ALASKA CARD

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SECTION 1. INTRODUCTION

Congratulations on your purchase of the Alaska Card, the most advanced software-backup card available. Unlike most other backup cards which can only save the "Lower 48", the Alaska Card can backup most 48K, 64K, and Apple //e 128K memory resident software with a simple press of a button. It is completely compatible with Apple][, Apple][Plus, and Apple //e computers.

The Alaska Card "freezes" any running program in memory, and lets you make a fast-booting floppy-disk copy of the frozen memory image. Whenever you boot this copy, the Alaska Card "thaws out" its contents, and allows the program to continue right where it left off ... "unaware" that it was ever stopped!

If you later wish to save the program as a set of standard DOS binary files, you can use the Alaska Utility Disk to create the files from the contents of the fast-booting copy. These files can be BRUN at any time, and saved onto a hard disk if desired. Note that unless you wish to create binary files, the utility disk is not necessary.

With the Alaska Card, you can also stop the program to:

1) View any graphics or text screen.
2) Jump into the Apple monitor to examine or change the contents of memory.
3) Print the contents of the text screen at any time. The card can print text stored on the Apple //e 80-column screen as well as the standard 40-column screen.

After using any or all of these options, you can resume execution of your program.

(Note: The Alaska Card will copy most DOS, Pascal, and other Apple software, but it is not designed to copy CP/M-based software, or programs that use a Z-80 card or other processor card.).

The Alaska Card works best with "memory-resident" software. These are programs that are loaded completely into memory when the disk is first booted, and do not require the program disk to remain in the drive. Some protected programs periodically load in other files or otherwise check the drive to make sure the original

disk is still present. (This is called "disk-intensive" software.) Your best bet with these programs is to back up the original disk with a good bit copy program such as Copy][Plus.

You can often use the Alaska Card together with Copy][Plus to create back-ups of disk-intensive programs that boot faster than the original! Use the Alaska Card to save the part of the program that is first loaded into memory when the disk is booted. Then back up the files and data onto another disk with Copy][Plus. The Alaska copy will boot very quickly and may bypass the protection checking the original program did on boot-up.

Hardware Requirements

The Alaska Card requires an Apple][or Apple][Plus computer with at least 48K of RAM, or an Apple //e (which has 64K of RAM built in).

A floppy disk drive and controller (16 sector) are needed to save the Alaska copies. The Alaska Card uses the Apple's usual boot drive (the one that starts up automatically when you turn on the Apple). The controller card can be plugged into any slot. However, if you also have a hard disk, then the floppy must be plugged into a higher numbered slot than the hard disk when making copies. Only one drive is needed. A second drive can be used to save time when using the Alaska utility disk.

If you want to print the contents of the text screen, your printer interface card will need to be plugged into slot 1.

How to Install the Alaska Card

Note: If you have an Apple //e, you must follow the procedures on the additional installation note included with this manual, or it will not function correctly.

1. TURN THE APPLE OFF!! If you've installed other peripheral cards in your Apple, you've heard this warning before. We won't say any more on the subject, except that installing or removing any card while the power is on can damage the Apple, the Alaska Card, and possibly cards in other slots. It has also been linked to cancer in laboratory rats.

2. Remove the lid from the Apple. This is done by pulling straight up
on the back corners of the lid until they come free (with a couple of
"pop" noises), then lifting the lid back and away.

3. Note the edge connectors, or slots, in the back of the Apple. The
Alaska Card can be placed in any convenient slot (except Apple][
slot 0 or the *IIe* auxiliary slot). We recommend slot 7, since by
tradition this slot is usually not used for anything else. Once installed,
the card shouldn't be moved unless necessary. (See the note below.)

Hold the card in your right hand, parallel to the slot, with the black
integrated circuit chips on the right. (Note that the other cards in the
Apple are all oriented in this same way.)

Push the card into the slot so that the gold fingers on the card are
seated firmly in the connector. It may take a slight back-and-forth
rocking motion if the connector is tight. (Don't flex the Alaska Card
left and right!)

5. Feed the pushbutton and cable through any convenient opening in
the back of the Apple.

6. This part is only for those who have an Apple][or Apple][Plus
with an Apple Language Card. You need to make a small modification
to the card by lifting a pin on one of its IC chips. Carefully unplug the
short cable from the socket in the Apple, and remove the Language
Card. Set the card on a table with the black IC chips facing up and the
gold fingers pointed toward you. Near the upper right corner is a
chip labeled 74LS20. With an IC puller (or by prying up with a small
screwdriver), carefully remove this chip from its socket. Don't pull it
up with your fingers; it's too easy to simultaneously stab yourself and
bend the pins on the IC chip.
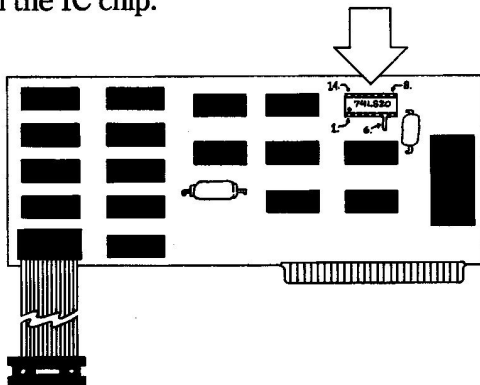
By using the diagram below, find pin #6 on the chip. Bend this pin so that it points straight out from the chip and will not go back into the IC socket. (Use needle-nose pliers if you have them.) Gently push the IC back into its socket, making sure that the notch on the chip is facing left. Reinstall the Language Card in slot 0, and plug the short cable back into the socket in the Apple.
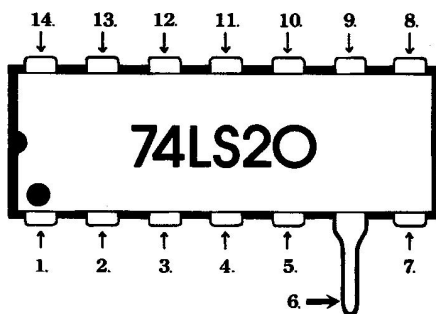
7. Replace the lid. Bring the front end of the lid slightly into the opening under the keyboard, then press the back corners straight down into place. The lid should seat firmly with two "pop" noises again.

Note: In order to copy software that might completely fill Apple memory, the Alaska Card uses its own internal memory for both saving and restarting programs. This means the Alaska Card must be present in the computer whenever copies made with the Alaska Card are booted, and it must be in the same slot it was in when the copies were created. (Whenever an Alaska copy is booted, the slot number intended for the Alaska Card is displayed at the top of the screen.) Binary files made with the Alaska utility disk remove this limitation. See Section 4.

