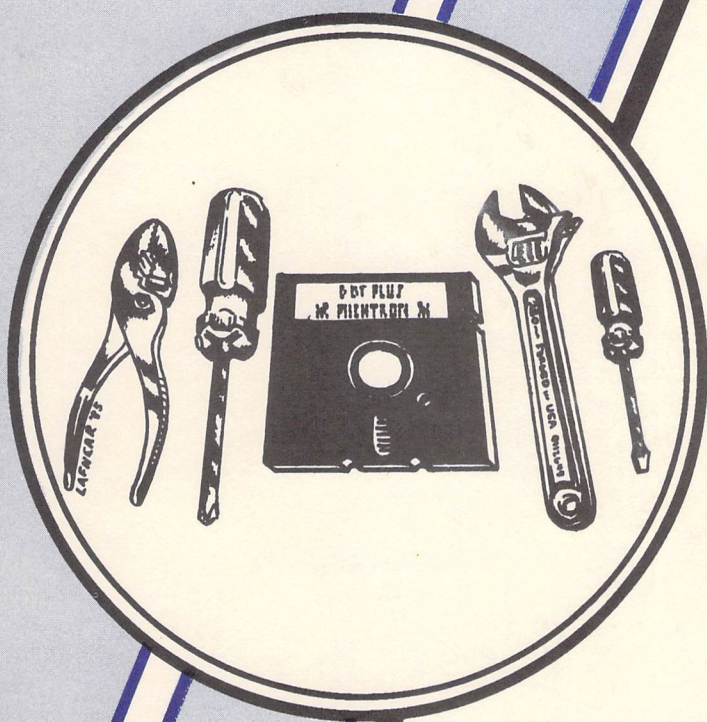


# *Michtron Utilities*

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by Timothy Purves

The Atari 520-ST Utilities Disk



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# **Introduction**

*MichTron Utilities* helps you keep control over your Atari ST files, even when things go wrong. Using *MichTron Utilities*, you can read and change any byte of information anywhere on your floppy or hard disks.

With this ability to address individual bytes, you can

**search through files or disks,  
change file contents,  
change file and volume names,  
change file attributes,  
format individual disk tracks,  
copy or verify individual sectors,  
restore deleted files,  
recover data from damaged disks,  
and repair damaged disks.**

*MichTron Utilities* gives you more flexibility to handle files and the potential to deal with trouble when it arises.

For instance, you can hunt for a file containing specific information even if you can't remember the file name. You can change the attributes of any file to hide it, make it a system file, make it read-only, change its date, change its name. You can also change the volume name.

If you accidentally delete a file, you can recover it as long as you haven't physically overwritten it. Even if the file has been partially destroyed, you may be able to recover the remaining parts of it.

If a disk has been damaged, you can isolate the trouble area and recover information from the rest of the disk. You can even try to reformat the affected area without harming the rest of the disk.

# **WARNING**

## **Be cautious when you use this program.**

Because you can use this program to reach into any disk location and change the information stored there, you can permanently destroy information. It is possible to destroy all the information on a disk with a single command.

If you are an experienced programmer with detailed knowledge of disk file management techniques, you should find it easy to use the *MichTron Utilities* without causing yourself trouble.

If you are new to disk handling, be especially careful. We have provided operation-specific procedures to solve common problems. Please do not try making up your own techniques unless you are willing to destroy some information while you learn.

As always, your best protection against data-loss disaster is to back up your disks. Even this program cannot promise to save your data in every situation.

If possible, don't use this program on the only disk you have containing valuable information. If, of course, you bought this package to recover the unduplicated database you spent three months compiling, you'll have to work with the original. **But practice first on something else.** We want you to be happy with the results, not mad because you misread the manual and permanently erased your data.

Before you give the go-ahead on any function, make sure the function is the one you want, that the sources and destinations are correctly entered and that the right disks are in the right drives. Taking a few moments to check everything at every step can prevent a disastrous error.

# ***Hardware requirements***

*MichTron Utilities* was designed for the Atari ST computer, independent of the monitor, printer or other peripherals you may have installed. Only one single- or double-sided disk drive is required.

NOTE: If you have a color monitor, set your preferences for Medium Resolution before loading this program. If you try to use low resolution, an alert will insist that you change.

# ***Loading instructions***

To load *MichTron Utilities*, boot up your Atari ST with your TOS disk or from TOS in read-only memory. Set the resolution preference to medium or high resolution.

Next, insert your working copy of *MichTron Utilities* into one of your disk drives. Press ESC if necessary to alert the computer that you have changed disks.

Select the program MUTIL.PRG by double-clicking on its icon or label.

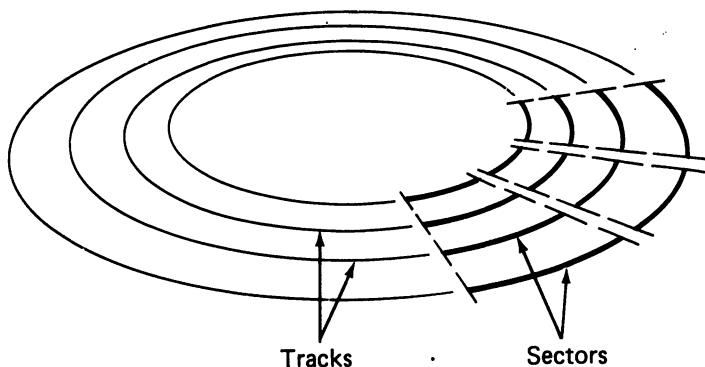
The *MichTron Utilities* opening screen will appear, ready to go to work. Pull down an appropriate menu to begin.

## ***How files are stored on disk***

In ordinary disk file handling you might never need to know how the operating system stores files on your disks: after all, the operating system is supposed to do the housekeeping for you and let you work on more important things.

But if you want to change file contents or structure or recover damaged or deleted files, it's vital that you know how your files are labeled and where to look for both files and labels.

Each floppy disk contains 80 circular, concentric tracks numbered from 0 on the outside edge to 79 on the inside. Each track is divided into nine sectors on each side, numbered 1 to 9 on the first side, 10 to 18 on the second side if there is one. Single-sided disks have 720 sectors in 80 tracks, double-sided disks 1440 sectors in 80 tracks. Each sector contains 512 bytes of information.





The logical sequence of sectors begins with sector one on track zero, then counts through all nine or eighteen sectors on track zero. The next sector in logical order is sector one on track one. The sequence continues through all sectors on each track before advancing to the next track.

The first few sectors on every disk are reserved for special use by the operating system. All other sectors are available for general use, so it is in those other sectors that we will find our files stored.

But those first few sectors contain all the information we need to find our files on the disk. Therefore both portions of the disk are important.

Hard disks allot storage similarly, but the disk may be logically subdivided by an operating system into several segments that operate independently.

## **The boot record**

The first sector on any disk is loaded with a short machine-language program designed to load the operating system into memory from the disk. Many disks, of course, do not have the operating system on them, but the loading program is always present anyway.

# The file allocation table

The next few sectors (The exact number depends on the type of disk being used) contain a list of how all the sectors on the disk are being used. The data sectors are grouped together into clusters of one to a few sectors each. (On any disk, all clusters are the same size, but different storage media use different cluster sizes.)

