

From out of 'THE ASHES' Rises

# ZXir QLive Alive!

The Timex/Sinclair North American User Groups  
Newsletter

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Chairman	Donald S. Lambert	Anhurn, Indiana
Volume 3	Number 2	Summer 1993

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## T/SNUG CHAIRMEN

Here is the list of 1993 T/SNUG Chairmen and how to contact them. We wish to support the following SIGS:- ZX-80/81/TS-1000, Z88, SPECTRUM/TS-2068/TC-2068 and QL. if you have any questions about any of these fine machines, contact the Chairman.

POSITION	NAME	PHONE	PRIMARY FUNCTION
Chairman	Don Lambert (ISTUG)	219 925-1372	Chief Motivator
Vice-Chairman	D.G. Smith	814 535-6996	Tape & JLO Library
Vice-Chairman	Dave Bennett (CATS)	717 774-7531	Z-88
Vice-Chairman	Ed Snow	407 380-5124	ZX-81 Tape Library
Vice-Chairman	Rod Gowen (CCATS)	503 655-7484	RMG
Vice-Chairman	Rod Humphreys (VSUG)	604 931-5509	TS-2068
Vice-Chairman	Bob Swoger (CATUG)	708 837-7957	BBS/LARKEN
Treasurer	Abed Kahale (CATUG)	708 885-4337	Cash Tracker/Newsletter

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ZXir QLive Alive!

Volume 3 Number 2

Summer 1993

# T/SNUG Information

*ZXir QLive Alive!* is the newsletter of T/SNUG, the Timex/Sinclair North American User Groups, providing news and software support to the T/S community in at least four newsletters per year.

It is our goal to build and maintain a Public Domain software library and develop a list of available software for all T/S computers showing the source.

T/SNUG wishes to have one chairman from every T/S user group who will take charge of sending us their group's newsletter contents and other correspondence for inclusion in the ZQA Newsletter.

We encourage your group to copy this newsletter and distribute it at regular meetings to all your members. If you cannot copy this newsletter, perhaps we can provide a disk with the articles on it.

YOU can keep T/SNUG alive for an annual contribution of \$10 made payable to Abed Kahale. Send check to:-

ABED KAHALE  
ZXir QLive ALive! Newsletter  
335 W NEWPORT RD  
HOFFMAN ESTATES IL 60195-3106  
Phone:- 708 885-4337

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## *ZXir QLive Alive!* Articles Contributions

If you like to contribute an article to the Newsletter, upload a file to our BBS called TSNUG.ART. If you have an AD for the Newsletter, UPLOAD a file called TSNUG.ADS. If you have news to post

about your group, UPLOAD a file called TSNUG.NWS

For help, contact the SYSOP by E-MAIL on the TSNUG BBS, mail or phone:-

BOB SWOGER (CATUG/LarKen)  
613 PARKSIDE CIR  
STREAMWOOD IL 60107-1647

It is preferred that you call:-  
H 708 837-7957 W 708 576-8068

To contribute a hardcopy, tape or disk send your inputs to:-

DONALD LAMBERT  
ZXir QLive ALive! Newsletter  
1301 KIBLINGER PL  
AUBURN IN 46706-3010  
Phone 219 925-1372

For software libraries, write or call the following Vice-Chairmen. When writing PLEASE enclose a LSASE.

DAVE BENNETT (Z88)  
329 WALTON ST REAR  
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D G SMITH (2068 TAPE & JLO)  
R 415 STONE ST  
JOHNSTOWN PA 15906

ED SNOW (ZX-81 TAPE)  
2136 CHURCHILL DOWNS CIR  
ORLANDO FL 32825

FROM THE CHAIRMANS DESK

*Don Lowbert*

Here I am starting Vol. 3 #2 and I have seen only the advance copies of Vol. 2 #4 and Vol. 3 # 1. But that is the way with publication. You have to work far in advance to keep up.

I have found yet another DOS (Disk Operating System) for the T/S 2068. It is not a new one but one that was called to my attention while Frank Davis and I were discussing the T/S 2068 and the DOS available for it. I mentioned the Ramex and he mentioned that it was the Ramex Millenia K which was from U. K. and that it was also usable on the Oliger system. So I found out more details. This all happened at a meeting of ISTUG. More about that in a separate article. I was also discussing having an AERCO 2068 disk interface but I don't want to have yet another set of drives and also I don't have room to have another computer setup all the time. Besides, a software only DOS was interesting.

I have a T/S 2068 with the Russell Spectrum Rom installed but I think that there is something wrong with it. I can not get it to operate correctly (or what I think is correctly). And without another computer set up the same way that is working correctly I don't really know. It seems to work with a pure Larken disk interface but when I try to use an Oliger with a Larken dock board seems to be when I have the trouble. I am planning to install a Spectrum EPROM on the Larken dock board and see if that is a better way of going.

A thought just crossed my mind, "How do we stay with our T/S computers when the last one bites the trail?" And it came to me that since there are programs to emulate the ZX81 and the Spectrum and I believe the QL for the MSDOS computers that is the way we will have to go to

to stay with the software and possibly some of the hardware that we currently use. I would like to hear from anyone that has successfully used a MSDOS computer to emulate any of the above and the luck in converting the original T/S programs to run on the Emulators. I am especially interested in which MSDOS computers will run the software.

