SUPER UTILITY PLUS

by Kim Watt of

Breeze Computing inc.

P.O. Box 1013 • Berkley, MI 48072

©1981

Disk Program for the TRS-80* MOD I

Distributed by:

BREEZE COMPUTING INC.
P. O. Box 1013
BERKLEY, MICHIGAN 48072

*TRS-80 is a product of Radio Shack, division of Tandy Corporation

FORWARD

Over the years, I have written a number of programs and it seemed that I constantly had to use various utility programs that were on the market from a number of different sources. Each of these programs performed a very specific function and I soon had invested several hundreds of dollars for these utility programs and seemed to be constantly having to buy more of these types of programs as the MICRO-MARKET expanded into ever higher levels of programming. As the programs on the market became more complex (and better), I was able to improve several of my existing utilities, but none of them were able to be the OVERALL utility that I was looking for.

Finally, after discussing this problem on numerous occasions with different people who were involved with TRS-80's, I decided to write a program in machine language that would be the LAST WORD in utilities and the resulting program was called SUPER-UTILITY. It was a 24K program that was introduced on the market in 1980, and was very well received all over the world.

During the following year, I received a lot of mail regarding that program and also requests for me to implement various other additional subroutines that people thought might make it even more versatile. I made several upgrades to the program trying to be receptive to their wishes, but then came DOUBLE DENSITY. After getting many requests to make it work with double density, I upgraded it again, but only so the ZAP option would work as I was running out of room.

I discussed this situation with Jim Frank, who does all of the documentation for us, and we decided that an entire new program would have to be written. We made lists of all of the requests for additional options that had been received and we then proceeded to spend the next several months making the new program. The final result of our effort is called SUPER-UTILITY PLUS, and we hope that it will be everything that you ever wanted in a utility program.

I would like to take this time and thank STEVE KING, SKIP TAYLOR, DENNIS BRENT, RALPH BURRIS, TOM BROWN, and PAUL WIENER for their assistance as TEST SITES for this program, for without their donations of untold hours, this release would have been many months delayed. It is through people like these that Super-Utility has evolved into the highly sophisticated program that it is today.

==========

DOCUMENTATION FOR TRS-80

S U P E R - U T I L I T Y P L U S

==========

```
*****************
***************
*************
***********
*********
*******
*****
***
*
```


1.0 INTRODUCTION: Page

1.1 REGISTRATION..... 1
1.2 HARDWARE REQUIREMENTS..... 1
1.3 PROGRAM OVERVIEW..... 2
1.4 LOADING INSTRUCTIONS..... 4
1.5 OBTAINING A BACKUP..... 4
1.6 HARDWARE COMPATABILITY..... 4
1.7 GENERAL PROGRAM INFORMATION..... 5
1.8 OVERRIDE COMMAND LIST..... 6

2.0 PROGRAM OPERATION MANUAL LIST:

2.1 ZAP UTILITIES..... 8
2.2 PURGE UTILITIES..... 21
2.3 FORMAT UTILITIES..... 25
2.4 DISK BACKUP UTILITIES..... 30
2.5 DISK REPAIR UTILITIES..... 31
2.6 TAPE UTILITIES..... 34
2.7 MEMORY UTILITIES..... 36
2.8 FILE UTILITIES..... 41
2.9 SYSTEM CONFIGURATION..... 50

3.0 ENHANCEMENTS:

3.1 ENHANCEMENT DISTRIBUTION..... 57
3.2 REPORTING INCOMPATABILITIES..... 57

1.0 INTRODUCTION:

The following documentation is written in layman terms in an effort to assist novice as well as professional programmers in completely understanding the full potential of this extremely powerful utility program. However, this documentation is not written with the intention of teaching you how disk storage systems are organized and stored. If in depth information on this subject is desired, there are several excellent books on the market to assist you.

BREEZE COMPUTING offers this program for sale "AS IS" and assumes no liability whatsoever in the event of damages of any kind as a result of the use of this program.

1.1 REGISTRATION:

Upon receiving your S U P E R - U T I L I T Y P L U S program, please fill out the attached registration form and mail it to BREEZE COMPUTING, P.O. BOX 1013, BERKLEY, MICHIGAN 48072. BREEZE COMPUTING will notify all registered owners regarding updates, enhancements, fixes, and new releases of coming programs. If you would like a backup copy of SUPER-UTILITY PLUS include $5.00 (to cover postage and handling : foreign orders $10.00 postage and handling) when sending in your registration form. Be sure to copy your serial number from the diskette label onto the registration form.

1.2 MINIMUM HARDWARE REQUIREMENTS:

This utility requires a minimum of 48K RAM and one disk drive to operate. The SPECIAL TAPE COPY UTILITY requires two tape recorders. The efficiency of the program is considerably enhanced with two drives.

COPYRIGHT (C) 1981 BREEZE COMPUTING INC.

1.3 WHAT IS "S U P E R - U T I L I T Y P L U S:"

SUPER-UTILITY PLUS was written by KIM WATT of BREEZE COMPUTING and is the most powerful program of its kind on the market at this time. This program is a machine language, stand alone program that has its own I/O routines, does not use any ROM or DOS calls, and works on SINGLE or DOUBLE DENSITY systems. It is the result of many months of hard work by Kim Watt and performs such a wide range of varied tasks, that it may truely be called "The King of Utilities". S/U PLUS does not require that the disk be in any drive after initialization of the program and user may custom configure the program to suit his individual system requirements.

The ZAP utility is a program that does everything Apparats "SUPERZAP" does, but it will do it on SINGLE or DOUBLE DENSITY systems and will work with most major operating system that are presently on the market. It has DUAL CURSORS (one for ASCII and one for the HEX side of the readout) and allows the user to go to the heart of the disk and read and/or modify data in HEX, ASCII, DECIMAL, BINARY, or OCTAL, regardless of whether it is a STANDARD disk or not. The screen printout on ZAP is similar to Superzap (one sector at a time in HEX and ASCII), but also tells user the true and relative track and whether the disk is IBM format or not. ZAP also has a search routine that will locate the highest or lowest configured track on the disk and others that will search the disk for a BYTE LIST, ASCII STRING, WORD LIST, or even ENCRYPTED CODE. ZAP also allows you to DISPLAY DISK SECTORS, COMPARE DISK SECTORS, COPY SECTOR DATA, ZERO DISK SECTORS, COPY DISK SECTORS, REVERSE SECTOR DATA, SECTOR SEARCHES, READ ID ADDRESS MARKS, or ALTER DATA ADDRESS MARKS.

PURGE has a full screen editing kill control that allows you to kill files by positioning cursor and pressing one key. Also, PURGE has several sub-utilities that allow you to zero out unused directory entries or zero out unused disk granules. In addition, user may kill files by naming the common category of the files (EXAMPLE: /CMD /BAS /TXT <I>nvisible, <V>isible, etc. or even kill files that begin with a specified letter), and also may compute existing passwords, change the disk name, date, passwords, auto command, or even file parameters (name, passwords, protection levels). Lastly, PURGE contains a complete disk directory that indicates all active and non-active files on the disk.

FORMAT is a utility that allows the user to format a disk with STANDARD FORMAT, FORMAT WITHOUT ERASING EXISTING DATA, SPECIAL FORMAT, (custom format your disk most any way you want it) BUILD A FORMAT TRACK and optionally write it back to any track on your disk, and even contains a software BULK ERASE utility. The total formatting capabilities of this program are just about UNLIMITED and you may even REFORMAT OVER a disk or ADD TRACKS to an existing disk without destroying existing disk data.

COPYRIGHT (C) 1981 BREEZE COMPUTING INC.

The DISK COPY UTILITY will copy any standard disk, with or without formatting. The SPECIAL DISK COPY enables the user to make a backup of MOST TRS-80 readable disks that are presently on the market, regardless of any efforts that have been made to protect them from being "BACKED UP". NOTE: (This program will NOT copy itself). This programs' only intended use is for you to make BACKUPS of your legally purchased programs. Please DO NOT USE this utility to make "BOOTLEG COPIES" for others as authors of quality programs deserve their royalities.

The TAPE COPY UTILITY enables the user to perform a wide variety of actions that include the ability to READ, WRITE, or VERIFY tapes and even includes a BIT BY BIT copying routine that will backup most ANY TRS-80 readable tape regardless of protection attempts made by authors. This utility also is for your own use only.

The DISK REPAIR UTILITY allows you to automatically repair the HIT and GAT sectors, and will automatically repair a BOOT. This utility also does a complete DIRECTORY CHECK and will advise you of errors that exist. In addition, this utility allows the user to RECOVER KILLED FILES, (if the file was killed by this utility or by NEWDOS), READ PROTECT or UN-READ PROTECT the directory, MOVE IT to a different location on the disk, or CLEAR UNUSED ENTRIES. Lastly, this utility advises you of all inactive files that are on the disk.

The MEMORY UTILITY supplies the ability to DISPLAY, MOVE, TEST, COMPARE, ZERO, EXCHANGE, INPUT or OUTPUT a byte to any port, EXCHANGE, JUMP TO, REVERSE, FILL, STRING SEARCH, or even LOAD/WRITE AN ENTIRE TRACK or SECTORS to/from memory.

The FILE UTILITIES consist of the abilities to DISPLAY FILES SECTORS, COMPARE FILES, COPY FILES, DISK DIRECTORY, FREE SPACE, FILE LOCATIONS, DRIVE STATUS, CREATE FILES, and CLEAR FILES from disk. These utilities give you a wide range of powerful commands at your disposal to perform just about any function that you want with files up and including the complete REORGANIZATION of your ENTIRE DISK with all the files re-written in their MOST CONTIGUOUS order.

CONFIGURE SYSTEM gives you the ability to CUSTOM CONFIGURE S/U PLUS to your system. You may select SINGLE or DOUBLE DENSITY, in any combination, of 5" drives, select your operating system boot of your choice, upper or lower case, high speed clock, SINGLE OR DOUBLE HEADED DRIVES, or even configure your printer.

COPYRIGHT (C) 1981 BREEZE COMPUTING INC.

1.4 LOADING AND INITIALIZATION INSTRUCTIONS:

To initialize the program, insert disk into drive 0 and press the RESET BUTTON. There will be a short delay while the program loads and the main menu will then be displayed to the screen. If you hold down either the right or left arrow keys during initialization, a list of system labels and entry points will be displayed to the screen. if the right AND left arrows are held down together during initialization, a copy of the labels will also go to the printer. These entry points are useful for utilizing the 1K patch area provided for user routines. These entry points may be moved on updated versions of S/U+.

1.5 BACKUP:

As previously stated in the registration information, BREEZE COMPUTING will send every registered owner of SUPER-UTILITY PLUS, one backup copy, upon request for $5.00 (postage and handling : foreign orders $10.00). If your ORIGINAL DISK should become PHYSICALLY DAMAGED, where it won't allow us to re-copy SUPER-UTILITY PLUS on it, send THE ORIGINAL DISK back to BREEZE COMPUTING, along with $8.00 (to cover a new disk, postage and handling) and a new copy will be sent to you. (NOTE: YOU MUST RETURN THE ORIGINAL DISK!).

1.6 COMPATIBILITY:

This program will operate with standard MODEL I TRS-80 MACHINES, equipped with 5" TRS-80 compatible drives (up to 96 track), and will support TRS232 serial or parallel lineprinters for screen printing.

COPYRIGHT (C) 1981 BREEZE COMPUTING INC.

1.7 GENERAL PROGRAM INFORMATION:

****

This program has a default setting of 35 track SINGLE DENSITY. In order to perform operations on a disk that exceed these parameters, it is necessary to RESET the SYSTEM CONFIGURATION. This can be done in various different ways. The program disk itself may be "ZAPPED" so that it will automatically be set to your particular system or you may use TEMPORARY OVERRIDE COMMANDS that are discussed further in both this section and in the CONFIGURE SYSTEM SECTION of this manual. Either of these methods will work equally as well but we recommend that you "zap" the disk to meet the individual requirements of your system and use the OVERRIDE OPTIONS for special situations. Be sure to read the CONFIGURE SYSTEM section (2.9) and fully understand it prior to proceeding.
****

THROUGHOUT THIS PROGRAM, ALL OF THE FOLLOWING NOTATIONS WILL APPLY:

Any time numerical input is required from the user, you may enter in either HEX, DECIMAL, BINARY, or OCTAL. All numbers are assumed to be decimal unless you append the letter "H", "D", "B", or "O" to the end of the number, in which case it will be interpreted as HEX, DECIMAL, BINARY, or OCTAL.

Any time you are requested to enter several numbers on the same line, you must separate the numbers with one or more commas or spaces.

All numbers displayed on the screen will be in DECIMAL unless the letter "H" is appended to the end of the number, in which case the number is in HEX. The only exception to this rule is that the displays in Zap are ALL in HEX unless otherwise noted.

Anytime that keyboard input is required, you may press <ENTER> and the default value (that is equal to the first possible selection) will be inserted.

This program recognizes upper and lower case and comes set so that pressing <SHIFT> and a letter key will result in a CAPITAL letter being displayed just like a typewriter. It may also be reversed by pressing <SH><0> at which time ALL letters will be displayed as CAPITALS and small letters ma be printed by pressing the <SHIFT> key. To change back again, merely press <SH><0> again.

Throughout the program, <BREAK> key may be used to interrupt ANY routine in progress except cassette I/O, in which <CLEAR> will interrupt. This includes all Disk I/O operations. The <BREAK> key will immediately return you to the last menu that was displayed and <SH><BREAK> will return you to the MAIN MENU. In some routines, such as the screen printer or dual mode a 1K buffer is used and it may be emptied by pressing <CLEAR> to interrupt the routine and return you to the immediate mode that you left.

COPYRIGHT (C) 1981 BREEZE COMPUTING INC.

If any Disk I/O errors are detected, you will be notified and given the opportunity to either <R>etry, <S>kip this sector, <Q>uit, <C>ontinous, and <N>on-stop.This applies to both Read AND Write operations.

The screen printer may be activated anytime the keyboard is being scanned by pressing <SHIFT><CLEAR> and the DUAL MODE (everything that goes to the screen will also go to the printer) may be selected by pressing <SH><ENTER> at the END of an INPUT LINE.

The term PAGING MODE shall refer to anytime you are viewing a full page of data and are NOT in the MODIFY MODE. The term MODIFY MODE shall refer to when you are viewing a full sector of data AND have pressed the "M" key so as to be able to MODIFY data.

In the MEMORY UTILITY section of S/U+, all changes are IMMEDIATE and are NOT held in a buffer area. Changes made in DISK MODIFICATION OPTIONS are held in a buffer area and are NOT WRITTEN TO THE DISK until the <U>pdate option is selected.

