OS-9 Newsletter

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HELP WANTED:

You must have something to say! Questions to ask! Here is your opportunity to put in your 2 cents worth. Share your knowledge with us. Participate! We need your input. Put your thoughts on paper and send them in to us and we will print them in this newsletter. I promise!

Speech-Sound Pak Fix
by Bill Boogaart, Mario Dilallo
and Bruce Isted

This text attempts to explain how to modify the Radio Shack/Tandy Speech-Sound Pak (catalog numbers 26-3144 and 26-3144A) to work with the COCO3 at 1.78 MHz.

Please note that the level 1 version 02.00.00 COCO OS-9 SSCPAK driver doesn't work properly with a modified Speech-Sound Pak. Included with this file should be a new driver (SSPak) and a new descriptor (SSP) which work on either level 1 or level 2 COCO OS9. We hope that they are an improvement over the original drivers! SSPak and SSP are Public Domain, and source is included, so feel free to distribute them, or to customize them if you wish.

The hardware modifications are fairly straightforward, but vary slightly between the two models (26-3144 & 26-3144A). Make sure that your Speech-Sound Pak is one of the Paks described, and that you make the correct modifications.

Externally, the 26-3144's that we have seen have a Radio Shack label, while the 26-3144A's have a Tandy label. Internally, the 26-3144 uses a 2907 transistor and the inductor (marked L1) is in a resistor-style (axial) package. The 26-3144A uses a different transistor, and the inductor (also marked L1) is in a small plastic box. In both Paks the transistor & inductor (coil) are close to the post hole in the circuit board.

It is necessary to change the transistor in order for the Speech-Sound Pak to work properly in most cases. We have seen only one unmodified Pak which worked when the COCO3 was running at 1.78 MHz. The voltage inverter circuit used must supply at least -5VDC in order for the output OP-AMPs to function. Unfortunately, the transistor used is sensitive to the frequency input to the circuit. The input signal used is derived from the bus E clock. When the COCO3 runs at 1.78 MHz, the circuit typically produces only -2.5VDC, which is not sufficient for the OP-AMPs.

The 2N3906 is a PNP transistor. Looking at the flat face, with the pins pointing down, the pin out should be Emitter, Base, Collector from left to right. The 2N2907 transistor should have the same pin out as the 2N3906. The transistor in the 26-3144A Pak should have a pin out of Emitter, Collector, Base when viewed in the same manner as the 2N3906. When installing the 2N3906 transistor into a 26-3144A circuit board you must swap the Base and Collector pins so that they match the original transistor's pin out.

26-3144 Voltage Inverter Transistor Change:

1) Make note of the 2N2907's pin out & orientation. Most manufacturers should use the same pin out, but its worth checking.
2) De-solder the 2N2907 transistor & remove it from the Speech-Sound Pak circuit board.
3) Solder a new 2N3906 transistor into the Pak's circuit board. The 2N3906 should be oriented the same as the 2N2907 that was removed, but again its worth checking the pin out!
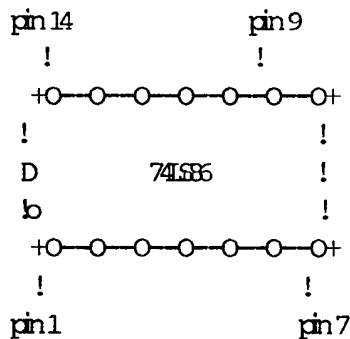
26-3144A Voltage Inverter Transistor Change:

1) Make note of the transistor's pin out & orientation. Most manufacturers should use the same pin out, but its worth checking.
2) De-solder the transistor & remove it from the Speech-Sound Pak circuit board.
3) Carefully bend a new 2N3906 transistor's base and collector pins so as to swap the holes they fit into. Make sure that they do not touch each other or anything else that could cause a short circuit.
4) Solder the new 2N3906 transistor into the Pak's circuit board. The 2N3906 should be oriented the same as the transistor that was removed (except 2 pins swapped), but again its worth checking the pin out!

