WEST PENN 99 ERS

This artical comes from the disk of CIN-DAY U.G. **MARCH 1992**

HOW TO BUY NEW FLOPPY DISK DRIVES.

by Richard Roseen.

1. Check;for quality the main mechanical parts of the drive. They should be located on a solid die cast piece of metal. In other words solid metal structure throughout as the base of the drive that holds the motors,soleniods and other moveable parts. Avoid any drive put together with metal plates.

2. New drives should be sold to you in antistatic plastic wrap (usually tinted looking) and may have a fitted styrofoam container,will always be half hight density,at least two sided,at least capable of 360K double sided double density. 720K 80 track drives are now getting rare due to the newer 1.2meg. drives. 1.2meg. drives can be useable at 720K. (more on that later). New 3.5" drives are 720K. or 1.44meg. They should follow the rule of die cast body as above also. Newer 3.5" drives will have a thickness much less than a half hieght 360K. drive. Only the new Myarc HFDC has promise of possible drivers to support 1.44meg. 3.5" or 1.2meg. 5.25"use. Certain CorComp controllers have floppy disk controller chips that can handle the 1.44meg. data rate,but the device drivers who knows. No older Myarc disk controller will be fully capable of the 1.44meg. data rate because of the FDC chips they use. The above also prety much applies to the use of 1.2meg. 5.25" drives. The 5.25" 1.2meg. and 3.5" 1.44meg. drives can be used for 720K. storage with the eprom driver support of the two Myarc controllers; however,if disk rotation speed cannot jumpered through lack of information on the drive options,you would be forced to live with odd ball' 720K. format disks only readable by someone else with 720K. capability and 3.5" 1.44meg. drives.

4. Newest drives always have a directly driven disk rotation motor. This means you will not see any belt driven disk rotation.

5. Warrantee's: ask what the manufacture warrenty is. The warrentee should be at least one year from the date of purchase. Also,check to see what the seller's guarentee is on the drive. Typically the seller's guarentee is full replacement for 30 to 90 days,in addation to the one year manufactures warrentee. The warrentee will give you plenty of time to verify that you do not have a lemon drive.

6. Get the sellers business card with address and phone. Get a receit in which you and the seller have a copy which must contain the serial number of drives bought and date as well as the cost. If the seller's address is on the reciet clearly that will substitute the business card. These requirements are necessary for the manufracture's warrentee and so you can later find the seller or manufracture for information. It is not always possable that the seller has info. on the drive,but it will not hurt to ask for data manuals,or schematics.

7. For quality look for heads mounted on assemblies that are

mounted to move rapidly not jerkily such as on two rails instead of one. For low mechanical noise or low clattering (increased reliability and longer life) look for solid movement of the heads assembly by a stepper motor through two following examples: Stepper motor that drives a screw shaft or two straps that wind on or off the stepper motor shaft and on or off of the head assembly as the heads move in either direction. Heads take the biggest beating in floppies and more often involved in alignment of a drive. An example of the stepper motor that drives screw shaft is the 3.5" 720K. Chinnon and Fujitsu. An example of the strap that winds on or off the stepper motor shaft and on or off the assembly is the Mitsumi 360K 5.25" drives.

8. 3.5" drives can be hooked up bare without the 5.25" bracket with 34 pin socket IDC (insertion displacement connector) connected to the square pins on the 3.5" drive. If this is done then the odd ball but findable 4 pin 3.5" drive power connector must be used. These are odd ball because they are not the same as the 5.25" drive power connectors. These connectors do not have a polarity tabs and can make difficult getting the proper polarity or orientation of the connector to plug in. Go for the works get the 5.25" bracket and the card edge adapter board that includes standard 5.25" power connector. Thest adapters may have a jumper for yse on PC XT or AT clones, be sure to select xt.

9. Unless you have help from a GURU or user who has successfully installed and used the same drives, then get info. from the seller or manufracture on drive selects, other jumper option or features, and resistor packs. On some new drives the resistor pack is premenantly soldered to a high density logic board with a jumper to disable orenable the use of the resistor pack for installation as lesser drive or drives on the chain. If such a drive is the last drive in a chain whose other resistor packs can be removed. there is no problem.

10. Buy or at least shop for any drive or power connectors or power supplies or casses as you may or may not need depending on what you already have.

11. The least expensive power supplies, drive connectors, cables, etc. are sold by vendors selling chips and electronic parts, not by the dealers of floppy drives. The chip parts dealer will have a lot of the necessary parts for home built linear supplies at the lowest total costof parts. A general list for a linear supply is a transformer, AC line coard and plug, switch, filter capacitor rated above 2200uf (micro farads), bridge rectifier or diodes, linear regulators both 5 and 12 volt.

12. Power requirements: some 3.5" drives recuire less than 1 amp for 5 and 12 volts. Some 3.5" drives are very low power and some require only a 5 volt supply. 3.5" drives require the least power. New 5.25" half height drrives never require more than 1 amp on 5 and 12 volt lines and can be as low as 1/2 amp, on the 5 and 12 volt line. Add the amperage required for each drive for each 5 and 12 volt line to check your power supply needs for your drrives. Drives can be powered separately because the 34 pin cable will carry the common logic signal ground between all drives on the train and the computer. If building a linear supply be sure the transformer, bridge rectifieror diodes and linear regulatorexceed your amperage needs. The transformer should be at least 12.6 VAC RMS and 6.3VAC RMS (transformers are commonly rated with RMS voltages at their secondaries).

Written by Richard Rossen.

WEST PENN 99'ERS CLUB INFORMATION

NEXT MEETING DATE: SEPTEMBER 21 1993

MEETING LOCATION: PENNS WOODS CIVIC ASSOCIATION
JUST OFF ROUTE 30
N. HUNTINGDON, PA

TIME OF MEETING: 7:00 P.M.

