BobsTerm Pro

By Bob Lentini
For the COMMODORE 128

BOBSTERM   PRO - 1 2 8

A Terminal Communications Program

For The Commodore-128

by Bob Lentini

USER SUPPORT

Thank you for purchasing BOBSTERM PRO. This manual is a
detailed description of the features and capabilities of the
Program. However, if you have any questions left unanswered,
or if you discover any problems with any portion of the
Program, please contact me on my 24-hour BBS:

    COMPUTER ADDICTS ANONYMOUS (CAA) BBS

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The BBS has a wonderful group of users willing to share their
experiences and information about computers and many other
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Doing so will put you on the active mailing list and allow
you to receive possible future updates and information about
the Program.

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1. INTRODUCTION

Welcome to the world of telecommunications on your
Commodore 128. BOBSTERM PRO is a sophisticated terminal
communications program designed to make interacting with
other computer systems a simple and rewarding
experience. This Program allows the user to control
virtually every communications parameter that is likely
to be encountered, and even offers adjustments and
escape routes to handle some of the RS232 limitations of
the C128.

Full use of the 80 column video capabilities of the C128
are employed throughout the Program, and the use of
window overlays makes for easy access to all of the many
available menu screens.

The manual begins with information necessary to get you
online quickly, and then goes on to explain, in depth,
each command and feature. The appendices at the end of
the manual discuss in detail telecommunication problems
unique to the C128, and offer solutions around them.

Following is a brief overview of the features of
BOBSTERM PRO. Do not be alarmed if some of the
terminology is unfamiliar to you; everything will be
explained in explicit detail in the following sections
as we take a tour through the fascinating world of
telecommunications.

1.1 MODEM COMPATIBILITY

BOBSTERM PRO is designed to be compatible with the
following modems:

* Commodore 1650 Automodem
* Commodore 1660 Modem/300
* Commodore 1670 Modem/1200
* Westridge Modem
* Master Modem
* Mitey-Mo Modem
* Hes I and II Modems
* Total Telecom Modem
* Hayes Smartmodem and Compatibles

Also, you can use many other modems that are
Commodore-compatible (VicModem, VolksModem, etc.) by
adjusting the various parameters in the Modem section of
the Program. In addition, special attention has been
given in development of the Program for creation of a

true carrier detect on modems like the Westridge and
Modem/300 to allow complete program automation during
redialing sequences and answer sequences for these
modems.

1.2   UPLOADING & DOWNLOADING

An extensive amount of control over data-transfer
compatibility is provided by BOBSTERM PRO. The transfer
protocols available are:

* STRAIGHT ASCII (Sequential)
* STRAIGHT BINARY (Program)
* SEQUENTIAL LINE Xfer with Prompt Wait
* XON/XOFF; DC1/DC2 Capture
* PUNTER Protocol
* XMODEM Protocol
* ENTIRE DISK Xfer (Commodore to Commodore)

All of these data transfers can be implemented directly
to or from the memory buffer, or directly to or from
disk.

In addition, the XMODEM Protocol may be used to transfer
data directly to and from CP/M double-sided formatted
disks, offering an easy method of collecting CP/M
programs from Bulletin Boards all across the country.

During all non-Error-Correcting transfers, the user has
complete control over character delay, line delay, and
nulls. The character delay also has a Wait-for-Echo
mode, and a Correcting-Wait-for-Echo mode.

The XMODEM protocol offers a choice of either binary
(program) or ASCII (sequential) transfer with choice of
automatic ASCII/PETSCII (Commodore ASCII) conversion
during transfers of sequential text files. Two choices
of Cyclic Redundancy Checksums (CRC) are also available.

1.3   BUFFER FACILITIES

BOBSTERM PRO provides a 60,000-byte memory buffer with
which the user can capture and manipulate data. The
buffer can be filled directly from the keyboard or from
disk. Buffered information can be edited in full-screen
fashion, with many special features such as line insert,
range delete, add linefeeds, remove linefeeds, change to
all upper-case, change to all lower-case, strip any
character, enter in HEX or DECIMAL, and more. The buffer

may be dumped to screen, printer, or disk. The user may
set Start and End markers to allow partial dumping. The
screen dump is implemented in pages, with both forward
and backward page-flipping; and the user may specify up
to nine View Markers for instant access to special
pages.

If a file larger than 60,000 bytes (234 blocks) must be
edited, a special Fill feature allows you to fill the
buffer from disk starting at a specified byte number.
When each succeeding part of the file has been edited it
can easily be appended to the previous parts on disk
during the dump, thus reassembling the larger file. This
feature makes it possible to handle files which are up
to 468 blocks in length!

1.4 MACRO CAPABILITY

By using programmable macro strings, the user may
automate log-on procedures and password entries, as well
as every other keyboard-controlled feature of which the
Program is capable. This allows complete automation of
the Program facilities; and the Program can even be set
up to begin an operation at a specified alarm time. The
programming commands used in the macro strings are
easy-to-understand keystroke symbols (usually the first
letter of the command title).

The macro strings and auto-logon listings are all saved
on disk as seperate program files; thus a library of
unlimited length is at your disposal. In addition, all
of the program parameters are saved with each macro and
phone file, so that when a number is dialed or a macro
string is executed, the entire program is configured to
the exact mode it was in when the file was created.

1.5 CONVERSION FACILITIES

BOBSTERM PRO has built in routines for instant
conversion of sequential text listings to executable
Basic programs, Basic programs to sequential text
listings, programs to ASCII-IMAGE files, ASCII-IMAGE
files to programs, and for stripping source-code
comments from files.

Also, any disk transaction with the buffer may be done
directly in CP/M double-sided format.

The user is given complete control over the ASCII-IMAGE

file parameters, which allows the conversion of an
infinite variety of ASCII-IMAGE filetypes. Included are
presets for Compuserve IMG files, Compuserve BIN files,
Commodore OBJ files, and a user-programmable mode. The
program will even create and convert CP/M HEX file
formats with ease.

1.6   REMOTE MODE

BOBSTERM PRO also offers a Remote Mode, which acts like
a mini-BBS in itself. It will answer the phone, keep
track of the number of calls, and offer a command menu
to the caller. The remote caller will have complete
control of the DOS (Disk Operating System) and all of
the protocol transfer modes. Thus files can be remotely
transferred between computers without operator
intervention. Also a welcome message feature can be
activated; and a user-created password can keep unwanted
callers from gaining access to the system.

1.7   OTHER FEATURES

Other features include:

*   Full-view Status Line
*   On-screen buffer status and byte count
*   Screen formatting (word wrap)
*   Seperate linefeed-in and -out control
*   Instant local echo control
*   Software caps lock
*   Can display all transfers
*   Can display all CTRL characters
*   Hook toggle
*   Real time clock
*   Stopwatch timer
*   Ten custom character sets
*   Split-screen line entry mode for CB and CO
      communications
*   Compatible with MSD Dual Drives
*   Compatible with 1-Meg Commodore drives
*   Allows drive selection from within filename
*   Programmable function-key strings
*   Programmable answer-back string
*   Directory listing shows 34 files on screen at
      once
*   User-adjustable baud-rate timers
*   Operates most 300-baud modems as fast as 500 baud
*   Automatic redialing
*   Cyclic Dialing of up to 10 Phone Listings

* Complete line editing on all input prompts
* Memory recall of all filenames and input prompts
* Complete color control
* Complete printer OPEN parameters control
* Programmable control string for printer setup

1.8   TERMINAL EMULATION

BOBSTERM PRO offers a Terminal Emulator feature which
allows the user to program the C128 to function like
many different telecommunications terminals. There are
built-in presets for ADM-31, VT-52, and VT-100
terminals. All of these presets may be modified and
saved in macros, or brand new terminals may be created
from scratch. The Emulator supports 37 of the most
common functions found on various terminals.

1.9   MANUAL ABBREVIATIONS

Throughout this manual, the following symbols are used
for the special function-performing keys as shown:

<RET>	Carriage Return key
<COMKEY>	Commodore Logo key
<SHIFT>	Shift key
<CTRL>	Control key
<RUN/STOP>	Run-Stop key
<INS/DEL>	Insert-Delete key
<CLR/HOME>	Clear-Home key
<RESTORE>	Restore key
<DOWN>	Cursor Down key
<UP>	Cursor Up key
<LEFT>	Cursor Left key
<RIGHT>	Cursor Right key
<ESC>	Escape Key

When one of these symbols appears in text, it refers to
a single keypress, and must not be typed as if seperate
letters in a string of characters.

Also, whenever seen in text, the character ^ is the
symbol for Control and specifies the character
immediately following as a Control Character. For
example, ^Z means Control Z (press and hold the <CTRL>
key, then press the character key).

1.10 ACKNOWLEDGMENTS

I would like to especially thank Thomas Stewart for his
support and contributions during the completion of this
project.

Also, thanks to all the beta testers whose feedback
added considerably to the finished product; and a
special thanks to Don Frank for his help in the
construction of this manual.

1.11 COPYRIGHT

1.12 DISCLAIMER

1.13 ENOUGH SAID

Enough said. It's time to get online. You can begin by
reading the next section, GETTING STARTED, and be online
in a few minutes.

BOBSTERM PRO is completely menu-driven, and will prompt
you with most of the commands you will need to know to

get it up and running. But in order to enjoy the full
benefit of its considerable power, you should thoroughly
read the entire manual including the appendices; for
there is much information and many hidden commands
buried within its pages.

This manual is intended to be a teaching guide to the
fascinating world of telecommunications and many of its
mysteries.

HAVE FUN!

2.   GETTING STARTED

OK. So you're anxious to get started. But first we must
take care of a few preliminary details before we can
begin making phone calls. This section of the manual
will take you through the least amount of steps
necessary to get you online quickly; but after your
initial journey you should buckle down and study the
rest of the manual - there is much to learn!

It is advisable at this point to make a backup copy of
the Master Disk using one of the many Backup Utility
Programs available for the Commodore. You should format
a disk in the C128 mode, so both sides are formatted,
and then you may go into 64 mode and use any Copy
Program to copy the first side. That will be sufficient
to create a working copy of the Program.

2.1   LOADING THE PROGRAM

Make sure that your modem is plugged in according to the
manufacturer's instructions.

Also make sure that the Dongle-Key is inserted in
JOYSTICK PORT 2.

Turn the POWER switch OFF and then back ON to initiate
an AUTOBOOT sequence.

Or, you may simply press the RESET switch on the side of
the computer.

The Program will autoboot. This means that it will load
and begin running itself automatically.

The title screen will appear, and after a few seconds
the screen will blank while the data files and
parameters files are loaded. A few seconds later the
MAIN MENU screen will appear.

NOTE: BOBSTERM PRO-128 uses the 80 column video chip
      exclusively for screen output. You MUST be using
      an RGB monitor or a specially created MONOCHROME
      (no color) cable plugged into the RGB output
      driving a composite monitor. This cable may be
      made by connecting pin 7 of the RGB output port to
      the tip of an RCA connector and pin 1 to ground on
      the same plug.

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2.2   SETTING THE MODEM PARAMETERS

The first thing we must do now is to tell the
Program what type of modem is being used. If you
are using a Commodore 1650 Automodem or a
1650-compatible, then you may proceed to Paragraph
2.3, DIALING A NUMBER, since the Program defaults
to the 1650 Automodem setting when run for the
first time. If you are using another type of
modem, you must change the modem setting in the
PARAMETERS section of the Program. To do this...

     Type: P

The screen will immediately change to the
PARAMETERS MENU. Select the MODEM option. To do
this...

     Type: M

Once again the screen will change and you will see
the MODEM MENU. The cursor will be flashing next
to the TYPE selection. You may cycle forward
through the selections by pressing <RET>, or you
may cycle backward through the selections by
holding down the <SHIFT> key and pressing <RET>.
Stop on the Modem-Type description that most
closely matches your modem. (Detailed explanations
of the other parameters are given in Section 21.)
At this time the other settings should be left
alone, except in the following case:

If your Modem-Type is a Commodore 1660 Modem/300,
purchased before Jan 1986 or thereabouts, you will
probably need to adjust the CARRIER DETECT
selection. (See Appendix B for more details on
determining if your modem falls into this
category). To do this...

     Type: <DOWN>

(<DOWN> is used throughout the manual as the
symbol for the CURSOR DOWN key.)

Continue pressing or holding the <DOWN> key until
you are at the CARRIER DET selection. Now, since
the carrier-detect pin on the User Port was not
connected on the older 1660s when they came from
Commodore, you must tell the program not to look
for the carrier signal to perform certain
operations. To do this...

Type: <RET>

The selection should toggle to OFF. This will
limit certain automatic functions of the program,
but in the appendices you will find details on how
to make a simple modification to the 1660 modem so
that this feature may be activated.

NOTE: If you are using a Hayes Smartmodem or
compatible (Commodore 1670 included), refer to
Appendix A for details on setting it up. Also, if
you are using a 1200 baud or higher speed modem,
refer to Section 18.4 and 18.6 for proper
adjustment of the baud rate.

OK. You are now ready to save these new parameters so
that the next time you boot up the program it will
automatically default to your proper modem settings. To
do this...

Type: <RUN/STOP>

(<RUN/STOP> is used throughout the manual as the symbol
for the RUN/STOP key.)

You should now be back at the PARAMETERS MENU. To save
the new parameters...

Type: S

The Program will prompt you to place the Master Program
Disk in the drive from which the Program was booted. If
you have removed the disk for any reason, you must now
put it back in the drive before proceeding further. When
the disk is in place...

Type: <RET>

The new parameters will be saved. To get back to the
MAIN MENU...

Type: <RUN/STOP>

2.3   DIALING A NUMBER

If you are using a manual-type modem, proceed directly
to TERMINAL MODE from the MAIN MENU. To do this...

Type: T

You are now in TERMINAL MODE. Follow your modem
instructions for properly connecting with another
system. Use your phone to dial the number, and after a
connection has been established, and you hear the beep
tone of the computer you are calling, connect the phone
wire or set the modem switch to be OFF HOOK. Now proceed
directly to Paragraph 2.4.

If you are using an auto-answer/dial-type modem, proceed
from the MAIN MENU to AUTO MODE. To do this...

    Type: A

Now you are at the AUTO MENU. Set any switches which are
necessary to prepare your modem for data transmission
and reception. For example, the Talk-Data switch on the
1650 should now be set to D. Also, the Answer-Originate
switch should be set to O.

Next, select DIAL. To do this...

    Type: D

You will see the flashing cursor prompting you for the
phone number you wish to dial. Enter the number. You
may, if you wish, use hyphens or other punctuation as
seperators. Notice, however, the two special punctuation
characters at the top of the screen: the comma (,), and
the plus sign (+). These characters have special meaning
to the number-processing routine. Each comma entered
inserts a 2-second pause between numbers, and each plus
sign will add 5 seconds to the normally-allotted
15/30-second time during which the Program waits for a
carrier signal before hanging up and redialing. When you
have entered the number, press <RET>. The number will
dial and the Program will wait for a carrier signal from
the other computer.

Upon receiving a connection and a carrier signal,
BOBSTERM PRO will automatically enter TERMINAL MODE
(unless you are using an unmodified 1660 Modem/300). If
after the 15-second (or more) interval no carrier has
been detected, then BOBSTERM PRO will hang up the phone
and automatically redial the number. This will continue
indefinitely or until you ABORT by pressing the
<RUN/STOP> key.

While the Program is waiting to connect, if you are
using an unmodified 1660 Modem/300 and you hear the
carrier tone through the speaker (signifying that a

connection was established), press the <COMKEY> (The
Commodore logo key in the lower left corner of the
keyboard) and you will immediately be placed in TERMINAL
MODE. If you hear a busy signal or do not press the
<COMKEY> within the allotted waiting period, BOBSTERM
PRO will hang up the phone and automatically redial the
number.

2.4   INSIDE TERMINAL MODE

Here, in Terminal Mode, everything you type is sent out
via the RS232 User Port to the modem and out over the
phone lines to the other computer. Likewise, all data
from the other computer is received by your modem and is
delivered to your computer through the RS232 User Port,
and is displayed on the Terminal Mode screen.

A few quick definitions and explanations are called for
here. First, when you call another computer system that
is set up to act as a bulletin board or data base, the
other computer system is referred to as the HOST System.
It controls the flow of conversation and presents
command menus for you to act upon. It is acting as the
HOST. The HOST is echoing back all of the keystrokes you
are typing so that you may see them on your screen. This
mode of operation is called FULL-DUPLEX. It is happening
so fast that you might not be aware of the fact that
what you are seeing is actually the character you sent
out to the HOST and which the HOST has sent back to your
screen.

Another mode of operation, which is slightly different,
is called HALF-DUPLEX. In HALF-DUPLEX mode of operation
neither computer is echoing back characters to the
other; and in order that each person may see what he is
typing on his screen, the terminal program itself must
provide the echo to the local screen.

If you look up at the top of the terminal screen you
will see a lineup of words and abbreviations above the
solid-line. About 1/3 of the way reading left to right,
you will see the word ECHO. This word represents the
ECHO status condition. When it is OFF (normal video), it
means that you are in FULL-DUPLEX mode expecting an echo
back from a HOST computer. When it is ON (inverse
video), it means that you are in Local Echo mode and
everything you type will be echoed to your screen by
BOBSTERM PRO. You can toggle this echo status ON and OFF
at anytime you wish. To do this...

Type: <COMKEY> E

(Throughout this manual whenever you see the <COMKEY>
being used to preface another keystroke, you must press
and hold down the <COMKEY> while you press the
subsequent key command.)

You will see the word ECHO on the Status Line change to
inverse video, signifying that the Local Echo mode is
now active. If you are connected to a HOST computer, and
you type something, you will now see all your keystrokes
duplicated on the screen. One character is the local
echo to the screen and its twin is the echo back from
the HOST. You may toggle the Echo mode OFF again by
repeating the <COMKEY> E keystroke sequence.

You will notice many other words on the Status Line.
Some are already ON (inverse), and others are OFF
(normal video). In Terminal Mode, normally everything
you type is sent out to the modem. You will notice
however, that the <COMKEY> E keystroke sequence was not
sent to the HOST but was intercepted as a local command.

WHILE IN TERMINAL MODE, ANY KEYSTROKE THAT IS MEANT TO
BE PROCESSED AS A LOCAL COMMAND MUST BE ENTERED IN
COMBINATION WITH THE <COMKEY>.

Any <COMKEY> sequence, however, which is not a
legitimate command sequence recognized by BOBSTERM PRO,
will be sent out as data to the modem.

The second word on the Status Line (BUFFER), stands for
the BUFFER status. You can toggle the buffer ON and OFF
just like the echo mode. To do this...

Type: <COMKEY> B

The word BUFFER will invert, showing that the buffer is
now ON and ready to accept data. If you are receiving
data from the HOST, you will see the Buffer Counter
decrementing as the data fills your screen.

THIS BUFFER COUNT IS THE NUMBER OF MEMORY LOCATIONS
(BYTES) REMAINING IN THE BUFFER.

You will also notice the word HOOK on the Status Line.
If it is in inverse video, it means that the modem is in
the OFF-HOOK (phone picked up) condition. If it is in
normal video, it means that the modem is in the ON-HOOK
(phone hung up) condition. When you are ready to hang up
and end your call, you can toggle the HOOK condition by

another command sequence. To do this...

    Type: <COMKEY> H

Notice that the word HOOK will change video states and
the modem will hang up, breaking the connection. If you
are using an active carrier-detect parameter, then when
the HOST hangs up, BOBSTERM PRO will detect the carrier
disappearance and will automatically hang up the modem.
(NOTE: This feature has no effect if you are using a
manual modem.)

Now that you are disconnected, go back to the MAIN MENU.
To do this...

    Type: <RUN/STOP>

THE <RUN/STOP> KEY WILL ALWAYS CYCLE YOU BACK THROUGH
THE MENU LEVELS NO MATTER HOW DEEP INSIDE A COMMAND
SEQUENCE YOU ARE. YOUR ESCAPE ROUTE IS ALWAYS THROUGH
THE <RUN/STOP> KEY

While we were online, we captured some data in the
buffer. Let's go look at that data quickly. To do this
from the MAIN MENU...

    Type: D

This will take us to the DUMP BUFFER MODE. This part of
the Program gives us control of dumping or saving the
buffer data (see Section 8). For now, let's just look at
the data on the screen. Use the VIEW MODE (See Paragraph
8.5). To view the buffer...

    Type: V

The menu will disappear and the screen will fill with
the data that we captured earlier in the buffer. (The
buffer retained the data that scrolled off the screen
while the Program was in Terminal Mode.)

If you have enough data to fill more than one screen,
the screen will display one page and wait for a command.
You can flip forward to the next page by pressing the
<DOWN> cursor key; and you can flip backward (not beyond
page one) by holding the <SHIFT> key down and pressing
the <UP> cursor key. If you flip to the end of the
buffer data, you will be notified by an END-OF-TEXT
message. You can exit the VIEW MODE at any time by
pressing <RUN/STOP>.

-2- GETTING STARTED

Now that you've had a quick demonstration of some of the
more common features of BOBSTERM PRO, I'm sure you are
anxious to delve into the depths of the Program and find
out how to really gain control of its many features and
conveniences.

IT'S TIME TO GET SERIOUS!

3. GETTING SERIOUS

So, you've made it this far and now you're ready to find
out what BOBSTERM PRO can really do! This section will
deal with features which are common to many areas of the
Program; and the following sections will explain each
menu screen and its associated commands. Let's begin the
tour!

3.1 INPUTS AND PROMPTS

Throughout BOBSTERM PRO, whenever the Program is
prompting you to enter input information of some kind,
you will see a flashing cursor. If the input expected is
a single keystroke (like Y or N) in response to a simple
question, you merely need to type the appropriate
keystroke response and the program will take immediate
action. No <RET> keypress is needed. If however, the
expected input could contain more than a single
character (such as a filename), then the Program will
invoke the Input Command Processor. This routine offers
you many convenient features:

(A) If you just type <RET>, then the last input
    information you entered at this same prompt will
    reappear. For example, if the last time you were
    prompted for a filename you entered "TEST", and if
    you just typed <RET> when prompted for a filename
    again, you would see "TEST" appear as if you just
    typed it in again. This feature holds true for
    each type of prompt: phone names, phone numbers,
    macro names, macro strings, etc. Each prompt type
    has its own memory buffer and remembers the last
    entry until you enter a new one in its place.

(B) If you type <SHIFT> <CLR/HOME>, then the letters
    you have entered up to this point will disappear
    and you may start again with a blank input. Typing
    <RET> now when the line is blank will bring back
    the original input you entered last time at this
    prompt.

(C) If you use the <INS/DEL> (delete) key, the letters
    to the left of the cursor will be deleted. All
    letters to the right of the cursor position will
    be pulled left to close up the space.