Software Installation

Binary file copies are useful for saving your back-ups onto a hard disk, or storing more than one back-up on each floppy disk. If you want to make binary file copies, you will first need to "configure" your Alaska utility disk. You only need to do this once. Here's how:

1. First make a work copy of the Alaska utility disk. This disk is not protected, and you can copy it using any standard disk copy program, such as the Copy][Plus COPY DISK option, or COPYA on your

DOS system master disk. Put the original in your bomb shelter, and use the back-up as a working copy. From now on, we'll refer to this copy as the Alaska utility disk.

2. Boot your DOS system master disk or any 48K slave disk.

3. Remove the DOS disk from the drive and insert your copy of the Alaska utility disk. Type "RUN CONFIGURE".

4. As prompted by the CONFIGURE program, insert the DOS disk again and press Return. The disk will whir for a few seconds.

5. Reinsert the Alaska utility disk and press Return again. When the program ends, your Alaska disk is configured and ready to use.

A First Example

Here is a quick example to show you how easy it is to copy a program with the Alaska Card. Boot any standard DOS disk (e.g. your DOS system master disk). When the Basic prompt appears, enter the following Basic program:

]NEW

]10 N = 0

]20 N = N + 1

]30 PRINT "NUMBER: "; N

]40 GOTO 20

]RUN

The running program should begin counting in a continuous loop:

```
NUMBER: 1
NUMBER: 2
NUMBER: 3
NUMBER: 4
NUMBER: 5
NUMBER: 6
    .
    .
    .
```

Now to freeze the program, press the button on the Alaska Card.
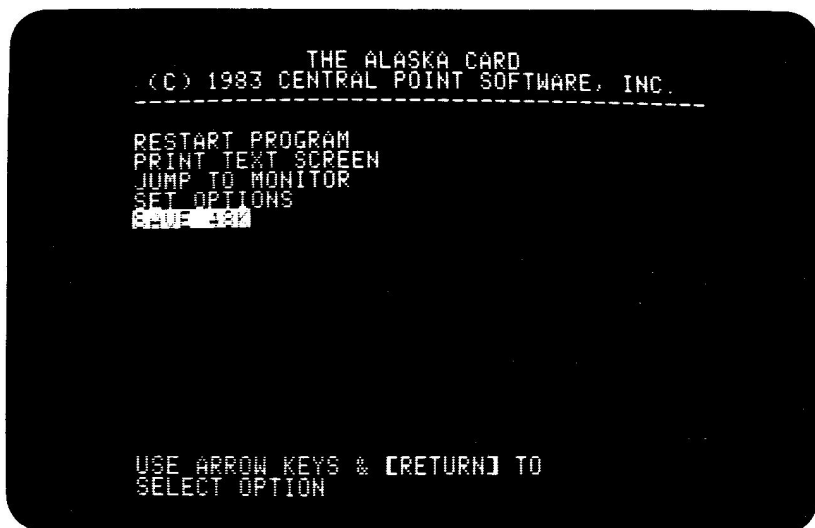A menu similar to the following will appear.

```
                    THE ALASKA CARD
       (C) 1983 CENTRAL POINT SOFTWARE, INC.
       -----------------------------------------

       RESTART PROGRAM
       PRINT TEXT SCREEN
       JUMP TO MONITOR
       SET OPTIONS
       SAVE 48K




       USE ARROW KEYS & [RETURN] TO
       SELECT OPTION
```

Figure 1.   Main Menu

The menu might also include the options SAVE 64K and SAVE 128K,
depending on how much memory is availble in your Apple.

The SAVE 48K option should be in inverse. Press [Return].
A message will appear at the bottom of the screen:

INSERT A BLANK DISK & PRESS [RETURN]
(OR PRESS [ESC] TO EXIT)

The Alaska Card uses the Apple's usual boot drive. (This must be a
floppy drive, not a hard disk.) Insert either a blank disk, or a disk
which you don't mind erasing, into this drive. Press [Return]. The
drive will whir for about 12 seconds, saving the Basic program
(and the rest of Apple memory) to disk. Then the menu will be
redisplayed.

Turn your computer off (erasing any program from memory), then
turn it back on again. The newly created copy will begin booting, and
display this message at the top of the screen:

THE ALASKA CARD — SLOT n

where n is the slot number the Alaska Card was in when the disk was made (and is still in). The Alaska Card loads the contents of the disk back into Apple memory. In about 10 seconds, the original Basic program is restarted, continuing from where it was interrupted as if nothing had happened:

NUMBER: 9
NUMBER: 10
NUMBER: 11
NUMBER: 12
NUMBER: 13
.
.
.

(Press ConTRoL-C to stop.)

Making a back-up with the Alaska Card is often as simple as with the above example:

> Run the program to be copied.
> Push the button on the Alaska Card.
> Press [Return].
> Insert a disk.
> Press [Return].

Other times, you may need to select one or two options. Making back-ups on an Apple //e is almost completely automatic, since the Apple //e provides more information about its own status. For example, the Alaska Card can directly find out what graphics mode an Apple //e is currently in and what memory is "on"; whereas on an Apple][Plus, this information cannot be read by the card and must be selected by you. Because of these differences, we've divided the step-by-step instructions into two parts. The first part is for Apple //e users; the second part is for people with Apple][or Apple][Plus computers.

SECTION 2: USING THE ALASKA CARD WITH AN APPLE //e

Using the Alaska Card with an Apple //e couldn't be easier...
When you press the button on the Alaska Card, the program is
interrupted, important status information is saved (including the
contents of the text screen), then the main menu (as shown in
Figure 1) appears.

One of the menu items is displayed using inverse (black-on-white)
characters. If you want to select that option, just press [Return]. If
you want to select another option, pressing the arrow keys will
move the inverse field to that option. Try pressing the arrow keys a
few times. The left arrow and up arrow move the inverse field up,
and the right and down arrows move it down. Once the option you
want is displayed in inverse, then press [Return] to run it.

These same keys apply to all of the menu selections in the Alaska
Card. In addition, pressing the ESCape key will end the current
menu or option and return you to the main menu. Copy][Plus
users will be pleased to note that this is the same menu style used
in the Copy][Plus utilities.

