

DECEMBER

# newsletter

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## ALPHA MICRO USERS SOCIETY

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# f FROM THE PRESIDENT

by Stephan Elliott

The AMUS Directory of dealers, members and educational users is available now. We are looking for corrections so if you have additions, deletions or changes of addresses that should be put in the directory, please let Sharon or me know. We are going to put out another directory in January, 1982. The deadline for getting your name put in that directory is January 25th. We will publish the directory as soon as possible after that.

All AMUS members should have gotten new passwords and logon instructions for the AMUS network by now. If you have not gotten one, please let us know—it means that we for some reason haven't put you on the system. Mail seems to be the thing that's giving people the most problem. What you need to do is say the word MAIL and it will give you a little right arrow prompt. After that you can use a question mark to get it to give you instructions on how to use mail. If you want to, you can create a file with VUE or whatever and then send someone that file with mail. If you are going to compose a message you need to have a CRT terminal because it uses SuperVUE to allow you to compose a one-page message. Also, while you are in mail, you can access the Bulletin Board. You may want to look at Help BB before you get into mail so you know how to use the Bulletin Board. If you have comments about how you would like to see the network improved, please let us know. If there is information that needs to be on there that isn't on there or information that seems hard to track down, we are anxious to hear your comments about how we can make the network better.

Also we still need articles and columns for the newsletter. Advertisers are flocking to the newsletter and we don't want it to be 90% ads and 10% information. If you have information about some problem you've had with the Alpha Micro that you have solved, other people are anxious to hear about it so please let us know.

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**AMUS** office hours are from 8:00 AM to 4:00 PM mountain time. Our over-worked manager is Sharon Greene. She is happy to assist you with any questions you might have about **AMUS**, or the Alpha Micro Computer. If she doesn't know the answer to your question, she will try to direct you to someone who does.

The **AMUS** Newsletter is published monthly by **AMUS**, 1911 11th St., Suite 210, Boulder, CO 80302. Subscription rates are \$10.00 per year. Each member representative receives a one year subscription, the cost of which is included in the annual dues.

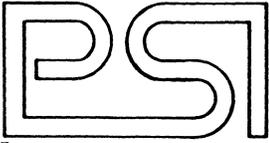
Additional copies and back issues of the newsletter may be ordered from Sharon. Bug fixes, articles, letters, reviews of software and information about Alpha Micro applications are happily accepted. Material must be received by the 10th of the preceeding month for inclusion in the following month's edition.

Second class postage is paid at Boulder, CO 80302, ISSN 0273-8708, USPS 567-330.

The Alpha Micro Users Society Network is a computer system meant to give members access to information and other Alpha Micro users with similar interest. It consists of an Alpha Micro computer with a Hawk disk drive, a 300 baud modem, a 1200 baud modem, and 160k of memory. **AMUS** members are given an individual account and password on the Network. Contact Sharon Greene for your account and password. Many thanks to Alpha Micro Systems of Irvine, CA; North American Title Co. of Houston, TX; and Dravac, of New Jersey who have donated equipment and software to the Network.

**AMUS** has a library of programs which have been donated by members for distribution to other members. Programs are available either through the **AMUS** Network, or, if you prefer, we can make floppy or Hawk cartridge copies and mail them to you. Order may be placed through Sharon.

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## Alpha Micro Compatible Mag-Tape Drive

**Programming Sciences, Inc., announces the availability of the first LOW COST 9 track tape drive for the Alpha-Micro.** The system uses the advanced duo of the Konan 'Enhancer' tape drive controller and the Cipher 'Microstreamer' one half inch tape drive. This combination allows you to run the tape drive truly interrupt driven, and non-DMA unlike other systems.

**This controller is so 'smart' that there are almost no errors** to report because they are all handled automatically. The advanced design of the Konan Controller with it's 4 Mhz Z80 processor, and the state of the art design of the Cipher 'Microstreamer', also with a 4 Mhz Z80, takes all the work off of the main computer, so you can get your backup done with as little intervention as possible.

**Another advantage of this means of storage is the cost of media.** One reel of tape is 5 times less than a Hawk pack and 10 times less than a Phoenix pack. Now, for the price of 1 Phoenix pack you can back up your entire Phoenix drive twice. Phoenix users can easily justify the cost of our tape subsystem when the cost for media for backing up data and the archive copies can in a small amount of time overrun the cost of the tape drive.

**If you wish to read tapes or create tapes for other computer systems,** this can easily be done, because our tape system uses the industry standard 1/2 inch magnetic tape drive at the standard 1600 bits per inch.

**The amount of information that you can store on one tape** is much more dense than almost any other mass storage medium. This means that a 3600 foot reel of tape can store over 22 megabytes storing 512 bytes per record. If you use a 4k blocking factor, you can get up to 50 megabytes on one 3600 foot reel. After the backup is made, the amount of shelf space to store the information is not a major factor in designing a computer room.

**The Microstreamer also saves space** by using only 8.72 inches in a RETMA rack chassis. This means that you can mount the tape drive in the cabinet with your disk drive. The tape is then loaded from the front of the drive, and the drive will automatically thread itself.

**The time required to do the backup is less** than the time you would take to back up your system the conventional way and doesn't require your computer to be 'DOWN' at any time during the backup. This means that the computer users can still be programming or entering data at the time of backup.

**This subsystem is available from Programming Sciences, Inc.,** for \$7700 which includes a Cipher Data Products Microstreamer I tape drive, a Konan "Enhancer" tape controller which will control up to eight "daisy chained" drives, cables and our completely AMOS compatible driver software. OEM discount pricing is available on request. We also include software that makes the subsystem "look" like a 33 Megabyte disc drive is you are not in a hurry.

**For further information** regarding this product or future developments, please contact us at the location above between the hours of 10 AM and 9 PM, Monday through Saturday PST.

## **DC-AMUS**

If you are interested in becoming involved in DC-AMUS, please contact Jay Gourley, 903 C Street, N.E., Washington, D.C. 20002, (202) 547-7607. Meetings are held the first Monday of each month at 903 C Street, N.E.

## **CH-AMUS**

Meetings are held the third week of every month alternating between Wednesday and Thursday at 1612 E. Algonquin Rd., Schaumburg, IL 60195. The main purpose is to get together to talk about problems. For further information, contact Jeff Fisher at (312) 397-8700.

## **SC-AMUS**

SC-AMUS holds meetings one Sunday each month at Fullerton Savings and Loan at 12860 Euclid (just north of Garden Grove Blvd.). SC-AMUS also publishes a newsletter each month with lots of good information. Membership dues are \$10.00 initially, plus \$12.00 per year. Send \$22 for first year to Phil Putman, 16168 Beach Blvd. #141, Huntington Beach, CA 92647. Or call him at (714) 842-4484. SC-AMUS has many helpful activities going on and knowledgeable and interesting speakers at their meetings.

## **FAMOUS**

FAMOUS, the Northern California Chapter of AMUS, holds general meetings the first Thursday of each month at the Betchel Building, 50 Beale St., San Francisco at 7:00 p.m. They are currently publishing a newsletter which will be available to paid members. For further information about FAMOUS, contact either Gerry Baugus or Bob Fowler at (415) 494-6221.

## **PHOENIX ARIZONA CHAPTER**

We received a note from Bob McGarey, (602) 955-0551, that an enthusiastic group of Alpha Micro Users have organized AZ-AMUS. Meetings will be held monthly (location to be announced) and its main purpose is an exchange of information with others using a compatible system.

## **PORTLAND OREGON CHAPTER**

Information about our other new chapter, Portland, Oregon, is available from Ormand Beyl, 15051 SE Mt. Royale Ct., Milwaukee, OR 97223 or call (503) 241-5353.

## **NEW ORLEANS, LOUISIANA CHAPTER**

We are in the process of organizing an Alpha Micro Users group here in New Orleans, NO-AMUS. The purpose is to get together and discuss problems and provide education related to the Alpha Micro computer and its peripherals.

For more information, contact Ron Howe, P. O. Box 7674, Metairie, LA 70010 or call (504) 468-1566.

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# COMPATIBILITY GUIDE

The following item appeared in the ISSG Newsletter and is reprinted with the permission of ISSG.

