAD.EXE**, **5XSTORE.EXE**, and **5XDIR.EXE** programs allow you to show the directory of files on an **HP495x**, format 3.5 inch disc, and copy files to and from the **HP495x** format 3.5 inch disc.
- The **X25.EXE**, **SNA.EXE**, **BOP.EXE**, and **COP.EXE** programs decode **HP495x** captured line data. The **HP495x** captured line data must be converted from an **HP495x** buffer data file type to an events file type before a decode program can load the data.
- The program **DATA2EVE.EXE** converts an **HP495x** buffer data file type to an events file type that is compatible with the **X25.EXE**, **SNA.EXE**, **BOP.EXE**, and **COP.EXE** decodes.
- The program **EDITEVE.EXE** allows you to display and modify the options in the events file.
- The program **EDITMENU.EXE** allows you to display certain key values from an **HP495x** menu (or menus and data) file.

Note The term **HP495x** refers to the HP 4951C, HP 4952A, and HP 4954A WAN Protocol Analyzers.

An events **file (filename.EVE)** is a file created from an **HP495x** data file (**filename.M&D** or **filename.BUF**) using the PC Utilities **DATA2EVE** program. An events **file** is the only format usable by the X25, SNA, BOP, and COP decode programs.

HP495x Protocol Analyzers Supported

- HP 4951C with Rev. 5.0 or greater
 - HP 4952A with Rev. 2.0 or greater
 - HP 4954A with Rev. 4.0 or greater
-

Note For instrument upgrade information please contact your local HP sales office.

Minimum PC Requirements

Microprocessor:	8086
Operating system:	MS-DOS 33 (earlier versions may work)
RAM:	640 Kbytes
Serial port:	Comm Port 1 or 2 for 5XREMOTE.EXE program
Disc Drive:	720 Kbyte 35 inch for HP495x disc file functions

Note A hard disc or **RAM** disc is required.

1 - 2 HP495x PC Utilities Basics

Minimum HP495x Requirements

HP 4954A event files (**filename.EVE**) created with a DataCommC software version that is less than **A.02.00** are not supported by the PC Utilities decode programs.

Event files (**filename.EVE**) created with the PC Utilities **DATA2EVE** program are not supported by the HP 4954A with a DataCommC software version that is less than A.02.00.

COP events **files** created with the PC Utilities **DATA2EVE** program are not compatible with the HP 4954A DataCommC **COPs** decode. COP events **files** created with HP 4954A DataCommC are not compatible with the PC Utilities COP decode.

The **HP495x** disc drive uses a 3.5 inch, double-sided, double density flexible disc. Specify Hewlett-Packard part number **92192A** to order a box of ten discs.

How to Use This Manual

If you would like to review the basic protocol analyzer functions and features, refer to that **HP495x** Operating Manual. If you would like an overview of what is contained in each chapter, refer to the Table of Contents. This manual describes the features of the **HP495x** PC Utilities with minimum reference to any **HP495x** protocol analyzer operation.

HP495x PC Utility application files are a set of programs, each performing a separate task. This **HP495x** PC Utilities user's guide is divided into four groups, each a chapter in this manual. The groups are: Using the PC Utilities, **HP495x** Load/Store/Directory, File Conversion/Protocol Decodes, and How to Use the Remote Capability.

Chapter 1, HP495x PC Utilities Basics

This chapter describes the PC Utilities, the minimum PC requirements, the equipment supplied, and how to load your PC Utilities software.

Chapter 2, Using the PC Utilities

This chapter ties together how to use the different PC Utilities to view data on the PC which has been previously captured on an **HP495x** protocol analyzer.

HP495x Protocol Analyzers Supported

- HP 4951C with Rev. 5.0 or greater
- HP 4952A with Rev. 2.0 or greater
- HP 4954A with Rev. 2.0 or greater

Note For instrument upgrade information please contact your local HP sales office.

Minimum PC Requirements

Microprocessor:	8086
Operating system:	MS-DOS 3.3 (earlier versions may work)
RAM:	640 Kbytes
Serial port:	Comm Port 1 or 2 for 5XREMOTE.EXE program
Disc Drive:	720 Kbyte 3.5 inch for HP495x disc file functions

Note A hard disc or RAM disc is required.

A mouse is optional. The mouse can be used within the PC Utilities shelf program in the Examine Data menu. See chapter 3.

1 - 4 HP495x PC Utilities Basics

How to Load Your HP495x PC Utility Application Files

The PC Utility application **files** can be loaded manually one file at a time, or all at once using the install program included on your **HP495x** PC Utilities disc.

By executing **INSTALL**, all of the PC Utility application programs are loaded into the directory specified, or in the default directory **HP495X**. **INSTALL** will create that directory and load each of the PC Utility **files** into it. To execute **INSTALL** with the PC Utilities disc in the "A" drive, type the following PC command:

```
A:\INSTALL 
```

Note Any disc drive may be used to **INSTALL** the PC Utility programs.

After executing **INSTALL**, the following message is displayed:

```
The tools are installed in directory C:\HP495X by default.  
Do you want to specify a different directory? (y/n)
```

If you answer yes (y), specify the directory. After specifying the directory and pressing , a message asks if the directory specified is correct. Answer yes (y) and the PC Utility application programs are copied into that directory. Answer no (n) and you will be prompted to specify a new directory.

If you answer no (n), the directory **\HP495x** is created, and the PC Utility application programs are copied into that directory.

Note

If you use INSTALL with the two **720** Kbyte 3.5 inch floppy discs, you will be prompted to insert the second disc after the first disc is copied.

The directory that contains the **HP495x** PC Utilities should be entered as a DOS path in your AUTOEXEC.BAT file.

The 3.5 inch disc drive must be configured correctly to handle DOS which may require a device driver installed in the **CONFIG.SYS** file.

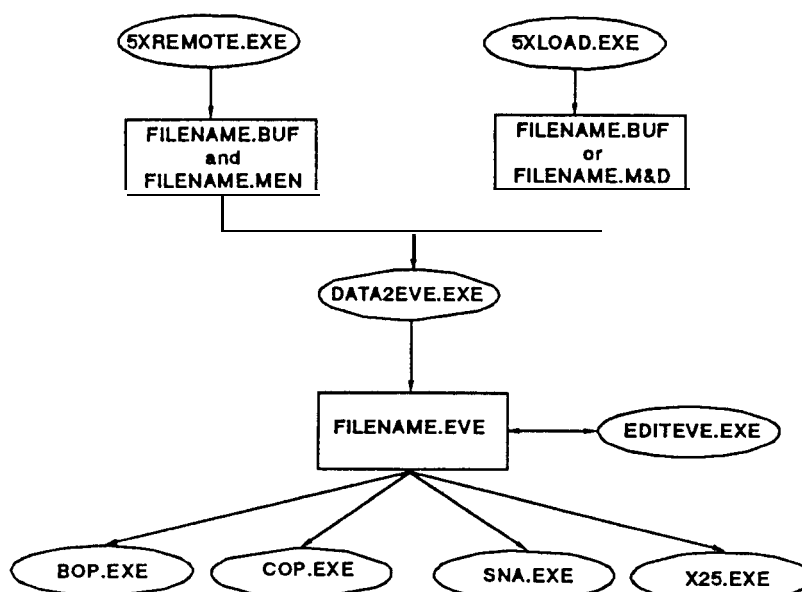
Set the CONFIG.SYS **file** statement to **20** or more (FILES = 20).

Using the PC Utilities

Each PC Utility program performs a special function. Together, they make a powerful toolset that performs the following:

- Analyze data on a PC
- Upload/download data and menus
- Remotely transfer files to and from an **HP495x** protocol analyzer to a PC

The following describes in general the different ways the PC Utility programs can be used together to analyze data on a PC.



CHART

Figure 2-1. HP495x Buffer Data to PC Analysis

Using 5XREMOTE.EXE to Upload and Analyze a Data File

This procedure takes an **HP495x** protocol analyzer's buffer data **file** and uploads it remotely into the PC (possibly from a remote site), and analyzes it. This procedure is performed as follows:

1. Using the **5XREMOTE.EXE** program, upload the present **HP495x** protocol analyzer buffer data, and uploads it to a file (.BUF) on the PC.
2. Convert the uploaded buffer data **file** using the **DATA2EVE.EXE** program into an events **file (filename.EVE)**.
3. Analyze the converted events **file** using one of the **X25.EXE**, **SNA.EXE**, **BOPEXE**, or **COP.EXE** decode programs.

Analyzing an HP495x Buffer Data File on a PC

This procedure takes an **HP495x** protocol analyzer's buffer data and copies it to a 3.5 inch disc, loads the buffer data into a **file** on the PC, and analyzes it. This procedure is performed as follows:

1. Store the buffer data (preferably Menu & Data) to a 3.5 disc using the **HP495x** Mass Store menu.
2. Load the **HP495x** 3.5, inch disc's buffer data **file (filename.M&D)** using the **5XLOAD.EXE** program.
3. Convert the Menu & Data file using the **DATA2EVE.EXE** program into an events file (filename.EVE).
4. Analyze the converted events file using one of the **X25.EXE**, **SNA.EXE**, **BOPEXE**, or **COP.EXE** decode programs.

2 • 2 Using the PC Utilities

HP495x Disc Functions

By using the PC Utilities, you can take an **HP495x** formatted 3.5 inch disc from an **HP495x** protocol analyzer, load **HP495x** applications, menus, or data into your PC, store it from the PC back to the disc, and read the disc directory. The load, store, and directory filenames are: **5XLOAD.EXE**, and **5XSTORE.EXE**, **5XDIR.EXE**. These PC Utility files use the **HP495x** file types shown in table 3-1.

5XLOAD

5XLOAD.EXE copies an **HP495x** protocol analyzer file from a 3.5 inch disc to the PC's hard disc drive (or **RAM** disc). Table 3-1 lists the supported filetypes. The command is issued as follows:

	source	destination
C:5XLOAD	A:DATA.BUF	C:DATA.BUF

When **5XLOAD** is executed, dots appear at the bottom of the display indicating the file is loading. Each dot represents 1024 bytes. The DOS prompt is returned when the transfer is complete.

Note

The source filename is case sensitive and must match the filename displayed in the directory. You must specify the source drive as A or B.

If the destination filename already exists, the file will be overwritten. The destination disc drive defaults to the current drive if not specified.

HP 4954A event files (**filename.EVE**) created with a **DataCommC** software version that is less than **A.2.00.00** are not supported by the PC Utilities decode programs .