Saving Programs to Disk

The 64K of memory in your Apple //e is divided into two groups of
48K and 16K. The 16K memory area, called "bank-switched"
memory, can be turned on or off, and is not used by most programs.
(In fact, it must be off for Applesoft Basic to work.) Some
programs, however, store information into bank-switched memory,
then turn the memory off for a while. The information is still there,
and can be retrieved by turning the memory on again later. The
options SAVE 48K and SAVE 64K are included in the main menu so
that you can either save only the "lower 48K", or save the entire
64K of memory.

If you have an Apple extended 80-column text card installed in your
computer, then another 64K of auxiliary memory is available for a
total of 128K. As with banked-switched memory, the auxiliary
memory on the card can be turned on or off. When it is on, it
replaces some or all of the memory built into the Apple so that no
more than 64K is ever being used at any one time.

With the extended text card installed, the option SAVE 128K will also appear in the main menu. If you select SAVE 128K, then the entire 128K of memory will be saved to disk, including the main 48K, the bank-switched 16K, and the auxiliary 64K of RAM.

When you first press the button on the Alaska Card, either SAVE 48K, SAVE 64K, or SAVE 128K will be in inverse. If SAVE 128K is in inverse, this means that the auxiliary memory on the extended text card was on when the button was pressed. You should definitely select the SAVE 128K option to save the entire 128K of memory. If SAVE 64K is in inverse, then the bank-switched memory was turned on. You should select either SAVE 64K or SAVE 128K so that the bank-switched memory will be saved. If SAVE 48K is in inverse, then neither bank-switched nor auxiliary memory were on when you pressed the button. Remember, however, that these areas can sometimes still contain important information even though they're off.

Most programs which use auxiliary memory will include a notice in the manual that an extended 80-column text card is required. If not, then you probably won't need to use the SAVE 128K option. Some programs that use bank-switched memory also mention this. (If the program you're backing up also runs on an Apple][, look for a reference to a "16K RAM card or language card". If the program doesn't use a RAM card on an Apple][, then it won't use the 16K bank-switched memory in an Apple //e.) If you're reasonably sure that the program only uses the main 48K of memory, then use the SAVE 48K option.

As a general guideline, the vast majority of programs can be copied simply by selecting whatever option is displayed in inverse. Always try this first.

After selecting either SAVE 48K, SAVE 64K, or SAVE 128K, the next message will be:

INSERT A BLANK DISK & PRESS [RETURN]
(OR PRESS [ESC] TO EXIT)

Insert a blank disk (or any disk with information that can be erased) into the boot drive. REMEMBER TO REMOVE YOUR ORIGINAL DISK!! Also make sure that your blank disk does not

have a tab over the write-protect notch. Press [Return]. (If you decide you don't want to save the program, press [ESC]. You'll be returned to the main menu.)

If any problem occurs while the program is being saved to disk, the message:

DISK ERROR!

will appear. Double-check that the disk is not write-protected and the drive door is closed. If this is not the problem, the disk may be partially defective. Try another disk.

The Alaska Card formats the disk track by track as it writes the contents of Apple memory. You don't need to initialize the disks ahead of time.

Here are the times for each of the save options:

SAVE 48K   **12 seconds**
SAVE 64K   **25 seconds**
SAVE 128K   **50 seconds**

Booting Your Saved Programs

To restart a copy made with the Alaska Card, simply make certain that the card is in the same slot it was in when the disk was created, then boot the disk as you would with any other program. As the data is loaded into memory, the original Alaska Card slot is displayed at the top of the screen. If the Alaska Card is not in this slot, the booting program will probably hang. Move the Alaska Card to the correct slot (with the power off!) and retry.

Here are the booting times for each program size:

48K   **10 seconds**
64K   **13 seconds**
128K   **26 seconds**

RESTART PROGRAM

Another option from the main menu is RESTART PROGRAM. You can use this option to resume execution of your running program after pressing the Alaska Card button. Simply use the

arrow keys to display RESTART PROGRAM in inverse, then press [Return]. Your program will continue running from where it was left off. (Note: If a peripheral card was on when you pressed the button. you'll need to use the INITIALIZE SLOT option before restarting your program. See below.)

SET OPTIONS

The SET OPTIONS selection lets you see any graphics or text screen, change which graphics screen the program displays, or initialize a peripheral card when the program is restarted.
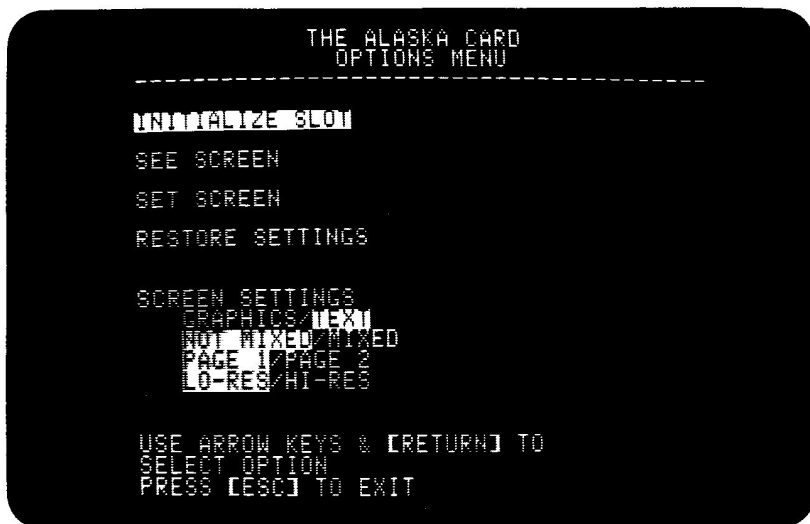
When you select SET OPTIONS, another menu appears:

Figure 2.   Apple // e Options Menu

Selecting and Seeing Graphics Screens

There are four main graphics "switches" built into the Apple:

> Graphics or text
> Not mixed or mixed text-with-graphics
> Page 1 or page 2
> Low resolution or high resolution

The Alaska Card "remembers" which way each of these switches

was set when you pressed the button. If you don't change them, then the Alaska Card automatically restores them when it restarts the program or boots an Alaska copy. The options menu shows the settings under SCREEN SETTINGS. The current setting of each switch is shown in inverse.

To see this screen exactly as it was when you pressed the Alaska button, use the arrow keys to select the SEE SCREEN option, and press [Return]. The screen is displayed. Press any key to bring back the options menu.