(D) If you use the <SHIFT> <INS/DEL> (insert) key, a
    space will be inserted at the cursor position. All
    characters to the right of the cursor will shift

to the right to make room for the new space.

(E) If you use the <DOWN> (cursor down) key, the
cursor will jump to the end of the line.

(F) If you use the <SHIFT> <UP> (cursor up) key, the
cursor will jump to the beginning of the line.

(G) You may enter HEX values directly if you first
type <COMKEY> $. You will see an inverse $ appear.
Now you must enter a two character HEX value
(numbers 0-9 or letters A-F). As you enter each
character you will see an inverse video image of
that entry on the screen at the same cursor
location. When you finish entering the second
character, you will see the video representation
for that HEX value, and the cursor will advance to
the next location. (NOTE: you can not delete in
the middle of a HEX entry)

(H) You may enter DECIMAL values directly if you first
type <COMKEY> #. You will see an inverse # appear.
Now you must enter a DECIMAL value up to three
digits in length (0-255). As you enter each digit
you will see an inverse video image of that entry
on the screen at the same cursor location. When
you enter the last digit, you will see the video
representation for that DECIMAL value and the
cursor will advance to the next location.

NOTE: You can not delete in the middle of a
DECIMAL entry; and if you use less than 3
digits, you must type <RET> to signal the
end of input. Also, if you enter a value
greater than 255, the original character
will remain unchanged.

3.2   FILENAMES

Filenames in the normal Commodore directory are stored
as PETSCII lower-case letters, which in Commodore BASIC
mode show up as upper-case letters. Most programs for
the Commodore that use upper- and lower-case character
sets require that you enter filenames in lower case so
that the directories appear normal in BASIC mode when
you first turn on the machine and look at the directory.

BOBSTERM PRO will automatically display upper-case
letters in filename prompts and directory listings so
the names will look as they appear on the disk when

directory listings are done in normal BASIC mode. If you
want to create a graphic symbol in a filename for any
reason, you can use the shift key along with the letter
and you will see an inverse letter appear. When viewed
in normal BASIC mode, this directory listing will
contain Commodore graphic symbols in place of the
shifted letters.

Remember: when typing filenames in BOBSTERM PRO, just
type the letters without using the shift key and the
names will automatically appear in upper-case just as
they would on a normal directory listing.

3.3   ABORTING

Whenever you wish to ABORT an operation, use the
<RUN/STOP> key. Pressing <RUN/STOP> will abort from
anywhere at anytime. Most operations will abort
immediately after the key is pressed. Some operations
have a slight delay because of the nature of the
operation (such as dialing a phone number). In those
cases, just hold down the <RUN/STOP> key until the
operation detects the keypress. Pressing <RUN/STOP>
repeatedly will step you backward through the menu
screens until you are returned to the MAIN MENU.

REMEMBER: IF YOU ARE IN TROUBLE, USE THE <RUN/STOP> KEY
TO ABORT!

3.4   RESETTING THE PROGRAM

There is an escape route provided in case of some sort
of program lockup.

It is the <RUN/STOP> <RESTORE> key combination. This is
to be used only in an extreme situation where the
Program has locked up and will respond to no other
keypresses. It will RESET the program under most
conditions provided that the <RESTORE> key
hardware-interrupt function has not been corrupted by
the lockup. To activate this escape route...

Just hold down the <RUN/STOP> key and sharply strike the
<RESTORE> key.

The screen will flash and the Program will ring the
bell; and you will be placed back at the MAIN MENU. The
buffer will not be affected, and your ONLINE status will
be retained. Certain parameters might be reset, but

essentially you should be able to regain control without
any major changes in the Program status.

NOTE: If this combination does not free the Program,
then you must turn off the power and reboot from
scratch.

3.5   EXIT TO BASIC

If you wish to exit BOBSTERM PRO, you can do so from the
MAIN MENU. To do this, go to the MAIN MENU and....

TYPE: E

You will be asked to confirm this action. If you have
changed your mind or have arrived here by mistake, just
type <RET> or N or anything but Y and you will be
returned to the MAIN MENU. If you type Y, the program
will do a clean RESET to BASIC.

NOTE: The disk drive is not RESET during this
operation and if you are trying to access a
program using the * as a filename, you might run
into problems. Just momentarily turn off the drive
and then turn it back on, or use a RESET button if
you have one installed.

3.6   MULTIPLE DISK DRIVE ACCESS

The Commodore 128 assigns Device Numbers to each of its
various input/output devices. The numbers 8-15 are
reserved for disk drive use. If you have more than one
disk drive connected to your C128, then whenever you are
entering a filename, you may include a Device Number
parameter at the end of your input string to specify
which disk drive you wish to access. The Device Number
must be preceded by a semicolon, like this:

FILENAME;9

This tells the Program to access Device #9 for the next
disk operation. Also, you may specify Drive 0 or Drive 1
when you are accessing a dual drive like the MSD Dual by
including a Drive Number followed by a colon in front of
the filename, like this:

1:FILENAME;10

This tells the Program to access Drive #1 of Device #10 for the next disk operation.

These parameters may also be used when you are entering DOS commands, like this:

    S0:FILENAME;9

This tells the Program to scratch a file on Drive 0 of Device #9.

4. TERMINAL MODE

You can enter Terminal Mode from three different
sections of the Program:

(A) From the MAIN MENU by typing T.

(B) From the AUTO MENU by dialing a number, either
directly or from the phone book. When a carrier is
detected, the program will automatically go into
Terminal Mode.

(C) From the AUTO MENU by using the Answer Mode. When
a phone ring and carrier are detected, after the
sign-on procedure is completed, the program will
automatically go into Terminal Mode.

Terminal Mode is the heart of all communications into
and out of the Program. Whatever you type is sent out to
the modem and whatever data arrives at the modem from
the phone line is sent to your terminal screen. As the
screen fills up, it will scroll upward and make room for
new lines at the bottom.

All of the COMKEY-COMMANDS (refer to Section 5) are
active in Terminal Mode and you may switch back to any
menu screen at any time by using the <RUN/STOP> key.
Terminal Mode uses a seperate screen buffer and will
remember your screen data and cursor position so that
when you return from the other sections, everything will
be just as you left it.

NOTE: If you are online and actively receiving data,
you may still leave Terminal Mode for a short time
without losing incoming characters. The RS232 has
a memory buffer of 256 characters and as long as
you return to Terminal Mode before the 256
character buffer has overflowed, you will not lose
any data. If you need to be away for a longer
period of time or if you need to do a disk- or
printer-based operation, then stop the flow of
data by sending an XOFF character to the HOST
(refer to Section 22, TRANSFER PARAMETERS), or
wait until the HOST prompts you for input before
leaving Terminal Mode.

If you would like to enter data in Terminal Mode and you
are not connected to a HOST computer, then toggle the
Local Echo mode to ON, so that you will see what you are
typing (refer to Section 5, COMKEY-COMMANDS).

5.   COMKEY-COMMANDS

All of the COMKEY-COMMANDS are initiated in conjunction
with the Commodore logo key (<COMKEY>), found in the
lower left corner of the keyboard. You must hold down
the <COMKEY> and type the appropriate command letter.
This arrangement is used to distinguish these keystrokes
from normal-communications keystrokes during Terminal
Mode. Most COMKEY-COMMANDS are available from most
sections of the Program. Some are labeled TERM MODE,
meaning that they are active only in Terminal Mode. Most
of these commands are switch toggles. When entered the
first time, they will toggle their function to the
opposite state and when entered again, they will toggle
back to the original state.

5.1   COMKEY MENU

This menu is a listing of all the COMKEY-COMMANDS. You
may get to this menu from the MAIN MENU only. To do
this, from the MAIN MENU...

    Type: K

You will now see a list of all the COMKEY-COMMANDS. You
do not need to come to this menu to access these
commands. This menu is a help screen only and serves as
a reminder if you forget a command sequence.

5.2   ASCII/BINARY SWITCH

To activate this command...

    Type: <COMKEY> A

This command toggles the conversion charts that handle
ASCII/PETSCII and PETSCII/ASCII conversions ON and OFF.
When the switch is OFF (binary mode), all characters are
passed into and out of the Program unmodified. Binary
data (8-bits) may be handled this way, and if the
Terminal Emulator is active it will have no effect on
the characters.

When the switch is ON (ASCII mode), you will see the
letters ASC appear in inverse video in the Status Line
at the top of the screen. In this ON state, all
characters passing into or out of the Program are being
converted to or from ASCII data.

Let's take a moment to understand what ASCII means.

All computers use character code-numbers to represent letters of the alphabet and punctuation. If all systems used the same code-numbers to represent the same character symbols, there would be no problem. Unfortunately, that is not the case. Many computers use different code-numbers to represent similar characters and that is where the problem of communication between systems occurs.

There does exist a form of character standardization called the ASCII code chart. This was established so that computers talking to each other might have a common basis for understanding what each other was saying. The Commodore 128 does not adhere strictly to this ASCII chart, which means that in order for the C128 to talk to other types of computer systems, the Commodore codes (PETSCII) for each letter and symbol of the alphabet must be converted to the standard ASCII code before the character is sent out to the modem.

Also, ASCII data which is received at the modem must be converted to PETSCII (Commodore Pet version of the ASCII code chart) so that the C128 can properly interpret the information. All of this conversion process is handled automatically by BOBSTERM PRO when the ASC mode is ON.

LEAVE THE ASC MODE ON FOR MOST COMMUNICATIONS.

BOBSTERM PRO gives you the option to turn the ASC mode OFF for special applications when you may want to transmit and receive data without any modification or processing taking place. This is important for sending program (binary) data. During program transfers (refer to Section 11, FILE TRANSFERS) you will notice BOBSTERM PRO controlling the ASCII/BINARY switch automatically.

FOR MOST APPLICATIONS LET BOBSTERM PRO CONTROL THE ASCII/BINARY SWITCH.

5.3   BUFFER ON/OFF SWTITCH

To activate this command...

        Type: <COMKEY> B

This command toggles the Capture Buffer ON and OFF. When the buffer is ON, the word BUFFER in the Status Line at the top of the screen will appear in inverse video.

BOBSTERM PRO has a section of memory set aside as a workspace. This is called the Capture Buffer. It has enough room to hold 60,000 characters or bytes of data. When the buffer is ON, all characters coming in or going out of the Program will be stored in the buffer. You will notice the counter number on the Status Line decrement as each character is placed into the buffer.

The counter in the Status Line shows the number of available bytes remaining in the buffer. Data which goes into the buffer is not lost when it scrolls off the terminal screen. You may go back and access that data at any time and edit it, save it, print it, or otherwise manipulate it under the various options that BOBSTERM PRO offers.

The buffer may be turned ON and OFF at any time during data reception to allow selective capturing of only the data you want. The buffer switch is active from almost anywhere in the Program.

5.4   CAPS LOCK

To activate this command...

      Type: <COMKEY> C

This command toggles the software-controlled Caps Lock ON and OFF, giving you all capital letters when ON. (Any lower-case letters already on the screen or in the buffer will remain lower-case.) When this mode is ON, the word CAPS in the Status Line at the top of the screen will appear in inverse video.

Whereas the SHIFT-LOCK on the keyboard has certain drawbacks in that it will also lock out the number keys and certain punctuation keys, and the CAPS-LOCK key on the C128 does not work properly, using the software Caps Lock will only affect the letters. Both outgoing and incoming letters will be affected.

5.5   DISPLAY TRANSFERS SWITCH

To activate this command...

      Type: <COMKEY> D

This command toggles the Transfer Display switch ON and OFF. When this mode is ON, the word DISP in the Status

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Line at the top of the screen will appear in inverse
video.

This feature allows the user to see data transfers on
the screen as they occur. For example, when you are
saving data from the buffer to disk, if this mode is ON,
you will see the data echoed to the screen as it is
transferred. All protocol file transfers, such as
PUNTER, XMODEM, etc., are also visible on the screen
when this mode is ON.

5.6   LOCAL ECHO SWITCH

To activate this command...

      Type: <COMKEY> E

This command toggles the Local Echo switch ON and OFF.
When Local Echo is ON, the word ECHO in the Status Line
at the top of the screen will appear in inverse video.

When Local Echo is ON, all characters typed in Terminal
Mode will be echoed to the screen by BOBSTERM PRO. This
is called HALF-DUPLEX mode. Use this mode if you are
talking to another computer running BOBSTERM PRO or
another terminal program.

If you are talking to a system that is acting as a BBS
or a HOST Data Base, then you should turn this switch
OFF or you will see a double image of every character
you type (like HHEELLOO). The HOST system is echoing
back the characters you type, as well as BOBSTERM PRO,
so you will see two characters for every one that is
typed. When the Local Echo is OFF, BOBSTERM PRO is
expecting an echo back from the HOST system. This is
called FULL-DUPLEX mode.

5.7   WORD WRAP SWITCH

To activate this command...

      Type: <COMKEY> W

This command toggles the Screen Word-Wrap switch ON and
OFF. When this switch is ON, the word WWRAP in the
Status Line at the top of the screen will appear in
inverse video.

When Screen Word-Wrap is activated, BOBSTERM PRO

determines if a word will be broken at the end of a
screen line, and if so, automatically moves the word to
the start of the next line, filling in with spaces at
the end of the current line. Sometimes, however, the
word wrap feature can mess up data which is critically
formatted; and in such instances, you should turn it
OFF.

NOTE: The blank spaces remaining in place of a moved
      word exist on the screen only and do not appear in
      the buffer.

CAUTION: When you type a message to a BBS and a word
         typed at the end of a line is wrapped to the start
         of the next line by the Screen Word-Wrap mode, the
         spaces thus created on the screen at the end of
         the previous line are not sent to the BBS. If you
         decide to backspace past the word that was moved,
       ' your cursor will be placed over spaces that do not
         exist in the BBS message; and backspacing any
         further could delete part of the previous word at
         the BBS end. If this condition could cause you
         problems, turn OFF the Screen Word-Wrap switch
         when entering messages.

5.8   HOOK TOGGLE

      To activate this command...

         Type: <COMKEY> H

      This command toggles the modem (phone) pickup and hangup
      condition. When the phone line is active or OFF-HOOK
      (phone picked up), the word HOOK in the Status Line at
      the top of the screen will appear in inverse video. When
      the phone line is inactive or ON-HOOK (phone hung up),
      the word HOOK in the Status Line at the top of the
      screen will appear in normal video. This command will
      have no effect on manual modems.

5.9   NULL STRIP

      This command will function only from Terminal Mode. To
      activate this command, go to Terminal Mode and...

         Type: <COMKEY> N

      This command toggles the Null Filter ON and OFF. When
      the Null Filter is ON, the word NULL in the Status Line
      at the top of the screen appears in inverse video, and

all incoming null characters [CHR$(0)] are stripped from the data and ignored.

5.10 INCOMING LINEFEED SWITCH

To activate this command...

Type: <COMKEY> I

This command toggles the Linefeed-In switch ON and OFF. When the switch is ON, the letters ILF (incoming Linefeed) in the Status Line at the top of the screen will appear in inverse video.

When Incoming-LF is ON, incoming linefeed characters are allowed to pass. When Incoming-LF is OFF, incoming linefeed characters are trapped and ignored.

Linefeeds are control characters [CHR$(10) or CTRL-J] that cause the cursor to move down one line. They are usually sent just after carriage return characters [CHR$(13) or CTRL-M] at the end of a line. Many computers need the linefeed characters in order to advance to the next line. The Commodore 128 and BOBSTERM PRO will automatically advance to the next line after a carriage return. Therefore, if linefeeds are sent by the HOST computer after each carriage return, BOBSTERM PRO will skip an extra line, causing double spacing. Many HOST systems ask if you need linefeeds. You can answer NO to those systems and leave the LI switch ON or you can leave this switch OFF and filter out any incoming linefeeds from a system that does not offer you a choice.

NOTE: When the Terminal Emulator is active, BOBSTERM PRO no longer supplies automatic Linefeeds after carriage returns. Most terminals treat Linefeeds as seperate characters, and consequently, to emulate them properly, you will neeed to turn on the Incoming-LF switch.

5.11 OUTGOING LINEFEED SWITCH

To activate this command...

Type: <COMKEY> O

This command toggles the Outgoing-LF switch ON and OFF. When Outgoing-LF is ON, the letters OLF (outgoing Linefeed) in the Status Line at the top of the screen

will appear in inverse video.

The Outgoing-LF switch determines whether linefeeds will
be generated automatically after carriage returns on all
outgoing data. When Outgoing-LF is active, a linefeed
character [CHR$(10) or CTRL-J] is sent immediately after
each carriage return character [CHR$(13) or CTRL-M] that
goes out to the modem. If you are talking to another
computer that is not advancing lines when you type
<RET>, then you should turn this switch ON.

5.12 DISPLAY CONTROL-CHARACTERS SWITCH

To activate this command....

Type: <COMKEY> ^

This command toggles the screen display of incoming and
outgoing control characters ON and OFF.

Control characters are characters that do not normally
appear on the screen. They are characters that cause
certain actions to occur, such as a carriage return
causing the cursor to move to the beginning of the next
line. When this mode is ON, the up arrow symbol between
ASC and DISP in the Status Line at the top of the screen
will appear in inverse video, and all control characters
[CHR$(0) to CHR$(31)] will be displayed on the screen
with a special character-set of small inverse letters
with a line above them. You will see a small inverse m
at the end of each line. This is the carriage return.
The letters are symbols for the code numbers, beginning
with CTRL-A or CHR$(1) through CTRL-Z or CHR$(26). As
you see them repeatedly, you will become familiar with
the other symbols for the remaining codes.

5.13 FUNCTION-KEY LIST AND EDIT

This command displays a list of the current Function-Key
strings and allows you to edit them. For details refer
to Section 10, FUNCTION-KEYS.

5.14 LINE/CHARACTER ENTRY MODE SWITCH

This command will function only from Terminal Mode. To
activate this command, go to Terminal Mode and...

Type: <COMKEY> L

This command toggles the entry mode between Character
and Line data.

Normal terminal entry mode is Character. Each character
you type is immediately sent out to the modem. When the
Line Entry command is activated, you will see an 80
column inverse-video line appear at the bottom of the
terminal screen. Now, whatever you type will appear in
that line but will not yet be sent out to the modem.
When you press <RET>, the entire line will be
transmitted at once and the inverse line will clear,
ready for more input. You can backspace and correct data
before you press <RET>.

Line Entry mode is extremely helpful whenever you are
communicating with a HOST computer that has a CB
simulator online. In that type of communication, the
normal terminal screen can quickly become garbled with
incoming data, making it difficult for you to see what
you are typing. In Line Entry mode, everything you type
goes directly into the inverse line, while incoming data
stays within the terminal window. Incoming data in the
window scrolls and does not interfere with the reserved
line that receives data from your own keyboard.

5.15 CLEAR SCREEN

This command is active only from Terminal Mode. To
activate this command, go to Terminal Mode and...

    Type: <COMKEY> <CLR/HOME>

This command clears the terminal screen window.

5.16 SHORT BREAK

This command is active only from Terminal Mode. To
activate this command, go to Terminal Mode and...

    Type: <COMKEY> <ESC>

This command sends a short break signal (aprox. 150 ms)
to the host. Many systems need this type of signal to
interrupt certain operations.

5.17 LONG BREAK

This command is active only from Terminal Mode. To
activate this command, go to Terminal Mode and...

Type: <COMKEY> <SHIFT/ESC>

This command sends a long break signal (aprox. 1 sec) to
the host. Many systems need this type of signal to
interrupt certain operations.

5.18 TRANSFER (XFER) FILES

This command is available only from Terminal Mode. It
activates all File Transfer protocols. For details,
refer to Section 11, FILE TRANSFERS.

5.19 TIME TOGGLE SWITCH

This command toggles between the Time-of-Day Clock and
the Stopwatch Timer Clock utilities. Refer to Section 6,
TIMER AND TIME-OF-DAY CLOCK for details.

5.20 RESET TIMER

This command resets the Stopwatch Timer Clock to zero.
Refer to Section 6, TIMER AND TIME-OF-DAY-CLOCK for
details.

5.21 SET TIME OR START/STOP TIMER

This command sets the Time-of-Day Clock, or starts and
stops the Stopwatch Timer Clock, depending on the state
of the Time Toggle Switch. Refer to Section 6, TIMER AND
TIME-OF-DAY CLOCK for details.

6.   TIMER AND TIME-OF-DAY CLOCK

There are two hardware clocks built into the Commodore
128. BOBSTERM PRO uses both of them. One is used as a
Stopwatch Timer and the other as a Time-of-Day clock.
These clocks are very accurate and are not disturbed by
the serial-bus activity as is the software Jiffy Clock
used by BASIC.

6.1   CONTROLLING THE CLOCKS

The Time-of-Day clock is visible as the default clock in
the upper right-hand corner of the screen when the
program is first booted up. To set the clock time...

        Type: <COMKEY> S

A flashing cursor will appear in the first character
position of the clock. You may enter any sequence of
numbers that make up a valid time based on the
twelve-hour clock system. You may also enter an A or P
for AM or PM at any character position. To view the AM
or PM status, just press the SPACE BAR. You may skip
character positions by pressing the <RIGHT> cursor key.
You may exit at any time by pressing <RET>. Once the
clock has been set, it will begin to keep time until you
exit the Program.

The Stopwatch Timer may be made visible, in the same
location and in place of the Time-of-Day clock, by using
the Time Toggle command sequence. To do this...

        Type: <COMKEY> T

You will now see the Stopwatch Timer clock appear in
inverse video. To start the Stopwatch Timer...

        Type: <COMKEY> S

The Stopwatch Timer will begin running. To stop the
Stopwatch Timer...

        Type: <COMKEY> S

The Stopwatch Timer will stop. You can also RESET the
Stopwatch Timer. To do this...

        Type: <COMKEY> R

The Stopwatch Timer will be reset to 00:00:00

-6- TIMER AND TIME-OF-DAY CLOCK

The two clocks may be interchanged in the display at any
time without affecting their time keeping operations.
They both function completely independent of each other.

6.2   AUTOMATIC TIMER OPERATION

If the Carrier Detect feature is active (refer to
Section 21, MODEM-TYPE PARAMETERS), BOBSTERM PRO will
automatically control the Stopwatch Timer during the
transition states of the carrier. On detecting the
presence of a carrier, the Stopwatch Timer clock will
automatically be reset, started, and displayed on the
screen. On detecting the loss of a carrier, the
Stopwatch Timer will be stopped and the clock display
will return to the Time-of-Day clock. The time online
will be retained until the Stopwatch Timer is reset
either manually or by the Program. You may view the
stored time by using the Time Toggle command.