When the computer stores files on the disk, it looks for unused clusters and writes the first part of your file into the first one it finds. If more space is needed, another cluster will be chosen to store the next part. The second cluster need not be physically near the first. The whole purpose of the file allocation table (FAT) is to keep track of where the clusters belonging to a file are located.

Each cluster in use by any file is tagged in the FAT with the number of the next cluster used by the same file. If the cluster is the last used by the file, a special end-of-file mark appears in the FAT. Other special tags show that a cluster is not now in use or that it is damaged.

When you ask your computer to find a file, it uses the FAT to locate all clusters used by that file after the first.

Because damage to this table could be disastrous, the operating system keeps two copies, one immediately following the other. If the first goes bad, the second can be used to recover the data on the disk.

When you delete a file, all clusters associated with that file are re-marked as "not in use." This makes long files difficult to recover after accidental deletes.

## **The root folder**

Immediately after the last sector used by the FAT, there appears a list of all files assigned to the root folder on the disk. This directory saves for each file the name, the date and time of creation, the attributes, the first sector and cluster used and the size. The number of sectors used for the root folder depends on the type of disk.

When you delete a file, only the first letter of the filename is changed. Because the rest of the information is still present, we may be able to recover the file after an erroneous delete operation. The missing data erased from the FAT, however, will make it difficult to recover long files.

## **The file data area**

After the base folder comes the file data storage area, which fills the rest (almost all) of the disk. Double-sided drives for the Atari ST, for instance, use one sector for the boot record, five sectors for the FAT and 16 sectors for the base folder information. The remainder of the disk, a total of 1418 sectors, is available for data storage.

## **Summary of disk file storage**

To use any file we need information from at least three different areas on the disk. The base folder stores the file name and attributes and the location of the first cluster of sectors used by the file. The FAT stores, for each cluster, the next cluster used to store the file, or a special character to show that no more clusters were used. Finally, the cluster or clusters within the file data area of the disk actually store the information.

A file is damaged if any of these areas is damaged.

# MichTron Utilities functions

This section describes the individual functions available from *MichTron Utilities*. It does not usually provide application-specific information. If you want to repair a damaged disk, for instance, you will use several of these functions. Application procedures are outlined in the next major section of this manual, Common operations. Unless you are very experienced, you will need to read both sections before using this program.

All the utility functions are accessible from the opening screen. The figure below shows how the functions are grouped in the menus.

Desk	Modify	Sector	File	Quit
☒	Utilities Info	Iron Utilities v1.0, (c) 1985 MichTron Inc.		
	Control Panel			
	Install Printer			
	VT52 Emulator			
	Set RS232 Config.			
Desk	Modify	Sector	File	Quit
☒	View Disk	Iron Utilities v1.0, (c) 1985 MichTron Inc.		
	View File			
Desk	Modify	Sector	File	Quit
☒		Relative Mode	v1.0, (c) 1985 MichTron Inc.	
		✓ Track Mode		
		Copy Sectors		
		Verify Sectors		
		Format Tracks		
Desk	Modify	Sector	File	Quit
☒		MichTron	Change Label	1985 MichTron Inc.
			File Attributes	
Desk	Modify	Sector	File	Quit
☒		MichTron Utiliti	Exit to TOS	885 MichTron Inc.

## ***Choose Location Mode***

You may usually choose to keep track of your location on a disk in either track mode or relative mode as you examine and change your disk contents. Each choice has advantages and disadvantages.

If you choose track mode, you must specify by number the track (and usually the sector of the track) you want to work with. You should certainly use this mode when you are planning to reformat one or more tracks. Since a whole track must be reformatted, rather than individual sectors, it's important for you to know just which sectors will be destroyed by the reformatting operation.

With track mode, you know just where you are looking on the **physical structure** of the disk.

If you choose relative mode, you must specify the sector you want to work with by specifying the offset of that sector from the beginning of the file or disk. In many ways this is more convenient than actually keeping track of the physical layout of the disk files. In fact, track mode is not available under View File because the often-fragmented storage of your files would be confusing to follow.

With relative mode you know just where you are looking on the **logical structure** of the disk or file.

If you are addressing a floppy disk, you may choose the location mode you prefer for View Disk, Copy Sectors and Verify Sectors. Format Tracks requires track mode and will automatically change to it if necessary. View File requires relative mode and will automatically change to it if necessary. Location mode is not relevant to other *MichTron Utilities* functions.

If you are addressing a hard disk, the program will automatically adopt relative mode. Format Tracks will not work on a hard disk.

# View Disk

View Disk is useful for examining and changing individual bytes in machine-language files and in the file control sectors at the beginning of each disk.

From the opening screen, select View Disk by clicking once on the selector line. The screen will clear, then display part of the disk contents and the controls for moving through and searching the disk.

Filling the top sixteen lines of the screen will be the contents of the first half of sector one, track zero of the default disk.

Below that you will find the View Disk control area. At the lower left you will see the drive designation and one or two slider bars showing the current location on the disk. At the lower right you will find four function selector buttons.

## View Disk screen in track mode

Desk	Modify	Sector	File	Quit
MichTron Utilities v1.0, (c) 1985 MichTron Inc.				
0000:	43 4F 4E 54 52 4F 4C 20-41	43 43 00 00 00 00 00	CONTROL ACC.....	
0010:	00 00 00 00 00 00 1A 00-40	00 02 00 06 30 00 00	.....K.....;	
0020:	54 45 52 40 49 4E 41 4C-41	43 43 00 00 00 00 00	TERMINALACC.....	
0030:	00 00 00 00 00 00 20 00-40	00 11 00 2C 19 00 00	.....K.....;	
0040:	54 4F 53 20 20 20 20-49	40 47 00 00 00 00 00	TOS IMG.....	
0050:	00 00 00 00 00 00 40 14-42	00 18 00 EE 05 03 00	.....e.B.....	
0060:	44 45 53 40 54 4F 50 20-49	4E 46 00 00 00 00 00	DESKTOP INF.....	
0070:	00 00 00 00 00 00 34 00-52	00 0A 00 CE 01 00 00	.....4.R.....	
0080:	53 5A 41 50 20 20 20-50	52 47 00 00 00 00 00	SZAP PRG.....	
0090:	00 00 00 00 00 00 C0 04-4A	0A 00 00 6A F9 00 00	.....J..j...	
00A0:	53 5A 41 50 20 20 20-20	20 20 00 00 00 00 00	SZAP .....	
00B0:	00 00 00 00 00 00 18 0A-52	00 11 01 00 00 00 00	.....R.....	
00C0:	53 4F 55 52 43 45 43 4F-44	45 20 10 00 00 00 00	SOURCECODE .....	
00D0:	00 00 00 00 00 00 14 0A-52	00 25 01 00 00 00 00	.....R.%. .....	
00E0:	E5 49 53 40 20 20 20-53	20 20 00 00 00 00 00	..ISK S .....	
00F0:	00 00 00 00 00 00 56 0A-52	00 26 01 65 0F 00 00	.....V.R.&.e...	
Track:	<input type="text" value="01"/>	<input type="text" value=""/>	<input type="button" value="Search"/>	<input type="button" value="Continue"/>
Drive: A				
Sector:	<input type="text" value="03"/>	<input type="text" value=""/>	<input type="button" value="Relative"/>	<input type="button" value="Exit"/>

# Disk contents display

The screen shows the contents of half (256 bytes) of an individual disk sector. At the far left of each of the first sixteen lines is the relative address from the beginning of the current sector of the first byte shown on that line. In the middle of the line, the contents are displayed in hex code, on the right in ASCII, 16 bytes per line. You may read or modify either display; modifications are automatically duplicated in the second display.

