

NEWSLETTER

of

TIBUG

SEPT/OCT 1996

T.I. BRISBANE USER GROUP
P.O. BOX 3051
CLONTARF MDC, QLD, AUST 4019



NEXT MEETING

Level 7
Gehrmann Laboratories
Research Road
St Lucia Campus, QUT.

Friday 27th September
TIME: 7.00 P.M. SHARP

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The views expressed in articles published in TIBUG are those of the author and do not necessarily reflect the views of the Editor, Committee Members or Members of this User Group.

All items, articles, programs etc in this Newsletter are believed to be public domain.

Contributions to TIBUG are invited from both members and non-members. Articles for inclusion in the succeeding monthly newsletter are required at least two weeks before the monthly meeting and may be included in that newsletter at the discretion of the Editor. If you have a disk system, please supply script on disk with diagrams separately on paper and as clear and black as possible to facilitate photocopying.

Most original articles by members of TIBUG in this newsletter are on disk and are available to other User Groups on request.

Submissions of articles, reviews, comments and letters from members is encouraged, however the editor would ask that members keep the following in mind.

Submissions should be about computers, the TI community in particular, or have general interest value.

The preferred media is floppy disk (any format) however cassette tape is most acceptable for those members who do not have expanded systems. Please remember that handwritten submissions have to be retyped into the computer so that they can be reproduced. Typed submissions can also be used directly if the quality of the type is suitable for photocopying.

The newsletter is produced on the weekend preceding the monthly meeting. Any submissions made after the Friday, one week before the meeting will be held over until the following month.

Submissions are best sent directly to the Editor rather than through the PO Box. The address is Col Christensen, 17 Centaur Street, Redcliffe 4020. Contact the editor if you have any difficulties with preparing a submission or have any comments about the newsletter.

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"I WISH EVERY SCHOOL HAD TI LOGO"

SEPTEMBER MEETING

Dennis Remmer is hosting this month's meeting. He has arranged for a room at the University of Queensland, St Lucia Campus where he will have a TI set up as well as a PC running a TI emulator programme.

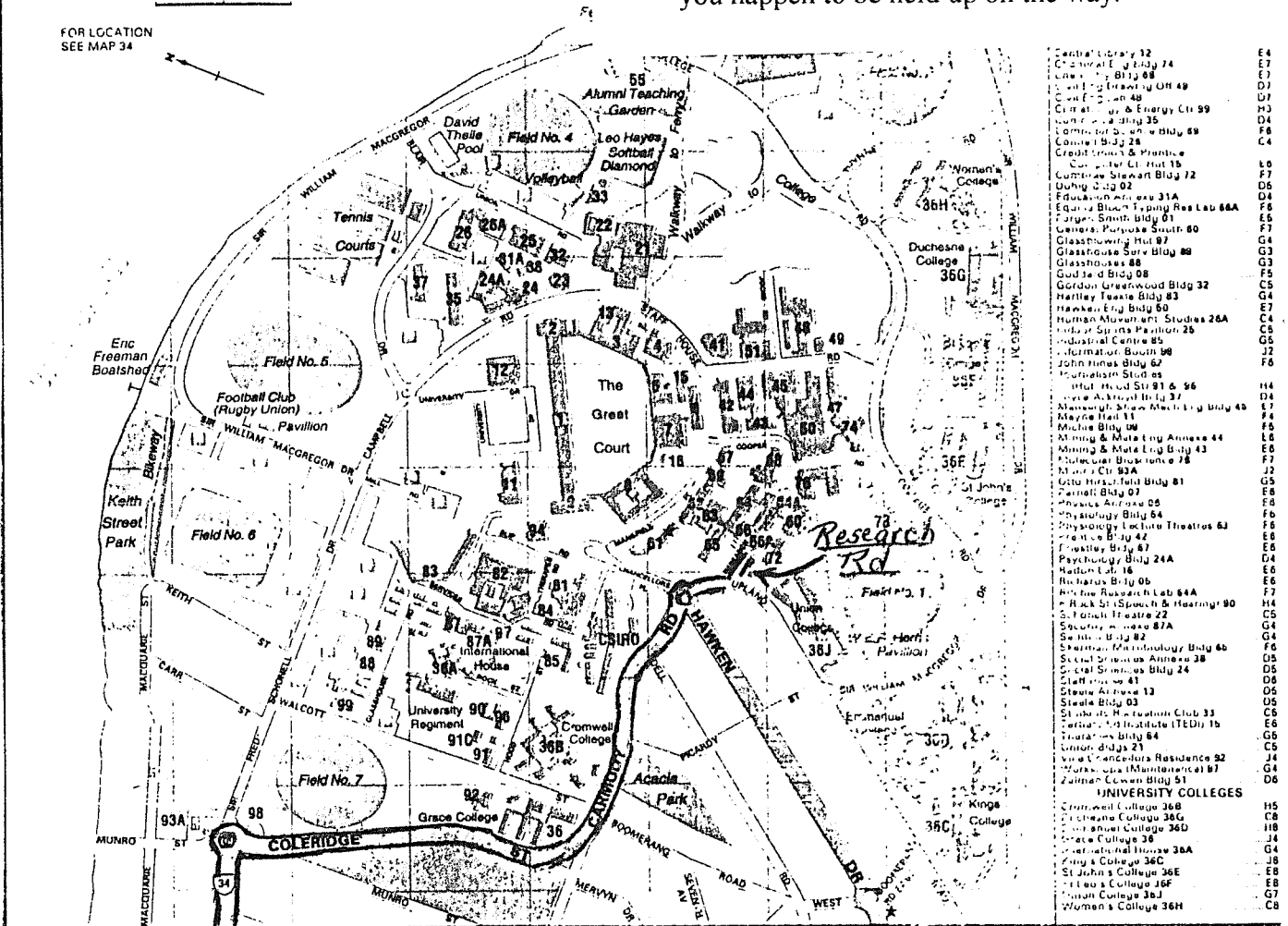
The room is at level 7 in the Gehrman Laboratories Building, Research Road which branches off Upland Road. UBD street directory Map 93, F6 shows Upland Road but not the Gehrman building. A not-so-clear copy of the map is shown here.

Dennis says that the building is secured and we need to meet him there at 7.00pm sharp. So please be early as there will probably be no way to contact anyone inside to let you in at a later hour. It would be best if you contact me on 3284 7783 prior to Friday 5pm to advise that you intend to attend and then we will know to wait if you happen to be held up on the way.