LIST OF WEST PENN OFFICERS FOR 1993

PRESIDENT:	MICKEY	412-265-5201
VICE PRESIDENT:	NORM	614-264-6442
TREASURER:	LYNN	412-835-4304
RECORDING SEC:	FRANK	412-751-6065
CORRESPONDING SEC:	PAUL	412-478-2754
LIBRARIAN:	BOB	412-863-5672
NEWSLETTER EDITOR:	RALPH	412-379-8762

GENERAL ITINERARY OF THE CLUB'S MEETING

6:45 P.M.	DOORS OPEN
7:00 P.M.	GENERAL MEETING
7:45 P.M.	DEMOS AND NEW INFO
9:45 P.M.	ONE ON ONE HELP
9:45 P.M.	SOCIALIZING
11:00 P.M.	DOORS CLOSE

MEETING HIGHLIGHTS FOR THIS MONTH

LATEST T.I. NEWS AND SOFTWARE DISCOUNTS

"NEW SOFTWARE" FROM MS EXPRESS SOFTWARE

"TI CASINO" - DEMO BY MICKEY CENDROWSKI

"GENEALOGY" - DEMO BY LYNN GARDNER

USING YOUR TI - DEMO BY VARIOUS MEMBERS

* SPECIAL - T.I. SWAP AND SELL MONTH! *

RENEW YOUR MEMBERSHIP DUES!

$15.00 PER YEAR FOR INDIVIDUAL / FAMILY
$10.00 PER YEAR FOR ONLY OUR NEWSLETTER

SPECIAL CLUB MEETING

Just a reminder - This month's West Penn 99'ers meeting has been designated as our first official Swap and Sell month.

What does this mean you ask? Well...for starters it means that ALL of our members should go through ALL of their extra T.I. Inventory and determine if they may be interested in selling any of their "Extra Stuff" or perhaps even willing to trade their "Extras" with someone else's "Extras."

This should prove to be quite a good time for all those participating.

Who knows...YOU may even be able to find THAT SPECIAL ITEM that you have always wanted to have...

And the price just might be in the "AFFORDABLE" range.

So let's make this a night to remember. The more members that participate...the better it will be for everyone.

To get you all started... Here's just a couple of items that I am searching for... IF THE PRICE IS RIGHT...

(1) RS232 CARD
(1) DISK MANAGER MODULE
(1) EXTENDED BASIC MODULE
    (with book)
(1) TEII MODULE
    (with book)

Also...I received a call from someone who has a T.I. Console for sale for $20.00. This price also INCLUDES a T.I. Cassette Recorder. If anyone is interested they should call Alice Vance at 412-767-4056.

Gotta run...I'm out of Pepsi!!

WHAT CAN A COMPUTER DO FOR ME?
by JOAN JOHNSON

Before I purchased my TI (short for Texas Instruments), I used to think to myself, "Why do I need a computer?" What would I use it for? All my children had computers, but I put off buying one. I didn't want to spend two thousand dollars for a machine that I might never use!

All that changed in July of 1991 when my husband and I attended a "free" computer class at the Orange Senior Center. In a way, that meeting changed our lives.

After learning a few things that the computer could do and finding out how cheaply we could get started with a TI99/4A computer, we were hooked. Now we can't live without it. Well, I guess we could, but we wouldn't have as much fun.

Here are some of the ways in which we use our computer. Others use their computers for different purposes.

1. WRITING LETTERS... The word processing program is great! Anyone can produce a professional looking letter. This article is being produced with the word processing program. When I have it exactly as I want it, I will instruct the computer to print it. If I'm not satisfied, I'll edit it, but I DO NOT have to retype the entire article.

2. MAKING LABELS... We no longer handwrite addresses on envelopes. We use the computer to make a label, peel it off, and slap it on the envelope. The Postal Service appreciates typed addresses because it speeds up their sorting process.

We send labels with our address on them to our friends around the country. All they have to do is peel one off and stick it on an envelope. Saves them from having to look up our address in their rolodex, write out the envelope, etc.

3. SPREADSHEETS... It wasn't too long ago that I didn't know what a spreadsheet was. Now we use such a program to track investments, help figure income tax records, sort lists of family names and address for genealogy purposes and many other uses.

4. TRACK SAVINGS BONDS... There is a program that will help you keep track of the current value of your bonds.

5. HOUSEHOLD INVENTORY... Using the computer to list your household items by name, date of purchase, purchase price, serial number, etc. is a valuable tool for insurance purposes in the event of theft or fire.

6. CREDIT CARD NUMBERS... Making a list of all your credit card numbers, including the telephone number to call if the card is lost or stolen, is another way to use your computer. Just remember to file your list in a safe place.

7. GAMES... Some people think that is all a computer is good for. The fact is that a computer can be a friend to a lonely person. You can play games such as bridge, poker, cribbage, backgammon, chess, you name it, with the human playing against the computer. It can be a lot of company. The uses are unlimited.

8. TELECOMMUNICATIONS... Using a modem, you can hook up to other computers and bulletin boards via the telephone lines.

Maybe the above ideas will get you thinking of how you could use a computer. Operating a computer does require some effort on the part of the user, however. Even though some computers are more "user friendly" than others, all require a training period to learn to operate them. MANUALS ARE A MUST!. Getting a free computer is no bargain unless you get the manual with it.

Maybe you thought you never came in contact with a computer. Well, think again. Everyone probably drives a car, uses a microwave, VCR, calculator, telephone, bank ATM card. All of these everyday items have microprocessors in them, and they are computers.

Many modern automobiles have a part referred to as a "brain". If the brain goes bad, the car won't run. That is only one of the computers in the car. Air bags use microprocessors and sensors to tell them when to inflate.

We can't go back to the days before computers, we probably wouldn't want to.

Reprinted from the Chicago TImes,
Feb., 1990

WHY DO I CONTINUE TO USE MY TI COMPUTER?

by Jan Janowski

Now that is a question that has started a few arguments.... I am aware that there are faster, more powerful computers. I am aware that there are not as many people with TI computers as with MS-DOS computers. So why do I keep using my TI? There are four very good reasons:

1. The TI User Group, and the people in it. The User Group expands your knowledge by sharing information and ideas. I know that is the case. For the first three years with my TI computer I "went it alone" without any backing of a local user group. What a waste of time! The power of a User Group is you have many people all working on there own projects, and these people discover things. It is this sharing of ideas and discoveries that make us collectively smarter. If we run into problems, we search for solutions as a group, covering much more area as a group than as individuals alone. The years I spent working on the TI computer alone were for a large part wasted time, for I was searching through problems that had already been solved. Without the User's Group behind me, I would have never developed the TI Portable, the PAL based MBP Clock, or the Eprommer mod, for I wouldn't have found out about a Ramdisk, MBP Clock, or the Eprommer.