With so many different operating systems presently available on the market and many of them designed differently, it has become a problem to give S/U+ the ability to interact with all of these different systems. This problem has been solved by allowing you to temporarily RECONFIGURE S/U+ at any time the program requires input. This may be done by selection of any of the following options.

1.8 OVERRIDE COMMAND LIST:

1. (S or !) following a drive number, tells S/U+ that the disk in the selected drive is SINGLE DENSITY and contains an operating system other than LDOS.
2. (") following a drive number, tells S/U+ that the drive contains a SINGLE DENSITY LDOS DISK.
3. (# or D) following a drive number, indicates a DOS+ DOUBLE DENSITY DISK.
4. ($) following a drive number, indicates that the disk will either be NEWDOS80 or DOUBLEDOS.
5. (%) following a drive number, tells it that the disk is a DOUBLE DENSITY LDOS SYSTEM DISK.
6. (&) following a drive number, indicates that the disk is a DOUBLE DENSITY LDOS DATA DISK.

The following page will contain examples showing some of the possible uses of the OVERRIDE COMMANDS.

COPYRIGHT (C) 1981 BREEZE COMPUTING INC.

EXAMPLE #1 - : You wish to examine track #5, sector #2, of a 40 track DOUBLEDOS disk in drive #1 for a friend and S/U+ is configured for your 35 track SINGLE DENSITY NEWDOS+ system. From the MASTER MENU, type "1" and press <ENTER>. You will now be asked to select from the ZAP MENU. Press <ENTER> again and S/U+ will DEFAULT TO THE FIRST POSSIBLE ENTRY when <ENTER> is pressed alone. You will now be in DISPLAY SECTORS and will be asked to input the DRIVE, TRACK, and SECTOR to be displayed. Type "1$=40 5 2" and press <ENTER> at which time said sector will be displayed to the screen. Another option that is available to you when you are asked to input the DRIVE, TRACK, and SECTOR information is you may input the drive number, followed by a space, and then followed by an:

1 - <UP ARROW> to display the HIGHEST TRACK on the disk.
2 - <DOWN ARROW> to display the LOWEST TRACK ON THE DISK.
3 - <L> to display the SAME SECTOR as was just displayed, but will allow you to select a different drive number.

EXAMPLE #2 - : Super-Utility Plus is configured to your 40 track DOS+ DOUBLE DENSITY system and you want to examine track 2, sector 4, of a 40 track LDOS DOUBLE DENSITY SYSTEM DISK in drive #2. From the MASTER MENU, type "1" and press <ENTER> or press <ENTER> by itself to default to the ZAP MENU. Next, type " 2% 2 4 ", press <ENTER>, and the sector will be displayed.

NOTE: The use of these OVERRIDE COMMANDS may seem a little technical at first, but once you become familiar with them, you will find that they give you the power to read/modify almost any disk on the market without having to spend the time or go to the trouble of reconfiguring your system. These options WILL NOT allow you to read/modify data in double density unless you have the double density modification in your computer.

Whenever PURGE is used to KILL FILES, it does so by resetting bit 4 in the PDE and XDE's. The HASH TABLE BYTES are then reset to 0 and all allocated space for the file is then released. Admittedly, this system makes it a little difficult to tell the active from the inactive files when ZAPPING, but if you want to restore a file using the DISK REPAIR utility, it will be restored to it's EXACT previous condition.

COPYRIGHT (C) 1981 BREEZE COMPUTING INC.

2.0 SUPER-UTILITY PLUS OPERATIONS MANUAL:

Upon initialization of S/U PLUS, the MAIN MENU containing the following ten options will be displayed.

1. Disk Zap
2. Disk Purge
3. Disk Format
4. Disk Backup
5. Disk Repair
6. Tape Utilities
7. Memory Utilities
8. File Utilities
9. Configure System
0. Exit Program

Selection ?

2.1 DISK ZAP:

Upon selection of DISK ZAP, a menu consisting of the following twelve possible options will be shown on the screen.

1. Display Sectors
2. Verify Sectors
3. Compare Sectors
4. Copy Sectors
5. Copy Sector Data
6. Zero Sectors
7. Reverse Sector Data
8. Exchange Sectors
9. String Search
0. Sector Search
A. Read ID Address Marks
B. Alter Data Address Marks

Selection ?

COPYRIGHT (C) 1981 BREEZE COMPUTING INC.

2.1A DISPLAY SECTOR:

Upon selection of option #1, press <ENTER> at which time you will be prompted to input the DRIVE, TRACK, and SECTOR number that you wish to examine (NOTE: user may input selections in HEX, DECIMAL, OCTAL, or BINARY). If selection is to be in hex, follow the numbers with a "H". If selection is to be in decimal, merely type in the numbers. (NOTE: Throughout this program, data inputs must be separated with either COMMAS or SPACES). At this time, the selected sector will be displayed on the screen (see below for example printout and the following page for explanation).

Field #1

Field #2

Field #3

Field #4

```
     00 00FE 1131 0042 2143 42CD C901 01FF 4D11 ...1.B!CB.....M.
HEX  10 0500 D918 453E 0132 E137 C9E3 E3E3 E3C9 ....E>.2.7......
DRV  20 C5CD 2842 E1C8 444D CD15 42ED 53EE 3721 ..(B..DM..B.S.7!
  0  30 EC37 361B CD1B 42CB 4620 FC36 88D5 11EF .76...B.F .6....
TRK  40 37CD 1B42 1803 0F30 0A7E CB4F 28F8 1A02 7..B...0.~.O(...
000  50 0318 F67E 36D0 D1E6 9CC9 CD98 423D 201A ...~6.......B= .
TRU  60 CD98 4247 CD98 426F CD98 4267 0505 CD98 ..BG..Bo..Bg....
000  70 4277 BE20 4323 10F6 18E0 3D28 0FFE 0338 Bw. C#....=(...8
SEC  80 2DCD 9842 47CD 9842 10FB 18CE CD98 42CD -..BG..B......B.
I00  90 9842 6FCD 9842 67E9 D90C 200F C5CD 2042 .Bo..Bg... ... B
LEN  A0 C120 101C 7BD6 0A20 0214 5F0A D9C9 21DD . ..{.. .._...!.
 01  B0 4218 0821 E842 1803 21F3 42CD C242 CD40 B..!.B..!.B..B.@
STD  C0 0076 CDC9 013E 1718 027E 23CD 3300 FE03 .v...>...~#.3...
     D0 20F7 C953 7570 6572 424F 4F54 034E 6F6E  ..SuperBOOT.Non
     E0 2D53 5953 5445 4D03 4469 736B 2D45 5252 -SYSTEM.Disk-ERR
     F0 4F52 034D 656D 6F72 792D 4552 524F 5203 OR.Memory-ERROR.
```

COPYRIGHT (C) 1981 BREEZE COMPUTING INC.

FIELD #2: This contains the RELATIVE BYTE NUMBERS in the sector. (NOTE: A relative byte is it's offset from the beginning of the sector.)

FIELD #1: To the left of relative byte 10H (upper left hand corner of the screen) you will see the word "HEX", "ASC", "BIN", "OCT", or "DEC". These words indicate whether the program is presently capable of modifying in HEX, ASCII, BINARY, OCTAL, or DECIMAL (NOTE: See MODIFY MODE instructions). The user may change modes by pressing the letters "H", "A", "B", "O", or "D" at any time PRIOR TO ENTERING THE MODIFY MODE. (To change modes when in the modify mode, press <SHIFT><ENTER> followed by "H", "A", "B", OR "O","D"). To the left of relative byte 20H the word "DRV" appears, and it stands for drive. To the left of relative byte 30H, a number between 0 and 7 appears and it indicates the drive # that is being read (if drive is double headed, and side #1 is being read, an apostrophe will also appear. To the left of relative byte 40H, the word "TRK" will appear and it stands for track. To the left of relative byte 50H a number appears that tells the relative track # (in HEX) that is being read. To the left of relative byte 60H, The word "TRU" will appear and it stands for true. (Below it the true track number as it is read from the disk is given.) NOTE: (The explainations on relative bytes 40H, 50H, 60H, AND 70H may seem strange because the TRUE and RELATIVE track numbers are usually the same. However, on certain protected disks there are differences). To the left of relative byte 80H, the word "SEC" is shown and it stands for sector. To the left of relative byte 90H, the sector number that is currently being viewed is shown. To the left of relative byte A0H, the word "STD", "RPT","DDT", or "UDF" is shown, indicating whether the displayed sector contains <S>tandard, <R>ead protected, <D>eleted, or <U>ser defined data. To the left of relative byte B0H the letters "ISD", "NSD", "IDD", or "NDD" will appear. (The first letter will tell if the sector is <I>BM or <N>on IBM format. The "SD" or "DD" that follows indicates whether the sector is <S>ingle <D>ensity or <D>ouble <D>ensity). When you are in the DECRYPTING MODE, the letters "DCR" appear to the left of relative byte B0H. To the left of relative byte F0H, the numbers "+00" appear and these are also explained in the DECRYPTING SECTION of this manual.

FIELD #3: This consists of 8 pairs of columns that contain the sector data (in HEX), and any byte may be modified by entering the MODIFY MODE and typing over the existing code that is presently highlighted by the flashing cursors (See MODIFY MODE instructions).

FIELD #4: this is an ASCII representation of the printable ASCII bytes contained in FIELD #3.

COPYRIGHT (C) 1981 BREEZE COMPUTING INC.

2.1B MODIFY MODE INSTRUCTIONS:

The MODIFY MODE has several options available and ahould be thoroughly understood prior to any "ZAPPING". Once your chosen sector has been displayed on the screen, any data byte shown may be modified using HEX, DECIMAL, BINARY, OCTAL, or ASCII input. To enter MODIFY MODE check the word located to the left of relative byte 10H to determine which mode the program is presently in and then make your mode selection by pressing "H", "A", "B", "O", or "D".

After selecting the desired mode, press "M" and you will observe the dual cursors on the screen. Said cursors may be moved to any data byte on the screen by using the UP, DOWN, RIGHT, and LEFT ARROWS. <SHIFT><ARROWS> will move the cursor to extreme column or row ends. Holding down an arrow key will cause the cursors to continue moving in the direction of the arrow until released. Once the cursor is on the byte that is to be modified, type over the existing byte and the changes are automatically updated to both FIELD #3 and FIELD #4.

Upon completion of the desired changes push <ENTER> and you are then given the options of being able to <U>PDATE data, <R>ETURN to modify mode, or <C>ancel changes. NOTE: (All changes are kept in a buffer and are not written back to the disk unless the <U>PDATE option is selected, and you may return to the menu at any time by pressing <BREAK>, or return to the MAIN MENU by pressing <SHIFT><BREAK>). If you select the <C>ANCEL option then all changes are cancelled and you are returned to the same sector/memory location as it was prior to entering the MODIFY MODE. If you choose the <R>ETURN to modify mode option, you are returned to the same sector/memory location as it existed prior to pressing <ENTER>, and you will still be in the MODIFY MODE.

COPYRIGHT (C) 1981 BREEZE COMPUTING INC.

2.1C MODIFY MODE COMMAND LIST:

The following command list of options apply only while you are IN THE MODIFY MODE. Also see PAGING MODE COMMAND LIST as there are differences and you should familiarize yourself with these differences BEFORE getting into various ZAPPING procedures. Be sure to check the manual instructions on each of the utilities prior to using them.

1 - Right Arrow	Moves cursor one byte to the right
2 - Left Arrow	Moves cursor one byte to the left
3 - <SH> Right Arrow	Moves cursor to last byte right side of display
4 - <SH> Left Arrow	Moves cursor to last byte left side of display
5 - Up Arrow	Moves cursor up one row
6 - Down Arrow	Moves cursor down one row
7 - <SH> Up Arrow	Moves cursor to top row
8 - <SH> Down Arrow	Moves cursor to Bottom row
9 - <Clear>	Returns cursor to relative byte 00H of display
10 - <P>	Place cursor on field #3 byte and after pressing "P", follow with numeric input. Whatever byte that was UNDER the cursor will be recopied to the bytes following the number of times of the inputed numeric value
11 - <Break>	Return to DISK ZAP MENU
12 - <SH><Break>	Return to MAIN MENU
13 - <SH><Clear>	Activate screen printer
14 - <SH><Enter>	Reset MODIFY MODE (Hex, Dec, Bin, Oct, Ascii)
15 - <G>	Plus relative byte number moves cursor to the specified RELATIVE BYTE LOCATION
16 - <L>	Plus numeric input, moves the cursor to the NEXT OCCURANCE of the NUMERIC INPUT
17 - ">"	Insert data and move the rest of the sector bytes to the right
18 - "<"	Delete the data that is being covered by the cursor and all remaining sector data is moved to the left.

COPYRIGHT (C) 1981 BREEZE COMPUTING INC.

2.1D PAGING MODE COMMAND LIST:

1 - Right Arrow	Pages one sector higher and will advance track
2 - Left Arrow	Pages one sector lower and will advance track
3 - <SH> Right Arrow	Pages one sector higher but won't advance track
4 - <SH> Left Arrow	Pages one sector lower but won't advance track
5 - Up Arrow	Psges one track higher
6 - Down Arrow	Pages one track lower
7 - <SH> ")"	Pages to highest sector on track
8 - <SH> "("	Pages to lowest sector on track
9 - <SH>Up Arrow	Pages to highest configured track
10 - <SH>Down Arrow	Pages to track #0
11 - <Break>	Returns to the menu
12 - <R>	Pages to Track 0, Sector 0
13 - <M>	Activates modify mode
14 - 0 to 9	Pages to a selected sector
15 - <SH><Break>	Returns you to MAIN MENU
16 - <SH><Clear>	Activates screen printer
17 - <Clear>	Allows reselection of a new DRIVE, TRACK, and SECTOR
18 - <T>	Allows reselection of a new TRACK and SECTOR
19 - <S>	Allows reselection of a new SECTOR
20 - <AT>	Enter DECRYPTING MODE
21 - ">" or "."	Pages to next higher VALID SECTOR
22 - "<" or ","	Pages to the next LOWER VALID SECTOR
23 - <H><D><B><A><O>	Select modify type

Normally, when you are in the PAGING MODE, you will use the RIGHT and LEFT ARROW KEYS to page forward or backward to different sectors, however, there may be times when you will run into a disk that has been "PROTECTED" by assigning non-standard track and sector numbers. These disks may be identified by using the ADDRESS MARKS program in the ZAP utility. SUPER-UTILITY PLUS has a routine that will automatically page forward or backward, until it finds a VALID sector on a disk. This routine is activated by using the ">" key for forward or the "<" key for backward.