7. FILL BUFFER COMMANDS

The FILL BUFFER MENU can be reached from the MAIN MENU.
To do this, go to the MAIN MENU and...

Type: F

You will now see the FILL BUFFER MENU. We have already
discussed filling the buffer with incoming characters
from the modem (refer to <COMKEY> B command, Paragraph
5.3). BOBSTERM PRO also allows three other ways to place
data in the buffer:

* From the Keyboard
* From the disk
* From the disk, starting at a specified byte #

7.1 FROM KEYBOARD

This mode lets you enter text and character codes
directly from the keyboard. You may type up to 80
characters at a time. The data is entered into the
buffer when <RET> is pressed. During data entry, you are
using the Input Command Processor which allows all of
the editing and data-manipulation features discussed
earlier in Paragraph 3.1, INPUTS AND PROMPTS.

Directing keyboard data into the buffer makes it very
easy to enter messages and text files that you may want
to, for example, upload to a BBS. You may edit each line
as you enter it; and if you need to edit earlier lines
you can use the full-screen editor built into the DUMP
BUFFER mode (refer to Section 9, BUFFER EDITOR COMMANDS)
of the Program. To begin keyboard entry of data...

Type: K

The screen will clear and you will see the cursor. You
may now proceed to enter data. Each time you press <RET>
you will see the buffer count decrement and the data
will be entered into the buffer. To exit this mode...

Type: <RUN/STOP>

7.2   FROM DISK

This mode lets you enter data to the buffer directly
from a disk file. To do this...

Type: D

Next, you will be prompted for a filename. After
entering the filename (or recalling a previous filename
entry), you will be presented with a filetype selection
menu. There are several ways to bring data into the
buffer from the disk. Let's examine them:

(A) SEQUENTIAL

A sequential (SEQ) disk file usually refers to
ASCII or PETSCII text information. It might be a
documentary file, or a message file, or a series
of text tables, etc. A file of this type is
listed in the disk directory with an SEQ next to
it. To select this type of transfer...

Type: 1

(In a transfer from disk to buffer, the file must
exist on disk as a SEQ file; otherwise a
disk-error message will flash on the Command Line
and wait for you to press any key to continue.)

(B) PROGRAM

A program (PRG) disk file refers to any BASIC
program or machine-language program, or binary
data of any kind. A file of this type is listed
in the directory with a PRG next to it. To select
this type of transfer...

Type: 2

(In a transfer from disk to buffer, the file must
exist on disk as a PRG file; otherwise you will
receive a disk error message.)

(C) BASIC PROGRAM TO SEQUENTIAL LISTING

This type of transfer automatically converts a
BASIC program file into a SEQ text listing of the
program as the data is being transferred from the
disk to the buffer. This converted text will
allow you to read a BASIC program just as if you
had used the LIST command in BASIC.

BASIC programs are stored on disk in an encoded
form to help the BASIC Operating System execute
the program. This encoded form is usually
referred to as TOKENIZED. The BASIC command words
like PRINT, GOTO, GOSUB, etc. are not stored as
text words, but as code numbers which substitute
for the text and make it easier for BASIC to
perform the specific operations. Also, program
line numbers are stored as two-byte binary
numbers and program lines are linked together
with link addresses which point to the next line.

By selecting this conversion mode of transfer,
you have the ability to list BASIC programs into
the buffer in text form which you can then send
over the modem to a BBS or another computer. To
select this type of transfer...

    Type: 3

(The file being converted must exist as a
Commodore BASIC PRG file, otherwise the converted
file will be full of meaningless data.)

(D) SEQUENTIAL LISTING TO BASIC PROGRAM

This transfer type converts a SEQ text listing of
a Commodore BASIC program into TOKENIZED program
form, ready to run. Such a transfer should be
effected after a SEQ listing has been downloaded
from a BBS because the listing will not run until
converted back to program form. To select this
type of transfer...

    Type: 4

(The file being converted must exist as a
sequential text listing of a Commodore BASIC
program file, otherwise unpredictable results
will occur and the converted file will be full of
meaningless data.)

(E) PROGRAM TO ASCII-IMAGE

Communication between computers over modems is
usually done using the ASCII standard code chart
for the alphanumeric and punctuation symbols.
Files of BASIC or machine-language programs
usually contain code numbers that range from
0-255, whereas ASCII codes range only from 0-127.

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An immediate problem presents itself here if we
need to send a program file. How can we make up
for the extra 128 codes missing from the ASCII
chart?

One method discussed earlier is to make a
sequential listing of a BASIC program and send
that. Then the listing can be converted back to a
BASIC program after it has reached its
destination. That is fine for a BASIC program,
but what about a program written in machine
language or a binary data file? These can not be
listed like a BASIC program. Another method of
listing was devised to handle conversions from
binary data to text. It is called an ASCII-IMAGE
listing.

An ASCII-IMAGE is just what its name implies - an
image or representation of the binary file listed
in ASCII code. The base form of an ASCII-IMAGE
file is a two-byte hexadecimal (HEX) value
representing each single byte of actual program
data. A two-digit HEX value can represent code
numbers from 0-255 by using the numbers 0-9 and
the letters A-F. These numbers and letters can
easily be sent as ASCII data in a long list which
is the actual IMAGE of the program file. A
typical ASCII-IMAGE line might look like this:

    1A23654F3E2B337FACDA2A384F

There are many format options for the ASCII-IMAGE
list: how many characters on each line, should
there be a header character, should there be a
prompt character, should there be a checksum
character at the end for data verification, etc.
Each BBS and Data Base seems to have devised its
own format. BOBSTERM PRO has taken this into
account and provides a very flexible routine to
handle all of these differences. Details of how
to set up the ASCII-IMAGE parameters are given in
Section 25, IMAGE PARAMTERS. For now, we are just
interested in how to initiate the program to
ASCII-IMAGE conversion process. To to this...

    Type: 5

The file will be changed into an ASCII-IMAGE of
the actual data file according to the parameters
currently set up in the IMAGE PARAMTERS section.
(In a transfer from disk to buffer, the file must

exist on disk as a program file, otherwise you
will receive a disk error message.)

(F) ASCII-IMAGE TO PROGRAM

This type of transfer converts an ASCII-IMAGE
file back into its actual binary-program form. To
effect this transfer...

    Type: 6

The file must exist as a SEQ file, and must be in
a valid ASCII-IMAGE format that matches the
current IMAGE parameters settings; otherwise the
attempted transfer will abort.

(G) STRIP SOURCE-CODE COMMENTS

This file transfer method strips all characters
following a chosen prompt character, from each
line of a sequential text file. It is useful for
removing programmer comments from a source-code
listing, since all comments must usually follow a
semicolon or some other fixed character. These
comments are invisible during program assembly,
and removal of them condenses the file, and also
allows for quicker assembly times. To use this
type of transfer...

    Type: 7

The Program will now ask you to enter a prompt
character. Whatever character you enter will be
used to trigger the truncation process. If you
just enter the prompt directly as one keystroke,
every character following the prompt on each line
of the file will be stripped from the transfer.
If you press <RET> first, and then enter the
prompt character, every character following and
including the prompt will be stripped from the
transfer.

(H) CP/M

This transfer type reads data directly from CP/M
double-sided 128 formatted disks. It will read
text data or program data. You will be warned by
a flashing message that the Program is expecting
a CP/M disk for the operation. A non CP/M disk
will transfer meaningless data and probably abort
with an error message shortly after beginning the

transfer. When transferring text data, you will
notice that the data appears mostly in inverse
video. This is because CP/M data is stored as
ASCII and not PETSII data. In order to view the
data properly, you will have to use the Buffer
Editor to convert the data to PETSCII and strip
the Linefeed characters. Refer to Section 9,
BUFFER EDITOR COMMANDS for details.

After you have selected a filetype, the transfer of data
from disk to buffer will take place. You will see the
details of the transfer at the top of the screen; and a
scrolling window of data will be displayed if the
transfer display mode is active. You may still use most
COMKEY-COMMANDS during the transfer process, and you can
make the transfer pause by pressing the <COMKEY> and
holding it down. You may abort the transfer at any time
by pressing <RUN/STOP>, even during filename or filetype
entry. The Command Line will notify you at the
completion (or abortion) of the transfer; and pressing
any key will cause Program operation to resume.

7.3   FROM SPECIFIED BYTE

This transfer mode is an extremely powerful feature, for
it allows you to load an oversize file (up to 125,535
bytes in length) into the buffer a section at a time,
edit or otherwise manipulate it, and subsequently
reassemble it back to disk. With it you can transfer
data to the buffer, specifying the starting byte number
as any number from 0 to 65535.

For example, suppose you need to edit a file that is 300
blocks long (the buffer is capable of handling a file
size of 234 blocks). First you fill the buffer with part
of the file (234 blocks) by using the Fill-from-Disk
command. After editing the data in the buffer, you dump
the buffer to a new disk file (refer to Section 8).
Next, after clearing the buffer, you load in the rest of
the original file. To do this go back to the FILL BUFFER
MENU and...

    Type: B

You will be asked to enter the starting byte #. Now,
since the buffer holds 60,000 bytes (byte 0 to 59,999),
the very next byte that we want from the file will be
byte # 60,000. Enter that number. Next you are asked to
specify either sequential or program filetype. Enter

either a 1 or a 2 at the prompt.

Now the transfer process will begin, but you will see no
data scroll by on the screen until the first 60,000
bytes are read in from the disk and discarded. When the
byte # you specified is reached, the buffer will begin
filling up. After editing the data in the buffer, you
can append the buffer onto the first part of the file
saved earlier (refer to Paragraph 8.3).

8.   DUMP BUFFER COMMANDS

To get to the DUMP BUFFER MENU, go to the MAIN MENU
and...

     Type: D

You will now see the DUMP BUFFER MENU. This section of
the Program deals with editing and saving the buffer
data. You will notice three groups of commands.

The first group:

     * To Screen
     * To Disk
     * To Printer

BOBSTERM PRO allows you to dump the entire buffer at one
time or to dump only the portion of the buffer which
falls within a specified RANGE setting. The RANGE of the
dump may be set in the editor. These three commands are
all responsive to the RANGE setting and will dump only
the portion of the buffer included within that RANGE.
When you first enter the DUMP BUFFER MENU, the RANGE is
preset to include the entire buffer. If you enter the
editor and change the RANGE, then each of these three
dumps will dump only the data included within the new
RANGE setting; and that setting will remain until you
change it or until you exit the DUMP BUFFER MENU.

The second group:

     * View Buffer
     * Page Markers
     * Set Page Markers

These commands are not responsive to the RANGE setting.
They will act completely independent of the RANGE
regardless of how it is set.

The last command:

     * Edit Buffer

This command enters the Buffer Editor.

8.1   TO SCREEN

This command dumps buffer data to the screen. The dump
starts at the beginning of the RANGE setting and stops
at the end of the RANGE setting. This allows you to
preview a partial dump on the screen before you send it
to the printer or the disk drive. To DUMP BUFFER to the
screen...

     Type: S

The screen will fill up with buffer data. If the buffer
RANGE has more data than can fill one screen, the dump
will pause and wait for you to flip to the next page. To
do this...

     Type: <DOWN>

The page will flip forward to page two. You may continue
flipping forward until you reach the end of the data
within the dump RANGE and the screen displays an END OF
TEXT message. You may also flip backward thru the pages.
To do this...

     Type: <UP>

You may continue flipping backward until you reach page
one. Most of the COMKEY-COMMANDS are active during this
dump mode and the screen is responsive to the SCREEN
FORMAT (word wrap) feature. You may exit this mode at
any time by pressing <RUN/STOP>.

8.2   TO DISK

This command dumps the buffer data that lies within the
RANGE setting to the disk. You will be prompted for a
filename. Next you will be prompted for a filetype
(refer to the filetype descriptions given in Paragraph
7.2). Once the transfer begins you will see the data
scroll by in the screen window (if the Display Transfer
switch is ON), while the transfer information remains at
the top of the screen. Most of the COMKEY-COMMANDS are
active; and you may pause the transfer by pressing and
holding the <COMKEY> key. You may abort the transfer at
any time by pressing the <RUN/STOP> key. The Command
Line will notify you at the completion (or abortion) of
the transfer and will wait for a keypress to resume
Program operation.

If you select a filename that already exists on the

disk, the Command Line will warn you and ask you to REPLACE or APPEND the file. If you wish to REPLACE the file...

Type: R

The existing file will first be scratched and the transfer will then begin. (The Save with Replace command is not used due to the possible discrepancies caused by its repeated use. The file is first scratched and then replaced by BOBSTERM PRO. This can mean a permanent loss of the file if the power fails in the middle of the transfer.)

If you wish to APPEND (add the buffer data onto) the existing file, then...

Type: A

The disk will spin and there will be a slight delay while the DOS locates the end of the existing file; and then the transfer of new data will begin at that point.

NOTE: During a CP/M filetype dump, make certain that the disk in your drive is truly a CP/M double-sided formatted disk. If a standard C128 formatted disk is inserted, the data on the disk will be destroyed. Note also, that during a CP/M write operation, any incomplete or aborted transfer will leave the CP/M disk in its previous condition. The directory is not updated until the successful completion of the operation.

8.3   TO PRINTER

This command dumps the buffer contents that are within the RANGE setting to the printer, and also to the screen if the Transfer Display switch is ON. Data will be output to the printer according to the parameters set up in the PRINTER PARAMETERS section (refer to Section 20). To dump data to the printer, first make sure that your printer is properly connected and turned ON. Then...

Type: P

The transfer will begin immediately. You may abort at any time by pressing the <RUN/STOP> key. The Command Line will notify you at the completion (or abortion) of the transfer and will wait for you to press any key to resume Program operation.

8.4 EDIT BUFFER

This command allows you to edit the buffer contents and
manipulate the data with special feature commands. Refer
to Section 9, BUFFER EDITOR COMMANDS.

8.5 VIEW BUFFER

This command allows you to view the entire buffer
contents regardless of the RANGE settings. To enter this
mode...

     Type: V

The buffer data will be displayed starting from the
beginning of the buffer. If there is more than one page
of data, the program will wait for a command. You may
page-flip forward or backward just as in the
DUMP-TO-SCREEN mode. In fact, this mode functions
exactly like the DUMP-TO-SCREEN mode, except that it
displays the buffer data from beginning to end and does
not respond to the RANGE settings. You may exit at any
time by pressing the <RUN/STOP> key.

8.6 PAGE MARKERS

An extra feature available in the VIEW BUFFER mode is
the use of PAGE MARKERS. The number keys 1-9 can be set
as page marks (see 8.7 below) and you may recall any
preset page by just pressing the corresponding number
key. For example, if key number 3 was preset to page
number 15, then pressing key number 3 in VIEW BUFFER
mode would immediately flip to page 15. The page
flipping works either forward or backward, depending on
what page is currently displayed on the screen when you
press the marker key. If you press a number key that was
preset to a page that no longer exists in the buffer,
the view pages will be flipped to the closest page
remaining.

8.7 SET PAGE MARKERS

This command which is active only in VIEW BUFFER mode, assigns the current view page to whatever number key you choose between 1 and 9. To set the current page to key marker number 2...

Type: <SHIFT> 2

The bell will sound (unless the bell has been turned OFF) and the current page number will be assigned to key number 2. This assignment will remain until it is changed or the Program is RESET or exited.

9.   BUFFER EDITOR COMMANDS

The buffer editor is a full-screen editor, which means
that you may move the cursor anywhere on the screen and
change the data. The editor can be entered directly from
the DUMP BUFFER MENU, or from any page being viewed on
the screen in either the VIEW BUFFER mode or the DUMP
BUFFER-TO-SCREEN mode. When the editor is entered
directly from the DUMP BUFFER MENU, it enters starting
at the same place it was the last time it was exited.
When the editor is entered for the first time since
returning to the DUMP BUFFER MENU, it enters starting
from the beginning of the buffer. If the editor is
entered while viewing a page on the screen, then it
enters at the start of that page and will return you to
the same view page or the nearest one if you have
scrolled past the page boundries. The last exit point
will be retained until you enter the editor from another
page or exit back to the MAIN MENU.

To enter the editor from within the DUMP BUFFER mode...

    Type: E

Once inside the editor you will see an environment
completely different from the rest of the Program. In
the upper left corner of the screen you will see the
cursor-position counter. This shows the exact
character-position of the cursor inside the buffer.
Under the cursor-position counter are the RANGE
settings. The first set of numbers is the beginning of
the RANGE and the second set of numbers is the end of
the RANGE. They are both in inverse video when you enter
for the first time because the default RANGE is set to
include the entire buffer. When the cursor is within the
active RANGE, both settings are inverse video. If the
cursor counter value is under the beginning RANGE
setting, that setting changes to normal video.
Conversely, if the cursor counter value is over the end
RANGE setting, then that setting becomes normal video.

You will also notice, at the top right side of the
screen, the HEX ($), DECIMAL (#), and BINARY (%) values
of the character at the cursor position (that value is
the PETSCII value of the character). You will also
notice that the screen displays any control character or
other usually non-visible character regardless of the
status of the Control Display switch.

IN THE EDITOR YOU WILL SEE EVERY CHARACTER THAT IS IN
THE BUFFER, INCLUDING NULLS AND CONTROL CHARACTERS.

-9- BUFFER EDITOR COMMANDS

You may move the cursor around in all four directions by pressing the appropriate cursor control keys. You will notice, however, that you can not move into the spaces that follow a CTRL-M (small inverse m with a line above it). This is a carriage return character and the spaces following do not exist in the buffer, so you are not able to move into them. The spaces are displayed for your convenience to make text easier to read. None of the other control character actions are performed in the editor, only the carriage return.

Any character you type over is instantly changed on the screen and in the buffer. BE CAREFUL.

There is a HELP screen available to remind you of all the editor commands. To see the HELP MENU...

    Type: <COMKEY> H

You will see the following list of editor commands:

    * Begin-Range Set
    * End-Range Set
    * HEX Entry
    * DECIMAL Entry
    * Remove Linefeeds
    * Add Linefeeds
    * Insert Mode
    * Delete Range
    * Zero Parity Bit
    * Strip Character
    * Convert to Lower-Case
    * Convert to Upper-Case
    * Convert to ASCII
    * Convert to PETSCII
    * Format Text
    * Replace Character
    * Insert Character
    * Delete Character

All of these commands (except the last two) are activated in combination with a <COMKEY>, but they have no relation to the COMKEY-COMMANDS that are used throughout the rest of the Program. You may remove the HELP screen by pressing the <RUN/STOP> key. Pressing the <RUN/STOP> key again, exits the editor.

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Let's take a closer look at each of the editor commands
and learn how to use them.

NOTE: All editor commands that add characters to or
remove characters from the buffer will clear the
RANGE settings.

9.1 BEGIN-RANGE SET

This command sets the begin-RANGE position. To activate
this command...

Type: <COMKEY> B

The begin-RANGE setting will change to match the current
cursor position. If the new setting is greater than or
equal to the current end-RANGE setting, the end-RANGE
setting will be automatically reset to the end of the
buffer.

9.2 END-RANGE SET

This command sets the end-RANGE position. To activate
this command...

Type: <COMKEY> E

The end-RANGE setting will change to match the current
cursor position. If the new setting is less than or
equal to the current begin-RANGE setting, the
begin-RANGE setting will be automatically reset to the
beginning of the buffer.

9.3 HEX ENTRY

This command allows the entry of HEX numbers directly
from the keyboard. To activate this command, first move
the cursor to the desired position; then...

Type: <COMKEY> $

The cursor will move up to the HEX readout at the top of
the screen, and the value there will be cleared. You may
now enter a two-character HEX value (numbers 1-9 and
letters A-F). When you are through, the cursor will
return and advance to the next position. The character
symbol for the value you entered will be placed into the
buffer and on the screen at the original cursor

position. Note that the value entered appears on the screen as a PETSCII character.

9.4 DECIMAL ENTRY

This command allows the entry of DECIMAL numbers directly from the keyboard. To activate this command, first move the cursor to the desired position; then...

Type: <COMKEY> #

The cursor will move up to the DECIMAL readout at the top of the screen, and the value there will be cleared. You may now enter a three-digit DECIMAL value from 0-255. If you enter less than three digits you must press <RET>. When you are through, the cursor will return and advance to the next position. The character symbol for the value you entered will be placed into the buffer and on the screen at the original cursor position. Note that the value entered appears on the screen as a PETSCII character. If you enter an invalid number, then the original character value will be restored.

9.5 REMOVE LINEFEEDS

This command removes, from text data, linefeed characters (CTRL-J) that follow carriage returns (CTRL-M). To activate this command...

Type: <COMKEY> -

The screen will blank, and when the entire buffer has been scanned, and all linefeed characters removed, the screen will redisplay the buffer data from the beginning.

9.6 ADD LINEFEEDS

This command adds, to text data, a linefeed character (CTRL-J) after each carriage return (CTRL-M). To activate this command...

Type: <COMKEY> +

The screen will blank, and when the entire buffer has been scanned, and all linefeeds have been added, the screen will redisplay the buffer data from the beginning.

9.7   INSERT MODE

This command allows you to insert an entire line of data (up to 80 columns) beginning at the current cursor position. To activate this command...

        Type: <COMKEY> I

An inverse line of 80 columns will appear at the top of the screen. You may type into this block, using the <INS/DEL> key to backspace and delete characters; and when you are through, press <RET>. The line will be entered into the buffer, beginning at the current cursor position and the buffer data which follows will be adjusted to make room. You may abort this command by pressing the <RUN/STOP> key.

9.8   DELETE RANGE

This command allows you to delete a block of data marked by the RANGE settings. To use this command, first you must set the begin- and end-RANGE settings (as detailed in 9.1 and 9.2, above), and then...

        Type: <COMKEY> D

The section of data that lies within the RANGE settings will be removed from the buffer and the rest of the data will be adjusted to close the gap. The screen will redisplay data starting from the end-RANGE setting.

9.9   ZERO PARITY BIT

This command clears (zeros) the Parity Bit (the high bit) from all data in the buffer. To activate this command...

        Type: <COMKEY> Z

The screen will clear and all high bits of the buffer data will be set to zero. This will cause all data values to end up in the range 0-127. The screen will then redisplay the buffer data from the beginning.

9.10   STRIP CHARACTER

This command allows you to strip any character from the
buffer data. To activate this command...

>   Type: <COMKEY> S

The screen will clear and you will be asked for the
character you want to strip. You may enter any character
directly from the keyboard, or you may enter a HEX value
(use the <COMKEY> $ command) or DECIMAL value (use the
<COMKEY> # command). The screen will clear again, and
when the entire buffer has been scanned, and each
occurrence of the specified character has been removed,
the screen will redisplay the buffer data from the
beginning.