2. Non TI-developed hardware. If ramdisks, Hard drives, and other uniquely designed third party hardware had not been developed, I am certain that interest in our Orphaned computer would have waned. I think of the day I bought my Hamsoft insert at a Hamfest as a turning point in my personal TI history. I spent about a month repairing the broken interface card, and when I was done, I was happily typing on a TI computer, and transmitting RTTY (Radioteletype) and CW (Morse Code) to other ham radio enthusiasts WORLDWIDE. I occasionally came across other TI computers, but in each case I found out that the people on the "other end" had no local TI User's Group nearby, so they used their TI as a tool, just like I did, but nothing more (Another example of the power of a User's Group!). It was this Ham Radio TI computer --- hardware, that opened my eyes to other projects. For example, Ramdisks have simplified our lives, and made our computers much more versatile. Hardware. That is the key to the future of our computer. The more hardware that becomes available, the more opportunities to expand and modify our individual projects. By expanding our projects our computers become more efficient. The more efficient, the more productive. We all started out saving to cassette. Remember how disk systems made you think that you never wanted to go back to cassette? Remember how Ramdisks speeded up your loading, saving? And of course if you have a Hard Drive, you probably decided that you couldn't live without it, right? I truly feel that Hardware is the key to our computer's extended life.

3. Familiarity. On first thought, you might think that this wouldn't have a thing to do with computers, but it does. One of the major problems facing software companies is getting a large percentage of registered software users to update to new releases of existing programs where the structure of the program is changed greatly, is overcoming the "familiarity factor" of users. This can be taken one more step, and considered on the whole, as opposed to just programs. One of the reasons that so many word processing programs abound is that people learn the one they are using, and do not want to go through the "learning process" all over again for a new program. If you are comfortable in BASIC, and you had an idea for a program, would you suddenly go to assembly language or C, or Forth if you were unfamiliar with those other languages? You probably would stay in BASIC. The same goes for computers.

you have all the documentation available for the TI. Just think of the re-learning time and effort you would need to spend just to get to where you are now... on a different computer. Not only would you need to re-learn everything all new, you would have to re-purchase like programs to the ones you already own, for the new computer, and re-learn that, too. All this is in order to continue with your existing projects. Then there is the problem of compatibility. Will your "new computer" software do exactly what your existing software does? Will it support your printer? Will the files be interchangeable? How much is your time worth? Familiarity.... It makes more sense now, doesn't it? This same argument is the reason why there are still people using Radio Shack Model III, Commodore, CPM, and other computers. Familiarity, it makes a lot of sense.

4. Cost. That is something that everyone can understand. If you have a project that at present costs you absolutely nothing, and you want to compare it against a $1400.00 outlay that does the same thing, you have an idea of what I am talking about. If you are comparing a project that cannot be done on one computer, verses a $1400.00 outlay, that is a different story. The biggest difference between our computer and other types would be whether a project could be done on it or not. If a project cannot be done on our TI computer there is no solution other than to consider switching. However, look into the software base for our computer. There are still software writers out there, and they are still bringing out new code. If you are comparing a $45.00 investment in code verses a $1400.00 investment in hardware plus "I don't know how much.." for software, which way do you go? It depends on how much you want to spend. I have contacted many hams who boast of an AT or PC connected to their ham radio, but they can't do any better job in RTTY than I can do on my TI computer except load files faster. I could not justify a $1400.00 (or possibly greater) expense to do the same thing that I can do on my $80.00 investment in computer gear for ham radio. (TV $10, Computer $15, Interface card $20, Software insert $20, Cassette Recorder $15, I borrow printer when necessary). Cost accounting on purchases is an emotional thing to do, but at the bottom line there still is that dollar figure staring up at you. Cost is a big consideration, when comparing an upgrade to an existing system.

So, why do I use my TI computer? Because it DOES THE JOB. It's:

-Efficient
-Accurate
-Available
-Easy to Use
-Educational
-Affordable (Paid for)
-Inexpensive (parts obtained inexpensively)
-Reliable
-Affordable and Modify-able (mods are relatively inexpensive)
-Improvable (extra hardware is available!)
-Good software base
-Custom software available (it is possible to get custom stuff written for you!)
-Benefit of the User Group
-Great people in the User Group
-Interaction to Ham Radio

and a heck of a lot of FUN!

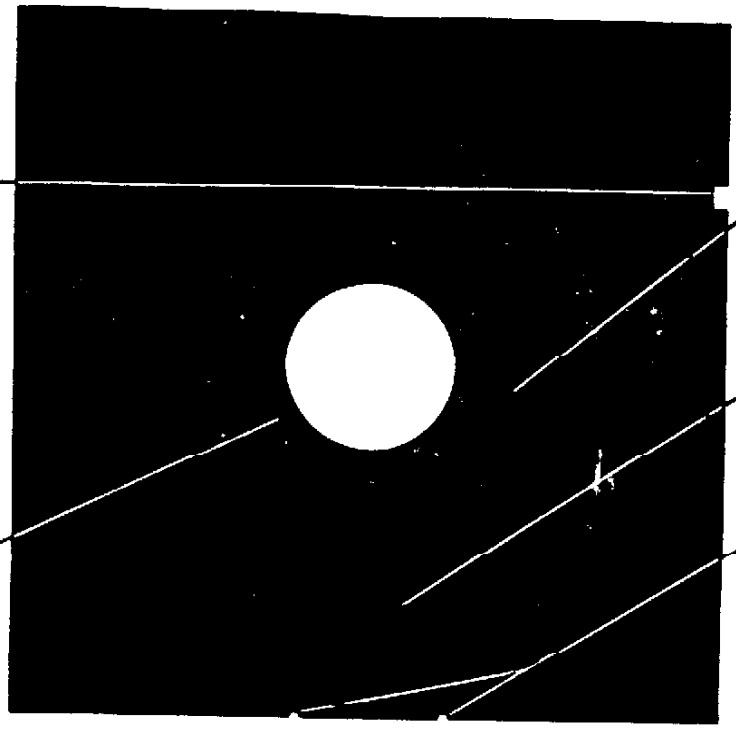
QUESTION ? ? ?

Why do cars drive on the parkway, and park in the driveway???

When flies land on the ceiling do the fly straight up and roll over at the last minute, or do they fly upside-down???

by Carlene Char

The Disk in Its Protective Cover



The write-protect notch in the upper right-hand corner of a disk protects the information on a disk from accidental erasure or overwriting. When the notch on a disk is open, information can be written on the disk or erased from it. When the notch is covered by one of the tabs that comes with every blank disk, the disk is said to be write-protected. Any attempt to write information on the disk or erase the disk will result in an error message. Information already on the disk, however, can be read without interference.