I saw an article on using computers to preserve family history. Of course it is a program or suite of programs to do that offered by colleges or a software developer. However, with our trusty T/S computers and a little ingenuity it is possible to do it without their software package and get it printed out far cheaper. See Preserving Family History.

About the Larken Ramdisk and battery life. I put a pair of alkaline AAA batteries in my original Larken Ramdisk in May 1989 and the voltage of the batteries is still 2.9 volts or 1.45 volts each. Of course that Ramdisk has only 128K of memory. My working Ramdisk with 256K of memory probably will have a faster battery drain. I did write to Radio Shack but the reply was not very helpful since they could not tell me how long the batteries would take to drop to 1.1 each or a total of 2.2. The static ram chips require at least 2.0 volts to maintain memory.

I was sent a disk with some files on it for the Larken disk interface. But there was a problem. The disk was 3.5 and all I have are 5.25. No problem except that when I took it to the ISTUG meeting I found that Paul's 3.5 disk drive would not read the directory. But Frank's 3.5 would but the other drive was a 80 track and the copy program was on a 40 track disk. So I LOADED the copy program and unplugged the disk interface

and plugged in Frank's, and then copied the disk. Sort of round the rosy sort of deal but I got it done. The drives I take to the meeting are two 1/2 height 40 track drives.

I use D. U. S. by Kristian Boisvert and use copyII.B1 to do the copying. It FORMATS the disk as it copies and it also starts with track 0 so whatever is the title of the original disk is copied. It also copies 5 tracks at a time so there is less disk drive operation. But it will only work with the Larken disk interface. In copying a set of disks for the CATUG library I did discover that occasionally it does not actually copy a disk. Nor does it report BAD DISK! However, since I always check for a correct SAVE after I have finished I discovered that I had a problem. Two disks out of about 60 actually refused to accept a copy using D. U. S. copyII program. And the disk had been FORMATTed with the Larken so there is something strange going on.

After using the Oliger disk interface there is one feature of Oliger that I like. And that is it reports how many bytes is saved in each file on the disk when you do a CAT. Of course the Larken does report how many blocks of text are in each file but the Oliger does let you know just exactly how many bytes are in the blocks of the files. It is really nice when working with a wordprocessor since you can look with MSCRIPT to see how big the file is and check to see if that is what is SAVED. Of course for a reason that I don't have the answer to the text SAVED to disk is always 1 byte more than the size of the file given by MSCRIPT.

I had a call out for a full height double sided double density Tandon TM 100-2A disk drive(s) and I got a response on April 1st but nothing

materialized. Then this last week (first week of June) I got a call from Bob Swoger and a fellow there thought he could find me some drives that he thought might be Tandon drives. So I asked for 3. He also was wanting a full height 80 track drive which I will exchange with him. Then a few days later I got a call from the first person and he is going to send me some Tandon drives. Since all drives are used off of IBM computers during upgrading they could be clunkers. So if I get two working drives out of the 6 I will be not badly off in price since full height drives are almost non existent. It pays to have a stock pile of some parts in case of failure. I will either have 6 untested drives or none.

And I got a call from a person that I was working with by letters and telephone when I was in Iowa (I moved here in 1990) on problems with the ZX81 and he dropped out of sight. Since he has changed work places and moved so he wanted the address of SMUG so he could go to meetings. He is in electronics and is trying to get back to tinkering with the ZX81.

I have finally decided to set up a schedule of publication for ZXir QLive Alive! With publication set for January, April, July and October I decided that I should have a cut off date for material submitted. Camera ready ads (ready to be copied in the newsletter) can be accepted up to the day before I mail the material to Bob Swoger to be printed. That day will be the 15th of the month preceeding publication. That will give Bob a chance to get it printed and delivered to Abed Kahale for mailing in time to meet the schedule. This month is a little late since it is already June 17th. Other material can be submitted anytime but if it is too close to mailing time it may

be held over till the next issue. 0/0.

Don Lambert  
Timex/Sinclair NorthAmerican  
User Groups

Our only Magazine  
Please Support it

# UPDATE!

Computer Systems  
P O BOX 1095  
PERU IN 46970

**LIBRARY**

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% %

! ! MAILING ADDRESSES ! !

% %

It has come to my attention that there are those out there that do not want to use the telephone to find out about availability or the software and/or hardcopy libraries. So for those I am including the address of the Vice-Chairmen if not given else where in Zxir QLive Alive!. Please! When writing enclose a LSASE:

DAVE BENNETT (Z88)  
329 WALTON ST REAR  
LEMOYNE PA 17043

D. G. SMITH (2068 TAPE/JLD)  
R 415 STONE ST  
JOHNSTOWN PA 15906

ED SNOW (ZX81 TAPE)  
2136 CHURCHILL DOWNS CIR  
ORLANDO FL 32825

ROD GOWAN (CCATS)  
14784 QUAIL GROVE CIRCLE  
OREGON CITY OR 97045

ROD HUMPHREYS (VSUG/2068)  
10984 COLLINS PLACE  
DELTA B. C. V4C 7E6 CANADA

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## COMPUTERFEST

COMPUTERFEST 1993 sponsored by the Dayton Microcomputer Association, Inc. will be held on Saturday August 28th from 10 AM to 6 PM and Sunday August 29th from 10 AM to 4 PM at the HARA Conference & Exhibition Center, 1001 Shiloh Springs Rd, Dayton Ohio. Tickets are \$5.00 in advance and \$6. at the door. T/Sers will used Red Roof Inn North the last two times for their accommodations.