9.11   CONVERT TO LOWER-CASE

This command allows you to convert the alphabetic
characters in the buffer to all lower-case letters. To
activate this command...

>   Type: <COMKEY> L

The screen will blank and when the conversion is
complete, the buffer will be redisplayed from the
beginning.

9.12   CONVERT TO UPPER-CASE

This command allows you to convert the alphabetic
characters in the buffer to all upper-case letters. To
activate this command...

>   Type: <COMKEY> U

The screen will blank and when the conversion is
complete, the buffer will be redisplayed from the
beginning.

9.13   CONVERT TO ASCII

This command converts PETSCII data to ASCII data. To
activate this command...

Type: <COMKEY> A

The screen will blank and when the conversion is complete, the buffer will be redisplayed from the beginning.

NOTE:ASCII data will appear strange on the screen. All upper-case ASCII will appear as lower-case letters, and all lower-case ASCII will appear as inverse upper-case letters.

9.14 CONVERT TO PETSCII

This command converts ASCII data to PETSCII data. To activate this command...

Type: <COMKEY> P

The screen will blank and when the conversion is complete, the buffer will be redisplayed from the beginning.

9.15 FORMAT TEXT

This command allows you to reformat text in the buffer down to a specified line length. It will place carriage returns at the end of each line, and word-wrap at the same time so there are no broken words. This feature is very helpful when you need to send text, which has been created with only carriage returns as paragraph markers, to systems that have a maximum line length.

To activate this command...

Type: <COMKEY> F

The screen will clear and you will be prompted to enter the maximum line length you desire. After answering the prompt, the screen will clear again and in a few seconds, the text will re-appear starting at the beginning, re-formatted to the maximum line length specified.

You may also expand text which has been pre-formatted to a short line length, although this requires a little more manual reconditioning. To expand 40 column formatted text, for example, to 80 columns, first you would replace all carriage returns with a space character (refer to the next paragraph), and then use

the Format command to specify a line length of 80 columns. Title lines or paragraph headers may now need some extra carriage returns placed into the text to properly set them off from the text body.

9.16 REPLACE CHARACTER

This command allows you to replace any character in the buffer with any other character. To activate this command...

Type: <COMKEY> R

The screen will clear and you will be prompted to enter the character you wish to be replaced. You may enter a character directly or enter a HEX or DECIMAL character by first typing a <COMKEY> $ or #. You will next be prompted to enter the new character you wish to replace the old one. Again, you may enter a HEX or DECIMAL value as stated above. The screen will clear again and in a few seconds, the buffer data will be redisplayed from the beginning with the new characters replacing the old ones.

9.17 INSERT CHARACTER

This command allows you to insert one character. To activate this command, first move the cursor to the desired position; then...

Type: <SHIFT> <INS/DEL>

One space will be inserted at the cursor position, and all following data will be moved to make room.

9.18 DELETE CHARACTER

This command allows you to delete one character. To activate this command, first move the cursor to the desired position; then...

Type: <INS/DEL>

The character at the cursor position will be deleted, and all following characters will be moved to close the gap.

NOTE: The last buffer character can not be deleted.
      This is a safeguard to keep at least one character
      in the buffer while the editor is active.

10.   FUNCTION-KEYS

The eight function-keys of the Commodore 128 are used by
BOBSTERM PRO to send programmable text strings out to
the modem. These function keys (labeled F1-F8 at the top
right side of the keyboard) may contain strings up to 32
characters in length. The strings may be created,
listed, and edited from any of four places in the
program:

* Main Menu
* Terminal Mode
* Comkey Menu
* Parameters Menu

To see the current function-key strings, go to one of
the four areas mentioned above and...

    Type: <COMKEY> K

You will now see the strings that are currently
programmed in the eight function-keys. If this is your
first look, no strings will be listed. The flashing
command line is prompting you for input. To create or
edit a particular string just press the function-key you
wish to work on. For example, to program function-key
1...

    Press the <F1> key

You will see the cursor appear next to the F1 string
entry. You are now in the Input Command Processor
routine and may enter and edit what you wish, including
HEX and DECIMAL numbers, control characters, etc.; and
you may erase a function-key string by pressing <SHIFT>
<CLR/HOME>. When you are through, just press <RET>. The
Command Line will now flash, signaling that it is
waiting for another command. If you type any key other
than a function-key, you will be returned to the Program
area from which you entered the Function-Key screen.

Now that you have programmed a string, you may send this
string at any time from Terminal Mode, by just pressing
the corresponding function key. You can observe this
action offline in Terminal Mode by turning the Local
Echo ON and pressing a function-key that you programmed.
The string will appear on the screen as if you had just
typed it. Note that if you want to send a carriage
return at the end of the string, you must include a ^M
(CTRL-M) at the end of the string when you program the
function-key.

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All function-key strings that are currently programmed
will be saved with each new Default Parameters and Macro
and Phone Book Entry that you create. This means that
you may create different function-key strings for each
Macro or Phone Entry to adjust to different needs of
different systems you may call. But be aware that if you
clear out the function-keys or reprogram them at any
time, when you load in another Macro or Phone Entry they
will be reset to the values that were active at the time
that Entry was created.

10.1   AUTO ANSWER-BACK

There is one special feature involving function-key 8
that needs to be mentioned. Some systems you may call
use a special control character (usually a ^E) to ask
for identification from the calling computer. The HOST
sends the answer-back control character and expects the
calling computer to answer with an identification
string. BOBSTERM PRO supports this feature by
automatically sending out the string programmed in
function-key 8 whenever the answer-back option is active
and the special character is received (refer to Section
24, GENERAL PARAMETERS).

11.   FILE TRANSFERS

This feature is available only from Terminal Mode. All
file transfers of any type, uploads and downloads, must
take place through the use of this command mode. Most of
the available protocols require that some preliminary
questions be answered and details be set up between the
communicating computers before a file transfer can take
place. Once the file transfer mode is engaged, BOBSTERM
PRO takes control of the computer and expects that all
setup requirements have been satisfied. Details and
suggestions for each type of protocol are presented in
the following sections of this manual. To activate a
file transfer, from Terminal Mode...

        Type: <COMKEY> X

The screen will clear and you will be asked to choose a
category of file transfer from the following list:

        * Send from the Buffer   (Upload)
        * Send from the Disk   (Upload)
        * Receive to the Buffer   (Download)
        * Receive to the Disk   (Download)

Sending a file from your computer is called UPLOADING.
Receiving a file from another computer is called
DOWNLOADING.

Uploading from or downloading to the buffer is the
quickest transfer and makes the most efficient use of
online time. When sending (uploading) from the buffer
you must send the entire buffer contents. There are no
partial transfers.

Uploading from or downloading to disk is somewhat slower
due to some of the internal hardware conflicts between
the RS232 port and the serial-port design of the
Commodore 128; but this type of transfer is more
convenient because the processed file is already on disk
at the end of the transfer and does not need to be saved
later.

Each method has its advantages and disadvantages.
BOBSTERM PRO offers complete flexability to allow you to
choose the best option for a particular situation. The
list of protocol options varies slightly between
categories, and I will present each protocol mode in a
seperate discussion.

All that you must do at this point is to enter the

number for the appropriate transfer category, and then
choose a protocol and answer the questions that pertain
to that protocol. The transfer will begin; and on
completion (or abortion) the Command Line will notify
you and wait for a keypress to resume Program operation.
Most of the COMKEY-COMMANDS are active during file
transfers, and you may abort the transfer at any time by
pressing the <RUN/STOP> key.

11.1 STRAIGHT TRANSFER

This protocol is available for sending (uploading) from
the buffer or disk. Once started, it will just send the
data straight ahead with no prompting or handshaking of
any kind. Some BBSs call this method of transfer BLOCK
mode, which means that you are sending data in one huge
block or chunk from beginning to end of the file. Some
systems are not fast enough to handle a large chunk of
data coming at them without any pauses. Data will get
lost on these systems unless you take certain
precautions and use some of the extra features BOBSTERM
PRO makes available to you (see Section 22, TRANSFER
PARAMETERS).

When you select this protocol, if you are sending from
disk, you will be asked for a filename. Next, you will
be asked to specify either sequential or program
transfer. If you are sending sequential information,
BOBSTERM PRO will make sure that the ASC mode switch is
ON and all information will be sent as ASCII data. If
the Linefeed-Out switch is ON, a linefeed will be added
after each carriage return; and if the Caps Lock is ON,
all alphabetic characters will be converted to
upper-case as the data is transmitted.

If you are sending program or binary data, BOBSTERM PRO
will make sure that the ASC mode switch is turned OFF
and all data will be sent without modification.

During a straight transfer, the NULLS, LINE DELAY, and
CHARACTER DELAY parameters are active. They can be used
to adjust the transfer to most systems without any loss
of data (refer to Section 22, TRANSFER PARAMETERS for
details). BOBSTERM PRO also determines whether or not
the HOST echos the transferred characters back to your
screen; if it does not, BOBSTERM PRO automatically turns
the Local Echo mode ON for the duration of the transfer.

11.2   LINE TRANSFER WITH PROMPT

This protocol is available for sending (uploading) from either the buffer or disk. Only sequential text files may be sent with this type of transfer. The Program sends one line at a time (the end of a line is determined by a carriage return), and then waits for the HOST computer to send back a prompt character signaling that it is ready to receive the next line.

This method of transfer allows you to send messages and E-Mail to BBSs that expect you to enter the text data line by line in their message editor. Most HOST systems that have this capability send a special character at the beginning of each line. This is the character that you will use as the prompt character.

When you select this type of transfer, if you are sending data from disk, you will be asked for a filename. Next you will be asked to enter the prompt character. Whatever character you type will be used as the prompt character for which BOBSTERM PRO will wait before transmitting the next line.

During this type of transfer, only the CHARACTER DELAY parameter is active (refer to Section 22, TRANSFER PARAMETERS). BOBSTERM PRO will automatically control the Local Echo mode depending on whether or not the HOST computer ehoes the transfer.

11.3   CONTROL CODE CAPTURE (XON/XOFF - DC1/DC2)

This protocol is available for sending (uploading) or receiving (downloading) to or from either the buffer or disk. The Capture method of transfer uses the XON and XOFF characters to start and stop the flow of data. It also uses the DC1 and DC2 characters to automatically open and close the buffer, or disk file, at the beginning and at the end of the data. These characters vary from system to system and you must have them properly set up prior to attempting file transfer in order for this protocol to work (refer to Section 22, TRANSFER PARAMETERS). This protocol will work only with sequential data files.

When you are receiving (downloading) with this protocol, you should make sure your system is setup before you activate the HOST system transfer process. After the protocol is activated, you will be returned to the terminal screen exactly where you were before you went

to the Transfer Files mode. You will have complete
control of the keyboard; and you will notice at the top
of the screen, a message telling you that Protocol C is
active. Activating this protocol just turns the XON,
XOFF, DC1, DC2 characters ON. The protocol will remain
active until the DC2 character is received from the
HOST, turning off the capture buffer and ending the
protocol.

The local keyboard may be used as well to enter the DC1
or DC2 characters. This allows you the ability to
download any sequence of text information directly from
another system to your disk. You simply activate this
protocol to disk and then open the file buffer by
entering the DC1 character. When you are through
receiving the information you want, just enter the DC2
character and the protocol (and transfer) will end.

When sending (uploading) with this protocol, make sure
to set up the HOST system first, because the transfer
will begin immediately upon activation of the protocol.
During Capture protocol uploads, the NULLS, LINE DELAY
and CHARACTER DELAY remain active. (Refer to Section 22,
TRANSFER PARAMETERS.)

11.4   XMODEM PROTOCOL

This protocol is available for sending (uploading) or
receiving (downloading) to or from either the buffer or
disk. This is an error-correcting protocol that employs
special handshake characters and sends data in 128-byte
blocks with a checksum (sum of all byte values) at the
end to determine the validity of the data. If there is
an error in transmission, the checksum detects it and
the block is sent again.

This protocol is a good method of transferring data,
especially program or binary files, because it does not
care what kind of data is in the 128-byte block; and if
the transfer makes it to completion, there is an
excellent chance that no data was garbled in the
process. When using this protocol, always set up the
HOST system first. When you are notified that the HOST
is ready, then activate this protocol in BOBSTERM PRO.

During this type of transfer, when transferring to or
from disk, you will be prompted for a filename. Next,
you will be asked to specify either sequential, program,
or CP/M. XMODEM transfers are used most often for
program or binary files because of the error-correcting

feature, but it works just as well with sequential text files.

Since XMODEM transfers all must take place with the ASC switch OFF, there is normally no conversion of ASCII data to PETSCII during the transfer, and if the file were an ASCII text file, you would end up with an ASCII text file that could not be handled properly by the Commodore 128. BOBSTERM PRO handles this problem by asking you if you want the ASCII/PETSCII conversion at the time you specify a sequential transfer. BOBSTERM PRO handles the conversion without destroying the handshake or checksums. If you still do not want to tamper with the data on a sequential XMODEM transfer, then answer NO to the conversion question.

When this type of transfer is activated you will see a BLOCK counter and if CRC mode is ON (Refer to Paragraph 22.4), a CRC counter at the top right corner of the transfer screen title window. The BLOCK counter keeps track of the number of blocks being transmitted. These are 128-byte blocks, so there will be two XMODEM blocks to every C128 disk block. The CRC is another form of checksum. It is much more accurate then just adding the data byte values together. It is a complex method of shifting and logically manipulating the individual bits of each byte of data. Many systems using XMODEM do not implement the CRC feature. Also, there are many versions of the CRC feature, each different, a fact which makes things more complicated.

BOBSTERM PRO provides two of the most popular methods of CRC calculation, CRCK and CCITT (most common). The Program uses the CRC value as a checksum during the transfer if this feature is turned ON in the Parameters section.

If an error occurs during transmission of an XMODEM data block, you will be notified by an ERR counter in the top center of the screen. It keeps count of the number of errors during the retransmission of the same data block. If the ERR count reaches 10 (HEX 0A), the transfer will be aborted. Note that when sending (uploading) using XMODEM, you will most likely encounter one or two errors at the start while XMODEM attempts to lock in sync with the receiving system. Once the protocol gets going, the ERR counter should clear and disappear from the screen.

Another error condition you will see from time to time, is a TIM (timeout) error. This occurs when a period of more than 10 seconds has elapsed without data

transmission. Ten consecutive timeouts will result in an
aborted transfer.

11.5   PUNTER PROTOCOL

This protocol is available for sending (uploading) or
receiving (downloading) to or from either the buffer or
disk. It is an error-correcting protocol like XMODEM,
that has become popular among Commodore users and can be
found on many Commodore Bulletin Boards across the
country. It uses a more complex handshake method and
checksum validation than XMODEM. It is also a good way
to transfer binary or program data, as well as text
data, because of its error-correcting ability.

PUNTER tends to be a little more sensitive and therefore
perhaps less reliable than XMODEM since the timing
tolerances don't appear to be as tight as the XMODEM
protocol implementations. When using this protocol
always set up the HOST system first before activating
the protocol on your end.

When this type of transfer is activated, you will be
asked for a filename if the disk is involved. Next, you
will be asked to specify either sequential or program
data. After you answer, the screen will clear and you
will see a BLOCK counter in the upper right corner of
the transfer screen window. PUNTER BLOCKS are the same
size as C128 disk blocks (256 bytes).

During the initial lockup stages of the protocol, you
will see two asterisks appear on the screen and then the
data BLOCKS will scroll by (if the Display Transfer
switch is ON). If an error in transmission is detected,
the same data BLOCK will be retransmitted and the ERR
counter will appear in the center of the screen. When
the error is corrected, the ERR counter will disappear.

11.6   ENTIRE DISK (Commodore to Commodore)

This protocol transfers an entire disk between two
Commodore 128s or a C128 and C64 that are both running
BOBSTERM PRO. The organization of data on the disk makes
no difference at all, but whole disk transfer will work
only with 1541-type formatted disks. (1571 and C128 CP/M
formats can also be transferred.)

This method transfers the data one sector (block) at a
time using an error correcting protocol very similar to

XMODEM. The process is a long one - about 2 and 1/2 hours at 300 baud. If you speed up the baud timers (refer to Section 18, RS232 PARAMETERS) to around 500 baud, then the transfer takes about 1 and 1/2 hours. If you are communicating at 1200 baud, the transfer takes about 35 min.

You will be prompted to select a single-sided or double-sided transfer. Choose the appropriate letter.

Unless a previous attempt at this type of transfer was aborted during the current session, the transfer will begin immediately. The screen will clear and you will see a TRACK and SECTOR counter in the center keeping you in touch with the progress.

If you had a previously aborted attempt at this type of transfer, you will be asked if you would like to continue from where the last attempt failed. This way, if you had already spent two hours before the problem developed which aborted the transfer, you can start right where you left off and not waste the two hours again. BOBSTERM PRO remembers the last track and sector that was successfully transferred.

12. AUTO MODE

This part of the program handles all of the automatic
dialing and auto-answer functions, and is also the
gateway to the Phone and Macro File storage directories.
To get to the AUTO MENU, from the MAIN MENU...

> Type: A

Now, let's take a closer look at each of the AUTO modes.

NOTE: None of these automatic dialing and answering
features will operate with any of the manual-type
modems.

* Before choosing any of these options, make sure
that your modem switches are set properly for DATA
communications mode and that the Answer/Originate
switch is set to the proper direction for the
operation you choose. Read your modem instructions
for details.

12.1 DIAL

This option is used to dial a number directly from the
keyboard. To choose this option...

> Type: D

You will see a short help screen and be prompted to
enter the phone number you wish to dial. You may use
hyphens or any other punctuation you choose within the
number. However, note that two symbols have special
meaning to the dialing routine. One is the comma. Each
comma that you place in the number will cause the
dialing routine to pause for two seconds. The other is
the plus sign. Each plus sign that you insert in the
number will add 5 seconds to the normal 15 or 30-second
interval between automatic redials (adjustable in the
Parameters section). If no carrier is detected within
the interval, then BOBSTERM PRO will hang up and dial
again. The redialing will continue until a connection is
made or you abort by pressing the <RUN/STOP> key.

When you are through entering the number, press <RET>.
BOBSTERM PRO will immediately begin dialing. The Command
Line will keep you informed of what is happening. While
the program is waiting to connect, if you wish to begin
redialing before the delay time has expired, you may
press the SPACE BAR and the program will immediately

begin the redial sequence.

When a carrier is detected, and the carrier-detect
option is turned ON in the MODEM PARAMETERS section, the
Program will automatically revert to Terminal Mode; and
the Stopwatch Timer will start keeping track of your
online time. If you are using an unmodified Commodore
1660 Modem/300 or any other modem that does not pass a
carrier-detect signal to the User Port, and if you still
have the carrier-detect option turned ON, then when you
hear the carrier tone in the speaker you must press the
<COMKEY> to enter Terminal Mode. The carrier-detect
status on the Status Line will not turn ON, however,
because there is no signal passed from the modem to the
computer. If the carrier-detect option is turned OFF,
then as soon as the number is dialed (and before a
connection can be effected) you will go directly into
Terminal Mode. This defeats the auto-redial feature of
the Program.

12.2   ANSWER

This option places BOBSTERM PRO in auto-answer mode,
which causes the Program to wait for a ring, then look
for a carrier, and then drop into Terminal Mode after
the sign-on procedure is executed.

The sign-on procedure is user-adjustable. There is an
ENTRY CODE option and a WELCOME MESSAGE option. You may
use either one or both, or none. If the ENTRY CODE is
empty (refer to Paragraph 12.5, EDIT ENTRY CODE, below),
then that option will be skipped and the sign-on will
jump right to the WELCOME MESSAGE check. If you have
programmed the ENTRY CODE with a string of characters,
the caller will be prompted to enter the code. If the
code is correctly entered, the sign-on will proceed; but
if not, the Program will disconnect and wait for the
next call. Use this option to keep unwanted callers from
getting into your system.

The Program next checks for the presence of a WELCOME
MESSAGE stored on disk as a sequential file named
"WELCOME". You can create any message for this file in
the buffer and save it to disk. You can make more than
one file and name them "WELCOME.1" and "WELCOME.2" and
so forth, as long as the one you want to use at the time
is named "WELCOME". If BOBSTERM PRO finds a sequential
file named "WELCOME" on the default disk drive (refer to
Section 19, DISK PARAMETERS), it will send out the
message. If there is no "WELCOME" file, the Program will

release control and leave you in Terminal Mode.

You can test Answer Mode by pressing <RET> while the Program is waiting for a ring. When it says WAITING TO CONNECT you can continue through the sign-on by pressing the <COMKEY>.

NOTE: When using the Answer Mode you should place your modem's Answer/Originate switch (if it has one) into the Answer position.

12.3   PHONE BOOK

This option places you in the Phone Book section. Here you will be presented with a directory of the phone listings you have created. Refer to Section 13, PHONE AND MACRO FILES for details.

12.4   MACROS

This option places you in the Macro section of the Program. Macro files are automated command files that you can program to perform virtually any command that can be entered from the keyboard. The Macro section is a library of Macro files that you create. They can be executed in a number of different ways (refer to Section 13, PHONE AND MACRO FILES for details).

12.5   EDIT ENTRY CODE

This option allows you to create an Entry Code for the Auto-Answer and Remote-Mode features of the Program. This Entry Code is empty when BOBSTERM PRO is first run. You may edit this code at any time and place a string of up to 8 characters into it. To do this...

        Type: E

You will see the cursor; and if there is anything already in the code, you will see that also. You can edit or enter anything you wish. You may clear the Entry Code by pressing <SHIFT> <CLR/HOME>; and you may recall the original code by pressing <RET> when the code is clear. If you exit with a clear (empty) code by pressing the <RUN/STOP> key, you will turn the option OFF. If you enter at least one character and press <RET>, the new code will now be active.

13. **PHONE AND MACRO FILES**

The Phone and Macro Files are very similar in many
respects. The main difference between them is their
initial method of execution.

The Phone Files save the names and phone numbers of the
various BBSs and Data Bases and other computers that you
may call. They also save an Auto-Logon Macro string,
which sends your name and password and executes whatever
other commands are needed to log you on to a particular
system.

The number of Phone Files you can store is limited only
by the amount of disk space you have. The Phone Files
also save all parameters except the character font and
the modem parameters. This means that you can specify
baud rates, and transfer characters, and line and
character delays, and so on, for each different system
you call. And when you dial and log-on from the Phone
File, all of these parameters are set up and ready to
go. The Phone Files begin execution by dialing and
waiting for a carrier.

The Macro Files can execute the same commands as the
Phone Files. The main difference is that the Macro Files
begin execution always from the MAIN MENU, and they
exclude the RS232 Parameters from those parameters that
are saved. When they are executed, the Macro Files do
not affect the current baud rates and other RS232
parameters. Nor do they save a phone number. Macro
Files, sort of like subroutines, may be used as
extensions of the Auto-Logon Files or as independent
command files that perform certain tasks.