The centering hole is used to rotate the disk. The disk-drive spindle fits tightly in the hole, allowing the disk to rotate at 300 revolutions per minute (rpm).

The index-hole window is a small round opening near the centering hole. As the disk rotates, a beam of light passes through each index hole in the disk itself, whenever an index hole lines up with the window.

The head access window exposes the magnetic surface of the disk to the read/write head of the disk drive. The head mechanism moves forward and back along this opening to read and write data on the disk.

The alignment notches at the bottom of the disk cover are used to ensure that the disk is placed correctly inside the disk-drive mechanism.

Few parts of a computer system generate less curiosity than a floppy disk. How excited can you get about a flat black card that just sits there when you look at it? It doesn't even light up. Pretty boring, right?

Don't be so sure. A disk is possibly the most vital and most sensitive part of your computer system. Treat it right and it will be your trusted ally for storing the programs and information you've worked so hard to create. Abuse it and it may develop amnesia, garble your data, and even destroy your disk drive. Indeed, learning something about the workings and care of a floppy disk today may spare you a lot of grief tomorrow.

This article will focus on the 5¼-inch floppy disk that is most commonly used with personal computers.

First we'll take a look at the anatomy of a disk and how information is stored on it, and then we'll examine some tips on getting the most from your disk and avoiding those memory-shattering experiences.

Anatomy of a Floppy Disk

Have you ever looked at a 5¼-inch floppy disk carefully? When you remove it from its envelope, the first thing you notice is that it appears to be a flat square. Of course, what you see is not actually the disk but a square vinyl jacket that protects the disk from dust, grime, and fingerprints. Inside the jacket is the disk itself—a thin, round, saucer-like object, slightly over 5 inches in diameter, made of Mylar plastic and coated on both sides with a thin layer of metallic oxide. If you hold the disk so that the manufacturer's label is in the upper left-hand corner, you'll see a rectangular *write-protect notch* on the right side and two tiny *alignment notches* on the bottom. The jacket itself has three holes: a large *spindle hole* in the center, a small *index-hole window* just to the right of the center, and an oblong *read/write access window* about an inch long near the bottom. This window exposes the part of the disk on which data is recorded

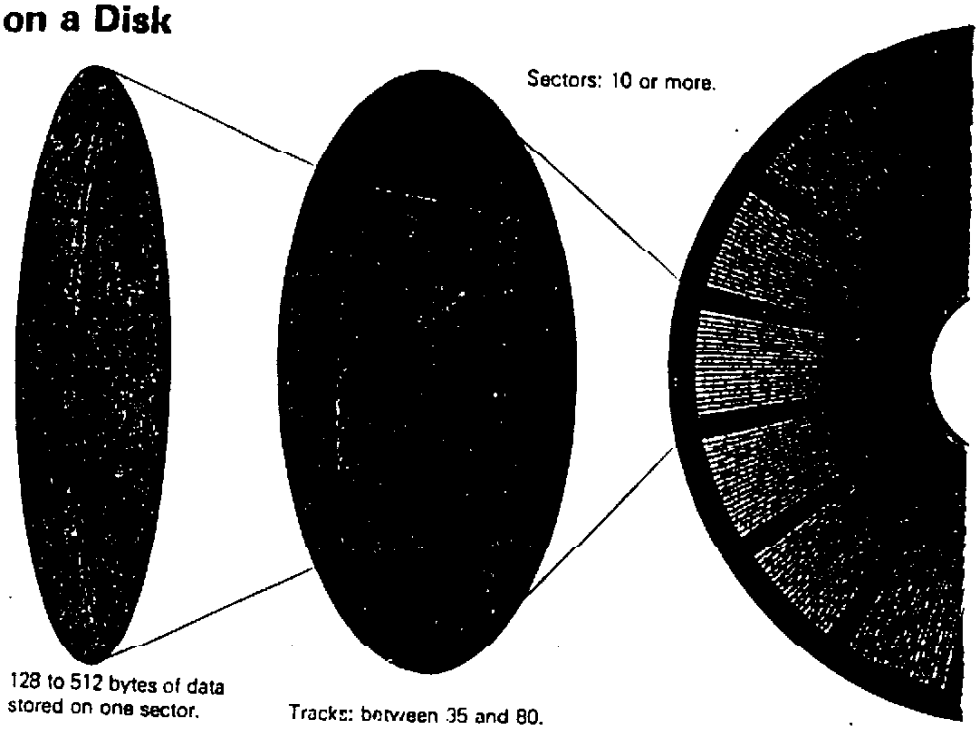
Now let's examine the disk itself. You'll notice that the center hole of the disk is strengthened with a *hub-protection ring* (almost all disks have one now, although it may be missing from disks made a few years ago). If you put two fingers into the center hole and press outward gently, you can rotate the disk until a small *index hole* appears in the index-hole window. The index hole enables the computer to keep track of the disk's position as it rotates

A ring of magnetic oxide runs around the outer part of the disk's surface. It is important to protect this part of the disk from dust and prying fingers.

Without touching the disk surface, look through the oblong access window. You can see the ring of magnetic oxide about one inch wide that runs around the outer part of the disk's surface. It is important to protect this part of the disk, where information is actually stored, from dust and prying fingers. The back side of a disk contains a similar magnetic ring, which can be used to store data as well.

How Data Is Stored on a Disk

Data is stored on the disk's surface on a ring that is less than one inch wide. As the disk rotates at a rate of five revolutions per second, the disk-drive head emits a stream of magnetic data pulses that create a series of tiny magnetic fields along a circular track on the disk's surface. At a rate of 125,000 data pulses per second, a single-density disk head can store up to 25,000 individual bits of data on a disk during a single rotation. Each circular track is divided into between 10 and 16 sectors that store up to 512 bytes of data each. (Every byte contains 8 individual data bits.) When one disk rotation is complete, the disk-drive head moves forward to the next track and starts emitting pulses again. The most sophisticated disk heads in use today can support a track density of 96 tracks per inch, allowing a total of 80 tracks per disk.



How Information Is Stored

How is data actually stored on a disk? Let's examine the process using that very sentence as an example. The sentence is made up of 38 characters, including spaces and the question mark at the end. Each character is represented by a number according to the *ASCII code* (American National Standard Code for Information Interchange). Each of the ASCII code numbers is in turn stored as an 8-bit binary number in the computer's memory.

