

TEXAS INSTRUMENTS

Randy's Ravings

by Randy Holcomb

This month we look at 2 new pieces of software for the 99/4A: A Flight Simulator, and a disassembler utility, along with the usual news and rumors in the TI mill.

Flight Simulator For TI 99/4A
Moriah Software
832 S. Knoxville
Tulsa, OK 74112
918-832-8825

Once again we have another program that attempts to give you that sensation of flying with the assistance of computer simulation. However, for 99/4A owners, no package has come around that even approaches the level of sophistication of MicroSoft's Flight Simulator or subLOGIC's program. Moriah Software makes an attempt at achieving such levels of sophistication with their product called FLIGHT SIMULATOR.

The program package provides 3 scenarios: a flight simulator, a bomber simulator, and an attack simulator, all written in Extended BASIC. Unlike most flight simulators all the information is displayed as raw numerics on the screen — no needle balls or gauges as you would find on other simulators. Also, all input is from the keyboard — no joysticks are used. The simulator does make nice use of the graphics available and makes use of color in its display modes.

The screen is split into three main areas: the first area is for visual navigation and shows the field where you are landing (and puts up a red plane to show you your approach). The background color indicates your relative distance to the landing field. Included in the upper portion of the display are readouts for ground level, altitude, total elapsed time, air speed, glide indicator, wing-temperature, range (for bomber simulations) and heading.

The second third of the screen has a cross-hair in the middle which changes color depending on your beacon bearing (if you are on course it flashes green, if you are over the beacon it will flash red,) with a climb indicator to the left and to the right data on the homing beacon (indicating bearing, beacon name,

distance and ETA).

The bottom portion of the screen contains status information of the landing gear, flaps, fuel remaining, engine RPM speed; and status information or the bomber simulation (number of missiles fired and kill factor).

The simulator has a demo mode which shows how the plane lands and the instructions suggest that you watch how the plane is landed. When actually flying the craft, high-pitch warning beeps may sound indication that trouble awaits if you don't back off your present parameters; I have caused many a wreckage because of too low of an airspeed or melted wings.

Analysis and Recommendation

Let's be honest: a subLogic or a MicroSoft flight simulator this isn't. And there are many other simulators for other machines that make this look pale by comparison. However, Moriah Software should be commended for at least taking a stab at getting one to market. Myself, I'm no big fan of flight simulators. But if you have an interest in such programs or would like a "game" that's just a tad different, give this one a try.

**MORE THAN A
DISASSEMBLER...**
TI 99/4A 9900 DISASSEMBLER
Cumberland Technology
10 Wagner Drive
Carlisle, PA 17103
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Now THIS is something that no /4A hacker should be without — a full blown disassembler with documentation and additional programs that help you disassemble object code back into SOURCE code. Cumberland Technology has released a package that combines a disassembler with some useful utilities both inside and outside the disassembler: it allows you to trigger CRU addresses, display the DEF symbol table, access VDP memory, print binary and text listings, as well as disassemble, with the provision of placing the listings to an output disk file — this is the KEY feature of this disassembler as we will see later on.

One of the favorite topics in many users group meetings is "backing" up certain ROM-

only cartridges of games, utilities and naseam. While such an exercise can prove educational it is also the basis of most of the software pirating going on these days.

Unfortunately, the disassembler lies at the heart of these activities. Before I proceed with the steps involved I want to make it perfectly clear that these techniques are for use in seeing HOW a program is organized and how it functions — NOT for piracy. Anyone who uses these tools for piracy is slitting their own throats and other owners as well.

Disassembly Dilemma. One of the problems when working backwards from object code to obtaining the original source

code is determining what is data used by the program and what is the executable code. Also problematic is determining where a program starts execution. Cumberland's program conveniently gives you a start in both of these areas by allowing you to not only disassemble raw object code but to print ASCII and hex data. You really need all of these before you start reconstructing the source code. Also, determining the start of the program is made easy by the Cumberland disassembler via the T command — it prints the symbol table used by the linking loader. If you see the name of the program in the symbol table listing then you know where the program

starts. If you are disassembling a cartridge, DSR or the console ROM then the start of the program can be found in the ROM header linkages for cartridges and DSR's, while the console ROM takes the WP at a >000 and the start of the program at >0002 and takes off from that point.