5XSTORE

5XSTORE.EXE copies **HP495x** PC files to an **HP495x** formatted **disc**. The command is issued as follows:

```
          source      destination
C:5XSTORE C:DATA.BUF  A:DATA.BUF
```

After **5XSTORE.EXE** is executed correctly, the file length is given at the bottom of the display and dots appear indicating that loading is in progress. Each dot equals 1024 bytes. The DOS prompt is returned when the transfer is complete.

Note

The destination tile for **filetypes** **.BUF**, **.MEN**, **.M&D**, **.EXM**, and **.DTC** must begin with a capital letter.

You must specify the destination disc drive as A or B. The source drive defaults to the current drive if not specified.

Application files (**.APP**) can only be loaded; they cannot be stored.

To delete or pack disc, you must use a **HP495x** protocol analyzer.

Event files (filename.EVE) created with the PC Utilities **DATA2EVE.EXE** program cannot be used on the HP **4954A** with a **DataCommC** software version that is less than **A.2.00.00**.

5XDIR

Lists the directory of an **HP495x** protocol analyzer 3.5 inch disc. The **HP495x** file types that can be listed in the directory are shown in table 3-1. If you wish to view the directory of an **HP495x** disc in the “A” drive, issue the command as follows:

```
C:5XDIR A:
```

Figure 3-1 is an example of an **HP495x** directory listing on a PC.

Note You must specify drive A or B.

Deleted **HP495x** files cannot be displayed.

File size is reported in bytes.

Name	Type	Size	Comment/Description
SIWHENU	MEN ▪ Menu File	8448	Monitor/Simulate menu
DATA	BUF :- Buffer Data	2816	Captured data file
SIM_DATA	M&D ▪ Menu & Data File	11008	Mon/Sim menu and data
SAHPLAPP	APP ▪ Application File	22784	Application file

Figure 3-1. A Sample Directory Listing of an HP495x Format Disc

Table 3-1. HP495x Supported Filetypes

A68 • 68000 source file
APP • application file
ARC • archive file of 128K RAM
BAK • backup file
BUF • buffer data file
C • c source file
COR • corrupt file • created on HP 4951C if convert fails
DBG • debugger file
DIR • directory file
DTC • **datacode** file
ERR • error log file
EVE • events file
EXM • extended menu
INC • include file
LCM • Link **command** file
LIB • library file
LIS • listing file
LST • link statistics file
LSY • link **symbol** file
M&D • menu & data file
MAC • **macro** file
MEN • monitor/simulate menu file
OBJ • object file
PRG • program file
SYS • system file
TXT • text file
USR • user file
XRD • extended run data file
821 • G.821 BERT file

3 - 4 HP495x Disc Functions

File Conversion and Protocol Decodes

To decode data collected by an **HP495x** protocol analyzer on the PC, an events **file** (.EVE) must be created from a data file (**.M&D** or **.BUF**). This is performed with the “data to events” (**DATA2EVE**) program. After the events file has been created from a data file, it can be analyzed with a PC decode program.

DATA2EVE

DATA2EVE creates an events **file** (**filename.EVE**) from an **HP495x** DOS data file (**filename.M&D** or **filename.BUF**) which may be examined with the PC decode programs X2.5, SNA, BOP, or COP.

The command is issued as follows:

```

C:DATA2EVE -options DATA_IN.BUF DATA_OUT.EVE
or
C:DATA2EVE -options DATA_IN.M&D DATA-CUT.EVE
or
C:DATA2EVE DATA_IN.M&D DATA-OUT.EVE

```

- The default input file extension is **.M&D** when the file extension is not specified.
- The default output file's extension is **.EVE** when it is not specified. A file extension other than **EVE** is not allowed.
- If the input **file** is type **.M&D**, the appropriate option values are extracted from the menus portion of that file. These values may be overwritten by specifying the options in the **DATA2EVE** command.
- If a previous version of the output **file** exists, it is overwritten without warning.

Note

If you have DataCommC version **A.02.00** or higher, you can transfer your events files to the PC with **5XLOAD** and examine them with the PC decodes, and, using **SXSTORE**, you can do the reverse: transfer an events file created on the PC with **DATA2EVE**, and examine it on your HP **4954A** with any of the DataCommC decodes.

DATA2EVE Options

-i (instrument): 4952 4951 4954
-p (pod): rs232 **rs449 v35 mil188c**
-b (bits/sec): **9600**
-r (protocol): bop cop
-c (data code): hex ascii ascii7 ebcdic transcode **ipars**
-e (error checking): none **rs232leads (bop only)**
-t (start time): **00:00:00.000** (hh:mm:ss.mmm in 24 hour time)

Note

The first selection for each option is automatically selected (default) if it is a buffer data file (**.BUF**), and if you do not specify the options.

The **DATA2EVE.EXE** options determine how the events file is created from the **HP495x** buffer data file (**.BUF**). The options do not alter the original data file. They pass information on how the data was captured.

-i (instrument) determines which leads are displayed by the decodes. For example, certain leads on the RS232 interface are followed only by the HP **4954A** (DSR, SRS, CD, SQ, SCS, SCD); if the instrument option is not selected as 4954, the decode will not **display** the status of those leads. You can use **EDITEVE.EVE** to change the instrument option to HP **4954A** and all lead information will be displayed. In general, if this option is not specified, its value is automatically determined from the input file.

-p (pod) determines which set of lead labels are used by the decodes, e.g., the RS-232 DTE leads are labeled "RTS" and "**DTR**", and the RS-449 DTE leads are labeled "RS" and "**TR**". This option has no effect on events in the file, it only effects the lead labeling. The pod value is automatically determined from the **.M&D** input **file**.

4 - 2 File Conversion and Protocol Decodes

-b (bits/sec) declares the line speed at which the buffer data in the input **file** was captured. This is necessary to correctly timestamp the events. The **bits/sec** value is automatically determined from the **.M&D** input file.

-r (protocol) declares whether the buffer data in the input **file** is in a bit-oriented (bop) or character-oriented (cop) protocol format. This is necessary to correctly format events in the output **file**. In general, the BOP, X25, and SNA decodes will decode only bop data, and the COP only cop data. The protocol type is automatically determined from the **.M&D** input file.

-c (data code) determines the data code that decode will default to for displaying raw bytes at its top protocol layer. This option is for convenience since the data code can be changed by **softkey** while decoding. All data codes are not necessarily supported by all decodes. The **bits/sec** value is automatically determined from the **.M&D** input **file**.

-e (error checking) If set to **"rs232leads"**, the **DATA2EVE** program will flag certain lead transitions that are probably erroneous on the RS-232 interface:

CD:	if it drops during a DCE frame
RTS, C-IS:	if it changes during a DTE frame
DTR, DSR:	if it drops at any time

This option flags these transitions by placing an extra event immediately after the lead transition event in question, that contains a description of the error, e.g., "CD dropped during DCE frame!"

"rs232leads" error checking can only be done on BOP data. It is not recommended that you select it when the interface is not RS-232; the error events will erroneously continue to contain RS-232 lead acronyms, and the events may not be errors on the specified interface,

-t (start **time**) defines the timestamp of the first event in the output file. All subsequent events are offset from this time.

An Example of Using the Options

```
C:DATA2EVE -rcop -b2400 DATA_IN.BUF DATA-OUT
```

The above example creates the output events file DATA-OUT.EVE from the input data file DATA IN.BUF, assuming that DATA-IN.BUF is COP data captured at 2400 bits/sec on an **RS232** interface (rs232 is default).

Note

Data may not be **decodable** if the **wrong** options or type of decode is executed. For example, if you execute **COP.EXE** on a BOP events **file**, the data may not be decoded at all.

While **DATA2EVE** is running, a dot is printed for every 1000 input file bytes processed.

EDITEVE

The **EDITEVE** utility displays and/or **modifies** an event **file's** parameters. To display the option parameters, type the following:

```
C:EDITEVE DATA-OUT
```

where `DATA_OUT.EVE` is the events file created with the **DATA2EVE** program in the previous **example**.

Note The extension `.EVE` does not have to be specified.

A screen with the following fields is displayed:

```
instrument: 4952
pod: rs232
baud rate: 9600
protocol: bop
data code: ascii
error checking: none
start time: 0.000
num events: 22
```

To change the option parameters, type the following:

```
C:EDITEVE -options DATA-CUT-EVE
```

Where “options” are the options described in the **DATA2EVE** section of this chapter.

For example:

```
C:EDITEVE -i4951 -cebcdic DATA_OUT.EVE
```

Note If one of the **EDITEVE** options **-b (bits/sec)**, **-r** (protocol), **-e** (error checking), or **-t** (start time) was incorrect, it can only be corrected by re-running **DATA2EVE** on the original **.M&D** or **.BUF** file using correct options.

The previous example changes the DATA-OUT.EVE events file options to HP 4951 as the protocol analyzer type used to capture the data, and EBCDIC as the data code to be used in the decode application.

EDITMENU

The function **EDITMENU** displays certain **HP495x** Setup Menu parameters in a **.M&D** or **MEN file**. This may be useful if you do not know the setup parameters used to capture the data, and you have the associated menu file that was used to capture that data.

Type the following to execute this command:

```
C:EDITMENU DATA_IN.MEN
```

Here is an example of how the **EDITMENU** command may display the setup information:

```
(values assumed by DATA2EVE, where different, are in parentheses)
file description: For use with Enh_X25_2
instrument: 4952
pod: rs232 rs232
baud rate: 9600
protocol: X.25 (bop)
data code: ascii 8 (ascii)
```









Protocol Decodes

The **HP495x PC Utility** decodes supported are: SNA, X.25, **BOPs** (HDLC, SDLC, LAP, and LAPB), and **COPs** (**Async**, BSC, and **IPARS**).

The **HP495x PC Utility** decodes each have a similar Examine Data menu. The X.25 decode is used as the primary example for all the PC Utility decodes. The differences are covered under each of the other decodes.

Special Decode Keys

The following PC keys allow you to move around the **Examine** Data menu's decode file.

	goto to the first event.
	goto to the last event.
	display previous page
	display next page
	scroll screen up
	scroll screen down
Spacebar	mark/unmark event
	got0 to previous event
	got0 to next event
	got0 to previous event
+	got0 to next event

Note

The decode programs can only decode an “events” file. An events file (**filename.EVE**) is created from an **HP495x** data file (**filename.M&D** or **filename.BUF**) using the **DATA2EVE** program. An events file is the only format usable by the protocol decode programs. An events file can also be created using **DataCommC** on the **HP 4954A** (Rev. **A.02.00** or greater). See the **DATA2EVE** section of this chapter for more information.

