

## THE NEW ADDITIONS: TNU & FMB

The latest version of the SUPERCLONE package (ver.2.0) now includes two new utilities. The first of the two, THE TOUGH-NUTS UTILITY or simply TNU for short, is a parameter driven nibble copier capable of handling a wide range of non-standard protection schemes.

Shortly after the original SUPERCLONE package was released, it came to our attention that there were a number of new programs hitting the market that were not copyable by our (or for that matter anybody elses) backup utility. These programs (DALLAS QUEST, SENTINEL, SLAMBALL) were using protection schemes that hadn't been seen before - things like writing out on track '36' and using extra sectors on a track. Because of their popularity, it was absolutely necessary to again come out with a revision, hence, VER.2.0 with TNU and FMB were hatched.

The TNU consists of three parts:

- (1) NON-STANDARD SECTORS
- (2) SINGULAR SYNC
- (3) REFORMAT A TRACK

It should be noted, that with all three of these options, only a single track at a time can ever be modified. This is because generally the TNU will only be used to repair or correct individual tracks on a disk after first copying using either SUPERCLONE or the FMB (more on this later).

The first option of the TNU, NON-STANDARD SECTORS, allows you to create a track with a number of unusual features. In the standard CBM DOS, normally every track has a set number of sectors. For instance, track number 18 always has 19 sectors. If you check your 1541 manual, you will see that there are actually four distinct regions on every disk. For each of these regions, there is a corresponding number of sectors (see accompanying chart). Well, it so happens that in region #2 (tracks 18 to 24) it is possible to squeeze in one extra sector more than normal. In order for this to be done, the track must be formatted in a special way and that, of course, is one of the things that option no.1 will do for you.

In addition to modifying the number of sectors on a track, NON-STANDARD SECTORS also allows you to change the density of which data is written onto the track. Although to my knowledge this hasn't yet been used as a copy protection method, it certainly could be in the near future. Notice from the chart that track densities are also divided up into the same four regions as discussed above.

REGION	TRACK NUMBER	TOTAL SECTORS	DENSITY BITS
1	1 to 17	21	3
2	18 to 24	19	2
3	25 to 30	18	1
4	31 to 35	17	0

When using this option, a reference sector must be entered. This is so that in the event of multiple sectors with the same header information, a unique sector can be identified and then used as a reference point. In most cases this has not been found to be a critical parameter, and it will generally be safe to use sector number zero as a default unless otherwise specified.

Note that when using this option, the requested RANGE parameter is equivalent to the total number of sectors on the track.



The second option of the TNU, SINGULAR SYNC, is like NON-STANDARD SECTORS also a nibble copier, however it is different in a fairly significant way. Typically, a nibble copier locates the header of a sector, reads in the ten bytes that are assumed to be present, and then reads in the 325 bytes of data that follow the next sync mark (in an encoded format known as GCR). Then, when writing out to the destination disk, the header bytes are placed followed by a data sync mark and finally the data bytes. With SINGULAR SYNC the difference is that no assumptions are made about any header bytes being present. Instead, all that happens is that a sync mark is located, and then the next 256 bytes are read in and then transferred to the destination disk. The final option on the TNU, REFORMAT A TRACK, is a utility that will allow you to do a number of different things. First of all, it will let you recover from some backup making mistakes without having to start all over again from scratch. Suppose, for instance, that you have put an error on the wrong track. Formally you would have had to reformat the entire diskette and recopy all the tracks. Now, you can just select this option, specify the appropriate track, use the default responses on all other parameters, and immediately erase the unwanted errors.

Secondly, you can use this option to create an error number 29 manually anywhere on the diskette. Simply proceed as above except when asked about disk ID specify two values that you know are different from the correct ones. This will produce an ID MISMATCH ERROR no. 29 on the selected track.

Finally, this last option can be used to create a special track by specifying non-standard offbytes. Offbytes are two bytes that are used for padding during the binary to GCR conversion of the sector header. Though these bytes are both normally equal to \$0F (15 decimal), they may be changed to some other values and then used as part of a copy-protection scheme.