## View Disk screen in relative mode

```
Desk  Modify  Sector  File  Quit
-----
* MichTron Utilities v1.0, (c) 1985 MichTron Inc.
0000: 43 4F 4E 54 52 4F 4C 20-41 43 43 00 00 00 00 00 CONTROL ACC....
0010: 00 00 00 00 00 00 1A 00-40 00 02 00 06 30 00 00 .....K.....
0020: 54 45 52 40 49 4E 41 4C-41 43 43 00 00 00 00 00 TERMINALACC....
0030: 00 00 00 00 00 00 20 00-40 00 11 00 2C 19 00 00 .....K.....
0040: 54 4F 53 20 20 20 20 20-49 40 47 00 00 00 00 00 TOS    ING.....
0050: 00 00 00 00 00 00 40 14-42 00 18 00 EE 05 03 00 .....E.B.....
0060: 44 45 53 40 54 4F 50 20-49 4E 46 00 00 00 00 00 DESKTOP INF....
0070: 00 00 00 00 00 00 34 00-52 00 DA 00 CE 01 00 00 .....4.R.....
0080: 53 5A 41 50 20 20 20 20-50 52 47 00 00 00 00 00 SZAP   PRG....
0090: 00 00 00 00 00 00 C0 84-4A 0A D0 00 6A F3 00 00 .....J...J....
00A0: 53 5A 41 50 20 20 20 20-20 20 20 00 00 00 00 00 SZAP   ....
00B0: 00 00 00 00 00 00 18 0A-52 00 11 01 00 00 00 00 .....R.....
00C0: 53 4F 55 52 43 45 43 4F-44 45 20 10 00 00 00 00 SOURCECODE ....
00D0: 00 00 00 00 00 00 14 0A-52 00 25 01 00 00 00 00 .....R.%.....
00E0: E5 49 53 40 20 20 20 20-53 20 20 00 00 00 00 00 .ISK  S .....
00F0: 00 00 00 00 00 00 56 0A-52 00 26 01 65 0F 00 00 .....V.R.&.e...
```

◀ | ▶ Search Continue

Drive: A Sector 11 of 720 Sectors. Track Exit

## **Viewing the disk you want**

If the disk you want to view is in the default disk drive, you need do nothing. If the disk is elsewhere, you may either transfer the disk to the default drive or change the view to another drive.

To put a new disk in the default drive, make the disk change, click on the disk drive label in the lower left of the screen and press RETURN.

To change the drive, move the pointer to the disk label in the lower left corner of the screen and click the mouse button once. Type the letter of the drive you want to view. The display will change to the new drive.

## **Choosing the location mode**

On the lower right corner of the screen is a button labeled Track or Relative (opposite of your current location mode). To change location modes, just click your mouse on the button. It acts as a toggle switch.

## **Viewing the track and sector you want**

Use the slider bars to move to the sector you want. The positions of the sliders represent the position of the current display within the disk. If you were in track mode when you entered the View Disk function, you will see slider bars for both track and sector; if you were in relative mode, a single slider bar represents the relative location on the disk.



**In track mode, you may select a new track by clicking on and dragging the Track slider along its bar.**

**You may change the track number by 10 by clicking inside the Track slider bar area either before or after the Track slider.**

**You may change the track number by one by clicking on the arrows at the ends of the Track slider bar.**

**You may select a new sector by clicking on and dragging the Sector slider along its bar.**

**You may change the sector number by 10 by clicking inside the Sector slider bar area either before or after the Sector slider.**

**You may also change the sector number by clicking on the arrows at the ends of the Sector slider box. Each click there moves the display one-half sector forward or backward.**

**In relative mode, you may select a new disk location by clicking on and dragging the Offset slider along its bar.**

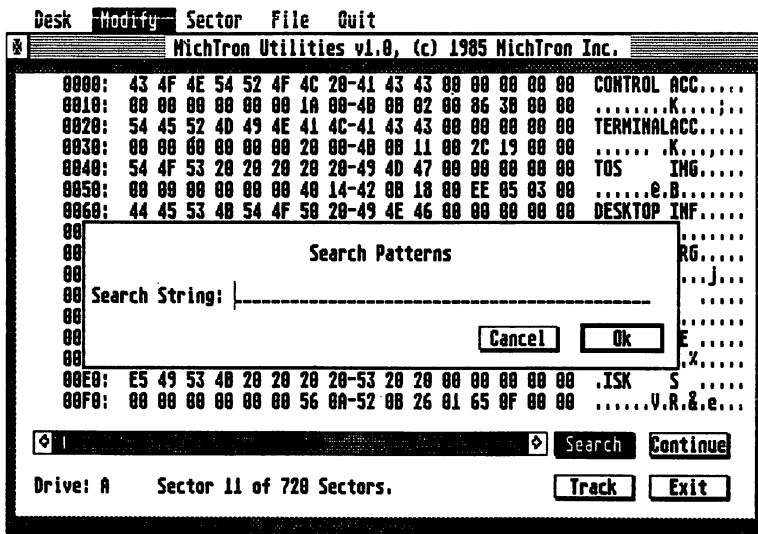
**You may change the sector number by 10 by clicking inside the Offset slider bar area either before or after the Offset slider.**

**You may also change the current sector by clicking on the arrows at the ends of the slider box. Each click there moves the display one-half sector forward or backward.**

**When you move beyond the last or first sector of a particular track, the display moves to the next or previous track.**

# Searching for character strings

You may search for a string of up to 43 ASCII or 22 hex characters. Begin by clicking once on the Search button. A dialog box will appear with space to type your string.



Type in the string you want to search for and click on the Ok button or press RETURN to start the search.

The default string type is hex. Each two keystrokes are counted as one hexadecimal number. For more readable entries, you may use commas to separate numbers. If commas are used, only a single digit is required. Even for zero, however, one digit is mandatory; a string of commas is interpreted as no entry.

The hex string mode is not case-sensitive.

If you want to enter an ASCII string, begin with either a single or a double quotation mark. All following text is interpreted as ASCII until the initial quotation mark is repeated. (Both styles of quotation mark are allowed so that you may search for strings including one of them.) The quotes need not be closed if the search string is entirely ASCII.

The ASCII string mode is case-sensitive.

Strings of mixed mode are allowed. Each ASCII section of the entry must begin with a quotation mark; if any hex entries follow, the ASCII section must be closed with the same quotation mark. You may use different quotation mark styles with different ASCII sections of a single search text.

In either mode, you may correct errors using BACKSPACE, DELETE, RIGHT ARROW and LEFT ARROW. ESC will erase the whole line.