COPYRIGHT (C) 1981 BREEZE COMPUTING INC.

2.1E DECRYPTING:

The PAGING MODE gives you the ability to do various "BIT" ROTATING and SHIFTING operations. These options are activated by pressing <AT> and then following it with the specific operation desired.

<1> - <R> : This option allows you to "ROTATE" the bits either to the right or left. This option does the same thing as the RLCA or RRCA command in ASSEMBLY PROGRAMMING. If you wish to ROTATE LEFT 4 times, press <AT> and then press <R>. (This means that you have decided to ROTATE) Now press <R> again (To ROTATE to the <R>ight), and then enter a number to indicate the number of times to ROTATE. If you had wanted to ROTATE LEFT, the LAST <SH><R> would have been a <L>.

<2> - <S> : This option allows you to "SHIFT" the bits either to the <L>eft or <R>ight and follows the same input as in the ROTATE instructions. THis option does the same thing as the SLA and SRL commands in ASSEMBLY LANGUAGE PROGRAMMING.

<3> - <A> : This option allows you to "AND" a value and requires a two digit input.

<4> - <O> : This option allows you to "OR" a value and requires a two digit input.

<5> - <X> : This option allows you to "XOR" a value and requires a two digit input.

<6> - <+> : This option allows you to "ADD" a value and requires a two digit input.

<7> - <-> : This option allows you to "SUBTRACT" a value and it also requires a two digit input.

One other major ability of the DECRYPTING program is to allow you to have the computer check sector data by incrementing or decrementing the data. This utility will perform these functions, update the ASCII side, HEX side, or BOTH sides of the screen and will RE-UPDATE the screen at a speed that is selected by you from several times per second to once a second. The following will be a list of possible options that are available.

<1> - <AT>	Enter or Reset the DECRYPTING MODE
<2> - "*"	Update ASCII side only
<3> - ":"	Update HEX and ASCII sides
<4> - <ENTER>	Turn off or reset routine
<5> - <EN> Up Arrow	Increment value
<6> - <EN> Down Arrow	Decrement value

DECRYPTING MODE continued on next page.

COPYRIGHT (C) 1981 BREEZE COMPUTING INC.

The DECRYPTING MODE routine also has a DISPLAY SPEED ADJUSTMENT option included and the speed of updating the displays may be set by including a number from 0 to 1 when setting up for decrypting. EXAMPLE: You want to check to see if there are any words on a sector that have been encrypted by incrementing or decrementing their value. First, display the sector to be checked on the screen and then enter the DECRYPT MODE by pressing the <AT> key at which time you will see the letters "DCR" appear to the left of relative byte #C0H. (DCR means that you are presently in the DECRYPTING MODE). Next, press either ":" if you want both the HEX and ASCII sides of the display to be updated or press "*" if you want only the ASCII side updated. Follow this by pressing either the UP or DOWN ARROW to increment or decrement the display. Lastly, you may enter a number from 0 to 255 to determine the speed of the screen updating. (a "1" is the fastest and "255" is the slower speed of updating the screen). This routine starts by adding or subtracting "1" to each byte of the display and automatically stops when it reaches FFH but it may be interrupted at any time by pressing the <AT> key. It is not necessary to supply a speed setting for this routine and the default speed value is approximately one updating each 1/2 second. An example of a minimum input selection after pressing the <AT> key would be <UP ARROW> followed by <ENTER> which would begin incrementing the displayed sector at a rate of approximately 2 times per second.

2.1F VERIFY SECTOR

Selection of this option requires that you input the drive, track, and sector where you wish to begin verifying and the number of sectors that are to be verified. The routine will then read and verify each individual sector and advise you of the location of any sectors (if any) that it wasn't able to verify.

2.1G COMPARE SECTORS:

Choosing option #3 requires input of the the drive, track, and sector numbers of the SOURCE DISK. Push <ENTER> and then enter the the information on the drive, track, and sector numbers of the DESTINATION DISK. This utility will then compare the source and destination disks by checking both the data address marks (DAM) and the DATA itself.

You will then be asked "Prompt for disk mounts?". If you answer YES, you will be prompted when to swap disks. NOTE: (All remaining memory is used as a buffer and the number of swaps is determined by how much RAM is available). Push <ENTER> and you are then told if the compared sectors are IDENTICAL. If the compared sectors are NOT IDENTICAL, you will be given the location of the first mismatched byte, and upon completion, the number of DATA mismatches, and number of DAM mismatches.

COPYRIGHT (C) 1981 BREEZE COMPUTING INC.

2.1H COPY SECTORS:

Selection of this option also requires you to input the drive, track, and sector numbers of the SOURCE DISK and the number of sectors to be copied. Push <ENTER> and you will be prompted to input the DESTINATION drive, track, and sector numbers. You will then be asked if you want to be prompted for disk mounts. This utility operates with the same input routines as COMPARE SECTORS for one or multiple drive systems and it too uses all available memory on single drive copies.

2.1I COPY SECTOR DATA:

Selection of this option requires input of the SOURCE drive, track, and sector. You will then be asked to supply the RELATIVE BYTE # where the copy is to BEGIN and then the number of bytes to be copied. Upon completion of these inputs, you will then be requested to enter the drive, track, and sector information on the DESTINATION drive. If the source and destination drives are the same, you will be asked if you want to be "prompted for disk mounts". Upon completing the data transfer, you will be advised if any I/O errors occured during the transfer. This utility will allow you to copy from 1 to 65535 bytes of data at a time to the location of your choice.

2.1J ZERO SECTORS:

Upon selection of this option, you are prompted to input the drive, track, and sector where you want to begin zeroing and the number of sectors that are to be ZEROED. WARNING!!! UPON PRESSING <ENTER> THE SELECTED SECTORS ARE IMMEDIATELY ZEROED AND THERE IS NO CHANCE OF DATA RECOVERY FROM THE SELECTED SECTORS. NOTE: (the selected sectors will be rewritten with all ZERO'S, but in STANDARD FORMAT when this routine is finished.)

2.1K REVERSE SECTOR DATA:

This utility simply takes the sector of your choice and completely REVERSES the data on it so that the data that WAS contained in relative byte #00 will NOW be contained in relative byte #FF etc. The ability to automatically perform this function has definite possibilities pertaining to disk protection of your machine language programs.

COPYRIGHT (C) 1981 BREEZE COMPUTING INC.

2.1L EXCHANGE SECTORS:

Option #8 asks you to input the SOURCE drive, track, and sector numbers along with the sector count to be exchanged. Then you are requested to supply the DESTINATION drive, track, and sector where you want the exchange to BEGIN. Upon completing these steps, you will be given the option of having "disk mount prompts" and the selected sectors will then be transfered between the two disks. You will also be advised if any I/O errors occured during the transfer of information.

2.1M STRING SEARCH:

This utility will allow you to search the DISK for a given ASCII STRING, BYTE, or WORD LIST. If the DISK is to be searched, it will require input of the drive and sector where you want to BEGIN searching. You will then have to input the number of sectors to be searched. Next, input the string to be searched for and lastly, you will be asked to supply a "Replacement string". (If you do not want to replace the string with another, press <ENTER>). If you DO wish to replace the string with another of your choice, then simply enter the string and press <ENTER>. Upon completion of the routine, the location of each match will be displayed to the screen along with the total number of matches that were found. NOTE: The ENTIRE string MUST be contained in a single sector for this routine to work properly, so if it doesn't find the string, try entering a portion of it. If MEMORY is to be searched, then go to the MEMORY UTILITY section of this manual. You may also use this utility to search for a BYTE or WORD LIST by first typing a "#" or "##" PRIOR to entering the two numbers. The following three explainations of the different types of searches, will include ASCII, BYTE LIST, and WORD LIST searches. ASCII is self explanatory, but the other two may not be so readily understandable to some users. A BYTE LIST is a list of numbers, where each numbers value is from 0 to 255 and may represented by ONE BYTE. A WORD LIST is a list of 2 BYTE NUMBERS whose values may be from 0 to 65535, and is entered in LSB-MSB format.

STRING SEARCH continued on next page.

COPYRIGHT (C) 1981 BREEZE COMPUTING INC.

This utility may be used to search the disk in three different types of searches the following will attempt to explain how each of the three types of search is used.

<1> - The ASCII STRING SEARCH may be used to locate any combination of ASCII bytes that are on the disk. First, you will have to enter the drive, track, and sector where you want the search to begin and the sector count (number of sectors to be searched. - Pressing <ENTER> will result in the entire disk being searched). Next, you are requested to enter the STRING that is to be searched for and upon entering it, the "REPLACEMENT STRING. If you DO NOT want to replace the string with a different one, simply press <ENTER> as the default value is "NO". The disk will then be searched and you will told the location of any "MATCHES" on the disk.

<2> - The BYTE LIST SEARCH may be used to locate a byte or byte list on a disk. First, you will be required to input the drive, track, and sector where you want the search to begin and the sector count (Pressing <ENTER> defaults to entire disk). Next, when you are requested to enter the STRING, enter "#" and the byte list to be searched for (the byte list may contain a single byte or several that are separated by a space or comma. An example entry after inputing the drive, track and sector information would be "#20H" or "#20H,10H,7FH"). Lastly, you are asked if you want to REPLACE the string and you may do so if you wish by following the ASCII search directions.

<3> - The WORD LIST SEARCH option allows you to search for 2 byte word lists on the disk. When you are requested to input the STRING, enter "##" PRIOR to the word list. A word list is simply 2 bytes of data instead of 1 as in the BYTE LIST SEARCH. When you are using this option, enter the 2 bytes in REVERSE ORDER as that is the way it is stored on the disk. An example of this type of search input after entering drive, track, and sector information would be "## 7F00H" or "## 7F00H,003CH". This utility has the same replacement options as in <2>.

<4> - If the string that is to be searched for is ENCRYPTED, then BEGIN YOUR STRING using the <AT> KEY as the FIRST LETTER OF THE STRING and the routine will then search for the string in its ENCRYPTED FORM.

There is one more option that may be used in any of the above searches, and its called the "I DON'T CARE" option. When inputing the string to be searched for in any of the above options, you may use the character "?" in place of any character in the string and the routine will then return the location of any string that matches the rest of your string but is different at the "?" characters location. EXAMPLE: You want to find all the locations of the ASCII strings "Jim" and "Tim". When requested to input the STRING, enter "?im" and upon completion of the routine, all matches of ASCII words with the letters "im" that are preceded by another letter will be returned to you.

COPYRIGHT (C) 1981 BREEZE COMPUTING INC.

2.1N SECTOR SEARCH:

Use of this option will require input of a SOURCE drive, track, and sector. Upon completion, you will then be asked to supply the drive, track, and sector numbers where to search is to BEGIN. Finally, input the number of sectors to be searched and you will then be told if there are any "MATCHES" of your source sector and if so, where their locations are on the destination disk.

2.1O READ ID ADDRESS MARKS:

This routine may be used for a number of different things, but its main function is advise you if a disk contains FALSE or NON-STANDARD SECTORS and to assist you in determining the way that a disk was formatted. The utility starts reading the disk at relative track #00 and will advance ONE track higher each time the <UP ARROW> is pressed. The display will move quite rapidly but may be stopped at any time by pressing the <SPACEBAR> and may be continued by pressing <ENTER> again. This routine may be exited by pressing <BREAK>. Additionally, you may proceed immediately to either the HIGHEST or LOWEST tracks on the disk by pressing either <SH><UP ARROW> or <SH><DOWN ARROW>. If the computer finds an UNFORMATTED track, the display will print " ID ADDRESS READ ERROR" or "TRACK NOT FORMATTED".

You will be asked to supply the drive number that contains the disk that is to be read, and upon doing so, you will observe 7 columns of information scrolling down the screen. 3 more columns of information may be obtained by pressing "X". The following is a list of what each of the columns are and what information is supplied by each one, starting from the left hand side of the screen.

CONTINUED ON NEXT PAGE

COPYRIGHT (C) 1981 BREEZE COMPUTING INC.

1 - SOURCE: This column advises you of what drive you are presently viewing and whether the track you are viewing is <S>ingle or <D>ouble density. :0S = DRIVE#0 with a SINGLE DENSITY track being displayed.
2 - TRACK: This column advises you of what track # (as read from the disk) is now on display.
3 - HEAD: This is the head number that is recorded on disk
4 - SECTOR: Displays the sector numbers as they are read from the disk. These numbers are not listed in any particular order and will appear in sequencial groups of 3 or 4. If there are any NON-STANDARD sector numbers, they should be quite easy to spot.
5 - LENGTH: IF IBM, "0"=128 else LENGTH * 256 - If NOT IBM, LENGTH * 16 "0"=4096. NOTE: The length numbers indicate the recorded length in the ID field and not necessarily the actual number of bytes in the sector.
6 - CRC1: Checksum of the bytes in the ID FIELD.
7 - CRC2: Checksum of the bytes in the DATA FIELD.
8 - CKCRC: Computes and compares CRC1 & CRC2 with actual data that is on the disk. The first "Y" indicates if CRC1 is correct, and if so, the second "Y" indicates if CRC2 is correct. If CRC1 is non valid, a "*" will be printed in column #8.
9 - IBM: This column advises you if the sectors are formatted in IBM format or not. If the sector IS in IBM format, a "Y" will appear. If the sector IS NOT in IBM format, a "N" will show.
10 - DATA: The DATA ADDRESS MARK (DAM) column will contain one of four possible words which will advise you if the sector that is presently being viewed has been formatted to store Std (STANDARD), Rptc (READ PROTECTED), Ddt (DELETED DATA), or Udf (USER DEFINED) data.

2.1P - ALTER DATA ADDRESS MARKS:

Selection of this utility will require you to input the drive, track, and BEGINNING SECTOR where you want to begin altering the data address marks. Next, enter the number of sectors that are to be changed and you will then have to select the type of data address mark that you want on the effected sectors. Your choice includes S>td (STANDARD), R>ptc (READ PROTECTED), D>dt (DELETED DATA), or U>df (USER DEFINED).

COPYRIGHT (C) 1981 BREEZE COMPUTING INC.

2.2 PURGE OPERATIONS MANUAL:

Upon selection of the PURGE UTILITY, the ten following options will be displayed to the screen.

<1>	KILL SELECTED FILES	<6>	ZERO UNUSED ENTRIES
<2>	KILL BY CATEGORY	<7>	ZERO UNUSED GRANULES
<3>	REMOVE SYSTEM FILES	<8>	CHANGE DISK NAME
<4>	REMOVE ALL PASSWORDS	<9>	CHANGE FILE PARAMETERS
<5>	DISK DIRECTORY	<0>	CHECK DIRECTORY

SELECTION ?