It should be understood that the kinds of protection schemes and techniques that can be handled via the TNU are varied and complex. There isn't any easy way for the average SUPERCLONE user to determine whether or not he needs to use the TNU, much less discover what values to give to the various parameters. This is the reason that there aren't any operating instructions included with the TNU. Instead, we have relied upon the resourcefulness of our more advanced users to supply the necessary parameters which we then will make available to all our customers over our phones and here in the CLONE NEWSLETTER. They say that a little bit of knowledge is a dangerous thing. I hope not, however, and I decided to present the information on the TNU above in the hopes of spurring some of the more adventurous and/or knowledgeable of you on to new discoveries. Remember, cash and merchandise rewards await those of you who make relevant contributions!

The other major utility included on our latest release is the FOUR MINUTE BACKUP, also known as FMB. This nifty little program will format and copy an entire diskette in just over four minutes. Only a couple of things need to be said about this simple to use backup. First of all, DISCONNECT any device (printer, 2nd drive, etc.) other than your single 1541 drive from the serial port. Turning it off isn't good enough, it must be unplugged from the back of your 1541. Secondly, realize that this program will NOT in most cases make a working copy of a protected disk just by itself. Those tracks reported as errored during the copying should generally be recopied using either SUPERCLONE, FASTCLONE, or the TNU.



The second edition of the book, published in 1962, was a significant improvement over the first. It included a new chapter on the history of the book, and a new appendix on the book's reception. The book was well-received by both scholars and the general public, and it remains a classic work in the field.

The book's success was due to its clear and concise writing, and its thorough treatment of the subject. It was a landmark work that opened up new areas of research and inspired a generation of scholars. The book's influence is still felt today, and it is a testament to the power of good writing and scholarship.

The book's impact was not limited to the field of literature. It also influenced the development of the social sciences, and it provided a new framework for understanding human behavior. The book's insights are still relevant today, and it continues to be a source of inspiration for scholars and students alike.

The book's legacy is a testament to the enduring power of good writing and scholarship. It is a work that has stood the test of time, and it continues to be a source of inspiration and knowledge for generations to come. The book's influence is a testament to the power of the written word.

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## SOLUTIONS

In this installment of our regular SOLUTIONS department, we're going to publish an exceptional account of software sleuthing by one of our readers.

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### How to Backup RAID OVER MOSCOW

This program was a tough one. I could tell by the noises the drive was making during loading, that there was a good deal of protection on the diskette. It seemed like a good idea to just investigate the code and see if I could eliminate the protection checking altogether. I have done this in the past on other programs and have usually ended up with a faster load with less abuse to my drive.

Turned out I was able to do it again, and I've outlined the steps below:

- 1) Copy the entire disk using the old CLONE MACHINE or the FOUR MINUTE BACKUP if you have it (don't use SUPERCLONE on this).
- 2) Go into the TRACK/BLOCK editor. Go to track 18, block 12, and change byte \$E1 from \$20 to \$00. This will stop the program after all the error checking has been done and before it starts to run.
- 3) Go to track 18, block 4, and change the first two bytes to: \$00 and \$FF. This will allow you to list the directory.
- 4) Go to track 18, block 0. They've phoned-up the BAM so that there's no available space on the disk, but I found some. Change the 12 bytes starting at \$14 to:  
\$15, \$FF, \$FF, \$1F, \$15, \$FF, \$FF, \$1F, \$15, \$FF, \$FF, \$1F
- 5) Now try to load your copy disk. You'll see the drive light blink a couple of times and then it'll just sit there and spin. At that point remove your copy and put in the original disk. As soon as you close the drive door you should see the load continue. The program is now checking out the disk's protection, and since its the original it should pass with flying colors!

- 6) In a little while the program will reach the breakpoint that was added and then return you to BASIC. Now simply save the BASIC part of the program as follows:

```
SAVE "RAID",8      and type 'NEW'
```

Next you'll need to save the machine language program that's residing up at \$C000 to \$C400. I wrote a little program to do this. Type this in and then run it:

```
10 A$="RAID.B":POKE184,1:POKE185,1:POKE186,8
20 X=PEEK(45)+256*PEEK(46)+3:POKE183,PEEK(X-1)
30 POKE187,PEEK(X):POKE188,PEEK(X+1):POKE781,0:POKE782,196
40 POKE251,0:POKE252,192:POKE780,251:SYS65496
```

- 7) After the SAVE is completed type NEW and then the following:

```
10 IF A=1 THEN LOAD"RAID",8
20 A=1:LOAD"RAID.B",8,1
```

- 8) Save this little boot program as "START". You now have the

entire RAID OVER MOSCOW program saved on your copy diskette along with the new boot program. To run it just type :

LOAD"START",8

and then RUN. The program should behave exactly like the original did. And of course, the nice thing is that it won't have to do all that protection checking anymore.