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**NOTE TO MEMBERS**

If you have a question, an article or a complaint send a note or a Post Card to: >>

ABED KAHALE  
335 W NEWPORT RD  
HOFFMAN ESTATE IL 60195-3106  
Phone: (708) 885-4337

OR

DONALD S. LAMBERT  
1301 KIBLINGER PLACE  
AUBURN IN 46706-3010  
Phone (219) 925-1372

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**ITEMS AVAILABLE FROM T/SNUG**

It has come to our attention that some Larken Users are using something less than Vesion 3 firmware. T/SNUG will supply updated EPROMS, SYSTEM DISKS, and MANUALS. Call in request to Bob Swoger at W708-576-8068 H708-837-7957

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If you have a mismatch between your Larken DOS EPROM and your Western Digital Controller chip, we will send you the correct one for free on behalf of our friends Rod Gowan of RMG and Larry Kenny of Larken. You should be using L3 EPROMS with WD1770 controller chips or L3F EPROMS with WD1772 controller



chips or L3F EPROMS with WD1772 controller chips. Check it out! Call in requests to Bob Swoger at W708-576-8968 H708-837-7957

SPECIAL DEALS AND BUYS

NAP\_Ware (Nazir A. Pashtoon's new endeavor) announces the availability of all Timex or QL PAL (Programmable Array Logic) chips. If interested, call him evenings at 708-439-1679.

If you are a Larken LK-DOS owner and would like a SPECTRUM V2 kit for your system, we will supply an EPROM, socket and 74HCT32 for \$12.00 which includes shipping and handling. The install instructions are in your Larken manual. We shall not be responsible for your install job. AERCO owners need only the SPECTRUM EPROM for \$10. \$10 is forwarded to Larken. Call in requests to Bob Swoger at W708-576-8086 H708-837-7957

So you like to fly? The 747 Flight Simulator for Spectrum by Derek Ashton of DACC sold over 40K copies in EUROPE. Requires Spectrum Emulator. At this time supplied on LarkKen SSDD only for \$10.00 which goes to Derek Ashton, now working at MOTOROLA with Bob Swoger. Call in requests to Bob at W708-576-8068 H708-837 7957.

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ARTICLES

SPDOS or yet another T/S 2068 disk DOS. By Donald S. Lambert.

Way back when there was a disk interface for the T/S 2068 called Ramex Millenia K. See UPDATE for January 1988 page 8. SPDOS was originally marketed by WATFORD ELECTRONICS as a disk interface and operating system. KEPSTON later marketed a version which used a smaller amount of RAM, approx. 700 bytes (WATFORD

used about 8K). A variant of the SPDOS interface was marketed in North America by Ramex International, LTD and known as the MILLENIA K. The SPDOS presently being marketed by the CUYAHOVA VALLEY SOFTWARE WORKS is a modification of SPDOS for the 2068 running on Oliger hardware. It is sold under license from ABBEYDALE DESIGNERS LTD, who wrote SPDOS.

It is still available from CUYAHOVA VALLEY SOFTWARE WORKS; 615 SCHOOL AVE.; CUYAHOVA FALLS, OHIO 44221 for \$24.95 plus \$1.50 postage. Currently it is available through CVSW only on 80 track 5.25 disks but I could help make it available on 40 track 5.25 disks. The package will consist of two disks and a 30 page manual.

The first disk is just a few files and it converts the Oliger disk system to accept SPDOS. Then you place the SPDOS boot disk in the first drive and press enter and there is the SPDOS screen and you are ready to work with SPDOS. While the Larken and the Oliger number the disks 0, 1, 2, and 3; SPDOS numbers the drives 1, 2, 3, and 4. And you have to use drive 1 (SPDOS #1 not Oliger #1) for the boot disk. In fact there are many things that require that drive to have the SPDOS boot disk in drive 1. The commands are very similar to Larken except that you can only use PRINT #4:command: X.X.

The main differences that you will find are that this is a RAM based DOS and it is in memory from 58500 thru 63500. It supports sequential files and also program overlays.

One main difference in the DOS is that SPDOS FORMATS a track to ten 512 sectors and the minimum SAVE to disk is 1K. Then there is a maximum of 144 files to a disk and if the disk is not a data disk the first 15K is not

useable for SAVEing a file to since it will have the BOOT program there.

The only problem I had with SPDOS was in copying the disks using MOVE. The manual gave the following:

```
PRINT #4: MOVE "", "": PRINT
d1,d2
```

but when I tried it I got ERROR messages mostly var not found.

I messed around and tried this and that with more ERROR messages. I finally called Thomas Simon and he looked it up in the manual and aha! this is what I was supposed to have used:

```
PRINT #4: MOVE "", "": PRINT 1,2
or whatever drives you are
copying from and to.
```

It worked, and when I asked Frank Davis about it he said he had the same problem.