THE UNIVERSITY OF QUEENSLAND ST LUCIA CAMPUS

SCALE 200m

FOR LOCATION SEE MAP 34



TUTORIAL

Using the Hewlett-Packard printer command language with a TI

By BOB GROSSART

This is reprinted from TIC TOC, the newsletter of the Rocky Mountain 99ers—Ed.

E_c(s0p10h6v0s3b3T

Introduction. Now that I have your attention, we can look into the world of the Hewlett-Packard (HP) Printer Command Language, known as HP PCL. I became interested in the HP PCL while trying to adapt TI99/4A programs to print with my recently acquired HP DeskJet 310 printer. Initially, ASCII files printed OK (sort of). But it became obvious that HP was far from being Epson-compatible. I needed to learn what I could about my HP printer if I wanted it to be useful with my TI. From HP, I ordered a Technical Reference Manual for my HP310. This 224-page manual contained very detailed information regarding printer commands and use of the PCL, in my case PCL-3. It was well worth the \$5.25 plus tax, sent FEX. Listed at the end of this article are this manual and two other books that have useful information on both the DeskJet and LaserJet HP printers.

HP PCL Architecture. The HP PCL provides application programs a way to control HP device features using a common printer language and architecture.

PCL is essentially a collection of commands, known as control and escape sequence codes, to control printer operations. HP categorizes general types of device functions into levels. Several levels of PCL have been implemented into different HP devices, but they are all backward compatible. PCL-4 incorporates all of PCL1, 2 and 3. Also, all levels of PCL ignore PCL commands they do not support. The levels are:

PCL-1: Print and Space PCL. Supports standard codes (e.g. CR, LF, underline, basic graphics)

PCP-2: EDP/Transaction PCL. For printers designed for transition processing. Adds margin, line spacing, page length, pitch, others.

PCL-3: Office Word Processing PCL. For printers designed for word processing. Adds commands to support LaserJet printers.

PCL-4: Page Formatting PCL. Came into use with the LaserJet Plus printers.

PCL-5: Enhanced but more complex PCL to support the LaserJet 111 family of printers

The HP PCL architecture consists of two major elements: PCL Kernel and Extensions to the Kernel. Extensions provide features that are device-specific (e.g., print color, envelope printing). The Kernel consists of the following feature groups: Device Control, Movement, Page Presentation, Fonts and Rendering (or graphics). My Technical Reference Guide describes each if these features in detail.

PCL Codes. There are two general types of PCL commands: Control and Escape Sequences (sounds familiar so far).

Control Codes. Beginning with CTRL (IBM) or CTRL-U

(TI), a single character (ASCII table in range of 0 through 32 decimal) that initiates a printer function (e.g., Carriage Return, Line Feed). The codes for my printer are listed in Table 111, which correspond to the special character mode commands in the TIW manual on page 146. BASIC uses the CHR\$ function. e.g. CHR\$(12) results in Form Feed.

Escape Sequences. Two or more characters with the first character always ASCII 27 decimal or 1B hexadecimal (identified as E_c).

Two Character Escape Sequence. E_c is followed by any character from ASCII table within range of 48-126 decimal, e.g., E_cE resets the printer

Parameterized Escape Sequence. The escape sequence has the following characteristics:

```

Ec ( s      05      H
|   | |      | -> |---> Termination Character
|   | |      |-----> Value Field
|   | |-----> Group Character
|   |-----> Paramaterization
|                                     Character
|-----> Escape Character

```

Parameterization Char.: Within range of 33-47 decimal. Indicates that this escape sequence is parameterized.

Group Char.: Within range of 96-126 decimal (' through /). Specifies group type.

Value Field: Within range of 48-57 decimal (0 through 9). May be preceded by + or - and contain digits after a decimal point. Range of -32767 to 32767. A value of 0 if not specified and is required.

Termination Char.: Within range of 64-94 decimal (@ through ^). Specifies parameter for value held. Terminates escape sequence when a capital letter.

Binary Data: Not required for example code above, but is eight-bit data (e.g., graphics). The Value Field specifies the number of bytes of binary data to immediately follow escape sequence.

In accordance with the PCL-3 command list, the example escape sequence above will produce a font pitch selection of five characters per inch. This assumes the printer has the built-in font with this characteristic/My printer has 37 different attribute categories controlled by escape codes.

Combined Escape Sequences: More than one escape sequence may be combined into one escape sequence using the following rules:

1. The first two characters following the "E_c" must be the same in all commands combined.

2. All alphabetic characters within the combined command are lowercase, except the final termination character.

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(Continued from Page 13)

3. Commands are executed in order, left to right.

For example, the combined sequence:

```
Ec(s0pl0h6v0s3b3T
```

is Font No. 56 on my printer which is specified by the attributes of Fixed Spacing, Pitch 10, Point Size 6, Upright Style, Bold Weight and Courier Typeface. This is equivalent to the following individual escape sequences:

```
Ec(s0P Fixed Spacing
```

```
Ec(s10H Pitch 10
```

```
Ec(s6V Point Size 6
```

```
Ec(s0S Upright
```

```
Ec(s3B Bold Weight
```

```
Ec(s3T Courier
```

HP cautions that the escape sequence should not have any spaces. My manual gives not only the alphanumeric codes, but also the corresponding decimal and hexadecimal equivalents. Table I contains some of the more common word processing commands. A full list is in the HP Technical Reference Manual, including graphics, which I have yet to explore. Table II is an index of Escape Sequence feature groups.

Application to TI99/4A: Having a list of PCL codes, the next step was to incorporate them into TI programs. I have tried several combinations of decimal, hex, CHR\$ and CTRL-U commands. So far my success has been limited.

Word Processing by TIW/FW:

a. The CTRL-U trick works as follows:

1. Bold print is desired
2. PCL-3 command E_c(s3B

3. Embed in text where required, the following keyboard sequence (no spaces):

```
CTRL-U FUNC-R CTRL-U (s3B
```

4. To return to normal stroke weight embed the following code:

```
CTRL-U FUNC-R CTRL-U (s0B
```

(Remember all commands remain in effect until canceled by another command, send printer reset or cycle printer power off/on.)

b. *Transliterate Commands* work as usual with the formatter.

```
.TL 35:27,40,115,53,72
```

```
.TL 33:27,40,115,49,48,72
```

```
#TEST HP PRINTER!
```

would print at five characters per inch. The equivalent PCL-3 commands are:

```
Ec(s5H replacing # and Ec(s10H replacing !
```

BASIC Program. The following program was used to test printer with TI99/4A, with result shown.

```
10 OPEN #1:"PIO"
```

```
20 PRINT#1:CHR$(27)&"(sSH"
```

```
30 PRINT#1:"THIS IS A TEST
```

```
" : "OF THE HP PRINTER"
```

```
40 PRINT#1:CHR$(27)&"(s10H"
```

```
50 PRINT#1:"THIS COMPLETES
1st HP PRINTER TEST"
```

```
60 PRINT#1:CHR$(27)&"(s511
"Test HP again"
```

```
70 PRINT#1:CHR$(27)&"(s10H"
&"This completes test"
```

```
80 CLOSE#1
```

```
THIS IS A TEST
OF THE HP PRINTER
```

```
THIS COMPLETES 1st HP PRINTER TEST
Test HP again
This completes test
```

Summary: Although I have not addressed graphics modes or extended programming methods (my lack of understanding), I hope this information may be of some interest if you acquire an HP printer for use with your TI99/4A.