While the protocol decode program is loading the events file (**filename.EVE**), dots appear at the lower part of the display indicating each 100 events loaded from the input file.

Using the X.25 Decode

To display X.25 data on the PC, execute the decode program as follows:

```
C:\X25 X25DATA.EVE
```

After a decode program is executed, the **Examine Data** softkey appears. By pressing **Examine Data**, the decoded data and all of the **Examine Data** softkeys are displayed. Figure 4-1 shows an example of the X.25 decode application with decoded events.

DTE		DCE	
<u>event 6</u> 00:00:20.360		<u>event 5</u> 00:00:20.353	
LAPB: UA C AddrOI P		LAPB: SABM R AddrOI f	
		<u>event 7</u> 00:00:20.377	
		LAPB: INFO R AddrOI Nr0 Ns0	
		X.25: RESTART INDICATION	
		mod8 LCI 0	
		Cause code 0	
		DTE originated	
		Diagnostic code 0	
		No additional info	
<u>event 8</u> 00:00:20.390			
LAPB: INFO R Addr03 Nr1 Ns0			
X.25:RESTART CONFIRM			
mod8 LCI 0			
<u>event 9</u> 00:00:20.390			
LAPB: INFO R Addr03 Nr1 Ns1			
X.25:RESTART REQUEST			
more keys more keys more keys 5			
Goto Event #	First Event	Middle Event	Last Event
			Mark Events
			Display Format
			Special Functions
			Exit

Figure 4-1. Decoded X.25 Event File

Notice the display is divided into two columns. The left column always shows DTE data, and the right column shows DCE data. When you are at the end of displayable events, the entire width of the display is filled with periods. See figure 4-2.

Lead changes are shown with acronyms for the currently selected hardware interface. The lead status of an event is indicated by showing leads that are On with their acronyms in upper case letters (full bright on most PCs). Leads that are Off are shown in lower case (half-bright on most PCs).

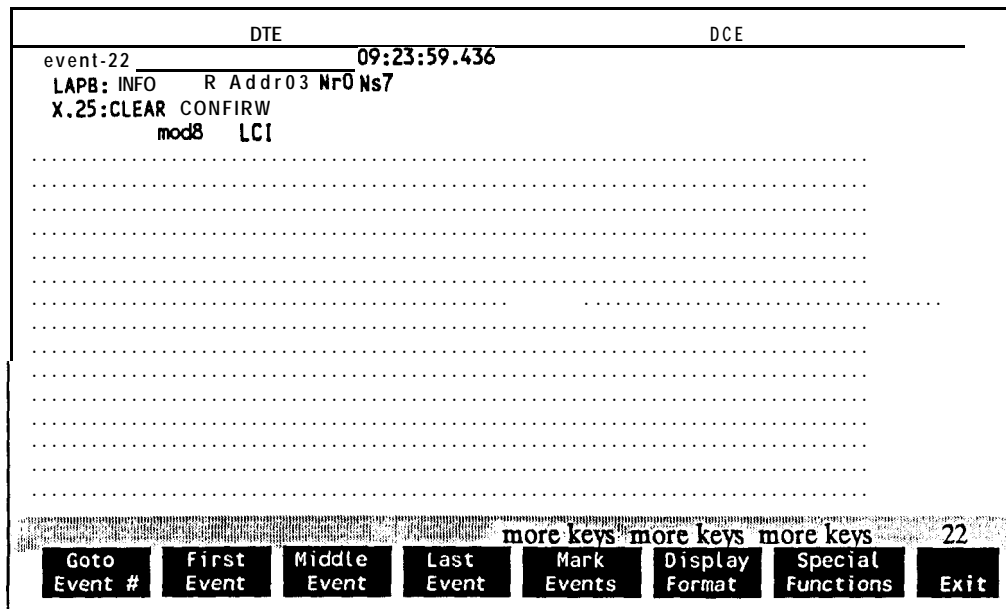



Figure 4-2. End of an Events File

The number of the event currently at the top of the display is shown in the lower right corner of the display, above and right of the **Exit** softkey. This is true even if only part of the event is being displayed. If you change the display format when part of the top event is off the screen, the events are redisplayed in the new format beginning with the first line of the top event (in other words, its midway positioning is not retained).

All About the Examine Data Softkeys

The Examine Data menu **softkeys** have an extra top row displayed in half-bright inverse video as shown in figure 4-2. This top row is a label which indicates how the **softkeys** work. There are three kinds of labeled softkeys:

- "on/off" 
- "more keys" softkeys.
- "more" softkeys.

'on/off' Softkeys. The on/off **softkeys** have two states: On or Off. To change the state of an on/off **softkey**, press the **softkey**.

An example of an on/off **softkey** is the **Event/Timestamp** **softkey**. When it is On, event numbers and timestamps are displayed. When it is Off, event numbers and timestamps are not displayed.

"more keys" Softkeys. "More keys" **softkeys** lead to an entire new set of softkeys. In other words, pressing a "more keys" **softkey** relabels all of the **softkeys** with new, lower-level choices. When you press a "more keys" **softkey**, a message is displayed on the line of the menu above the **softkeys** to indicate where you are in the **softkey** levels.

For example, **BOPS Layer 2** is a "more keys" **softkey**. Pressing this **softkey** leads to a new set of **softkeys** dedicated to changing the display format of the layer 2 data.

"More keys" also indicate their status by changing color. However, they are only Off when all the **softkeys** below them are Off.

"more" Softkeys. Pressing a "more" **softkey** relabels **only that softkey** with another choice. In effect, the **softkey** cycles through a set of choices.

An example of a "more" **softkey** is the **ASCII7** **softkey**. Pressing this **softkey** causes it to cycle through the other possible datacodes.

Top Level Examine Data Softkey Description

Goto Event #	You can go directly to a particular event by using this softkey . After you press this softkey , a flashing " Goto Event: " field appears at the lower right corner of the display. Use the keyboard to type in the number of the event you want to go to, and then press the Return key. If you enter a negative or out-of-bounds number, the last event may not be visible. Press the Goto Event # softkey again and re-enter the number of the event you want to go to.
First Event	Use this softkey to display the first event at the top of the display.
Middle Event	Use this softkey to display the middle event at the top of the display.
Last Event	Use this softkey to display the last event at the top of the display. The remainder of the display will be filled with periods.
more keys Mark Events	This softkey allows you to mark only the events you wish to view. By pressing this key, the cursor is enabled which allows you to move through the file using the ▲ ▼ arrow keys and the Pg Dn Pg Up keys. Mark Events is discussed in detail in the next section of this chapter.
more keys Display Format	This softkey takes you to the next level of softkeys where you can change the way the data is displayed. The Display Format is discussed in detail in the next section of this chapter.
more keys Special Functions	This softkey takes you to the next level of softkeys where the special functions Filter, Search, Save Configuration, Event Timing, and Print Events are selected. The Special Functions are discussed in detail in the next section of this chapter.
Exit	Pressing this softkey twice takes you out of the Examine Data menu and back to DOS.

4 - 12 File Conversion and Protocol Decodes

Using the Mark Events Softkey to Display Data

The mark events function allows you to highlight selected events, and, to move quickly and easily between marked events. After pressing **Mark Events**, the Mark Events menu shown in figure 4-3 is displayed. While in this menu, use the spacebar to “mark” (highlight) the events. The event that is currently at the top of the display will be highlighted. Pressing the **◀ ▶** keys moves you quickly to the next and previous event. By pressing **Show Only Marked**, it displays only those marked events. **Unmark All** unmarks the marked events.

Save Markings saves the marked events by writing to the events file. The next time that events file is opened, the marked events are kept.

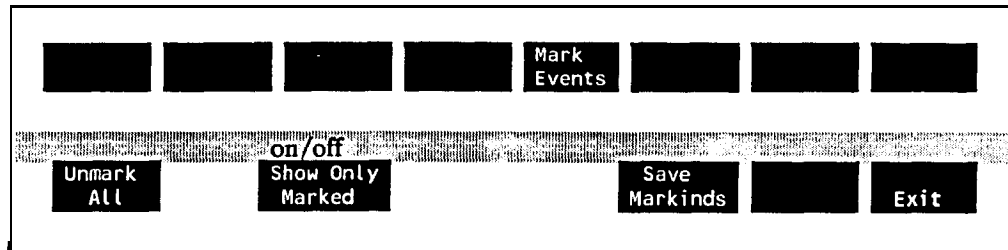


Figure 4-3 The Mark Events Softkey Tree

Note If the events file is loaded from floppy disc, the disc write protect must be Off to save the event markings.

Using the Display Format Function

Pressing **Display Format** maximizes the display efficiency by showing only the information of interest to you. If you change any of the display format selections, the softkeys and the data on the screen are immediately changed to reflect the new selections.

Note Changes you make in the display format do not affect the actual data in the events file; they only affect the way data is displayed.

Layer 1. Layer 1 in the Display Format contains the **Event/Timestamp** and **Lead Status** softkeys. The choices for these hvo **softkeys** are On or Off

Layer 2. Layer 2 in the Display Format is entered by pressing the **BOPS Layer 2** softkey. The choices for this layer are shown in Figure 4-4 These choices vary with the different decodes.

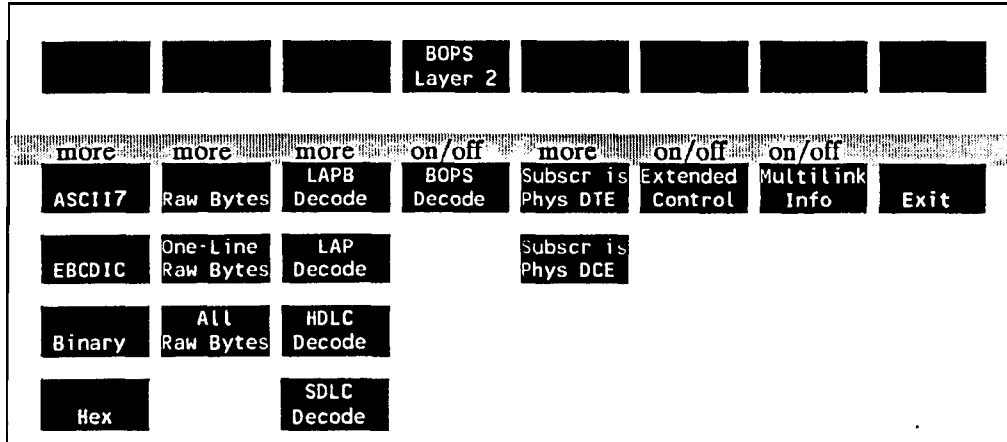


Figure 4-4. Display Format Layer 2 Selections

Layer 3. Layer 3 selections in the Display Format menu are entered after pressing **X.25 Layer 3**. The choices for this layer are shown in Figure 4-5.