The other hardware change required alters the clock frequency of the Pak's micro-controller and sound effects chips. The Speech-Sound

Pak uses a frequency doubling circuit to provide the clock signal for these ICs. These chips use a typical clock of 2 MHz, and the old COCO's clock of .89 MHz was doubled to provide the Pak's ICs with a 1.78 MHz clock. This is close enough to 2 MHz that the Pak runs properly. However, when the COCO3 runs at 1.78 MHz, this frequency is doubled to 3.56 MHz, which is well above the ideal 2 MHz clock. We've found that most Paks will work at this speed as long as the voltage inverter has been modified. If the clock doubler isn't modified, the speech synthesizer will sound normal, but the sound effects will be one octave higher than they should be. That is, sound effects will not sound as they should, with the result that software which uses the Pak for sound effects will probably disappoint you.

Here's a diagram of the 74LS86 (viewed from above), where the 'D' represents the notch at the "pin one" end of the chip. Some chips do not have a notch to indicate pin 1. In that case, look for a small indentation (represented here by the lower case 'o') close to pin 1 to find the orientation of the chip's pin numbers. The upper case 'O's represent pins.

```
pin 14              pin 9
   !                  !
 +O--O--O--O--O--O--O+
 !                   !
 D       74LS86      !
 b                   !
 +O--O--O--O--O--O--O+
   !                  !
pin 1               pin 7
```

Here are two alternatives to fixing the Speech-Sound Pak's clock rate. The first will limit your Pak to use at 1.78 MHz, unless you restore the Pak to its original state before using it at .89 MHz. The second will allow you to switch the Pak to operate at either .89 MHz or 1.78 MHz. Both fixes will work on either the 26-3144 or 26-3144A Speech-Sound Pak.
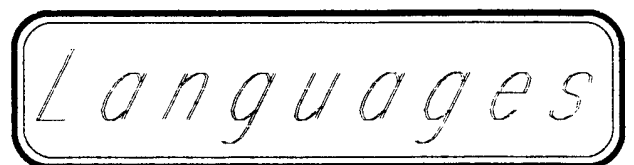
1.78 Mhz COCO3 Clock Frequency:

1) Cut the trace leading from the Pak's bus Q signal (card-edge pin 7) to pin 9 on the 74LS86.
2) Connect pin 9 of the 74LS86 to the Pak's ground.

.89/1.78 MHz COCO Switchable Clock Frequency:

1) Cut the trace leading from the Pak's bus Q signal (card-edge pin 7) to pin 9 on the 74LS86.
2) Connect pin 9 of the 74LS86 to the centre (common) pole of a small SPDT (Single Pole Double Throw) switch.
3) Connect one outside pole of the SPDT switch to the Pak's ground.
4) Connect the remaining pole of the SPDT switch to the Pak's bus Q signal.
5) Mount the SPDT switch on or in the Pak, wherever its convenient, and will not accidentally short to anything.

We hope that your Speech-Sound Pak modification goes as smoothly and successfully as ours did (once we figured out the voltage inverter problem it was all downhill!). Thanks to Kevin Darling and others who believed that there was no good reason why it wouldn't work!

Radio Shack TM Tandy Corporation, OS-9 TM Microware & Motorola, Inc.

Languages

Some people have complained about the lack of languages for OS9. Thought I'd come to it's defense

Here's is a list of supported languages for OS9 from Microware's ad in the Aug/Sept 68 Micro Journal:

C	Pascal
Fortran	Basic09
Modula-2	Ada

In June, Mike Ward from IMS (MM/1 68K OS9) announced that Microsoft's Quick Basic

would be available for the MM/1 this fall. This has generated a lot of comments from many of our favorite OS9 Gerus.

ZACK SESSIONS says:
I seriously doubt anyone will use Quick Basic to any extent for development of new software applications for the MM/1. It's primary usefullness will be to enable several already existing packages written in Quick Basic to be easily ported over. It is much easier to port an application from one OS to another OS in the same language than it is to convert it to another language either on the same OS or for a different OS. Quick Basic may be a powerful software development tool, I don't know, but I do know that like Mike says, C is the ''native tongue'' of UNIX and therefore OS9 as well.