To FORMAT a disk you can either use the FORMAT that is in the SYSCOPY program or use the following:

```
PRINT #4: FORMAT "disk name":
PRINT (number of the drive to be
formatted 1-4), (the number of
tracks of that drive 35, 40,
80), (the number of sides on the
drive 1 or 2), (and the stepping
rate 1-4 with 1=6MS, 2=12MS,
3=20MS, 4=30MS)
```

I have a version of MSCRIPT that works with SPDOS but it has had the memory shortened so that it has about 2 1/2 pages of text or ROOM in memory 9627. But it works.

And now I have a copy of TASWORD that works with SPDOS. But it does have a limited file size.

And my thoughts about SPDOS is that while it works it is not friendly like either the Larken or the Oliger DOS in that it is software only and it uses up 11K

of memory. I now know what the MSDOS users go through. First you load the software that prepares the Oliger for SPDOS and then you LOAD SPDOS. And SPDOS is not bashfull about reporting an error code which you seldom see with either the Larken or the Oliger. It is a joy to use a real user friendly disk operating system.

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## RecordKeeping

While there are a few 'DataBase' softwares available for the 2068 such as PROFILE, I like to roll my own program. I needed some kind of simple record to keep track of the membership list. Of course this program can be used for any other data keeping function. 1000 records, 32 characters each and 3K of free memory left.

### MENU

1. START a new record.
2. ADD or Update a record.
3. LIST the records to the screen starting at the record of your choice.
4. FIND a record by entering the first 3 characters.
5. SEARCH (wild-card) by entering letter(s) or numeral(s). Handy when the spelling is not sure.
6. CORRECTION to a record.
7. PRINT to large printer. Select margin and column width. (delete lines 4000 to 4035 for the 2040)
8. SORT alphanumerically using SHELL SORT routine. (about 100 records/minute)
9. CATalog disk.
0. SAVE "program" LINE 10.

Use GOTO G if you break, or loose data if you use RUN.

The program can accommodate addresses by changing DIM(1000,32) to say, DIM(350, 3, 32) with appropriate changes to O\$(....) in the program.

*Abed Kahale*

```

5 DIM O$(1000,32)
10 CLS : LET G=10: LET H=100
12 POKE 23658,8: POKE 23609,10: PAPER 1: INK 9: BORDER 1: BEE
P .03,40: BEEP .05,42: BEEP .03,45
15 PRINT PAPER 5;"RcordBase by Abed Kahale 1992"
20 PRINT "1 - Start a NEW File"
25 PRINT "2 - ADD new record(s)"
30 PRINT "3 - LIST records"
35 PRINT "4 - FIND a record"
40 PRINT "5 - SEARCH, Wild-Card " Use (GOTO 6) after BREAK
45 PRINT "6 - CORRECT an entery"
50 PRINT "7 - LPRINT records list"
55 PRINT "8 - SORT records"
60 PRINT "9 - CATalog disk" TAB 19; INVERSE 1;"FREE MEMORY"
65 PRINT "0 - SAVE to disk";TAB 24; INVERSE SGN PI; FREE
70 PAUSE NOT PI
100 LET L$=INKEY$
110 IF L$="1" THEN GO SUB VAL "200"
120 IF L$="2" THEN NEXT J
130 IF L$="3" THEN GO SUB VAL "600"
140 IF L$="4" THEN GO SUB VAL "700"
150 IF L$="5" THEN GO SUB VAL "900"
160 IF L$="6" THEN GO SUB VAL "3000"
170 IF L$="7" THEN GO SUB VAL "4000"
175 IF L$="8" THEN GO SUB VAL "8000"
180 IF L$="9" THEN CLS : RANDOMIZE USR H: CAT "",: PAUSE 0
190 IF L$="0" THEN GO SUB VAL "9000"
195 GO TO 6
230 FOR J=1 TO 1000
240 CLS : PRINT "ENTER "Z" TO TERMINATE ENTERIES"
250 PRINT AT VAL "10",VAL "10";"ITEM NUMBER "; FLASH 1;J
260 INPUT "Title, Cassette# & Counter read-ing?" LINE C$
265 IF LEN C$>32 THEN BEEP .5,40: PRINT INVERSE SGN PI;" Ove
r 32 Characters - ReENTER ": PAUSE NOT PI: GO TO VAL "240"
270 IF C$="Z" THEN GO TO 6
320 PRINT "C$"
330 PRINT "'If Correct"; INVERSE SGN PI;" ENTER"; INVERSE NOT
PI;" If Not, ENTER any letter"
340 INPUT Z$
350 IF Z$<>" THEN GO TO VAL "240"
360 LET O$(J)=C$
380 NEXT J: RETURN
630 CLS : INPUT "START WITH # ";Q
640 FOR M=Q TO J
650 PRINT PAPER PI;M; PAPER SGN PI;O$(M): NEXT M
655 PRINT 'TAB VAL "20"; INVERSE 1;" NO NOW ": PAUSE NOT PI: R
ETURN
720 CLS : INPUT "Title? (First 3 Letters)" LINE N$
722 PRINT "LOOKING FOR>>-> ";N$
730 FOR M=1 TO J