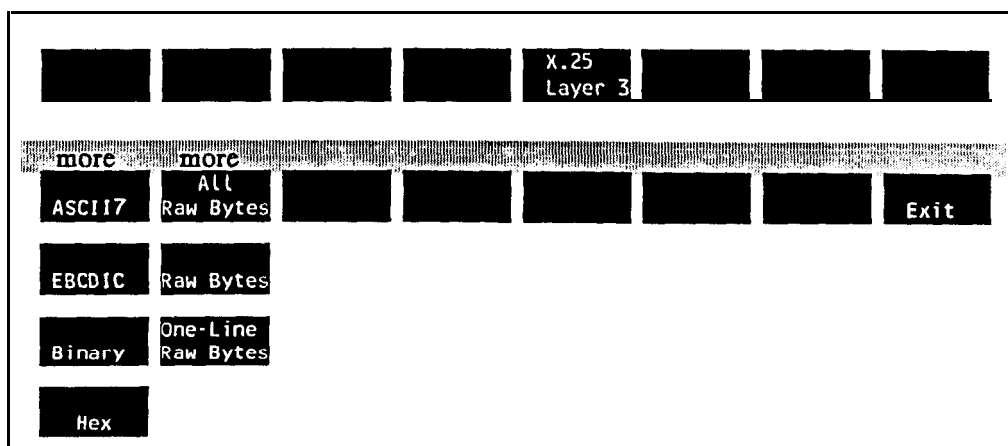


Figure 4-5. Display Format Layer 3 Selections

Printing From Events

To print events you must specify a filename. You may specify any text filename. The event(s) are written in straight ASCII to the specified **file**. If you specify an existing filename, it will append the event(s) to that file. The display is printed exactly as it appears.

Print will output to a configured and connected printer if PRN is entered as the filename.

The BOP Decode

The BOPs decode program provides detailed interpretation of all major protocol fields for HDLC, SDLC, LAP, and LAPB. The decode is started from the directory containing the PC Utility file as follows:

```
BOP BOPDATA.EVE
```

The BOP decode program's **Display Format** and **Special Function** softkeys are unique to this decode. The other BOP softkeys are similar to the X.25 decode, and are covered in the X.25 decode section of this chapter.

Figures 4-6 and 4-7 show the Display Format and Special Function softkey trees.

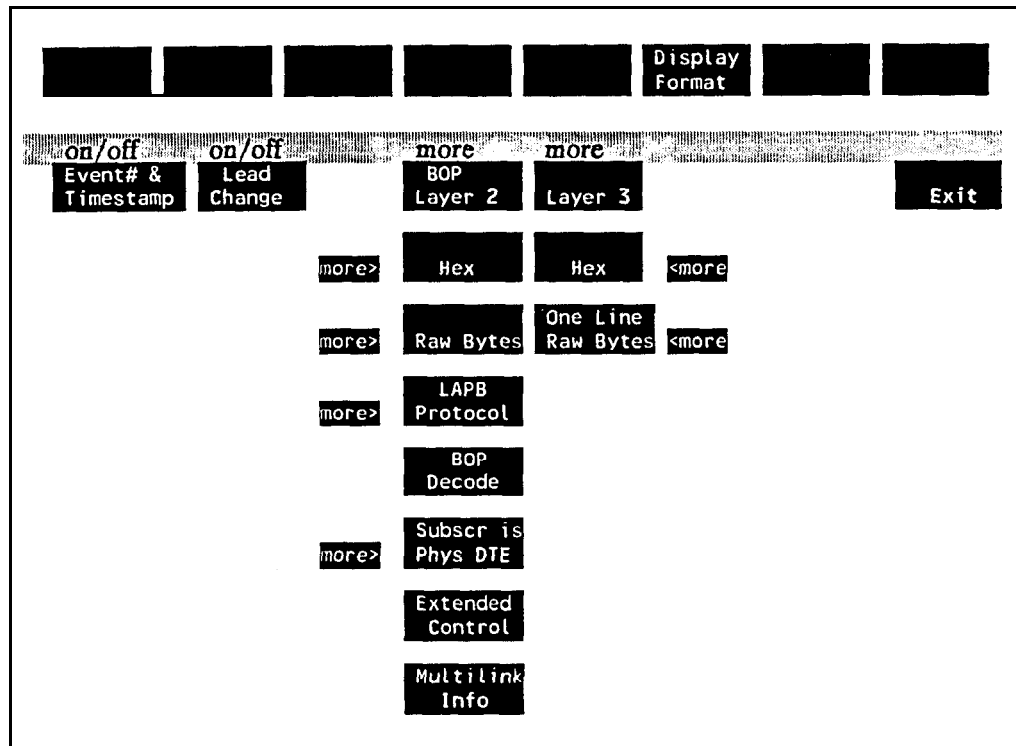


Figure 4-6. The BOP "Display Format" Softkey Tree

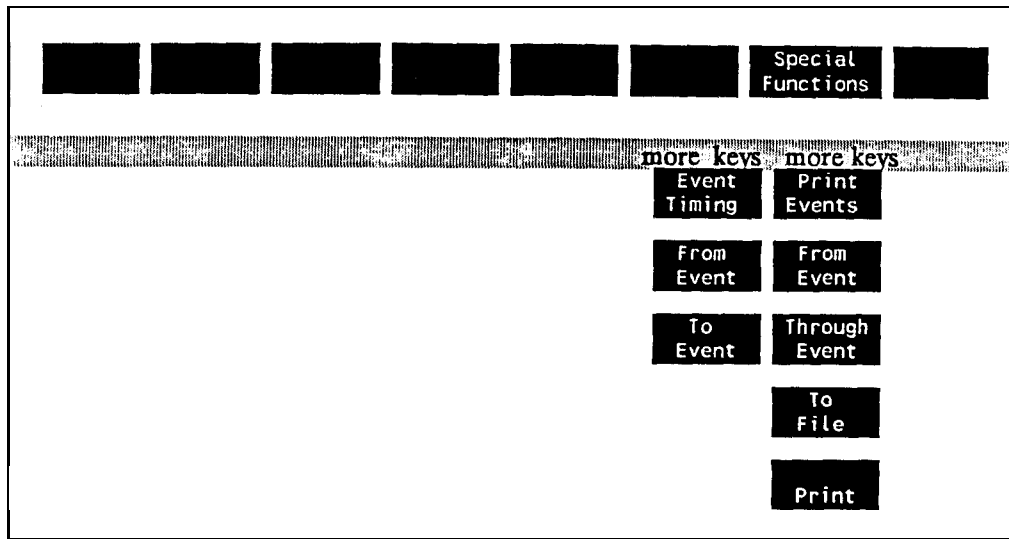


Figure 4-7. The BOP "Special Functions" Softkey Tree

The COP Decode

The COP decode program provides detailed interpretation of **all** character oriented protocol data such as **Async**, BSC, Poll-select, DDCMP, and **IPARS**. The decode is started from the directory containing the PC Utility We as follows:

```
COP COPDATA. EVE
```

Note COP events files created with the PC Utilities **DATA2EVE** program are not compatible with the HP **4954A** DataCommC **COPs** decode. COP events files created with HP **4954A** DataCommC are not compatible with the PC Utilities COP decode.

The COP decode program's **Display Format** and **Special Function** softkeys are unique to this decode. The other COP softkeys are similar to the X.25 decode, and are covered in the X.25 decode section of this chapter.

Figures 4-8 and 4-9 show the Display Format and Special Function softkey trees.

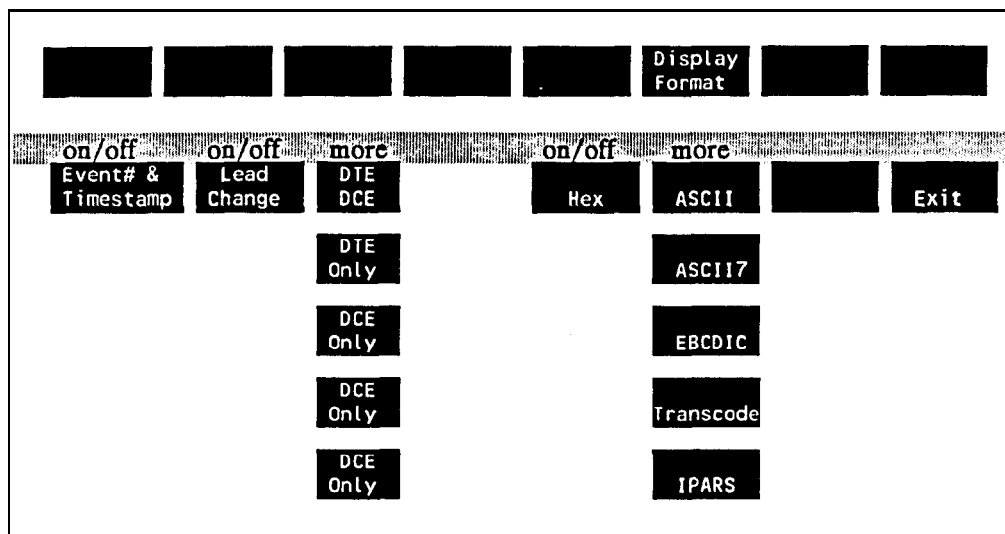


Figure 4-8. The COP 'Display Format' Softkey Tree

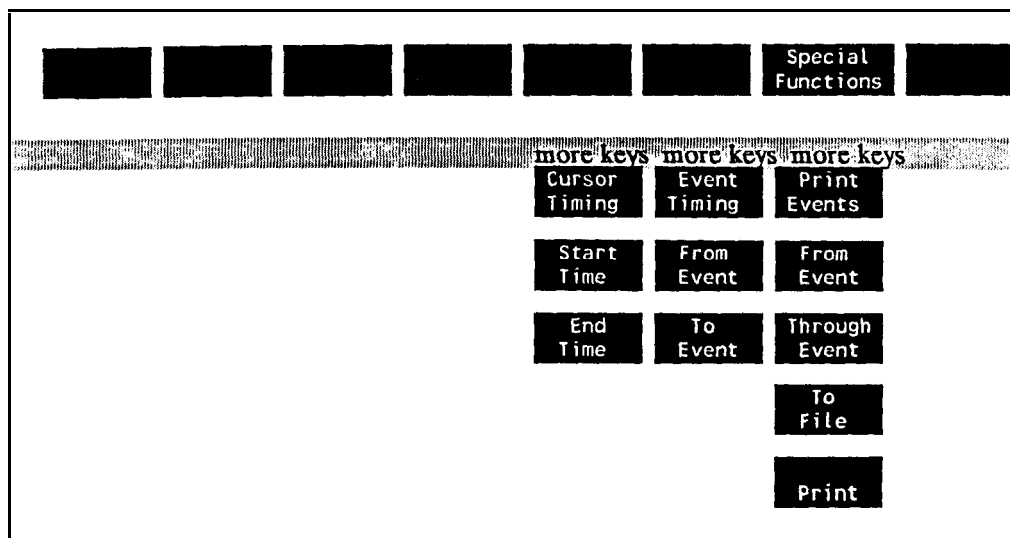








Figure 4-9. The COP “Special Functions” Softkey Tree

Cursor Timing

Cursor Timing measures the time between events and the time between COP characters in an event.