To change the settings of the screen switches, select the SET SCREEN option. An arrow will appear beside one of the settings:

SCREEN SETTINGS
→ GRAPHICS/TEXT
   NOT MIXED/MIXED
   PAGE 1/PAGE 2
   LO-RES/HI-RES

Try pressing [Return] a couple of times. The inverse field to the right of the arrow will toggle back and forth between the two settings. When you're in this mode, pressing [Return] changes the setting of whichever switch the arrow is pointing to. Pressing the arrow keys points the arrow to a different switch. You can use the arrow keys and [Return] together to change the settings of any or all of the graphics switches. Press [ESCape] to leave this mode and return to the options menu.

By using SET SCREEN and SEE SCREEN together, you can select to see any or all of the graphics and text screens. (If an 80-column display was active when you pressed the button, and you select to see a text screen, the Alaska card will automatically display the text screen in 80 columns.)

When the Alaska Card saves or restarts the program, it uses whatever screen settings are shown in the options menu. When you leave the options menu, you should make sure that the screen switches are set correctly; otherwise the wrong screen will be displayed when the program restarts. That's what RESTORE SETTINGS is for. If you select RESTORE SETTINGS and press [Return], the Alaska Card will automatically restore the screen

switches to their original settings. That way, you don't have to remember what they were before you changed them.

INITIALIZE SLOT

The other selection in the options menu is INITIALIZE SLOT. Sometimes you may need or want to freeze a program with the Alaska Card while a printer, modem, or other peripheral is being used. If so, then the peripheral will usually need to be "initialized" whenever the copy is restarted. This helps to set the hardware to the way it was when the program was stopped, so that all conditions are the same when the copy is booted.

The Alaska Card will initialize up to three peripheral cards on restart for you if you've selected it with the INITIALIZE SLOT option. You will rarely need to initialize more than one. When you select INITIALIZE SLOT, a colon and a flashing cursor will appear. Simply enter the slot number(s) you want to initialize. If you change your mind and want to delete a number, press the left arrow key. When you are done, press [Return]. The colon will disappear, but the numbers will remain, showing that those slots will be initialized whenever the program is restarted or booted.

Saving 80-Column Programs

If you have an Apple //e 80-column text card, the Alaska Card will save 80-column programs automatically. The Alaska Card keeps track of the 80-column hardware and firmware settings, and restores these when you restart the program or boot a copy.

If you're using a different 80-column card that is plugged into one of the 7 slots, the procedure may be a little tricky. The main difficulty is that the Alaska Card menu appears only on the standard 40-column screen. If an 80-column card is on, you won't see the menu, even though the Alaska Card is working perfectly! (The Alaska Card has no way of knowing how to turn off the 80-column card, since nearly every card on the market uses a different method.)

If the 80-column card is on, you can usually still display the 40-column screen (and the Alaska Card menu) by connecting a cable from the Apple video-out jack directly to your monitor. Some 80-columns cards also have switches connected to the circuit card

that you can use to select between 40 and 80 columns. Once the menu is on the screen, select the OPTIONS MENU, then INITIALIZE SLOT. Enter the slot number that your 80-column card sits in (usually slot 3). Return to the main menu, then save the program in the usual way. When you boot the copy, the 80-column card will be automatically turned back on.

PRINT TEXT SCREEN

The PRINT TEXT SCREEN option from the main menu is a handy utility you can use for making a hard-copy of anything that appears on the Apple text screen. It will print either the 40-column or 80-column screen, whichever was being displayed when you pressed the button. Printing the text screen is easy:

1. Make sure your printer card is in slot 1, and your printer is on.
2. When the text you wish to print is on the screen, press the Alaska button.
3. Select the PRINT TEXT SCREEN option. The contents of the screen is printed immediately.
4. Was a peripheral card on when you pressed the Alaska button? If so, enter the options menu and initialize the slot.
5. Use RESTART PROGRAM to resume execution of your program.

JUMP TO MONITOR

This option is mainly intended for bold and daring machine language programmers. You can use the Alaska Card to freeze a program, then enter the Apple system monitor to examine or change nearly any value in Apple memory, then restart the program again.

When you select the JUMP TO MONITOR option, the Alaska Card clears the screen and enters the Apple system monitor with an asterisk prompt. While in the monitor, you can use CTRL-E to see the values that the 6502 registers contained when the program was frozen. The 6502 program counter is also saved into locations $3A and $3B, which are used by the monitor's [L]ist and [G]o commands. If you do a [L]ist, the disassembly will begin at the address where the program was stopped. However, executing a [L]ist or [G]o command will also overwrite these two locations. (All

register values are also stored in the Alaska Card's internal memory, so changing the values in these locations will not affect the actual copy in any way.)

To re-enter the Alaska Card, press [CTRL-Y] and [Return]. The Alaska Card main menu will reappear. From here you can use the RESTART PROGRAM option to resume execution of your running program.

Nearly every location in Apple memory is left untouched when you enter the monitor. However, some locations are changed, then restored when the Alaska Card restarts the program. Here are the addresses of those locations:

$20 — $6F   Various monitor and zero page locations
$100 — $1FF   6502 stack
$200 — $2FF   Line input buffer
$3F8 — $3FA   CTRL-Y vector
$400 — $7FF   Text screen area

(Note: When the Alaska Card jumps into the monitor, it sets the stack pointer as though a BRK instruction had stopped the running program. Even though the monitor is using the stack above this point, any values or return addresses that the running program had pushed on the stack will still be valid.)

If you want to press [CTRL-Y] to re-enter the Alaska Card menu, then you must not change the values in locations $50 - $57 and $3F8 - $3FA. Other than that, you can change the values in any of the above areas without affecting the frozen program in the least. (Outside of these areas, you're on your own!)

(Central Point Software may later introduce a disk-based "Alaska monitor" so that any part of the frozen program can be examined or changed.)

Summary: How to Make a Back-up

1. Run the program to be copied.

2. As soon as practical after the program is loaded, press the Alaska button.

3. Was any peripheral card actually in use when you pressed the button? If so, enter the options menu and use INITIALIZE SLOT to select the slot number of the peripheral card.

4. Return to the main menu, and select either SAVE 48K, SAVE 64K, or SAVE 128K.

5. Insert a blank disk or a disk that doesn't have any valuable data into the boot drive, then press [Return]. The disk drive will whir for a few seconds as the Alaska Card creates the back-up of your program.

To run the back-up, simply boot it like any other disk.

The next section describes how to use the Alaska Card with Apple][and Apple][Plus computers. You may skip to Section 4 for a discussion of binary file back-ups and other general information.

