

# CoCo ~ 123



Glenside Color Computer Club, Inc.  
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Carpentersville, Illinois  
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## CoCo ~123 HighLights

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### G.C.C.C. Inc. OFFICERS

Here is the list of 1999 club officers and how to contact them.  
If you have questions about our club, call one of the officers  
for the answers.

<u>POSITION</u>	<u>NAME</u>	<u>PHONE</u>	<u>PRIMARY FUNCTION</u>
President:	Howard Luckey	708-749-5320	The buck stops here
V. Pres.:	Justin Wagner	630-393-7072	Co-ordination
V. Pres.:	Scott Montgomery	773-282-6044	Navigation
V. Pres.:	Brian Goers	708-754-4921	Special Events
Treasurer:	George Schneeweiss	815-832-5571	Dues and Purchasing
Secretary:	Tony Podraza	847-428-3576	Recording/reporting



Howard Luckey



Justin Wagner



Scott Montgomery



George Schneeweiss



Brian Goers



Tony Podraza

## CoCo ~ 123 INFORMATION

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The CoCo ~123 is the newsletter of the Glenside Color Computer Club. Your annual contribution of \$15.00 keeps our club going. Send your check to Glenside Treasurer:

**George L Schneeweiss**  
13450 N 2700 E Road  
Forrest IL 61741-9629

Our treasury provides newsletters, local meeting room and good times with fellow CoCo users at our annual Chicago CoCoFEST! Other member benefits include: Sam's Club eligibility; CoCo community supplier discounts; access to club archives; notification of community events (the CoCoFEST!s); and friendly fellowship.

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## CoCo ~123 CONTRIBUTIONS

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If you have any suggestions for the newsletter or would like to submit an article, please contact the CoCo ~123 Editors:

**Howard Luckey**  
4 Gibson Rd  
Park Forest IL 60466-2122

**Tony Podraza**  
119 Adobe Circle  
Carpentersville, IL 60110  
[tonypodraza@juno.com](mailto:tonypodraza@juno.com)

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## CONTRIBUTORS TO THIS ISSUE

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**Howard Luckey---Robert Gault---Tony Podraza---Garry Spencer---Marty Goodman---Brian Heath  
Mike Knudsen--George Schneeweiss---Bob Swoger**

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## G. C. C. C. MEETINGS

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The Glenside Color Computer Club meets the second Thursday of each month at the Schaumburg Public Library at 7:30 p.m. A social get-together always occurs at nearby restaurant. If you need a map, see our WWW Glenside Homepage at:

<http://members.aol.com/clubbbs/glenside>

Bob Swoger, Webmaster  
Glenside Color Computer Club, Inc.

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### FROM THE PRESIDENT'S DISK

Hi, folks. My name is Howard Luckey and I am the new president of the Glenside CoCo Club. Thank you, Brian, for the work you have done for the club over the last few years. At the meeting for nominations I was the second choice for the job after no one jumped up and yelled, "I want to be president."

The Last 'Last' CoCo Fest is over and it turned out well even without a lot of attendees. As Bob Swoger said, "There was a wonderful spirit."

As a CoCo user I have always been impressed by the amount of activity that goes on in the community. When I bought my first CoCo back in the eighties I did it because I thought computers were a powerful technological force for social change. This thought was related to an introductory sociology course I was teaching at the time. In that course I emphasized social cultural evolution, the idea that of all the forces for social change the most important and most powerful was and is technology. When a significant technology is introduced into a society what people do will change, how people do things will change, ideas and beliefs will change, and so forth. Examples include: control of fire, the bow and arrow, ----- the automobile, the computer, etc. (Based on an idea of K. Marx, the discount philosopher.)

Computers had been around for awhile and I began to think I should get to know more about them. At the time, after shopping around, I found the CoCo at a price I thought I could afford, and since I only want to learn a little bit about how computers work and I wasn't planning on using them big time I bought one.

Oh foolish me, I discovered I wanted to have disk drives, to have a better monitor than a TV, etc until over the years I have spent thousands of dollars on the CoCo and other computers. At the time I also discovered computer magazines, CoCo and otherwise, discovered computer groups, my first was the Cook County Color Computer Club and when that died the Glenside Color Computer Club, The OS9 users group, both local and national, and since then the Chicago Commuter Society.

Also, I began to learn about all the things people in the CoCo community were doing as far as hardware and software development. Such work continues today when I read items on the *listserver.coco*, such as the IDE project, now coming to a close, and Mark Marlette's 2MB superboard, and others.

The following is from Brian's last column:

"I would like to start another column dealing with robotics and hardware, so if there are any topics in this area that you would like to know about let me know. Better yet we can have contributing writers. It may make me write this column more frequently, the newsletter editor would like to not need to remind me to write my column."

"As a note the next show is already being organized. So stay tuned in. And I'll see you at the show."

I second that motion. Please take a moment to contribute to the newsletter.