References

1. Hewlett-Packard Company, "HP DeskJet 310 Printer, Technical Reference Guide," Manual Part Number C2621-90172.
2. Crane, Mark W., Pierce, Joseph R., with Holzgang, Daniel A., "LaserJet Companion." Microsoft Press.
3. Cummings, Steve, "DeskJet Unlimited," Peachpit Press Inc.

Table I. HP PCL-3 ESCAPE SEQUENCES

Code	Printer	Decimal
Name	Feature	Command
Reset		EcE 027 069
Self Test		EcZ 027 122
Point Size	# 1/72 inch	Ec(s#V 027 040 115 #..# 086
Print Pitch	Char./Inch	Ec(s#H 027 040 115 #..# 072
Stroke Weight	Normal	Ec(s0B 027 040 115 048 066
" "	Bold	Ec(s3B 027 040 115 051 066
Style	Upright	Ec(s0S 027 040 115 048 083
" "	Italic	Ec(s1S 027 040 115 049 083
Spacing	Proportional	Ec(s1P 027 040 115 049 080
" "	Fixed	Ec(s0P 027 040 115 048 080
Print Quality	Letter	Ec(s2Q 027 040 115 050 081
" "	Draft	Ec(s1Q 027 040 115 049 081
Underline	Single Fixed*	Ec&d1D 027 038 100 049 086
	*other modes available	
Underline Off		Ec&sd@ 027 038 100 064
Line Spacing	Lines/Inch*	Ec&Ls#D 027 038 108 #..# 068

*Ec(s#D is 8 lines per inch. Also, the # is a lower case "l" or

"ell" but this shows up better. The HP manual uses a lower case script "ell," also to distinguish from a "one"

Vertical Pos. Decipoints* Ec&a#V 027 038 097 #..# 086

*Increments of 1/720 inch. A +240 is one-third inch down and a -240 is one-third inch up, for value of #.

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Note: In the above list the symbol # represents a decimal number, while #..# represents a decimal number represented as ASCII code (10 is 49 48).

All upper/lower case values and no spaces must be followed.

TABLE II. ESCAPE SEQUENCE INDEX

(Spaces shown for clarity)

Escape Sequence	Description
E _C & S#A	Paper Size
E _C & S#C	Vertical Motion Index
E _C & S#D	Line Spacing
E _C & S#E	Top Margin
E _C & S#F	Text Length
E _C & S#H	Media Source
E _C & S#L	Perforation Skip Mode
E _C & S#O	Logical Page Orientation
E _C & S#P	Page Length
E _C & a#C	Horizontal Position, Columns
E _C & a#H	Horizontal Position, Decipoints
E _C & a#L	Left Margin
E _C & a#M	Right Margin
E _C & a#R	Vertical Position, Rows
E _C & a#V	Vertical Position, Decipoints
E _C & b#T	Dry Time
E _C & d#D	Automatic Underlining ON
E _C & d@	Automatic Underlining OFF
E _C & k#G	Line Termination
E _C & k#H	Horizontal Motion Index
E _C & k#W	Text Printing Mode
E _C & p#X	Transparent Print Mode
E _C & s#C	End-of-line-Wrap
E _C ([ID]	Character Set, Primary
E _C (s#B	Font Stroke Weight, Primary
E _C (s#H	Font Pitch, Primary
E _C (s#P	Font Spacing, Primary
E _C (s#Q	Font Quality, Primary
E _C (s#S	Font Style, Primary
E _C (s#T	Font Typeface, Primary
E _C (sb#V	Font Height, Primary
E _C ([ID]	Character Set, Secondary
E _C)s#B	Font Stroke Weight, Secondary
E _C)s#H	Font Pitch, Secondary
E _C)s#P	Font Spacing, Secondary

E _C)s#Q	Font Quality, Secondary
E _C)s#S	Font Style, Secondary
E _C)s#T	Font Typeface, Secondary
E _C)sb#V	Font Height, Secondary
E _C *b#M	Raster Graphics Compressor
E _C *b#S	Seed Row Source
E _C *b#V	Transfer Graphics Plane 1
E _C *b#W	Transfer Graphics Row 1
E _C *b#Y	Relative Vertical Pixel Movement
E _C *o#D	Raster Graphics Depiction
E _C *o#Q	Raster Graphics Shingling
E _C *p#X	Horizontal Position, Dots
E _C *p#Y	Vertical Position, Dots
E _C *r#A	Start Raster Graphics
E _C *r#Q	Raster Graphics Quality
E _C *r#S	Raster Graphics Width
E _C *r#U	Number of Graphics Planes
E _C *rbC	End Raster Graphics
E _C *t#R	Raster Graphics Resolution
E _C 9	Clear Page Margins
E _C E	Reset Printer
E _C Y	Display Functions Mode ON
E _C Z	Display Functions Mode OFF
E _C z	Printer Self Test

TABLE III. HP PCL3 CONTROL CODES

(CTRL-U Special Character Mode on 1199/4A)

Code Name	TI		IBM Decimal
	Key Press	Key Press	
Backspace	SHIFT H	CTRL H	08
Horizontal Tab	SHIFT I	CTRL I	09
Line Feed	SHIFT J	CTRL J	10
Form Feed	SHIFT L	CTRL L	12
Carriage Return	SHIFT M	CTRL M	13
Shift Out	SHIFT N	CTRL N	14
Shift In	SHIFT O	CTRL O	15
Escape	FCN R	CTRL R	27
Space			32



TI users learn to navigate

By JOHN BULL

Have you ever been in a small sailboat on the ocean? Yachts cruise by, leaving you in their wake, but you wouldn't swap places, that is, if you have any sense of adventure!

A few months back I launched my trusty little TI99/4A into the deep, wide, waters of the Internet. Loaded and ready with Myarc 512, Horizon RD, 2400 baud modem, and reliable old TELCO, we signed on Delphi for \$10 per month plus \$3 for Internet access. That gave us four hours per month (more costs more) of net time and I have not wasted a single minute.