If the program detects an illegal entry after you attempt to start the search, it will replace the first error with a dollar sign (\$). You may correct the error and try again or cancel the search.

If the search succeeds, the screen will show the search text on a normal **View Disk** screen with a cursor pointing to the text. If the entry was in hex, the cursor will be in the hex field; if the entry was in ASCII, the cursor will be in the ASCII field. If the entry was mixed in mode, the mode of the first letter determines where to place the cursor.

If the search fails, the program will display an alert. Click on the **Ok** button. You will be left at the end of the disk.

## **Aborting a search**

If you decide to abort a search, press **ESC** or hold the mouse button down. You will be left at the current position of the search.

## **Continuing a search**

If you want to repeat a search for the same string, just click on the **Continue** button on the lower right corner of the screen. The search will begin again immediately.

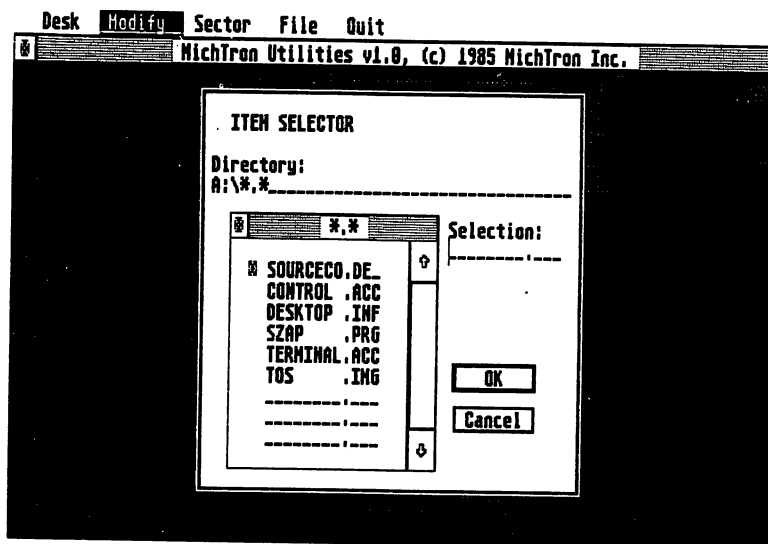
## **Quitting *View Disk***

Click on the **EXIT** button on the lower right of the screen. You will return to the opening screen.

# View File

View File, like View Disk, is useful for examining and changing individual bytes in machine-language files.

From the opening screen, select View File by clicking once on the selector line. The screen will clear, then display the ITEM SELECTOR dialog box. The screen names the current folder on the default drive near the top of the dialog box and displays its contents, or part of its contents, in the lower left. At the right you will see a place to type a file name. At the lower right are Ok and Cancel buttons.



## **Viewing the folder you want**

To change the folder displayed, click on the line containing the name of the current folder. Backspace over the current information and type in the new folder name. Do not press RETURN. Instead, move the pointer to the folder identifier move bar just below the folder name and click once. The new folder loads immediately.

If the folder you want to view is part of the current folder, you may see its contents just by double-clicking on its selector line. You may open as many folders within folders as you like.

If you ask for a folder not present on the specified disk, the dialog box will display the root folder for that disk.

## **Viewing the file you want**

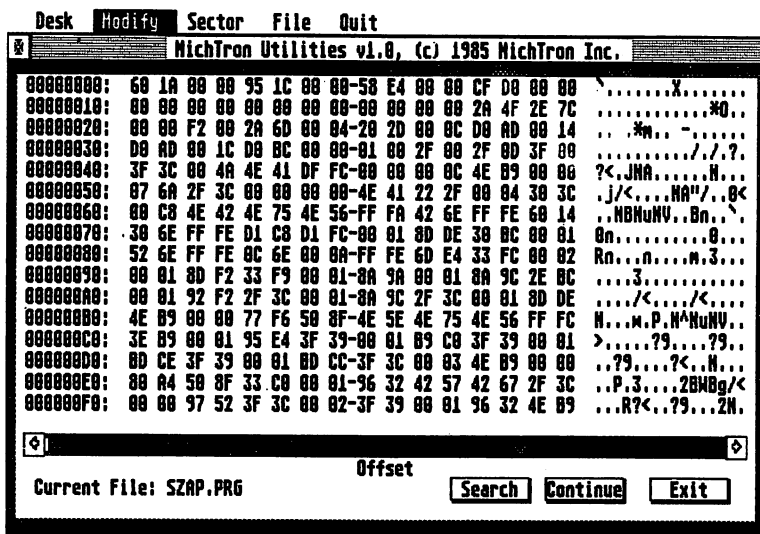
Once you have the right folder, its files will be listed on the screen. If the number of files is large, use the vertical scroll bar to bring different files into view until you find the one you want. Choose the one you want to view by double-clicking on the file name or by clicking once and pressing RETURN or clicking on the Ok button. You may also type in the filename if you want.

After you choose a file, the screen will clear, then display part of the file contents and the controls for moving through and searching the file.

# File contents display

Filling the top sixteen lines of the screen will be the contents of the first 256 bytes of the file.

Below that you will find the View File control area. At the lower left you will see the drive designation and file name. Above the name is an Offset slider bar showing the current location within the file. At the lower right you will find three function selector buttons.



The screen shows the contents of 256 bytes of the chosen file. At the far left of each of the first sixteen lines is the relative address from the beginning of the file of the first byte shown on that line. In the middle, the contents are displayed in hex code, on the right in ASCII, 16 bytes per line. You may read or modify either display; modifications are automatically duplicated in the second display.

## Moving through the file

You may look at other sections of the file by clicking on and dragging the Offset slider along its bar. The bar length represents the entire length of the file. The width of the slider shows (approximately) the fraction of the file displayed on the screen; its position shows the position of the display within the entire file.

You may change the current display by 2560 bytes by clicking inside the Offset slider bar area either before or after the Offset slider.

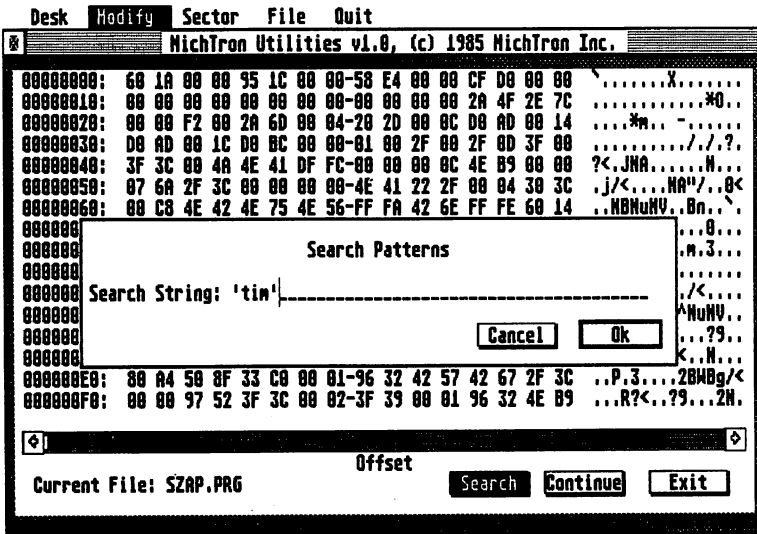
You may also change the current display by clicking on the arrows at the ends of the slider box. Each click there moves the display 256 bytes forward or backward.