To use Cursor Timing from within the Special Functions menu, do the following:

1. Press **Cursor Timing**.
2. Position the Start time or End time event at the top of the display using the  or  arrow keys. See the Special Decode Keys section in this chapter for more information on how to move the cursor.
3. If the event contains characters, the **Enter Event** softkey appears. Press this key and use the  or  arrow keys to move within that event.
4. Press either **Start Time** or **End Time** to mark the **beginning** or end of the measurement. Press **Exit Event** to exit from Enter Event mode.
5. If the event does not contain characters, **Enter Event** does not appear. Press either **Start Time** or **End Time** to mark the beginning or end of the measurement.

6. Place the next event to be measured from (start or end time) at the top of the display using the  or  arrow keys.
7. Press either **Start Time** or **End Time** to mark the beginning or end of the measurement.

This completes the measurement. The Start, End, and Delta times appear at the bottom of the display. The Delta time is the difference between the Start and End times.

Event Timing

Event Timing measures the time interval between events. An event can be a group of up to **25** consecutive characters (character group), a lead change, a parity error, a framing error, a bad BCC, or a good BCC (not displayed).

If the event is a character group event, the time is measured from the **first** character in each event.

Choose the event interval with **From Event** and **Through** . The event numbers are entered from the keyboard.

The SNA Decode

The SNA decode program provides detailed interpretation of all major SNA protocol fields including Bind parameters. The decode is started from the directory containing the PC Utility file as follows:

```
SNA SNADATA.EVE
```

The SNA decode program's **Display Format** and **Special Function** softkeys are unique to this decode. The other SNA softkeys are similar to the X.25 decode, and are covered in the "Using the X.25 Decode" section of this chapter.

Figures 4-10 and 4-11 show the Display Format and Special Function softkey trees.

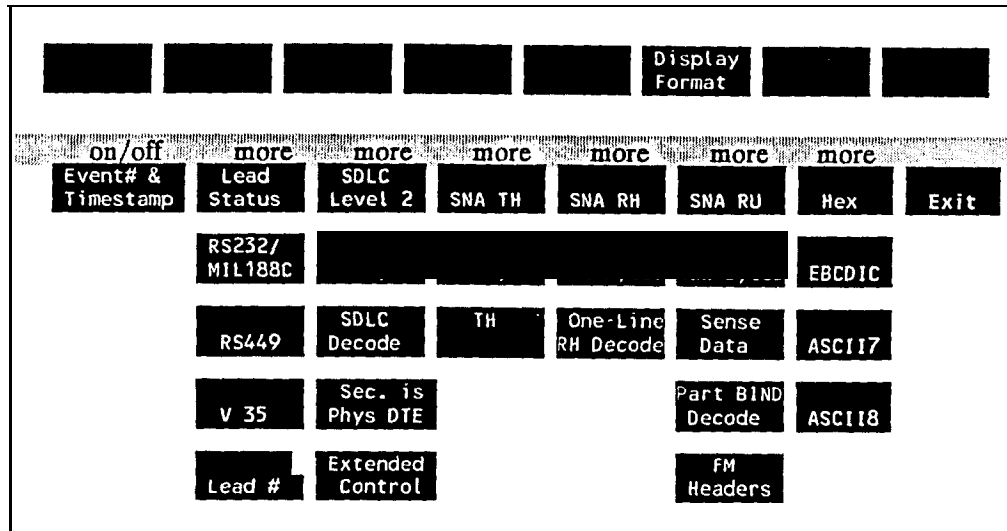


Figure 4-10. The SNA 'Display Format' Softkey Tree

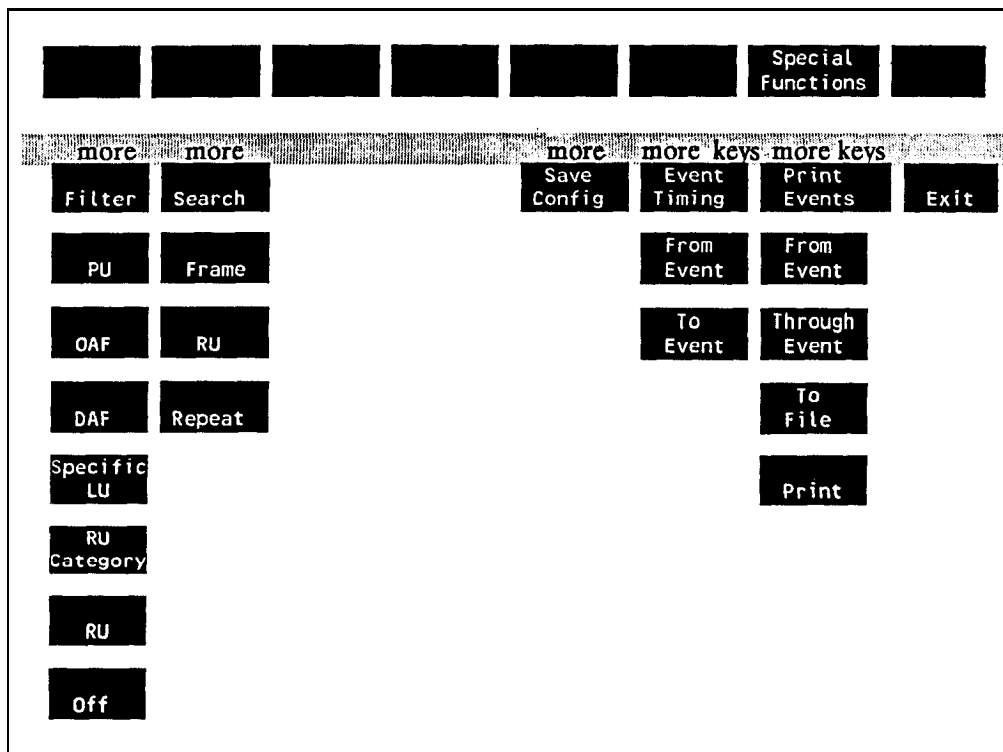


Figure 4-1 1. The SNA “Special Functions” Softkey Tree

Event Filtering

Event filters out all events except SNA parameters selected in this menu. Press **Event Filtering**, and select the SNA parameter. Enter the mnemonic (if required) associated with that SNA type. For example, if RU is selected, **ACKPU** could be entered. All events except RU =ACKPU will be filtered out.

Note The mnemonic is case sensitive. Use all upper case when entering.

Search

Searches for an event with the specified SNA frame or RU type. Once found, press **Repeat** to continue search to next one.

Note The frame type and mnemonics are case sensitive. Use all upper case when entering.

Save Config

Saves the Filter and Display Format menu setups to the file **SNASAVE.TXT** in the current directory.

PC Remote Operation

This application controls an **HP495x** protocol analyzer from a PC. No longer is a dedicated protocol analyzer required at the central test site.

Figure 5-1 illustrates an HP 4952A Protocol Analyzer connected at a remote site to a PC at a central site via asynchronous modems.

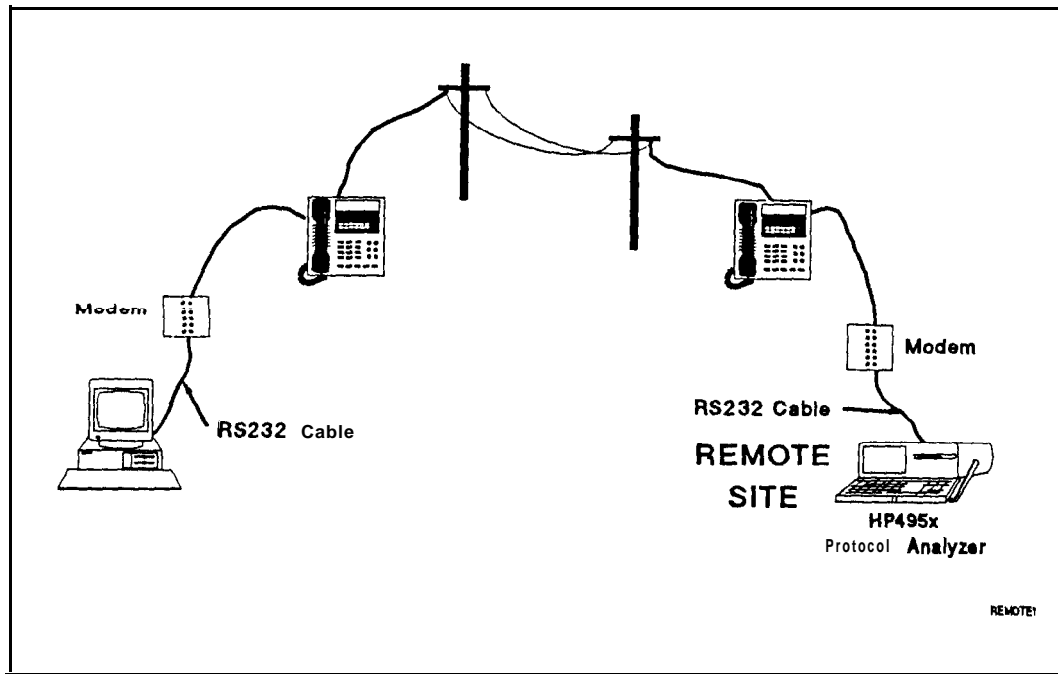


Figure 5-1. The Remote Connection (typical)

An Example of Using the HP 4952A at a Remote Site

Connect the HP 4952A Protocol Analyzer to a modem at the remote site with an RS-232 cable.