MARK GRIFFITH responds:
I wouldn't be too sure about that Zack 'ol bean. Quick Basic may not be the ideal programming language (I agree that C is), but it will be something lots of
MM/1 users will work in. Lots and lots of Level II users write in BASIC09 because it is easy and pretty quick — and, they just don't want to learn C.

One thing that will make QuickBasic on the MM/1 a well used language is it will have the same user interface that the MS-DOS versions. This in itself will make it attractive to newer programmers. Until someone else comes up with something like it or better, QB on the MM/1 will have the only slick programming interface.

DENNIS WELDY's comments:
I agree with nearly all that has been said about C. C is cryptic (at first!) As I say, some languages give you enough rope to hang yourself, C will provide the rope, the tree, kick out the stool and bury you afterwards.

C is also without doubt the most powerful language I have ever used. It was designed by programmers for programmers who want to produce code. It was not initially a teaching language, it does not profess or promote any

particular methodology. C can be tricky as anything, particularly tracking down stray pointer problems, it also will stay out of the programmer's way.

Pascal/Modula2/Ada/etc all try to second guess the programmer ''HEY, you! you need an explicit conversion here!''. C admits that the programmer knows his/her job.

GRERG WALKER's Books on 'C':
I learned the C language more years ago than I care to admit and I had to take the rocky road from using Pascal in school to using C in industry. The most readable book that I have seen is ''The C Primer'' by Les Hancock and Morris Krieger. ''The C Programmer's Handbook'' by Thom Hogan, is the handiest reference to the language that I have found.

I friend of mine who teaches C at the local community college uses the text ''C as a Second Language For Native Pascal Speakers'' by Tomasz Muldner and Peter W. Steele. Perhaps it would help Pascal programmers down that rocky road.

The world has become more complicated in the last few years because there are two dialects of the C language. The above mentioned books describe the original K&R version of C, which is what comes on OS-9 Lev I and II for the CoCo. (K&R means ''Kernigan & Ritchie'', who wrote the language and the original book ''The C Programming Language'' about it.) Now there is also an ANSI Standard version of C that, as far as I can tell, is essentially a superset of the original C. I have two books on ANSI Standard C: ''The C Programming Language'', second edition, by K&R (outrageously priced), and ''Standard C'', by P.J. Plauger and Jim Brodie.

I found the second book to be unreadable, so shelled out the bucks for K&R, second edition. I have not used it enough to tell if it is really much better.

I have used C daily for the last eleven years (OK—there—I admitted it!) so it is my program-

ming language of choice, but I could easily set this newsletter on fire describing its bad aspects. Actually, I do not have to, because there is a book about exactly that: ''C Traps and Pitfalls'' by Andrew Koenig. This book is easy to read and should be required reading for all C programmers. Buy it second.

Rainbow's End?
A Collective Discussion

Is it just me or is The Rainbow getting smaller every month? I've only had my CoCo2 and my CoCo3 for a few years and don't know much about programing, and only have the old DC modem pak at 300bps that is too old to work on the CoCo3 but... I enjoyed all of the 'stuff' in the magazine and over the past year I've seen it get smaller and smaller every month... Who is still supporting CoCo? Radio Shack isn't! They treat it like a game machine... 'upgrade to an MS-dos machine' the guy told me today as I was buying computer paper. (He knew I had a coco because I was in earlier this week for some software.)

P.S. I vote for Rainbow to discontinue June, 1991.
-Douglas Dever

Naww...I say August of '91.

I agree. I've tried and tried to keep a positive attitude about it, but even I have given up. Rainbow is dying, and I don't accept the BS of ''no one is submitting stuff''. The August Rainbow has the reason the Rainbow, and the CoCo, are damned to oblivion. Some idiot wrote in saying the Rainbow has way too much OS9 stuff in it. Ha. All the articles in the past year relating to OS9 don't match the article in ONE issue dealing with RSDOS. The death of the Rainbow will be brought on by them NOT going into OS9.