SECTION 3: USING THE ALASKA CARD WITH AN APPLE][OR APPLE][PLUS

When you press the button on the Alaska Card, the program is interrupted, important status information is saved (including the contents of the text screen), then the main menu (see Figure 1) appears.

One of the menu items is displayed using inverse (black-on-white) characters. If you want to select that option, just press [Return]. If you want to select another option, pressing the arrow keys will move the inverse field to that option. Try pressing the arrow keys a few times. The left arrow moves the inverse field up, and the right arrow moves it down. Once the option you want is displayed in inverse, then press [Return] to run it.

These same keys apply to all of the menu options in the Alaska Card. In addition, pressing the ESCape key will end the current menu or option and return you to the main menu. Copy][Plus users will be pleased to note that this is the same menu style that is used in the Copy][Plus utilities.

When the menu first appears, the SAVE 48K option is usually already in inverse. This is helpful for saving most programs in as few keystrokes as possible.

If you do not have a 16K RAM card or language card, then the following section will not apply to you. You may (without fear of losing your sanity) skip to the next section...

Saving 64K Programs

If your computer contains a 16K (or larger) memory card, then the option SAVE 64K will also appear in the main menu. When saving or restarting a program, you will need to select how to use the extra memory. A basic understanding of how the card works can help.

The 16K memory card can be turned on or off by a running program. The memory must be on to read its contents, and must be off in order to use the Basic stored in the Apple ROM. Even if the memory is currently off, however, it may still contain data that will be needed later in the program. To complicate things a little more, 8K of the memory is divided into two 4K banks (numbered 1 and 2), only one of which can be selected at any one time. (For more detailed information, consult your memory card manual.)

Suppose you wish to make a back-up of a protected program. When you press the button, there are four possibilities for the 16K memory: 1) The memory is on, with bank 1 selected. 2) The memory is on, with bank 2 selected. 3) The Basic ROM is being used and the memory is currently off, but it contains important information which should be saved. 4) The top 16K of memory is being ignored altogether.

Most programs which use the top 16K of memory will mention this in their manuals. Look for phrases like: "... requires an Apple][with 16K memory card". If you think this memory is being used by the program, select the SAVE 64K option instead of the SAVE 48K option.

If you select the SAVE 64K option, the following sub-menu will appear:

WHICH MEMORY ON?
    ROM
    BANK 1
    BANK 2

Select the appropriate memory, using the arrow keys and [Return]. Most 64K programs use only bank 2. Try this first. Others, such as Apple Pascal, switch frequently between the two banks, and may require a couple of trials to copy. Try to find a stable place in the program (such as an input) to press the Alaska button when saving these, and select bank 2 for your first try.

Continuing with SAVE

Whether you select SAVE 48K or SAVE 64K, the next message will be:

**INSERT A BLANK DISK & PRESS [RETURN]
(OR PRESS [ESC] TO EXIT)**

Insert a blank disk (or any disk with information that can be erased) into the boot drive. Make sure that the disk does not have a tab over the write-protect notch. Press [Return]. (If you decide you don't want to save the program, press [ESC]. You'll be returned to the main menu.)

If any problem occurs while the program is being saved to disk, the message:

DISK ERROR!

will appear. Double-check that the disk is not write-protected and the drive door is closed. If this isn't the problem, your disk may be defective. Try another disk.

The Alaska Card formats the disk track by track as it writes the contents of Apple memory. You don't need to initialize the disks ahead of time. A 48K save takes approximately 12 seconds; a 64K save takes 25 seconds.

Rebooting Saved Programs from Disk

To restart a copy made with the Alaska Card, simply make certain that the card is in the same slot it was in when the disk was created, and boot the disk. As the data is loaded into memory, the original Alaska Card slot is displayed at the top of the screen. If the Alaska Card is not in this slot, the booting program will probably hang. Move the Alaska Card to the correct slot (with the power off!) and reboot.

A 48K program will load into memory in about 10 seconds, and a 64K program will take 13 seconds to load.

RESTART PROGRAM

Another option from the main menu is RESTART PROGRAM. You can use this option to resume execution of your running program.

Note that you may need to use SET OPTIONS to select the right graphics screen or to initialize a slot before you restart the program. SET OPTIONS is discussed later.

On 48K Apples, selecting the RESTART PROGRAM option will immediately return you to the interrupted program.

On Apples with a memory card, the WHICH MEMORY ON? menu (described above) will appear first, so that you can select which memory should be active when the program is re-entered. After selecting the appropriate memory option, the Alaska Card will restart the program. (If you select the wrong memory option, the program will probably hang. You may still be able to recover by pressing Reset, or by pushing the Alaska button and trying the RESTART PROGRAM option again.)

SET OPTIONS

The SET OPTIONS selection allows you to initialize a peripheral card when the program is restarted, see any graphics or text screen, and set or change screen options.
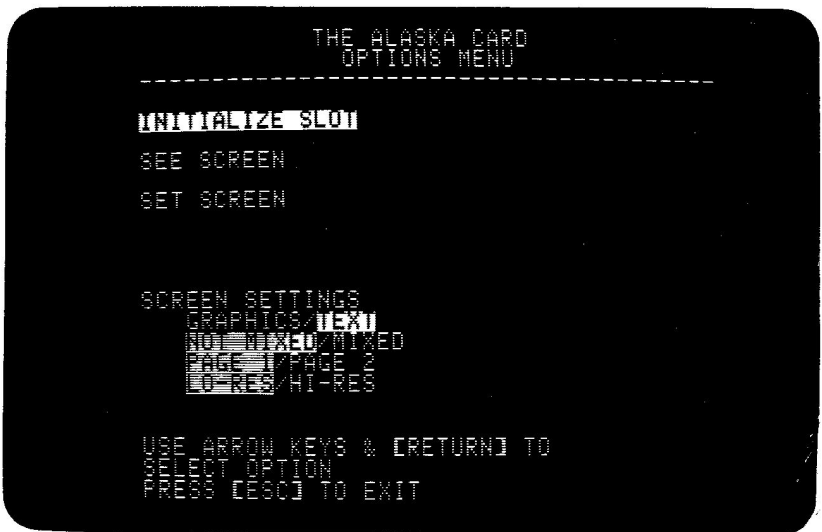
When you select SET OPTIONS, another menu appears:

Figure 3.   Apple][Options Menu

Selecting and Seeing Graphics Screens

There are four graphics "switches" built into the Apple:

> Graphics or text
> Not mixed or mixed text-with-graphics
> Page 1 or page 2
> Low resolution or high resolution.