Until the next newsletter keep the CoCos running.  
Howard Luckey  
President, Glenside Color Computer Club

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### The Secretary's Notebook

Minutes GCCCI

April 20, 2001

Members present: Brian Goers; Brother Jeremy; Justin Wagner; George Schneeweiss; Scott Montgomery; Tony Podraza

Called to order: 20:01

#### Old Business:

##### Upcoming CoCoFEST!

Confirmed: T-shirts to be marketed by FWD Enterprises; Glenside to provide the artwork  
David Kiel to present his emulator through the auspices of GCCCI

Cancel the flipchart; Brian Goers will bring his

The Saturday night Family dinner will be held in the Ramada Inn Restaurant, again. It went over well, last year.

Brian Goers will try to get his lead article turned in by April 27<sup>th</sup> for inclusion in the newsletter/ show issue.

#### New Business:

Brian Goers to Co-ordinate the 2002 CoCoFEST!

Location: Halstead & I80, also a Ramada Inn (at this time)

Treasurer's report was accepted as read.

The question of Buttons came up. John Chasteen to be called. With his new schedule, it is doubtful that he will be able to provide them as in the past.

Should we have new member packets as in the past? Discussion lead to scrapping that idea to having an open "grab-bag" form the club inventory.

## ELECTIONS

The results are as follows:

President:	Howard Luckey
Vice President:	Justin Wagner
Vice President:	Scott Montgomery
Vice President, Special Events:	Brian Goers
Treasurer:	George Schneeweiss
Secretary:	Tony Podraza

The Illinois Secretary of State form was filled out reflecting the newly elected officers. George Schneeweiss will mail the form.

The meeting adjourned @ 21:05 with no blood shed and the participants retired to Santé's restaurant where the Epicureanistic Delights began.

Submitted by Tony Podraza

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**May 05, 2001**

Howard called the meeting to order at 7:45 PM at the Schaumburg Township District Library. Present were Brian Goers - VP special events, Bob Swoger, Eddie Kuns, Brother Jeremy, Howard Luckey and Tony Podraza.

Co-secretary Tony Podraza read the minutes of the April 20 meeting which were amended and passed.

An Executive session was declared to discuss the status of the IDE Project.

Tony will put together an article describing the steps necessary to get on the Internet-based CoCo List.

A discussion of appointing Scott Montgomery as registered agent instead of Bair took place. For the moment, Rich Bair will remain the agent.

The following is a summary of the 10<sup>th</sup> Annual "Last" CoCoFEST! results given at the meeting: There were approximately 50 attendees. Regarding the financial status, the event closed pretty close to black, thanks to Mr. Don Adams, who donated somewhere around 60 totes of computer equipment and software & publications to the club. The size of the donation was so big, that the executive board would not have time to sort out the totes prior to an auction, so the totes were offered to the attendees at \$10.00 a tote, as is. There were some real deals to be had. Without Don's gracious gift, the FEST! Just might have been a bust. (Thank you, Don) By the way, Don was also the person responsible for the donation of the lunches on the Sunday of CoCoFEST! 2000, last year.

Attendees came from as far away as Virginia, North Carolina, New York, Minnesota, Texas, Saskatoon, & California. If your location was left out, sorry.

Two new members joined Glenside.

The unofficial receipts amounted to \$1277.00. As you can see, this thing is not a money maker for the club.

The concept of a different location was approved by the exhibitors, should it prove more economical.

The overall consensus of this year's show was that the food was fine, but the Saturday night music and sing along was short. A little more music, professor, if you will.

Next year's target date for the FEST! Should be 2 or 3 weeks around Mother's Day (but not on).

A thank you letter to Don Adams and the Delco Electronics Computer Club for their donation, as well as newsletter recognition, is to be drafted.

The meeting adjourned at 8:56 p.m. We retired to the Santé Restaurant just west of Roselle Road on Higgins Road to finish another good meeting.

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Minutes for June, 2001; Glenside Color Computer Club, Inc.

The meeting called to order at 8:12:02 PM by the sounding of the official electronic gavel by President Howard Luckey. Brother Jeremy moved that the reading of the previous month's minutes be dispensed with as there was not a copy of the minutes at the meeting.

Tony Podraza reported that a couple more checks from the CoCoFEST! Would be making their way into the treasury. One more T-shirt had been sold (to Rob Gibbons, in Florida) and a couple of errant checks surfaced.

A number of newsletters have been returned due to people moving, etc., and the database has been updated.

Brian Goers is continuing to check out more locations for the 2002 CoCoFEST! on the southern tip of Chicagoland. (Talk about the name changes that the Holiday Inn of Elgin has gone through! HAH! When Brian started to scope out the locations, he gathered information from a Ramada Inn and a Best Western. The Ramada Inn is now a Day's Inn and the Ramada Chain has bought the Best Western.) The room rates appear to be similar to Elgin location's, \$69.00 and up. Possible dates for he 2002 FEST! Look like April 27<sup>th</sup> & 28<sup>th</sup>, May 4<sup>th</sup> & 5<sup>th</sup>, or May 18<sup>th</sup> & 19<sup>th</sup>. (As a backup location, the dates and rates will be inquired of the Ramada Inn of Elgin.)