P.Sayah  
Clifton, N.J.

Ed. Note: An excellent article Mr.Sayah! I'm sure many of our readers will benefit from your example of inspired cloning.

#### LETTERS TO THE EDITOR

Dear CLONERS,

Just wanted to report on the success I've had with your new TOUGH-NUTS UTILITY. I tried to copy DALLAS QUEST by DATASOFT with SUPERCLONE but had no luck. Took my drive apart and watched the head move during loading. I could tell by watching that the drive was going out to read past track 35. I then used the TNU - NON-STANDARD SECTORS. Tried to copy track 36 using different density bits, again no luck.

Finally I tried TNU - SINGULAR SYNC on track 36 and guess what...it works!!! I have since found out that JUNO, also by DATASOFT, can be copied in exactly the same way. Just copy with the FMB and then use SINGULAR SYNC on track 36. Thanks for a great product!

Dave Kaiser  
San Francisco, Ca.

Ed. Note: We appreciate that, Dave. As was mentioned earlier in this newsletter we are counting on our subscribers to keep us informed of their discoveries in using the TNU. Here are some more letters from pioneering TNU users.

Dear Sirs:

I've used just about every copy program on the market, but could never make a backup that worked correctly of my ZAXXON. I played this game a lot and was really worried about losing it.

Well, I recently got your new update with the TOUGHNUTS UTILITY on it. Here's how I was finally able to copy ZAXXON:

- Track 20*
- a) Copy disk with FMB.
  - b) Load TNU, and select option #1 - 'NON-STANDARD SECTORS'
  - c) Answer 'NO' to 'ALTER DENSITY BITS?'
  - d) Enter 0 for REFERENCE SECTOR
  - e) Enter 20 for RANGE

This will then produce a perfect copy of ZAXXON.

Martin Weseley  
Stamford, Conn.

LETTERS TO THE EDITOR (cont.)

Dear Micro-W.

I have been working with the TOUGH-NUTS UTILITY now for about 2 weeks and have successfully cloned two of my most recent additions to my software library: SLAMBALL and SENTINEL. Both of these programs had similar protection schemes involving an extra sector of data on one of the tracks.

- 1) SLAMBALL
  - a) Copy with FOUR MINUTE BACKUP
  - b) Use TOUGH-NUTS - NON-STANDARD SECTORS
  - c) Track = 18
  - d) Alter density bits = NO
  - e) Reference sector = 0
  - f) Range = 20
  
- 2) SENTINEL
  - a) Copy with FMB
  - b) TNU - NON-STANDARD SECTORS
  - c) Track = 24
  - d) Alter density bits = NO
  - e) Reference sector = 0
  - f) Range = 20

In general I'd say your product is very good, however I think that you really should have included some more documentation on how to use the various utilities in the TOUGH-NUTS section.

Sincerely,  
Gene Walden  
Miami, Fla.

Ed. Note: Thanks for the help, Gene. Your comment on our documentation (or lack of it) concerning the TNU was reflected upon earlier in this issue and hopefully the situation has been improved.

Dear Sir:

I have used your new TOUGH-NUTS UTILITY to backup WIZARD which is a program that I consider probably one of the most difficult to copy. I couldn't understand at first what the problem was. It seems that (after much analysis and study) this diskette has some very unusual tracks. On tracks 1, 2, and 3, the sector numbers run from 0 to 9, and then from 0 to 10, sequentially! In other words, the only unique sector was number 10. Because of this, was is impossible to copy it correctly until I set the reference sector equal to 10.

Thus, the copy plan is as follows:

- 1) First copy the disk with the FMB.
- 2) Next, load the TNU and select 'NON-STANDARD SECTORS'.
- 3) Select track #1.
- 4) Say 'NO' to 'ALTER DENSITY BITS?'
- 5) Set reference sector equal to 10.
- 6) Set range equal to 21.
- 7) Repeat same parameters for tracks 2 and 3.

John Martinelli  
Philadelphia, Penn.

Ed. Note: Seems as though you're the true wizard, John. Thank you!