These switches determine what kind of graphics or text display will actually be shown on the screen when the program is restarted.

Under SCREEN SETTINGS, the current switch settings are shown in inverse. Initially, these will be the default settings of TEXT, NOT MIXED, PAGE 1, and HI-RES. To see the screen that is set by the switches, use the arrow keys to select the SEE SCREEN option, and press [Return]. The screen is displayed. Press any key to bring back the options menu.

To change the settings of the screen switches, select the SET SCREEN option. An arrow will appear beside one of the settings:

SCREEN SETTINGS
→ GRAPHICS/TEXT
   NOT MIXED/MIXED
   PAGE 1/PAGE 2
   LO-RES/HI-RES

Try pressing [Return] a couple of times. The inverse field to the right of the arrow will toggle back and forth between the two settings. When you're in this mode, pressing [Return] changes the setting of whichever switch the arrow is pointing to. Pressing the arrow keys points the arrow to a different switch. You can use the arrow keys and [Return] together to change the settings of any or all of the graphics switches. Press [ESCape] to leave this mode and return to the options menu.

By using SET SCREEN and SEE SCREEN together, you can select to see any or all of the graphics and text screens to determine which one was being displayed when you pressed the Alaska button. When you leave the options menu, make sure that the screen switches are set the way you want them; otherwise the wrong screen will be displayed when the program restarts.

INITIALIZE SLOT

The other selection in the options menu is INITIALIZE SLOT. Sometimes you may need or want to freeze a program with the Alaska Card while a printer, modem, or other peripheral is being used. If so, then the peripheral will usually need to be "initialized" whenever the copy is restarted. This helps to set the hardware to the way it was when the program was stopped, so that all conditions are the same when the copy is booted.

The Alaska Card will initialize up to three peripheral cards on restart if you've selected it with the INITIALIZE SLOT option. You will rarely need to initialize more than one. When you select INITIALIZE SLOT, a colon and a flashing cursor will appear. Simply enter the slot number(s) you want to initialize. If you change your mind and want to delete a number, press the left arrow key. When you are done, press [Return]. The colon will disappear, but the numbers will remain, showing that those slots will be initialized whenever the program is restarted or booted.

Saving 80-Column Programs

In many cases, the Alaska Card can save programs that use an 80-column card. The main difficulty is that the Alaska Card menu appears only on the standard 40-column screen. If an 80-column card is on, you won't see the menu, even though the Alaska Card is working perfectly! (The Alaska Card has no way of knowing how to turn off the 80-column card, since nearly every card on the market uses a different method.)

If the 80-column card is on, you can usually still display the 40-column screen (and the Alaska Card menu) by connecting a cable from the Apple video-out jack directly to your monitor. Some 80-column cards also have switches connected to the circuit card that you can use to select between 40 and 80 columns. Once the menu is on the screen, select the OPTIONS MENU, then INITIALIZE SLOT. Enter the slot number that your 80-column card sits in (usually slot 3). Return to the main menu, then save the program in the usual way. When you boot the copy, the 80-column card will be automatically turned back on.

PRINT TEXT SCREEN

The PRINT TEXT SCREEN option from the main menu is a handy utility you can use for making a hard-copy of anything that appears on the Apple 40-column text screen. Printing the text screen is easy:

1. Make sure your printer card is in slot 1, and your printer is on.
2. When the text you wish to print is on the screen, press the Alaska button.
3. Select the PRINT TEXT SCREEN option. The contents of the screen is printed immediately.
4. Was a peripheral card on when you pressed the Alaska button? If so, enter the options menu and initialize the slot.
5. Use RESTART PROGRAM to resume execution of your program.

JUMP TO MONITOR

This option is mainly intended for bold and daring machine language programmers. You can use the Alaska Card to freeze a program, then enter the Apple system monitor to examine or change nearly any value in Apple memory, then restart the program again.

When you select the JUMP TO MONITOR option, the Alaska Card clears the screen, then puts you into the Apple system monitor with the asterisk prompt. While in the monitor, you can use CTRL-E to see the values that the 6502 registers contained when the program was frozen. The 6502 program counter is also saved into locations $3A and $3B, which are used by the monitor's [L]ist and [G]o commands. If you do a [L]ist, the disassembly will begin at the address where the program was stopped. However, executing a [L]ist or [G]o command will also overwrite these two locations. (All register values are also stored in the Alaska Card's internal memory, so changing the values in these locations will not affect the actual copy in any way.)

To re-enter the Alaska Card, press [CTRL-Y] and [Return]. The Alaska Card main menu will reappear. From here you can use the RESTART PROGRAM option to resume execution of your running program.

Nearly every location in Apple memory is left untouched when you enter the monitor. However, some locations are changed, then restored when the Alaska Card restarts the program. Here are the addresses of those locations:

$20 - $6F   Various monitor and zero page locations
$100 - $1FF   6502 stack
$200 - $2FF   Input buffer
$3F8 - $3FA   CTRL-Y vector
$400 - $7FF   Text screen area

(Note: When the Alaska Card jumps into the monitor, it sets the stack pointer as though a BRK instruction had stopped the running program. Even though the monitor is using the stack above this point, any values or return addresses that the running program pushed on the stack will still be valid.)

If you want to press [CTRL-Y] to re-enter the Alaska Card menu, then you must not change the values in locations $50 - $57 and $3F8 - $3FA. Other than that, you can change the values in any of the above areas without affecting the frozen program in the least. (Outside of these areas, you're on your own!)

(Central Point Software may later introduce a disk-based "Alaska monitor" so that any part of the frozen program can be examined or changed.)

Summary: How to Make a Back-up

1. Run the program to be copied.

2. As soon as practical after the program is loaded, press the Alaska button.

3. Was the program displaying text or graphics? If graphics, enter the options menu and use SET SCREEN and SEE SCREEN to select the appropriate graphics screen.

4. Was any peripheral card actually being used when you pressed the button? If so, enter the options menu and use INITIALIZE SLOT to select the slot number of the peripheral card.

5. Return to the main menu, then select either SAVE 48K or SAVE 64K.

6. If SAVE 64K, use the WHICH MEMORY ON? menu to select which 16K memory option to turn on whenever the back-up is booted.

7. Insert a blank or unneeded disk into the boot drive and press [Return]. The disk drive will whir for a few seconds as the Alaska Card makes a fast-booting copy of your program.

To run the back-up, simply boot it like any other disk.