A discussion ensued regarding the invitation to other "classic" computer users. Mentioned were: Timex, Commodore, Amiga, Apple, Adam, Atari, & Macintosh. No final decision was made, but a general feeling against the suggestion was in the air.

A brief executive session was held regarding the IDE Project. The general consensus of the session leaned toward contacting the principal party to offer any aid we could to bring the first stage of the project to a successful closure.

The business meeting was closed at 9:15PM.

Submitted by Tony Podraza

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Minutes for July, 2001; Glenside Color Computer Club, Inc.

The business portion of the Glenside Color Computer Club, Inc., was called to order at 7:43 PM.

President Howard Luckey read the letter that was the result of June's executive session. The letter was approved by all and would be sent at the earliest possible mailing.

Brian Goers will be checking further into possible CoCoFEST! sites for 2002. Added to the list was the Harvey Inn & Conference Center.

The notation to the CoCoFEST! 2001 financial record was made that the club needs to forward \$25 to Don Yehling for an oscilloscope that was sold at the FEST!

A topic for discussion was entered into regarding the utilization of a number of '486 machines that Bob Swoger has in storage. The computers could be loaded with the David Keil CoCo emulator and distributed. No other software would be included. Talk about a good use for a '486!!!!

The Annual Glenside PiqueNique will again be held at George Schneeweiss' on Saturday the 15<sup>th</sup> of September. If you haven't been to George's, you haven't been. Be ready to pick your jaw up off the ground. See the last pages of this issue for a map.

A request has been made of the Club. An attendee of the CoCoFEST!, John Linville, acquired an MM/1 and needs a set of boot disks. Tony will try to come up with a set and/or contact Bill Beisert, of Carpentersville, to see if he can supply a set.

The Treasurer's report was accepted as read.

Members present were: Howard Luckey; Bob Swoger; Justin Wagner; George Schneeweiss; Brian Goers; Tony Podraza; Scott Montgomery; and Brother Jeremy.

Notes taken by Bob Swoger and typed by Tony Podraza

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## **Data streams from the CoCoLIST**

### **Desoldering the 6809**

Robert Sherwood asked:

What's the most efficient and least destructive method of removing the CPU from the CoCo motherboard? I've been working on it with Radio Shack's desolder braid for over an hour today and it's still holding tight.

I suppose I could resort to cutting the thing out with a Dremel cutting wheel, but I'd prefer to keep the chip operational if at all possible.

Thanks in advance

--Robert

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### **Garry Spencer replied with:**

Greetings Robert -

I have had the best results using the Radio Shack solder sucking iron instead of using the bulb, which I found awkward. I hooked it to the intake side of a small air compressor. By running the power cord through a heavy duty momentary contact switch, I can turn it on with my foot and it only runs when I need a vacuum. I use a dental pick modified to a semi circle cross section. After the solder is sucked out, it leaves the pin still attached at the edges. Sliding the pick along side the leg of the chip and twisting slightly loosens it and, after doing all the legs, the chip virtually falls out. Then replace it with a socket.

Good Luck,

Garry

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### **Marty Goodman replied with this:**

Robert asked:

"What's the most efficient and least destructive method of removing the CPU from the CoCo motherboard? I've been working on it with Radio Shack's desolder braid for over an hour today and it's still holding tight. I suppose I could resort to cutting the thing out with a Dremel cutting wheel, but I'd prefer to keep the chip operational if at all possible."

First of all, if you never have done something like this... which seems implied by the question and the comment that solder removal braid was the first thing used... DON'T do it, unless you want trouble. That would be my first bit of advice. Get someone who knows what they are doing, and who has proper tools, to do it for you.

Second, the question is rather vague: Critical to any question about removing a chip from a board is the issue of whether you care only about getting the chip out intact, or whether

you care about keeping the board intact, or both. The technique you use will vary significantly depending on your goals.

I've removed a dozen or more CoCo 3 CPU chips, and replaced them with sockets (several of my CoCo 3's and one of my Multipak Interfaces have ALL chips removed and socketed). There are a number of good techniques... I'm happy with mine, others are happy with theirs. NONE of these techniques, as far as I know, involve solder braid.