# Searching for character strings

NOTE: The View File search function is identical in operation to the View Disk search function, except that the area of search extends only over a chosen file, not the whole disk. The procedure is repeated here for convenience in reference.

You may search for a string of up to 43 ASCII or 22 hex characters. Begin by clicking once on the Search button. A dialog box will appear with space to type your string.



Type in the string you want to search for and click on the Ok button or press RETURN to start the search.

The default string type is hex. Each two keystrokes are counted as one hexadecimal number. For more readable entries, you may use commas to separate numbers. If commas are used, only a single digit is required. Even for zero, however, one digit is mandatory; a string of commas is interpreted as no entry.

The hex string mode is not case-sensitive.

If you want to enter an ASCII string, begin with either a single or a double quotation mark. All following text is interpreted as ASCII until the initial quotation mark is repeated. (Both styles of quotation mark are allowed so that you may search for strings including one of them.) The quotes need not be closed if the search string is entirely ASCII.

The ASCII string mode is case-sensitive.

Strings of mixed mode are allowed. Each ASCII section of the entry must begin with a quotation mark; if any hex entries follow, the ASCII section must be closed with the same quotation mark. You may use different quotation mark styles with different ASCII sections of a single search text.

In either mode, you may correct errors using BACKSPACE, DELETE, RIGHT ARROW and LEFT ARROW. ESC will erase the whole line.

If the program detects an illegal entry after you attempt to start the search, it will replace the first error with a dollar sign (\$). You may correct the error and try again or cancel the search.

If the search succeeds, the screen will show the search text on a normal View File screen with a cursor pointing to the text. If the entry was in hex, the cursor will be in the hex field; if the entry was in ASCII, the cursor will be in the ASCII field. If the entry was mixed in mode, the mode of the first letter determines where to place the cursor.

If the search fails, the program will display an alert. Click on the Ok button. You will be left at the end of the file.

## **Aborting a search**

If you decide to abort a search, press ESC or hold the mouse button down. You will be left at the current position of the search.

## **Continuing a search**

If you want to repeat a search for the same string, just click on the Continue button on the lower right corner of the screen. The search will begin again immediately.

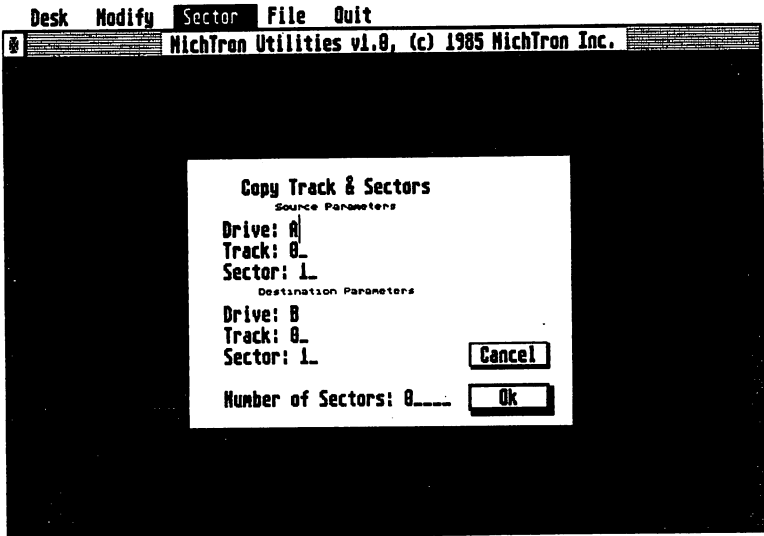
## **Quitting View File**

Click on the EXIT button on the lower right of the screen. You will return to the opening screen.

# Copy Sectors

From the opening screen, select Copy Sectors by clicking once on the selector line. The screen will clear, then display a dialog box in which you may specify the sectors to copy.

If you began this function while in track mode, you will see labels for drive, track and sector for both source and destination. Below will be a line to specify the number of consecutive sectors to be copied. At the right will be the Ok and Cancel buttons.



If you began while in relative mode, you will see labels for the drive and relative sector (from the first sector of track zero) for both source and destination. At the right will be the Ok and Cancel buttons.

In either location mode, click on any label you want to change and type in the new information. When you have both source and destination properly specified, click on Ok to begin the copy.

Copying begins immediately, so make sure you specify all parameters correctly.

A dialog box will appear to count down the sectors being copied. If copying succeeds, the dialog box will close up and the program will return you to the opening screen.

If a copy could not be made, an alert will warn you. Click on Ok to return to the opening screen.

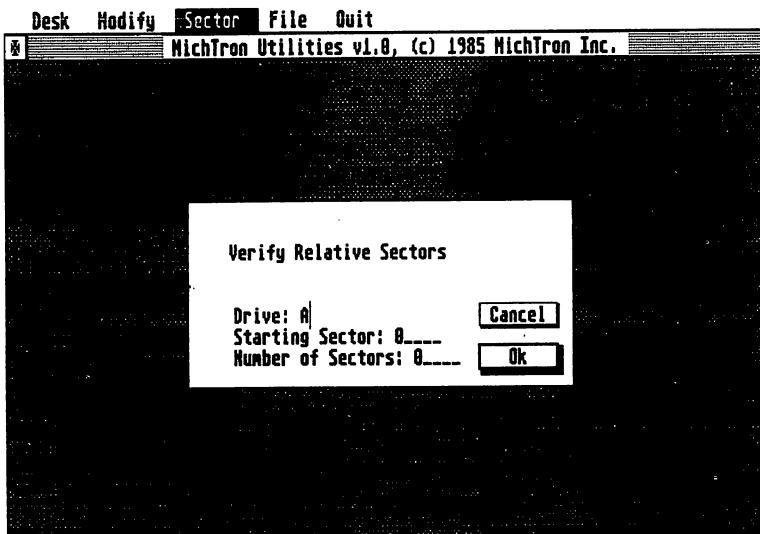
The function will abort if it encounters the end of the disk.

## Verify Sectors

From the opening screen, select **Verify Sectors** by clicking once on the selector line. The screen will clear, then display a dialog box in which you may specify the sectors to verify.

If you began this function while in **track mode**, you will see labels for drive, track and first sector to be verified. Below will be a line to specify the number of consecutive sectors to be verified. At the right will be the **Ok** and **Cancel** buttons.

If you began while in **relative mode**, you will see labels for the drive and first sector (relative to the first sector of track zero) to be verified, as well as for the number of consecutive sectors to be verified. At the right will be the **Ok** and **Cancel** buttons.



In either location mode, click on any label you want to change and type in the new information. When you have both source and destination properly specified, click on Ok to begin the verification.