Note that both the PHONE BOOK MENU and the MACRO MENU
are identical except for the command that begins
execution. When you first enter either menu, the program
searches the disk and displays a directory of current
entries. The first time you run BOBSTERM PRO, or if you
are using a new disk which does not have any Phone or
Macro Files on it, the directory will be blank. Let's
take a look at how to create a Phone Book entry. First
we must get to the PHONE BOOK MENU. To do this, from the
AUTO MENU...

    Type: P

You will now see the PHONE BOOK MENU. The directory of
current entries will be blank if you have no Phone Files
on the disk. Let's create an entry.

13.1   ADD ENTRY

This option lets you enter new files. To activate this option...

    Type: A

The screen will clear and you will be prompted for a
TITLE. This is a descriptive name for the file and can
be up to 29 characters in length. Next, you will be
prompted for a PHONE #. Following the procedure given
earlier in Paragraph 12.1, enter the phone number of the
system you will be calling. Press <RET> and you will now
see the MACRO HELP SCREEN. This is a list of all the
special Macro commands that you can use to create the
Auto-Logon Macro string. Refer to Paragraph 13.7, below,
for details. For now, just type an asterisk and press
<RET>.

Next you will be asked for a FILENAME. This is the name
for the Phone File that will be stored on disk. You can
enter up to 14 characters. BOBSTERM PRO will place a P-
in front of the name to identify the file as a Phone
File (M- in front of a Macro File). Next the cursor will
jump to the top of the screen and you will be asked if
you need to change parameters.

NOTE: MAKE SURE ALL PARAMETERS ARE SET EXACTLY AS YOU
      WILL WANT THEM TO BE WHEN YOU PLAN TO USE THIS
      PHONE ENTRY. THE CONDITION OF ALL STATUS LINE
      SWITCHES, COLORS, FUNCTION-KEY STRINGS, ETC. WILL
      BE SAVED AND RESET TO THIS EXACT STATE WHEN THIS
      ENTRY IS EXECUTED.

If you answer Y to this question, you will be taken
immediately to the PARAMETERS MENU. Here you may adjust
every possible parameter that is adjustable in BOBSTERM
PRO. When you are through, press the <RUN/STOP> key; and
you will be prompted to make sure everything is set for
the save.

At this point make sure that the proper disk is in the
proper drive and then press <RET>. The phone entry will
be saved as a Phone File; and you will be asked if you
want to create another one. You may keep building phone
entries, and when you are through, just answer N at this
prompt.

The procedure for creating new Macro Files is exactly

the same except that you will not be asked for a PHONE #.

At any point up to and including the change-parameters prompt, you may abort the entry by pressing the <RUN/STOP> key.

13.2   EDIT ENTRY

Editing an already existing entry is easy...

Type: E

Next, select the letter of the file you wish to edit.

The screen will blank, and you will be taken thru the same prompts as if you were creating a new entry. The difference, you will notice, is that the current entry appears on the screen with each prompt. You may edit the entry or clear it out and start over, or accept it just as is. To clear the entry press <SHIFT> <CLR/HOME>. To accept it as is press <RET>. If you have cleared it and decide that you want the original back again, just press <RET> when the entry is empty. When you have followed the prompts all the way to the end, the old version of the Phone or Macro File will be scratched, and the edited version will be rewritten back to the disk with the same filename.

You may also create new entries that are very similar to existing entries without having to type in all the data over again. First, choose the EDIT ENTRY option and retrieve the file you wish to edit. You may now make whatever changes you wish; and as long as you change the filename, you will have created a brand new Phone or Macro File after you have answered all the prompts.

13.3   SCRATCH ENTRY

If you decide that you no longer need a certain Phone or Macro File you may easily scratch it from the disk. Simply...

Type: S

Select the letter of the entry you wish to scratch, and the file will be removed from the disk.

13.4   DIAL & LOGON

This command begins the execution of a Phone File. To activate this option...

Type: D

Next, select the letter of the first file you wish to execute. You will now notice that your chosen file letter appears in the command line followed by a comma. You may now select another file which will be executed if the first system does not connect. In fact, you may choose up to 10 files to be executed in cyclic fashion until one of the systems connects and a carrier is detected. The first file will be loaded into memory and the Program will reset all the parameters; and BOBSTERM PRO will begin dialing the phone number. You will notice the word MACRO in the Status Line flashing. This means that the Program is now under Macro control. If you wish to regain control of the Program, you may abort the Macro by pressing the <RUN/STOP> key. When the Macro is completed or if you abort, the MACRO status word will stop flashing, signaling that you have control again.

If there is no carrier detected within the alloted carrier wait time, then BOBSTERM PRO will load the next file chosen and begin dialing that number. This will go on indefinitely until either a connection is established or you abort the dialing procedure with the <RUN/STOP> key.

13.5   RUN

This command begins execution of a Macro File. To activate this option...

Type: R

Next, select the letter of the file you wish to execute. The file will load into memory, and the parameters will be reset; and the Macro will jump to the MAIN MENU and execute. You will see the MACRO status word flashing, letting you know that the Macro now has Program control. You may abort at any time by pressing the <RUN/STOP> key. When the Macro is completed or if you abort, the MACRO status word will stop flashing, signaling that you have control again.

13.6   TIMED START

This command allows you to delay the execution of a
Phone or Macro File until a preset starting time. To
activate this option...

Type: T

You will be shown the current start time in the center
Command Line. You may set this clock the same way you
set the TIME-OF-DAY clock, or just press <RET> to skip
to the AM/PM setting. Here you may press A or P or just
press <RET> to accept it as is. Next, select the
letter(s) of the file(s) you wish to execute. The first
file will be loaded in, but you will be notified at the
top of the screen window that the execution is delayed
until the time specified. When the TIME-OF-DAY clock
matches the start time set by you, the file will begin
execution. You may abort the delay at any time by
pressing <RUN/STOP>.

13.7   MACRO COMMANDS

The Macro Command Strings that are entered into the
Phone and Macro Files are capable of executing virtually
every keyboard command, as well as a few special
commands that provide flexibility in automating
operations on the many different types of systems you
might call. When constructing a macro string, you must
consider every keystroke and decision you would make
manually, and enter each one right after the other, with
no spaces or other seperators in between. Every
character in a macro string will be taken as a command
or as an operator within a command. For clarity,
however, the examples given below show each character in
the string seperated from the others with a space.

THE SPACE IS FOR EASE OF READABILITY AND SHOULD NOT BE
ENTERED AS PART OF THE MACRO STRING ITSELF. ALSO, THE
CONTROL SYMBOL (^) IS NOT TO BE TYPED BUT MEANS TO HOLD
DOWN THE <CTRL> KEY AND TYPE THE LETTER THAT FOLLOWS.

Each macro string may contain up to 79 characters; but
individual macro strings may be linked together with a
JUMP command, effectively creating a macro of infinite
length.

When a macro is active, each time the keyboard is
scanned in the Program, the next character in the macro
string is placed into the keyboard buffer, and the

Program interprets it just as if you had typed it in by
hand. Simply build the macro string with the series of
keypresses that you would do manually to accomplish a
certain task.

All of the special macro commands are CONTROL CHARACTERS
(except for the asterisk). Each will perform a special
function, some of them operating on characters that
follow. Let's look at the special macro commands
individually.

   (A) * - PAUSE 1/2 SECOND

        This command causes a delay of 1/2 second. During
        that time, if you are online and actively
        receiving data, the data flow will not be
        interrupted. The command will just delay the
        macro continuation for 1/2 second. Several of
        these may be chained together for a longer delay
        time.

   (B) ^K - COMKEY PREFIX

        Since many program commands use the <COMKEY>
        along with another keypress to activate an
        operation, the macro interpreter needs some way
        to know that the next character in the string is
        intended to couple with a <COMKEY> press. That is
        the function of this command. When the macro
        processor sees this command it takes the next
        character and interprets it as a <COMKEY>
        command.

   (C) ^F - CURSOR FORWARD

        This command emulates the forward cursor key and
        causes the same response as if you manually
        pressed the <RIGHT> key.

   (D) ^B - CURSOR BACKWARD

        This command emulates the backward cursor key and
        causes the same response as if you manually
        pressed the <LEFT> key.

(E)   ^U - CURSOR UP

This command emulates the up cursor key and
causes the same response as if you manually
pressed the <UP> key.

(F)   ^D - CURSOR DOWN

This command emulates the down cursor key and
causes the same response as if you manually
pressed the <DOWN> key.

(G)   ^R - RUN/STOP EQUIVALENT

This command emulates the RUN/STOP key and causes
the same response as if you manually pressed the
<RUN/STOP> key.

(H)   ^M - CARRIAGE RETURN EQUIVALENT

This command emulates the RETURN key and causes
the same response as if you manually pressed the
<RET> key.

(I)   ^J name - JUMP TO NEXT MACRO

This command passes control to the macro whose
filename immediately follows. Leave no space
between the CTRL-J and the filename. Enter the
filename the way it appears in the macro
directory listing. Note that the filename must be
the last entry in the macro string. No further
commands or characters can follow it.

NOTE: JUMPING TO ANOTHER MACRO INVOLVES A DISK
OPERATION, AND YOU SHOULD WAIT FOR A TIME
WHEN THERE IS NO DATA COMING IN FROM THE
HOST COMPUTER IF YOU ARE ONLINE. OPERATING
THE SERIAL-BUS DESTROYS THE TIMING ON THE
RS232 USER PORT. IF YOU ARE CONCERNED WITH
THE ACCURACY OF THE INCOMING DATA, ACCESS
THE DISK ONLY WHEN THE PORT IS QUIET.

(J)   ^W x - WAIT FOR NEXT CHARACTER

This command halts the continuation of the macro
until the character that follows is received at
the modem port. Leave no space between the CTRL-W
and the character. All incoming data flow is
unaffected. Note that the comparison
differentiates between upper- and lower-case
characters. (Refer to NOTE in Paragraph (M),
below.)

(K)   ^Q n - QUIET FOR n SECS

This command halts the continuation of the macro
until the RS232 port is quiet (no incoming data)
for n seconds. The number n can range from 1-9.
Leave no space between the CTRL-Q and the number.

(L)   ^A n - AGAIN STARTING AT POSITION n

This command restarts the same macro, starting n
characters from the beginning. The number n can
range from 0-9. A zero will cause the macro to
start over right from the first command. Leave no
space between the CTRL-A and the number.

(M)   ^S xxxxx ^S - WAIT FOR ENCLOSED STRING

This command halts the continuation of the macro
until the IDENTICAL string enclosed between the
command characters is received at the modem port.
Leave no spaces between the two CTRL-Ss and the
enclosed string. Note that the comparison
differentiates between upper- and lower-case
characters.

NOTE: When commands are entered in a macro
      string, all keystrokes are displayed on the
      screen as upper-case characters. The
      purpose of this feature is to match the way
      keystrokes and filenames appear throughout
      the Program. NOTE THAT THE DISPLAYED
      CHARACTERS IN A MACRO STRING ARE ACTUALLY
      LOWER-CASE AND ARE INTERPRETED AS SUCH IN
      ALL COMMAND COMPARISONS. IF UPPER-CASE
      CHARACTERS ARE DESIRED IN THE MACRO STRING,
      ENTER THOSE CHARACTERS USING THE <SHIFT>
      KEY AND YOU WILL SEE THEM DISPLAYED AS

INVERSE VIDEO UPPER-CASE CHARACTERS.

(N)   ^T xxxxx ^T - TRANSMIT THE ENCLOSED TEXT

This command transmits the text enclosed between
the command characters out to the modem port.
Leave no spaces between the CTRL-Ts and the text.

(O)   ^I x y (ccccc) - IF/THEN CONDITIONAL WAIT

This command is a conditional wait. It halts the
continuation of the macro until one of the two
following prompt characters is received at the
modem port. If character x is received first,
then the macro will ignore the string within the
parentheses and continue execution of any
commands that follow outside the parentheses. But
if the character y is received first, then the
macro will execute the string within the
parentheses and then end, regardless of any
commands that may follow. Leave no spaces between
any characters in the command. Also, DO NOT place
conditional commands within the parentheses of
other conditional commands.

Note that the comparison differentiates between
upper- and lower-case characters. (Refer to NOTE
in Paragraph (M), above.)

13.8   TIPS ON BUILDING MACROS

Creating macro strings can be fun, but can also be very
tedious. However, there are ways to streamline the
process. When you create a log-on string for a new BBS,
for example, one helpful thing is to turn ON the buffer
and then log-on manually, capturing the entire sign-on
procedure in the buffer. Then, after hanging up, you can
carefully study all the details of the sign-on procedure
by viewing the buffer page by page. After you have
decided on the characters to use as triggers, and what
data should be entered in which sequence, you can build
your macro string.

Try to pick unique characters or strings to use as
triggers, keeping in mind that messages and text might
also contain certain characters that could trigger a
macro command (at the wrong place). If you will be
reading messages or text while waiting for a prompt

trigger, consider using the QUIET command, because it is not text-dependent. Try to create common macro routines as seperate macros and link them together with JUMP commands.

There is another useful feature built into the macro section that will help you to debug your new macro. If you are using any of the wait commands and the macro hangs because the character never comes, you may bypass the wait command by pressing the <COMKEY>. This causes the macro to continue to the next command without aborting so that you can check the rest of the macro for proper operation. Remember, if the macro gets all messed up, you can abort at any time by pressing the <RUN/STOP> key.

There is much flexibility with what you can do using the macros, so put on those thinking caps and go to it!

13.9   EXAMPLE 1 - SENDING YOUR NAME AND PASSWORD

This is a simple thing to do and will probably be very similar from system to system. Let's assume that the following macro is an Auto-Logon string in a Phone File, which means it will begin execution from Terminal Mode after a carrier has been detected. Let's evaluate this macro:

   ^W : ^T name ^M ^T ^W : ^T password ^M ^T

REMEMBER NOT TO USE THE SPACES. THEY EXIST HERE ONLY FOR CLARITY.

The ^W tells the Program to wait for the next character (in this example, a colon). This character, of course, would be the character at the end of the BBS prompt that asks for your name (like, "ENTER YOUR NAME:"). When the character (colon) is received, the ^T will now transmit everything up to the next ^T (your name and a carriage return). Then the ^W will wait for another colon (like, "ENTER YOUR PASSWORD:") and the ^T will transmit your password and a carriage return. When there are no more commands to be processed the macro will release control back to you.

13.10   EXAMPLE 2 - LOCAL COMKEY-COMMANDS

It is easy to enter local COMKEY-COMMANDS from within a macro. Assume that the following macro is a continuation

of a previous Phone File Log-on string, and that we are
in Terminal Mode and at a BBS command prompt waiting for
us to read the public messages by entering P. Our buffer
is OFF but we want to turn it ON and capture all the
messages. Let's evaluate this macro:

^K B ^T P ^T ^Q 4 ^K B

REMEMBER NOT TO USE THE SPACES!

The ^K lets the Program know that the next character
will be a COMKEY-COMMAND. The B tells the program to
turn the buffer ON (refer to Paragraph 5.3, <COMKEY> B
comand). The ^T will transmit the letter P and the
messages will start to flow into the buffer. At this
point the ^Q tells the macro to wait patiently until the
line goes quiet for 4 seconds. As long as the messages
are still coming the macro will proceed no further. When
the messages are through and the BBS goes back to a
command prompt, then after 4 seconds of silence, the
macro will continue. The ^K sets up the next B as a
COMKEY-COMMAND and the buffer is closed. The macro is
completed and control is released back to you.

13.11   EXAMPLE 3 - LINKING MACROS AND THE CONDITIONAL

This example shows you how to use the conditional test
to decide which of two macros to continue executing.
Assume that you have just signed on to a BBS and want to
make a decision based on whether there is mail waiting.
This particular BBS informs you of mail by prompting,
"YOU HAVE MAIL WAITING...READ IT NOW?". If there is no
mail for you, it goes straight to the command prompt,
"COMMAND:". Let's evaluate this macro:

^I : ? (^J macro1) ^J macro2

REMEMBER NOT TO USE THE SPACES!

The ^I is the conditional wait command. In this example
it will wait for either a colon or a question mark. If
the colon is received first, then the macro will
continue executing at the next character after the
parentheses. In this case the ^J tells the program to
jump to a new macro named "macro2". If the question mark
were received first, then the macro would continue
executing at the first character within the parentheses.
In this case the ^J tells the program to jump to a new
macro named "macro1". Any series of commands can be
entered inside or outside the parentheses, not just

jumps.

13.12 EXAMPLE 4 - LOCAL CONTROL

This example deals with automating local control commands and stepping thru the program menus. Assume that your Auto-Logon macro has captured some data in the buffer, and after disconnecting, has jumped to this macro to save the data to disk. Let's evaluate this macro:

        D * D * name ^M * 1 ^M * ^R

Since this is a Macro File, it will begin executing right from the MAIN MENU. The D will send us to the DUMP BUFFER MENU. The * will just introduce a 1/2-second pause so the menu screens don't flash by so fast (it is not needed). The next D will select the Dump-to-Disk option. Again a pause. Now we will be at the filename prompt. The name in the macro will be accepted one letter at a time, as if you were typing in the name by hand. The ^M enters a carriage return after the name. Another pause, and now we will be at the filetype prompt. Assume that the buffer data is sequential data, so we use a 1 to choose a sequential-type transfer.

Now the transfer will take place, and the macro will wait until the next scan of the keyboard. After the transfer is complete, the Command Line will inform you to that effect and wait for a keypress. That is when the ^M will enter a carriage return taking us back to the DUMP BUFFER MENU. Another pause, and then the ^R will be interpreted as pressing the <RUN/STOP> key, and you will be taken back to the MAIN MENU; and the macro will end.

13.13 AUTOSTART MACRO

BOBSTERM PRO-128 allows for an autostart macro to be executed upon Program bootup. Any macro file named AUTOSTART will automatically execute immediately after bootup and Program initialization. You can use this feature to automatically begin dialing a Phone file or just to place you in another menu area other than the MAIN MENU.

14.   DOS SUPPORT

This part of the Program permits execution of Disk
Operating System (DOS) commands so that you may perform
disk-based operations without leaving the BOBSTERM PRO
environment. To get to the DOS COMMANDS MENU, from the
MAIN MENU...

Type: @

You will see a help screen reminding you of the DOS
commands and the cursor in the Command Line waiting for
your input. All the features of the BOBSTERM PRO Input
Command Processor are active here; and you may recall
the last DOS command entered by just pressing <RET>.

When you enter a DOS command, the operation will default
to the disk Drive and Device number specified in the
DISK PARAMETERS section. If you specify a different
Drive number and colon preceding the command, and/or a
different Device number preceded by a semicolon at the
end of the command, then that command will overide the
default settings for this operation. You may exit back
to the MAIN MENU at any time by pressing the <RUN/STOP>
key.

The Commodore pattern-matching wildcard characters are
active in all filename entries. The * will cause a match
with any characters that follow its position and the ?
will match any character in its position. Let's look at
each command seperately.

14.1   DIRECTORY

This command displays the disk directory. To do this...

Type: $ <RET>

The screen will clear and the directory will list up to
34 files in two columns. Notice that the names are
listed in upper-case, and any control characters will
also be displayed in the filenames. If there are more
than 34 files in the directory, the disk light will stay
on and you will be prompted to display the next page. If
you answer Y, the next group of files will be displayed.
If you press any other key, the cursor will jump back up
to the Command Line; and you may enter a DOS command
while the directory screen stays in full view.

As the screen is filling up with files you may press the
<RUN/STOP> key at any time, to stop the listing and
return to the DOS Command Line.

14.2 READ ERROR CHANNEL

You may read the Disk Error Channel at any time. To do
this...

> Type: @ <RET>

The Command Line will display the Disk Error Channel
output.

14.3 FORMAT A DISK

This command formats a disk (erasing any existing data)
and makes it ready to accept new data. To do this...

> Type: N0:name,ID <RET>

The zero points to drive 0 (may be a 1 if you are using
a dual drive). The disk name can be up to 16 characters
in length and should not contain commas, semicolons, or
colons. The ID should be a unique identification number,
two characters long. The formatting process takes about
two minutes; during which time you are free to do
anything else you want inside BOBSTERM PRO, as long as
you don't try to access the drive until the formatting
is complete.

14.4 CLEAR THE DIRECTORY

This command clears the directory of an already
formatted disk without your having to wait the two
minute reformatting time. To do this...

> Type: N0:name <RET>

Notice that the only difference between this short
version format command and the long version format
command is the missing ID number.

14.5   SCRATCH A FILE

This command removes a file from the disk directory and
makes the filespace available. To do this...

        Type: S0:name <RET>

Again, a 1 may be substituted for the 0 if you are using
a dual drive.

14.6   INITIALIZE THE BAM

This command initializes the BAM (Bit Availability Map)
of the disk. It copies the BAM from the current disk
into disk memory. To do this...

        Type: I0 <RET>

The 0 may be replaced by a 1 for dual drives.

14.7   RESET DRIVE

This command resets the disk drive. There have been some
problems associated with this DOS command. The Commodore
manual documents this command as UJ. But a UJ command
will cause the 1541 drive to hang. U; is the actual DOS
command needed for the 1541; but that will not work on
the newer one-meg drive from Commodore, which does
respond to UJ. The MSD drive will accept either.

The situation is made more complicated by the addition
of the 1571 drive. This drive needs a U: or a UJ to work
properly.

BOBSTERM PRO handles the situation by sending the U;
first and then checks the drive response. If the command
was accepted then all is well; if it was not accepted
then a UJ is sent. It is all done automatically and all
you need to do is...

        Type: U: <RET>

It is good practice to come to the DOS Support screen
and send a RESET command any time you get a DRIVE NOT
READY error because you forgot to put a disk in the
drive or something like that. After an error of that
type, many future operations involving writing to the
disk can cause problems.

14-3

14.8   RENAME A FILE

This command renames an existing file in the directory.
To do this...

     Type: R0:newname=0:oldname <RET>

The 0 may be replaced with a 1 where applicable.

14.9   VALIDATE THE DISK

This command searches through each file on the disk,
following all track and sector links, and rewrites an
updated BAM back to the disk directory. It clears the
directory of improperly closed files which appear in the
directory with an asterisk next to them. DO NOT SCRATCH
A FILE WITH AN ASTERISK BESIDE IT - VALIDATE THE DISK TO
REMOVE IT. To do this...

     Type: V <RET>

14.10 COPY A FILE

This command copies a file on the same disk or from one
disk to another on a dual disk drive. To do this...

     Type: C0:newfile=0:oldfile <RET>

The 0 may be replaced with a 1 if a dual drive is used.