If I want to remove a chip intact AND have the board intact, I use a high quality solder sucker with a soldering iron to remove as much solder as possible from around each pin. This technique takes some practice and experience. I often ADD a little solder to the pin and hole before sucking it out. I try to wiggle the pin a little just as it's cooling, to break solder bridges. After THOROUGHLY sucking out all solder, I can get (including especially the pin(s) in the ground and power holes, which tend to be hardest to desolder), and being able to visibly see most pins surrounded by air in their holes (or mostly surrounded by air), I put the board in a vise and apply a paint removing heat gun on high to the area of the chip. VERY VERY VERY carefully, at JUST the right distance, with JUST the right amount of gentle waving of the gun around. While holding the chip in IC removing jaws and putting a gentle tug on it JUST as the solder remaining gets a little tacky, the chip lifts out, leaving the board utterly uninjured. I often then have to suck remaining solder from some of the holes left by the removed chip. Using the paint removing heat gun it's VERY easy to screw up and burn parts

-Marty

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Brian Heath added this:

If you're using solder wick, also use Patience and Care. Difficult pins can sometimes be made easier by softening the solder and moving the pin slightly with a probe before using the solder wick. PRACTICE ON SOMETHING ELSE until you've got the technique for wicking solder down. It's not as straightforward as it might seem. You need good thermal conductivity, which sometimes means adding a small amount of solder between the wick and the solder joint. You need to be very careful not to overheat either the board or the chip, or to reheat them too many times, this means that you need to develop a sure and quick touch. Even so, some pins will be difficult. Work on each pin individually, if your doing it right most of them will have only a thin bridge of solder remaining. This can be broken by gentle pressure with the probe on the end of the pin (not while it's molten). A few will come clean with little effort. A few will be a real pain, the wick just won't seem to work on them. If you can get the number of difficult ones down to two or three you can work the chip out a little at a time by softening first one and then the other(s) while lifting the chip with that irreplaceable probe.

Alternatively there are (or used to be) various types of vacuum assist devices that will suck the molten solder out. While these also require some practice to learn how to use correctly, good results are easier to achieve and happen somewhat more consistently. The problem here is telling the difference between something that works well enough to be useful and cheap junk (commercial systems can be very expensive, although there are

reasonably priced systems that are perfectly adequate for short-term and/or infrequent use).

It can be done with solder braid, but make sure you learn how before trying it on something irreplaceable.

Brett K. Heath

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### VIEWING the HBUFF

From: Robert Gault <robert.gault@ATT.NET>

Here is some undocumented information on the HBUFF command. HBUFF 0 instructs Basic to clear all Hbuffers. The number of the first HBUFF is 1. Basic should give a redimention error with multiple entries for the same buffer, ex. HBUFF1,2: HBUFF1,100, but it does not generate any errors.

Here is a bit of code which I used to examine the buffer space.

```
1 FOR M=&H68000 TO &H68030: LPOKE M,&HFF: NEXT
2 GOSUB 10
3 HBUFF1,2: HBUFF2,3: HBUFF3,4
10 FOR M=&H68000 TO &H68030: PRINT HEX$(LPEEK(M))" ";: NEXT
```

When this is run, the HBUFF region is first set to \$FF, then three buffers are reserved, and finally the data in the buffers is displayed.

The first two bytes of the buffer space are always \$FFFF. This was not expected and does not make much sense. What was found is shown below.

Byte Data

```
0,1 $FFFF
2 1 this is buffer #1
3,4 $0002 size of buffer
5,6 $FFFF data previously LPOKEd into the buffer
7,8 $C00F start of next or third buffer
9 2; buffer #2
$A,$B$0003 size of buffer
$C-$E$FFFFFF junk data
$F,$10 $0000 indicates that there are no more buffers assigned
$11 3; buffer #3
$12,$13 $FFFF junk data
```

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### TYPOS or ...?

By Mike Knudsen

Ya know, I don't think I've ever said this out loud before, but I REALLY LIKED the Chiclet keyboard! I got my first Coco in late 1983, a silver-gray case with 16K RAM and Extended Basic, and the chiclet keyboard.



As a touch typist, I liked the way the dead space between keys gave you some leeway for hitting a key off-center. A "real" keyboard has the keys close enough so that a bad hit tends to "smear" into the adjacent key and get you both characters.

Yes the center spacing on the chiclet keys was the same as a standard keyboard, so I could type without looking. And the chiclets had nice tactile feedback -- you knew when one had been depressed hard enough.

Tandy's first "standard" keyboard had mushroom-shaped keys, felt terrible, and had no tactile feedback. It got better after that. But I still sort of miss that chiclet keyboard.

BTW, put a Puppo adapter and PC keyboard on my Coco3 almost as soon as I got it, to get the extra key codes for typing C programs. I found that "smearing" two keys will confuse the Puppo into sending some strange key codes. These used to make CompuServe and Delphi drop the phone connection on me all the time. I'd be typing some email like a crazed secretary, smear two keys, and boom! Instant hang-up, long email letter to the great circular file in the sky.

And my C programs would end up with not just typos, but puppos. That's what I called 'em :-)) --Mike K.

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### **Transferring Coco Pak Software to Disk**

By Robert Gault

Most cartridge Paks for the Coco are almost completely empty. Open one up, and you will find a small circuit board about 1.5 by 2 inches, just large enough to hold a single ROM chip. The goodies are all in the software on the ROM.