Armed with all this data, Cumberland provides an Extended BASIC program called LABEL which takes the output disassembly listing and creates a display variable 80 file which contains source assembly statements and labels. At this time their label program replaces addresses that fall within the scope of the start

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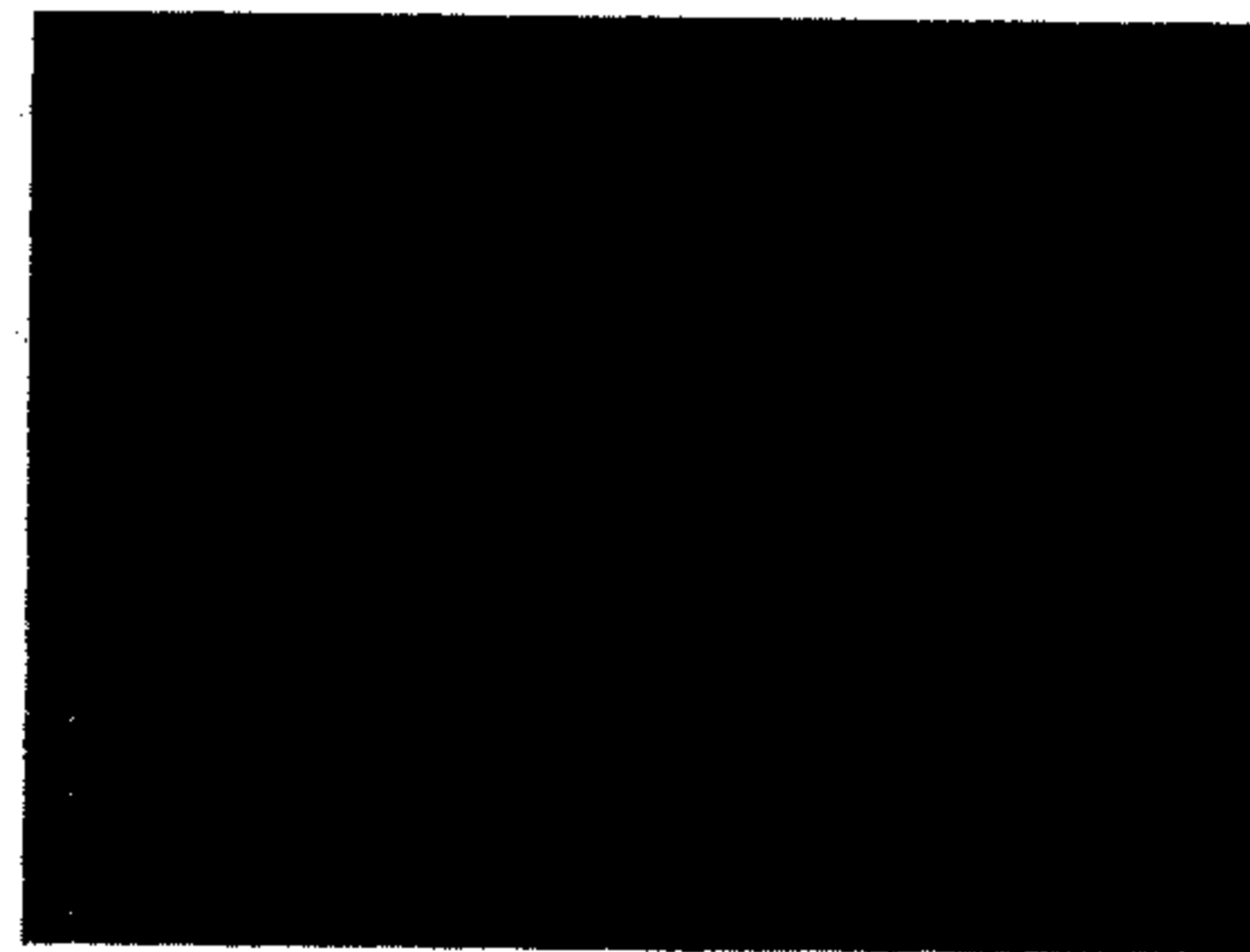
3 Megabytes Of RAM On The IBM PC/AT!

Emulex Corporation introduced the Mega Memory, the newest offering in its Persyst product line. The Mega Memory provides up to 3 MBytes of RAM for the IBM Personal Computer AT, allowing users to take full advantage of the AT's 16-bit data bus and extended memory addressing capabilities.

A full-size printed circuit board, the Mega Memory fits into any of the 16-bit slots of the AT. This one board memory solution offers users high reliability and easy installation, as well as compact size.

The Mega Memory offers 0 KB to 3 MBytes of RAM memory. A total of six banks, representing 12 rows, can be populated using either 64K or 256K chips, depending on the AT configuration. With this flexibility users can fill base memory and expand upper system application memory at the same time.