14.11 CONCATENATE FILES

This command combines up to four individual files
together into one larger file. To do this...

     Type: C0:largefile=0:file1,0:file2 <RET>

The 0 may be replaced with a 1 if a dual drive is used.

14.12   DIRECTORY FOR CP/M

This command reads the directory of CP/M double-sided
formatted disks directly. It will present the directory
in standard CP/M style with the 8 letter name followed
by a period and the three letter extension. To execute
this command...

Type: D

You will be prompted to make sure the disk is truly a
CP/M formatted disk, and then the directory will be read
and displayed.

15.   REMOTE MODE

This feature of the Program reverses the communications
roles and causes BOBSTERM PRO to act like a HOST system
or mini BBS. To activate this mode, from the MAIN
MENU...

Type: R

You will be asked to confirm this action, since
accidental entrance into Remote Mode can cause problems
when you are connected to a HOST system. If you answer Y
to the confirmation prompt, the entrance procedure will
continue. Any other keypress will return you to the MAIN
MENU.

If you are already online with another computer, the
screen will clear and Remote Mode will be activated
immediately, giving the other computer control of your
BOBSTERM PRO. If there is no carrier present, BOBSTERM
PRO will go into Answer Mode and wait for a caller. All
of the sign-on procedure features of Auto-Answer Mode
(refer to Paragraph 12.2) are active; and when a caller
completes the sign-on, Remote Mode will be activated.

NOTE: If you are using Remote Mode to answer incoming
        calls, you should set the Answer/Originate switch
        on your modem (if it has one) to the Answer
        position.

In Remote Mode, the remote terminal is in control of
your computer. A remote command prompt will be presented
to the remote terminal and may be expanded into a help
menu if the terminal operator just presses <RET>. The
remote terminal has access to your DOS and upload and
download protocols for disk file transfers. The local
keyboard is active also, but Remote Mode is designed
mainly to be operated from a remote terminal or
computer.

If the carrier is lost at any time while your computer
is in Remote Mode, BOBSTERM PRO will automatically cycle
back to Answer Mode and wait for another call. This will
go on indefinitely until you exit Remote Mode by
pressing the <RUN/STOP> key. You may exit and come back
to Terminal Mode at any time to chat with the caller;
and when you are through you can return to Remote Mode
again without breaking the connection. Let's look at the
commands available in Remote Mode.

NOTE: DO NOT PLACE BOBSTERM PRO INTO REMOTE MODE WHEN
CONNECTED TO A HOST COMPUTER OR ANOTHER
COMMUNICATIONS PROGRAM WHICH IS IN A SIMILAR MODE.
(HAYES MODEMS WILL ALSO ECHO CHARACTERS WHEN IN
COMMAND STATE). THE ECHOES OF COMMAND PROMPTS AND
MENUS CAN CAUSE UNPREDICTABLE RESULTS AND CAN LOCK
UP THE PROGRAM OR DAMAGE DISK FILES.

15.1 COMMAND MENU

By pressing <RET> at the COMMAND Prompt you will see the
COMMAND MENU:

* Upload
* Download
* Terminate
* DOS :

The UPLOAD protocols available are:

* Control Code Capture
* XMODEM
* PUNTER
* Entire Disk (Commodore to Commodore)

The DOWNLOAD protocols available are:

* Straight Transfer
* Control Code Capture
* XMODEM
* PUNTER
* Entire Disk (Commodore to Commodore)

All of the DOS commands are available so BE CAREFUL. A
REMOTE CALLER CAN DESTROY YOUR DISKS!

16.   PROGRAM PARAMETERS

This section of the Program controls all of the
user-adjustable parameters that BOBSTERM PRO offers. The
PARAMETERS MENU can be reached from three places in the
Program:

    * From The MAIN MENU
    * During Phone File entries
    * During Macro File entries

During Phone or Macro File entries you will be prompted
to enter the PARAMETERS MENU after all the appropriate
file data is entered. If you enter this menu from there,
when you are through adjusting the parameters and exit
by pressing the <RUN/STOP> key, you will be taken back
to finish saving the Phone or Macro file.

To enter the PARAMETERS MENU from the MAIN MENU...

        Type: P

If you enter from the MAIN MENU, when you are through
and exit by pressing the <RUN/STOP> key, you will be
returned back to the MAIN MENU.

Once at the PARAMETERS MENU you may choose any of the
options, and you will be returned back to this menu,
after completing your adjustments. Every parameter
available is accessable from this menu including all of
the COMKEY-COMMAND switches and the FUNCTION-KEY strings
list and edit option. You may save all of these
parameters, including the character font that you are
presently using, as DEFAULT PARAMETERS which will set
BOBSTERM PRO into this exact state the next time you
boot up. To do this...

        Type: S

You will be prompted to put the Master Program Disk back
into the disk drive from which it was booted; and when
you are ready, just press <RET>. The parameters will be
saved in a file named "PARAMETERS". From now on, when
you boot the Program it will access these parameter
settings as defaults.

If you mess up important parameters and find yourself in
trouble when you boot up, you can scratch the
"PARAMETERS" file and BOBSTERM PRO will boot up with the
original defaults that are built into the Program.

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17. COLOR PARAMETERS

The Color Parameters section controls all the color settings in the Program. To reach this section, from the PARAMETERS MENU...

Type: C

You will see the controllable options listed on the screen. Use the <DOWN> key or the <UP> key to place the cursor next to the option you wish to adjust, and follow the prompt at the top of the screen to select your choices. To return to the PARAMETERS MENU press the <RUN/STOP> key.

17.1 CHARACTER (DEFAULT: L CYAN)
This option controls the color of all the characters that appear on the screen display window. To change the character color, select this option; and press <RET> to flip forward through the choices, or press <SHIFT> <RET> to flip backward through the choices. Note that you will be prevented from duplicating the background color of the screen.

17.2 SCREEN (DEFAULT: BLACK)

This option controls the background color of the screen. To change the screen's background color, select this option; and press <RET> to flip forward through the choices, or press <SHIFT> <RET> to flip backward through the choices. Note that you will be prevented from duplicating the color of the characters or the Status Line.

17.4 STATUS LINE (DEFAULT: L RED)

This option controls the color of the Staus Line characters at the top of the screen. To change the color of the Status Line, select this option; and press <RET> to flip forward through the choices, or press <SHIFT> <RET> to flip backward through the choices. Note that you will be prevented from duplicating the background color of the screen.

17-1

18.   RS232 PARAMETERS

       This section of the Program controls all the RS232 port
       settings of the computer. RS232 communications send and
       receive characters serially, one bit at a time. It is
       important that these parameters are set the same by both
       the sending and the receiving systems. To reach this
       menu, from the PARAMETERS MENU...

            Type: R

       You will see the controllable options listed on the
       screen. Use the <DOWN> key or the <UP> key to place the
       cursor next to the option you wish to adjust, and follow
       the prompt at the top of the screen to select your
       choices. To return to the PARAMETERS MENU press the
       <RUN/STOP> key.

18.1   WORD BITS   (DEFAULT: 8)

       This option controls the number of transmitted and
       received bits for each character. Most systems set this
       option to 8 bits so that binary program transfers are
       possible. BOBSTERM PRO-128 will automatically reset this
       to 8 during any non-ASCII transfers, and then reset it
       back to your default setting after the transfer is
       completed. To change the number of bits for each
       character, select this option; and press <RET> to flip
       forward through the choices, or press <SHIFT> <RET> to
       flip backward through the choices.

18.2   STOP BITS   (DEFAULT: 1)

       This option controls the number of stop bits after each
       character. Most systems use 1 stop bit. To change the
       number of stop bits, select this option and press <RET>
       to alternate the choices.

18.3   PARITY   (DEFAULT: NO)

       This option controls the parity bit setting. The parity
       bit is the high bit (the 8th bit) of each character.
       When transmitting ASCII data, which needs only 7 out of
       8 bits, the parity bit is sometimes used as a simple
       method of error detection. By a mutual agreement between
       the two systems, each character's parity bit is set, on
       the transmitting side, to a certain value based on the
       character's other bit values, and is checked at the

receiving side to make sure that the character was not
garbled during transmission. BOBSTERM PRO will
automatically set this to NO PARITY for all non-ASCII
transfers, and then reset it back to your default
setting after the transfer is completed. The various
options are:

    * ODD....make the number of 1s an odd count.
    * EVEN...make the number of 1s an even count.
    * MARK...always set the parity bit.
    * SPACE..always clear the parity bit.
    * NO.....don't tamper with the parity bit at all.

To change the parity setting, select this option; and
press <RET> to flip forward through the choices, or
press <SHIFT> <RET> to flip backward through the
choices.

18.4   BAUD RATE   (DEFAULT: 300)

This option controls the baud rate of the RS232 port.
The baud rate is the number of bits per second being
transferred. Baud rates up to 2400 can be implemented on
the C128, however, problems may occur with XMODEM
protocol file transfers at baud rates equal to or above
1200. To adjust the baud rate, select this option; and
press <RET> to flip forward through the choices, or
press <SHIFT> <RET> to flip backward through the
choices.

NOTE: Due to clock speed discrepancies between C128s,
      baud rates faster than 600 might need trimming.
      See the Baud-Adjust Timers below for details.

18.5   DUPLEX (DEFAULT: FULL)

This option controls the duplex mode of the RS232 port.
Full-duplex allows communication in both directions at
the same time. Half-duplex allows communications in only
one direction at a time. To adjust the duplex mode,
select this option and press <RET> to alternate choices.

18.6   BAUD ADJUST LO BYTE   (DEFAULT: 69)

This option, which in effect is a baud-rate fine
adjustment, controls the baud-rate-timer lo-byte value
for the software-generated RS232 of the C128. By
adjusting this value you can fine trim the baud rate

faster or slower from the original rate selected above.
To adjust the lo-byte trim, select this option; and
press <RET> to increment, or press <SHIFT> <RET> to
decrement the value.

Due to clock speed variances from C128 to C128 it is
sometimes necessary to adjust this lo-byte value when
you are going to communicate at 1200 baud or higher
using the Commodore 128. If the C128's timing is off
enough, many or all of the characters will be garbled at
1200 baud. I have found that 1200-baud communication
becomes very reliable if the lo-byte is adjusted to a
value between 55 and 68.

You can find the optimum setting on your computer by
following this procedure:

Connect to another system and begin reading a large text
file or message base. While the data is coming in, go to
the parameters and adjust the lo-byte value higher by
about 5. Then go back and look at the data. If the
majority of data is garbled, take note of the the
setting. Now adjust the lo-byte value lower by 5, and
check the data. As you go lower the data should begin to
clear up. Keep adjusting the value lower until the data
is mostly garbled again. Take note of this setting. Now
pick a value midrange between the high and low values.
This will be the optimum trim for your computer.

18.7   BAUD ADJUST HI BYTE   (DEFAULT: 6)

This option, which in effect is a baud-rate coarse
adjustment, controls the baud-rate-timer hi-byte value
for the software-generated RS232 of the C128. To adjust
the hi-byte trim, select this option; and press <RET> to
increment, or <SHIFT> <RET> to decrement the value.

Changing this value will shift the baud rate much more
drastically than changing the lo-byte value. Changing
the hi-byte value can be used quite effectively to
create non-standard baud rates and to push the speed of
many of the Commodore 300-baud modems faster, with no
hardware modifications at all. I have successfully run
the 1650 and 1660 modems as fast as 545 baud. They seem
very stable when run at about 450 to 500 baud. You can
do high-speed program transfers with a friend who is
also running BOBSTERM PRO, as long as you both set the
trim values the same. The formula for calculating the
values is:

$$256 * HI + LO = ((CLOCK / BAUDRATE) / 2) - 100$$

Where: CLOCK = 1,022,730 for American NTSC version
or: CLOCK = 985,250 for European PAL version.

Here are some values to try:

```
350 baud:   LO=81    HI=5
400 baud:   LO=154   HI=4
450 baud:   LO=12    HI=4
500 baud:   LO=154   HI=3
550 baud:   LO=61    HI=3
```

19.   DISK PARAMETERS

This section controls the default settings for the disk
operations. To reach this menu, from the PARAMETERS
MENU...

     Type: D

You will see the controllable options listed on the
screen. Use the <DOWN> key or the <UP> key to place the
cursor next to the option you wish to adjust, and follow
the prompt at the top of the screen to select your
choices. To return to the PARAMETERS MENU press the
<RUN/STOP> key.

19.1   DRIVE #   (DEFAULT: 0)

This option selects the drive number (0 or 1) to which
all disk operations will default unless otherwise
specified in the filename or DOS command string. Leave
this number set at 0, unless you are using a dual drive
and prefer default operations on drive 1. To change the
default drive number, select this option and press <RET>
to alternate choices.

19.2   DEVICE #   (DEFAULT: 8)

This option selects the device number (8-15) to which
all disk operations will default unless otherwise
specified in the filename or DOS command string. To
change the default device number, select this option;
and press <RET> to flip forward through the choices, or
press <SHIFT> <RET> to flip backward through the
choices.

19.3   MACRO/PHONE DRIVE #   (DEFAULT: 0)

This option selects the drive number (0 or 1) to which
all Macro and Phone file operations will default. Leave
this number set at 0, unless you are using a dual drive
and prefer default operations on drive 1. To change this
setting, select this option and press <RET> to alternate
choices.

19.4 MACRO/PHONE DEVICE #   (DEFAULT: 8)

This option selects the device number (8-15) to which
all Macro and Phone file operations will default. To
change this setting, select this option; and press <RET>
to flip forward through the choices, or press <SHIFT>
<RET> to flip backward through the choices.

20.   PRINTER PARAMETERS

This section addresses the printer control options. All
printer operations are affected by these settings. To
reach this menu, from the PARAMETERS MENU...

Type: P

You will see the controllable options listed on the
screen. Use the <DOWN> key or the <UP> key to place the
cursor next to the option you wish to adjust, and follow
the prompt at the top of the screen to select your
choices. To return to the PARAMETERS MENU press the
<RUN/STOP> key.

20.1   DEVICE #   (DEFAULT: 4)

This option selects the device number (4-7) to which all
printer operations will be sent. To change the device
number, select this option; and press <RET> to flip
forward through the choices, or press <SHIFT> <RET> to
flip backward through the choices.

20.2   SECONDARY ADDRESS   (DEFAULT: 7)

This option selects the secondary address (0-31) sent to
the printer at the beginning of all printer operations.
Each type of Commodore interface and printer has
different secondary addresses which do different things
with the printer. BOBSTERM PRO lets you set this address
any way you want to adapt to your particular setup. To
change the secondary address, select this option; and
press <RET> to flip forward through the choices, or
press <SHIFT> <RET> to flip backward through the
choices.

20.3   AUTO LINEFEED   (DEFAULT: OFF)

This option controls whether or not BOBSTERM PRO sends
an automatic linefeed after each carriage return to the
printer. Certain interface-printer combinations have
trouble with linefeed control, so this option is just
one more weapon in the battle for compatibility. To
change the linefeed setting, select this option and
press <RET> to alternate choices.

20.4   OUTPUT MODE   (DEFAULT: PETSCII)

This option selects either ASCII or PETSCII output to
the printer. If you are using a Commodore printer you
will need to send PETSCII characters to it. If you are
using an interface-printer combination you may use
either option most of the time. Normal operation would
be for the interface to emulate a Commodore printer, in
which case you would send PETSCII characters. As an
alternative, though, most interfaces have a transparent
mode of operation, often controlled by a secondary
address, which means that you can send ASCII characters
to the printer and use the full ASCII character set
built into the printer.

I find this transparent mode helpful, because my
interface normally creates some symbols, like brackets,
by drawing them as graphics characters. The thing I
don't like is that these symbols are larger than the
regular characters, and they mess up neatly aligned
tables. By using the transparent mode and sending ASCII
characters, I can use the printer's character set in
which all characters are the same size. To change the
output mode, select this option and press <RET> to
alternate choices.

20.5   CONTROL CHARACTER STRING   (DEFAULT: 27; 206; 3)

This option adjusts a 14-character control string that
is sent to the printer at the start of all printer
operations. This string can be used to set your printer
into various modes, or control font sizes, or
double-strike, or whatever. Each printer is different,
so BOBSTERM PRO gives you complete control of these
control string characters.

One note of caution: if you are using an
interface-printer combination that is emulating a
Commodore printer set in upper/lower-case mode, be
careful of printer escape sequences that use upper- or
lower-case letters as part of the command. The interface
expects PETSCII codes and will convert them to ASCII
codes, causing improper escape sequences to be sent.
Adding 128 to the ASCII codes in the 65-90 range and
subtracting 32 from the ASCII codes in the 97-122 range
should correct the problem.

As an example, my printer has an escape sequence to skip
the perforations on each page. The sequence is ESC N 3.
But if you look at my defaults which send this sequence,

you will see 27 (ESC); 206 (78 + 128); and 3. The N (78) has been changed by adding 128 to adjust for the interface conversion. To change a control string character, first select the character you wish to change, and then use one of the three following options to enter it:

* Type the character directly from the keyboard
* Press <SHIFT> $ and enter a HEX value
* Press <SHIFT> # and enter a DECIMAL value.

Enter as many characters as you need to create your control sequences. I recommend that you set any remaining characters not used in the 14 character string to zero.

21. MODEM-TYPE PARAMETERS

This section of the Program controls the various
parameters that configure BOBSTERM PRO to your
particular modem. To reach this menu, from the
PARAMETERS MENU...

Type: M

You will see the controllable options listed on the
screen. Use the <DOWN> key or the <UP> key to place the
cursor next to the option you wish to adjust, and follow
the prompt at the top of the screen to select your
choices. To return to the PARAMETERS MENU press the
<RUN/STOP> key.

21.1 TYPE (DEFAULT: AUTO-1650)

This option selects the type of modem you are using. The
more common modems are listed; but if your modem is not
on the list, one of the types should be close enough to
work well; and by adjusting some of the other
parameters, you should be able to configure BOBSTERM PRO
to almost any modem that will connect to a C128. Any
modem that plugs directly into the User Port should be
compatible with one or more of the listings. Any modem
that connects through a standard RS232 interface, and is
Hayes-compatible, should work with the Hayes setting.

All other types of RS232 modems that have their own set
of dialing and control commands may be controlled
directly from Terminal Mode, but will probably not be
able to take advantage of the Phone Book auto-dial and
log-on routines. However, you should be able to create
Macro Files, with little difficulty, that will send the
proper commands to dial and execute an auto-log-on
routine. To change the modem type, select this option;
and press <RET> to flip forward through the choices, or
press <SHIFT> <RET> to flip backward through the
choices.

21.2 DIALING (DEFAULT: PULSE)

This option selects either pulse or tone dialing mode.
If your modem is capable of tone dialing (like the 1660
Modem/300), BOBSTERM PRO will generate the tones,
through the audio output of the C128, which you can then
feed back into the modem. To change the dialing mode,
select this option and press <RET> to alternate choices.

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21.3   MAKE-TIME   (DEFAULT: 40)

This option selects the make-time (in milliseconds) for
pulse dialing. It has no effect on tone dialing. You may
adjust the make-time slower if you have trouble dialing
out from your exchange. You may even adjust it faster if
you have no problem dialing out from your exchange; but
it is probably best left at the default setting. To
change the make-time, select this option; and press
<RET> to flip forward through the choices, or press
<SHIFT> <RET> to flip backward through the choices.

21.4   BREAK-TIME   (DEFAULT: 60)

This option selects the break-time (in milliseconds) for
pulse dialing. It has no effect on tone dialing. You may
adjust the break-time slower if you have trouble dialing
out from your exchange. You may even adjust it faster if
you have no problem dialing out from your exchange; but
it is probably best left at the default setting. To
change the break-time, select this option; and press
<RET> to flip forward through the choices, or press
<SHIFT> <RET> to flip backward through the choices.

21.5   DIGIT-TIME   (DEFAULT: 700)

This option selects the time between digits (in
milliseconds) for pulse dialing. It has no effect on
tone dialing. You may adjust the digit-time slower if
you have trouble dialing out from your exchange. You may
even adjust it faster if you have no problem dialing out
from your exchange; but it is probably best left at the
default setting. To change the digit-time, select this
option; and press <RET> to flip forward through the
choices, or press <SHIFT> <RET> to flip backward through
the choices.

21.6   CARRIER DETECT   (DEFAULT: YES)

This option tells BOBSTERM PRO whether or not to expect
a carrier-detect signal at the User Port when a carrier
frequency is present on the phone line. The presence of
a carrier frequency is used by the Program to trigger
many automatic control functions. Some modems do not
pass a carrier-detect signal back to the computer, so
BOBSTERM PRO must be directed not to wait or else

certain functions could never be executed.

The 1660 Modem/300 comes from Commodore without the
carrier-detect signal connected to the User Port. (In
Appendix B you will find information on modifying this
modem so you can take full advantage of the automatic
features of BOBSTERM PRO.) To change the carrier-detect
status, select this option and press <RET> to alternate
choices.

21.7 CARRIER PHASE (DEFAULT: -)

This option selects the phase (+ or -) of an active
carrier signal. Most Commodore modems cause the User
Port carrier-detect pin to go LOW (-) when a carrier
frequency is present on the line. The Hayes modem, on
the other hand, causes the User Port carrier-detect pin
to go HIGH (+) when a carrier frequency is present on
the line. If you are using a Hayes or Hayes-compatible,
you must set this option to + so that BOBSTERM PRO will
react properly to the carrier signals it receives.

If you are using another type of modem that is not
listed, you must determine the phase of the
carrier-detect signal. When the modem is not plugged
into the phone line, the carrier status at the top left
corner of the screen should be OFF (normal video). If it
is not, then you must reverse the carrier-detect phase.
To change the carrier-detect phase, select this option
and press <RET> to alternate choices.

21.8 CARRIER WAIT TIME (DEFAULT: 15 SEC)

This option selects the default wait time for a carrier
during an auto-dial sequence. If you are using a Hayes
or compatible, you will find it preferable to set this
at 30 seconds, due to the extra time it takes the Hayes
to dial. Also, for long distance numbers, the 30 second
wait time will probably be needed. To change this
setting, select this option and press <RET> to alternate
choices.

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22.   TRANSFER PARAMETERS

This section of the Program controls all of the
file-transfer parameters. To reach this menu, from the
PARAMETERS MENU...

Type: X

You will see the controllable options listed on the
screen. Use the <DOWN> key or the <UP> key to place the
cursor next to the option you wish to adjust, and follow
the prompt at the top of the screen to select your
choices. To return to the PARAMETERS MENU press the
<RUN/STOP> key.