Connect the serial card (Comm1 or Comm2) of a PC to a modem with an RS-232 cable.

Both the PC controller and the protocol analyzer slave must be configured properly and consistently to allow communication. This is done in the HP 4952A Remote & Print menu and in the PC Utilities Remote menu.

For example, if the modem is a 1200 baud **async** modem and the PC expects a slave address of 1, you need to setup the PC Utilities Remote menu to match these parameters.





HP 4952A Configuration


1. From the HP 4952.4 top level menu press MORE, then **Remote&Print**.
2. Press **Slave**. This accesses the Slave Menu and sets the HP 4952A as the slave when you press EXIT.
3. Set the Slave Address to 1.
4. Select the **Bits/sec** field (baud rate) to 1200. This matches the baud rate of your modem.
5. Enter the Modem String. The modem in this example will auto answer on the first ring (AT SO= 1).
6. Press **EXIT twice** to return to the top level menu.

PC Configuration

1. The PC Utilities must be installed. See "How to Load Your **HP495x** PC Utility Application **Files**" in chapter 1 for this information.
2. From the directory that contains the PC utility **files**, execute the Remote menu by pressing **SXREMOTE** at the DOS prompt. The Remote application can be executed either from hard disc or from floppy disc.






5 • 2 PC Remote Operation

3. After executing Remote, a configuration menu appears. Select the appropriate PC Comm Port (PC Comm Port 1 or 2) that the remote RS-232 cable is attached. Press the   arrow keys to move from PC Comm Port field to the Baud Rate field.
4. Change the **Bits/sec** field from **2400** (default) to **1200** by entering the value. Press (Enter) to exit this menu and initiate the Remote menu.
5. Press  to pull up the Remote Address menu (also contains PC Comm Port and Baud Rate fields). Using the keyboard enter "1" as the Slave Address. Press  twice to exit this menu and return to the main Remote menu shown in figure 5-3.

Execute PC "Identity Slave's Identity" by highlighting it and pressing . This verifies the configuration and cable connections between the HP 4952A and your PC. The message "Remote Identity = HP4952" is displayed.

Uploading Data From a Remote Site

Assuming the PC and protocol analyzer have been correctly configured (see previous example), upload data from the protocol analyzer at the remote site to your PC by performing the Remote menu's Upload Captured Data function as follows:

1. Move the cursor using the   arrow keys over "Upload Captured Data" and press .
2. Enter the filename of the buffer data file you wish to upload (without an extension). This function will append the extension ".BUF". Press  to select this file.
3. Select the captured data Start and End Block numbers. Specify the Start and End Block within the actual range or use the default range. Use the keyboard to enter the values and the  key to execute the upload.

This completes an example of one way to use the HP 4952A at a remote site.

5XREMOTE Setup

As discussed in the previous example, you must **first** setup the **HP495x** protocol analyzer and PC properly before performing any remote operations.

The PC acts only as a controller, and the **HP495x** protocol analyzer acts only as a slave. Refer to the appropriate **HP495x** User's guide to setup the analyzer as the slave.

Note The HP 4951C Remote menu must be executing for remote commands to be recognized.

PC Comm Port and Baud Rate Setup Menu

From the directory that contains the PC utility files, execute the Remote menu by pressing **5XREMOTE** at the DOS prompt. After the PC Remote menu has been executed, a window appears as shown in figure 5-2 which allows you to set the PC Comm Port and Baud Rate. Notice that **F1** is a help key. The help key gives helpful information on the field the cursor is on.

The baud rate determines the rate of data transmission. The baud rate should be considered when transmitting over a communication link (long distance) since the charge is calculated against the amount of time to make the call. Table 5-2 illustrates the difference in transmission times for a 227 **Kbyte** application file (89 sectors) for various baud rates.

Table 51. Time of Remote Transmission Versus Baud Rate

9600 baud	32 seeds
4800 baud	1 minute, 4 seconds
2400 baud	2 minutes, 5 seconds
1200 baud	4 minutes, 8 seconds
600 baud	9 minutes, 10 seconds

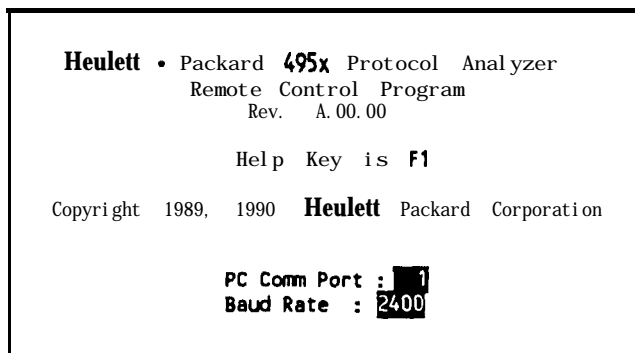





Figure 5-2. Selecting the PC Comm Port and Baud Rate

Use the   arrow key to move the cursor between the PC Comm Port and Baud Rate fields. Type in the values for the PC Comm Port and Baud Rate. Each field displays the possible choices at the bottom of the display.

When you have completed setting this menu, press  (or the Return key depending on your PC) to access the main Remote menu as shown in figure 5-3.

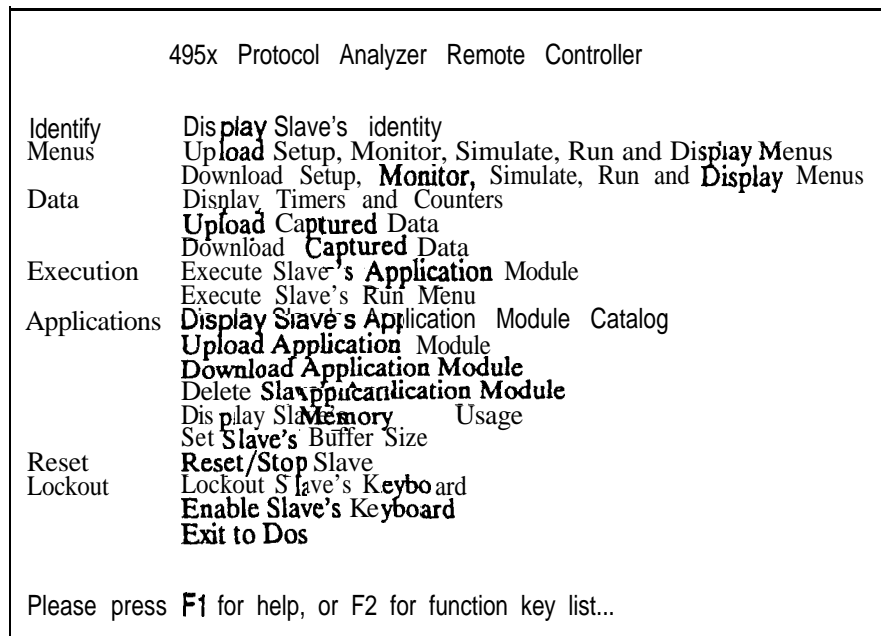


Figure 53. The Remote Menu

Remote Address and Baud Rate Setup Menu

From the Remote menu press **F8** to access the Remote Address and Baud Rate Setup menu as shown in figure 5-4.

Use the **▼** **▲** arrow keys to move the cursor between the Remote Address and Baud Rate fields.

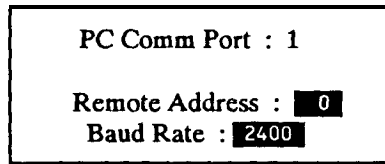


Figure 54. Selecting the Remote Address and Baud Rate

Make sure the remote address you set matches the address at the remote site. You are limited to 0-15. These are the only addresses Hewlett-Packard protocol analyzers can be set to. Select the Baud Rate with the keyboard.

5 - 6 PC Remote Operation

When you have completed setting this menu, press **Enter** (or the Return key depending on your PC) until the main Remote menu is displayed as shown in **figure 5-3**.

Note It is best to use Remote Address 0 when a point-to-point configuration is used.

Invoking a DOS Shell from within the Remote Menu.

Pressing **F9** while in the Remote menu invokes a DOS shell. This allows you to perform various tasks such as change directories, copy and rename files, etc. Type exit to return to the Remote menu.




Invoking the Terminal Emulator

Pressing **F7** while in the Remote menu invokes the terminal emulator which is useful for sending character strings to a modem tied to the Comm Port.

Exiting the Remote Menu

By either pressing **F10**, **ESC**, or selecting "Exit to DOS", the Remote menu is exited and returned to the originating DOS shell.

Operation of the Remote Menu Functions

Operation of any Remote menu function is merely a matter of selecting the function from the menu. Use the   arrow keys to move the highlight to the desired selection and press  (or the Return key depending on PC).

When the slave and PC have been configured, it is advisable to run the **Display Slave's Identify** function first to confirm the link.

Note The HP 4951C Remote Menu must be executing for remote commands to be recognized.

Compatibility with HP Protocol Analyzers

Slave analyzers can simultaneously operate in the remote and run-time mode (i.e., monitoring a data link) through the interface pod connector. These simultaneous operations can degrade or abort remote analyzer operations. Degradation can be reduced, but not eliminated, by using slower data rates.

Table 5-3 illustrates the capabilities associated with the HP 4951C, 4952A, and 4954A/I/AX protocol analyzers in the slave configuration.

Table 52. Available Functions for Hewlett-Packard Protocol Analyzers

Operation	HP 4951	HP 4952	HP 4954
Identify			
Display Slave's Identity	Yes	Yes	Yes
Menus			
Upload Setup, Monitor, Simulate, Run, Display	Yes	Yes	Yes
Download Setup, Monitor, Simulate, Run, Display	Yes	Yes	Yes
Data			
Display Timers and Counters	Yes	Yes	Yes
Upload Captured Data	Yes	Yes	Yes
Download Captured Data	Yes	Yes	Yes
Execution			
Execute Slave's Application Module	Yes	Yes	Yes
Execute Slave's Run Menu	Yes	Yes	Yes
Applications			
Display Slave's Application Module Catalog	No	No	Yes
Upload Application Module	Yes	Yes	Yes
Download Application Module	Yes	Yes	Yes
Delete Slave's Application Module	No	Yes	Yes
Display Slave's Memory Usage	Yes	Yes	Yes
Set Slave's Buffer Size	No	No	Yes
Reset			
Reset/Stop Slave	No	Yes	Yes
Lockout			
Lockout Slave's Keyboard	No	Yes	Yes
Enable Slave's Keyboard	Yes	Yes	Yes
Exit to DOS			

Remote Menu Function Descriptions

Note The HP 4951C Remote Menu must be executing for the following Remote functions to work.

