

CONVERTING PLATO TO DS/DD {from GENIAL TRAVELER 2/1}  
by Charley Summerhill

I found myself with the opportunity to acquire the entire Plato library for a very reasonable price. I did realize that if I wanted backups, I would end up with hundreds of disks that I really didn't need wasting space. I also was tired of changing disks each time I completed a lesson. With this in mind I set out to see if I couldn't fit an entire Plato program onto a double sided, double density disk. What I discovered applies to double sided, single density disks also.

The first thing you have to understand is the protection scheme used. It's not very complicated but is necessary to know in order to format the new disks correctly. Plato disks store the information normally found on sector 1 further down the disk on sector 359 (decimal). This sector indicates the place where each file header is stored in alphabetical order.

Cataloging a Plato disk will only show one file called \$\$1. There are others there but hidden from the disk controller's view. The Plato cartridge contains the routine which reads sector 359 and remembers where the file headers are. Moving sector 359 to sector 1 would solve the cataloging problem, but since Plato expects to see the information on sector 359 we have to keep it there also. Remember this because we will have to move it from sector 1 to 359 before we can use the new disk.

I went through several steps you may find unnecessary, but I wanted to be sure I had enough room to hold all the files, and I wanted to see if maybe I could save more than one Plato program on the same disk. [Editor's note: I recommend that you do not alter your original Plato disks in any way. Instead, use DM1000 to do a sector copy of the disk, and then pretend that this backup copy is the original disk, just in case you should accidentally do something wrong along the way!]

I wrote a little command file for Advanced Diagnostics that copied sector 359 to 1 and also read sector 0 and read in the proprietary P from the DSKP, changed it to a space, and wrote it back. [Editor's note: the PLATO/PREP program in this issue of GT will do the same thing. If you don't have Advanced Diagnostics from Millers Graphics, you can - with a bit of effort and patience - accomplish everything described here by using PLATO/PREP plus a sector editor you may already have, such as DSKU or even DPATCH a.k.a. DISKO.]

After changing all of the originals so that any disk manager can read or copy any the files on the disk, I then cataloged all of the disks so that I could get the size of each file and know which files were on which disks. The originals say that all 360 sectors are used, but they are not. This part of the procedure took a while, since Plato disks are all floppies and each side has to be done separately. I totaled the files for each lesson and determined how many new disks I'd need to combine all the disks in a lesson package. After that was done, I needed to make some new disks to copy the files to.

You can do this a couple of ways. I formatted a whole bunch of disks as double sided, double density with Rapid Copy (a program by Barry Boone available from Texaments) because of the fast formatting it does. Then I went back with another command file in Advanced Diagnostics and fixed sector 0 to make sector 359 look used. [Editor's note: PLATO/PREP on this disk will accomplish the same thing.] This way I could file copy to the disk and the controller would leave that sector alone. I could have done all of this with Advanced Diagnostics, but I thought this would be faster, and I believe it was. The byte you change in sector 0 is 100 (>64 in hex, if you use DPATCH), and you change it from 00 to 80. [Editor's note: you don't need Advanced Diagnostics or DPATCH to do this, if you use PLATO/PREP.]

If I could fit all the files from one lesson onto one DSDD disk then I went to my disk manager and started copying files to a DSDD I prepared just to hold temporary files. The reason I did that was I knew I'd be searching files later and wanted them in alphabetical order to make the search easier. I had therefore to file-copy all the files again to one of the special disks I prepared before. I suppose you could just find out where the files were and search those sectors but that becomes a hassle when you see what you have to change and what you have to change it to. Anyway, that's how I did it. [Editor's note: do not use Mike Dodd's MCOPY for this purpose, because - although it puts files on the disk in alphabetical order, it does not check to see whether sector 359 is "used.")

The next step is to copy the files themselves. I used the CorComp disk manager and used this procedure: If I had, say, 6 sides of originals to copy, I started with side 6 and copied all the files to my temporary disk. Then I changed the file named DISKMENU to DISKMENZ. [Editor's note: if you had 5 sides to copy, you would change it to DISKMENY; if you had 7 sides to copy, you would then use DISKMENA or whatever you want to call the one past DISKMENZ. The point is that you want to be able to work backwards so that the last one you do is called DISKMENU.] Then I copy side 5 with exception of two files called TIMENU and \$\$1 which are the same on each side of each group of lesson disks. Then I change DISKMENU to DISKMENY.

I do this for all the rest of the sides decrementing the last letter so that side one will not have to be changed (i.e., so that the last one will be called DISKMENU). Silly, I know, but it does save a step. This keeps the menu of each side unique to each group of files. So you should end up with all of the files from the originals with DISKMENU-DISKMENZ now on the copy disk. Since this does take time I usually stop after doing this for one lesson and go on to the next step, but you could do several if you wished. Now copy this temporary DSDD disk to one of the specially prepared ones and get ready to make the fixes.