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## Alpha Microsystems' Product Compatibility Guide

As Alpha Microsystems' releases new systems and new products, we are often asked if this new equipment is compatible with already existing products. The majority of our new releases can easily be integrated with previously released systems. However, there are some circuit boards that must have certain modifications implemented before they may be used with other products.

This article is designed to inform you which products are compatible; and what, if any, modifications are required to integrate these items. Some of our later systems do require that a certain version of our Software Release be used; this information is also included.

### Central Processing Units (CPUs)

#### AM-100 CPU

The AM-100 CPU is compatible with all existing Alpha Microsystems' products with the following exceptions.

1. AM-420 Disk Controller/AM-600-01 Combination

There are certain modifications that must be made to the AM-100 for use with the AM-420. Refer to the article included in this issue, "AM-100/AM-600-01 Modifications for Use with the AM-420."

2. The AM-100 CPU is not compatible with the AM-700 Memory Partition Controller Board

3. AM-960 Status Display

To use the AM-960 Status Display with this CPU requires the addition of an AM-965 Status Display Interface Board.

4. To insure AM-100 compatibility with the memory parity signal when an AM-120 or AM-710 is included in the system, the AM-100 Memory Parity Compatibility Enhancement procedure should be implemented. Refer to the *ISSG Newsletter*, Volume 3, Number 7, page 12 for this procedure.

#### AM-100/T, Revision C or earlier

The AM-100/T, Revision C or earlier CPU is compatible with all existing Alpha Microsystems' products with the following exceptions.

1. The AM-100/T is not compatible with the AM-200 Floppy Disk Controller Board
2. The AM-100/T is not compatible with the AM-12-01 (Pigeon 64K Memory Board)
3. To utilize this CPU with the AM-700 Memory Partition Controller Board (MPC), the modification described in the *ISSG Newsletter*, Volume 3, Number 10, page 6 must be done.

4. If an AM-700 MPC and an AM-600 Mag Tape Interface Board are included in the system with an AM-100/T, Revision C13 or F06 or earlier, then the AM-100/T DMA Compatibility procedure as described in the *ISSG Newsletter*, Volume 3, Number 7, page 11 must be implemented.

5. AM-960 Status Display

An AM-965 Status Display Board must be included in the system for AM-100/T Revision C and AM-960 compatibility.

6. Dual-level, power-fail for use with AM-120

To utilize the dual-level, power-fail feature, the procedure described in the *ISSG Newsletter*, Volume 3, Number 10, page 4 must be implemented. This procedure also requires Software Release 4.5 or later.

7.

This product requires that Software Release 4.4 or later be included on the system.

#### AM-100/T, Revision F

This CPU is compatible with all existing Alpha Microsystems' products except the following.

1. This CPU is not compatible with the AM-200 Floppy Disk controller board

2. This CPU is not compatible with the AM-12-01 (Pigeon 64K Memory Board)

3. This product requires that Software Release 4.4 or later be included on the system.

### Disk Controllers

#### AM-200

The AM-200 Floppy Disk controller board is compatible with all existing Alpha Microsystems' products with the following exceptions.

1. The AM-200 is not compatible with the AM-100/T CPU
2. The AM-200 is not compatible with the AM-210 Floppy Disk Controller because of I/O port address assignment conflicts
3. The AM-200 is not compatible with the AM-700 Memory Partition Controller
4. The AM-200 is not compatible with the AM-710 Memory Board

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dravac**

**the logical choice.**

# hardware by dravac

**Software by Dravac** are words synonymous with quality. Designing Alpha Micro system software for over three years, Dravac software products solve problems for Alpha Micro users all over the world. We know the needs of the Alpha Micro community, and we have the expertise to meet them. That's why we've expanded our line—with **Hardware by Dravac**.

Why should you buy **Hardware by Dravac**? Because we probably know the Alpha Micro computer and AMOS better than anyone outside of Irvine California. Anyone can sell hardware, but Dravac can supply the total package—finely tuned software with complete local and national support. In other words, the same reasons that you've been buying **Software by Dravac**.

Our first **Hardware by Dravac** product is the DR-400 Winchester subsystem using the proven PRIAM 8 and 14 inch winchester drives. What makes ours different? The DR-400 software makes it **28 percent faster** than the AM-500. No one else even comes close. And we didn't stop with just a DVR for [1,6]. You get software for formatting, multi-volume backup (using data compression), and automatic power up/down—ideal for unattended operation. And, since our business is Alpha Micro software, you don't have to worry about new releases obsoleting your DR-400—we'll be here for AMOS release 5.0 and beyond.

Incidentally, hardware is not new to Dravac. Over 850 of our revolutionary Omnilock™ software protection boards are installed worldwide—without a single failure. That's a record few companies can match. We apply the same quality control techniques developed for the Omnilock™ to the DR-400.

The DR-400 is available today with the PRIAM 30 and 60 megabyte 14 inch drives. The subsystem includes everything you need—drive, power supply, cables, software, documentation, and interface card with boot PROM. Dravac will also make available the 150 megabyte 14 inch drive and the PRIAM 8 inch 30 megabyte drive as they become available—all at competitive prices. So don't wait, upgrade your Alpha Micro system with **Hardware by Dravac** today!

## Features:

- Controller hardware handles up to four disk drives.
- Media defects are handled transparently to the central processor. The controller automatically reassigns sectors or tracks that contain media defects.
- A program is supplied that allows you to specify a "time out" period for a drive. If the device is not accessed within this time period, the drive is powered down. The next access to the device will automatically power the drive back up, with no loss of data!
- A linear voice coil positioner is used which offers fast access to data as well as mechanical simplicity.
- Short start-up/spin-down time of 30 seconds.
- Operates with both the AM-100 and 100T cpu.
- Brushless DC motor which eliminates the belts, pulleys, etc. normally associated with AC motors in Winchester disk drives. Also eases use of battery backup.

- Light weight and small size ease installation.
- Microprocessor controlled self-test protects data and aids troubleshooting.
- Expected Mean Time Between Failures (MTBF) is 8000 power-on hours. The Mean Time To Repair (MTTR) is less than 30 minutes. No preventive maintenance is required.
- 30 and 60 megabyte units can be mixed on the same controller.

As you can see by the above list of features, the DR-400 is a smart system to own. The DR-400's cost of ownership is less than a conventional drive because:

1. No preventive maintenance needed. This means no filters to replace.
2. Winchester technology assures high reliability and therefore fewer service calls or problems. Maintenance times are reduced. MTBF times are double those of conventional drives.

Dravac supplies all the software needed to interface the DR-400 to your Alpha Micro computer. This software consists of a device driver, formatter, bootload program, and several utility programs. We will update this software as needed by changes in the Alpha Micro operating system.

### **Specifications:**

Capacity (formatted): 30 or 60 megabytes

Number of logical drives: 3 or 6 (10 megabytes each)

Bitmap size (words): 1210

Number of sectors/logical drive: 19355

Single track positioning time: 8 ms

Average track positioning time: 45 ms

Start/stop time: 30 seconds

Height (inches): 8.0

Width: 17.6

Depth: 20.0

Weight (pounds): 56

### **How About Backup?**

Dravac has designed a controller and support software for the Archive streamer tape drive, our model name: DR-300. This is a 20 megabyte tape device. It will backup your DR-400 at the rate of 2 megabytes per minute. The DR-300 uses the DC-600a 3M tape cartridge. The cartridge requires about the same shipping volume as a floppy disk.

The DR-300 may also be used to backup any other disk device that you own. Think of it, you can backup a Phoenix disk on a single \$35.00 tape cartridge instead of a \$330.00 disk pack. The time savings is also considerable. A Phoenix backup requires a 15 minute purge and up to 45 minutes of copying. The DR-300 backup requires 9 minutes. You can backup your entire drive (six platters) in about the same time as a single disk to disk Phoenix copy.

Software is supplied with the DR-300 that will enable you to save and retrieve files from the tape in a manner similar to a larger 1/2" 9 track tape drive. This allows you to exchange data with other DR-300 users using the tape cartridge rather than an expensive disk pack. Up to 20 megabytes of files may be transferred on a tape cartridge that is as easy to ship as a floppy disk.