22.1   NULLS   (DEFAULT: 000)

This option selects the number of nulls [chr$(0)] that
are sent after each carriage return during sequential
file transfers in ASC mode. Nulls are often used to
create a slight delay at the end of each line of text
during a transfer. One need for a delay might be to
allow a printer on the receiving side time to return the
printhead back to the left paper margin after a line of
text has been printed. Also, some systems need time to
store a line of text properly before the next line can
be accepted.

Sending nulls creates a delay because they are not valid
text characters, and they give the system time to
process before the next line of actual text arrives.
BOBSTERM PRO uses this null number only during
sequential file transfers. The setting has no effect
during binary transfers or normal communications. To
change the number of nulls, select this option; and
press <RET> to flip forward through the choices, or
press <SHIFT> <RET> to flip backward through the
choices.

22.2   LINE DELAY   (DEFAULT: N)

This option selects the line-delay time (X 100
milliseconds) that occurs between lines of text during a
sequential file transfer in ASC mode. This feature has
the same effect as sending nulls, but it creates the
delay without sending any characters to the receiving
system. It is the preferred method of slowing down
transmission, because some systems store the nulls as
part of the text. If this option is set to N then the

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line delays are turned OFF. The delays are created only
during sequential file transfers and have no effect
during binary transfers or normal communications. To
change the line-delay setting, select this option; and
press <RET> to flip forward through the choices, or
press <SHIFT> <RET> to flip backward through the
choices.

22.3   CHARACTER DELAY   (DEFAULT: N)

This option selects the character-delay time (X 10
milliseconds) that occurs between characters of
sequential file transfers. This feature can be used to
slow down the transmission of files to allow slower
systems to keep up without losing any data. The default
setting N provides no delay time. There are two special
modes of character delay that will help when
transmitting to very slow systems:

* E mode: Wait for echo. This delay sends a character
          and waits for the echo back from the HOST
          before sending the next character. This
          mode tracks the exact speed of any system
          with which you are communicating. It is
          roughly half the normal speed because it
          must wait for the character to be sent and
          then sent back.

* C mode: Correcting wait for echo. This delay mode
          also sends a character and waits for the
          echo back from the HOST. Then it compares
          the echo with the original character; and
          if they do not match, it sends a backspace
          and resends the character. This is an
          excellent way to upload messages to a BBS,
          because it corrects for line noise problems
          as the data is transferred.

CAUTION: DO NOT USE THESE OPTIONS UNLESS YOU ARE
         CONNECTED TO A HOST COMPUTER WHICH ECHOES BACK
         YOUR CHARACTERS. OTHERWISE THE TRANSFER WILL
         HANG AFTER THE FIRST CHARACTER IS TRANSMITTED,
         BECAUSE THERE WILL BE NO ECHO.

To change the character delay, select this option; and
press <RET> to flip forward through the choices, or
press <SHIFT> <RET> to flip backward through the
choices.

22.4   CYCLIC REDUNDANCY CHECKSUM   (DEFAULT: OFF)

This option selects the method for calculating the CRC
value when using XMODEM protocol. The CRC value reflects
a complex technique of determining if a bit has been
modified during a transfer. There are many different
methods of calculating the CRC value, and this Program
offers two of the most common. If this option is turned
ON to one of the two versions supported, then all XMODEM
transfers will take place using the CRC calculation
rather than the simple checksum. Make sure that the
other system supports the CRC XMODEM transfer or the
transfer will abort. CCITT is the most common method of
CRC, so try that option first when setting up for a new
system. When this option is activated, you will see the
CRC value calculation in the transfer window at the top
of the screen during an XMODEM operation. To change the
CRC method, select this option; and press <RET> to flip
forward through the choices, or press <SHIFT> <RET> to
flip backward through the choices.

22.5   XMODEM ADJUST   (DEFAULT: 01)

This option adjusts the timeout period between
characters during the reception of an XMODEM block. The
normal waiting period is 1 second. However, on large
timesharing databases, longer delays than 1 second can
occur, causing XMODEM transfers to abort prematurely.
BOBSTERM PRO allows you to lengthen the waiting time
between characters up to 99 seconds. To adjust this
setting, select this option; and press <RET> to flip
forward through the choices, or press <SHIFT> <RET> to
flip backward through the choices.

22.6   XON   (DEFAULT: ^Q)

This option selects the XON character, which is used to
start the flow of data after it has been stopped
previously with the XOFF character. Most HOST systems
will prompt you somewhere in a menu screen, telling you
what character to use. To change the XON character,
select this option and enter the new character directly
from the keyboard, or use the $ or # to preface a HEX or
DECIMAL entry.

22.7   XOFF   (DEFAULT: ^S)

This option selects the XOFF character, which is used to temporarily stop the flow of data. Many systems call this the pause character, and you will usually be prompted by the HOST somewhere on a menu screen as to what character to use. To change the XOFF character, select this option and enter the new character directly from the keyboard, or use the $ or # to preface a HEX or DECIMAL entry.

22.8   BUFFER ON - DC1   (DEFAULT: ^R)

This option selects the DC1 or BUFFER ON character. It is used in the Capture protocol to turn ON the buffer. To change the DC1 character, select this option and enter the new character directly from the keyboard, or use the $ or # to preface a HEX or DECIMAL entry.

22.9   BUFFER OFF - DC2   (DEFAULT: ^T)

This option selects the DC2 or BUFFER OFF character. It is used in the Capture protocol to turn OFF the buffer. To change the DC2 character, select this option and enter the new character directly from the keyboard, or use the $ or # to preface a HEX or DECIMAL entry.

22.10   XMODEM EOT   (DEFAULT: ^D)

This option selects the XMODEM protocol END-OF-TRANSMISSION character. It is used in the handshake to signal the end of transmission. I have seen various values documented for this character. The default character is the most common. To change the EOT character, select this option and enter the new character directly from the keyboard, or use the $ or # to preface a HEX or DECIMAL entry.

22.11   XMODEM ACK   (DEFAULT: ^F)

This option selects the XMODEM protocol ACKNOWLEDGE character. It is used in the handshake to signal that the last block of data was received with no errors. The default character is the most common. To change the ACK character, select this option and enter the new character directly from the keyboard, or use the $ or # to preface a HEX or DECIMAL entry.

22.12 XMODEM NAK (DEFAULT: ^U)

This option selects the XMODEM protocol NEGATIVE
ACKNOWLEDGE character. It is used in the handshake to
signal that the last block of data was not received
properly. The default character is the most common. To
change the NAK character, select this option and enter
the new character directly from the keyboard, or use the
$ or # to preface a HEX or DECIMAL entry.

22.13 XMODEM CAN (DEFAULT: ^X)

This option selects the XMODEM protocol CANCEL
character. It is used in the handshake to cancel or
abort a transfer. The default is the most common
character. To change the CAN character, select this
option and enter the new character directly from the
keyboard, or use the $ or # to preface a HEX or DECIMAL
entry.

NOTE: Some systems will not respond to the CAN
      character, but will continue to remain in protocol
      mode. If you initiate an abort sequence (by
      pressing <RUN/STOP>) during an upload, and you
      encounter this problem, try sending an EOT
      character. If you encounter this problem during a
      download, wait until the other system reaches the
      end of the current block, and then send three ^C
      characters. If that does not cause an abort, send
      a NAK character. Continue answering each
      retransmission attempt with a NAK character and
      after ten tries the other system should abort.

22.14 XMODEM BLOCK STARTING # (DEFAULT: 1)

This option selects the XMODEM protocol starting-block
number. The default value is 1 and should remain
unchanged except for special purposes. If this value is
greater than 1, the file transfer will proceed from the
beginning as normal, but all the data will be discarded
until the starting block count is reached. You will
still see the data on the screen (if the Display switch
is active) but it will not be written into the actual
file until the starting block count is reached.
Sometimes different systems have special header blocks
for specific computers at the beginning of an XMODEM
transfer. This option allows you to remove them. To

change the block-start number, select this option and
enter a new character of the proper value directly from
the keyboard, or use the $ or # to preface a HEX or
DECIMAL entry.

22.15 **XMODEM CHARACTER START #   (DEFAULT: 0)**

This option selects the XMODEM protocol
starting-character number of the first block. The
default value is zero and should not be changed except
for special purposes. If this value is greater than zero
(maximum is 127) then all data in the starting block
number will be discarded until the starting-character
count is reached. Some systems send special header
information in the first block of an XMODEM transfer,
and this option can be used to remove the unwanted data
as the transfer takes place.

NOTE: Compuserve IMG files on the Commodore SIG contain
an extra six bytes of data in the first block of
an XMODEM download. These extra bytes must be
removed before the downloaded program can run.
BOBSTERM PRO allows you to do this simply by
setting the character-start number to 6. When the
transfer occurs, bytes 0-5 will be stripped; and
the first byte saved into the file will be byte 6.

To change the character-start number, select this option
and enter a new character of the proper value directly
from the keyboard, or use the $ or # to preface a HEX or
DECIMAL entry.

22.16 **XMODEM EOF   (DEFAULT: ^Z)**

This option selects the XMODEM protocol END-OF-FILE
character. The EOF character is placed at the end of the
file to fill out the last block to a full 128 byte-block
size. There are no short blocks allowed in XMODEM
transfers and this character is the one used to fill in
any empty spaces at the end. The default character is
the most common standard for the EOF of ASCII
text-files. Another common character used is a zero. To
change the EOF character, select this option and enter
the new character directly from the keyboard, or use the
$ or # to preface a HEX or DECIMAL entry.

23. **FONT STYLE PARAMETERS**

This section of the Program selects from the different
character sets that are interchangeable in BOBSTERM PRO.
To reach this menu, from the PARAMETERS MENU...

Type: F

You will see the current character-set number listed;
and you may press <RET> to flip forward through the
choices, or press <SHIFT> <RET> to flip backwards
through the choices. When you have made a selection,
press <RUN/STOP> and you will be prompted to place the
Master Program Disk into the drive from which it was
booted. When everything is ready just press <RET> and
the new character set will be loaded in.

There are only 7 character sets on the Master Program
Disk, although the choices go from 0-9. The character
sets are named "CHARACTER SET.0" through "CHARACTER
SET.6". The last three slots (7-9) are left open for you
to create your own custom character sets. Any
character-set editor, such as ULTRAFONT, will work. The
files are program files which are 2048 bytes long, and
are a direct copy from memory storage of the character
set data.

The order of characters in the character set is arranged
in ASCII code format, not in the order of the standard
Commodore character set. For example, an upper case A is
in position 65 of the character set. Positions 128-147
contain the special graphic characters which draw the
window borders and fill the menu screens. Positions
148-255 are exact inverses of each character position
19-127. The starting address of the file is not
important, because BOBSTERM PRO will relocate it when
the file is loaded in.

24.   GENERAL PARAMETERS

This section of the Program controls the general
parameters that deal with special screen and keyboard
control functions. You may turn any of these character
value functions OFF by changing their value to zero. To
reach this menu, from the PARAMETERS MENU...

Type: G

You will see the controllable options listed on the
screen. Use the <DOWN> key or the <UP> key to place the
cursor next to the option you wish to adjust, and follow
the prompt at the top of the screen to select your
choices. To return to the PARAMETERS MENU press the
<RUN/STOP> key.

24.1   CURSOR TYPE   (DEFAULT: BLINKING BLOCK)

This option controls the type of cursor used throughout
the Program when you are being prompted for input. To
change this setting, select this option; and press <RET>
to flip forward through the choices, or press <SHIFT>
<RET> to flip backward through the choices.

24.2   IN FILTER   (DEFAULT: OFF)

This option determines how many of the six avaiable
character filters are activated. When a character filter
position is turned ON, then that character will be
stripped from incoming RS232 data. Nulls are treated
seperately by using the Null Filter. The filter
positions may be turned ON in sequential order starting
from the first position, then the first and second
position, and so on until all six positions are
activated. To adjust this setting, select this option;
and press <RET> to flip forward through the choices, or
press <SHIFT> <RET> to flip backward through the
choices.

24.3   FILTER CHARACTER   (DEFAULT: NULLS)

These options are used to specify up to six seperate
characters that will be stripped from the incoming RS232
data before reaching the Program. They may be preset to
any value, but will not actively be stripped until the
corresponding position is turned ON in the IN FILTER
option above. The stripping action only occurs in ASCII

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mode, and will be bypassed during all BINARY transfer
operations. To change these characters, select a
position, and enter the new character directly from the
keyboard, or use the $ or # to preface a HEX or DECIMAL
entry.

24.4   BACK SPACE   (DEFAULT: ^H)

This option selects the backspace character. This is a
destructive deleting backspace. To change the backspace
character, select this option and enter the new
character directly from the keyboard, or use the $ or #
to preface a HEX or DECIMAL entry.

24.5   HTAB   (DEFAULT: ^I)

This option selects the tab character. This character
shifts the display position eight spaces to the right on
the screen. The spaces exist only on the screen and not
in the buffer. The tab character, however, is entered in
the buffer. To change the tab character, select this
option and enter the new character directly from the
keyboard, or use the $ or # to preface a HEX or DECIMAL
entry.

24.6   CLEAR SCREEN   (DEFAULT: ^L)

This option selects the clear-screen character. This
character clears the terminal screen when received in
Terminal Mode. It is entered into the buffer also. To
change the clear-screen character, select this option
and enter the new character directly from the keyboard,
or use the $ or # to preface a HEX or DECIMAL entry.

24.7   BELL   (DEFAULT: ^G)

This option selects the bell character. This character
rings the bell sound on the computer. To change the bell
character, select this option and enter the new
character directly from the keyboard, or use the $ or #
to preface a HEX or DECIMAL entry.

24.8   ANSWER-BACK   (DEFAULT: ^E)

This option selects the automatic answer-back character.
When this character is received, BOBSTERM PRO

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immediately sends out the string that is programmed into
FUNCTION-KEY 8. That string should be your
identification string. You should turn this option OFF
if you want to use FUNCTION-KEY 8 for other purposes. To
change the answer-back character, select this option and
enter the new character directly from the keybord, or
use the $ or # to preface a HEX or DECIMAL entry.

25.   IMAGE PARAMETERS

This Program section controls the adjustable parameters
of the ASCII-IMAGE file converter routines. All IMAGE
conversions are configured according to these
parameters. To reach this menu, from the PARAMETERS
MENU...

Type: I

You will see the controllable options listed on the
screen. Use the <DOWN> key or the <UP> key to place the
cursor next to the option you wish to adjust, and follow
the prompt at the top of the screen to select your
choices. To return to the PARAMETERS MENU, press the
<RUN/STOP> key.

25.1   FORMAT   (DEFAULT: USER)

This option selects the IMAGE format that will be used
to structure the IMAGE file conversion. IMAGE files come
in all shapes and sizes. BOBSTERM PRO has a few common
formats preset for you, and also offers a completely
flexible USER format that you can configure yourself. If
you select one of the preset formats, the other options
are not available for you to adjust. You may use these
presets as a guide as you study and learn about IMAGE
files. If you select the USER format, you will be free
to adjust all other options. The preset formats are:

* COMPUSERVE IMG: This format is the same as the
  Compuserve IMG files found on the Commodore SIG of
  Compuserve. If you select this option you will be
  able to create and decode Compuserve IMG files with
  ease.

* COMPUSERVE BIN: This format is the same as the
  Compuserve BIN files found on the CP/M SIG of
  Compuserve. If you select this option you will be
  able to create and decode Compuserve BIN files for
  use with Commodore CP/M.

* COMMODORE OBJ: This format is the same as the
  Commodore OBJECT files created by the Commodore
  Assembler. If you select this option you can create
  and decode the OBJECT files created by the
  Commodore Assembler.

To change the format, select this option; and press
<RET> to flip forward through the choices, or press

<SHIFT> <RET> to flip backward through the choices.

25.2   LO-BYTE OF CHECKSUM   (USER DEFAULT: ACTUAL)

This option selects the type of checksum value that will
be used on the LO-byte of the checksum if the checksum
option is selected. Many IMAGE files use a one- or
two-byte checksum value at the end of each line to check
the accuracy of the data. Two different types of
calculations can be found:

        * ACTUAL.............The actual sum of the data in
                             the line.
        * TWO'S COMPLIMENT...All the bits of the sum are
                             inverted, and a one is added to
                             obtain the final result.

You may select this option only in the USER format; and
to change it, just press <RET> to alternate choices.

25.3   OFFSET START ADDRESS   (USER DEFAULT: ZERO)

This option selects the starting value of the offset
address if the offset address option is selected. Many
IMAGE files contain a two-byte offset address, near the
start of each line, which keeps track of the position of
the first byte of the line relative to the start of the
file. Two different starting values can be found:

        * ZERO...............Start at zero

        * PRGM LOAD ADDRESS..Start at the load address of
                             the program. The first two
                             bytes of the program are used
                             as the load address in lo-hi
                             byte format. You may force the
                             IMAGE start address to any
                             value by adding or changing the
                             first two bytes of the program
                             to the values of your choice.

You may select this option only in the USER format; and
to change it, just press <RET> to alternate the choices.

25.4   BYTE COUNT   (USER DEFAULT: NO)

This option selects whether or not a byte count of each
line is to be part of the file. Many IMAGE files contain

a count of the number of bytes in the line as the first
byte of each line. You may select this option only in
the USER format; and to change it, just press <RET> to
alternate choices.

25.5   OFFSET ADDRESS   (USER DEFAULT: NO)

This option selects whether or not a two-byte offset
address is to be part of the file. Many IMAGE files
contain a two-byte address near the beginning of each
line, just after the byte count (if a byte count is
used). This address keeps track of the position of the
first byte of the line relative to the start of the
file. The starting value is determined by the OFFSET
START ADDRESS value. You may select this option only in
the USER format; and to change it, just press <RET> to
alternate choices.

25.6   SEPERATOR BYTE   (USER DEFAULT: NO)

This option selects whether or not a seperator byte
(value of zero) is to be a part of the file. Many IMAGE
files contain a zero byte, between the file information
(byte count and offset address) and the file data, to
act as a seperator. You may select this option only in
the USER format; and to change it, just press <RET> to
alternate choices.

25.7   # OF BYTES PER RECORD   (USER DEFAULT: 28)

This option selects the number of data bytes per line.
This seems to be one of the most variable of the format
parameters from system to system. This value is the
value that would be used in the BYTE COUNT option if the
byte count is turned ON. You may select this option only
in the USER format; and to change it, press <RET> to
increment the value, or press <SHIFT> <RET> to decrement
the value.

25.8   # OF CHECKSUM BYTES   (USER DEFAULT: 0)

This option determines how many (if any) checksum bytes
are to be used in the file. Many IMAGE files use a one-
or two-byte checksum value at the end of each line to
verify the accuracy of the data. If this value is zero,
the checksums will not be used at all. If checksums are
used, the LO-byte will always be governed by the LO-BYTE

CHECKSUM setting. You may select this option only in the
USER format; and to change it, press <RET> to flip
forward through the choices, or press <SHIFT> <RET> to
flip backwards through the choices.

25.9   HEADER LENGTH   (USER DEFAULT: 0)

This option selects whether or not there is to be a
header and how many characters it will contain. Many
IMAGE files contain a short string of characters as an
identifier in the first line of the file. These
characters are not part of the program data, and the
conversion routines must be notified of their presence.
You may create a header string of up to eight
characters, and this option must specify that header
length. If this value is zero, the header option will
not be used. You may select this option only in the USER
format; and to change it, press <RET> to increment the
value, or press <SHIFT> <RET> to decrement the value.

25.10   PROMPT CHARACTER   (USER DEFAULT: CHR$(0))

This option selects the character to be used as the
prompt character at the start of each line. If this
value is zero (null character), the prompt option will
be turned OFF. Many IMAGE files contain an ASCII prompt
character such as a colon or semicolon at the start of
each line. The conversion routines must be notified of
its presence. You may select this option only in the
USER format; and to change it, enter the new character
directly from the keyboard, or use the $ or # to preface
a HEX or DECIMAL entry.

25.11   HEADER CHARACTER STRING   (USER DEFAULT: NULLS)

This option selects the characters that make up the
header string if the HEADER option is active. I
recommend setting all characters not being used to zero.
You may select these options only in the USER format;
and to change a character, enter the new character
directly from the keyboard, or use the $ or # to preface
a HEX or DECIMAL entry.

25.12 TIPS ON USING IMAGE FILES

IMAGE files can be very confusing and frustrating, but
are sometimes the only method of transferring program or
binary files to certain systems. You can study the
formats of the preset types and look at the files they
generate. Also, don't be afraid to experiment with a
short program, and modify one parameter at a time, and
study how the new IMAGE file looks. You will soon be
able to recognize the key elements of an IMAGE file, and
with a few experimental attempts, be able to crack the
format of any new files that you may run into.

When you try to convert an IMAGE file with the wrong
parameters settings, you will most likely end up with an
abort or I/O error in the Command Line. If you are using
checksums, this usually indicates that the number or
calculation-type you have chosen is incorrect. Try
adjusting them, then run the file through again. Look
for repeating patterns of data at the beginning of the
file. If there is a similarity at the start of each
line, it usually means that there is byte count and/or
offset address present. With a little practice you will
be able to decode just about any IMAGE file you can
find.

Here is a very common format of an IMAGE file used in
the CP/M operating system. This is the way a CP/M HEX
file, which is generated by the CP/M Assembler, looks.
The CP/M LOAD routine changes these HEX files into COM
files, which can then be directly executed. You can
create CP/M HEX IMAGE files by adjusting the IMAGE
parameters as follows:

```
    *   FORMAT.............  User
    *   LO CHECKSUM........  Two's Compliment
    *   OFFSET START.......  Program Load Address
    *   BYTE COUNT.........  Yes
    *   OFFSET ADDRESS.....  Yes
    *   SEPERATOR..........  Yes
    *   # BYTES/RECORD.....  16
    *   # CHECKSUMS........  1
    *   HEADER LENGTH......  0
    *   PROMPT.............  :
    *   HEADER CHARS.......  All Nulls
```

Now you must add the starting address at the beginning
of the program data to start the IMAGE offset at 0100
HEX. This means you must place a chr$(0) and a chr$(1)
as the first two bytes of the program (LO-HI byte
format). You can easily do this by loading the program

into the buffer and inserting these two characters at
the start. Also, the HEX format has 10 zeros at the end
of the file that look like this:

    :0000000000

You must append these to the file after the conversion
takes place. If the final IMAGE conversion is in the
buffer, you can easily add these characters to the end
of the file. If the IMAGE file is on disk, you can put
these characters in the buffer, by themselves, and then
append them onto the existing disk file during the DUMP
TO DISK process.

26.   TERMINAL EMULATOR PARAMETERS

This Program section controls the operation of the
Terminal Emulator. The Terminal Emulator allows the C128
to function like different types of hardware terminals.
There are many different types of terminals available on
the market, and each one responds to different command
sequences in order to perform certain screen and data
handling functions. BOBSTERM PRO offers a programmable
Emulation feature that allows you to specify the command
sequences that will carry out the various functions
supported. BOBSTERM PRO supports 37 different screen and
data handling functions. This is by no means 100%
complete, but does span the majority of the most common
functions which the various terminals need to operate.