These Paks developed for the Coco 1 are addressed via the cartridge port. Historically, only the Disk Basic addresses \$C000 - \$DFFF were used and the largest ROM was 8K, although 4K sized programs were common. Actually even on a Coco 1, the addresses \$C000 - \$FEFF were available, so the ROMs could be as large as 16K.

With the advent of the Coco 3, which can be set for 32K external ROM, a Pak could now be 32K and addressed from \$8000 - \$FF00. I don't know of any cartridges using this addressing scheme but there probably were some.

Greg L. Zumwalt pushed the trend for larger ROMs to the economic limit with a 64K ROM addressed as four bank switched 16K ROMs and RoboCop and Predator came to the Coco in the Super Program Pak (SPP). The SPP supported 64K by 8-bit or 128K by 8-bit ROMs. In the June, 1990 issue of Rainbow, Zumwalt promoted the SPP II designed to provide 512K by 8-bit ROMs. I believe this latter device was never marketed.

Can the software in these ROMs be transferred to a hard disk and therefore be used on an emulator, or are they doomed to be forever trapped inside a Pak? The answer depends on the manner in which the programs were coded. Copy protection schemes aside, the contents of a Pak can easily be transferred to disk and then loaded into RAM memory. As

long as the ROM program does not assume it can use both 16K of ROM and 16K of high RAM or comes from an SPP, the program will work from disk as well as it does from a Pak.

There are two classes of ROM Pak excluding the SPP; manual start and auto start. When a Pak connects the cartridge port lines Q and CART, the Pak will auto start. This must be prevented if we want the chance to copy the code to disk or tape.

There is a second problem if a Multi-Pak is not present in the system. Without a Multi-Pak, you can't have both a disk and Pak connected to the Coco at the same time. While it is possible to remove a Pak and connect a disk controller to a Coco with the power on, that is a recipe for disaster. It is the fastest way known to destroy a Coco short of pouring soda through the cooling slots.

### **Disabling Auto Start in Non-Multi-Pak Systems**

First, you need to ensure that the Pak will not auto start. This is best done with the Pak open; easily done by removing one case screw and prying the clam shell case apart. For reference, the +5V trace is normally slightly shorter than all others on the edge connector. This is done to prevent shorts if the Pak is bumped. The +5V pin is pin #9 and all odd numbered pins are on one side of the circuit board with the even numbered pins on the other side. Locate edge pins 7 (Q) and 8 (CART). Either apply tape to pin 8 or cut the connection between pin 7 and 8. This will disable the auto start.

### **Transfers VIA Tape**

Turn off your Coco, insert a non-auto starting Pak into the cartridge port, connect a tape recorder to CASS, and turn everything on. To be safe, we will assume that all program Paks are 16K Paks. Of course if you know yours are smaller, you won't need to transfer as much data.

Make sure that the Coco is in RAM/ROM mode. This will be true for the Coco 1 or 2 but not for the Coco 3. To set a Coco 3 into RAM/ROM mode, you must issue a POKE HFFDE,0 command. Since this will prevent any Coco 3 commands from functioning, you must be in WIDTH32 mode before issuing the poke command.

Save the Pak contents to tape with CSAVEM "filename",&HC000,&HFDFE,&HC000. That will transfer 16K of data, use &HC000,&HDFE,&HC000 for 8K or &HC000,&HCFFE,&HC000 for 4K.

Turn off your Coco, remove the Pak, connect your disk and controller, and turn the system on. You must now load the program from tape (CLOADM "filename"). However, remember that the program was saved from the addresses used by Disk Basic. The simplest CLOADM command will try to load the program to it's original addresses and trash Disk Basic if in RAM mode. We need to offset load the program to low memory

CLOADM "filename", &H7000 which will load the program at \$3000. If the program was written with relocatable code it can now be saved to disk with a SAVEM "filename",&H3000,&H6FFF,&H3000. To use the program just LOADM and EXEC.

Unfortunately, not all Paks are written in relocatable code so these must be loaded to \$C000. This will require some machine language programming so that your disk system and the Pak can coexist. You must also ensure that your Coco is in all RAM mode, true for a Coco 3 but not a Coco 1 or 2. This will require a short machine language program as follows:

```
1   ORG $7000
2   STARTORCC#$50   TURN OFF INTERRUPTS
3   LDX #$8000     POINT TO THE BEGINNING OF THE ROM
4   LOOP STA $FFDF  FORCE ROM MODE
5   LDD ,X         COPY THE ROM CONTENT TO REG.D
6   STA $FFDE     FORCE RAM MODE
7   STD ,X++      STORE THE ROM COPY TO RAM
8   CMPX#$E000    ARE WE PAST THE END OF THE COCO 1&2 ROMS?
9   BNE LOOP      IF NOT KEEP COPYING
10  ANDCC #SAF    RESTART THE INTERRUPTS
11  RTS          RETURN TO BASIC STAYING IN ALL RAM MODE
12  END START
```