First, it took a week or two to master the art of logging on and maneuvering the menus — not hard, but it does take some learning with the help of the Delphi manual. You set up TELCO to dial the local Sprintnet access phone number, oops! — first remembering to tell TELCO to log the screen to Myarc 512. Then a fancy little logon routine with cryptic key presses, then user name and password. Shortly, here comes the welcome message and main menu.

Remember, you are in a little boat in channels charted for big ones. The screen is all 80 columns and you have only 40! Fortunately they pause at the bottom of each 24-line page and <f>5 scrolls left and 3 scrolls right, letting you read it all; <enter> gets on to the next page. It is not too handy but it works.

The real secret of success is logging the screen to whatever disk memory you have, and sometimes you need a lot. After sign-off you can then load the log files into the Funnelweb editor and read, edit, and save as much (or little) as you want. I use LOG/1 as a filename and TELCO fills it with a buffer-full (10K or so) and then updates to LOG/2, etc., automatically.

Delphi and other nets have all sorts of interesting and valuable things immediately available on-line — the encyclopedia is real handy and I have used it — but the first attraction for me was TI NET, which includes a lively forum and a big database for free downloading of TI stuff.

The Forum includes Tony McGovern as an active participant plus a lot of friendly, knowledgeable people who are generous with advice and information. Did you know that CALL ABSP will abort the contents of the Myarc printspooler? I do now (it is not in the manual) thanks to an inquiry on the forum.

The database is easy to use once you find what you want — it may take some looking since KEY WORDS are not always what they seem. TELCO's Xmodem works flawlessly for me for both downloading and uploading files. My "WINDOWS for the TI" is now there for anyone who wants it. A lot of the program files are for 9640 users, which is good or bad, depending on the point of view. Your boat may be bigger than mine.

Beside the TI Forum, the Internet was the chief attraction for me. E-mail is quick — usually fractions of seconds to deliver. If you know an address, mine is in% "bulljh@delphi.com"; you type MAIL SEND, give the address, add your message, type <c>Z, and it is on its way.

The TELCO macros are very useful for addresses, since e-mail addresses are sometimes long and complex and precision is essential. One wrong keystroke, and it doesn't go. I keep about a dozen addresses as macros that are instantly available with <f>M plus the appropriate single key press.

Editing messages on the screen can pretty tricky for a low grade typist like me and so I prefer, if they are more than a line or two long, to type them in advance and save them as text files using PF, then C DSKn.filename. This eliminates printer codes, which do not fare well on the Internet. The message can then be placed on the screen with TELCO's ASCII file uploader. It is quick and easy.

Tom Wills has undertaken to keep updated the list of TI user e-mail addresses that he recently published in MICROPENDIUM. His address is twills@indirect.com and he says that he will send the list to those who ask. This should help the TI community stay in touch.

As you may already have heard, the In-

ternet is a *really* big ocean. Plain e-mail is just sticking your toe in. Recently, our local newspaper published the address of a server, LISTSERV, that if asked will send you a complete list of all the lists on the Internet. Well, I asked and I received — about 7,500 listnames, addresses, and descriptions marching up my screen for over two hours! It took all the Myarc 512 plus all available Horizon space plus most of a floppy to get all of it. Are you interested in dogs? Which breed? There is a list for you! A list for almost every conceivable interest! It took several more hours with Funnelweb to edit the 7,500 down to about 150 lists that might have some interest to me or my friends.

Several of those 150 looked really interesting, so I picked out one in my professional field and sent an e-mail message saying SUBSCRIBE, as instructed. In the next three days there were more than 350 e-mail postings to my address and they must have averaged two typed pages each. Most were amateurs holding forth without limitations — if they felt like saying something, they did so, and at length. My Delphi mailbox began to fill up with much more than I had time to read. How to stop it? Easy! Just send e-mail, RESIGN, and they quit sending.

There was one big plus from the experience — a friend from 40 years back was author of one of the first messages and that has led to a pleasant renewed contact via private e-mail. You never know who you will meet!

Finally, how does the TI99/4A perform on the Internet? Plenty well enough to be fun and valuable. Anything that is in plain English, ASCII text, or TI program files can be handled. The whole ocean of material that can be found through gopher and its helpers is right there for the taking. Thousands of interest groups, some matching your interests, are just waiting for you to join them. Windows, a really fast modem, and a few megs of memory, for instance, would add capabilities that we do not have. Thank you, but *no!* My own little sailboat is more fun.

Reprinted from TIT BITS, Perth, Australia

Originally from Micropendium

PC99 Stage 3A released

Emulator upgrade includes host of new utilities

CaDD Electronics has released PC99 Stage 3A, an upgrade to PC99 Stage 3. PC99 is a TI99/4A emulator for an IBM or compatible computer. In addition to all features available in previous stages, the new release includes, according to the manufacturer:

- Mini-Screen trace: Allows the user to save events (for example, the last value of the program counter) to a "trace stack" and recall them. The contents of any address or register can also be traced.
- Mini-Screen instruction stack: A scrolling stack displays the last 100 instructions.
- Speech Synthesizer support: The TI Speech Synthesizer ROM is included. PC99 will execute all speech functions, such as CALL SPGET and CALL SAY in TI Extended BASIC, or OPEN:#1:"SPEECH" using Terminal Emulator II, and return the correct values. Users can also run modules, such as Early Reading, and games, such as Lasso, that require the Speech Synthesizer; however, no audible speech is produced.
- Sprites: In both PC99A.EXE and PC99L.EXE, sprites no longer "flash."
- DSKDIR.EXE: Can display a disk sector map showing which sectors are used. The switches have been modified to allow for greater flexibility in outputs.
- CFG.EXE: This is now a 32-bit protected mode program, with minor changes to the menus and help screens. The user can specify an overlay file. This file can contain the text in the plastic overlay strips used with the 99/4A console. The text can be displayed to the right of the PC99 screen. If the user changes a joystick, the joystick calibration values are retained and may be reused instead of calibrating the joystick. Joystick calibration also requires the user to press Enter between stick movements to prevent "button fall-through." The joystick section also contains a test allowing the user to check calibration.

New utilities include:

- ART.EXE, which will display TI-Artist files in DOS and can be used to create a "slide show."
- DSKFIND.EXE, which will find a disk manager filename using a wild card selection of disk files.
- DLCONV.EXE, which allows the user to download files from a BBS with a TI FILES header and import them into a .DSK file using DSKIN EXE.
- SPDUMP.EXE, which allows the user to dump the index of the Speech Synthesizer ROM and locate speech strings.
- SPCODE.EXE, which breaks down words and phrases from the Speech Synthesizer ROM into their linear predictive coding (LPC) elements.