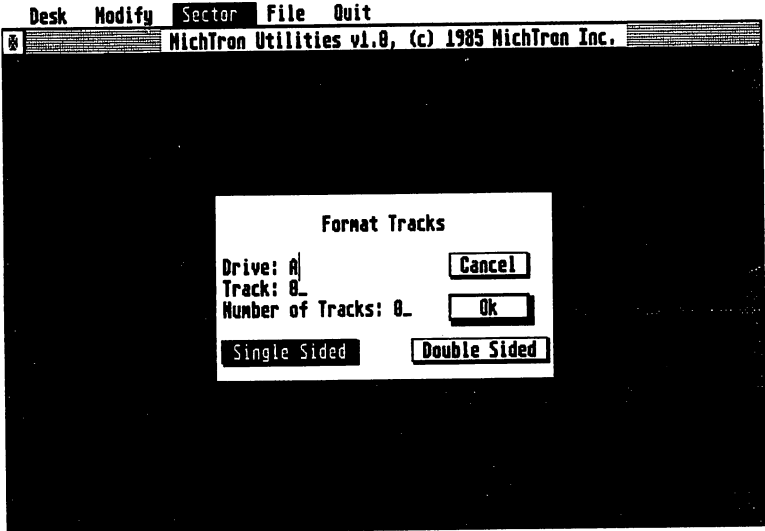
A dialog box will count down the sectors as they are verified. If the sectors checked are all usable, the dialog box will simply close automatically and the program will return you to the opening screen.

If any of the sectors checked is damaged, an alert will warn you. You may choose to continue verifying the other specified sectors by pressing Ok or to abandon the verification by pressing Cancel. Choosing Cancel will send you back to the opening screen.

# Format Tracks

From the opening screen, select Format Tracks by clicking once on the selector line. The screen will clear, then display a dialog box in which you can specify the tracks to format.

You will see labels for the drive and first track to be formatted. Below will be a line to select the number of consecutive tracks to be formatted. At the bottom you will see selector buttons for single- or double-sided disks. At the right will be Ok and Cancel buttons.





Select between single- and double-sided by clicking on the appropriate button. To change the drive or track, click on the label you want to change and type in the new information. When you are sure you have selected the right tracks on the right drive (and that the right diskette is in that drive), click on the Ok button.

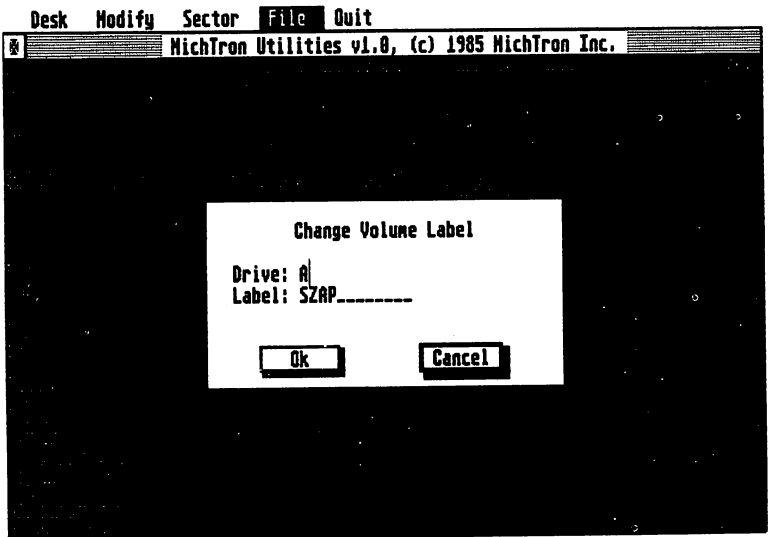
A dialog box will count the tracks formatted. If all tracks are successfully formatted, the dialog box will close up and the program will return you to the opening screen.

If the formatting fails, an alert box will warn you. Click on Ok to return to the opening screen.

# Change Label

From the opening screen, select Change Label by clicking once on the selector line. The screen will clear, then display a dialog box in which you can specify the new volume label.

You will see labels for the current disk drive and the volume label of the disk in that drive. The typing cursor will already be set to the disk drive.



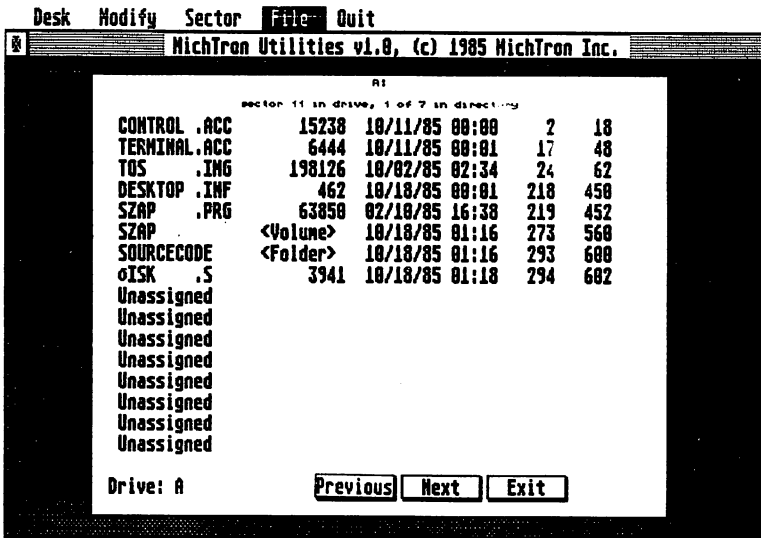
If you want to change the disk drive, type in the new disk drive letter; if the drive is correct, do nothing. When the drive is correct, use the mouse to bring the typing cursor to the volume label line (just click once on the line).

Type in the new volume label. When it is correct, click on the Ok button to make the change. If you decide not to change, just click on Cancel instead.

# File Attributes

This function is used to alter the information about the file stored in the folder, but not the actual data stored in the file.

From the opening screen, select File Attributes by clicking once on the selector line. The screen will clear, then display a dialog box listing the files belonging to the current folder.



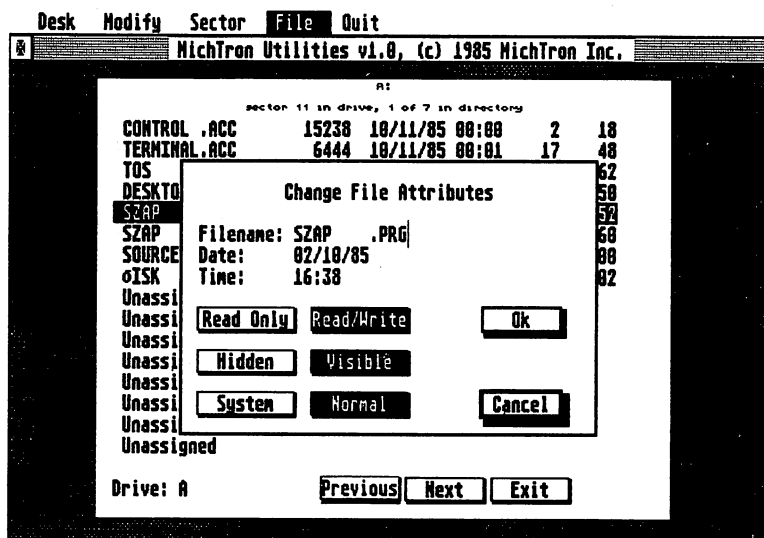
Files are listed with their names and extensions, size in bytes, date and time of creation, starting cluster number and starting sector number. You may click on buttons at the bottom of the screen to see the next or previous group of files in the current folder. If you decide to abandon work, click on the Exit button.