```

```

735>BEEP .005,38
740 IF O$(M)( TO 3)=N$( TO 3) THEN GO TO 770
750 NEXT M
760 PRINT 'TAB VAL "20"; INVERSE SGN PI;" NO NOW ": PAUSE NOT PI:
RETURN
770 PRINT INVERSE 1;M; INVERSE 0;O$(M)
775 GO TO 750
780 PAUSE NOT PI: RETURN
890 REM =====(WILD CARD SEARCH)=====
900 CLS : INPUT "ENTER any character(s)!" LINE X$
905 PRINT "SEARCHING FOR>=> ";X$
910 PRINT : POKE 23692,255
915 FOR N=1 TO J
920 FOR K=1 TO 33-LEN X$
930 IF O$(N,K TO K+LEN X$-1)=X$ THEN GO TO 960
935 NEXT K: NEXT N
940 PRINT 'TAB 20; INVERSE SGN PI;" NO NOW ": BEEP .5,40: PAUSE N
OT PI: RETURN
960 BEEP .03,40: PRINT O$(N)
965 GO TO 935
970 RETURN
1000 REM DELETES SPACES AFTER SORTING
1020 FOR N=1 TO J: LET O$(N)=O$(N+1)
1025 BEEP .005,40: NEXT N: GO TO 6
3000 CLS : INPUT "ENTER Record # to be corrected" N
3010 PRINT INVERSE SGN PI;O$(N)
3030 INPUT "ENTER the correction" A$: IF A$="" THEN RETURN
3040 LET O$(N)=A$: RETURN
4000 CLS : RANDOMIZE USR H: OPEN #3,"LP"
4010 RANDOMIZE USR H: POKE 16092,0: RANDOMIZE USR H: POKE 16090,13
2: REM 132 columns
4015 INPUT "Left Margin?" R
4030 RANDOMIZE USR H: POKE 16094,R: LPRINT : REM MARGIN
4035 OUT 127,27: OUT 127,20: REM Condensed style/font
4040 INPUT "Start printing with #" Y"End printing with #" Z
4045 FOR N=Y TO Z: LPRINT O$(N): NEXT N
4050 RANDOMIZE USR H: CLOSE #3: RETURN
8000 CLS : REM =====( SHELL SORT )=====
8005 PRINT AT VAL "10",VAL "12";"STANDBY";AT VAL "13",VAL "10"; FL
ASH SGN PI;" SORTING "
8010 LET S=1
8020 LET S=S*2
8030 IF S<=J THEN GO TO 8020
8040 LET S=INT (S/2)
8050 IF S=0 THEN BEEP 1,30: RETURN
8060 FOR T=1 TO J-S
8070 LET Y=T
8080 LET W=Y+S
8090 IF O$(Y)<=O$(W) THEN GO TO 8150
8100 LET Z=O$(Y)
8110 LET O$(Y)=O$(W)
8120 LET O$(W)=Z$
8130 LET Y=Y-S
8140 IF Y>0 THEN GO TO 8080
8150 NEXT T
8160 GO TO 8040
9000 RANDOMIZE USR H: SAVE "DBSMPL.BZ" LINE 10
9010 RANDOMIZE USR H: LOAD "L.B1"

```



# Disk Life

So, you've just spent big bucks for a super piece of software, made your back-up and are working away with your working copy. Suddenly while you are working with a relatively unimportant utility program on another disk, your disk goes bad. That's not a major problem. You have a back-up somewhere, but it gets you thinking about your back-ups on your commercial programs. What happens if they go bad? Should you have made them on some type of premium disks to guard against that?

You scour through catalogs and adds in magazines. There are sources galore for disks, at all prices, and some of them have specifications. You run into one spec called 'clipping level' and the supplier claims that because his disks have been tested to higher clipping level they are superior. Should you pay a premium for disks with superior specs? What do these specs mean? Will your back-ups be less likely to fail if you use premium disks?

These are difficult questions to answer. Perhaps an explanation of some of the tests run on disks and what can happen to your back-ups with time would help you make that decision. In addition, you may be interested in considering the cost tradeoffs of using premium disks.

As an engineer with many years of experience in magnetic recording I had never heard of the term 'clipping level' until it came up in a discussion on KAY-FOG. In fact, I had never seen a spec sheet in any box or bag (I buy the cheap stuff by mail order too) of disks I have bought. However, I spent a few years on a design team working on a Winchester Drive for personal computers. One of my jobs was the specification and testing of the disks used in the drives.

by Ted Jensen

**CLIPPING LEVEL:** Since magnetic media is pretty much the same whether it's tape, disk, or hardisks (the major difference being the base material the magnetic particles are bonded to is mylar for tape and disks, and aluminum for the hard disks), it wasn't difficult for me to guess at what was meant by 'clipping level'. A little looking through a parts catalog and I found a specification on a chip designed for use in disk drives and they defined 'clipping level' (although in rather vague terms). It's unfortunate that these words are used to describe a test performed on disks since they have a different and more understood meaning throughout the general electronics industry. In any case we will have to accept these words since they are the ones used in the advertisements.