The manufacturer says it has fixed bugs in DSKDIR.EXE, which sometimes showed the wrong file date when displaying a p-System catalog; in DSKOUTP.EXE, which no longer shows "garbage" at the end of an incorrectly extracted p-System file on side 2 of the disk, since the program now uses the last block character count; and in PC99A.EXE and PC99L.EXE, in which the BLWP instruction did not force an address to an even value. The error was found in Disk+Aid when doing a search. The cursor would become an = character, preventing text entry.

A Stage 3A upgrade is \$7 if CaDD supplies the disk, \$5 with the return of the Stage 3 disk. The upgrade plus two "new purchaser" disks, which allows installation of Stage 3A from scratch, is \$10 if CaDD supplies the disks, \$8 with the return of the Stage 3 disk. Users should specify 3.5-inch or 5.25-inch disks. Prices include shipping and handling to any country.

For further information, or to order, contact CaDD Electronics, 45 Centerville Dr., Salem, NH 03079-2674, or phone (603) 895-0119 or (603) 893-1450.



A simple printer trick

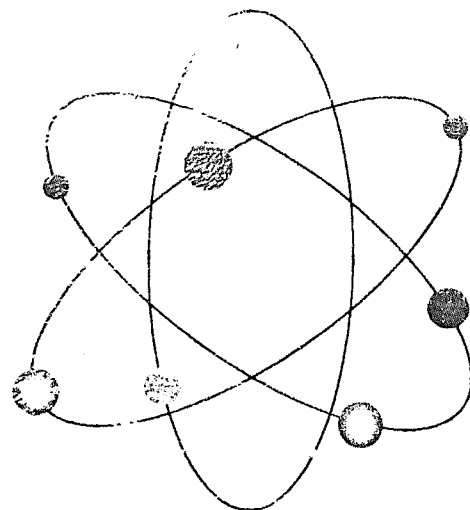
The following, which has been edited to fit, was written by Jack Sughrue and appeared in various user group newsletters.—Ed.

I was up early one Thanksgiving Day on my computer, trying to debug a lengthy program I had typed in from a magazine. The program was printed 40 columns wide. My screen view was 28 columns, so my printed out version was 80 columns. I OLDED up the program and entered this one liner with my trusty Gemini terminal on:

```
OPEN #1:"PIO" : PRINT #1:CHR$(27);CHR$(81);CHR$(40)
```

Then I entered LIST "PIO" and, voila, my printout was exactly as the printout in the magazine. I could quickly check all the line endings to see if they matched. I had the program debugged within a half hour.

People I've shared this with have felt the same way. It was basically a matter of looking through my printer manual and noticing the right margin code: 81. The rest is self-explanatory. I've also used this for printing 28-column program listings for use in newsletters and articles.



Booting your Geneve from a Horizon RAMdisk

By JACK MATHIS

This is reprinted from the January 1995 newsletter of the SouthWest Ninety-Niners.—Ed.

So you say you've tried FORM3MEG by Jim Schroeder and you still cannot "boot" your Geneve! You can get your Horizon to format at the proper amount of "sectors" but you cannot get it to load the "SYSTEM/SYS" file? You can "look" at the disk with "Disk Utilities" or some other sector editor and "see" the file is there, but it won't "auto-load"? Well, you weren't alone!

I tried to format my HRD 4000 and Mike Doane's HRD 3000 and although they formatted to the correct size, they would not load the SYSTEM/SYS or auto-load the AUTOEXEC file. I examined the HRDs (using the late John Birdwell's Disk Utilities) and made an interesting discovery.

The "FORM3MEG" program does indeed "mark" the HRD correctly as per the correct number of sectors, but the Geneve cannot locate the file. The problem is when the Geneve is attempting to boot up the file the Geneve is unaware that every file's "starting" sector has to be multiplied depending on the size of the HRD.

The "fix" for this was simple after I dis-

covered the problem.

Physically set the Horizon CRU address to 140-0 with the dipswitches locating on the HRD. You can find the settings in your HRD manual.

Use FORM3MEG to format your HRD at CRU 1401, set as boot RAMdisk and follow the instructions to load SYSTEM/SYS. The RAMdisk is now set as DSK8.

Using Disk Utilities, go to File Utilities; select the File Report option; type SYSTEM/SYS at the prompt "File Name" (you *must* use capital letters!) and "DSK8" at the drive prompt.

Look for the sector where the FDR is located. Go to the "sector utilities" portion of the program.

Edit the FDR sector — Change byte 28 (>1C) in Hex Mode to read 00F21D.

Your system should boot from your Horizon now.

Now to make SYSTEM/SYS file boot your AUTOEXEC.

Go back to the "File Utilities" on the "SYSTEM/SYS" file and using the "replace string" option search for the following Hex code and replace the 1400 with 1401 (sets DSK6 to CRU 1401 — REMAP 6N). If you have a second HRD "addressed" at 1700, then changing the

1600 with 1701 (sets DSK7 to CRU 1701 — REMAP 7Q) allows you to access it as DSK7.

020C 1400 1014 020C 1600 1011 020C 1401 100E 020C 1601

Next, search for "DSK1.AUTOEXEC" and change it to "DSK6.AUTOEXEC"; for automatic ASSIGN of drives, search for:

"DSK1" is the "A" drive

"DSK2" is the "B" drive

"DSK3" is the "C" drive — I changed this to "HDS1"

"DSK4" is the "D" drive — I changed this to "HDS2"

(Do *not* change these drive numbers if you have more than two floppy drives.) This is equivalent to "ASSIGN C=HDS1:" in the "autoexec" file.

"DSK5" is the "E" drive — RAMdisk if called for in AUTOEXEC

"HDS1" is the "F" drive — I changed this to "DSK6"

"HDS2" is the "G" drive — I changed this to "DSK7"

"HDS3" is the "H" drive — I changed this to "DSK8"

This will enable you to boot from your HRD. This modification has worked on HRD 3000s and 4000s.

Hidden characters Using invisible characters in filenames

By STEVE PATTERSON

Patterson is listed as a member of New Horizons. MICROpendium picked up this article from the Spirit of 99 Newsletter of the Central Ohio Ninety-Niners. The newsletter thanks the TEXPAC BBS of TIsHUG.

Hidden characters is a term that I have given for the use of characters in a filename that are unable to be seen on most disk catalogs. These types of characters can be used in both programs and files but there is a huge difference. With files, if

You would want to place hidden characters only on certain files that only you want to see and that will not be updated often.

you copy the program with an Extended BASIC file copier such as my "Copier" then you can use any character ever imagined.