The files listed may be active files, deleted files, folders or volume labels. Active files have complete filenames and a non-zero size. Deleted files look similar, but the first character of their filename is replaced by a Greek delta. Folders and volume labels are labeled in the size column.

To select an item to work on, use the mouse to click on it. The program response depends on which item you picked.

## Changing active file parameters

If you choose to work with an active file, click once on its line. A second dialog box will appear on top of the first.



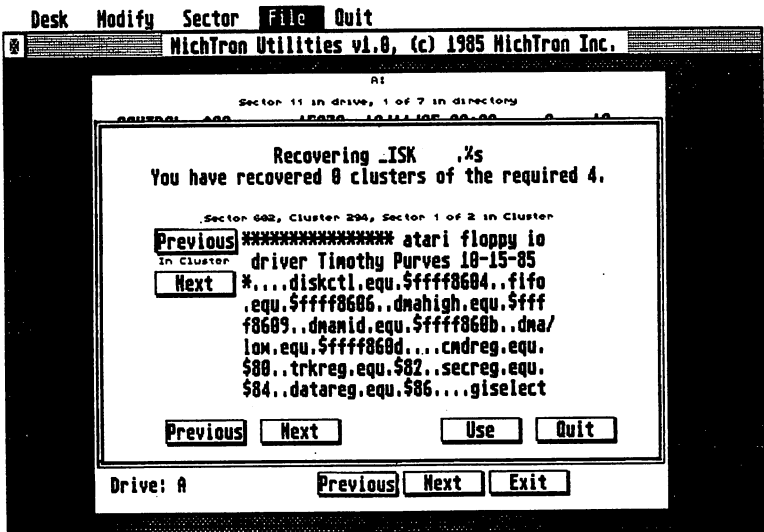
This box shows the file name and date and time of creation at the top. You may change any of these by clicking on the appropriate line, backspacing over the current information and typing in the revised data.

At the lower left you will also see pairs of buttons that set whether the file is read-only or read/write, hidden or visible, system or normal. You may change any of these by clicking on the appropriate button.

No change takes place immediately. You must click on the Ok button on the right to actually make the changes you have entered. You may also, of course, Cancel.

## Recovering deleted files

If you choose to try to recover a deleted file, click on its line to start. A second dialog box will show the file name and the number of recovered clusters at the top, then the current cluster and sector number and an ASCII display of the first sector of the file. Below and to the left will be a collection of buttons to control the search.



The upper pair of buttons will let you see the next or previous sector within the current cluster if such sectors exist. Looking at all the sectors may help you decide whether the material belongs to your deleted file.

The second row of buttons will let you choose to see the previous unassigned cluster or the next one if such clusters exist, to use the current material as part of the reconstructed file or to quit the attempt to reconstruct the deleted file.

The program searches for your deleted file by showing you every unassigned cluster on the disk, one at a time. You may make an immediate decision to include or reject a cluster or suspend decision until you have examined other sectors or clusters.

When all possible clusters have been inspected, the program will put up an alert to let you know you've seen everything. (You will not be shown unassigned clusters if the first sixteen characters of their first sectors are all format characters, because such characters would have been overwritten if the disk area had been used.)

The search ends only when you choose to quit. Watch the counter at the top of the screen to see when you have chosen enough clusters to reproduce the original length of the deleted file.

When you choose quit, an alert box will ask whether to save the clusters you have designated and quit, resume the recovery attempt or simply cancel without saving anything.

After you quit, with or without saving, the program will return you to the root folder of the current disk.

## **Changing a volume label**

If you click on the volume label, an alert will tell you that you must use the Change Label function to change the volume label. Click on Ok to return to the list of filenames.

If your intention was to change the volume name, click on the Exit button to return to the opening screen. Then choose the Change Label function.

## **Opening a folder**

If you click on a folder, the folder will open to show its contents. If other folders are included, these can be opened as well. Clicking on either the .. or . entries in any folder will cause the program to return you to that folder's parent folder (not necessarily the root folder).

## ***Common operations***

This section outlines procedures for solving common problems, for making common alterations in your files. Generally, the procedures involve using one or more of the *MichTron Utilities* functions in the correct sequence and on the right targets. Details of the operations of the functions are given in the preceding section of this manual, *MichTron Utilities* functions. Unless you are very experienced in dealing with disk files, you should follow the procedures given here for solving problems.

Before you use any of the procedures for the first time, please try it out on information you are willing to lose. If you misread or misunderstand an instruction, it's important that you have a chance to find out you got it wrong before you destroy valuable data.

Always check to make sure that you issued your instructions with the right sources and targets specified and the right diskettes in the right drives.

## ***Searching for text***

The most common reason to search for text is to find the files or portions of files containing a key phrase or string. This may be important if you cannot recall the name given to a file on a particular subject or if you are trying to recover lost sectors of information after a partial file loss.

To find a particular string of characters, whether ASCII or hex, select View Disk or View File as appropriate from the opening screen. Use the search sub-function described in the View Disk or View File functions. (The descriptions are duplicates, provided in both places for easy access.)



## ***Changing text***

The most common reason to change individual bytes on a disk is probably to patch machine-language programs for improved function or altered default values. Please do this only to a copy, not the original: an error in typing the replacement bytes could cause a fatal program error.

To change one or more bytes in a selected disk or file, use **View Disk** or **View File** to browse through the data or use the **search** sub-function to find the bytes to change.

To change any byte, simply move the mouse pointer to the beginning of the byte, click once to get a cursor on screen there and type in the replacement characters. If you are replacing more than one byte, keep typing; succeeding bytes will be replaced automatically as the cursor reaches them.

You may type in either the hex field of the display or the ASCII field. The other field will automatically be updated. If you try to enter an illegal character, the program will simply ignore it and wait for the next legal character to appear.

**Watch the screen as you type and check before you approve storing your changes. Disaster awaits the unwary.**

Changes are not permanent until you try to view another region of memory or exit the **View Disk** or **View File** function. In either case, a dialog box will give you the chance to **save** or **cancel** the changes. When you choose to save, the changes are made immediately.

## ***Changing volume labels***

You may want to change a volume label because the files now on the disk no longer correspond to the label originally given to it. Changing the volume label would be easier than copying all the files to a new disk with a better label.

To change a volume label, use the Change Label function.

## ***Changing file names***

You may want to change a filename to make the name more closely reflect file contents, to prevent confusion between similarly-named programs or to conceal the nature of a file from others.

To do so, use the File Attributes function.

## ***Changing file attributes***

The file attributes, as outlined in the earlier section of this manual, How files are stored on disk, include flags to make the file a read-only file, a hidden file or a system file. Other file attributes are the date and time of creation or update. You may want to give a file one of these attributes, remove a file attribute, or change the creation time and date.

To do so, use the File Attributes function.