In simple terms, your drive uses a 'head' to read the information on the disk. You can think of this as being like the needle and pick-up on a phonograph. The head reads the magnetic information previously written on a disk and converts it into an electrical signal. This signal is further processed and eventually takes on a form suitable for transmission to your computer as bits, or bytes, which represents the data.

**SIGNAL VARIATION:** The size and shape of the electrical signal developed by the head varies for many reasons. First of all, it varies as a result of the information written on the disk, and this variation itself represents that information. However, there are other variations which take place due to imperfections in the head, the mechanical characteristics of the drive, or the imperfections in the disk. These variations, if large enough, will lead to the drive electronics not being able to correctly decode the

information, and your computer will indicate this by means of some error message that it can't read the disk. It's therefore important to keep these variations (those not part of the data) at a minimum.

**COATING THICKNESS:** Magnetic disks or tapes are made by bonding magnetic particles to a flexible mylar backing material. Characteristics which affect the performance of the final product include, but not limited to, the magnetic nature of the particles, the size of the particles, (note: it's the modification of these 2 properties that make the difference between 1.2M disks and a 36K disk), the thickness of the coating, and, most important to the subject of 'clipping level', the uniformity of the coating. If a tiny part of the disk, the size of a pinhole, doesn't get coated, the signal level recoverable from that spot is reduced. Thus, if there are a number of these of sufficient size, the level of the signal will be fairly uniform until the 'pin-hole' passes under the head, at which point it will drop. The industry refers to these as 'drop-outs'. Furthermore, if the coating thickness varies over the surface of the disk, the amplitude of the signal can vary in a relatively smooth manner as the disk rotates. This is generally not a serious problem, however.

Your drive can recover data by separating disk related variations from the variations in signal due to the real data, provided that the disk related variations are not too large. Typically a drive might be able to successfully ignore disk related variations which did not reduce the amplitude of the real signal to less than 30% of the normal output. This number, however, also depends on a wide variety of factors, and varies

from drive to drive, even the same model by the same manufacturer.

Thus anything one could do to assure that the level of these disk related variations are held within a specified range should reduce the probability of errors. The key word is 'probability', and more will be said about this later. Therefore a disk which is tested to a 'clipping level' of 60% is tested to assure that the variations due to disk are small enough that the signal level never drops below 60%. That is, the variations are held to a range between 60% and 100%. It follows that the higher the 'clipping level', the less variation in signal output and the reduced chance of a disk error. Now comes the tough part. How much extra money should you pay for a disk tested to a 60% level as compared to one tested to a 40% level? Would you pay 50% more? Ten times as much? The way I see it is this, there's a high probability that if a buy 25 or 50 brand X disks and they all work, whatever tests were run on them were probably sufficient to assure me that brand X disks always work. I have no way of knowing what 'clipping level' disks destined for my drives should be tested at, nor, do I believe, do the manufacturers of floppy disks.

**A WORD ABOUT HARD DISKS:** In Winchester drives the situation is a little different. The manufacturers of the disks which go into these drives are generally different companies than those that make disk drives. The drive manufacturer imposes specifications on the disk maker. Furthermore, the drive manufacturer continually tests the disks using sophisticated equipment to be sure that the disk maker meets these specs. That is, people who manufacture disks for use in hard drives do not sell them

directly to the end user (removable hard disks being the exception).

**BOTTOM LINE \$\$\$:** But, back to floppies. Assume I buy 100 disks from each of two sources. SuperDisk for \$2.00 dollars each, and CheapDisk at \$0.40 per. Finally, out of all the disks I bought, one SuperDisk and ten CheapDisks failed to format. I have ended up paying slightly over \$2.00/disk for the good SuperDisks, and about 45 cents each for the good CheapDisks. I still think I got a good buy on the CheapDisks.

**MORE USE --- BETTER PERFORMANCE:** What about disk failures in the future? That is as I use those 90 CheapDisks are they more likely to fail in the future than the 99 SuperDisks? Well, I suppose there are those who would argue with me that in fact they would. But I really don't believe it. The reason is that the first few times I use a disk its performance improves. The surface of the disk is left slightly rough because of the manufacturing process and this prevents good contact between the head and the disk. This poor contact degrades disk performance. As the disk is used and rotates past the head, the head knocks off some particles of the coating, smoothing the surface and improving the contact and the performance. In tape recording, in critical applications, new tape is never used without running it through a machine at least once and sometimes several times, just for this reason. Therefore, after I have used my CheapDisks several times I feel more comfortable with them than when they were brand new.

**HOW LONG WILL THEY LAST?:** Finally, what about the really long term? Will CheapDisks retain the information stored on them equally as well as SuperDisks, say over a period of

a 100 years? Well, here we are dealing with real unknowns. There are no disks around that are a 100 years old. Magnetic recordings using media of the type used in disks is only about 40 years old. Archival data that has been around for long periods of time has turned out to be a problem in a number of fields. Ask a librarian about the problems facing the Library of Congress in protecting many of its books.