For program type HC I have only found one to this day, which is ASCII 127 or FCTN-V. This is the only character that is hidden and has a key-in. You can use this character at the end of a filename to make it hard for others to run the program because they cannot figure out how to spell the filename because they do not notice the last hidden character. Of course you can use more than one and they do not

have to be at the end. You could put one in the middle of the filename or you could let the entire filename be character 127. But having it at the end makes it a lot less noticeable.

Now how do you use ASCII 127 and possible ASCII 1-29 in a filename for a file? This is where you will have to have some X BASIC programming knowledge. You have to use either my program mentioned above or one of your own which you can write from scratch. Basically how to get any character at the end of a filename is to open that file in XB, then open a new file with a couple of hidden characters at the end of the filename. Then read each record of the file and save it to the new file.

So you have actually copied the file itself and in the process you have added several invisible or hidden characters at the end of the filename. With the possibility of any char from 1 to 29, only you know the characters at the end. So, say you have a filename like: "DSK1.LIST"; you can

change that normal and easy-to-read file into the almost impossible-to-open file: "DISK1.LIST"&CHR\$(2)&CHR\$(25). This portion will place an ASCII Char 2 right after the "T" in the name. It will not be seen on most catalogs but you will know what it is because you wrote the two chars down somewhere safe.

One bad thing about this is that later you cannot load this file into any program without changing it back to the normal way or by going in and changing the open statements in the program so that the hidden characters are in the filename. So you would not want to place hidden characters in a filename that is updated every day. Only on certain files that you only want to see and that will not be updated often would this be of any use.

The reason I keep saying that most catalogs will not be able to read the end characters is because I wrote one that can detect when there is a character in the file-

name that you would not normally see. For those who are not clear on the type of program that will add these hidden characters to a filename, read on.

```
100 OPEN #1:"DSK1.LIST", INPUT, DISPLAY, VARIABLE 80
110 OPEN #2:"DSK1.LIST"&CHR$(4)&CHR$(16)&CHR$(23), OUTPUT, DISPLAY, VARIABLE 30
120 IF EOF(1) THEN 160
130 INPUT #1:A$
140 PRINT #2:A$
150 GOTO 120
160 CLOSE #1
170 CLOSE #2
180 END
```

The program above will give you a copy of the file LIST with three hidden characters at the end of the file, these characters being ASCII 4,16,23. Hope you find this new and experimental process of locking up files of some use and of some help in keeping away the unwanted and unneeded.

Orphans unite!

Computer user offers plan for non-PC users

By JEFFREY WOOD

The author has recruited members on Delphi's TI-NET. — Ed.

Hi, and welcome to Ch.A.O.S. Country. Welcome to the revolution. The Cheyenne Area Orphaned Systems, or Ch.A.O.S., is a club devoted solely for the preservation of classic non-IBM systems, such as ours, and for the defeat of Microsoft. If we wanted IBM compatibility, we would have abandoned our systems long ago. Those of us who do have IBMs, but still use our classics, only bought them out of necessity, such as for work or school.

This is not a political organization. We do not hold any specific right-wing or left-wing political views. We do believe in fair competition and Microsoft is *not* fair. We spent all that time and money on our respective systems because they performed the task or tasks we bought them for. Whether it be for gaming, education, office or whatever, our classic systems performed up to our expectations, and, in some cases, beyond the original design. Why should we abandoned everything we put into our systems?

I have been working on the designs of two programs that I feel would unite all of our systems, yet retain the sovereignty or flavor of each individual system:

1. A terminal shell with game maker to allow two or more non-compatible systems to play games over the modem or in a mini-network. Of course, standard protocols will have to be set between computers to ensure game play. But, graphics between two different systems won't have to be the same because screen data won't be sent, just tiny info packets. The games would take full advantage of the graphics and sound capabilities of each individual system. The games would be played as close to real time as possible.

2. A DEVICE OPERATING SYSTEM (DOS) designed on a

bi-level format: The primary level is a whole new computer that provides cross-platform compatibility between our classic systems. The computer will be based on the Power PC. This will allow each classic system to be enhanced to that of at least a 486, without losing much compatibility with the existing systems. Full compatibility is not guaranteed because of the new enhancements to each individual operating system. But, at least you won't have to abandon your whole classic system.

The secondary level is a whole new disk operating system for the original classic. This will allow direct disk access communication between *all* systems. Yes, even IBM. Just imagine, a C64 computer operating system with 38K free RAM can now have as much as 3.75-meg free RAM on a 4-meg system. This is directly accessible without bank switching or even use as a RAMdisk. Just imagine the fresh, new applications that can be developed that retained the original C64's flavor. No, this is not limited to the C64, but to all classic systems, such as the Atari, Tandy CoCo, VIC20, Apple and the TI.

All of our classic systems have their own uniqueness, their own distinctiveness. That is why we refused to follow the industry or marketing trends. This would allow us to preserve our systems and at the same time develop a cross-platform industry standard. Who says we have to follow the Microsoft standard? Let's follow a standard, sure, but we should also be allowed to keep our systems we have devoted so much time and energy into.

For more information, write Cheyenne Area Orphaned Systems, c/o Jeffrey Wood, 813 Covered Wagon Dr., Cheyenne, WY 82007-1671.

Chicago TI Faire

New card from Germany boosts TI speed 6 times

By GARY W. COX

The 13th annual Chicago TI Faire has now come and gone. This year's faire was held at the Evanston Public Library in Evanston, Illinois, which is a suburb of Chicago. The weather this year, as is usual, was wet as vendors carted equipment into the library. Some problems with both Holiday Inn and the library slightly dampened the event but these problems were out of the control of the Chicago TI UG. However, the library meeting room was plenty large and the seminar room very close which made for a good event. It was also really good to see all the hard core Tiers once again!

Attendance to the faire this year was about the same as last year's event but vendor attendance was down. Scheduled to have tables were many different user groups, many of which didn't show, and a few regular vendors were noticeably absent.

Despite a few missing vendors many new products were released at the Faire. Those coming into the faire were given a special event newsletter as well as a free copy of an electronics/computer/ham radio magazine called *Nuts & Volts* which was used for some of the advertising for the Faire.