Howard Wilson

I won't predict a month for the demise of the Rainbow. Yes, it's likely that if the Rainbow holds to its current path it will wither away. I'll wait and see how they handle the MM/1 & Tomcat. If they ignore the two machines, then they are definately doomed, it will just be a question of time.

I really don't think that the Rainbow editor, Lonnie Falk is stupid, however. If he sees the new KMA's doing well, I don't think there's any way he can ignore them. I agree that he should have been much more aggressive promoting the machines — BUT he has written about them in quite a few of his columns (I read them, do you? :) and remember that there is a three month lead time to writing in the Rainbow! It's a risk; what happens if you promote a machine which falls flat on its face? Guess who's next? I'm playing devil's advocate here.

Also, notice that the Rainbow refunded the $$ for the History of the CoCo book. Falsoft is an ethical outfit. If the Rainbow folds, I doubt that they would take the money and run. :) However, if droves of people unsubscribe, predicting the future demise of the Rainbow, then it becomes a self-fulfilling prophesy. I plan to renew my subscription in April.

Even if the Rainbow is pamphlet sized. They're our link to the future, and a major link holding the CoCo community together. (*OUR* community) If we think they're being too conservative, we should TELL them! I've talked with Greg Law and Cray Augsburg. I've given them my ideas on where the Rainbow should go. Have you? Both of those individuals are into OS-9 themselves — they'll listen!

Don't give up until it's over! Yes, there are other CoCo magazines, but the Rainbow has the single largest reader base, and it's ALREADY on newsstands. (Not many, but it's there.) Let's guide the Rainbow through this difficult time of transition and help them become strong again!

Eddie Kunz

I'm sure if the Rainbow dies, most, if not all, of
it's advertisers will fold. And along with that,
most people who take the coco seriously now
will quickly start to lose hope and move on to a
PC or the like. I think the CoCo 3 is a marvellous
machine (for its price) and it will be the most
favorite computer I will ever use, because of the
Rainbow and friends like you all.

Its sad how one companies descision (Radio
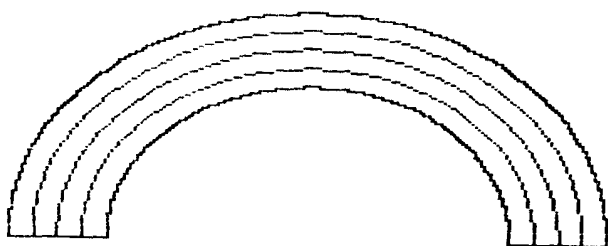Shack) can inflict so many lost hopes to Coco
users, developers and vendors.

But, on the bright side, I am very glad to see many
sincere people building new machines and
writing great software. I hope the new comput-
ers catch on because I'm going to buy one, and
I'd hate to be the only one in my area to have one.

Matt Pratap

I also told people the same thing. In fact, I
FLAMED them, outright telling people that
cancelling their subscriptions due to ''rumours''
of the death of the magazine, would in fact bring
on the death of said magazine.

However, I finally woke up and smelled the
bacon burning. With an average of 86 pages in
an issue, and NO articles on OS9 (there will be
the occasional word or two), I lost hope for the
magazine. I do have a LONG subscription ahead
of me. I actually renewed for the 3 year option
back about March or so...of THIS year. Being
an active supporter of the magazine, and not one
of the ''it's dying, so I'm leaving'' crowd, I am in
a position to tell you that I do believe I will be
refunded the majority of what I paid.

Howard Wilson II

> I just received my money back from Falsoft for
> the book that was supposed to
> be coming out this fall about the history of the
> COCO.
> [...]
> Anyway, the letter claims that the people they
> had contracted to write the
> book had failed to do so in a ''timely and
> orderly'' fashion.