**hardware by dravac**

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Omnilock is a trademark of Dravac Ltd., New York, NY

**Dravac Ltd.**  
53 Deerhaven Road  
Mahwah, NJ 07430  
(201) 825-1616

# COMPATIBILITY GUIDE CONTINUED

## AM-420 Disk Controller

This board is compatible with all existing products except when used with an AM-600-01 in an AM-100 based system unless the procedure described in "AM-100/AM-600-01 Modifications for Use with the AM-420," included in this issue is implemented.

1. This product requires that Software Release 4.5a or later be included on the system.

## AM-600-01 Magnetic Tape Interface Board

The AM-600-01 is not compatible with the products listed below.

1. AM-700 MPC
2. AM-710 Memory Board
3. AM-420 used in conjunction with the AM-100 CPU unless the procedure "AM-100/AM-600-01 Modifications for Use with the AM-420," included in this issue of the newsletter is implemented.

## AM-600-02 Magnetic Tape Interface Board

This board is compatible with all existing Alpha Microsystems' products. However, the following items need certain modifications in order to be used with the AM-600-02.

1. AM-700 Memory Partition Controller

Refer to the procedure published in the *ISSG Newsletter*, Volume 3, Number 9, page 10.

2. AM-710 Memory Board

See the procedure described in the *ISSG Newsletter*, Volume 3, Number 8, page 4.

## AM-610 VCR Interface

This product requires that Software Release 4.6 or later be included on the system. Please be aware that a real-time driver is required when using this product. Refer to the Software documentation that accompanies the AM-610 for further information.

## AM-620 Streaming Tape Drive Interface

The AM-620 Interface board is compatible with all existing Alpha Microsystems' products. Please be aware that a real-time driver is required when using this product. Refer to the Software documentation that accompanies the AM-620 for further information.

1. If this product is to be used with an AM-100 CPU, an AM-120 must also be included in the system.

2. Software Release 4.6 or later must also be included on the system.

## Memory Boards

### AM-700 Memory Partition Controller Board

The AM-700 MPC is compatible with all existing Alpha Microsystems' products with the following exceptions.

1. The AM-700 is not compatible with the AM-200 Floppy Disk Controller
2. The AM-700 is not compatible with the AM-100 CPU
3. The AM-700 is not compatible with the AM-600-01 Magnetic Tape Interface
4. The AM-700 is not compatible with the AM-12-01 (Piiceon 64K Memory Board)
5. To use this board with the AM-19-01 (Piiceon 32K Word Memory Board), refer to Volume 3, Number 9 of this newsletter, "Memory Management Using the Memory Partition Controller Board," page 8.
6. AM-600-02 Magnetic Tape Interface  
Refer to the procedure published in the *ISSG Newsletter*, Volume 3, Number 9, page 10.
7. This product requires that Software Release 4.5 or later be used.

### AM-710 Memory Board

This memory board is compatible with all existing Alpha Microsystems' products with the following exceptions.

1. AM-200 Floppy Disk Controller
2. AM-600-01 Magnetic Tape Interface
3. AM-600-02 Magnetic Tape Interface  
See the procedure described in the *ISSG Newsletter*, Volume 3, Number 8, page 4.
4. This product requires that Software Release 4.4 or later be used.

## Input/Output Devices

### AM-120

To utilize this board, Software Release 4.5 or later must be included on the system.

# COMPATIBILITY GUIDE CONTINUED

Table II  
Product Compatibility Chart

AM-100	100/T	120	200	210	300	310	320	400	410	420	500	600	610	620	700	710	900	900/A	12-01	19-01
AM-100	N	Y	Y	Y	Y	Y	Y	Y	Y	Y*	Y	-01	Y	C	N	YA	Y	Y	Y	YA
100/TN		Y	N	Y	Y	Y	Y	Y	Y	Y	Y	-02	Y	Y	Y	Y	Y	Y	N	Y
120	Y	Y		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
200	Y	N	Y		N	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	N	Y	Y	Y	N
210	Y	Y	Y	N		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
300	Y	Y	Y	Y	Y		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
310	Y	Y	Y	Y	Y	Y		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
320	Y	Y	Y	Y	Y	Y	Y		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
400	Y	Y	Y	Y	Y	Y	Y	Y		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
410	Y	Y	Y	Y	Y	Y	Y	Y	Y		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
420	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y		-01N -02Y	Y	Y	Y	Y	Y	Y	Y	Y
500	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y		Y	Y	Y	Y	Y	Y	Y	Y
600	-01	-02	Y	Y	YY	Y	Y	Y	Y	Y	-01N -02Y	Y			-01N -02Y	-01N -02Y	Y	Y	Y	-01N -02Y
610	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
620	C	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
700	N	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	-01N -02Y	Y	Y		Y	Y	Y	N	Y
710	YA	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	-01N -02Y	Y	Y	Y		Y	Y	Y	Y
900	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y		Y	Y	Y
900/A	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y			Y	Y
12-01	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y		Y
19-01	YA	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	-01N -02Y	Y	Y	B	Y	Y	Y	Y	Y

\*=Without AM-600  
A=Without AM-600 or AM-200  
B=Requires Modification  
C=Configuration Limitation

Y=Assumes both products are up to current revision level

**\*\* C O M M A N D \*\***

PRODUCT ENGINEERING	Drawing and Bill of Matl. Data: Maintenance / Display / Listing Indented Bill of Matl. and Where-Used Displays and Listings B/M Maintenance with Same-as-except, Mass Replace, Mass Delete Pending and Incorporated Engr. Change Records cross-referenced to affected Products, Parts, and Assemblies Automatic Unit of Measure to Unit of Issue conversion
INDUSTRIAL ENGINEERING	Work Center / Tooling / Routing Data: Maintenance / Display Work Center and Tooling Where-Used Display and Listing Work Center Mass Replace / Multiple Routines per Part Work Centers and Tooling cross-referenced to Routines and Work-In-Process Records
SALES & SHIPPING	Customer Data: Maintenance / Display / Listing Sales Order: Entry / Amendment / Shipment / Display / Listing Selling Price: Calculations / Maintenance / Listing Sales Analysis
PURCHASING & RECEIVING	Vendor Data: Maintenance / Display / Listing Purchase Order: Entry / Amendment / Receipt / Display / List Shipments to Vendors / Receiving Inspection Reporting Purchase Commitments and Vendor Performance Reports
INVENTORY CONTROL	Inventory Ordering Rules: Maintenance / Display Inventory Transaction Processing / Cycle Count Control Detailed Inventory Status: Display / Listing Net Change Material Planning ABC Classification: Graph generation and item updating Calculate Scrap Factor, Order Point, Safety Stock Calculate Independant and Dependant Usage Exponentially Smoothed Independant Demand Forecast YTD Transaction Display and Listing by Item and Order Implicit Multi-Level Pricing
PRODUCTION CONTROL	Work Order: Maintenance / Display / Listing Operation Completion and In-Process Inspection Reporting Work Order Release and Operation Scheduling Shop Traveler and Pick List Component / Material Allocation Work Center Load Detail and Summary: Display and Listing
FACTORY ACCOUNTING	Cost Displays: Bill of Matl. / Routing / Historical Part Cost calculation from Routing and Bill of Material Cost rollup through all where-used levels Costed Bill of Material and Cost List by Part Number Cost Inventory and Labor Transactions at Std. or Actual Work Order Cost Calculation using Standard or Actual Cost Labor Variance and Distribution Reports
FACTORY REPORTING	Employee Data: Maintenance / Display / Listing Labor and Attendance Reporting / Reconciliation / Analysis
CAPACITY PLANNING	Standard Capacity Requirements and Cost by Product Master Schedule: Maintenance / Display / Listing Projected Master Schedule Labor and Cost Requirements
DATA BASE MANAGEMENT	User-managed Program security codes Peek & Poke any file, any record, any data Reorganize Master Files and/or Chain Files

\*\*\*\*\*  
\*\* C O M M A N D \*\*  
\*\*\*\*\*

( C O M P R e h e n s i v e M A N u f a c t u r i n g D a t a )

I n t e g r a t e d D a t a B a s e

I n t e r a c t i v e D a t a E n t r y

P a s s w o r d P r o t e c t e d

S t r u c t u r e d f o r E a s e o f M o d i f i c a t i o n

M e n u D r i v e n

PRODUCT ENGINEERING	INDUSTRIAL ENGINEERING
SALES & SHIPPING	PURCHASING & RECEIVING
INVENTORY CONTROL	PRODUCTION CONTROL
FACTORY ACCOUNTING	FACTORY REPORTING
CAPACITY PLANNING	DATA BASE MANAGEMENT
ACCOUNTS RECEIVABLE *	ACCOUNTS PAYABLE *
PAYROLL *	GENERAL LEDGER *

\* These four accounting applications comprise an optional accounting system that utilizes the same data base.