For those who only work with Basic, the following will do the above:

```
10 REM ROMRAM
20 LI=80
30 FOR M=&H7000 TO &H7016 STEP10:SUM=0
40 FOR I=0TO9:READA$:VA=VAL("&H"+A$):SUM=SUM+VA:POKE M+I,VA:NEXT
42 READ CHK:IFSUM<CHK THEN PRINT"ERROR IN LINE"LI:END
50 LI=LI+10:NEXT
60 EXEC &H7000
70 END
80 DATA 1A, 50, 8E, 80, 0 , B7, FF, DE, EC, 84, 1404
90 DATA B7, FF, DF, ED, 81, 8C, E0, 0 , 26, F1, 1670
100 DATA 1C, AF, 39, 00, 00, 00, 00, 00, 00, 00, 260
```

Use the above only for the Coco 1 or 2!

You also need a short program to transfer the Pak code to its final destination at \$C000 before it can be executed.

```
1   ORG $7000
2   START ORCC #50   TURN OFF INTERRUPTS
3   LDX#$3000       POINT TO CURRENT LOCATION OF PAK CODE
4   LOOPLDD,X++    COPY THE DATA
5   STD$8FFE,X     STORE THE DATA AT $C000 UP
6   CMPX #7000     HIGHEST DATA LOCATION
7   BNELOOP       IF NOT FINISHED, LOOP
8   JMP$C000      EXECUTE THE PAK CODE
9   ENDSTART
```

Basic only users should run the following which will save the program Transfer to disk. It can be loaded and executed as needed from disk after a LOADM of the Pak program.

```

10 REM TRANSFER
20 LI=80
30 FOR M=&H7000 TO &H7012 STEP10:SUM=0
40 FOR I=0TO9:READA$:VA=VAL("&H"+A$):SUM=SUM+VA:POKE M+I,VA:NEXT
42 READ CHK:IFSUM<CHK THEN PRINT"ERROR IN LINE"LI:END
50 LI=LI+10:NEXT
60 SAVEM "TRANSFER",&H7000,&H7012,&H7000
70 END
80 DATA 1A, 50, 8E, 30, 0 , EC, 81, ED, 89, 8F, 1178
90 DATA FE, 8C, 70, 0 , 26, F5, 7E, C0, 0 , 00, 1107

```

So to summarize, the Pak was transferred to tape, the tape offset loaded to RAM, the RAM saved to disk from which it can be loaded and executed. As needed, after loading the Pak from disk, the transfer program can be loaded from disk and be executed to start the Pak.

### Transfers Using a Multi-Pak Interface

If you are lucky enough to own an MPI, you won't need to use a tape recorder as an intermediate. Plug your Pak into MPI slot 1 and the disk controller into slot 4 and you are ready to transfer. Again it will be necessary to make use of machine language programming to handle slot selection and data transfer. What is nice about this method is auto starting Paks do not need to be disabled.

```

1 ORGS7000
2 START PSHS CC
3 ORCC #$50          KILL INTERRUPTS
4 LD$FF23
5 ANDA #$FE          TURN OFF THE CARTRIDGE INTERRUPT BIT
6 ST$FF23            RESET THE PIA
7 LD$FF7F            READ THE MPI SETTING
8 PSHS A              SAVE ON STACK
9 CLRA                SLOT 0
10 ST$FF7F           POINT MPI TO SLOT 0
11 ST$FFDE           GO TO ROM MODE
12 * THE NEXT TWO LINES ARE FOR THE COCO3 AND DO NOTHING ON OLDER COCOS
13 LDA#$84           COCO1, NO DRAM, STANDARD SCS
14 ST$FF90           RESET GIME
15 LDX#$C000         POINT TO PAK
16 LOOP LDD,X++      COPY DATA
17 STD-$9002,X        STORE DATA FROM $3000 UP
18 CMPX #$FF00       THE MAXIMUM DATA POSSIBLE
19 BNELOOP
20 PULS A             RECOVER MPI SETTING
21 ST$FF7F           RESET MPI
22 ST$FFDF           FOR COCO3 ONLY !!!!!!! RETURN TO RAM MODE
23 PULS CC.PCR       RETURN TO BASIC
24 ENDSTART