Well, not to get into it too deeply, but I think one
reason was that the authors simply could not
continue to afford making all the long distance
interview calls they needed. I guess the pro-
jected payback didn't pan out for any of those
involved... that's strictly a personal guess, tho.
Maybe early order counts were low.

Too bad. I hear they spent hours interviewing
the Tandy CoCo people on its history. I suppose
one day someone will gather up all this material
and finish the book.

Kevin Darling

Shell ''PLUS''
by Rodger Alexander

Shell that comes on your OS9 Level two System
Disk from Radio Shack has a couple of bugs in
it. Besides there is something better........

Shell PLUS has many added advance features
over the original Shell::
*Execute script files from the CMDS directory.
*Change the prompt to show process ID # or
        device name. or current working direc
        tory or current date/time or any text you
        want to display.
*Redirect or change path from a script file.
*Convert script files into memory module files
        us Datamod.

*Write script files using "variables" that can be incremented and decremented.
*Pause a display and wait for a key press or a mouse click.
Wildcard matching using the standard "" or "?" symbols.
*IF / THEN / ELSE / ENDIF / FI / CLRIF / GOTO / ONERR GOTO conditional testing for more sophisticated script files.
*PATH= allows alternate directories to be searched for a command if not found in the default execution directory.
*.PWD/.PXD results are retained in memory to save time and unnecessary disk reads.
*CD/CX (MSDos equivalents to CHD/CHX) may now be used.

WOW! What an improvement. You can really make OS9 jump through hoops using Shell+. You've got to be impressed, and you should be!

HOW CAN YOU GET SHELL+? It's available absolutely free on any OS9 Bulletin Board and is usually included in most CoCo/OS9 club libraries.

HOW DO YOU INSTALL SHELL+? Use Modbuster to separate the files in your OS9Boot file to a blank directory i.e., TEMPBOOT. Delete the original shell and replace it with the shell+ file (also named shell). OS9GEN a freshly formated disk using the command: LS TEMPBOOT ! OS9GEN /d1. Or use EZGEN, if you have it, to delete the old and insert the new! EASY!
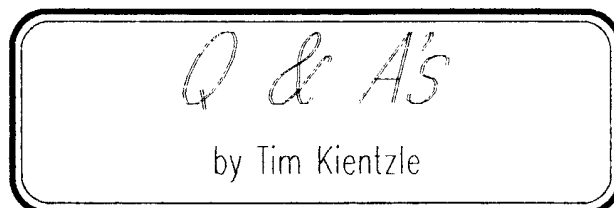
(NOTE: LS is a single column directory utility available from OS9 Level Two Development System or from most OS9 Bulletin Boards or club Public Domain Libraries.)

WARNING! WARNING! WARNING!
In case you haven't heard, there's a troublesome "feature" in version 2.1 that prevents running some large programs. Namely, shell-plus 2.1 tries to run every program with at least 8K- of data memory. A nice idea for things like COPY, but it messes up large applications that need to map things in and out of memory (subroutines, grafix buffers, etc.).

Programs such as MVCanvas, UMuseIII, and KBCom are affected by this bug. If anyone is aware of a patch or fix for this bug, please let me know.

Q & A's

by Tim Kientzle

Q: I cannot read or identify OS9 files that have a "PAK" extension. What does the "PAK" extension mean?

There are two popular archiving programs for OS9. One is the old reliable "ar", and the other is called "pak". Both are available in the standard places (Listserv, CIS, Delphi). People should realize that "pak" is currently NOT available on OSk (the author never released source, so it's dependent on the original author to port it), so as people move to MM/1's or TC70's, "pak" format archives will be increasingly unpopular.

Q: There are 2 files on DELPHI for gshell+. One is "gshell+ multivue" and the other is "gshell patch". Both claim to give you gshell+. What is the difference and which one do I want?

There are two sets of GShell+ patches floating around. The first patches stock GShell to give you GShell+ 1.24. The second patches GShell+ 1.24 to give you GShell+ 1.24a. Both are needed to get the most current version (1.24a).