Look at the first word in the sentence, "How." The ASCII code for the uppercase letter "H" is 72, which is stored in the computer as the binary number 01001000. The ASCII code for "o" is 111, stored as the binary 01101111; for "w" it is 119, stored as binary 01110111; and for the blank space at the end of the word it is 32, stored as binary 00100000. In this way the computer translates each word of our sentence into a string of 304 individual *bits* of information (38 characters, or *bytes*, times 8 bits of binary information for each byte). "How is data actually stored on a disk?" is then stored on the disk as a series of 304 tiny magnetic fields.

A magnetic field has a polarity, or direction, from right to left or from left to right. One of these directions represents a 1, the opposite, a 0. Creating magnetic fields on a disk is the job of the *read/write head*, the movable part of the disk drive. When you tell the computer to store information on the disk, the head moves forward to a position determined by the *disk operating system (DOS)*, which is simply the software that controls the storage of data on disks. As the disk rotates (at a rate of 5 revolutions per second), the head creates a sequence of 304 individual magnetic fields, each corresponding to either a 1 or a 0 as it stores our leading question.

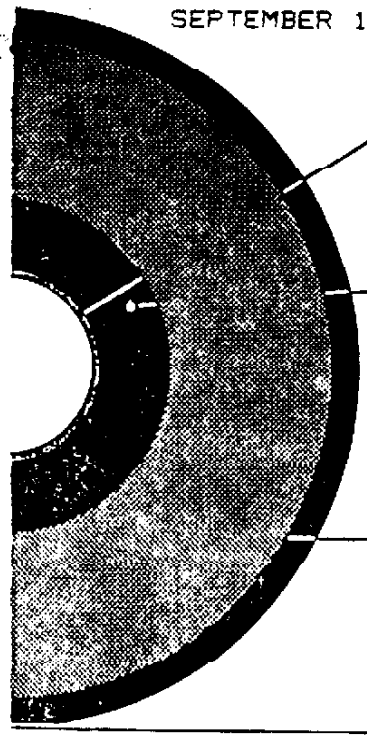
It sounds like a tedious process, but a standard single-density disk-drive head sends an electronic impulse, or *data pulse*, creating a new magnetic field, every 8 microseconds (125,000 pulses per second). Thus all 304 magnetic fields needed to store the question "How is data actually stored on a disk?" are stored within 2432 microseconds, a little more than 2-thousandths of a second. Because a disk revolution takes one-fifth (200-thousandths) of a second, more than 80 sentences like our example could be stored during a single disk rotation.

Actually, the amount of data stored on a given disk depends on how that disk is *formatted* by a particular disk operating system into *tracks* and *sectors*. Data is stored along a series of between 35 and 80 concentric tracks that are divided into 10 or more sectors. (See "How Data Is Stored on a Disk," page 108, for a more detailed description.)

The amount of data stored on a 5¼-inch disk can vary greatly from one disk drive and disk operating system to another. At the low end of the storage spectrum are the *single-density* disk drives. For example, the Osborne 1 stores data on 40 tracks, each of which has 10 sectors that store 256 bytes of data each, a total capacity of 100K bytes (102,400 bytes to be exact) of data storage per disk. But because some of the disk is used to store formatting information and the disk operating system software, the actual amount of user data-storage space available is quite a bit less than that. The Apple II is also at the low end of the spectrum. The Apple's disk operating system, DOS 3.3, formats each disk into 35 tracks of 16 sectors each, for a total storage capacity of 140K bytes.

At the other end of the spectrum, some *double-density* disk drives can pack more than 500K bytes (a half a *megabyte*) of information into a disk because

The Disk Exposed



The hub-protection ring in the center of the disk keeps it from being mangled by the disk-drive spindle during its many thousands of rotations. Most disks now include hub-protection rings, although you can purchase a hub-ring kit to add protection to a disk that comes without one.

The single index hole in a soft-sectored disk lets the computer know where the disk is as it rotates. A beam of light is aimed through the index-hole window on the disk cover. When the hole itself is aligned with the window, the light shines through the index hole, triggering a light-sensitive switch that tells the computer one disk revolution has been completed. A hard-sectored disk has an index hole for each sector and one more for alignment.

A one-inch ring of the disk's surface is coated with a thin magnetic flux that is used to store data. The *read/write head* of the disk drive actually reads the direction of the magnetic field at each point on the disk. The amount of information that can be stored on a disk depends on the number of individual magnetic fields that can be squeezed onto the disk's surface and on the speed, sensitivity, and accuracy of the disk-drive head itself.

The amount of data that can be compressed onto a single disk depends on the density of data in each track and the number of tracks per inch.

they have 80 tracks instead of the standard 40, 16 sectors per track, and 512 bytes per sector. Disk drives with double-sided heads—one head on each side of the disk—can store twice as much information on a 5¼-inch disk.

The *density* of information storage, or the number of bits that can be stored along any one track on the disk's surface, is determined by the data pulse rate of the disk-drive head. Single-density heads send or receive one *pulse* of data every 8 microseconds. Double-density heads send or receive data every 4 microseconds. A single-density disk drive must be used with a single-density disk, but the pulse rate of a double-density drive can be slowed down so that it can work with either single- or double-density disks.

Disks certified for single density may work fine with double-density disk drives, but you may lose data.

Another factor affecting the amount of storage on a disk is *track density*, the number of tracks per inch. The least sophisticated disks store data on up to 40 concentric circular tracks. Forty-eight tracks per inch are squeezed onto the magnetic part of the disk surface. More recent technology can squeeze 96 tracks per inch onto the same surface, or up to 80 tracks per disk. This increased track density requires a more sensitive head and finer control over the head's movement. Disks that have both double-density and 96 tracks per inch are called *quad-density* disks because they store four times as much information as standard single-density disks with 48 tracks per inch.

In practice, single- and double-density disks aren't very different. Disks certified for double-density use have a higher-quality magnetic-oxide surface. Because they cost more than single-density disks, you probably won't want to buy them for single-density applications, but they can be used for both. On the other hand, disks certified for single density may work fine with double-density disk drives, but you'll run the risk of losing some data.