## ***Restoring deleted files***

If you discover you have accidentally deleted a file you still want, **drop whatever else you had in mind and immediately try to recover the file.** If the first cluster of the file has not yet been overwritten, recovering a short deleted file is relatively simple. If the first cluster is already overwritten, recovering the rest of the file is still possible, but the process is not pleasant or quick.

To begin, select the volume on which the deleted file resided. Check to see if your file is still undamaged by using the File Attributes function to look at the folder in which the file was stored. Deleted files appear on the file list with their first letter replaced by a Greek delta.

If the (truncated) file name does not appear on the list, recovering the file will be next to impossible. The first cluster will certainly have been overwritten and others may have been as well.

If the file name still appears, there is hope that you can recover the file. Click on the filename. The program will attempt to recover the first cluster of the file.

If the first cluster belongs to your deleted file, continue searching for the rest using the File Attributes function.

If the first cluster of a file has been overwritten, the program will allow you to try to recover the rest, but a warning message will remind you that you are changing the starting location of the file and therefore cannot recover all the data.

## ***Recovering data from damaged disks***

The usual reason for trying to recover data from damaged disks is to protect the remaining data before trying to salvage the original, damaged disk. This is important because reformatting even a single track is likely to wipe out several good sectors along with the bad ones.

Begin by using **Verify Sectors** to find the bad sectors. Then use **Copy Sectors** to preserve all the good sectors on another disk.

## ***Repairing damaged disks***

Begin by using **Verify Sectors** to discover which sectors are damaged, which still readable.

Use **Copy Sectors** to get the remaining information onto an undamaged disk.

Now you can use **Format Tracks** to reformat only those tracks on which the bad sectors appear.

Use **Verify Sectors** again to see that the re-formatted tracks are now readable. If they are still bad, the disk cannot be repaired.

If the sectors are readable now, you can write back the information originally on them from a backup or, if you have no backup, at least restore the good sectors you saved before formatting the tracks.

## ***Error messages***

Procedural errors and warnings will appear in alert boxes that give you the choice of continuing on despite the error or canceling the current operation. The following errors mean that a read or write operation failed.

**Can't Read Drive X Disk Parameters** - The file allocation table or root folder information on the disk in drive X is damaged. The copy or verify attempt failed.

**Error During Copy** - A read or write error occurred while the Copy Sectors function was active.

**Error in Verify** - A bad sector was found by the Verify Sectors function.

**Error Reading [Writing] X** - A read or write error occurred. Further information from the BIOS:

**All Purpose Error**

**Bad Sector**

**CRC Error** - There was a parity error on read or write.

**Drive Not Ready**

**General Mishap**

**Media Change** - A disk was removed and another put in its place without notifying TOS.

**No Paper** - This appears to be a TOS bug. Usually means bad sector.

**Read Fault**

**Sector Not Found**

**Seek Error** - The disk read/write head physically could not reach the location required.

**Unknown Device**

**Unknown Error**

**Unknown Media** - The computer does not recognize the disk format.

**Write Fault**

**Write Protect** - The disk addressed is write-protected.

**Format Error** - An error occurred while the Format Tracks function was active.

**Sorry, I can't open X** - The file X is hidden.

**Warning I am having problems reading the disk in drive X** - The computer does not recognize the format of the disk, but it will assume the disk is a normal double-sided disk so that you may change the individual bytes in an attempt to fix things.

**We have some real problems. Can't read SYSTEM DATA sectors. Error was in X sector in Y drive, A of B in directory** - The file directory sectors or the FAT sectors or both are unreadable. The recover operation failed.

## ***Consultations***

*MichTron Utilities* has been thoroughly tested and this documentation carefully written to cover questions that may arise in everyday use. Given the low price of the program, we cannot answer questions without additional charge.

If you want help for a special application, we will provide it at \$25 per question or 15-minute period. We will bill your major credit card for the service, so please have your card number on hand when you call.

If you have suggestions for program improvements or documentation revisions, please write. We do upgrade and revise our programs based on user responses, so your feedback is valuable to us.

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If the disk on which *MichTron Utilities* is distributed becomes defective within the warranty period, return it to us for a free replacement. After the warranty period, we will replace any defective program disk for \$5.00.

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**UPGRADES AND REVISIONS:** If you return your information card, we will notify you if upgrades to *MichTron Utilities* become available. For minor upgrades and fixes, return the original disks to us with \$5.00. For major revisions, the upgrade fee is typically 15-20% of the original suggested retail price.

**FEEDBACK:** Customer comments are VERY important to us. We think that the use, warranty and upgrade policies outlined above are among the fairest around. Please let us know how you feel about them.

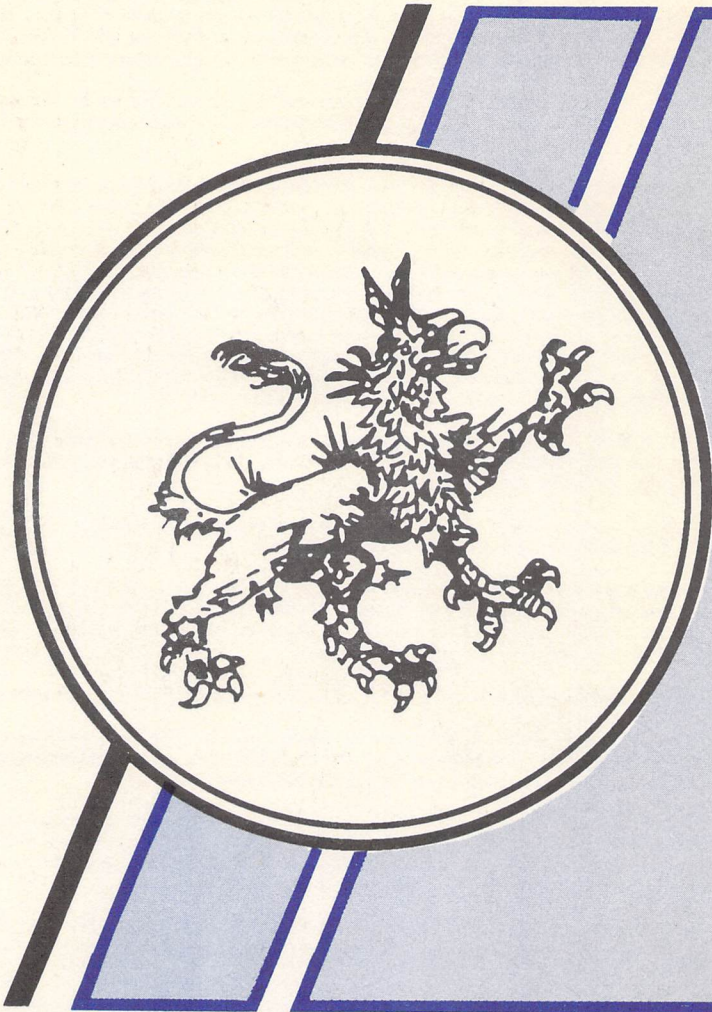
Many of the program and documentation modifications we make result from customer suggestions. Please tell us how you feel about *MichTron Utilities* - your ideas could make the next version better for all of us.

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# MichTron

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# *MICHTRON UTILITIES*

The Atari ST Utilities Disk  
by Timothy Purves



**MichTron**

Pontiac, Michigan

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