Using the Program in Terminal Emulation mode allows full
screen cursor control and a way to remotely run
specialized applications programs that take control of
the screen. You will have full control of cursor
position and inserts and deletes and even video
intensity and much more. This is a very complex area and
I will attempt to present enough information here to get
you started in being able to program the Emulator, but
this discussion is by no means meant to be a complete
tutorial on Terminal Emulation.

In order to program a special terminal into the
Emulator, you will need to obtain a list of the command
sequences for each of the various functions the terminal
can perform. Then you must enter those command sequences
into the proper function areas of the Emulator and when
you are finished, you should create a MACRO which will
store all of these functions. You should give the MACRO
the name of the terminal, and just put a single '*' in
the macro string (just pauses 1/2 sec). You can then run
this MACRO at any time you wish to emulate this specific
terminal.

Let's now look at the various options given to us and
describe how each one functions.

To reach this menu, from the PARAMETERS MENU...

      Type: E

You will see the controllable options listed on the
screen. Use the <DOWN> key or the <UP> key to place the
cursor next to the option you wish to adjust, and follow
the proper adjustment procedure as given in each of the
various paragraphs below. To return to the PARAMETERS

MENU, press the <RUN/STOP> key.

26.1 TERMINAL EMULATION (DEFAULT: OFF)

This option turns the Emulator ON and OFF. None of the
Emulator functions will operate until this option is
turned ON. When ON, there will be some noticable changes
in the way BOBSTERM PRO operates in Terminal Mode. The
first and most obvious change will be the disappearance
of the solid line under the Status Line. This is done so
that the terminal window is now a full 24 line by 80
column window, the size used by most terminals on the
market. You will also notice that automatic linefeeds
are no longer generated on the screen after carriage
returns. Remember, we are no longer using a Commodore
terminal at this point. You will most likely have to
turn ON the INCOMING LINEFEED switch when operating in
any of the Emulation modes. Also, you will notice that
backspacing no longer automatically erases characters on
the screen, and the cursor keys now move the cursor
anywhere on the screen (if the outgoing sequences are
properly programmed).

To change this setting, select this option, and press
<RET> to alternate choices.

26.2 TERMINAL TYPE (DEFAULT: ADM-31)

This option controls the choice of preset terminal types
built into BOBSTERM PRO. The choices are:

* ADM-31   (similar to most CP/M systems)
* VT-52
* VT-100
* USER   (create your own terminals)

Any of these presets may be used as is, or may be
modified to create customized terminal applications. The
USER mode starts with a blank slate so you may create
from scratch.

The VT-100 is not complete in its emulation. For
instance it does not support alternate character sets or
double high characters. It also does not support region
scrolling and a few other specialized functions. It will
however allow you access to most of the important VT-100
operations. If you need the applications keypad
controls, you will have to program the eight function
keys to emulate up to eight of the most important

functions you desire.

To change this setting, select this option; and press
<RET> to flip forward through the choices, or press
<SHIFT> <RET> to flip backward through the choices.

26.3   CURSOR SEQUENCES   (SUB-MENU)

This series of options control all of the cursor
movement sequences. This is a SUB-MENU, meaning that the
options are grouped together in another menu which is
obtained by pressing <RET> at this option choice. All of
the SUB-MENU options are adjusted exactly as these, and
the procedure will only be explained one time here. Once
you have reached the SUB-MENU, you will see a list of
the controllable options. You may select any option by
placing the cursor next to your choice using the <DOWN>
or <UP> key. Pressing <RET> will clear the option and
allow you to enter a new command string. You may enter
direct from the keyboard, or enter <COMKEY> $ or # to
preface a HEX or DECIMAL entry. Press <RET> when
complete. The maximum length of the command strings is 8
characters. If you decide to abort in the middle of an
entry, you may press the <RUN/STOP> key and the original
entry will be restored. Let's look at the CURSOR
SEQUENCES in more detail:

    (A) ROW/COL-NUMBER TYPE

        This option specifies certain information needed
        to decode the POSITION CURSOR sequence that
        follows. To position the cursor on the screen some
        terminals look for the ROW as the first position.
        Others look for the COLUMN as the first position.
        Here you must specify which is to come first.

        * R specifies ROW first.
        * C specifies COLUMN first.

        The next entry in this string must specify the
        type of numerical data which is to be expected for
        the actual row and column position.

        * + specifies an offset value.
        * # specifies a decimal value (up to 2 numbers)

(B) POSITION CURSOR

This option specifies the command string which
directly positions the cursor to any row and
column. There are some special conditions placed
on this string that BOBSTERM PRO expects to find.
In the exact locations within the command string
where the actual placement value is specified,
BOBSTERM PRO expects one of two types of data:

* For offset only data, a single character of the
offset value with the high bit set is expected.
For example, if the offset value for the data is
HEX 20 ($20), then a character value of HEX A0
($A0) ($20+$80 or #32+#128) must be placed in the
command string. There would be two of these
characters needed to specify both the row and
column position.

* For DECIMAL data, two HEX 80 ($80 or #128)
characters are expected for row and another two
for the column.

There are two possible entries allowed here to
perform the same function. Some terminals have
more than one way to position the cursor. Use the
presets as an example when creating a new terminal
type.

(C) CURSOR LEFT

This option specifies the command string which
moves the cursor to the left. There are two
possible entries allowed here to perform the same
function. Also note that the inclusion of one of
the special high-bit set characters in the string
may be used to specify repetitive cursor movement
for those terminals that support such functions.

(D) CURSOR RIGHT

This option specifies the command string which
moves the cursor to the right. There are two
possible entries allowed here to perform the same
function. Also note that the inclusion of one of
the special high-bit set characters in the string
may be used to specify repetitive cursor movement
for those terminals that support such functions.

(E) CURSOR DOWN

This option specifies the command string which
moves the cursor down. There are two possible
entries allowed here to perform the same function.
Also note that the inclusion of one of the special
high-bit set characters in the string may be used
to specify repetitive cursor movement for those
terminals that support such functions.

(F) CURSOR UP

This option specifies the command string which
moves the cursor up. There are two possible
entries allowed here to perform the same function.
Also note that the inclusion of one of the special
high-bit set characters in the string may be used
to specify repetitive cursor movement for those
terminals that support such functions.

(G) LINEFEED

This option specifies the command string which
performs a LINEFEED. Contrary to cursor down
movements, a linefeed which reaches the bottom of
the screen will cause the screen to scroll up.

(H) REVERSE LINEFEED

This option specifies the command string which
performs a REVERSE LINEFEED. Contrary to cursor up
movements, a reverse linefeed which reaches the
top of the screen will cause the screen to scroll
down.

(I) NEW LINE

This option specifies the command string which
performs a carriage return and linefeed
combination. This moves the cursor to the start of
a new line. If at the bottom of the screen, it
will cause the screen to scroll up.

(J) SAVE CURSOR

This option specifies the command string which
performs a save of the current cursor position.

(K) RESTORE CURSOR

This option specifies the command string which
will restore the cursor to the last saved position
from the execution of the command string above.

(L) HOME CURSOR

This option specifies the command string which
moves the cursor to the HOME position of row 1 and
column 1.

26.4   ERASE SEQUENCES   (SUB-MENU)

This option is a SUB-MENU and pressing <RET> will
present the list of available options. These functions
control all of the screen erase functions.

(A) CLEAR TO END OF LINE

This option specifies the command string which
will clear all characters from the cursor position
to the end of the current line. There are two
entries allowed here to perform the same function.

(B) CLEAR TO END OF SCREEN

This option specifies the command string which
will clear all characters from the cursor position
to the end of the screen. There are two entries
allowed here to perform the same function.

(C) HOME AND CLEAR SCREEN

This option specifies the command string which
will home the cursor and clear the entire screen.
There are two entries allowed here to perform the
same function.

(D) CLEAR FROM START OF LINE

This option specifies the command string which
will clear all characters from the start of the
current line up to and including the cursor
position.

(E) CLEAR FROM START OF SCREEN

This option specifies the command string which
will clear all characters from the start of the

screen up to and including the cursor position.

(F) CLEAR CURSOR LINE

This option specifies the command string which will clear the current cursor line. The cursor position will not be affected.

(G) CLEAR ENTIRE SCREEN

This option specifies the command string which will clear the entire screen. The cursor position will not be affected.

26.5   OUTGOING SEQUENCES   (SUB-MENU)

This option is a SUB-MENU and pressing <RET> will present the list of available options. These functions control all of the outgoing sequences.

(A) CURSOR LEFT

This option specifies the command sequence which will be output when the cursor left key is pressed.

(B) CURSOR RIGHT

This option specifies the command sequence which will be output when the cursor right key is pressed.

(C) CURSOR DOWN

This option specifies the command sequence which will be output when the cursor down key is pressed.

(D) CURSOR UP

This option specifies the command sequence which will be output when the cursor up key is pressed.

(E) CURSOR POSITION RESPONSE

This option specifies the response string which will be output upon the receipt of the REPORT CURSOR POSITION command sequence (see MISC. SEQUENCES below). This option reports the current cursor position back to the HOST computer. Note

also that the use of high-bit set special
characters in the output string will perform
exactly as in the CURSOR POSITION command
sequences above.

(F) IDENTIFY RESPONSE

This option specifies the response string which
will be output upon the receipt of the IDENTIFY
command sequence (see MISC. SEQUENCES below). This
option reports the terminal identifier information
back to the HOST computer.

26.6   INSERT/DELETE SEQUENCES   (SUB-MENU)

This option is a SUB-MENU and pressing <RET> will
present the list of available options. These functions
control all of the insert and delete sequences.

(A) INSERT CHARACTER

This option specifies the command string which
will cause the insertion of a character at the
cursor position. The rest of the text on the line
to the right of the cursor will shift right to
make room.

(B) INSERT LINE

This option specifies the command string which
will cause the insertion of a line at the current
cursor line. The rest of the screen below the
current line will scroll down to make room.

(C) DELETE CHARACTER

This option specifies the command string which
will cause the deletion of a character at the
cursor position. The rest of the text to the right
of the cursor will shift left to close up the
space.

(D) DELETE LINE

This option specifies the command string which
causes the deletion of the current cursor line.
The rest of the screen below the current line will
scroll up to close the space.

26.7   AUTO LINEFEED TO SCREEN   (DEFAULT: OFF)

This option controls the generation of automatic
linefeeds to the screen during all emulation modes. If
this option is turned ON, then linefeeds will be
generated after every carriage return printed to the
terminal screen. With this option OFF, linefeeds are not
generated by BOBSTERM PRO and unless the INCOMING
LINEFEED SWITCH is turned ON, text will overprint itself
on the terminal screen after carriage returns. This is
the normal condition of most terminals. By keeping the
linefeed control seperate from carriage returns, the
HOST gains much more control of the terminal screen.

26.8   VIDEO ATTRIBUTES   (SUB-MENU)

This option is a SUB-MENU and pressing <RET> will
present the list of available options. These functions
control all of the video attribute sequences. All of the
video attributes are retained with the terminal screen
whenever you enter and exit terminal mode. Clearing the
terminal screen will reset all screen colors to the
default color setting, however all active attributes
will still remain in effect. Turning the EMULATION OFF
and then back ON will reset all active attributes to an
OFF condition. This will also occur at the beginning of
a new session when a carrier is received.

    (A) FULL INTENSITY

       This option specifies the command string which
       turns FULL INTENSITY ON. It should be noted here,
       that although 16 color choices are available to
       the RGB video output, there are actually only 8
       seperate colors. The status of the intensity bit
       creates the apparent extra colors. Certain color
       choices will lend themselves better to emulation
       which uses the intensity control often. For
       example; The color brown will turn to yellow when
       the intensity goes to full.

    (B) HALF INTENSITY

       This option specifies the command string which
       turns HALF INTENSITY ON. Colors will darken.
       Careful choice of default color is again needed
       when using a system that makes full use of the
       intensity bit. Some terminals default to the Half
       intensity mode, and others normally start with
       Full intensity. It helps to select the proper

default color which will reflect the correct
starting condition.

(C) REVERSE ON

This option specifies the command string which
turns REVERSE VIDEO ON. All following characters
will now display in inverse.

(D) REVERSE OFF

This option specifies the command string which
turns REVERSE VIDEO OFF. All following characters
will now display normal.

(E) FLASH ON

This option specifies the command string which
turns FLASH ON. All following charcters will now
flash.

(F) FLASH OFF

This option specifies the command string which
turns FLASH OFF. All following characters will now
display steady.

(G) UNDERLINE ON

This option specifies the command string which
turns UNDERLINE ON. All following characters will
now display with underline.

(H) UNDERLINE OFF

This option specifies the command string which
turns UNDERLINE OFF. All following characters will
now display without underline.

(I) REVERSE AND FLASH OFF

This option specifies the command string which
turns both REVERSE and FLASH OFF simultneously.
Some terminals do not support individual attribute
OFF command sequences.

(J) ALL OFF

This option specifies the command string which
turns all attributes OFF simultaneously.

26.9   MISC. SEQUENCES   (SUB-MENU)

This option is a SUB-MENU and pressing <RET> will present the list of avaiable options. These are extra functions which are often needed to emulate most terminals properly.

(A) REPORT CURSOR POSITION

This option specifies the command string which sends the CURSOR POSITION RESPONSE string back to the HOST computer. The output string is specified in the OUTGOING SEQUENCE functions.

(B) IDENTIFY

This option specifies the command string which sends the IDENTIFY RESPONSE string back to the HOST computer. Two command strings are allowed here to perform the same function. The output string is specified in the OUTGOING SEQUENCE functions.

(C) SET TAB

This option specifies the command string which sets a tab stop at the current cursor position.

(D) CLEAR TAB

This option specifies the command string which clears the current cursor position of any tab stops.

(E) CLEAR ALL TABS

This option specifies the command string which clears all preset tab stops. The default tab settings are at every 8th position. These defaults will be reset upon receiving a new carrier or turning EMULATION OFF and then ON.

26.10   ABSORB SEQUENCES   (SUB-MENU)

This option is a SUB-MENU and pressing <RET> will present the list of avaiable options. These functions are used to absorb special command sequences that a system might be sending that BOBSTERM PRO does not emulate. By absorbing the

command string, the terminal screen will not be
cluttered by misc. command characters and
successful emulation can occur even with a few
unsupported functions.

APPENDICES

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A.   USING THE HAYES SMARTMODEM

     The Hayes Smartmodem (Commodore 1670 included) is called
     an intelligent modem because it uses its own
     microprocessor and has a complete set of its own
     commands that it recognizes to perform certain
     functions. For example, to instruct the Hayes to dial a
     number using the touch-tone method, you simply send the
     command ATDT followed by the number. There are many
     commands documented in the Hayes manual, and you should
     refer to it for details.

     BOBSTERM PRO automatically sends certain Hayes commands
     that relate to the automatic functions of the Program.
     You do not need to concern yourself with dialing or
     answer mode, or the HOOK toggle command (<COMKEY> H),
     which will properly hang up the Hayes.

     The Hayes must be connected thru an RS232 interface that
     plugs into the User Port and converts the Commodore
     RS232 signals (+-5v) to the voltage levels that are
     standard for the RS232 serial interface (+-12v).

     Go to the PARAMETERS section and select the HAYES
     Modem-Type. Also, if your telephone exchange can use
     tone dialing, select that option. Next, change the
     carrier phase to + (except in the case of the Commodore
     1670 modem).

     NOTE: If you are using the Hayes Smartmodem 1200, refer
           to Section 18, RS232 PARAMETERS for information on
           adjusting the baud-rate timers for 1200-baud
           Commodore 64 operation. Do not take this
           adjustment too lightly... IT IS CRITICAL.

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-APPENDIX A-   USING THE HAYES SMARTMODEM

*   SETTING THE DIP SWITCHES

The DIP switches of the Hayes should be set up as
follows so that BOBSTERM PRO can send and receive the
proper data to control the modem:

   1 - Down: This forces the RS232C Data Terminal Ready
               lead (pin 20) true. This enables the Hayes
               to execute commands.

   2 - Up: Hayes responds with English command words.

   3 - Down: Result codes will be sent to your computer.

   4 - Up: Hayes will echo characters back to your
               computer while in command state.

   5 - Down: Hayes will not auto-answer until told to do
               so.

   6 - Up: Allows the carrier-detect lead (pin 8) to
               signal the presence or absence of a carrier
               frequency.

   7 - Up: Setting used for RJ11 modular telephone
               jack (single line connection).

   8 - Down: Enables Hayes command recognition.

Note that in the case of the 1670 modem from Commodore,
there are only three dip switches.

   1 - Up: Enables normal phone jack connection.

   2 - Down: Disables Analog Loopback Test Mode.

   3 - Down: Enables Carrier Detect.

B.   MODIFYING THE COMMODORE 1660 MODEM/300

The Commodore 1660 Modem/300 is an excellent modem but
the original models had one major flaw. The
carrier-detect signal was not coupled back to the User
Port. You may easily determine if your modem falls into
this category. Select the 1660 MODEM TYPE in the
Parameters section and set the CARRIER DETECT option to
ON, also in the Parameters section. Using the Auto Dial
option at the AUTO MENU, dial and connect to a HOST
computer. If your modem is one of the originals, you
will hear the carrier tone in the speaker, but BOBSTERM
PRO will take no automatic action to send you into
Terminal Mode. BOBSTERM PRO has no way of knowing
whether a carrier frequency has been detected or not. If
the carrier signal is detected and you are taken
automatically into Terminal Mode, you may skip this
section.

As you can see, this puts serious limitations on the
amount of automatic functions that can be controlled by
the Program. The following information can be used to
modify the original 1660 modems so that the
carrier-detect signal is passed to the User Port.

WARNING! MAKE THESE MODIFICATIONS AT YOUR OWN RISK. YOU
WILL VOID THE WARRANTY BY OPENING THE CASE OF THE MODEM.
RML LABS AND THE AUTHOR ACCEPT NO RESPONSIBILITY FOR
DAMAGED COMPONENTS DUE TO THESE SUGGESTED HARDWARE
MODIFICATIONS.

To open the case on the early 1660 modems is an easy
task. Simply insert a wide-blade screwdriver between the
case halves near each corner, and carefully pry them
apart. Some versions, however, are glued shut - which
makes it very difficult to get the case apart without
damaging it. I have managed to wedge the screwdriver
into the case at the corners, making a slit, that
allowed me to push the screwdriver into the case
slightly. Then I had enough leverage to snap the pins
holding the corners together.

Be careful. It is very easy to crack the case doing
this. When you are done, you can simply glue the case
corners shut with rubber cement so that you can open it
again easily if you need to. At any cost, connecting the
carrier-detect far outweighs any damage to the case in
my opinion.

-APPENDIX B- MODIFYING THE COMMODORE 1660 MODEM/300

Before you begin, obtain some very small wire and a
small switching diode, like a 1N4148 or 1N914 (or
similar).

Now that you are inside the case, the surgery can begin.
If you are not comfortable using a soldering iron, you
should have someone else who does electronic work make
these modifications.

(1) Remove the circuit board and lay it on the table
in front of you, with the top half of the case
(containing the speaker transducer) to your left
and the User Port plug-end closest to you.

(2) You should see a resistor (about 220-ohm value -
red/red/brown) sticking up out of the circuit
board with a wire connected to it leading to the
speaker transducer. This resistor can be changed
to a higher value to reduce the volume of the
sound. This helps eliminate all the noise during
serial-bus operations, and generally quiets the
operation of the modem to a reasonable level. I
have used a 10k-ohm resistor to make my modem very
quiet. Anything around 4.7k-ohms seems to be a
comfortable level.

(3) Flip the circuit board over so that the components
are face-down and you are looking at the
connections of the User Port plug. The plug-end
should be closest to you. There are two rows of
connections along the edge of the board. The
carrier-detect pin is the sixth pin from the right
on the row closest to the edge of the board
(closest to you). This is pin H as it is labeled
in the Commodore manuals. Using some very small
wire (wire-wrap wire is excellent for this
purpose), solder one end to this pin.

(4) Flip the circuit board over to the component side.
Make sure the User Port plug-end is still facing
you. In the center of the board, towards the back
half (away from the plug-end), you will see a row
of components lined up from front to back (the
component leads run left to right). In this group
you should see an empty space labeled C2 with
nothing in the two holes that were drilled in the
board. The holes might be filled with solder but
there should be no component leads there. If your
model is different, try to find an empty hole
somewhere in the area of these components. Clean
out any solder from the hole you choose, and pull

the loose end of the wire up through the hole to
get it neatly onto the top of the circuit board.

(5) Next, locate the resistor marked R15 (it should be
about 10k-ohms - brown/black/orange). The left
side of this resistor should be connected to pin
number 3 of the big IC chip (counting
counter-clockwise from the chip corner with the
indented dot marker) in the left corner of the
circuit board.

Now take the switching diode and solder the marked
side (marked by a dark line or arrow) to the left
side of this resistor (the side closest to the IC
chip). Cut the leads of the diode short and allow
it to stick straight up from the board.

(6) Now, solder the free end of the wire to the other
side of the diode; and the surgery is over.

(7) Close the case and secure it with a dab of rubber
cement if needed.

That's all there is to it. You are now in business with
a completely-equipped modem that will allow all
automated functions of BOBSTERM PRO to operate.

C.   PROBLEMS YOU MAY ENCOUNTER

Here are a few problems to be aware of while exploring
with BOBSTERM PRO:

*   If you are using a 1660 Modem/300 and you call a
     Westridge Modem which is set up to answer the call, you
     will experience difficulty in obtaining a carrier
     frequency lockup. The Westridge Modem switches carrier
     frequencies between Answer and Originate until an
     opposite frequency is detected. The 1660 Modem/300 has a
     built-in delay when it is set in the Originate mode.
     This delay causes the Westridge to keep cycling between
     frequencies, and the two modems never lockup. Change the
     1660 Modem/300 setting to Answer mode to eliminate the
     problem.

*   If you are using a Master Modem, set the Modem-Type
     parameter to the Westridge setting. Even though the
     Master Modem claims compatibility with the Commodore
     1650 Modem, it needs the slight delay built into the
     program routines that control the Westridge Modem.

*   If you are using a Commodore 1670 Modem, make sure to
     take your time adjusting the LO BAUD RATE setting in the
     RS232 PARAMETERS section of the Program. Also, when
     creating phone files or autodialing, the 1670 sometimes
     has trouble with the first character it receives from
     the dialing string. Try using a comma as the first
     character to eliminate garbaging the first number.