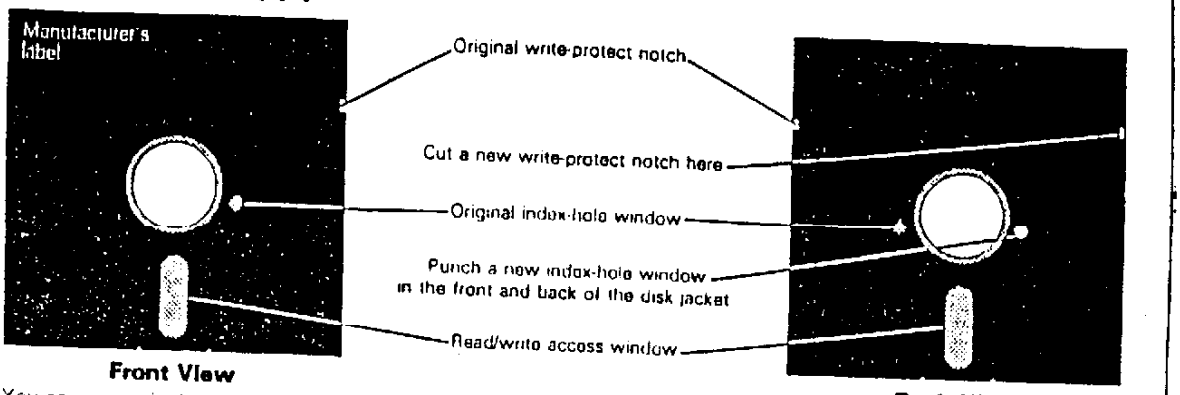
Disks have other physical differences. They are divided into sectors in one of two ways. A *hard-sectored* disk has prepunched index holes that divide it into a fixed number of sectors, 10 or 16. A *soft-sectored* disk has only one index hole (used when the disk is originally formatted) and is formatted into sectors by the disk operating system software. Moreover, a soft-sectored disk can be formatted for use with many different operating systems. The flexibility of soft-sectored disks has made them the type most people prefer. On the other hand, the process of formatting information uses up some of the storage space on a soft-sectored disk, so a soft-sectored disk generally stores less data than a hard-sectored disk.

Flipping the Floppy

Double-sided disks and their corresponding disk drives take advantage of the fact that both sides of a floppy disk are coated with a magnetic-oxide layer. By having two heads—one on each side of the disk—a disk drive can read or store twice as much information on a single disk. Actually, a double-sided disk can also be used with a single-head disk drive if you flip the disk over and reinsert it.

Single-sided disks can be used on both sides for some purposes. All you have to do is cut a write-protect

Flipping the Floppy



Front View **Back View**

You can use a single-sided disk on both sides by cutting a symmetrical write-protect notch and punching new index-hole windows in the top and bottom of the disk jacket. Be careful not to damage the disk in any way as you do this. A rough-edged hole punch may leave jacket fibers that could shorten the life of your disk considerably. A disk made in this way should be used only for archival or back-up purposes. The durability of your data is not assured if the disk gets a lot of use.

notch in the opposite side of the disk jacket and carefully punch a set of index holes opposite the original index holes in the jacket (see "Flipping the Floppy"

A double-sided disk can be used with a single-head disk drive if you flip the disk over and reinsert it.

You may be able to purchase a "flippy kit" from a dealer or by mail order to help you accomplish this. Be warned, though: it's not necessarily a good idea to use both sides of such a disk too frequently. It may not even save you any money in the long run. If you store data on both sides of a disk and use it twice as often, the disk may just wear out twice as fast. Furthermore, a flipped disk rotates in both directions. Dust and grime that are normally retained in the jacket can be released by bidirectional spinning, further shortening the life of your disk. A good rule of thumb is to use both sides of a disk that's primarily for archival or back-up purposes and to use single-sided disks for everyday purposes.

Disk quality is often rated in terms of the number of million rotations the disk can survive. But chances are a user won't live long enough to use millions of rotations.

Certified Disks

Approximately 45 million floppy disks (both 5¼-inch and 8-inch) were sold in 1979, and an estimated 230 million will be sold annually by 1984. Given these astronomical figures, you'd expect the quality of disks to vary widely. But most disks sold can be expected to meet or exceed established performance levels, thanks to industry standards set by the American National Standards Institute (ANSI).

Requirements for disk certification fall into four categories: their ability to withstand environmental conditions, their physical quality, abrasivity, and signal performance. In the first place, a disk should hold up under temperatures from 50° to 125°F and relative humidities from 8 to 80 percent without warping. For disks being transported, the tolerances are even greater: −40° to 125°F and 8 to 90 percent humidity.

Testing physical requirements is a nit-picker's holiday. Every dimension of the disk, including distance between tracks—indiscernible to the naked eye—is measured to a thousandth of a millimeter. Other important physical tests include light transmittance, starting and running torque, and expansion due to heat and humidity. An overly abrasive disk causes excessive wear of the disk-drive head. Disk abrasivity is measured by recording signal amplitudes taken before and after a test run.

Ultimately a disk's worth is measured by its signal performance. A disk can't be certified by ANSI if it's deficient in signal quality. One type of error is the dropout, or missing bit, caused by a "hole" in the disk's magnetic coating. Another type of error is the dropin, or extra bit. A certified disk is error-free.

Life and Death Issues

How long should you expect a disk to last? The minimum warranty for a certified disk is one year. Some disks carry warranties extending beyond five years, and lifetime warranties are not uncommon, but you probably don't need a disk with a lifetime warranty. If you read the fine print you'll see that warranties are honored only if a product defect is involved. Because most disks die from "natural" causes—coffee showers, dust storms, heat stroke, fallen ashes, and normal wear— a failed disk can rarely be replaced, even if it's covered by a warranty.

When should a disk be discarded? Most obviously, when it develops problems in reading or writing data or if it consistently gives you "track errors" when you're formatting it. To avoid lost data and its accompanying frustration, replace heavily used disks at regular intervals. The cost of replacing disks every three to six months is minimal compared to the cost of computer downtime and lost data.

Disk-Related Terms

alignment notches—two small semicircular notches in the disk jacket that ensure that it is properly inserted in the disk drive.