2.2A KILL SELECTED FILES:

Selection of this option requires input of the drive number. The disk is then read and you will be told the NAME and DATE of the DISK, along with the NUMBER of TRACKS and FREE GRANULES. Press <ENTER> and the entire disk directory will be displayed including ACTIVE and NON-ACTIVE (see following example display). The ACTIVE files are contained with RIGHT AND LEFT ARROWS and the NON-ACTIVE files are contained in GRAPHIC BLOCKS. In the upper left corner of your video display you will notice a CURSOR and it may be moved around the screen by pressing the ARROW KEYS. If you are examining a disk with more files on it than can be displayed on a single screen, you may TOGGLE to PAGE #2 by pressing <SH><UP ARROW>. To return to PAGE #1, press <SH><DOWN ARROW>.

At this point, you may either KILL files by placing the cursor on the file to be killed and then pressing <K>ill, or files that have already be killed may be RESTORED by pressing <R>estore. These commands are held in a buffer until you press <W>rite to disk, at which time you will be asked if you really want to <W>rite the changes back to the disk (answer "Y" or "N"). You may return to the PURGE MENU at any time by pressing <BREAK> or return to MAIN MENU by pressing <SH><BREAK>.

When requested to input the drive #, you may input MORE THAN ONE if desired, and the above directions would still apply except the SECOND SELECTED DRIVE would be displayed upon completion of the FIRST DRIVE changes.

The following is a COMMAND SUMMARY of KILL SELECTED FILES.

<1> - <K>	KILL file that cursor is on
<2> - <R>	RESTORE file that cursor is on
<3> - <W>	WRITE changes back to disk
<4> - <N>	NO action, go to next file
<5> - <A>	ADVANCE to next drive

COPYRIGHT (C) 1981 BREEZE COMPUTING INC.

2.2B KILL FILES BY CATEGORY:

Use of this utility requires input of the drive(s) number(s) and after doing so, you then have to supply the "COMMON CATEGORY" of the files that are to be killed. Common category refers to the filename EXTENSION (/BAS, /CMD, /TXT, etc). NOTE: (Don't forget the "/" separater). NOTE: (if you specify "/SYS" as the common category, ALL SYSTEM FILES INCLUDING BOOT and DIRECTORY will be killed !! and this could be fatal to your disk. Use option 3 to safely remove the system files).

You may also elect to kill multiple files by specifying the category as being <V>isible, <I>nvisible, <P>rotected, or <S>ystem, however, a SPACE must be inserted PRIOR to any of the letter commands. EXAMPLE: To PURGE ALL <V>isible files, input a SPACE, followed by the letter "V", and press <ENTER>.

LASTLY, this utility contains a "WILD CARD" option where you may input a LETTER ALONE and all files that START WITH THE LETTER will be KILLED. If you accidentally purge a file(s), you may recover it/them by going to the KILL SELECTED FILES option and using the <R>estore command on the file(s) that you want to restore.

2.2C REMOVE SYSTEM FILES:

The only input needed for this utility is the drive(s) number(s). Press <ENTER> and ALL SYSTEM FILES (except BOOT and DIRECTORY) are instantly "KILLED". NOTE: Any files that are killed with "SUPER-UTILITY PLUS" may be reinstated at any time by using the disk repair option as long as the sectors or unused directory entries haven't been "zero'd" or the granules haven't been allocated to a new file.

2.2D REMOVE ALL PASSWORDS:

This utility simply requires you to input the drive(s) number(s). Press <ENTER> and they will then automatically be changed to EIGHT SPACES and the MASTER PASSWORD will then be "PASSWORD".

COPYRIGHT (C) 1981 BREEZE COMPUTING INC.

2.2E DISK DIRECTORY:

The disk directory utility, after input of the drive(s) number(s), will supply you with the NAME and DATE of the disk, number of TRACKS and FREE GRANULES, and the number of FREE FILES that are available on the disk. In addition, you will be shown EVERY VALID FILE on the disk. This will include each files PROTECTION LEVEL (if any), and whether it is a SYSTEM FILE, VISIBLE, or INVISIBLE. The method of advising you of the status of each file is in standard TRSDOS format (S=SYSTEM, I=INVISIBLE, P+NUMBER=ATTRIBUTE LEVEL). EXAMPLE: "SYS0/SYS SIP=7" indicates that the file "SYS0/SYS" is a <S>ystem file that is <I>nvisible, and has a <P>rotection level of 7.

If the disk contains a large number of files that cannot be displayed on a single screen, press <ENTER> and you will be shown the next page of files. If more than one drive was originally selected, the information for the second drive will automatically start upon completing the first drives information.

2.2F ZERO UNUSED DIRECTORY ENTRIES:

This utility is excellent for "cleaning up" the directory and only requires input of the drive(s). Having done so, press <ENTER> and all non active files are immediately ZEROED out. WARNING !!!! Once this done, you will not be able to recover non active files without engaging in the wonderful pastime called "mucking thru the disk".

2.2G ZERO OUT UNUSED GRANULES:

This utility is also an excellent for "cleaning up" a disk, and it too only requires input of the drive(s). Press <ENTER> and all NON-ALLOCATED GRANULES are immediately ZEROED out. Once it has been used, there is absolutely no chance of data recovery from the AFFECTED GRANULES of the disk. NOTE: (all ZEROED sectors are written as standard data regardless of their original format.

2.2H CHANGE DISK NAME:

This routine asks for input of the drive(s) and you will then be told the existing NAME of the disk and asked to supply a new one (Pressing <ENTER> alone, defaults to "NO CHANGE"). Next, you will be told the existing DATE of the disk and requested to supply another one. Next, you will be given the MASTER PASSWORD of the disk and given an opportunity to change it. Lastly, you will be told if the disk is set for an AUTO COMMAND and you may also alter that to a DIFFERENT program.

COPYRIGHT (C) 1981 BREEZE COMPUTING INC.

2.2I CHANGE FILE PARAMETERS:

Use of this option requires the user to input a complete filename, and upon completing the input, you will be told the filename, if it is a marked as a system file, whether it is visible or invisible, and the present protection level of the file. Next you are asked if it the file is to be made <V>isible or <I>nvisible (answer "I" or "V"). Finally, you are requested to input a PROTECTION LEVEL to the file, (answer 0 to 7). Press <ENTER> and all changes are now written to to disk.

2.2J CHECK DIRECTORY:

Input the drive(s) to be checked and you will then be advised of the disk NAME, DATE, number of TRACKS, FREE GRANULES, and FREE FILES. In addition, a very complete check of the directory of the selected disk is performed and you will be told if any errors exist in the HIT or GAT SECTORS of it. If errors are discovered in either of these places, you may have SU+ automatically repair these problems for you by going to the MAIN MENU and selecting the DISK REPAIR option. Pressing <BREAK> will return you to the PURGE MENU and pressing <SH><BREAK> will return you to the MAIN MENU.

COPYRIGHT (C) 1981 BREEZE COMPUTING INC.

2.3 DISK FORMAT UTILITY OPERATIONS MANUAL:

Selection of the DISK FORMAT utility will result in the following six options being displayed to the screen.

1.	STANDARD FORMAT	4.	BUILD FORMAT TRACK
2.	SPECIAL FORMAT	5.	WRITE FORMAT TRACK
3.	FORMAT WITHOUT ERASE	6.	SOFTWARE BULK ERASE

SELECTION ?

2.3A STANDARD FORMAT:

Upon selecting this utility, you are asked to supply the NAME, DATE, and MASTER PASSWORD of the disk(s) to be formatted, and if you wish to use the CONFIGURATION for which the system has been set.

If your response is <Y>es, the routine will first attempt to read the disk that is to be formatted and if it is READABLE, you will be given EXISTING DISK INFORMATION. If the directory WASN'T READABLE you will also be advised. You will then be given the options to <C>ontinue with the formatting or <S>kipping the formatting and returning to the FORMAT MENU or <K>eep same density.

If your response is <N>o, it will result in the prompt ":1 DEN, TRKS, DIR, ST TK?" being displayed. At this point you may CUSTOM FORMAT the disk by selecting the DENSITY of the disk, number of TRACKS, track number where the DIRECTORY will reside, and the STARTING TRACK number where the formatting is to begin.

EXAMPLE: You have a DISK that you wish to format as 40 TRACK, DOUBLE DENSITY, and you want the DIRECTORY on TRACK #20. You would now input "D, 40, 20", and then press <ENTER> to accomplish the format.

There are 2 OVERRIDE COMMANDS that may be used in this routine when you are asked "USE CONFIGURATION ?", and they are the "*" and "!". The "!" will force the routine to format the disk WITHOUT attempting to read the disk, and the "*" will force the routine to NOT VERIFY the disk during formatting. Using either of these two override options will start the formatting process to begin as soon as you press <ENTER> from answering the "USE CONFIGURATION ?" prompt.

Using ALL DEFAULT VALUES in responding to the prompts will result in a disk with the name " ", a password of "PASSWORD", and a date of " ". When formatting is completed, you will be asked if you wish to REPEAT? (answer "Y" or "N").

COPYRIGHT (C) 1981 BREEZE COMPUTING INC.

2.3B SPECIAL FORMAT:

This utility was designed to allow you to CUSTOM FORMAT a disk in ways that are only limited by your imagination. You may assign as many sectors as you wish to any track and make any of them either VALID OR FALSE. Further, you may make tracks SINGLE or DOUBLE DENSITY in any combination or even have the routine assign ALL RANDOM TRACKS AND SECTOR NUMBERS to your disk.

The main purpose of this utility is to assist professional programmers who wish to protect their work and at the same time, give the novice some understanding of how various protected disks are put together.

You will first be asked to input the DRIVE NUMBER that contains the disk that is to be formatted, and upon doing so and pressing <ENTER>, you will see the work "TRACKS ?". Input the number of tracks that are to be on the disk and press <ENTER>. Next, the prompt "T=00, S=00" will appear on the screen and you may begin inputting TRACK and SECTOR information as explained in the following manner.

The "T=00" tells you the REAL TRACK NUMBER that is now being built is "00". The "S=00" tells you that the NUMBER of SECTORS that have ALREADY BEEN BUILT on the track. There are several different commands that may be used in building custom formatted tracks and sectors and the following is a list of those SPECIAL FORMAT COMMANDS.

1. <S> - This letter, when followed by a number, tells the routine that this <S>ector is to be called by the NUMBER that follows it. EXAMPLE: "S5" means that the sector is to be called SECTOR #5.

2. <T> - This letter, when followed by a number, tells the routine that this <T>rack is to called by the NUMBER that follows it. EXAMPLE: "T2" means that the SECTOR that is now being built, is to be called #2.

3. <L> - This letter, when followed by a number, tells the routine that the SECTOR that is being built is to be the <L>ength of the NUMBER that follows the "L".

4. <M> - This letter, when followed by the letter "S", "U", "R", or "D" tells the routine that the SECTOR DATA MARK is to be <S>tandard, <U>ser defined, <R>ead protected, or <D>eleted.

5. <C1> - This letter and number, when followed by another NUMBER, determines the ID FIELD (CRC1) NUMBER. If this number is anything other than "F7", the sector will be considered FALSE and nothing will be written to the DATA FIELD, however the sector will still reside on the track.

6. <C2> - This letter and number, when followed by another NUMBER, determines the DATA FIELD CHECKSUM of the sector.

7. <I> - This letter, if followed by a "Y", tells it that "Yes, the sector is IBM". If followed by a "N", then the sector is "NOT an IBM sector".

COPYRIGHT (C) 1981 BREEZE COMPUTING INC.

8. <R> - If this letter is used as the ONLY INPUT for the sector, then everything will be <R>andom. If the <R>andom command is used on all the sectors and the "REPEAT ?" prompt is answered <Y>es, then each disk produced will be completely identical.

9. <D> - This letter, when followed by "D" or "S", tells the routine that "the TRACK is <D>ouble density", or "the TRACK IS <S>ingle density".

Pressing <ENTER> without inputting any data, will advance to the NEXT TRACK and start again at SECTOR 0. Lastly, you may format some tracks as single density and others as double density as the utility will allow SINGLE OR DOUBLE DENSITY FORMATS, BUT YOU MAY NOT CHANGE THE DENSITY IN THE MIDDLE OF A TRACK.

EXAMPLES OF CUSTOM FORMATTING AFTER THE "T=00, S=00" PROMPT.

EXAMPLE #1. T00 S12 MU L64 IN DD C100 <ENTER>

In the above sector description, "T00" means that the <T>rack NUMBER is "00", "S12" means the <S>ector is to be called "12", "MU" means the DATA <M>ark is to be <U>ser defined, "L64" means the sector is to have a <L>ength of "64", "IN" means the sector is <N>ot to be <I>BM type of format, "DD" means that <Y>es, it is to be <D>ouble density, and lastly, "C100" means that the CR<C1> ID FIELD is to contain the value "00" and will make this a FALSE SECTOR.

EXAMPLE #2. T24 S123 LR MR <ENTER>

In this sector description, "T24" means that the <T>rack number FOR THIS SECTOR is "24" and the "S123" will cause the <S>ECTOR to be called "123". "LR" tells it that the <L>ength of the sector is to be <R>andom and "MR" tells it that the data <M>ark also is to be <R>andom.

EXAMPLE #3. R <ENTER>

This ONE LETTER DESCRIPTION tells the routine to make EVERYTHING IN THE SECTOR COMPLETELY <R>ANDOM.

COPYRIGHT (C) 1981 BREEZE COMPUTING INC.

2.3C FORMAT WITHOUT ERASE:

This utility requires you to input the DRIVE(S) NUMBER(S) that you want formatted just as was required in the standard format utility. (However, in this routine, you may RE-FORMAT a disk that has existing data on it and still leave said existing data intact). If you wish to REFORMAT the disk and leave the SAME NUMBER OF TRACKS, press <ENTER> to proceed. If you wish to INCREASE the number of tracks on the disk, use the following procedure.

When you FIRST INPUT the DRIVE to be REFORMATTED, also input a "=" and the number of tracks desired. EXAMPLE: To make a disk in drive #0, with LESS THAN 40 tracks into a disk WITH 40 tracks, input the following when FIRST prompted to input the DRIVE. "0=40 <ENTER>". The program will then proceed to REFORMAT the disk WITHOUT LOSS OF EXISTING DATA THAT WAS ORIGINALLY ON THE DISK.