There has been some experience with magnetic recording in general that may be of interest. In tape, such as your audio or video cassettes, or computer tape as used on large main frames, there's a problem with long term storage known as 'print through'. The magnetic pattern on the tape representing the information emanates a magnetic field, just as the North and South poles do. This field is very minute, but still present, and any material susceptible to being magnetized will do so in the presence of a magnetic field. This is true even for weak fields if the material is held still within the field for long periods of time. All tape is susceptible to being magnetized, that's its prime purpose in life. When wound on a reel, each piece of tape is tightly pressed against another one, and each piece emanates a field. If the tape is left untouched for several years, a little of the information recorded on each piece is transferred to mix with the information on the adjacent piece. In audio tapes one can hear this as low level background of the same music that played either a few seconds earlier or a few seconds later, particularly where a loud passage is immediately followed by a quiet one.

Normally disks have a jacket around them that is fairly thick. Thus it's unlikely that

print through would take place between disks. On double sided disks however, the magnetic information on one side is pretty close to that on the other side, the distance being the same range as that previously discussed in the case of tape on a reel. If I were to make a guess at the first cause of long term failure, in the sense of not being able to recover 100% of the material from a floppy, I would guess that 'print through' would be the cause.

**RE-COPY YOUR FLOPPIES:** Someone once raised the question of whether it makes sense to re-copy masters of back-ups from time to time to make new back-ups. My initial reaction was that I didn't think it was worthwhile. Having given it some thought, however, it might not be a bad idea. If there's a degradation that takes place with time on an untouched back-up as it sits on the shelf, re-copying does in fact restore the information to a more pristine state and thus acts as added protection against the probability of losing your data. As to SuperDisks being any better than CheapDisks in an archival sense, I can think of no reason why there should be any difference, but perhaps we won't know that answer for another 100 years.

**HOW COME SO CHEAP?** There are a lot of reasons SuperDisks sell for more than CheapDisks. They spend more on advertising, or packaging, and possibly corporate headquarters. They sell primarily to companies, which avoid buying anything by mail order from some post office box across the country. And they sell at the price they do because people are willing to pay for it, whatever the reason. In fact, however, if you look into it you'll find that many of the people selling the cheaper disks are buying their raw

materials from the same source as those selling the expensive versions. The whole thing about mass produced products, whether it's disks, drives, computers, or light bulbs, is that they are produced on a statistical basis. That is, costs are reduced to the point where the chance of a bad one getting to the user is acceptably low. This is simply good business. No company can stay in business if it strives for perfection in a commercial product line. Only governments can afford products which have been tested to the level of a space shuttle, and as we've found out, even they're not as perfect as needed. Personally I've always bought the least expensive disks I could find, furthermore, I buy single sided, single density disks and use them in double sided double density drives with no problems. On one occasion, I paid over \$25.00 for a box of 10 disks. It was a Sunday, I needed them, and they were the only ones I could find. One of the disks proved to be one of the few I ever ran into that was bad right out of the box.

On last comment on probabilities. If the odds of a given disk failing is 1 in 1,000 under whatever circumstances, the chance of 2 failing under the same circumstances is 1 in 1,000 times 1,000 or 1 in 1,000,000. Anyone for making 2 45 cent back-ups instead of 1 \$2.00 backup?

PS: I've taken some liberties in the preceding comments in the interest of keeping it from becoming overly technical but I don't believe these affect the substance of the arguments for purchasing lower cost disks. Also, I wasn't able to find detailed information on the testing of disks in the literature and much of the above is based on extending my experience from tape and hard disks to floppy disks. I'd



appreciate it if anyone having more information on the subject, or finding inaccuracies within this tome contact me by mail at: P. O. BOX 324, Redwood City, CA 94062.

#### COMMENTS by Don Lambert

Without going into the elements of costs I am interested in long term storage of programs on floppy disks. How long will a disk hold data without loss? In other words how long before I should make backup copies and then refresh the original disk? Is that an element that can be addressed in any fashion?

But the above article does give some insights into the problem. First there is the problem of "print through". One way to avoid that problem is to FORMAT and SAVE to single sided disks. But if the disks take eight years to "print through" and the disks themselves even if single sided no longer retain data more than ten years then it is not much of a gain to use single sided disks. What is the shortest time that a disk will fail? What is the longest time? If one would check a thousand disks annually what is the bell curve of the recoverable data from the disks?

And then the concept of using a disk a few times to smooth up the "rough spots" is another idea. But is it practical? Should one FORMAT a disk a number of times before it is used as the "archive copy"? If you do would it not be a good idea to use a disk drive that is not your #1 best drive but a drive that is relegated to that purpose. In my experience I have had a very few disks that would FORMAT on the 3rd or 4th try when they wouldn't FORMAT the first times. Is this the reason why?

Anyone have any comments on this?

#### DISK LIFE!

By Ed Snow:

To answer your question about how long tapes will last. Data tapes, when kept in a temperature and humidity controlled environment will retain their ability to hold data virtually forever. However, as you pointed out, the condition of "bleed through" or "print through" will gradually erase the data that is on the tape. To prevent this, tapes must be rewound periodically. Most companies having large amounts of data stored on tape will employ a tape librarian whose duties include the rewinding of tapes. Most companies will rewind every few months. If you keep your cassette tapes away from excess humidity and rewind them periodically they should last far longer than you or I will! Of course this assumes good quality tapes that have not been exposed to ultraviolet (which destroys the mylar substrate of the tape) or excess heat. The general rule is that if you are comfortable in the environment, then so are your tapes.