Although COMMAND is adaptable to a wide range of manufacturing organizations, it is primarily oriented toward the small to medium-sized company performing fabrication and assembly of discrete products in a job-shop environment.

COMMAND includes Manufacturing, Sales, Engineering, and Accounting functions and supports all of these applications from the same integrated data base. This data base uses a combination of ISAM and Relative Record Number files to achieve a chain-file type cross-referencing of records analogous to that available on much larger computer systems.

COMMAND is described in a 350 page user-oriented manual which includes a Data Base Dictionary, all screen layouts and printed reports, and functional descriptions of programs. This manual is provided with both the Source and Demonstration Packages or may be purchased separately. The source files from which this manual is produced are also supplied with the Source Package so that the user's documentation can be revised to reflect program modifications he may require.

Call or Write:

DATA BASE BUILDERS INC.

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# INTERFACE TO WESTERN UNION

by Don Fleming

First, let me thank all who responded to my request for help to develop an interface with Telex paper tape; particularly William Isherwood, Berry Feldmand, Donald Jones and David Reed who had good ideas and assistance.

After discussions and investigation with various AM users and Western Union, I found out that WU was expanding their EMS—Electronic Mail System to allow a variety of computers to have direct interface with them. EMS is the front-end store and forward system for their INFO MASTER system which is the computer that actually connects with the teletype wire service network. Their test center in McLean, Virginia handles all new applications for certification of user computer systems to EMS. The test center gave me the specifications for communication and message format and assigned a programmer to monitor our test.

This method would allow us to send text files that were previously prepared on our system directly to EMS and avoid the paper tape altogether. We simply develop the text files in VUE using the proper Western Union EMS message headers and trailers and send them to EMS on their toll free number.

Now's a good time to mention that you will need to call your local Western Union salesperson and let him set you up with a temporary or test ID. This is a formality as he will probably just give you the telephone number of the test center and let them set you up. This contact needs to be made whether or not you presently have a TELEX or TLX terminal installed.

We utilize a DC Hayes and Larry White software to automate the dialing and communications process. A command file takes the operator directly thru to the EMS password sign on. Once signed on with your account number, they will prompt you to send your message.

Since TLX and TELEX use different code schemes (ASCII vs BAUDOT) and different private wire connections to their respective terminals, it is convenient to use the INFO MASTER system for translating code and transferring networks. Before the advent of the Western Union EMS system your only choice was to send to INFO MASTER using a previously prepared and edited paper tape. It is a tedious and frustrating job to prepare these tapes if the messages are long and involve any formatting. In our case most of the messages came in for transmission at 4:50 PM. Important messages such as invoices and bank wire transfers require that all details are perfectly correct. User approval in the form of an initialed proof copy message run from paper tape is usually required before sending. When mistakes are found or editing changes are made, the operator must make a new paper tape.

However, when an operator can sit down at any terminal on our system and quickly and easily set up a VUE file, dump it to a printer, get the approvals and send the message, you have a lot of happy people (including the boss). We send a lot of free text messages, of course, but we have evolved about 12 standard type messages. Several different types and formats for invoices, bank wire transfers, verifications of contract agreements and verification of barge and pipeline product movement are standardized. These standard messages are stored as VUE files and copies are printed for a master booklet. We print these messages with blank spaces for the variable information. Each department that sends the various types of messages has made xerox copies of the messages in a fill in the blanks format. They simply fill in the blanks and return them. A terminal operator can then sign on and update the appropriate file and send back a new copy for approval. Now when a last minute rush of messages come in it's no problem to get them out.

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# INTERFACE TO WESTERN UNION CONTINUED

How it works:

We first set up a special PPN with a password for the exclusive use of teletype. When you sign on we display the directory and load the Phone program. We use two D.C. Hayes modems on the system and one is dedicated to a remote data entry system. Using a .CMD FILE to ready the right modem and load the proper communications specifications eliminates a variety of problems. The D.C. Hayes micro modems used with Larry White, Inc., communications software make a versatile and flexible method of handling a wide variety of communication problems at the 110 and 300 baud range. The communication program can be set to meet the requirements of each different computer you communicate with. In the case of Western Union EMS, the program is set as follows:

```
PHONES PHONE 300 7 1 EVEN
```

This sets the modem called PHONE to 300 baud, 7 bit word length, 1 stop bit, and even parity.

Now VUE can be used to create and edit the message. The D.C. Hayes in our system is hard wired to a dedicated phone line and can be terminal key board dialed to reach the EMS system.

To further automate and to cut down errors, we use a command file that contains the 1 800 EMS number and the necessary commands for the terminal to talk to the modem. It looks like this:

```
:T  
CALL PHONE 1 * 800 * 3360101  
TALKTO PHONE
```

Once you have done this and received a "Connection Established", EMS will prompt you for a sign on with >Enter Account ID.

After checking and accepting your account number, EMS will prompt you to >start message. Now toggle to your system and send your message. We use a command file to facilitate this as well as an assembler program that strips line feeds and ends the message with a control S. The small assembler is called PUTMSG and our command looks like this:

```
:T  
PUTMSG =M?.TXT
```

M? is the message number. Other methods could accomplish the same thing and the assembler functions could probably be done with Super Vue, but I haven't tested that approach. It also is necessary to set TALKTO with the CONFIG utility so that you do not have to manually set a control character each time you want to toggle between the phone line and your computer.

When your transmission is completed, EMS will send you a "Thank you" message and acceptance number. The Thank you is evidence that EMS has received your message and the acceptance number indicates that it has passed the editing test and will be forwarded to INFO MASTER.

The message acceptance number has 12 digits and is decoded as follows:

```
000 0 00000 000
```

Julian date/computer no./sequence of message #/page # # of transactions

# INTERFACE TO WESTERN UNION CONTINUED

Sample of formats:

\*TLX 966439\ LEHIGHOIL NORW \ DON FLEMING

The first line must start either \*TLX or \*TWX or \*ZIP, the backslash, the answerback of the company you are sending to, backslash and the attention name if any.

\*VTX

The second line must start \*VTX space and the body of your text.

Text notes;

All lines are limited to a length of 67 characters.

You may NOT use \* symbols in the body of your text.

You may NOT use TAB or ARROW KEYS in your text.

Always use the SPACE BAR to add the additional spaces you need.

\*END

End of message indicator must follow the last character of your text.

Here is how a sample message with fill in the blanks might look.

\*TLX..... \ ..... \ .....

\*VTX MM/DD/YY

TO:.....

ATTN:.....

FROM: LEHIGH OIL COMPANY

PURCHASE/SALES AGREEMENT CONFIRMATION

SELLER:.....

BUYER: LEHIGH OIL COMPANY

LEHIGH REF. #:.....

BROKER:.....

PRODUCT:.....

QUALITY:.....

PRICE PER GALLON:.....

TAXES \$:.....

AMOUNT DUE:.....

DELIVERY PERIOD: MM/DD/YY TO MM/DD/YY

DELIVERY METHOD: BARGE TRANSFER

IF ANY OF THE ABOVE IS CONTRARY TO YOUR UNDERSTANDING OF OUR AGREEMENT, PLEASE NOTIFY US IMMEDIATELY.

REGARDS,

LEHIGH OIL COMPANY \*END

As your Western Union man will tell you, using EMS is more expensive than direct dialing another TELEX machine and key boarding or sending paper tape. However, when time, convenience, and accuracy are important, this method may be the answer.

If you explore this with your local Western Union person, you will find this contact at EMS in McClean, Virginia to be very helpful. . . . Berry Applebaum and or Dawn Metcalf. They arranged our test monitoring and were very helpful in trouble shooting. Currently they can be reached at (703) 821-4168.

I hope this will give those who are interested a starting point for their own methods. If you run into serious problems or just want to discuss this, I can be reached at the following address.