This program will read each track, one sector at a time and then re-format and re-write the same sectors back on the track. If it reaches a track that is not formatted, it merely continues formatting until the specified track count is correct and then "FIXES" the directory. Lastly, this utility is also very handy for RE-VITALIZING those older disks that have been sitting for long periods of time, but it is a good idea to do a DIRECTORY CHECK (See DISK REPAIR UTILITY) when DECREASING the number of tracks on a disk as any data that was resident on the tracks that had been eliminated would be lost.

2.3D BUILD FORMAT TRACK:

This utility will BUILD a formatted track in memory and allow you to make the MODIFICATIONS of your choice. Upon choosing this option, you will be asked whether the track is to be <S>INGLE or <D>OUBLE DENSITY, to which you answer with a "S" or "D" to indicate your choice. Next, the prompt "TRACK ?" is displayed, to which you input the TRACK NUMBER that you want it to be called and press <ENTER>. You will then be prompted to press <ENTER> again and the BUFFER AREA that holds the track will then be displayed to you for examination or modification. After making any desired changes by using the MODIFY MODE (you remember the modify mode instructions don't you?). When all changes are complete, press <BREAK> to return to the FORMAT MENU and then go to the WRITE FORMAT TRACK option to transfer the track to the disk.

COPYRIGHT (C) 1981 BREEZE COMPUTING INC.

2.3E WRITE FORMAT TRACK:

This routine will WRITE A TRACK FROM MEMORY TO DISK that was prepared with the BUILD FORMAT TRACK option. Upon selecting this utility, you will be asked to input the DRIVE and TRACK NUMBER where you want the prepared formatted track to go on the disk. Remember that you were given the option of NAMING THE TRACK NUMBER in the BUILD FORMAT routine, and NOW you are required to supply the DRIVE and TRACK number where the track is to go. The routine will take the prepared track and put it at the location you are now indicating, BUT it will still have the NUMBER from the ORIGINAL preparation.

2.3F SOFTWARE BULK ERASE:

This neat little utility will take a disk and COMPLETELY REMOVE ALL DATA FROM IT. If you have ever had problems with SOME OPERATING SYSTEMS that just don't seem to like to cooperate with BACKUPS or FORMATTING because of data that is already on the disk, you're going to LOVE this routine. Simply place the offending disk in the drive of your choice, advise the utility of the DRIVE NUMBER, press <ENTER>, and then just sit back and relax. This program will completely eliminate the need for the BULK ERASERS or MAGNETS that you have been using in the past to correct these problems and were afraid to bring into the COMPUTER ROOM for fear of damaging valuable disk data.

COPYRIGHT (C) 1981 BREEZE COMPUTING INC.

2.4 DISK COPY UTILITY OPERATIONS MANUAL:

Selection of this utility results in the following two options being displayed to the screen.

1. STANDARD DISK BACKUP 2. SPECIAL DISK BACKUP

SELECTION ?

2.4A STANDARD DISK BACKUP:

This routine will, in effect, make a copy of almost any IBM formatted disk as long as the track and sectors are numbered sequentially from 0 on up. Most protected disks may be "BACKED UP" by use of this program and you may determine if a disk is numbered sequentially by use of the ZAP or READ DISK MARKS programs that are included in this program package. Use of this utility requires you to input the source and destination drives.

ONE DRIVE SYSTEM: If the source and destination drives are the same, you are prompted when to make the necessary disk SWAPS to complete the disk copy. NOTE: The entire unused memory is used as a buffer during this routine.

TWO DRIVE SYSTEM: When source and desination drives are different, simply place a blank disk in the destination drive and the disk to be copied in the source drive. Press <ENTER> and the copy will be automatically completed.

This routine uses ALL AVAILABLE MEMORY during data transfer from source to destination disks. Prior to any copying, the destination disk is formatted to the number of tracks specified.

2.4B SPECIAL DISK BACKUP:

Selection of this utility requires input of the SOURCE DRIVE. Upon pressing <ENTER>, the program will begin scanning the SOURCE DISK and you will be able to observe the screen as it constantly updates during the scanning process. You are also told the number of tracks on the source disk along with the type of format (IBM NON-IBM). This routine is COMPLETELY AUTOMATIC and requires no further user input during its scanning operation. After the SOURCE DISK has been "FIGURED OUT", you will be asked to what drive(s) you want the SOURCE DISK to be copied. Upon completion, you will then be asked if you desire any more copies and if you do, simply input the drive(s) number(s) where you want the additional copies made. NOTE: The SCANNING PROCESS may take a little time but once it has finished, it doesn't have to scan again for additional copies.

COPYRIGHT (C) 1981 BREEZE COMPUTING INC.

2.6 DISK REPAIR UTILITY OPERATIONS MANUAL:

Selection of this utility will result in the following ten options being displayed to the screen.

1.	REPAIR GAT SECTOR	6.	RECOVER KILLED FILES
2.	REPAIR HIT SECTOR	7.	MOVE DIRECTORY
3.	REPAIR BOOT SECTOR	8.	DISPLAY DIRECTORY
4.	READ PROTECT DIRECTORY	9.	CHECK DIRECTORY
5.	UN-READ PROTECT DIRECTORY	0.	CLEAR UNUSED ENTRIES

2.6A REPAIR GAT SECTOR:

If you find that an error exists in the "GAT" (GRANULE ALLOCATION SECTOR), select this option and input the drive(s) number(s). Press <ENTER> and the GAT SECTOR will IMMEDIATELY BE REPAIRED.

2.6B REPAIR HIT SECTOR:

If it is found that an error exists in the "HIT" (HASH INDEX TABLE), select this option and input the drive(s) number(s) to be repaired. Press <ENTER> and the directory will be read and the "HIT" table will be COMPLETELY RECONSTRUCTED without any further user intervention.

2.6C REPAIR BOOT SECTOR:

If you have a disk that will not BOOT, insert the disk into a drive, select this option, input the drive #, and press <ENTER>. At this point, a new BOOT will be re-written to the disk. NOTE: (the BOOT that is written to the disk will be either the one that you selected when you CONFIGURED SUPER-UTILITY PLUS or the FAST BOOT that came with this program if you DID NOT choose to use your own. This routine DOES NOT log the boot to the directory as most standard DOS-type disks will already have the BOOT logged in the directory).

COPYRIGHT (C) 1981 BREEZE COMPUTING INC.

2.6D READ PROTECT DIRECTORY TRACK

If you try to boot in a diskette, and the drive seems to be making a lot of passes and finding nothing, there is a possibility that some or all of the directory track is not read-protected. This does not mean that it cannot be read, but is a type of marking that sets it apart from the remainder of the disk which contains data. Whenever DOS tries to read a directory, and cannot verify that all sectors are read-protected, it will search the disk trying to find a track that is read protected. You may repair this condition by simply entering the drive(s) number(s) and pressing <ENTER>, at which time, the directory will automatically be READ PROTECTED.

2.6E UN-READ PROTECT DIRECTORY:

Selection of this routine will require that you input the drive(s), and upon pressing <ENTER>, the directory will immediately be UN-READ PROTECTED.

2.6F RECOVER KILLED FILES:

Selection of this utility allows you to reinstate previously killed files that have been killed by SUPER-UTILITY, SUPER-UTILITY PLUS, or NEWDOS. NOTE: (you cannot recover files with this utility killed under TRS-DOS, as the entire directory entry is ZEROED out when the file is killed.)

You are first asked to input the drive(s) and you are then told the DISK NAME, DATE, NUMBER OF TRACKS, NUMBER OF FREE GRANULES, and NUMBER OF FREE FILES that are available. Press <ENTER> and you will be presented with a full screen display that consists of all VALID and NON VALID files that are presently on the disk. All ACTIVE FILES will be contained with a <RIGHT> and <LEFT> ARROW, and all NON ACTIVE (previously killed) files will be contained in RECTANGULAR GRAPHIC BLOCKS.

To RECOVER KILLED FILES, move the cursor to the file that is to be recovered by using the ARROW KEYS and once the cursor is LOCATED ON TOP of the file, press <R>estore and you will see the graphic blocks replaced by the right and left arrows on the screen. When the files to be recovered have all been changed in this manner, press <W>rite, and you will then be asked if you want to WRITE the changes back to the disk (answer "Y" or "N"). NOTE: If the disk you are examining contains more files than can be displayed on a single screen, press <SH><UP> or <SH><DOWN> ARROWS to go to next page of display. Also, you may not be able to restore a killed file if you have SAVED other programs on the disk AFTER killing it, as the file may have been WRITTEN OVER.

COPYRIGHT (C) 1981 BREEZE COMPUTING INC.

2.6G MOVE DIRECTORY:

This utility will move the directory to any track on the disk as long as the track IS NOT ALLOCATED to another file. After selecting this routine, input the drive(s) that you want to move the directory and you will then be asked to input the TRACK WHERE YOU WISH THE DIRECTORY TO BE MOVED. If the selected track is ALREADY ALLOCATED, you will be told and then requested to supply a different track number. Upon entering the track and pressing <ENTER>, the directory will be moved and the BOOT SECTOR will also be updated. As always, you may exit this routine by pressing <BREAK> to return to DISK REPAIR MENU or <SH><BREAK> to return to MAIN MENU.

2.6H DISPLAY DIRECTORY:

This option asks for input of the drive(s) number(s) and it then gives you a full screen display of all ACTIVE FILES on the disk. Also the status of each file (system, visible, protection level, ect.) is supplied. In addition, you are given the disk name, date, and the number of free granules and files.

2.6I CHECK DIRECTORY

This utility was designed to thoroughly examine the directory for errors and then report them (if any) to the user.

Upon entering the drive(s) number(s) and pressing <ENTER>, you will be told the number of TRACKS on the disk, the number of FREE GRANULES, the number of FREE FILES, and you are told if there are any ERRORS in the directory. NOTE: If any errors are found to exist in the HIT or GAT sectors on the directory, use the DISK REPAIR utility to automatically repair them.

2.1J CLEAR UNUSED ENTRIES:

This option simply asks you to supply the drive(s) number(s) and after doing so, press <ENTER> and ALL NON-ACTIVE FILES on the disk will be ERASED from the directory. This routine is great for cleaning up the directory, but once you have used this routine on a disk, you will not be able to go back a recover any NON-ACTIVE files that may have been on the disk.

COPYRIGHT (C) 1981 BREEZE COMPUTING INC.

2.5 TAPE COPY OPERATIONS MANUAL:

Selection of this utility will result in the following four options be displayed to the screen.

1. READ TAPE
2. WRITE TAPE
3. VERIFY TAPE
4. COPY TAPE

2.5A READ TAPE:

This utility will READ a TAPE into memory, at which time, you may elect to EXAMINE OR MODIFY the bytes and write them back to tape. You will first be asked whether DECK 1 or DECK 2 is to be used. Input the DECK (recorder) number that contains the tape that is to be read and press <ENTER>. At the bottom of the screen you will then be shown the bytes that are being read as they are received from the recorder. The bottom three lines contain the data as it is read from the tape. The top one is as ASCII representation of the bytes and the bottom two lines are the data in HEX numbers. When the routine is finished reading the data, you will be prompted to press <ENTER> and the TAPE data will be presented to you in standard ZAP format so that you may use the MODIFY MODE to make any changes. If changes are made, you may make another tape of the program that INCLUDES YOUR CHANGES by pressing <BREAK> after you have made the changes, and then using the WRITE TAPE OPTION. When using the MODIFY MODE to change MEMORY, all changes are IMMEDIATE and therefore the <U>pdate option that is used when changing a DISK is not necessary when using these options.

2.5B WRITE TAPE:

This utility asks you the DECK (RECORDER) that you want to record to, and upon answering, you will be prompted to PRESS ENTER TO BEGIN. Upon Pressing <ENTER>, the MEMORY that was READ IN BY THE READ TAPE OPTION will be written back to the specified deck along with any changes that you made.

COPYRIGHT (C) 1981 BREEZE COMPUTING INC.

2.5C VERIFY TAPE:

This option asks you to input the DECK NUMBER (recorder) that holds the tape that is to be VERIFIED. After supplying the information and pressing <ENTER>, you will be given information on the LAST TAPE THAT WAS READ by the READ TAPE OPTION and also the BYTE COUNT and CHECKSUM of that tape. Press <ENTER> to proceed and the tape will be VERIFIED against the information that is contained in memory from the READ TAPE OPTION. If there are any differences, you will be given the number of errors that were encountered during the VERIFY.

2.5D COPY TAPE:

Upon choosing this utility, you are first asked which tape player you wish to use (1 or 2). Input the SOURCE recorder number and place the SOURCE tape (rewound to the beginning of the program) in the SOURCE recorder and press the PLAY button down. Next, unplug the larger of the two gray plugs (AUX) that goes into the SOURCE recorder. Next, unplug BOTH gray plugs from the DESTINATION recorder (AUX and MIC) and then insert the AUX plug from the Source recorder into the AUX jack of the DESTINATION recorder.

To begin copying, press down the PLAY and RECORD buttons on the DESTINATION recorder (it will immediately start running) and then press <ENTER>.

When active data from the source recorder starts pulsing into the computer, you will observe a large GRAPHICS BLOCK begin flashing in the upper right hand corner of the screen, and the copy is complete when the flashing stops. To stop the routine and return to the menu, press <BREAK>.

This utility takes a data pulse from the source tape, "cleans it up", and then immediately rewrites it to the destination tape without loading the program into memory.

COPYRIGHT (C) 1981 BREEZE COMPUTING INC.

2.7 MEMORY UTILITY OPERATIONS MANUAL:

Selection of this utility will result in the following fifteen options being displayed to the screen.

1. DISPLAY MEMORY
2. MOVE MEMORY
3. EXCHANGE MEMORY
4. COMPARE MEMORY
5. FILL MEMORY
6. REVERSE MEMORY
7. TEST MEMORY
8. JUMP TO MEMORY
9. STRING SEARCH
0. INPUT BYTE FROM PORT
A. OUTPUT BYTE TO PORT
B. MEMORY TO SECTORS
C. SECTORS TO MEMORY
D. MEMORY TO TRACK
E. TRACK TO MEMORY

SELECTION ?

2.7A DISPLAY MEMORY:

Selection of this routine will require you to input the memory ADDRESS where you wish to BEGIN VIEWING. Press <ENTER> and you will see the MEMORY ADDRESS and the FOLLOWING 255 BYTES on the screen. The screen format is in standard ZAP FORMAT and you may go into the MODIFY MODE and perform modifications, however, changes that are made while in this routine are IMMEDIATE and are NOT HELD IN A BUFFER. If you elect to enter into the MODIFY MODE (by pressing "M"), you will find that are a few COMMAND KEY differences between using the MODIFY MODE in this utility and in DISPLAY SECTORS if the ZAP UTILITY.