HP 4954A - The protocol analyzer must be at the top level menu and Lockout Slave's Keyboard executed for the following Remote functions to work.

Display Slave's Identity. This function will identify the remote protocol analyzer by model number. It can be used as a simple function to verify the cable connection, baud rate, and remote address.

Display Slave's Application Module. This function will display the remote HP 4954A protocol analyzer's application module catalog. This will help you determine which applications are resident on the remote protocol analyzer.

Upload Setup, Monitor, Simulate, Run and Display Menus. This function will upload the remote protocol analyzer's setup, monitor, simulate, run and display menus to a specified DOS file (DOS extension .men). You will be prompted for a file name.

Limitations: Extended Menus can not be uploaded.

Download Setup, Monitor, Simulate, Run and Display Menus. This function will download a DOS file to the HP495x protocol analyzer. The menus downloaded are the setup, monitor, simulate, run and display menus. You can use this to configure the protocol analyzer.

Display Timers and Counters. This function will display the remote protocol analyzer's timer and counter values.

Upload Captured Data. This function will upload buffer data from the remote protocol analyzer into a specified DOS file (DOS extension .buf). You will be prompted for the Start Block and End Block numbers for the Remote data.

Download **Captured Data**. This function will download buffer data from a DOS **file** to the remote protocol analyzer's capture buffer. You can then view the data in the Examine Data menu of the protocol analyzer's capture buffer.

HP 4952A • The protocol analyzer must be at the top level menu for the capture buffer to be overwritten.

Execute **Slave's Application Module**. This function will execute a currently loaded application program on the remote protocol analyzer (HP 4954A only). You are prompted for a group string and file name. In most cases the group string can be left blank.

HP 4954A • You must specify the application file name. The group name can be left blank if a duplicate filename does not exist on the HP 4954A.

Execute **Slave's Run Menu**. This function will remotely execute the current run menus. These include the setup, monitor, simulate, run, and display menus. Use the Reset Slave command (not available on an HP 4951C) to halt execution.

HP 4951C, HP 4952A • If both a Monitor and Simulate menu exist, the Monitor menu will be executed.

Upload Application Module. This function will upload an application program from the remote protocol analyzer to the specified DOS file (DOS extension .app).

HP 4954A • You must specify the application **file** name. The group name *can* be left blank if a duplicate filename does not exist on the HP 4954A.

Download Application Module. This function will download an application program that was previously uploaded to DOS to the remote protocol analyzer.

Limitations: Application programs are not compatible between different types of protocol analyzers, e.g., HP **4951C, 4952A, 4954A**.

Delete Slave's Application Module. This function will delete an application program from the remote protocol analyzer's application memory.

HP 4954A • You must specify the application file name. The group name can be left blank if a duplicate filename does not exist on the HP 4954A.

Display **Slave's Memory Usage**. This function will obtain information about the remote protocol analyzer's memory statistics. This information will include the capture buffer size, the amount of data in the capture buffer, how much memory application programs are using, and the amount of available space left for more application programs.

Set Slave's Buffer Size. This function will change the allocation of memory set aside for application programs versus the data capture buffer (HP **4954A** only).

Reset **Slave**. This function will reset the remote protocol analyzer to the top level menu. This can be used to halt execution of a test.

Lockout Slave's Keyboard. This function will lock the remote protocol analyzer's keyboard.

HP **4952A** • Will lockout keyboard at any menu level.

HP 4954A • The remote protocol analyzer must be at the top level menu to execute this command. This can be achieved by executing the Reset Slave command. Most operations require the HP 4954A keyboard to be locked out.

Enable Slave's Keyboard. This function will unlock a locked keyboard.

Exit to Dos. This function will exit the Remote menu and return you to DOS. **ESC** and **F10** perform the same function.

Error Messages

Below is a complete list of Error Messages you will see.

Conventions used in this appendix are:

- When text is enclosed in single quotation marks ‘ ’, the message is not literal. The message that is displayed will be instructional. Follow the instructions.
- Filenames are enclosed in brackets, < >. This appendix refers to them, <filename.ext>.
- Extensions referred to as ‘.ext’ are variable, or wildcard. They can be any valid extension.

X25, SNA, BOP, and COP Decode Error Messages

<filename > : End of file reached before all events read

A disc controller or media error occurred while reading the events file. Possibly, an error occurred when the file was originally formed so that the number of events listed in the tile is greater than the number of events actually in the file.

<filename > : Internal file type (.EXT) does not match extension (.EVE)

The file has the correct extension (.EVE) but it is not an EVE file. The file was probably renamed in error and should be renamed so that its file extension matches its internal file type. This file cannot be decoded because it is not an events file.

<filename > in wrong format

The file is not in the correct format; either the file is too short to be an events file or an events tile that was created on an HP 4954, DataCommC revision A.00.00. These events files are in a different format, and cannot be read by HP495x PC decodes. To change the events file to correct format, use DataCommC revision A.01.00 or later, load the events file into the events buffer and store the contents back to disc.

<filename > is write-protected

Write permission is needed for 'Save Markings.' Decodes must open the **file** with write permission to use 'Save Markings (see Chapter 3). The specified file's DOS file attribute indicates that it is read-only. Decoding an events **file** never destroys or alters any of the events in that file; the only thing that may change is the list of events you have marked.

c filename > not found

The specified **file** does not exist.

<filename > not of type .EVE

Only events files (.EVE) may be decoded. **< filename.BUF>** and **< filename.M&D >** files cannot be decoded directly. An **.EVE** file must be created **first** from the **.BUF** or **.M&D** file using the **DATA2EVE** utility (see Chapter 4).

Not enough memory for <filename >

< num bytes > bytes were needed.

< num bytes > bytes were available.

Seven bytes of RAM are required for each event in the events **file**. You may be able to free sufficient memory by deleting programs in RAM. For example, if you left the **Sxremote** utility in memory by escaping from it to DOS using **F9** instead of killing it with **F10** or **Exit to DOS**. Return to it and kill it by typing 'exit' at the DOS prompt and then pressing **F10**.

DATA2EVE Error Messages

Couldn't open c filename >

The specified output **file** exists, but its DOS **file** attribute indicates it is write-protected. **DATA2EVE** cannot overwrite it.

Error seeking in <filename >

A media or disc controller error occurred while accessing the file.

Error writing to <filename>

A media or disc controller error occurred while writing the output file; the file was therefore deleted.

Error writing to <filename>; disk may be full

Not all events could be written to the output file; the output file was then deleted.

<filename > : Internal file type (.EXT) does not match file extension (.EXT)

The **file** has a valid extension (.BUF or .M&D), but is not a .BUF or .M&D file. The file was probably renamed in error and should be renamed so that its file extension matches its internal file type. This file can never be converted to events because it is not a .BUF or .M&D file.

c filename > not found

The specified input **file** does not exist.

<filename> not of type .M&D or .BUF

The input file must have the extension .BUF or M&D. The .XRD (extended run data) file type is not supported.

Illegal option: -< option >

The specified option is not defined. Options and their values are case sensitive; enter lowercase letters (non-Capitals).

Illegal option: -< option > value: <value >

The specified option may not take on the specified value. Options and their values are case sensitive; enter lowercase letters (non-Capitals).

Input and output files not specified

The names of the input file (.BUF or .M&D) and the output file (.EVE) must be specified on the DOS command line.

Output file not specified

Only one **filename** was specified on the DOS command line. You must also specify the name of the output **file** to be created (.EVE).

Superfluous file name: <filename >

Three or more filenames were specified on the DOS command line. Only two filenames are necessary or useful.

EDITEVE Error Messages

Couldn't open FILE.EVE

The specified output file exists, but its DOS file attribute indicates it is write-protected.

Error updating c filename >

A media or disc controller error occurred while writing the output file; the file was therefore deleted.

FILE.EVE in wrong format

The **file** is not in the correct format; either the **file** is too short to be an events **file** or an events file that was created on an HP 4954, DataCommC revision **A.00.00**. These events files are in a different format, and cannot be read by **HP495x** PC decodes. To change the events file to correct format, use DataCommC revision **A.01.00** or later, load the events file into the events buffer and store the contents back to disc.

c filename > not found

The specified input **file** does not exist.

c filename > not of type .EVE

Only events files (**.EVE**) may be edited.

Illegal option: -< option >

The specified option is not defined. Options and their values are case sensitive; enter lowercase letters (non-Capitals).

Illegal option: - < option > value: < value >

The specified option may not take on the specified value. Options and their values are case sensitive; enter lowercase letters (non-Capitals).

EDITMENU Error Messages

Couldn't open <filename >

The specified output file exists and its DOS file attribute indicates it is write-protected. EDITMENU cannot overwrite it.

Error seeking in <filename >

A media or disc controller error occurred while accessing the file.

<filename> :Internal file type (.EXT) does not match extension (.EXT)

The file has a valid extension (.MEN or .M&D), but is not a MEN or .M&D file. The file was probably renamed in error and should be renamed so that its file extension matches its internal file type. This file can never be displayed with EDITMENU because it is not a .MEN or .M&D file.

<filename > in wrong format

The specified file is too short to contain HP495x menus; it is not .M&D or .MEN regardless of its file extension. Cannot be displayed with EDITMENU.

c filename > not found

The specified file does not exist.

<filename > not of type .M&D or .MEN

The input file must have a .M&D or .BUF extension.

5XDIR - Directory Error Messages

Drive must be A: or B:

Directory command only applies to floppy drives A or B.

Error writing to floppy disk

An error has occurred while writing to the floppy disc. Reformat disc on the **HP495x** and retry.

Error reading from floppy disk

An error has occurred while reading the floppy disc. Probably a media error, or no floppy in disc drive.

Floppy not in HP 495x format

The floppy disc must be formatted on an **HP495x** analyzer.

5XLOAD Error Messages

The load function always refers to loading from a floppy in drives A or B and placing the tile in DOS resident disc **file** on the PC.

Couldn't open c filename.ext >

Cannot open specified file. Make sure your **disc** has adequate space to load and is working properly.

Destination drive cannot be A: or B:

Destination drive has been **specified** in error. Destination drive must be hard **disc** or PC RAM disc.

Error writing to floppy disk

An error has occurred while writing to the floppy disc. Reformat disc and retry.