New from Cecure Electronics was a very neat program called TI BAR CODE written by William F.S. Dowling. TI BAR CODE will run on a TI99/4A or Geneve in Extended BASIC. This program produces the bar codes used by the post office in routing your mail! Thus, with the ability to create the same bar code that the post office creates to route mail, already having that bar code on the letter saves the post office one step! You may have not noticed this bar code before but take a look at some of your mail and often you will see a bar code printed on it somewhere below the address. A computer at the post office scans this bar code to determine the destination of a letter thus elimi-

nating the necessity of a human having to do the routing by hand. This program sells for \$15. I commend William Dowling for a job well done writing a complicated program to produce these bar codes! Don Walden of Cecure Electronics also had clock cards available for the 4A for only \$34. Don also was selling a neat device which splits off the audio from the 4A console to where head phones can be connected, thus allowing one to listen to the sounds from the 4A privately. Also remember Cecure Electronics is an authorized repair center for all TI99/4A, CC40 and Myarc products but can often repair some third party products as well.



Charles Good demonstrates Term 80 at the fair.
(Photo by Gary Cox)

Ada and Ron Markus of Ramcharged Computers had several tables of mostly software and some hardware such as the Asgard Mouse. Recently Ramcharged Computers purchased the remaining stock of Asgard Software which was on display and updates to some of the programs are expected in the near future. New for the faire was a neat Tunnels of Doom game called Hall of Lost Moria which sold for only \$4.95! Also new was a version of Clippix called Clippix Plus which is written for systems with an 80-column card. An announcement of other new products for Ramcharged Computers is expected soon!

Bud Mills of Bud Mills Services was giving out EPROMS for the SCSI (small computer systems interface) cards! On a Geneve and using MDOS 4.0 any SCSI hard drive can be used. At this time CD-

ROMs are limited to just playing music with the current version. Version 4.01 of MDOS, expected to be released soon, will provide floppy drive and ZIP drive support! On a TI99/4A the SCSI EPROM is still in the beta test stages but in its current version it will still control a SCSI hard drive. The hard drive can be accessed in the same manner as any other device such as typing "OLD SCSI" the same as using "OLD CSI"; Bud also had his assortment of the usual Horizon RAMdisks!

Berry Harmsen of the Dutch TI Users Group in Amsterdam, The Netherlands, had a really neat new device which plugs into the PEB and replaces the TI99/4A console GROM 0-3. With this GROM card in place and some modifications to the TI console the TI99/4A will run six times faster! The card, which was produced by Michael Becker and Gerd Weissmann in Germany is not yet available in the USA. However, you can write to them if you wish by writing Gerd Weissmann, Königstr. 17-19, D-67655 Kaiserslautern, Germany or Michael Becker, Diedesfelder St. 12, D-68309 Mannheim, Germany. Perhaps one of the TI vendors in the USA can pick up on this new card?

Mike Wright of CADD Electronics was present showing a prerelease version of PC99 (TI Emulator for PCs) version 3a. This new version included upgrades in some of the utilities such as a "disk find" search for any TI file on disk" and an artist utility which can display TI-Artist files. An overlay function was also added to PC99 as since an overlay can't be placed on a PC keyboard like on a TI99/4A the function keys to obtain the functions of the overlay on a PC are displayed on the screen. Another feature added was a TRACE function to trace the progress of events as the system runs. Mike also recently obtained permission from Texas Instruments to release all of TI's disk-based programs (like the ones with the brown label) and already has permission for the cartridge-based programs. He also can

now provide the documentation for many of the programs on a PC disk with a special viewer to view it showing the manual in color with graphics; thus, the manuals are displayed in their original format rather than a text-only conversion. Those who have purchased PC99 will be receiving update information in the mail when the latest version is released.

Ricky Bottoms of RBD Enterprises had an assortment of equipment and cartridges for sale including TI modulators, various PEB cards and keyboards.

Bob Retzler of JOA Midwest had a huge assortment of mostly PC CD ROMs for sale including games, utilities and programs.

As for the user groups, the Chicago TI Users Group represented at the table by Victor Steerup and Dave Connery had the user group library as well as an interesting 3D display on a TI99/4A. Victor had a console setup running TIM (80 column device) connected to some electronic 3D glasses which are in turn connected to the video output of the console. Therefore, when using these glasses and viewing images written in 3D graphics format, the images appear to our eyes to be in 3D! Also available at the Chicago TIUG table was a new assembly language poker game by Marcel's Software with assistance from Bruce Harrison.

Charles Good of the Lima TI User Group had a system set up where any program from Jim Peterson's library could be copied. He also had copies of the demo version of TERM 80 and RXB (Rich Extended BASIC).

William Lucid of the Hoosier Users Group (assisted by Jeff White) had a variety of publications available. Michael Mickelsen of The Windy City TI User Group had a variety of hardware and software for sale. The Milwaukee Area Users Group also representing Arcade Action Software had a variety of hardware and software including some CC40 items. Peter Kraus of the Will County TI users group had a variety of hardware and software as well for sale! The Mid-South (Memphis) TI users group, of which I am president, had a table with a variety of hardware and software for sale, including a Geneva. While some other groups didn't have tables, representatives of several other user groups were present at the faire. Then last but not least John Koloen of MICROpendium was present and had free

copies of MICROpendium available for everyone. If I have left anything or anyone out I must apologize but I hope John Koloen will cover in his article what I missed in this article.

I would like to thank Hal Shanafield (Faire Chairman) and the Chicago TI Users Group for all the hard work that they put into getting this event together as I really had a good time! Thanks again Hal!

If at all possible please try to attend a TI faire and support the vendors. Other fairs coming up include the Fest West Feb. 17 in Tucson, Arizona, and the Multi Users Group Conference May

25 in Cleveland, Ohio. Berry Harmsen of the Dutch TI users group mentioned that a TI Faire is planned for Germany and I hope that information will be in MICROpendium as soon as the details arrive. The TI community depends on the support of everyone reading this article. Support the fairs, go to your local user group meetings, buy from the vendors, tell the shareware authors at least thanks for their work and last but not least continue your support for MICROpendium. Without MICROpendium the TI community would fall apart fast!

HANDY HINTS

by **Ross Mudie**.

This file contains:

PIO cable configuration.

TI99/4A PIO to CENTRONICS CABLE

PIO	CENTRONICS	PIO PLUG
1	1	BACK VIEW
2	2	2 _____ 16
3	3	_____
4	4	1 _____ 15
5	5	
6	6	_____
7	7	CABLE
8	8	_____
9	9	16 WAY
10	11	_____
11	19	_____
12	N/C	
13	N/C	19 _____ 36
14	N/C	BACK VIEW
15	N/C	1 _____ 18
16	20	

CENTRONICS PLUG

Note: N/C connections are cut off at centronics plug.