Don Fleming, Lehigh Oil Company, One Terminal Way, Norwich, CT 06360, (203) 886-5111 (office), (401) 438-3127 (home).

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**'PDP-11 FORTH USER'S GUIDE' BY JOHN S. JAMES**

This manual describes the editor, assembler, and string package distributed with μA/FORTH. It discusses trig functions provided, shows a recursive programming technique, guides the user through an initial terminal session and includes extensive annotated examples of FORTH programming.

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**BRINGING UP THE SYSTEM**

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**TO RUN:**

- μA/FORTH IS DISTRIBUTED WITH THE SYSTEM IN ACCOUNT [170,10]. LOG INTO [170,10] AND TYPE 'AFORTH'. μA/FORTH SHOULD COME UP AND TYPE 'μA/FORTH V 3.1 '
- MAKE A COPY OF THE ACCOUNT.  
PROTECT AGAINST ACCIDENTALLY ERASING THE SYSTEM OR THE SOURCE PROGRAMS.  
AS PROVIDED, THE FILE 'FORTH.SCR' CONTAINS FORTH SCREENS 1-128. FORTH.SCR IS A CONTIGUOUS FILE.
- IF YOU WANT TO RE-ASSEMBLE THE SYSTEM (WHICH MOST USERS WOULD NEVER FIND NECESSARY), YOU MUST EDIT AND MACRO 'AFORTH.MAC'.
- ADVANCED USERS MAY NOTE THAT THIS SYSTEM IS DESIGNED TO ALLOW THE MEMORY LAYOUT--NUMBER AND LOCATION OF DISK BUFFERS, LOCATION OF THE STACK, ETC.,--TO BE CHANGED DYNAMICALLY, WITHOUT REASSEMBLY.
- TEST THAT IT IS UP BY TRYING SOME ARITHMETIC OR DEFINITIONS, E.G.,  
88 88 \* . (NOTE THAT THE '.' MEANS PRINT)  
: SQUARE DUP \* ;  
25 SQUARE .
- OR TYPE 'VLIST' FOR A LIST OF ALL THE FORTH OPERATIONS IN THE DICTIONARY.
- TEST THE DISK BY TYPING  
1 LIST  
WHICH SHOULD LIST THE SCREEN WHICH LOADS THE EDITOR, ASSEMBLER, AND STRING ROUTINES.

# AMUS MEMBER • DEALER DIRECTORY NOW AVAILABLE

If you would like your name to appear in the AMUS Member Directory, please fill out this form and return to Sharon Greene, AMUS, 1911 11th St., Suite 210, Boulder, CO 80302. Regardless of whether you want your name to appear, please be sure and fill out the information about your dealer and send it to Sharon.

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- No, I do not want my name to appear.
- Enclosed is my check or money order for \$ \_\_\_\_\_ for \_\_\_\_\_ copies of the **AMUS Directory** at \$10.00 each plus .50 for postage and handling. (Please allow 2 weeks delivery.)

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Comments: \_\_\_\_\_

\_\_\_\_\_

For those of us who have ADDS Regent 40's, you are well aware of occasional problems using VUE. This includes asterisks and plus signs appearing on the screen when you do control J's and control K's. The problem has been identified by Gene Holland of Electrotrex in Houston, Texas, and it is a bug in the Intel 8755A PROM.

ADDS sent Gene the corrected program, and told him that he could burn his own PROMS, but that is fairly expensive, and comes to over \$60.00 each. I would like to hear from all the AMUS members who have ADDS Regent 40's, and would like to send a stack of letters to ADDS demanding that the problem be fixed for a reasonable fee. If you have a Regent 40, please contact me, and I'll put together a letter to send to ADDS. (Steve.)

Speaking of ADDS, the ADDS driver that we have on the Network has been modified for the new Viewpoint terminal thanks to Dan Dunham of Central States Grain in Des Moines. AMUS has a copy of the driver named ADDV.MAC in account #100,11 on the Network.

MANY thanks to DRAVAC for the donation of their Utility programs to AMUS. We've made good use of several of their programs. How did we live without their version of TYPE for all these years? TYPE allows you to change the speed of the display while it's running by the screen, allows you to go back a page, and uses the space bar to stop and start the display. Much easier to deal with than the AMOS TYPE which forces you to stop and begin all over if the item you're looking for goes off the top of the screen. Also fun is SEQ.PRG which is like DIRSEQ except that it only works on your PPN (much faster than DIRSEQ) and will also organize your files first by extension, then by the file name. Imagine seeing all of your .BAS file together followed by the .CMD files, followed by the .DO files, etc.

I stumbled across an interesting feature (bug?) in the APPEND program recently; the documentation says that the default extension is null. I took this to mean that I had to type in full extensions for every file I wanted APPENDED, however, you only need type in the extension on the name of the destination file if all of the input files have the same extension. This is the same way that RENAME and COPY work, which makes sense. Only obstinate fools like myself persist in doing things the hard way.

## AMOS 4.5a(2) Update

Alpha Micro has published corrections for RUN, RUNSML, COMPIL, and 420DVR.DVR. If these changes have been made, your monitor will be 4.5a(2). If you have the old hash totals, you should contact your dealer for the update, or, if you have no dealer, contact AMUS.

RUN had four problems which were corrected:

1. It did not find .RUN modules which had already been loaded into user memory.
2. The maximum record number allowed for random files was 65535 minus the file base, it has been expanded to over 4 billion.
3. Input of numeric variables that started with 9 didn't work correctly.
4. Improperly nested FOR-NEXT loops would sometimes cause spurious "Return without GOSUB" errors.

The old hash total for RUN.PRG was 505-507-347-402. The updated hash total should now be 045-726-467-671.

RUNSML had the same problems as RUN. It's old hash total was 252-372-151-426. The new hash total should be 012-264-450-135.

COMPIL had problems correctly reporting errors that it found in ++INCLUDEd portions of programs. It would give random line numbers for errors that it found. The new improved version correctly identifies errors as part of an ++INCLUDE statement and tells you the name of the ++INCLUDE line where the error occurred. You will have to COMPIL the ++INCLUDE file separately to find the offending line number. The old hash total was 643-445-221-520. The new one should be 147-740-356-150.

For those of you with the AM-420 Winchester drives, you will want to correct a problem with alternate track handling. Old hash: 037-714-621-527. New hash: 452-215-154-106.

After these changes are made you should have AMOS version 4.5a(2). You can check this by typing in SYSTEM from monitor level. The last line of the display for SYSTEM will tell you the monitor version number.

## THE SECOND ANNUAL AMUS CONVENTION

- WHERE?** The Deauville Hotel, Miami Beach, Florida
- WHEN?** January 24 through January 29, 1982
- WHAT?** Seminars, conferences, demonstrations, and meetings for businessmen, systems analysts and programmers based on the Alpha Micro System.

The Second Annual AMUS Convention is being held to bring end users of Alpha Micro systems together with the various software firms that provide software for the Alpha Micro and representatives of Alpha Micro. We have scheduled five days of meetings and software demonstrations where the customers can see the products first hand. This is the time and place to ask questions and get the answers you need. What can a word processor do for me? Is VUE and TXTFMT enough? What is a data base? Do I need a data base system? What data base system should I purchase? Has anyone documented the fixes to Alpha Accounting? What are other users doing with their system? How can I save money with my system? How can I use my system to make money? What steps should I take to prevent unauthorized access to my data? How can I possibly evaluate software systems? These questions and similar ones will be addressed during the AMUS convention.

The following organizations will be represented at the convention, and the list is still growing.

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The International Alpha Micro Dealers Association (IAMDA) will be discussing the relationships between dealers and users, and will be holding a special session for dealers on how the Alpha Micro can be successfully marketed.

Bob Fowler and Bill Miller will be comparing AMOS to the UNIX operating system.

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**HOW MUCH?** *Registration \$180.00*—includes all seminars and classes for 6 days. *Additional registrants*—\$140.00 each additional registrant per company. *Exhibitor fee*—\$350.00. *Banquet*—\$30.00. *Hotel Convention Rates*—first come, first-served basis. \$60.00 per day per room. Children under 12 are free when accompanied by parents and using same room. Rooms will be reserved for a deposit of \$60.00. *Note:* We are able to hold down the room rates to last year's amount.