SECTION 4: OTHER ALASKA CARD GOODIES

Possible Problems, and How to Deal With Them

The Alaska card hardware and firmware were designed with a great deal of forethought regarding compatibility with other hardware, reliability of operation, and ease of use. Every card is tested before it is shipped. However, computers being what they are, and Murphy's Law being what it is, you may at some point run into a problem. Perhaps you are having difficulty making a working back-up of a program, or maybe the Alaska card itself seems to be misbehaving.

If you do have problems, the first thing you should do is try it one or two more times. Computers are stranger than you think, and a little persistence can often make a difference. If the problem refuses to go away, take careful note of four things: 1) what you're trying to do, 2) what keys you press, 3) what you think should happen, and 4) what actually happens instead. Following are a few common problems and what you can do to correct them, printed in a "question and answer" format.

A "DISK ERROR!" message appears when I am making a back-up: Make sure a disk is in the boot drive, the disk does not have a tab over the write-protect notch, and the drive door is closed. If you still get the "DISK ERROR!" message, then the disk is probably defective. Try another disk.

When I boot my back-up, the message "THE ALASKA CARD — SLOT n" appears on the screen, but then it immediately hangs or behaves erratically: The Alaska card is not in the correct slot. Move the card into the slot shown on the screen, then try booting the back-up again.

When I boot my back-up, the message "DISK ERROR!" appears: The back-up disk was probably damaged since the back-up was made. You'll have to make a new back-up.

When I boot my back-up, the program's original screen is displayed, but then the program hangs, behaves erratically, or tries to reset or reboot: This could be caused by a number of things. 1) You may not have saved enough memory, i.e. selecting the SAVE 48K option to save a program that uses 64K or 128K, or selecting SAVE 64K to save a 128K program. 2) On an Apple][or][Plus SAVE 64K option, you might have selected the wrong WHICH MEMORY ON? option. 3) You forgot to initialize a peripheral card. 4) You're trying to run an Apple //e copy on an Apple][(or vice versa). This will sometimes work, but there are no guarantees. There are important differences between the two computers. 5) The program may be copy-protected against hardware back-up cards. This is rare, because it is always difficult (and sometimes impossible, depending on the program) to protect against a hardware back-up.

My program hung, and I wanted to find out where it was stuck by using the JUMP TO MONITOR option. However, nothing happened when I pressed the Alaska button: While trying to execute code where it wasn't supposed to, the processor encountered an "invalid opcode". Several of these nasty numbers can make the processor stop cold, so that it won't even respond to an interrupt from the Alaska card. Pressing [Reset] is the only way back to reality.

If the Alaska card itself doesn't seem to be working correctly, there may be a hardware problem in your Apple. The Alaska card uses hardware features in the Apple that are ignored by most other peripheral cards and programs. Your computer will usually work correctly even if this special hardware is defective — until you try to use the special hardware by installing an Alaska card. We recommend that the more technically inclined reader refer to the February 1983 issue of Apple Orchard for the article "Diagnosing and Repairing Your Apple II" by Neil Lipson. It points out some of the more common hardware problems in the Apple][and][Plus computers.

Making DOS Copies of your Programs

The Alaska utility disk can be used to convert your 48K and 64K fast-booting Alaska copies into DOS compatible files. Hard disk owners will find this to be a great advantage, since they can run their back-ups directly from the hard disk. Floppy disk users can store two 48K or 64K copies on each disk, so they don't have to use as many disks to store their back-ups. In addition, the Alaska card isn't used when the DOS copies are restarted, so the card doesn't need to be present in the computer.

To boot and run 48K DOS back-ups, you need an Apple with at least 64K of RAM (i.e. an Apple][or Apple][Plus with a 16K memory card, or an Apple //e). To run 64K DOS back-ups, you must have an Apple //e with an extended 80-column text card. This extra memory is needed because the disk operating system has to be loaded into the computer along with the entire memory image that was saved.

For these instructions, we assume you have already made a fast-booting copy with the Alaska card, and you're now ready to make the DOS copy. If you're using floppy disks, you'll need a DOS disk to save the files onto. You can either initialize a new disk, or use a disk which is not very full. Note: If you own one of the commercial "DOS speed-up" programs which shortens the loading time of binary files, we suggest you make your initialized disk a "fast-DOS" disk. The binary file copy will then load 2 to 5 times faster.

The Alaska utility makes the DOS copy by reading the data from your fast-booting copy and saving either two or three files onto your DOS disk. If you have two disk drives, this procedure is completely automatic. If you have only one drive, then the program will tell you when to insert each disk.

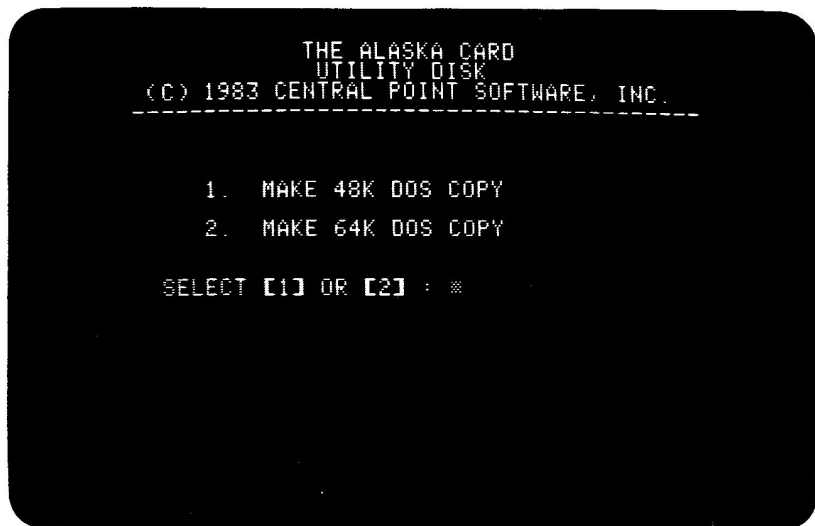Begin by booting your copy of the Alaska utility disk. A short menu will appear:

```
                  THE ALASKA CARD
                   UTILITY DISK
        (C) 1983 CENTRAL POINT SOFTWARE, INC.
        ----------------------------------------


           1.  MAKE 48K DOS COPY

           2.  MAKE 64K DOS COPY


        SELECT [1] OR [2] : *
```

Figure 4.   Utility Disk Menu

Press [1] to make a 48K copy, or [2] to make a 64K copy. The disk will whir as the appropriate program is loaded. A menu similar to the following will appear:

```
                   THE ALASKA CARD
                 48K BINARY FILE MAKER
        (C) 1983 CENTRAL POINT SOFTWARE, INC.
        ----------------------------------------

        COPY DISK SLOT: DEFAULT=6    *

                 DRIVE: DEFAULT=1

       BINARY FILE SLOT: DEFAULT=6

                 DRIVE: DEFAULT=2

                VOLUME: DEFAULT=0

        FILENAME:



        ENTER VALUES OR
        PRESS [RETURN] TO ACCEPT DEFAULTS OR
        PRESS [ESC] TO EXIT
```

Figure 5.   Binary File Maker

If you selected to make a 64K DOS copy, the header will say "64K BINARY FILE MAKER". The default values listed may also be different, depending on what drive the program was run from.