Error reading from floppy disk

An error has occurred while reading the floppy disc. Probably a media error, or no floppy in disc drive.

Error writing to <filename.ext> ; disk may be full

Cannot write to specified drive. Make sure your disc has adequate space and is working properly.

<filename.ext > does not have HP495x file extension

The **HP495x** source file specified does not have an **HP495x** file extension from table 3-1.

c filename.ext > not found

Cannot **find** specified source **file** on floppy. Make sure the drive and filename are specified correctly. If necessary, do a **5xdir** command to **find** out what **files** are currently on the floppy disc.

Floppy not in HP495x format

The source floppy disc must be formatted on and **HP495x** analyzer.

Source drive must be A: or B:

Source drive has been specified in error. You must load from the floppy drives A or B.

5XSTORE Error Messages

The store function always refers to storing from a DOS **file** that is resident in the hard drive on the PC to floppy drives A or B.

.APP files cannot be stored

Application files can never be stored to floppy. This is a limitation of the PC Utilities.

Couldn't delete temporary file PCFILE.TMP

Couldn't open < filename.ext >

Cannot open specified source file.

Destination drive must be A: or B:

Destination drive has been specified in error.

Destination file name must begin with captial letter

Destination **filetypes** .BUF, .MEN, **.M&D**, **.EXM**, and .DTC must begin with a capital letter.

Error reading <filename.ext >

An error has occurred while reading from the source **file** on the hard disc (or **RAM** disc). File may be corrupt or possibly a media error.

Error writing to floppy disk

An error has occurred while writing to the floppy disc. Reformat disc and retry.

Error reading from floppy disk

An error has occurred while reading the floppy disc. Probably a media error.

c filename.ext > already exists

Trying to store a **file** to disc that already has a **file** by that name. You cannot overwrite files.

c filename.ext > does not have HP495x file extension

The **HP495x** destination **file** specified does not have an **HP495x** file extension from table 3-1.

< filename.ext > in wrong format

The source **file** specified has an improper length. File must be on a **256** byte boundary.

c filename.ext > not found

Cannot **find** specified source **file** at specified path on floppy. Make sure the drive, path, and **filename** are specified correctly.

Floppy not in HP495x format

The destination floppy disc must be formatted in **HP495x** protocol analyzer. Make sure a floppy is in specified drive.

Internal file type (.ext) does not match (.ext)**Protocol Analyzer directory full**

The directory on the protocol analyzer disc is full. Maximum directory size is 80 entries.

Protocol Analyzer disk full

The destination floppy disc does not have enough space to store the specified file.

Source drive cannot be A: or B:

Source drive has been specified in error. The source drive must be the hard drive on the PC or the RAM disc.

A-8 Error Messages

5XREMOTE Error Messages

Error messages that are due to a communications problem can be attributed to one of two failures:

- link timeout
- operation rejected

The **link** timeout means that the PC cannot detect an instrument on the serial port. The probable cause is no physical connection, possibly loose connector, or baud rate mismatch. In the case of the HP **4951C**, the instrument may not be executing its remote function. The operation rejected cause is because the instrument does not support the command.

In the following error messages you will see the message 'error message from **link** or an instrument reported error'. This is not a literal representation from the display. When this message appears you can relate the cause to the above explanation. The actual displayed message may be different with each remote instrument.

Buffer Data Upload/Download Error Messages

Download Data Block: 'error message from link or instrument'

Bad physical link or an instrument reported error.

Operation aborted, 'number' blocks downloaded

Download to the remote instrument was unsuccessful.

No buffer data resident

Upload from the remote instrument was unsuccessful.

Set Block Limits: 'error message from link or instrument'

Bad physical link or an instrument reported error.

Set Block Range: 'message from link or instrument'

Bad physical link or an instrument reported error.

Upload Data Block: 'error message from link or instrument'

Bad physical link or an instrument reported error.

Timers and Counters Display Messages

Upload Timers and Counters: 'error message from link or instrument'
Bad physical link or an instrument reported error.

Application Upload/Download Messages

Download Application: 'error message from link or instrument'
Bad physical link or an instrument reported error.

Download Application Header: 'error message from link or instrument'
Bad physical link or an instrument reported error.

Set Block Limits: 'error message from link or instrument'
Bad physical link or an instrument reported error.

Memory Statistics Display Messages

Set Application Header: 'error message from link or instrument'
Bad physical link or an instrument reported error.

Set Block Limits: 'error message from link or instrument'
Bad physical link or an instrument reported error.

Upload Application: 'error message from link or instrument'
Bad physical link or an instrument reported error.

Upload Application Header: 'error message from link or instrument'
Bad physical link or an instrument reported error.

Upload Memory Statistics: 'error message from link or instrument'
Bad physical link or an instrument reported error.

Menu Upload/Download Messages

Download Menus: 'error message from link or instrument'
Bad physical link or an instrument reported error.

Upload Menus: 'error message from link or instrument'
Bad physical link or an instrument reported error.

Application Catalog Display Messages

No application modules resident

The application is not resident in memory. Cannot execute the application.

Upload Application Catalog: 'error message from link or instrument'

Bad physical link or an instrument reported error.

Function Messages

Cannot Upload Memory Statistics: 'error message from link or instrument'

Bad physical link or an instrument reported error.

Delete Application Name: 'error message from link or instrument'

Bad physical link or an instrument reported error.

Execute Application: 'error message from link or instrument'

Bad physical link or an instrument reported error.

Enable Remote Keyboard: 'error message from link or instrument'

Bad physical link or an instrument reported error.

Execute Run Menu: 'error message from link or instrument'

Bad physical link or an instrument reported error.

Lock Remote Keyboard: 'error message from link or instrument'

Bad physical link or an instrument reported error.

Reset Remote: 'error message from link or instrument'

Bad physical link or an instrument reported error.

Set Application Name: 'error message from link or instrument'

Bad physical link or an instrument reported error.

Set Application Name: 'error message from link or instrument'

Bad physical link or an instrument reported error.

Set Slave's Buffer Size: 'error message from link or instrument'

Bad physical link or an instrument reported error.

Slave not at top level:

HP 4952 only, issue Reset Slave.

Upload Status: 'error message from link or instrument'

Bad physical link or an instrument reported error.

Common Error Messages

Couldn't open < filename.ext >

The instrument could not open the specified **file**. File may be corrupt.

Couldn't open temporary file

Application returns to top level menu. Disc may be full or media error.

Error reading < filename.ext >

Could not read the file, check for media error.

Error writing to c filename.ext > ; disk may be full

The destination **disc** is probably full. Change discs.

c filename.ext > in wrong format

The file is in the wrong format. Rename and correct the extension.

< filename.ext > is not in '.ext' format

Rename the file with the .ext extension.

< filename.ext > not found

The instrument could not **find** the specified or could not open. Check **filename** and path.

Operation aborted, not enough memory

The instrument does not have enough memory to execute operation.

Remote Identity: 'error message from link or instrument'

Bad physical link or an instrument reported error.

LCD Display Problems

If you encounter LCD display problems with your laptop PC while running an **HP495x** PC Utility decode programs X25, SNA, COP, BOP, or with the **5XREMOTE** program, execute **5XLCD.BAT** to try to correct the problem. This batch **file** works on most LCD displays. The following are symptoms you may experience which may indicate the need to execute **5XLCD.BAT**:

- In a decode program, “marked” events do not appear to be marked. If they are marked, they should appear in inverse video.
- In a decode program, fields turned On/Off do not appear in regular and inverse video respectively.
- In the Remote program, a **display** appears in inverse video or blank.

The following is the **5XLCD.BAT** batch which may correct these laptop display problems:

```
@echo off
rem 5xlcd.bat
copy hpcolor.lcd hpcolor.use > nut
echo event examination tailored for use with LCD displays.
echo LCD > 5xremote.use
echo 5xremote tailor& for use with LCD displays.
```

The batch file **5XLCD.BAT** contains the **file** **HPCOLOR.LCD**. This **file** controls the way the **HP495x** PC Utility decode menus are displayed. This file is explained in Appendix C.

An **HP495x** PC Utility decode uses its default color palette unless **HPCOLOR.LCD** is executed in the batch file **5XLCD.BAT**.

The PC Utilities file HPCOLOR.LCD

The file HPCOLOR.LCD is a color palette for HP495x PC Utility decodes. This file can be customized to display the decode menus in different shades and colors. This file functions on color, black&white, and LCD displays.

For the HPCOLOR.LCD to function with the HP495x PC Utility decodes, the following must be performed:

- The file HPCOLOR.LCD must be copied to the file HPCOLOR.USE.
- The file HPCOLOR.USE must be in the same directory the decode program is executed from.

The file HPCOLOR.USE is read every time an HP495x PC Utilities decode program is executed. The display's color format is obtained by reading the **first** 17 hex integers from the file HPCOLOR.USE. Anything in the file after those integers is ignored. The first 17 integers are as follows:

1 10 81 8 12 1 18 8 1 8 10 12 18 1 1 8 8

These 17 integers define the colors for the following decode items, in order:

- 1) **prompt** Line: normal video
- 2) **prompt** line: inverse
- 3) **prompt** Line: blinking
- 4) underlines that define top and bottom of decode uindow
- 5) softkeys bottoms
- 6) "off" softkey bottoms

- 7) **softkey tops**
- 8) **softkey numbers**
- 9) **events: full-bright**
- 10) **events: half-bright**
- 11) **events: inverse**
- 12) **marked events: full-bright**
- 13) **marked events: half-bright**
- 14) **marked events: inverse**
- 15) **title 1 (decode name/description)**
- 16) **title 2 ("HP495x <-> PC Protocol Decode Platform")**
- 17) **title 3 ("Copyright tieulett-Packard 1990")**

Each of the 17 integers represents a byte in the standard CGA/EGA/VGA text mode format for display attributes:

bit

0-3: foreground color (0-15)

4-6: background color (0-7)

7: blink bit

where bit 0 is the least significant bit.

C - 2 The PC Utilities file HPCOLOR.LCD



The available foreground and background colors are as follows; background colors are limited to **0 through 7**:

0 black	8 dark gray
1 blue	9 light blue
2 green	A light green
3 cyan	B light cyan
4 red	C light red
5 magenta	D light magenta
6 brown	E yellow
7 light gray	F white

Thus the default **softkey** bottom color, **3E**, means YELLOW letters on a CYAN background, with the letters NOT blinking.

The default color palette **is**:

7 70 87 7 3E 17 17 3 B 3 30 c 4 40 E 7 3

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