**WHAT DO I HAVE TO DO?** Make out two checks. Make the first check payable to: William L. Miller & Associates for Registration and optionally the banquet. Make the second check payable to the Deauville Hotel for the amount of \$60.00 per room you wish to reserve. Complete the form below. Send both checks and completed form to:

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Miami, FL 33158

Do not send reservation requests to the hotel as this will delay matters. Reservation requests must be accompanied by the reservation deposit. Due to the limited number of rooms available, registration is limited to AMUS members. Sorry, travel agency commissions will not apply due to the special group rate. Reservation confirmation will be sent by mail. Make your reservations early to avoid disappointment.

Please call (305) 233-1216 for further information.

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| 3) Bayesian Decision Analysis          | 16) Net Present Value of an Investment |
| 4) Continuous Interest Compounding     | 17) Nonlinear Breakeven Analysis       |
| 5) Current Value of a Treasury Bill    | 18) Payoff Matrix Analysis             |
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| 7) Depreciation Switch                 | 20) Profit Sharing Contributions       |
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| 9) Economic Production Quantity        | 22) Rule of 78's Interest              |
| 10) Financial Mgmt Rate of Return      | 23) Swedish Machine (Queuing Theory)   |
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This package including source code and complete documentation is available on floppy

For further information or to place an order contact CONTEMPORARY CYBERNETICS GROUP, 1204 Willow Green, Newport News, Virginia 23602, (804) 599-4749.

# LETTERS

---

For some time now we've had an unusual problem with our Phoenix based systems. On occasion, when intensive disk I/O is involved, we have encountered what we term physical block transfer. That is, we are finding entire 512 byte physical blocks being duplicated in the middle of a file, thus clobbering a good block, or a wrong block being read in during processing of a file. This has occurred both from our own Alpha-Basic applications programs and Alpha Micro's COPY.PRGM and, apparently, only on our Phoenix based systems.

We are not certain that this ever involves writing the right block to the wrong location, but we do know that it has involved reading the wrong block. For example, a file with 8 logical records per block is being processed. Logical record 8008 is the next record to be read in but record 8016 is read in by mistake, this being in the next physical block. It has always seemed to be off by some simple binary factor such as 1, 2, 4, 8, 16, etc. Now, if the same program is run again on the same data base, the block containing record 8008 will be properly read in though the problem may or may not be encountered with some other block. This problem is very intermittent.

So far we've not uncovered the cause of all this. When reporting this to Alpha Micro, they have been unable to offer a solution. So, we are now appealing to other AMUS members who may have had or heard of such a difficulty. We would be pleased to receive any helpful thoughts or suggestions.

Thank you,

J. Michael Towry  
Cybertec

---

In regards to BUG #6 on BUGLIST #15 and the response by Jim Rea in BUGLIST #16 about VUEing files with an extension of .ZZZ, I would like to state that there is a way of bypassing the 'FSPEC quirk.' By using DDT I was able to change VUE to allow the .ZZZ extension.

```
.LOG SYS:
.DDT VUE
PROGRAM BASE IS XXXXX
PROGRAM SIZE IS 33774
576/ BIT @(R2)#,@-(R2) 0 [ret]
614/ BIT @(R2)#,@-(R2) 0 [ret]
^C
.SAVE VUE
```

New hash total: 046-250-602-335.

After examining the EXIT routine in the system monitor, I found that a default extension of .< > is allowed. But, since the assembler will not accept FSPEC DDB, I then wrote the following patch for the VUE source file. If you could, please forward this to Jim Rea.

```
FSPEC DDB,ZZZ
.=.-2
WORD 0

TST DDB+DB.EXT
BNE EXTOK
```

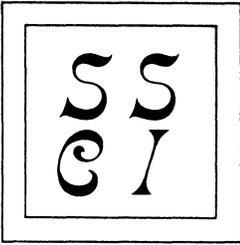
Of course, the Symbols I have used may not be correct, but I am fairly sure that Jim will understand what I mean. For Version 4.4 of VUE, the DDT patch may be used. I did test the change for the source file and it appears to work with no degree of difficulty.

Thanks,

Joe Leathlean  
8545 Andromeda Rd.  
San Diego, CA 92126  
(714) 566-5458

Ed Note! Jim Rea no longer works for Alpha Micro. He's on his own developing and selling SuperVUE.

---



## Software Systems Consulting Incorporated

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Software Systems Consulting Incorporated (SSCI) is an Alpha Micro Dealer. However, as a Software Vendor, SSCI is primarily a custom programming shop. When a requested program or system seems to have potential as a marketable product, additional effort is expended to provide a software package that's as attractive as possible. Source code is always available and SSCI stands ready to discuss any needed program modifications.

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**PRODUCT: MULTI-USER FILE-ACCESS ROUTINES (MUFAR).**

MUFAR is a file-access method and a program in much the same way that ISAM is a file-access method and a program. As a method, MUFAR can provide Sequential, Direct, Isam, Hierarchical, and Network file-access. As a program, MUFAR becomes another type of I/O device, available as a shared resource to all users of the system. Users read and write records to MUFAR, while MUFAR does the actual reading and writing to the data file. MUFAR runs in its own user area completely independent of all other users. MUFAR is inherently Multi-User by design, even in LINKed systems. MUFAR removes 14K to 26K of file-access programming from each user program, effectively allowing such programs to double or quadruple in effective programming power. MUFAR is able to manage a file that spans as many as sixteen AMOS-supported disk platters for support of very large files. MUFAR is fast.

**PRODUCT: CUSTOMER INFORMATION/ACCOUNTS RECEIVABLE SYSTEM (CI/AR).**

CI/AR is an information retrieval system that works in conjunction with MUFAR to provide a business with a completely current source of information on its customers. Data entry is done in real-time. Customers are known by their names, not by a number. CI/AR provides a balance inquiry screen, an order taking screen, many different customer lists, a versatile label formatter/printer, automatic interest assessor on past due amounts, monthly statements, dunning letter, and a TRW Business Credit tape/diskette record formatter. The system also features standard account aging, an unlimited number of transactions on each account's ledger, and provision for notes to be written intermixed with the debit and credit transactions.



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**PRODUCT: WAREHOUSE INVENTORY CONTROL SYSTEM (WINCON).**

WINCON is an information retrieval system that works in conjunction with MUFAR to provide a business with an accurate up-to-the-minute picture of current and projected inventory levels. WINCON monitors sales, stock, and on-order levels as well as current, average, and future unit costs. Data entry is done in real-time. Inventory items are identified by Supplier and Item, such as IBM360-65 or P&GCHARMIN. WINCON provides direct inventory reduction, picking tickets, purchase orders, and inventory taking assistance. If advised of "minimum safe" inventory levels, WINCON can advise each company buyer of his impending shortages. In conjunction with the CI/AR system, WINCON can generate invoices for customers.

**PRODUCT: ELECTRICAL/HEATING/VENTILATING/AIR-CONDITIONING SYSTEM (EHVAC).**

EHVAC is an information retrieval system that works in conjunction with MUFAR to provide an electrical contractor or an HVAC contractor with an accurate up-to-the-minute picture of current and projected inventory levels. EHVAC maintains inventory levels and current pricing on standard and special order items from up to six different suppliers (per item). Data entry is done in real-time. Inventory items are identified by a six-digit number. This system includes a job estimating and invoicing sub-system.

**PRODUCT: MAILING LIST SYSTEMS (GML and IPSSC).**

These two mailing list systems are information retrieval systems that work in conjunction with MUFAR to provide a completely current source of information on a relatively simple data file. GML maintains a name, an address, a phone number, and two code fields. IPSSC also maintains the dates of up to twenty "events" and the dates of your response to each such event. An "event" might be a request for information about a specific product. Data entry is done in real-time. People and corporations are known by their names, not by a number. Outputs include several types of lists and a very versatile label formatter/printer. The IPSSC system has an automatic response date poster that updates the data file to reflect the sending of certain mail.