The following will a list consisting ONLY of the COMMAND KEY DIFFERENCES between this routine and DISPLAY SECTORS using the MODIFY MODE. The COMMAND KEYS that are NOT LISTED here and are contained in the MODIFY MODE COMMAND LIST and will also work in this routine.

COPYRIGHT (C) 1981 BREEZE COMPUTING INC.

1 - <UP ARROW>	Pages next higher 256 bytes
2 - <DOWN ARROW>	Pages next lower 256 bytes
3 - <SH><RIGHT ARROW>	Same as <UP ARROW>
4 - <SH><LEFT ARROW>	Same as <DOWN ARROW>
5 - <CLEAR>	Reselect new memory location
6 - <SH><UP ARROW>	Pages to highest memory
7 - <SH><DOWN ARROW>	Pages to lowest memory
8 - <RIGHT ARROW>	Rotates one byte of memory on the lower right hand section of screen and rotates one byte off upper left hand section
9 - <LEFT ARROW>	Rotates one byte of memory on the upper left hand section of screen and rotates one byte off the lower right hand side

2.7B MOVE MEMORY:

This routine asks you to input the STARTing and ENDing locations the memory to be MOVED, and also the STARTing location of where it is to be MOVED TO. EXAMPLE: To move memory from location 5000H to 6000H and move it so that it will reside STARTING at 8000H, would require the following response to the program requests of "START, END, START?". RESPONSE: "5000H,6000H,8000H" and then press <ENTER>. After the routine moves the selected memory to its new location, you will then also be advised of the number of bytes that were moved.

2.7C EXCHANGING MEMORY:

This utility requires that you input the STARTing and ENDing location of the bytes to be exchanged and also the STARTing address of the location of where you want the EXCHANGE to BEGIN. EXAMPLE: To EXCHANGE the memory locations that reside from 5000H to 6000H with the memory locations that BEGIN at 8000H, the following input would be required. RESPONSE: "5000H,6000H,8000H".

2.7D COMPARE MEMORY:

Selection of this utility requires you to input the STARTing and ENDing address of the MEMORY LOCATIONS that are to be COMPARED and then , the STARTing address of where you wish the compare to start. This routine will then advise you if it locates any differences between the two "BLOCKS OF DATA" and tells you the location of any BAD BYTES that it discovers. This utility requires the same type of data input as the the afore mentioned 2 examples in sections 2.7B and 2.7C. NOTE: If several NON-COMPARES are discovered, they will scroll very rapidly on the screen and you may PAUSE them by holding down the <SPACE BAR>.

COPYRIGHT (C) 1981 BREEZE COMPUTING INC.

2.7E FILL MEMORY:

To FILL MEMORY with a user specified byte, select this option and you will then be requested to input the STARTing and ENDing point of WHERE you want memory to be filled and FILL byte that is to be used. EXAMPLE: To fill memory from A000H to B000H with the byte FFH, you would respond with the following input. RESPONSE: "A000H,B000H,FFH".

2.7F REVERSE MEMORY:

This routine asks you to input the START and ENDing points of the memory locations that you want REVERSED. Press <ENTER> and the entire BLOCK of data will immediately be put in reverse order from before and you will also be told the number of bytes that had been changed.

2.7G TEST MEMORY:

This utility tests every byte of memory between the inputed addresses by loading each byte with 00H to FFH and then verifies each change.

To use this routine, input the STARTing and ENDing addresses and you will observe that the screen is constantly being updated with a display of the byte address being tested while it is in progress. The only RAM addresses that MAY NOT BE TESTED are displayed on the screen as they are the locations of the test routine itself and attempting to test in this area will cause a SYSTEM CRASH.

If you attempt to test ROM (Read Only Memory), you will get all ERRORS as ROM cannot be "written to" by this routine. Also, if any problems are detected in RAM ADDRESSES, you will be given a display of the BAD BYTE LOCATIONS and told BIT BY BIT where the problems are located.

2.7H JUMP TO MEMORY:

This program will allow you to JUMP TO any memory location and selection of it only requires that you input the ADDRESS of where you wish to transfer control, and then press <ENTER>.

COPYRIGHT (C) 1981 BREEZE COMPUTING INC.

2.7I STRING SEARCH:

Selection of this routine requires that you input the STARTing and ENDing points of the memory locations to be searched. Next, you are asked to supply the STRING that is to be searched for, and you will then be asked if you want to enter a REPLACEMENT STRING. If you want the string replaced with another one, simply enter the REPLACEMENT STRING and press <ENTER> at which time each occurance of the ORIGINAL STRING will be replaced with the REPLACEMENT STRING.

If you wish to leave the ORIGINAL STRING in its original form and merely want to locate it, then press <ENTER> by itself when you are requested to supply the REPLACEMENT STRING. Upon completion of the routine, you will be told the exact memory locations (if any) where any MATCHES exist and if there are several of them, you may pause the scrolling by holding down the <SPACE BAR>.

2.7J INPUT A BYTE FROM PORT:

Selection of this option will merely allow you to input and display a byte of data from any port. You only need to supply the PORT number from which you wish the input.

2.7K OUTPUT A BYTE TO PORT:

Selection of this option will allow you to output the byte of your choice to a port. You will be requested to input the PORT number where you want the byte sent and the BYTE that is to be sent to the port.

2.7L MEMORY TO SECTORS:

This program requires input of the block start address that is to be DUMPED from memory to the disk. You will then be asked for the DRIVE, TRACK, SECTOR of where to BEGIN THE DUMP, and then the SECTOR COUNT (number of sectors to be saved).

Upon completing the data input, press <ENTER>, at which time the specified block of memory will be saved to the disk at your selected locations. NOTE: (Memory saved to the disk with this utility is not updated to the directory, and as a result, will be invisible without ZAP. Data stored to the disk with this utility may be loaded back to memory by using the SECTORS TO MEMORY UTILTITY.)

COPYRIGHT (C) 1981 BREEZE COMPUTING INC.

2.7M SECTORS TO MEMORY:

This option asks you to input the DRIVE, TRACK, and BEGINNING SECTOR. Next, the SECTOR COUNT (number of sectors that are to be loaded into memory). You are then requested to input the ADDRESS where to BEGIN storing the data (this is the FIRST memory location where the block will reside in memory). EXAMPLE: To load 10 sectors of data, from drive #0, track #14, sector #0, to RAM MEMORY, starting at location A000H, the following responses are required.

1 - RESPONSE to DRIVE, TRACK, SECTOR ....."0,14,0"
2 - RESPONSE to SECTOR COUNT ....."10"
3 - RESPONSE to ADDRESS....."A000H"

2.7N MEMORY TO TRACK:

This utility asks for input of the beginning ADDRESS in memory where you wish to start the transfer of data to the disk. Next, you are asked to supply the DRIVE and TRACK number where the data is to be placed. Press <ENTER> and a track of data that resides FROM the beginning address will be written to the disk at the specified drive and track number.

2.7O TRACK TO MEMORY:

This utility will allow you to READ a COMPLETE TRACK of a disk, including GAPS, SYNC FIELDS, ADDRESS MARKS, and all DATA. To implement this routine, input the DRIVE, TRACK, and SECTOR NUMBER where you wish to begin examining. NOTE:(The SECTOR NUMBER HAS TO BE 0). Next, you will be asked if you want it "SYNCHRONIZED" or not. If you want the controller to synchronize each address mark it finds, press <Y>es. If you want the controller to display the bytes "AS ASSEMBLED", press <N>o.

You will also be given the location of where the track data is presently located, and you may view the data by simply pressing <ENTER>.

COPYRIGHT (C) 1981 BREEZE COMPUTING INC.

2.8 FILE UTILITIES OPERATIONS MANUAL:

Selection of this utility will result in the following fourteen options being displayed on the screen.

1.	DISPLAY FILE SECTORS	8.	DRIVE STATUS
2.	COMPARE FILES	9.	SECTOR ALLOCATION
3.	COPY FILES	0.	BUILD A FILE
4.	DISK DIRECTORY	A.	CLEAR A FILE
5.	FREE SPACE	B.	DISK ALLOCATIONS
6.	OFFSET A FILE	C.	COMPUTE HASH CODE
7.	FILE LOCATIONS	D.	COMPUTE PASSWORDS

SELECTION ?

2.8A DISPLAY FILE SECTORS:

Selection of this routine will require input of the FILENAME that is to be displayed (Don't forget extensions and drive numbers if any). Press <ENTER> and you will be given the END OF ALLOCATION (EOF) SECTOR NUMBER, END OF FILE (EOF) SECTOR NUMBER, and then requested to supply your CHOICE of which sector is to be viewed.

Standard operating system disks contain TRACKS on which data is stored (from 35 to 80) and each track is broken down into GRANULES which are further broken down into SECTORS. On SINGLE DENSITY DISKS, each TRACK contains 2 GRANULES and each granule contains 5 SECTORS. On DOUBLE DENSITY DISKS, each TRACK contains 3 GRANULES and each granule contains 6 SECTORS. You will notice that the EOF and EOA usually are not the same. The reason for this is that operating systems allocate space for data storage in GRANULES and so the EOF SECTOR may be located anywhere in the LAST ALLOCATED GRANULE.

To display the first sector in the file, press <ENTER> or you may input the sector number of your choice and <ENTER>. To automatically go to the EOF SECTOR, press "E" or to proceed immediately to the EOA SECTOR, press "A". Pressing <CLEAR> will allow you to RESELECT the sector of your CHOICE. You may also page thru the file by using the RIGHT or LEFT ARROW KEYS or UP and DOWN ARROWS (as they both perform the same function in this option) to go forward or backward thru the file one sector at a time. At any time you may enter into the MODIFY MODE by pressing "M" if you want to make corrections to the file.

COPYRIGHT (C) 1981 BREEZE COMPUTING INC.

```
    S00 C9E5 6069 2929 2929 4485 4FE1 2318 DB21 Ie'i))))DOa#.[!
HEX Y10 D206 1100 4001 3600 EDB0 AF06 2712 1310 R...@.6.m0/.'...
DRV S20 FCF3 C375 00CD A051 210F 43F3 2B19 CBFE ¦sCu.M Q!.Cs(.K~
 0  130 210F 403E C322 1643 3215 433E CD22 3140 !.@>C".C2.C>M"1@
TRK /40 FB32 3040 C31F 4ECB BEAF 3215 433E 3E21 {20@C.NK>/2.C>>!
 16 S50 A3EF 18E9 CDA0 5111 D94C 3E0B CA13 44C3 #o.iM Q.YL>.J.DC
TRU Y60 1044 237E FE20 28FA FE28 C023 CDDF 5078 .D#~~ (z~(@#M_Px
 16 S70 B7C9 0116 B551 434D 440A 444F 5320 5245 7I..5QCMD.DOS RE
SEC  80 4144 590D 5748 4154 3F0D 0121 C951 F5C5 ADY.WHAT?..!IQuE
 04  90 E521 7F38 7EFE 0428 09E1 C1F1 CB74 23C3 e!8~~.(.aAqKt#C
STD  A0 CD43 3E0D CD3B 00E1 C1F1 C3DA 4301 05CA MC>.M;.aAqCZC..J
ISD  B0 43C3 C951 0202 004E FF01 B7FA 5023 7EFE CCIQ...N.7zP#~~
FPDE8C0 29C8 FE2C CB18 F601 0000 7ED6 30D8 FE0A )H~,H.v...~V0X~.
RSECED0 D0E5 6069 2929 0929 0600 4F09 444D E123 Pe'i)).)..O.DMa#
0004 E0 18E8 0100 007E FE27 C023 7ED6 3038 0AFE .h...~~'@#~V08.~
+00 @F0 0A38 0ED6 07FE 1038 087E FE27 23C8 2BAF .8.V.~.8.~~'#H+/
```

You probably have already read the manual section on DISPLAY DISK SECTOR (2.1A) where the DISPLAY FIELDS are explained, but if you haven't, please do so PRIOR to continuing with this explanation.

The printout in this routine contains all of the information that is supplied in DISPLAY DISK SECTOR, but since we are now dealing with FILES, additional information is now available. To the left of RELATIVE BYTE #C0H, you see "FPDE" which means that the sector being viewed is in a FILE PRIMARY DIRECTORY ENTRY (don't worry about the "8" that is sitting right after "FPDE" as it will be explained later). If the letters had been "FXDE", it would mean the the sector is a FILE EXTENDED DIRECTORY ENTRY. To the left of RELATIVE BYTE #D0H, The letters "RSEC" appear and they stand for RELATIVE SECTOR. To the left of RELATIVE BYTE #E0H, a DECIMAL NUMBER is displayed and it tells you the RELATIVE SECTOR NUMBER of the file that you are viewing.

COPYRIGHT (C) 1981 BREEZE COMPUTING INC.

Lastly, there is one more COLUMN of information that needs to be explained and it is RIGHT NEXT TO, and IMMEDIATELY TO THE LEFT OF the RELATIVE BYTE NUMBERS. This COLUMN contains the FILENAME that is being viewed, and will also tell you if you are viewing a sector that is located BEFORE or AFTER the EOF SECTOR. The FIRST LETTER of the FILENAME itself sits IMMEDIATELY to the left of relative byte #00H, and the FOLLOWING LETTERS of the filename sit DIRECTLY UNDER IT. In the SAME COLUMN and to the left of RELATIVE BYTE F0H, you will see ONE OF THREE SYMBOLS. If the symbol is a "-", then you HAVE NOT reached the EOF SECTOR. If the symbol is a "+", then you HAVE ALREADY PASSED the EOF SECTOR. If the symbol is a "AT", then you are viewing the EOF SECTOR and you will ALSO NOTICE that there is a HEX number IN this column and to the left of RELATIVE BYTES #C0H & #D0H (I told you we would get back to that 8 and the E). These numbers are representative of the FIRST AVAILABLE BYTE AFTER THE FILE ENDS (so the last byte in the file would be one byte LESS). If the numbers contained are "00", then the actual file ended with RELATIVE BYTE #FFH in the PRECEDING SECTOR.

EXAMPLE: In the preceding example DUMP, the FILENAME is called "SYS1/SYS", the sector being viewed is a "FPDE", the "AT" symbol is visible which tells you that the EOF SECTOR is presently being viewed, and the HEX NUMBERS "8" and "E" appear next to relative bytes C0H & D0H, which tells you that RELATIVE BYTE # "8EH" is the FIRST AVAILABLE BYTE in the sector and that # "8DH" was the LAST BYTE USED in the file.

2.8B COMPARE FILES:

Selection of this utility will require you to input the SOURCE FILENAME and then the COMPARE FILENAME. The routine will then compare the two programs BYTE BY BYTE and you will be told the location of any MISMATCHES that it finds.