Hardware project

Keeping the TI working

By JERRY KEISLER

The following article appeared in the Ozark 99er News. As usual with hardware projects, the individual user assumes all risk in applying these instructions.—Ed.

I go through about one keyboard each year. My father also went through one keyboard a year. I used to just replace the keyboards, but they are getting scarce. I now try to repair them.

I understand there were six different keyboards made. Failure modes include keys that always repeat when hit and keys that quit working.

I have fixed the keyboard with NI-TEK 100511D on the printed circuit board keyboard several times. This one is easy, just pop the top off the offending key and you will see two gold-plated contacts. I use a piece of brown paper bag as a burnishing tool. Cut a strip of paper bag about one-eighth inch by one inch. Place it between the contacts. Depress the key and work the paper up and down several times. Then remove the paper and replace the cap on the key. This fix has worked for over six months at a time.

For those made in Japan — date code KCCBA082 — the keyboard is a little harder to fix. First, you need two of these keyboards. If you do not know how to desolder and remove printed circuit parts, forget it. You will have to partially dismantle the TI to replace keyboards. The first round, just replace the keyboard and mark the offending key on the back of the old keyboard.

The second time around requires the removal of the keyboard. Desolder the offending key. Desolder a good key from the keyboard you saved from the first round.

You did save the keyboard, didn't you? Desolder one of the good keys. I usually go for the Z, Y, B, +, and - keys for my first choice.

Now remove the desoldered keys from both keyboards. This requires three hands, or long-nose pliers and a good crow bar. Remove the cap from the desoldered keys. There are spring-loaded tabs on each side of the key. Gently press them toward the center of the key. This is a good use of your long-nose pliers, not electrical long-nose pliers, the real small ones used by electronics technicians.

While holding the spring, press the key up and out of the board. You will have to slide a knife between the key and board to do this. If the key does not come out easily, wiggle the terminals you desoldered to make sure they are free and repeat with the pliers and knife. Once both keys are removed, line up the solder terminals of the good key with the holes in the board and pop the good key in the slot of the defective key. Resolder the terminals. Place the cap of the defective key on the new one.

Good luck with keyboard repair.

CONSOLE CONNECTOR REPAIR

The other complaint I had with my TI was the firehose connector on the side. When that thing wears out, I seem to get computer lockups every couple days. If speech is installed, it is twice as bad.

My fix to correct this to like-new condition follows:

You will need to dismantle the computer down to the board with all the chips on it. This board is the computer. The metal shield must go also. If you have not gone this far before, stop here. I don't think you want to try this.

The edge of this board that the firehose plugs into has solder pads on the top and bottom that mate with the firehose. These pads are normally badly grooved. With a small soldering iron (about 20 watts) and a clean cotton rag, I proceed to heat each pad and wipe the solder off. Wipe the solder away from the computer board. Do not let any solder splatter on the board.

If there are any black grooves left on a pad, remove the black. I do this by lightly scraping the groove with the point of a small pen knife. Here is where I may part company with a lot of techs. I clean the pads with a fine emery cloth. I'm told emery can short-circuit your computer.

Using the 20-watt soldering iron and some thin multi-resin core solder, I heat each pad and place a thin layer of solder on the pad. If you get too much solder on a pad, remove it and try again. If the diameter of the solder is too large, it will be had to do this.

When all pads have a new solder layer of about the same thickness of the original board (using the eyeball method), I clean the new pads with a clean cotton cloth. Then I spray the pads with a good tuner cleaner and connect and disconnect the firehose several times to clean it.

If everything looks good, reassemble the computer in the reverse order that it was dismantled.

I have fixed three computers this way, and they have all provided several more years of trouble-free service. You could do the same thing with the speech synthesizer. However, I would not do any of this without a spare computer, just in case things don't work out.

How many Englishmen does it take to screw in a light bulb?

What do you mean change it? It's a perfectly good bloody bulb! We have had it for a thousand years and it has worked just *fine*.

How many Germans does it take to screw in a light bulb?

1. Ve are asking ze qvestions here!

Clocking The Groms

by Lou Amadio
Illawarra Regional Group

During the Christmas break Geoff Trott and I carried out an interesting experiment at the Wollongong University. We wanted to see how far we could push the GROM clock in frequency before the console refused to work. Amongst other things, we were hoping to show some improvement in speed with TI BASIC / XBASIC and GROM modules.


TI conveniently provided a link on the motherboard for isolating the clock line to the system GROMS. We lifted this link and injected a clock signal from an external signal generator.

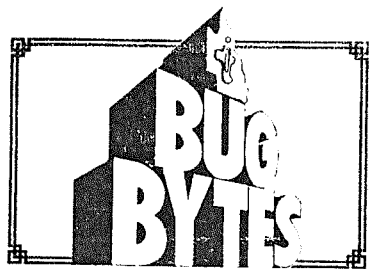
The specification for the GROM clock frequency is approximately 440 kHz to 480 kHz. The console that we were experimenting with had a clock rate of 448 kHz - 480 kHz at the lower end of the range.

The experiment was carried out by switching the console off, adjusting the frequency on the generator and then switching the console back on again. We were amazed to find that we could reliably run the GROMS at up to three times their normal speed (1.3 Mhz). There was no abnormal overheating of any chips on the motherboard and the console ran quite happily at the maximum GROM clock speed. The only peculiarity that we noticed was a change in pitch in the reset tone.

Did it make any difference to the speed of the console? In a word, no. We ran a BASIC program which changed the screen colours and carried out some mathematical calculations but the results with and without the clock modification were very similar.

The bottleneck in speed must therefore be in a different area. We welcome any ideas on this subject.

END OF ARTICLE 



Heaviest Element Discovered

The heaviest element known to science was recently discovered at the Lawrence Livermore National Laboratory. The element, tentatively named Administratium (Ad), has no protons or electrons, thus it has atomic number 0. It does, however, have one neutron, 75 associate neutrons, 125 deputy associate neutrons, and 111 assistant deputy associate neutrons. This gives it an atomic mass of 312. The 312 particles are held together in the nucleus by a force that involves the continuous exchange of meson-like particles called memo-ns.

Because it has no electrons, Administratium is inert. Nevertheless, it can be detected chemically because it seems to impede every reaction in which it takes part. According to Dr. M. Langour, one of the discoverers of the element, a very small amount of Administratium made one reaction that normally takes less than a second take over four days to go to completion.

Administratium has a half-life of approximately 3 years, at which time it does not actually decay. Instead, it undergoes an internal reorganization in which associates to the neutron, deputy associates to the neutron, and assistant deputy associates to the neutron all exchange places. Some studies have indicated that the atomic mass actually increases after each reorganization.

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