The questions allow you to tell the program what drives you want to put the disks into. COPY DISK SLOT and DRIVE refer to the fast-booting copy, and BINARY FILE SLOT and DRIVE refer to the DOS disk where the binary files will be stored.

The cursor will be flashing beside the COPY DISK SLOT question. If you want to use the slot shown for the fast-booting copy, press [Return]. If you want to use a different slot, type the slot number. (If you make a mistake, the speaker will beep.)

The cursor will then flash beside the DRIVE question. Either press [Return] or enter a new drive number.

You will then be prompted for the BINARY FILE SLOT and DRIVE. If you have a DOS-formatted hard disk that uses volume numbers to simulate floppy disk drives (see below), you can save the files directly onto the hard disk. Select the slot and drive numbers in the same way.

The next question asks for a VOLUME number. Some hard disks are divided into many volumes, each with the same storage as one floppy disk. If you're saving onto a hard disk that uses this scheme, enter an appropriate volume number. If you're saving onto a floppy, simply press [Return] to accept a volume of 0 (which will match any disk volume).

The last question allows you to select what FILENAME to give the files. Type in the name you want your program saved as, then press [Return]. The filename can't be any longer than 28 characters.

(A 48K save creates two files, and a 64K save creates three files. The second and third files will have a ".A" and a ".B" tacked onto the end of your filename. You don't need to worry about these files though. When you run the first file, it will automatically load the others for you.)

If you make a mistake when answering any of the above questions, and want to start over, press [ESC]. If you want to exit out of the program, press [ESC] twice.

After answering all of the questions, the screen should look something like this:

```
         THE ALASKA CARD
      48K BINARY FILE MAKER
  (C) 1983 CENTRAL POINT SOFTWARE, INC.
--------------------------------------

        COPY DISK SLOT: 6

               DRIVE: 1


      BINARY FILE SLOT: 6

               DRIVE: 2

              VOLUME: 0

      FILENAME: BACKUP




----------------INSERT DISKS--------------
PRESS [RETURN] TO PROCEED OR
PRESS [ESC] TO EXIT *
```

Figure 6.   Binary File Maker

Insert the disks in the drives you selected, then press [Return]. The drives will whir for a couple of minutes, saving the files onto your DOS disk.

If you selected the same drive for both the copy disk and the binary file, you will instead be prompted when to "INSERT SOURCE DISK" or "INSERT DESTINATION DISK". "Source disk" refers to your fast-booting copy, and the "destination disk" is your initialized DOS disk.

After the program finishes writing the files to disk, it will clear the screen, print "ALL DONE!", and return you to Basic.

Restarting Binary File Copies

To restart a binary file copy made with the Alaska utility disk, simply boot DOS, insert the disk with the back-up files in the drive (or select the proper volume on your hard disk), then type:

]BRUN BACKUP

substituting the name of your file for "BACKUP". The drive will whir, and after a few seconds, a phrase similar to:

48K ALASKA COPY

will appear at the top of the screen. The copy will continue loading, then the program will resume its execution, right from where it was interrupted when you pressed the button on the Alaska card.

Possible Binary File Problems, and what to do about them

If you run the MAKE 48K COPY program, then insert a 64K or 128K fast-booting copy, the program will print the message "THIS ISN'T A 48K COPY" and stop. Similarly, using a 48K or 128K copy with the MAKE 64K COPY program will produce the message "THIS ISN'T A 64K COPY". Load the correct file utility and try again.

If the utility has trouble reading the data from the fast-booting copy, the error message:

ERROR READING ALASKA DISK COPY
PRESS A KEY

will appear. Check to make sure the right disk is in the right drive and the drive door is closed, then try again. If the error occurs again, try booting the copy directly. If a "DISK ERROR!" message appears, then the copy was probably damaged. You'll need to make a new back-up.

If the utility has problems saving the binary files, a normal DOS error message will be printed. Make sure you're using an initialized DOS disk that does not have a tab over the write-protect notch, etc.

Remember that a 64K Apple is needed to load a 48K binary copy

into memory. If there is not enough memory available, the copy will print:

I NEED 64K TO LOAD!

To load a 64K binary copy, you need an Apple *II*e with an extended 80-column text card. If the text card is not present, the program will stop with the message:

I NEED AN APPLE *II*E EXTENDED 80-COLUMN TEXT CARD TO LOAD!

Other Wonderful Products

Central Point Software also sells these other software back-up and disk utility products:

The Filer is a collection of file and disk utilities for the Apple computer. The Filer utility allows you to copy, delete, lock, and unlock files, copy DOS, and change the DOS booting program. Fast Copy is a very fast, yet reliable copy program for DOS, CP/M, Pascal, and other Apple compatible diskettes. Disk Test is used for verifying that your disk drives are in top working order, and for checking the reliability of your floppy disks. All three Filer programs support 35, 40, and 70 track drives.

Copy][Plus is a sophisticated yet easy-to-use utility and software back-up product for the Apple. Copy][Plus can make back-ups of most popular software, protected or not. The Bit Copy option handles synchronized tracks, half tracks, bit insertion, spiral tracks, and other common protection schemes. The utilities are completely menu-driven, with surprisingly convenient file selection. Options include copy files, disk, DOS; delete files, disk, DOS, lock/unlock files; format disk; verify disk, files, drive speed; view files; fix file sizes; track/sector map; change boot program; recover deleted files; sector editor; and catalog with file lengths, hidden characters, and deleted files.

Copy][PC is the most complete copy program available for the IBM Personal Computer. It copies most protected diskettes with no parameter changes, and uses all available memory to make reliable copies — fast. Copy][PC also includes a disk speed test to help keep your drives in top running order.

CENTRAL POINT
Software, Inc.