Q: Can someone tell me more about the files "cc3go" and "cc3disk+"? What are they for etc.?

"CC3Go" is the very first program run on CoCo3 OS9. Typically, it is included in the bootfile. The stock version does the following: sets up initial default and execution directories (on /H0, if possible), runs Autoex (if it exists),

runs "Shell Startup" to process the startup file, then chains your initial shell. Several authors have written replacements which provide different boot sequences. Common changes include setting montype r, reading the startup program from a file, customizing the startup message, etc.

The CC3Disk patches add some additional calls to CC3Disk. These additional calls allow CC3Disk the ability to read non-OS9 disk formats. This is needed for programs such as "RSDos" and "PCDos", which transfer files to/from those disk formats.

Q: I noticed the shell+ file. Is this an improvement on shell? Would anyone recomend it instead of the normal shell? What exactly is it?

Ron Lammardo and others worked on the normal shell to add a bunch of new features and options. Tedious for the novice to install (so you might want to wait for a while if you're hesitant about digging around), but highly recommended, especially for more advanced users. The recommended installation involves taking apart the "shell" file (which contains a number of programs other than just "shell"), and reassembling one or more files (including the replacement shell), each of less than $1e00 bytes. One of these files should be called "shell" (and should include "load", BIW), and any others can be loaded by your Startup file.

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 _____
|  _____  |
| /                               \ |
||     Washington State OS 9        ||
||                                  ||
||     NEWSLETTER                   ||
| _____/ |
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Through the efforts of Donald Zimmerman and Chris Johnson of Port Orchard, Ron Schuman and Jeff Britten of Seattle, Erich Sweaney of Tacoma and Rodger Alexander of Bellingham.....a state wide CoCo/Os9 Newsletter is in the planning stages.

Such details as a publishing schedule, first time mailing list, format design, how to cover printing

and mailing expenses on the first issue, etc., are being worked out. Fotunately Chris Johnson has provided us with access to a 1-800 BBS where we can keep in contact with one another without the expense of long distance.

It should be noted that Erich Sweaney is already publishing the CoCo Notes Newsletter for over a year at a rate of $12 for a 12 month subscription. Address: P.O. Box 45434, Tacoma, WA 98445.

Since the Port Orchard "Port O'CoCo" club is the driving force behind a statewide newsletter, I thought it would be appropriate to print an article by Donald Zimmerman about the Port Orchard group.

WHO, WHAT, WHERE, WHEN, HOW
by Donald Zimmerman

Port O'CoCo is a computer club of about 20 with 13-17 regularly attending the meetings. We focus on any of the three models of the Tandy Color Computer, its peripheals, and software. The Color Computer was introduced in 1981. Since then Tandy has introduced the Color Computer II and now the Color Computer 3. Two other machines based on this technology have been introduced by other firms. All together this pool of machines forms one of the largest numbers of computer in the world!

In 1985, the OS-9 operating system was introduced for the CoCo. This system allows multi-tasking and multi-users with this computer. Most people are not aware that hard drives can be used with the CoCo. Software can be all the way from Nintendo ™ type games to business applications.

Port O'CoCo meets in Port Orchard. Currently we are using the community meeting room at the Main Branch of Kitsap Bank. The bank is located at the west end of Bay Street next to Geiger Drug and across the street from Bill's Chevron Station. We meet monthly the third Monday of each month at 7 p.m. Our meeting break up by 10 p.m. Members range from 16 to the mid-60's with interest in graphics, games,

hardware, and business applications. The dates of our upcoming meetings are:

October 15th
November 19th
December 17th

We do not have a membership fee. We only ask for a contribution of $1 per meeting. We do ask you to bring two things to the meetings:

1. A glass or cup to hold the punch the club provides
2. A box or bag of your favorite snack for our break/chat time.

It's a great idea to bring paper and pencil to make notes. A formatted disk or two to make copies of shareware programs is also a smart move. There is **LOTS OF TIME** for discussing and sharing at each meeting!