ASCII code—the American National Standard Code for Information Interchange. The code by which characters are translated into numbers in a computer's memory. Each ASCII code number uses 1 byte of computer memory.

bit—a single digit of information, 0 or 1, as used by a computer.

byte—an 8-bit sequence of binary digits. Each byte corresponds to one character of data, representing a single letter, number, or symbol. Bytes are the most common unit for measuring computer and disk storage capacity. See *kilobyte, megabyte.*

data pulse—an electronic signal sent by the disk-drive head to create a tiny magnetic field on a disk.

density—the amount of data that can be stored on one sector of one track of a floppy disk. The density is determined by the rate at which the disk-drive head emits data pulses. A faster rate results in a higher density of bytes stored per sector. See *single-density disk* and *double-density disk.*

disk—see *floppy disk.*

disk drive—an electromechanical device into which a disk is inserted to read or write information.

disk-drive controller—a hardware interface, between the disk drive and the computer, that controls the operation of the disk drive.

disk-drive head—an electromagnetic device that sends and receives data pulses that allow it to create magnetic fields on a disk or read information already stored in magnetic fields on the disk. Also called the *read/write head.*

disk operating system (DOS)—software that controls the process of transmitting information to and from a disk. The disk operating system formats the disk and keeps track of where information is stored on it.

double-density disk—a disk on which twice as much information can be stored through use of a disk-drive head that emits a data pulse every 4 microseconds—twice as fast as that of a single-density disk.

double-sided disk—a disk that can store information on both sides.

floppy disk—a flexible disk, made of Mylar and coated with a magnetic oxide, used for storing and retrieving computer data. Sometimes called a *floppy diskette.*

format—the arrangement by which information is stored on a floppy disk in tracks and sectors.

formatting—the process by which the disk operating system organizes a floppy disk into tracks and sectors for storing data.

hard-sectored disk—a disk that is divided into a fixed number of sectors, usually 10 or 16. A hard-sectored disk has one index hole for each sector and one additional hole for disk alignment. See *soft-sectored disk.*

head—see *disk-drive head.*

head access window—an oblong slot in the disk jacket that allows the disk-drive head access to the information stored magnetically on the disk.

hub-protection ring—a plastic ring that strengthens a disk's center spindle hole. Hub protection rings are now built into most floppy disks to prolong disk life.

index hole—a small hole in the disk surface, near the center hole. As the disk rotates, a light shines through the index-hole window in the disk jacket and triggers a light-sensing device whenever an index hole passes the window. This is used by the disk operating system when formatting the disk. A hard-sectored disk has an index hole for each sector.

index-hole window—an opening in both sides of a disk jacket that allows a light beam to pass through an index hole every time it rotates past the window.

kilobyte (K)—informally, 1000 bytes of information. Actually, 1K bytes consist of 1024 bytes of information. (All totals given in K bytes should be multiplied by 1024 to get the exact number of bytes stored.) Disk storage is usually rated in terms of K bytes of information. See *byte, megabyte.*

magnetic oxide—an iron-oxide layer on the surface of a floppy disk that is used to store data in a series of tiny magnetic fields.

megabyte (M)—1 million bytes of information.

microfloppy disk—a 3-inch to 3½-inch floppy disk enclosed in a plastic cartridge. This size is called *microfloppy* to distinguish it from 5¼-inch *minifloppy disks.*

minifloppy disk—a 5¼-inch floppy disk. This size is often called minifloppy to distinguish it from 8-inch floppy disks.

quad-density disk—a double-density disk with twice the track density of a standard disk. A quad-density disk stores four times as much information as a regular single-density disk. See *density, double-density disk, single-density disk,* and *track density.*

sector—the fraction of a circular disk track on which data is stored. The number of sectors of a soft-sectored disk is determined when it is formatted by a disk operating system. Typical values are between 10 and 16. The number of sectors of a hard-sectored disk is predetermined by the number of index holes in the disk, usually 10 or 16.

single-density disk—a disk that stores between 128 and 256 bytes per second. A single-density disk-drive head emits a data pulse every 8 microseconds as the disk rotates.

single-sided disk—a disk intended for use on only one side.

soft-sectored disk—a disk with only one index hole, for which the number of sectors is determined when the disk is formatted by a disk operating system. See *hard-sectored disk.*

track—a circular strip on a disk's surface on which data is stored.

track-density—the number of circular tracks per inch on the surface of a disk. A standard track density is 48 tracks per inch. Some newer disks have double that amount, 96 tracks per inch.

write-protect notch—a rectangular notch on the side of a disk jacket that prevents any change in the information already stored on a disk. For a 5¼-inch floppy disk, covering the notch with a small tab protects the disk. For an 8-inch floppy disk, the reverse is true: opening the notch protects the disk, while covering it allows information to be written on or erased from the disk.

Transferring TI-Base files to a PC.

By Dick Ohi West Penn 99'ers

This article describes one method of transferring TI-Base data files from a TI99/4A to an IBM compatible. It assumes that you are familiar with TI-Base and with the programs that you are using on the PC. Most database programs will import data in an ASCII table format. This format is basically a text file that has one record of a data per line and each field has the same number of characters in every record. An ASCII table file would look like thefollowing example.

REC	LN	FN	PHONE
0001	JONES	SAM	311-555-1234
0002	SMITH	ANN	613-555-4321
0003	GREEN	JOHN	555-555-9876

This method of file transfer was done using a TI99/4A and a Gateway 2000 computer connected by a RS232 cable. This requires that the two computers are set up near each other. I used a ribbon cable with the appropriate DB25 connectors wired to the same pin numbers. Radio Shack PN 260-1408 should work.

Load TI-Base on the TI computer and change the set up with the following commands at the dot prompt.

```
SET PRINTER RS232.BA=4800.DA=8.PA=N.LF
SET SPACES 1
SET PAGE 200
```

NOTE: The PAGE parameter should be set to a value greater then the number of records in the database file. The PRINTER parameter assumes the cable is attached to the RS232 port 1, if you are connected to RS232 port 2 then the command would be
SET PRINTER RS232/2.BA=4800.DA=8.PA=N.LF

The SET SPACES 1 command will place a space between each field, this will cause each field length in the new database on the PC to be one character longer than in the TI database.

Load the database to be transferred into TI-Base.

On the PC end you will need a communications program that has a Log feature. A Log feature will capture to disk anything that is received by the program. In this example I used ProComm Plus. Set up the PC to the same parameters (4800,1,N) on the port the cable is connected to (COM1 or COM2), open the LOG file.

On the TI type the command PRINT ALL at the dot prompt in TI-Base. What happens here is the TI thinks it is printing the database to the RS232 port and the PC thinks it is receiving data on the COM port, ProComm saves the data to disk as it is received. When TI-Base has finished printing, close the LOG on the PC.