```

Now you can save your Pak program as described above under tape transfer.

```
10 REM TRANSFER
20 LI=80
30 FOR M=&H7000 TO &H7032 STEP10:SUM=0
32 REM REPLACE 30 WITH 33 FOR COCO1 OR 2
33 REM FOR M=&H7000 TO &H702F STEP10:SUM=0
40 FOR I=0TO9:READA$:VA=VAL("&H"+A$):SUM=SUM+VA:POKE M+I,VA:NEXT
42 READ CHK:IFSUM<CHK THEN PRINT"ERROR IN LINE"LI:END
50 LI=LI+10:NEXT
60 SAVEM "TRANSFER",&H7000,&H7032,&H7000
70 END
80 DATA 34, 1, 1A, 50, B6, FF, 23, 84, FE, B7, 1200
90 DATA FF, 23, B6, FF, 7F, 34, 2, 86, 0, B7, 1225
100 DATA FF, 7F, B7, FF, DE, 86, 84, B7, FF, 90, 1890
110 DATA 8E, C0, 0, EC, 81, ED, 89, 6F, FE, 8C, 1578
120 DATA FF, 0, 26, F5, 35, 2, B7, FF, DF, 35, 1307
130 DATA 81, 00, 00, 00, 00, 00, 00, 00, 00, 129
140 REM REPLACE LINES 120 AND 130 WITH 150 ON COCO1 OR 2
150 REM DATA FF, 0, 26, F5, 35, 2, 35, 81, 00, 00, 775
```

### **Caveats**

I have not described the various copy protection schemes or special requirements of some ROM Paks. The readers will have to find these for themselves. A hint is to look for and remove any code which attempts to write to a ROM address within the ROM program; a technique used in MegaBug.

Readers familiar with ml programming should consider tacking the transfer program onto the ROM Pak code to simplify the loading process.

Not all ROM Paks will work with a Coco 3! If a ROM Pak expects to make use of the address from \$FE00-\$FEFF and \$FF90 - \$FF9F, it will not work with a Coco3. If a ROM Pak tries to make use of most of the semigraphics modes available on a Coco1, it won't work on a Coco3. If a ROM Pak makes use of artifact graphics, it will run but may not be useful with RGB monitored Coco3s.

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## CoCoFEST! 2001-A CoCo Odessa

Here a just a few of the many pictures that were taken at this year's CoCOFEST!  
How many of these people do you know?