2.8C COPY FILES:

This utility asks you to input the DRIVE(S) number(s) from which you wish to COPY FILES, and upon doing so and pressing <ENTER>, you will be given a full screen directory of all valid files on the disk. In the LOWER LEFT HAND CORNER of the screen, you will see a FILENAME and IMMEDIATELY to its RIGHT a number will appear that tells you the number of GRANULES in that file. To the right of that, the word "COPY ?" appears, and you are then required to answer "Y" if you want that file copied or "N" if you don't want it copied. Each file on the disk will be displayed to you is this manner, and upon completion, you will be asked to input what DRIVE(S) NUMBER(S) where you want the files copied.

COPYRIGHT (C) 1981 BREEZE COMPUTING INC.

2.8D DISK DIRECTORY:

This utility, after input of the the DRIVE(S) NUMBER(S) to be displayed, will supply you with the NAME, DATE, NUMBER OF TRACKS, NUMBER OF FREE GRANULES, AND FREE FILES that are available on the disk. In addition, you will be shown every VALID FILENAME on the disk, including the PROTECTION LEVEL of each (if any), and whether each file is VISIBLE, INVISIBLE, or a SYSTEM FILE. The method of advising you of the status of each file is in STANDARD DOS format (S=SYSTEM, I=INVISIBLE, P+NUMBER=ATTRIBUTE LEVEL). EXAMPLE: "SYS5/SYS SIP=7" indicates that the filename "SYS5/SYS" is a <S>ystem file that is <I>nvisible and has a <P>rotection level of "7".

2.8E FREE SPACE:

Selection of this routine automatically reads ALL DRIVES presently on the system, and you will be given the NAME, DATE, TRACKS, FREE GRANULES, and FREE FILES that are on EACH DRIVE.

2.8F OFFSET A FILE:

This utility will allow you to LOAD A FILE into memory at the location of your choice or load a file into memory at one location and then have it move to ANOTHER LOCATION and EXECUTE, or you may even DISABLE INTERRUPTS. You will first be asked to supply the FILENAME of the file that is to be OFFSET and upon pressing <ENTER>, you will then be told the LOAD MODULE RANGE of the file (the PRESENT START, END, AND ENTRY POINT of the file). Next, you will be asked to supply the NEW LOAD ADDRESS (where you WANT it to reside), and the LOW OFFSET (the LOWEST memory location that may be offset ** default=4000H **). Next, you will be asked of you want to ADD APPENDAGE (the appendage is 14 bytes long and it performs a BLOCK MOVE of a file from one location in memory to another ** answer "Y" or "N" **). You will then be told the NEW MODULE LOAD RANGE and asked if you wish to DISABLE INTERRUPTS (answer "Y" or "N"). Press <ENTER> and the file will be written back to the disk and from this point on, it will load into memory at your specified locations.

COPYRIGHT (C) 1981 BREEZE COMPUTING INC.

2.8G FILE LOCATIONS:

This routine will give you complete information on the location of files on a disk and it only requires you to input the DRIVE(S) NUMBER(S) that are to be examined. Press <ENTER> and you will given the NAME of each valid file on the disk, whether the file is a SYSTEM file, INVISIBLE, PROTECTED, the location of the File Primary Directory Entry (FPDE), and File Extension Directory Entries (FXDE) if any exist. In addition, you will be told the TRACK and SECTOR NUMBERS where the FPDE resides, PLUS the RELATIVE BYTE NUMBER and DIRECTORY ENTRY CODE (DEC) of the FPDE. Also you are given the End Of File Sector (EOFS), End Of File Byte (EOFB), Logical Record Length (LRL), Encoded Update Password (EUPD), Encoded Access Password (EACC), Number of GRANS in the file, and the location of EXTENTS.

The following will be a LINE BY LINE explanation of each of the information outputs from this utility (see SECOND page following for sample printout). The different outputs will be discussed starting from the LEFT of each line and then proceeding to the RIGHT.

LINE 1 - This contains the FILENAME that is being displayed and information on whether the file is <S>YSTEM, <I>NVISIBLE, and the <P>rotection level of the file.

LINE 2 - The first part of the line gives you the LOCATION of the FPDE and tells you the DRIVE NUMBER where it is located. Next, the TRACK and SECTOR NUMBERS where the FPDE resides (directory), the location of the relative BYTE NUMBER of the entry, and the DEC NUMBER. The DEC NUMBER is the RELATIVE BYTE NUMBER LOCATION of the HIT BYTE in the Hash Index Table (HIT) of the file. EXAMPLE: If the DEC NUMBER is 60H, you could display the HIT sector (second sector of the directory), and at RELATIVE BYTE 60H you would see the HIT BYTE NUMBER of the file. The DEC also may be used to figure out the location of the SECTOR NUMBER where the FPDE resides in the following manner. The LAST NUMBER in the DEC PLUS 2 will tell you the sector number on the directory where the FPDE is located. To figure out the RELATIVE BYTE LOCATION of the FPDE on the sector, change the LAST NUMBER to ZERO. EXAMPLE: If the DEC=62H, the FPDE of the file would be on sector 4 (2 PLUS 2) of the directory and it would entered starting at RELATIVE BYTE 60H (change the last number to 0).

LINE 3 - The End Of File Sector (EOFS) will contain the number of the FIRST AVAILABLE SECTOR AFTER THE FILE if the End Of File Byte (EOFB) is 00H. If the EOFB IS NOT 00H, the EOFS will contain a number that is actually 1 less than true and you will have to add 1 to it. NOTE: Don't blame us for this as this is the way TRSDOS was written. The EOFB is simply the FIRST AVAILABLE BYTE AFTER THE FILE. The Logical Record Length (LRL) is figured by multiplying the number by 256. EXAMPLE: If the LRL = 0, then the sector contains 256 bytes. If the LRL = 1 , the sector contains 512 bytes.

COPYRIGHT (C) 1981 BREEZE COMPUTING INC.

LINE 4 - The Encoded Update Password (EUPD) and Encoded Access Password (EACC) hash codes are both printed out in LSB-MSB format. The GRANS NUMBER tells you how many GRANULES are in the entry.

LINE 5 - The EXTENTS tell you how many extents are in the FPDE and the location of the data on the disk. Each EXTENT contains 3 numeric values that tell you the STARTING TRACK number where the data resides, the STARTING SECTOR number, and the NUMBER OF GRANULES in the extent. On SINGLE DENSITY DISKS, each track contains 2 granules and each granule contains 5 sectors. On DOUBLE DENSITY DISKS, each track has 3 granules and each granule contains 6 sectors. EXAMPLE: If line 5 reads "05,0,06", then the data for this EXTENT starts on TRACK #5, SECTOR #0, and would contain a total of 6 GRANULES of data. The TRACK AND GRANULE NUMBERS may be read directly for both single and double density disks, but the SECTOR NUMBER is a little different. On SINGLE DENSITY DISKS, if the sector number is "0", then the data will start on sector "0". If the sector number is "1", then the data will start on sector #5. DOUBLE DENSITY DISKS, the sector number may contain the numbers "0", "1", or "2", (double density disks have 3 granules per track) and these indicate the data starts on sectors "0", "6", or "12" respectively.

LINE 6 - This line will not normally be displayed unless you have a very large file that requires more than four extents. On the following page is a sample printout of a file with several EXTENSIONS. When a file with extensions is encountered, line 6 will read as FXDE DEC = ##. Following this, you will see that each extension will be listed in numeric order and will contain the necessary information to determine the location of the file data for each extension. The extension printouts are in the same format as we have been discussing, but WILL NOT contain the information on PASSWORDS, EOFS, or EOFB as this information was already given to you with the FPDE for the file. Also you will notice the the DEC NUMBER in line 6 will be the same as the DEC NUMBER of the FIRST EXTENSION, thereby letting you maintain the BACKWARD CHAIN of the program data.

SEE EXAMPLE PRINTOUT ON NEXT PAGE.

COPYRIGHT (C) 1981 BREEZE COMPUTING INC.

```
TEST/CMD
FPDE - :1, TRACK = 17, SECTOR = 28, BYTE = 80H, DEC = 85H.
EOFS = 00099, EOFB = 00H, LRL =  00.
EUPD = 9642H, EACC = 9642H, GRANS =  05.
EXTENTS /  21,0, 02 /  22,1, 01 /  23,1, 01 /  24,1, 01 /
FXDE DEC = A5H.

#01 FXDE - :1, TRACK = 17, SECTOR = 60, BYTE = A0H, DEC = A5H.
EOFS = 00000, EOFB = 00H, LRL =  00.
EUPD = 0000H, EACC = 0000H, GRANS =  04.
EXTENTS /  25,1, 01 /  26,1, 01 /  27,1, 01 /  28,1, 01 /
FXDE DEC = C5H.

#02 FXDE - :1, TRACK = 17, SECTOR = 92, BYTE = C0H, DEC = C5H.
EOFS = 00000, EOFB = 00H, LRL =  00.
EUPD = 0000H, EACC = 0000H, GRANS =  04.
EXTENTS /  29,1, 01 /  30,1, 01 /  31,1, 01 /  32,1, 01 /
FXDE DEC = E5H.

#03 FXDE - :1, TRACK = 17, SECTOR = 24, BYTE = E0H, DEC = E5H.
EOFS = 00000, EOFB = 00H, LRL =  00.
EUPD = 0000H, EACC = 0000H, GRANS =  05.
EXTENTS /  33,1, 02 /  02,1, 01 /  03,1, 01 /  04,1, 01 /
FXDE DEC = 46H.

#04 FXDE - :1, TRACK = 17, SECTOR = 64, BYTE = 40H, DEC = 46H.
EOFS = 00000, EOFB = 00H, LRL =  00.
EUPD = 0000H, EACC = 0000H, GRANS =  02.
EXTENTS /  05,1, 01 /  06,1, 01 / EOF
```

COPYRIGHT (C) 1981 BREEZE COMPUTING INC.

2.8H DRIVE STATUS:

Selection of this option automatically checks the status of all drives in the system and tells you the individual status of each.

2.8I SECTOR ALLOCATION:

This utility will tell you to which file, any sector on the disk has been allocated. Input the DRIVE, TRACK, and SECTOR number that you wish to check and press <ENTER>. You will now be given the NAME of the file that it is assigned to, along with the RELATIVE SECTOR NUMBER that it is in the file. In addition, you will be told the End Of File Sector number (EOFS), End Of File Byte number (EOFB), and the Logical Record Length (LRL) of the file.

2.8J BUILD A FILE:

Selection of this option will allow you to PRE-ALLOCATE space on a disk for a file so that when the file is written to the disk at a later time, it will be written in a contiguous manner. You will be asked to supply a FILENAME and after doing so, will be advised of the disks NAME, DATE, NUMBER OF TRACKS, FREE GRANULES AND FILES THAT ARE AVAILABLE. Next, you are asked to input the NUMBER OF GRANULES THAT ARE TO BE ALLOCATED for the file. Press <ENTER> and the file information will be written to the disk and the directory will be updated.

2.8K CLEAR A FILE:

This option asks you to input the FILENAME that is to be CLEARED from the disk. Press <ENTER> and you will then be asked "Are you SURE you want to clear it ?". Answer "Y" or "N" and press <ENTER>. When you use this option to clear a file, all of the files data is ERASED from the disk and there is NO CHANCE OF DATA RECOVERY.

COPYRIGHT (C) 1981 BREEZE COMPUTING INC.

2.8L DISK ALLOCATIONS:

This routine requires that you input the DRIVE(S) NUMBER(S). Press <ENTER> and you will observe a full screen display of the ENTIRE DISK ALLOCATIONS. The screen will show the numbers 0 to 95, and each represents a track. To the RIGHT of each number you will see that there is a possibility of THREE ENTRIES for each track. Each entry will be either a PERIOD, GRAPHIC BLOCK, or X and each one represents 1 GRANULE. If the disk being examined is DOUBLE DENSITY, then each of the GRANULE REPRESENTATIONS are valid, but if the disk is SINGLE DENSITY, disregard the RIGHT MOST ENTRY for each TRACK. The STATUS of each GRANULE may be obtained by noting whether the GRANULES are ALLOCATED or not. If a PERIOD is displayed, the granule has already been ALLOCATED. If a GRAPHIC BLOCK is displayed, the granule is STILL AVAILABLE. If an "X" appears, the track is LOCKED OUT and not usable.

EXAMPLE: On the following sample printout of a SINGLE DENSITY DISK, you will notice that the LEFT MOST granule entry for track contains a period as that granule is ALLOCATED for the SYSTEM BOOT. The granule that is to its RIGHT appears as a GRAPHIC BLOCK and it has NOT been allocated by the system. On all tracks higher than 39 (this printout is a 40 track disk and contains tracks 0 thru 39), you see that each granule entry contains an "X" which tells you that all over these tracks are locked out and not usable.

The reason that we display the 3 GRANULE format to the screen for both SINGLE and DOUBLE DENSITY DISKS is to remain consistant AND it allows us to save a little more memory for other things. This program is OVER 32K long and we have to conserve memory whenever possible by using SCREEN DISPLAY ROUTINES that may be used for more than one subroutine.

2.8M COMPUTE HASH CODE:

This routine will compute the HASH CODE of ANY VALID FILENAME. You will be asked to supply the FILENAME for which you want the HASH CODE, and upon doing so, the program will COMPUTE AND DISPLAY it to the screen.

2.8N COMPUTE PASSWORDS:

Upon choosing this option, you will be asked if you wish to <E>ncode or <D>ecode a password to which you answer <E> or <D>, and press <ENTER>. If you pressed <E>ncode, you will then be required to input the PASSWORD that is to be <E>NCODED, and upon doing so and pressing <ENTER>, the HASH CODE for the PASSWORD will be COMPUTED AND DISPLAYED.

If you select <D>ecode, you will be prompted to input a FILENAME and upon completion and pressing <ENTER>, it will read the FILENAME from the disk and then COMPUTE a USABLE UPDATE and ACCESS PASSWORD.

COPYRIGHT (C) 1981 BREEZE COMPUTING INC.

2.9 DISK CONFIGURATION OPERATIONS MANUAL:

2.9A SYSTEM INFORMATION:

The following will be STEP BY STEP INSTRUCTIONS for persons wishing to CUSTOM CONFIGURE this program to their individual systems. Before I start explaining this procedure, there are a few things that you may have to know in order to insure proper operation of the program.

SUPER-UTILITY PLUS will allow you to configure up to 8 drives, but certain systems require special considerations. Several of the routines in SUPER UTILITY PLUS will TEMPORARILY OVERRIDE the configuration in odder to operate and then RETURN back to the ORIGINAL configuration when completed. This AUTOMATIC SWITCHING back has been implemented to allow for much easier operation by the user. So if you happen to look at the CONFIGURE SYSTEM option, it could show something different than you originally set up, but don't worry, it will RETURN to your configuration by itself.