Load your database program on the PC (I used Alpha 4) open a new database select the Import feature, type in the path to the LOG file and follow the procedures to set up the new database. If the LOG file is clean, that is each line of text is the same length and the data in each field begins at the same column and there are no extra control characters (PAGE BREAKS,or formatting characters) in the LOG file you should have all your data transferred. If the new database has some of the data split in different fields, exit the database program and load the LOG file into a text editor

and look for extra control characters or fields that do not have the correct number of characters according to the structure of the original TI-Base file, remember that we added one space character to each field in the printing process. Try to use a text editor that will display control characters. Notepads in PC Tools, Word for Windows, and Wordperfect have this feature. As in the above example the data will appear in columns or in table form if it were printed on paper. If the records are longer than the number of characters displayed between the margins on the text editor the lines of text will wrap to the next displayed line and not look like a table. Another possible reason for the text not appearing to line up table fashion is the font used for displaying the text is a proportional font, that is the characters are different widths so that even if there are the same number of characters in each line the lines appear to be of differing lengths on the screen. try to use a font that will display each character the same width. There should be a Hard Return or CR/LF at the end of each record. Eliminate any other control characters, and check to be sure that each field in each record is of the correct length and try to create thedatabase from the cleaned up file.

Other database programs for the PC should have import features that will accept an ASCII table file as input, the terminology may be different such as fixed record length file or system data format.

NEWSLETTER NEWS
Ralph J Vasko

Mickey gets around! Her President's 2 Cents article was published in the South-West Ninety-Niners/Apr 1993 issue which is where the JSC TI-99/4A Users Group got the article for their April 1993 issue. Should she be elected a national TI president? Maybe if we hear from other countries we could nominate her for an international office.

A9CUG CALL NL 3/93 & 4/93 GIF files in MS-DOS can be transfered to TI with PC TRANSFER and PC TRANSFER UTILITIES if you have a Corcomp or MYARC disk controller and 2 double sided double density disk drives. Then using GIF-MANIA you can view the files and save the pictures as TI Artist files. Articles are by Larry Adamson. See Paul Brock to get the newsletters for more info. BBS numbers with TI SIG for 2 boards in the Atlanta GA area with IBM, TI, GIF files are (404) 888-9535 12/24/9600 and (404) 991-6250 3/12/2400.

SOUTHERN CALIFORNIA COMPUTER GROUP has moved their BBS. New number is (619) 263-9135.

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No. 9596 * User Group Discussions *
On: 09/06/93 10:05 pm
By: LARRY ADAMSON 12 (CHAMBLEE GA)
To: ALL Sb: RECENT UPLOAD
The recent upload contains one of several Halloween graphics that I've scanned and converted to TI-Artist format. The collection of Halloween graphics will be on the October A9CUG Disk of the Month. A free complimentary copy is available to any TI Users Group that sends a self addressed stamped Disk Mailer (5 1/4") to:

Atlanta 99/4A Users Group
3554 Shallowford Rd. #C-6
Chamblee, GA 30341

Hope everyone enjoys the upload... TTYL, Larry Adamson
A9CUG President

No. 9584 * General Interest *
On: 08/24/93 3:42pm
By: CLIFF PEMPER 17 (ALLISON PARK PA)
To: ALL
Sb: POLE POSITION 2 CARTRIDGE

I AM INTERESTED IN AQUIRING AN ATARI POLE POSITION 2 CARTRIDGE. IF YOU HAVE ONE AND ARE WILLING TO SELL PLEASE ADVISE ME OF PRICE AND AVAILABILITY. THANKS.

Words of Wisdom from The Cactus Patch...
A little inaccuracy sometimes saves tons of explanation.

FREE SOFTWARE CATALOGS

Anyone interested in obtaining a free software catalog from MS Express Software should write to:

MS Express Software
P.O. Box 498
Richmond, Ohio 43944

FREE SOFTWARE CATALOGS

Anyone interested in obtaining a free software catalog from Notung Software should write to:

Notung Software
7647 McGroarty Street
Tujunga, California 91042

HELP A FELLOW TI'ER OUT!

Stanculescu Marin is looking for educational software on cassette for his 8 year old boy. Anyone interested in helping this man out should write to:

Stanculescu Marin
Str. Ciuruleasa, Nr. 3
Cod 75445, Sect. 4, O.P.7
Bucuresti -- Romania

Note: He DOES NOT have a disk system, nor 32K in any format.

NEW CLUB ADDRESS

Effective immediately - all club correspondence and newsletter exchange should be sent to the following address:

West Penn 99'ers

C/O Mickey Cendrowski
R.D. 1 Box 133
Russellton, Pa 15076

NEWSLETTER NEWS
Ralph J Vasko

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FROM THE EDITOR

Last month I must of been burning too much midnight oil as my name was missing an S, but the newsletter got out in time for the meeting.

RALPH J VASKO
1 VIRGINIA DR
DONORA PA 15033-1607
(412) 379-8762
PUG BBS #32

Articles are accepted as hard copy, ASCII text files on the PUG BBS, MS-DOS Word Perfect V4.2, V5.0 or MS-DOS ASCII text files on disk. Deadline is the Sunday after the meeting. My TI systems are not set up. PAGE PRO articles like PAUL'S PAGE will have to be photo ready.

NEWSLETTER EXCHANGE

Exchange newsletters are to be sent to;

WEST PENN 99'ERS
C/O MICKEY CENDROWSKI
RD 1 BOX 133
RUSSELLTON PA 15076

PEPSI-----COKE!!!

> This information was kept in general as possible so as to guide the 4A buyer. How to buy used floppy drives could never be this informtive. Anyone wishing to document their experience with a specific drive or drives is invited to do so by attaching this general artical. An archived document

> My preferences are Mitsmi drives 3.5" and 5.25" any density. These drives are the most quiet drives you will ever hear. They have a jumper block to enable disable the resistor pack though have not verified the identity of the jumper as of yet. Another preference are the NEC 1036 3.5"720K.drives. They are small, quiet and durablely solid, and I like any other 3.5" drive lightwieght and low power. Also recommended Chinnon 3.5" 720K.drives. These are much the same as the NEC drives except for screw shaft stepper motor and extremely low power and 5 volt only operation make it better. These drives may be the lowest power in the industry.

FOOTBALL STARTS

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