As far as floppy diskettes are concerned, they are basically just round tapes. They also are made of mylar, and the coatings used are basically the same. However, with diskettes you do not have the problem of bleed through because the mylar is much thicker than that used in cassette tapes. At least that is what I have been told. On a diskette, the problem is that the data is stored by aligning the iron oxide particles in the coating either north-south (representing a 1) or south-north (representing a 0). Or vice-versa (I never can remember which is which). Anyway, the north pole of a binary 1 will attract the south pole of an adjacent binary 0 and eventually cancel each other



out. The designers take this into consideration when they plan the data density that the diskette will use. As hardware became more efficient and the quality of the coatings improved, data densities have gone up without sacrificing reliability. This means that in the same environment, the diskette will hold data just as long as tape will. A friend of mine has floppy diskettes from an old Ohio Scientific kit computer from 1979 that are still readable after 13 years. I have at the college 8" diskettes dated from 1972 that are still readable and reusable on a System 34 minicomputer. That's 20 years!

~~~~~

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DONALD S. LAMBERT  
1301 KIBLINGER PLACE  
AUBURN IN 46706-3010

**WANTED:**

~~~~~  
INFORMATION ON HOW TO READ WITH A TS 2068 A QL ASCII FILE USING THE LARKEN DISK INTERFACE. IT CAN BE DONE WITH A PROGRAM ON A MSDOS DISK SO LONG AS THE DISK IS COMPATIBLE WITH THE SIZE AND TYPE OF DISK DRIVE. IT ONLY NEEDS TO CONVERT THE TEXT FILES INTO MSCRIPT AND THE CLEANUP OF PRINTER CODES CAN BE DONE THEN.

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# Input/Output

## Help

Terry Graham is looking for an article on TURBO for the ZX-81 authored by a user from Australia that appeared in a Newsletter, possibly Long Island L I S T.

TERRY GRAHAM  
9743 S W LONDON CT  
TIGARD OR 97223

Edward Radtke (WA4BQE) has been looking for a VOTEM analog interface for three years. (The VOTEM is used for measuring voltage and temperature) Anyone?

EDWARD RADTKE  
1602 WOODLUCK AVE  
LOUISVILLE KY 40205

Wayne Knaust looking for information on how to add 16K Memotek Rampack to his 32K. The RAMTOP resets and still ends up with 32K instead of 48K on his TS-1000.

WAYNE KNAUST  
2 PEAR TREE CT  
ST PETERS MO 63376  
H 314 441-2303 W 314 895-6718

## *Keep 'em coming*

Greg Newkirk of Long Beach CA :-  
"Thank you and please let everyone working on the Newsletter know that they are doing a great job."

Robert Madaris of Trafford AL :- "It is GREAT indeed that we are *QLive Alive!*"

Dan Elliott of Cabool MO :- "The Company name is not "ZX REPAIR", it is "Computer Classics"."

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Sorry Dan, the error has been corrected. Dan trades and repairs classic home computers.

Fred Henn of Amherst NY:- "I'd like to see a copy of your Newsletter. When SNUG originally formed, I sent in my "application" to join the Org. Nothing happened .. so after 3 or 4 letters with no reply .. I quit trying."

Alexander Sweitzer of Fayette City PA :- "I would be very pleased to receive your quarterly Newsletter. I am glad the Timex is not completely forgotten. Currently, I own 24 Timex 1000, 1 Timex 2068, 2 Z88, 1 Sharp Laptop, and 4 ADAM computers. As you see I like the orphan computers."

William Hanes of Schenectady NY :-  
"I'm still using my 2068 as writing BASIC is a lot easier than with QBASIC on my 386."

*Same here, Bill.*

Albert Seyler of Pocahontas AR, Teaches Electricity/Electronics at the Black River Technical College. "I have used the Timex/Sinclair computer since the day I completed the assembly of my first ZX. I am sure that I have written a hundred or more programs for use by my students in solving different electrical and math problems, programs from simple total series resistance to programs for solving simultaneous equations."

Les Cottrell of Cocoa FL "Your Newsletter appears to be worthwhile so I will enclose a \$10 bill for Membership" .. "I have written several articles for the "Sinc-Link" and you would be most welcome to print them in your Newsletter if any of the articles seem worthwhile."

*Thanks Les.*

Fred Henn of Amherst NY. "I still prefer the 2068 over the other computers I "played" with." " Found it interesting that Don Lambert (in his: 50 tips) refers only to the Spectrum. Does this assume that all 2068's are now equipped with a Spectrum emulator? (mine isn't). Also ... I don't know what "musical" capabilities the Spectrum has, but the 2068 has very satisfactory "musical" capabilities (especially when played through a good sound system."

*Most of the 50 Tips will work with the 2068 except for those for JOYSTICK and ROM calls, I believe. What says you, Don?*

*With fancy programming to the BEEP command, the Spectrum can come close to the 2068.*

*Fred*

## Treasurer Notes

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### ☺ Welcome, New Members

As of July 7, 1993, we have a balance of \$529.27 from 6 groups, 2 dealers and individual contributors.

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