Another step I take before I quit the manager is to make a printed catalog of the new disk. I'll tell you why in a minute. Now that I've finished the copying, I load up DISK+AID. [Editor's note: I understand that John Birdwell's DSKU also has a search feature. If you have neither DISK+AID nor DSKU, you'll have to do the searching on your own!] I use it because it maps the directories and I need to do a search for the file name DISKMENU. Before I do that, however, I need to READ sector 1 and WRITE it to sector >167 (this program uses hex not decimal 359). [Editor's note: once again, PLATO/PREP will accomplish the same thing!] This takes care of the protection scheme (i.e., Plato's checking sector 359 for the directory of file headers).

Then I map all the directory sectors to find out where the files reside and write that down next to the file name on the catalog I just made. (I told you I'd tell you why I made another catalog!) Locate the file DISKMENU and go to the last sector it occupies. Read it in and look for the word BOOT. (Of course all of this is done in ASCII mode.) If you find DISKMENU, change it to DISKMENV. Yes, there are enough blank spaces after BOOT to allow the extra letters. Now back up one sector and see if you see BOOT again. If you do, change it also. I recommend you look at one more sector before this for BOOT just in case. You'll always find BOOT within 2 sectors of the last one. this after a while. You'll see the last choice is always Select Another Diskette. Change that line to say See Menu 2 of 6 (or what ever the total menus are). I used to type Select from Menu 2 of 6, but I found if there were more than 9 menus, I'd run out of space, so I shortened it. When this is done, find the last sector used by the file DISKMENV [Editor's note: DISKO works fine for this!] and follow the above procedure, this time substituting DISKMENW for BOOT and See Menu 3 of 6 when you find the place. Keep going until you've get to DISKMENZ, and instead of BOOT, type DISKMENU, and in place of See Menu 7 of 6, type Begin Again--See Menu 1. Now there is just one more step and you are done.

Get out your original catalog of the original disks and see which file names go with which menu. Write the menu letter down next to the file name on the new catalog. After you've done this for all the files use the SEARCH option of DISK+AID (or DSKU?) to search for the file name DISKMENU. Remember to turn off the update function on DISK+AID, and this becomes very fast. I did find the word DISKMENU split between sectors a few times, so I started using DISK and then MENU by itself if I couldn't find it with the whole word. When you find the DISKMENU, change it to whatever menu it belongs to. So side 6 which we named DISKMENZ will be substituted for DISKMENU in the files found on side 6. This returns it to the proper menu from whence it came. If you use this procedure you don't have to do anything to the files on side 1 because they already say DISKMENU. Hey, it saves a step. DISKMENU only appears once in each file and is always in uppercase.

When all of this has been done, you should be able to plug in your PLATO cartridge and step through all the menus and then get menu 1 again. There is only FCTN = to quit, I'm afraid, but that's in the cartridge, and I haven't been able to understand all the disassembly yet enough to modify and put the cartridge on disk. Maybe one of the whizzes can help me.

So what if the total files of a lesson add up to more than the sectors available on your copy disk? Well, you use another disk. I believe the most sides in any Plato package is 14. That requires three DSDD disks. The procedure is the same except that I first figure how many sides will fit on one disk (you don't want to separate a file from its menu) and work your way backwards again. This time when you get to the last menu that will be seen on this disk, leave the word BOOT and change the menu to say Change Disk--See Menu X, where X will be the first menu on the next disk (or if it's the last menu, say Begin Again--See Menu 1). The BOOT causes the PLATO cartridge to go through a power up type of thing and check the disk again for the protection stuff. Then it loads the files and you start again. Just a note about the diskname. Most PLATO disks use the diskname of LESSONDISK, but not all. Some have the author's name. It doesn't matter, as it is never looked at by the program.

Another problem is when a lesson has only one program on a side. These disks don't have a menu to select from, and so they start right away. You don't find a DISKMENU file and the file name is something like LESSON or something (it has been a while since I did these). I "stole" a DISKMENU file from another disk and modified it to allow me to choose from several programs. I just change the file names to LESSON1 and LESSON2 or whatever used to be the main program names. You'll also have to change the TIMENU file that contains the file name like LESSON to DISKMENU but that isn't hard to find. This method works great, and the only problem is finding a DISKMENU file with enough menu choices to change to the number of different programs you can fit on the disk. I do recommend that you keep the files together by category, you know, like all the BASIC READING things together, etc., even if it means wasting a little disk space. Use the PLATO library listing from any catalog that sells them for the grouping.

Well, that's it in a nutshell. Figure that on the average you can fit 6 sides of PLATO on a DSDD disk, 12 on 2 and 14 on 3. You will find a couple that are just 8 or 9 sectors too long to fit on one or two disks, but that's the breaks. Split the files up equally so you won't spend all your time changing disks for one menu.

Write me if you have any questions, and I'll try to answer as quickly as possible.