**PRODUCT: PHYSICIAN'S INFORMATION SYSTEM (OBYN).**

OBYN is an information retrieval system that works in conjunction with MUFAR to provide the Ob-Gyn physician with a ready reference to the current Medical, Biographic, and Demographic record of each of his patients. This is not a patient billing system. Using the facilities of MUFAR, this system will maintain a record on each patient that expands from a basic 512-byte record to one many times that size as information is added to the file. The data input module features VUE-like input editing. Patients are known by their names, not numbers. Several hard copy and CRT output formats.

# BUG FIX

## b

by BOB FOWLER

### Buglist #19 (Version 4.5A)

One user suggested I keep a TOP ten bugs and suggestions mini-list. This sounds like a good idea and would keep the big ones in focus. Due to considerations of time and 4.6, I will delay this until next buglist.

Local AMUS chapters all go onto our permanent SF chapter mailing list. Again, I suggest that all local chapters do the same thing, to keep in touch. Others to add to your permanent chapter mailing list are : AM, AMUS, ??? A possible UK/AMUS was mentioned in June 1980 AMUS, heard from them lately? Subscriptions to the SF Newsletter (\$10/year) are now available through me. To get previous issues, send three (3) first class postage stamps per issue. Monthly issue #7 was for Oct 1980.

### Buglist #18 Errata

Following are typos from yours truly:

Bug (15) "mm > 00 , dd > 00" should instead read "mm < 01 , dd < 01"  
Bug (22) "There was also on the label" should be "There was also a label"

Following typos occurred in buglist #18 due to re-typing at AMUS.

Bug (3) first line of MAP1 should have 50, not 30 characters.  
Bug (6) DIM'ension variable should be "B" not "b".  
Bug (23) "exists" should read "exits"  
Note (1) variable "a" should be "A"  
Note (15) the "M B" in Banks 4,5,6 should have 2 full spaces between them  
Timings : the "+/1" column heading should read "+/-"

### Buglist #20 (Version 4.6x1)

This is for AM's eyes only, as this is a preliminary (beta) release. I gave VUE a good work over, looking up all the past bugs and re-reporting any that still weren't fixed. VUE is 2258 bytes smaller in this release !!! Outside it looks the same, but internally was changed a lot. Major additions in 4.6x1 are bigger Priams, more Priam software, and tapes. The 30 & 60 MByte Priams are available, and may be split into "sub" drives. Thus, a 30 MByte physical Priam may be configured as one 30MB logical drive, (DSK0:), or as two 15MB logical drives (DSK0: and DSK1:), up to 8 sub-drives. A nice tradeoff, especially if you want more than 63 PPN's on one drive.

### Timings on Priams

All timings are given in milliseconds per disk block read.  
For RNDRED, this is an average, usually covering 500 or 1000 reads.  
For REDALL, this is the time of a REDALL divided by the # of blocks.

Device	Interface	Format	RNDRED	REDALL
Persci	AM-200	AMS	150 ms	63 ms
Wangco	AM-200	AMS	270 ms	63 ms
CDC	AM-210	AMS/DD	190 ms	122 ms
Hawk	AM-500	Hawk	62 ms	27 ms
Phoenix	AM-410	Phoenix	50 ms	17 ms
Priam 8.5M	AM-420	1 device	94 ms	18 ms
		2 devices	78 ms	20 ms

Larger Priams have voice coils (vs stepping motors), and should be faster.

### Notes on Winchesters & MPC

Like the Phoenix, alternate tracks are used and recorded in BADBLK.SYS[1,2]. The Phoenix allows 15 bad tracks; I have never seen one with more than 2. The Priam Winchesters allow 5,10,20 bad tracks on the 8.5,30,60 Mbyte drives. A major difference is that bad tracks are not "replaced", but are "deleted". Thus, suppose that track 2 is bad on a Phoenix and Priam disk. Then this is where AMOS will actually look for a given track on each :  
AMOS (logical) : 00000 00001 00002 00003 00004 ...  
Phoenix (physical) : 00000 00001 00809 00003 00004 ...  
Priam (physical) : 00000 00001 00003 00004 00005 ...  
Now suppose that you lose the BADBLK file on both devices. On the Phoenix, you will simply have trouble reading track 4. But on the Priam, you will have a big headache, because all sequential files past track 2 will now be pointing to the wrong blocks/tracks. Even recovery programs like DSKFIX will fail unless they are changed to allow BADBLK tables to be dynamically built in memory by the user. The best hope will be to artificially create a BADBLK file on the disk, and DSKDDT it to the point where it matches the old one.

In summary : After CRT420, mark bad track #'s on the outside of the drive, and possibly preserve a copy of your BADBLK file offline on a floppy disk (use LOAD and SAVE to do the copying, since COPY won't cooperate). After that, keep everything backed up. I repeat, KEEP IT BACKED UP. Only if you fail to do all 3 of these things will you get into real trouble. For those of you who get into real trouble, here is the BADBLK.SYS format:

# The Alpha Micro Problem Solvers

CLR.PRG  
CNTBLK.PRG  
KILALL.PRG  
MOVE.SBR  
LOCK.SBR  
TAPE.SBR  
SEQIN.SBR  
SEQOUT.SBR  
TRMTST.PRG  
STRIP.SBR  
COMMON.SBR  
SLEEP.SBR

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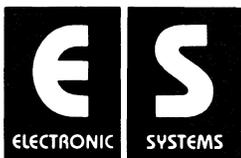
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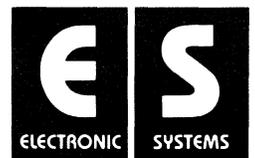
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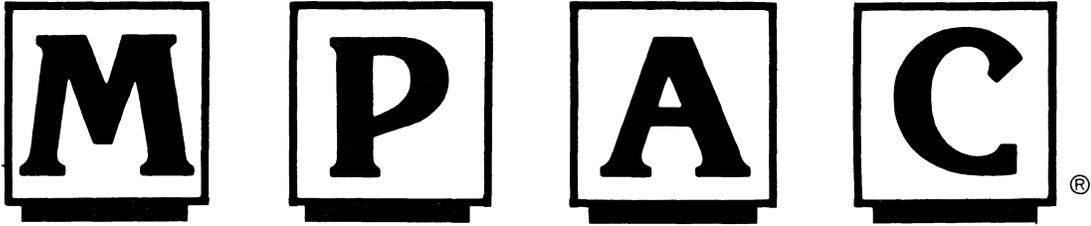


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# BUG FIX CONTINUED

This is what BASIC should have converted the "20" line number into. Thus, the problem is with COMPIL, not RUN.  
[thanks, Lai]

- (8) ECHO.SBR & NOECHO.SBR --- how they effect lower case conversion

XCALL NOECHO sets image mode, no echo, and lets lower case input go by. XCALL ECHO sets line mode, echo, and converts lower to upper case. It is possible that someone intended to force upper case in NOECHO.SBR, and return to lower case allowed on ECHO.SBR, but got it backwards. In any case, to remedy this problem, apply the following fix:

```
LOG DSK0:7,6
DDT ECHO.SBR
/6 BIC #23,@RO      BIC #3,@RO
^C
SAVE ECHO.SBR
```

[thanks, Jim Taylor and Peter Jacobson]

- (9) STENO.SBR --- documentation has some errors and omissions

Right off the bat, you are told to use F6 variables for STRTNO and ENDNO. This is wrong, and will get you into all kinds of trouble (use strings). We are then told that an ALL response returns values 0 and 999999999999. This is also wrong; it returns "" (empty string) and "[[[" (not "]]]"). Omissions : a return for ENDNO defaults to the value of STRTNO. The routine starts with a TAB(06,02); TAB(-1,10); TAB(12,20); "etc".

- (10) FLTCNV --- now uses RUN

As of 4.5, FLTCNV uses the conversions within RUN to do everything. Before 4.5, FLTCNV and RUN both had their own (parallel) conversions, which required AM to parallel any changes in both programs. As of 4.5, the 2nd word of RUN contains the version (eg, "45"), and this is checked by FLTCNV against its own version number.  
[thanks, Peter Jacobson]

- (11) BADBLK --- if found in memory, doesn't report correctly

Both of the following happened to us at different times. First,  
LOG DSKn:[1,2] ; any DSKn except DSK0  
LOAD BADBLK.SYS  
DIR BADBLK/H ; check hash code ...  
MAP ; hash code matches BADBLK on disk  
BADBLK DSKn: ; reports using DSK0:BADBLK.SYS !!!  
BADBLK didn't report on the BADBLK.SYS on disk, nor the copy in memory;  
it instead reported on DSK0:BADBLK.SYS[1,2] !!!  
The other time we tried this, it failed in a different way. Thus,  
LOG DSK5:  
LOAD BADBLK.SYS  
LOG DSK4:  
BADBLK DSK3: ; reports using MEM:BADBLK.SYS  
In this second case, neither the specified DSK, nor login DSK, nor DSK0 was used, but instead MEM: was used.  
This is disconcerting, but one of these is reproducible at any given time.