Gator (Bob Swoger) & Guitar



Howard Luckey



DR. Eddie Kuns



Computer Widows



James Jones Brother Jeremy



Carl Boll



Allen Huffman



Chris & Nancy Hawks



Scott Griepentrog



Curtis Boyle & Brian Schubring



Scott Montgomery



Barbara Morris



Malcolm Cleveland

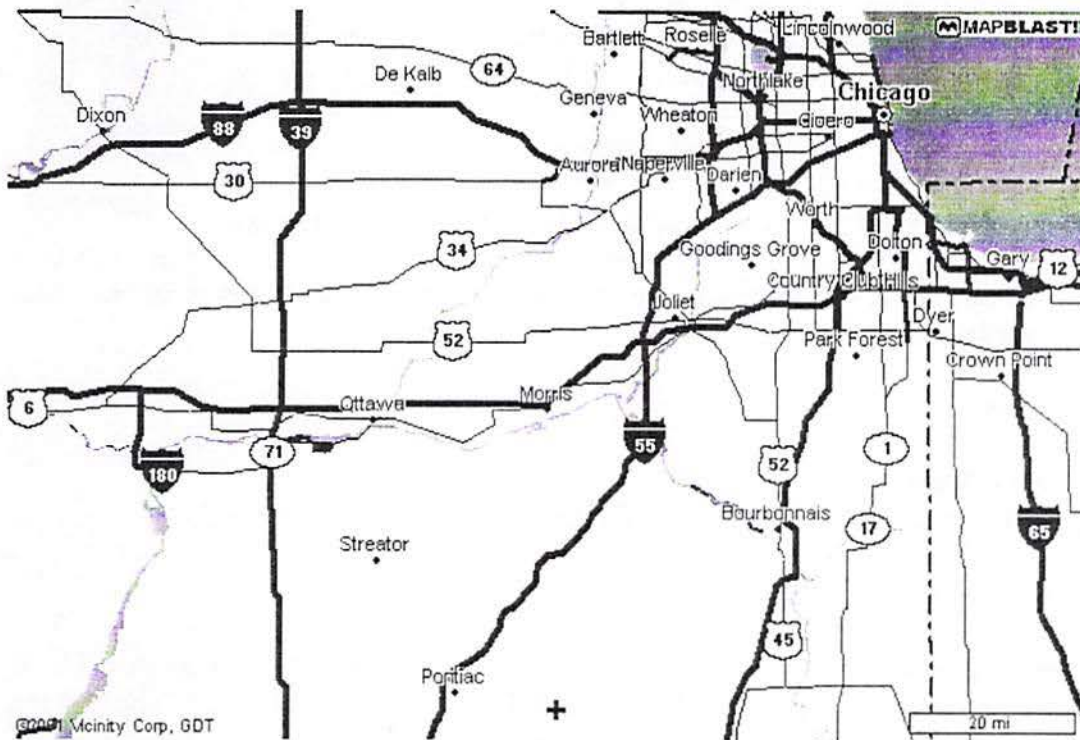


Tony Podraza

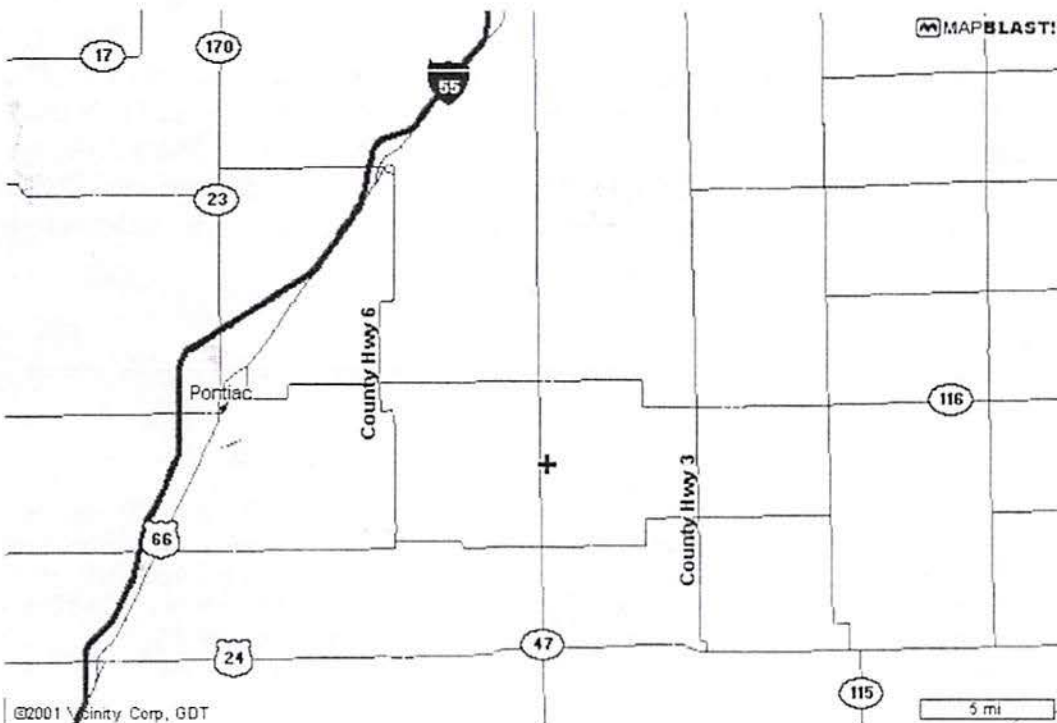
We hope to see you all next year!



The Glenside Annual PicqueNicque will, again be held at George Schneeweiss' home. The date is **Saturday, September 15, 2001**. Time: 1:00PM till the cows go home (or you do). See maps below for location. See page 2 for address & phone number.



RIGHT HERE



## CoCo 1,2,3 Processor Protector, Pro-Tector Daughter Board

### Price Reduced!

The Pro-Tector daughter board is ready to ship. This unit is a plug in device to the CoCo's motherboard after a socket is added. This device buffers the address lines of the processor. In the event of an external failure on the bus the processor is protected. I have used this device for years and has saved me MANY CPUs. Since the 63x09EP is getting harder to procure this adapter is a low cost alternative to always replacing the CPU. Cloud-9's 2 meg Memory/SCSI card will have this buffering already present. This product is for users that have other memory cards and would like to have a some protection. If you have a Y cable connected to your external cartridge port, this device can only help in that type of environment. Note the processor IS NOT included.



The unit will ship with the following items:

- 1 - Pro-Tector board
- 1 - 40 pin "machined" Augat style socket for the motherboard
- 1 - Installation Manual
- 1 - Schematic package

Please note that unsoldering of the processor is REQUIRED. If you are uncomfortable at this then please Email me below. I will provide this service at NO CHARGE. You pay for round trip insured shipping of your Color Computer. I will also give you a discount on the shipping charge for the product as well. Since you are already paying for shipping back to you.

Cost is US \$16 each, plus \$4 shipping per order, not per unit. Shipping will be UPS ground or USPS within the US. If you are outside of the US please indicate method of shipment desired and I will check into the added cost, if any. If you would like a different method of shipment please indicate. Ex: UPS-RED, BLUE, FEDEX, AirBorne, etc. These will all have additional shipping costs added to the base price. For more information contact:

Mark Marlette -- mmarlett@isd.net

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**EOF**

By Tony Podraza

Another issue of the CoCo-123 comes to a close. We wanted to get it out in July. We offer you our apologies. We can always use your articles, experiences, tips and trials. The format is a bit different this time. I decided to use the full page width because I believe that it has made the programs by Robert Gault easier read and understand, let alone follow, if you will be typing them in to your computer. Send me feedback on your opinion. My phone number is on page one and my addresses are on page two.

Not many advertisements, this issue, but be watching for some really interesting stuff in the next issue.

Until then, I bid you Peace. See you at the PicqueNicque.