If your system has DOUBLE HEADED DRIVES of the type that are HARDWIRED using EACH SIDE as a SELECTED DRIVE NUMBER, then configure the program as if each SIDE was a DRIVE by itself.

If your system has DOUBLE HEADED DRIVES of the type that uses DRIVE #3 (the 4th drive) as a ROUTER for the other three, then you will have to use a "'" immediately AFTER the DRIVE NUMBER whenever you are selecting SIDE #2 of the disk.

There are three different ways to CONFIGURE SU+. The first way, by TEMPORARY OVERRIDES, is discussed in the GENERAL INFORMATION section of this manual and will not be discussed in this section. The other two ways are called SOFT CONFIGURING and HARD CONFIGURING.

2.9B SOFT CONFIGURE:

The user may "SOFT CONFIGURE" this program upon initialization or at any time when the program is resident in memory. The SOFT CONFIGURE is only resident for the remainder of time that the program is in memory and if you use this method, you will have to CONFIGURE the system each time you LOAD the program. Select the CONFIGURE SYSTEM option and press <ENTER> at which time you will observe the following screen display appear.

COPYRIGHT (C) 1981 BREEZE COMPUTING INC.

```
**  SYSTEM CONFIGURATION  **

:0!, S DEN, TRACKS= 35, DIR=17, STEP=3, DELAY=2/2, HEAD= 17.
:1#, D DEN, TRACKS= 40, DIR=17, STEP=3, DELAY=2/2, HEAD= 18.
:2#, D DEN, TRACKS= 80, DIR=40, STEP=3, DELAY=2/2, HEAD= 00.
:3#, D DEN, TRACKS= 80, DIR=40, STEP=3, DELAY=2/2, HEAD= 00.
HIGH-SPEED CLOCK = N, SAVE CONFIG. = Y.
PRINTER:  GRAPHICS = N, LOWER CASE = N, MX80 = N.
PARALLEL, LINEFEEDS = N, DUAL = N.

HIGH-SPEED CLOCK ? 0
```

The top line of the information display tells you the information for DRIVE :0. The default values, as read from left to right, on each of the drives, are "S DEN" (Single DENsity), "TRACKS= 35" (35 TRACK DRIVE), "DIR=17" (the DIRectory is on track #17), "STEP=3" (STEP 1=06ms, STEP 2=20ms, and STEP 3=40ms ACCESS SPEEDS), DELAY=2/2 (1 second), HEAD= 00 (HEAD 00 is the position where the head presently located).

You may individually change the specifications on any of the drives or perform a wide range of other functions by answering the questions that are displayed on the screen. The first question will ask how many drives are in the system and you simply input the number and press <ENTER>. Next, you will be asked if you want to "save the configuration". If you want the program to REMEMBER the configuration during the whole time it is in memory, press "Y" and then <ENTER>. If you are planning to examine several different types of DISK OPERATING SYSTEMS, and intend to use the OVERRIDE COMMANDS, then press "N" and <ENTER>.

You will then be given an opportunity to INDIVIDUALLY specify the parameters for EACH DISK, one at a time, in your system. EXAMPLE: The screen has just displayed ":0" and you want it to be a <D>ouble density, 40 TRACK disk, with the DIRectory on track #20, and your drive has a STEP SPEED of 6ms (STEP 1). The following input would result in these changes. "D,40,20,1 <ENTER>".

COPYRIGHT (C) 1981 BREEZE COMPUTING INC.

After inputting the specifications for each drive, you will be asked if you have a HIGH-SPEED CLOCK (answer "Y" or "N"), if your printer is capable of printing GRAPHICS (answer "Y" or "N"), if you have LOWER CASE capabilities ("Y" or "N"), if your printer is a MX-80 and requires that the graphic bytes are ADJUSTED ("Y" or "N"), if your printer requires LINEFEEDS ("Y" or "N"), and lastly, if your printer is P>arallel or S>erial ("P" or "S").

2.9C HARD CONFIGURE GENERAL:

HARD CONFIGURING involves ZAPPING the disk and once you have completed this process, the program will be set to the SELECTED specifications each time it is loaded. You may still examine other types of systems simply by using the OVERRIDE COMMANDS, or the program may be RE-CONFIGURED by ZAPPING the disk again for DIFFERENT PARAMETERS, however, it is STRONGLY SUGGESTED!!!!!!!! that you read the section on the MODIFY MODE and familiarize yourself with it prior to attempting ANY zapping on the SU+ disk.

2.9D HARD CONFIGURE SECTOR #2

To HARD CONFIGURE the program, expose the disk notch, place SU+ in drive #0, and then perform the following steps.

1. - Press RESET BUTTON and wait for the program to load.
2. - Select option #1 (DISK ZAP) and press <ENTER>.
3. - In response to the "DRIVE, TRACK, SECTOR ?" question, input "0,0,2", and press <ENTER>. You will now see the sector displayed and to the far right hand side of the row that begins with RELATIVE BYTE 40H, you will see the words "# DISK DRIVES =."
4. - Look to the left of relative byte #10H and make sure that the word "HEX" is there as all modifications on THIS sector are inputted in HEX. If any other word is there, press "H" and you should see the word HEX appear.
5. - Press the "M" key to enter the MODIFY MODE and you will observe that there are now 2 cursors on the screen. One is on the HEX (left) side and the other is on the ASCII (right) side.
6. - Using the ARROW keys, move the RIGHT HAND CURSOR so that it is right on top of the LAST possible digit in the line that starts with 40H (on top of the ".").
7. - Input the number of drives in your system but DO NOT PRESS <ENTER> yet.

COPYRIGHT (C) 1981 BREEZE COMPUTING INC.

8. - ON the next line LOWER, the words "TITLE =01234567" appear and these numbers each represent a DRIVE NUMBER. UNDER the word TITLE, the words TRACKS, DIRECT, DENSITY, STEP, and DELAY appear, and each of these will allow 8 possible different entries (one for each drive). Place the cursor ON TOP OF the "0" that indicates DRIVE "0" in the line that contains the word TITLE (its located at relative byte #58H of the sector).
9. - Press the <DOWN ARROW> key TWO TIMES and the cursor will move straight down TWO LINES and will then be on top relative byte #78H (in the line that says "TRACKS" and DIRECTLY UNDER the DRIVE "0" where it was before.
10.- You may now input the NUMBER OF TRACKS that you want for DRIVE #0, but DO NOT press <ENTER> until you have FINISHED making ALL the changes to the SECTOR.
11.- Next, press the <LEFT ARROW> to return to the DRIVE #0 column and them press <DOWN ARROW> again to move to the DIRECTory line. Input the number of where you want the DIRECTory to reside.
12.- Next, Press <DOWN ARROW> again to move cursor to DENSITY line. If DRIVE 0 is to be <S>ingle density, proceed to next step. If DRIVE 0 is to be <D>ouble density, backspace and then input a "D" on top of the "S". Default=S.
13.- Press <DOWN ARROW> again and place cursor on STEP line. If DRIVE 0 operates at 40ms ACCESS, proceed to next step. If DRIVE 0 operates at 20ms, input a "2". If DRIVE 0 operates at 12ms, input a "1". Default=3. Proceed to next step.
14.- Press <DOWN ARROW> and place cursor on DELAY LINE. If a 1 second delay is desired, do nothing and proceed to next step. If a 1/2 delay is desired, input a "1" and proceed to next step.
15.- You have now completed all possible entries for drive 0, and IF you have a 1 drive system, press <ENTER> and then select the <U>pdate option. If you have TWO OR MORE DRIVES in your system, move the cursor back up to the TITLE LINE, place it on top of the "1" (relative byte #59H), and do the entire procedure for DRIVE 1 as we just did for DRIVE 0.
16.- When you have CONFIGURED each drive in your system, press <ENTER> and then select the <U>pdate option. The changes will then be written back to the disk.

COPYRIGHT (C) 1981 BREEZE COMPUTING INC.

2.9E HARD CONFIGURE SECTOR #3:

After completing the afore described zapping procedure for SECTOR #2, press the <RIGHT ARROW> one time and you will see the BOOT REPAIR SECTOR that is located on SECTOR #3. This is a VERY FAST BOOT and if you a using 2.1 NEWDOS or TRSDOS, we suggest that you use this boot as it is much faster than either of theirs. If you are using other systems, then please select the DISK ZAP utility, and use the COPY SECTORS option to use YOUR SYSTEM BOOT as the REPAIR BOOT in this program. To place your boot on the SU+ disk, select the COPY SECTORS option and when asked to input the SOURCE DRIVE, TRACK, and SECTOR numbers, respond with "0,0,0" after placing YOUR REGULAR SYSTEM DISK in DRIVE #0, and press <ENTER>. Next, you will be asked to input the DESTINATION DRIVE, TRACK, and SECTOR, to which you respond with the DRIVE NUMBER where SU+ is going to reside (if source and destination drives are the same, you will be prompted when to swap disks),in the following manner. "DRIVE NUMBER,0,3". NOTE: You are taking the BOOT from YOUR DISK where it resides at TRACK #0, SECTOR #0 and you are placing it on TRACK #0, SECTOR #3 of the SU+ disk.

2.9F HARD CONFIGURE SECTOR #4:

Sector #4 allows you to HARD CONFIGURE the same information that was discussed in the SOFT CONFIGURATION instructions. The following instructions will advise you on the necessary steps to complete the changes. All of the DEFAULT VALUES that were discussed in the SOFT CONFIGURATION section also apply in this section. If any changes are made on this sector, DO NOT PRESS ENTER until ALL the changes on it are completed.

1. - If SU+ is already running in your machine, press <SH><BREAK> to go to the MAIN MENUand then proceed to step #3. If SU+ is NOT presently up and running in the machine, proceed to step #2.
2. - Place the SU+ disk into drive #0, press the RESET BUTTON, and then wait while the program loads.
3. - When the MAIN MENU is displayed on the screen, press "1" and then <ENTER> to select the DISK ZAP option.
4. - You will next be asked to supply the DRIVE, TRACK, and SECTOR number that is to be examined. Input the following response: "0,0,4" and press <ENTER>.

COPYRIGHT (C) 1981 BREEZE COMPUTING INC.

5. - Beginning on the top line of the ASCII side (right) of the printout, you should see the words "ENTER ALL VALUES IN ASCII FORMAT". Look to the left of RELATIVE BYTE #10, and if the word "ASC" DOES NOT appear in that location, press the letter "A", at which time you will observe it appear.
6. - Next, press "M" to enter the MODIFY MODE and you may then position the cursor on top of the DEFAULT VALUES that reside in the MOST RIGHT HAND COLUMN of the ASCII side.
7. - Any changes that are to be made, with the exception of the CLOCK SPEED, will be made by placing a "Y" or "N" on top of the values that are to be changed.
8. - The Clock speed DEFAULT VALUES are set for a HIGH SPEED clock, but the entire option is sent to you in a TURNED OFF condition. If you have the HIGH SPEED option and it requires a "1" to turn it on, simply change the "N" in line that starts with relative byte #50 to a "Y".
9. - After completing all changes, press <ENTER> and then <U>pdate and the changes will be written back to the disk.

2.9G HARD CONFIGURE SECTOR #5:

This sector will let you specify up to six different ports and let you send a byte to each of them.

1. - Load SU+ and select the DISK ZAP option.
2. - Select option #1 and press <ENTER>.
3. - When the DISK ZAP MENU is displayed, input "1" press <ENTER>.
4. - Answer the DRIVE, TRACK, and SECTOR question with "0,0,5" and press <ENTER>.
5. - CHECK to the left of relative byte #10 and if the word "ASC" doesn't appear, press "A" so that it DOES appear.
6. - Next, press "M" to go into the MODIFY MODE and position the cursor on top the the port # that you want to change. You may change any of the port numbers and any of the byte numbers in this sector by inputting the DESIRED number on top of the existing one. As always, DO NOT press enter until ALL changes are made.
7. - After finishing all changes, press <ENTER> and then <U>pdate the disk.

COPYRIGHT (C) 1981 BREEZE COMPUTING INC.

2.9H PATCH SECTORS:

Sectors 6 thru 9 on track #0 have been left open to allow you to insert another program of your choice WITHIN this program. If you have a special printer driver or other utility program that you want resident at the same time, then you may use these sectors. These sectors will allow TRSDOS STANDARD LOAD FILE FORMAT and the following four code numbers apply.

1. - "0" = TERMINATOR.
2. - "1" = LOAD MARKER.
3. - "2" = ENTRY POINT.
4. - Any OTHER number = REMARK.

Additionally, all memory above SU+ may be used for other programs,and you may even use any of the sub-routines in SU+ in YOUR PROGRAMS. If you want to locate and use the subroutines in this program, then you may find the NAMES AND ENTRY POINTS of each by holding down the <RIGHT ARROW> key when SU+ is being loaded, at which time, they will be displayed to the screen. If a HARD COPY is desired, press the <RIGHT> AND <LEFT><ARROWS> together when it is loading and the printer will give you a full copy.

After the program is loaded, you won't be able to get this information, as many changes are made in the program during initialization, but you may RE-BOOT the system at any time to obtain it.

COPYRIGHT (C) 1981 BREEZE COMPUTING INC.

3.0 ENHANCEMENTS AND INCOMPATABILITIES:

3.1 SUPER-UTILITY PLUS ENHANCEMENT DISTRIBUTION:

BREEZE COMPUTING will notify all registered owners of SU+, of any enhancements or updates pertaining to this program as they become available. Registered owners will also be placed on our mailing list, so as to be kept informed of any NEW programs as soon as they go on the market.

3.2 REPORTING OF INCAPATABILITIES:

SU+, to the best of our knowledge, contains no "BUGS", but with a program of this size (32K of machine language) it is possible that some minor bugs may be found.

If you find such a problem, please RE-READ the MANUAL concerning that section, and if you still are not able to overcome the problem, send a thorough discription of the problem along with the disk that you are having the problem with and $5.00 POSTAGE AND HANDLING, to BREEZE COMPUTING P.O. BOX 1013 BERKLEY, MICHIGAN 48072.

We will do our best to assist and support all REGISTERED OWNERS, so be sure and include your SERIAL and PHONE number. Upon receiving your disk, we will attempt to locate and isolate the problem (within reason) to your satisfaction, however, we have found that in MOST cases where problems arose, the user had either NOT READ the section in the manual concerning the problem or had GLOSSED OVER it and had missed the explanation.

COPYRIGHT (C) 1981 BREEZE COMPUTING INC.