Utilizing single board design, the Mega Memory offers many advantages. Reliability is greatly increased by eliminating piggy-back boards with connectors that can fail. A single board is easier to install and saves space. It also allows maximum card spacing for optimum cooling and enhanced reliability.



Standard with the Mega Memory are two software packages, Wait-Less Printing and Insta-Drive. Wait-Less Printing adds the convenience of print spooling, so users can print documents while the PC is busy with other tasks. RAM disk emulation is provided by Insta-Drive which sets aside portions of memory to operate as floppy disk drives, improving access time and efficiency.

Physically, the Mega Memory measures 4.5" x 13" and it uses 3.4 amps at 5 volts. List price ranges from \$395 with OK RAM up to \$5495 with 3 Megabytes RAM. First units were scheduled for March 1 shipment.

Every Persyst board is circuit tested then burned-in at 55 degrees Centigrade for 24 hours. Each board is then run through all IBM diagnostics inside a PC a minimum of five times. Emulex Persyst products feature a full two-year limited warranty and are fully backed by an expert service and applications staff.

For further information on these products, contact: Phillip (Flip) Begich, vice president, domestic sales, at Emulex Corporation, 3545 Harbor Blvd., P. O. Box 6725, Costa Mesa, CA, 92626, (800)-854-7112, in CA (714)-662-5600.

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and stop addresses; however with some time the utility could be written to do back-stuffing of addresses; also jump and branch instructions have a @ prefixing the address.

By examining the output of the label program and the ASCII and hex listings data areas should stand out, whereby the assembled code generated can be replaced by appropriate DATA, BYTE, BSS, BES, and similar assembler directives. This process is iterative (repeats itself)

until runnable code is achieved. As you proceed in this process studying the disassembled code will start revealing certain patterns of its actions, these can be commented in the source directly and make the disassembly process more rewarding. There is no magic key that unlocks the disassembly process — it takes time, perseverance, patience and a willingness to work at it — but with tools like Cumberland Technology's disassembler the task is made much easier.

TI News. The TI Forum celebrated its 1st anniversary on CompuServe in February

and passed the 30,000th message mark — not bad considering the majority of its membership is using the "orphanded" 99/4A. Special anniversary conferences with many key 99/4A personalities were held and transcribed, so if you haven't paid a visit recently you may want to take the time and cruise by.

Rumors are that Myarc is modifying their disk controller to be able to read CorComp double-density disks as well as their own standard; and will be releasing a disk manager software to be included with future card shipments; check with your local dealer for more details.

I'm still waiting to hear from you TI professional owners as well. Just because there are a lot of 99/4A's out there doesn't mean we're ignoring you. Article suggestions are always welcome!

Next Month: MicroText Bizmaster review, more of the "Upgrading the TI 99/4A" series and more news and rumors in the TI world. ●

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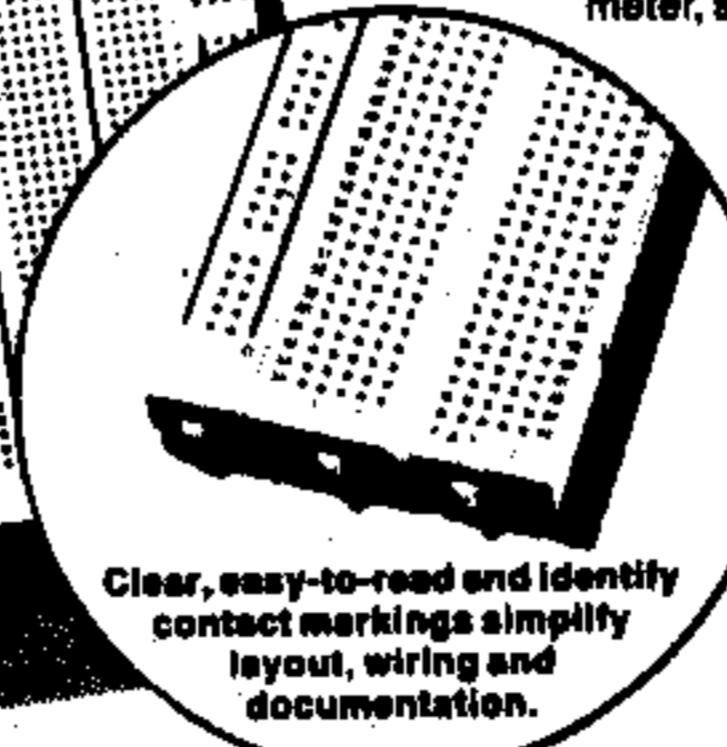
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