- (12) HELP --- Oversized crt bug #2

We have a 60-line CRT here at AIS. It has surfaced the following bug.  
HELP - only uses 24 lines  
[thanks, Gerry]

- (13) MACRO FSPEC monitor call --- default device not documented correctly

If an FSPEC call processes a file specification string with no device, it assumes the default (user login) device, and puts into the DDB a device name of 000000 and a drive number of 377 (octal). The documentation disagrees with the former & agrees with the latter. It says that the login device is located in the user's Job Table entry, and is copied into the DDB device word.

- (14) FIX --- Oversized crt bug #3

We have a 60-line CRT here at AIS. It has surfaced the following bug.  
FIX - only uses 24 lines, even if more exist  
[thanks, Gerry]

- (15) DDT --- the undocumented esc ? command

Type an ESC ? sequence in DDT. This will display several things, including the user's regs, DDT's regs, and breakpoints.

- (16) DDT --- Foot-in-mouth error in Buglist #18 Bug #21

Yes, Bob Fowler, you can input JSR and CALL to DDT. MACRO allows CALL <label> as a default to "CALL PC,<label>", but DDT requires the PC operand to be there (likewise for JSR).  
[thanks, Peter, John, and AM]

- (17) CDC Floppy --- POP manuals give wrong step rate

The Proof of Performance manual for the AM210 says to use a step rate of

# SABTEG IS STILL HERE!

All of you out there are doing so many great things with your Alphas that it's getting difficult to keep track of what each program does . . . right?

Lists like—

ADLRCP	BAS 1	ALGOR	BAS 4	AVAIL	BAS 5	AVAIL1	BAS 5
AVAIL2	BAS 6	BUILD	BAS 4	CHECK	BAS 1	CHKIN	BAS 76
CHKTRN	BAS 14	CHNGRM	BAS 44	CLEANR	BAS 9	CLRCAL	BAS 3
CSHOUT	BAS 32	CSHOU1	BAS 29	DAVE	BAS 5	DAYSET	BAS 3
DELREM	BAS 4	DELRFI	BAS 4	DONE	BAS 2	DUMB	BAS 1
ERASER	BAS 1	ERASR1	BAS 1	LOCRED	BAS 6	LOKALG	BAS 12
LOKROM	BAS 4	LOKSEQ	BAS 8	LOOK	BAS 2	MADCLR	BAS 1
MENU	BAS 1	MENU1	BAS 21	OUTCHK	BAS 62	OUTCHS	BAS 62
OUT2DA	BAS 7	PAYMNT	BAS 21	PYMNT1	BAS 7	PYMNT2	BAS 8

don't tell you all that much after a while do they? How would you like a program that gives you lists like:

<b>DIRBAS</b>	produces a merged directory with annotated information on each file.
<b>DIRCMD</b>	produces merged directory with notes CMD files (last update 11/20/80) HCB.
<b>DIRDAT</b>	produces merged directory of .DAT files with notes updated 11/30/80.
<b>FETCH1</b>	gives image mode from basic-examines keyboard input before C/R.
<b>PRTASC</b>	demo of single .SBR gives instant ASCII val upon keyboard input—no C/R.

The above was produced by typing (GETBAS) C/R. The list contains all the basic programs in that particular PPN. If we had wanted the .CMD files we would have typed (GETCMD)C/R.

Note II gives the name of each program followed by what it does and other pertinent information such as date last updated, related programs, author, etc.

Basic programs structured in a consistent manner, such as having line #90 contain the name of the program and explanatory information, will produce the above file automatically, as it reads your program to get that line and prints it in the index.

Programs with other than .BAS extensions will have to have their indexes annotated (once) for each new addition. New additions will show up properly merged in alphabetic order but without explanatory notes. Sabteg also handles TXT and LST files.

Explanatory notes are added using VUE.

Make no mistake, this is no lazy person's way out of doing an index. Nobody but Guru Leach, Hank Boschen and the several dozen who have already bought his SABTEG Program use Line 90 as an explanatory label.

You will have to manually edit an index (once) for each extension that you use.

Naturally you will do it Hank's way in the future (for basic programs) and each time you VUE programs you will modify them to conform.

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# BUG FIX CONTINUED

3 for the CDC floppies. This would normally be correct. However, the CDC drives require a 20 ms settling time on the last track, and the WD1791 chip only allows a maximum of 15 ms. Hence, it is presently necessary to compensate by setting the step rate to 10. Again, this is only true for the AM210+CDC combination. [thanks, Gerry/Ray]

## AMOS SUGGESTIONS (Version 4.5A)

- (1) VUE --- an "are you sure?" query on any Quit.  
[thanks, Joe]
- (2) PRINT --- make the /K work for wildcards.
- (3) PRINT --- extend the /W option to /W:n (n = minimum # of queue blocks)  
PRINT /W waits until there are enough queue blocks to process the PRINT. Thus, (eg) you can set up a command file to print 1000 files, and not have to worry about crashing, typing them in manually, etc. However, the current # of minimum queue blocks required by /W is too low to guarantee that other users will not cause the crash. I suggest either raising the minimum, or else allow the user to set it. Thus, FLOCK users, non-FLOCK multi-users, and single users could each set their own limits, and learn by experience what that should be.
- (4) COPY --- add /F switch for full filespec  
Currently, COPY only displays as much file spec as is necessary, if the device or PPN corresponds to the default, it is not displayed. Perhaps add a /F switch to cause the full filespec (device,filename,PPN) to always be displayed on both source & destination.  
[thanks, Alan]
- (5) Suggestion for AMOS 5.0  
Automatic file locking by the AMOS monitor. Nice, huh ?

## AMOS NOTES (Version 4.5A)

- (1) BASIC --- a bizarre bug with the number 900666 in 4.4  
If you are still on 4.4, or have one handy, try the following.  
SIGNIFICANCE 11 ! won't work with anything less  
PRINT 900666 ! comes out as 900665.99999 in 4.4  
Something was amiss with the conversion-to-output routine. Ok in 4.5. According to Jim, he tried for hours to find another case, but didn't.  
[thanks, Jim Taylor]
- (2) BASIC --- some strange syntaxes that are valid & may throw you a curve  
The syntax "THEN <statement>" by itself is legitimate. Consider this  
INPUT X,Y  
IF X=0 &  
AND Y=0  
THEN PRINT "BOTH ZERO"  
A pair of consecutive colons is equivalent to a cr+lf. Consider this  
INPUT X  
IF (X=0) THEN PRINT "ONE" : PRINT "TWO" : : PRINT "THREE"  
In both the above programs, the last print statement always executes. Both of these discovered from (painful) experience.  
[thanks, Joe and me]
- (3) RUN --- INPUT works ok with no echo  
To use XCALL INPUT, it is necessary to first XCALL NOECHO. Before 4.5, XCALL NOECHO caused problems with using the regular INPUT. Thus, in general a program used all XCALL INPUTS or all INPUTS. As of 4.5, XCALL NOECHO no longer causes problems with INPUT.
- (4) COMPIL --- how to use the fact that a COMPIL with errors leaves no .RUN  
As of 4.5, if COMPIL encounters any errors, no RUN module is created. In addition, if any old RUN module was there, it is also deleted. Thus, you cannot unknowingly execute a flaky RUN module. In addition, if you COMPIL many BAS modules via a command file, you no longer need to stay at your terminal to see if any errors occur; just go to lunch, and later check to see which RUNs are missing.
- (5) BASIC algorithms --- some notes from Peter Jacobson  
Elegant is the word for how the following functions are accomplished. First, the INT function is calculated exactly the same as the following  
$$\text{INT}(x) = x + 2^{**39} - 2^{**39}$$
Second, the FLOAT function (or any integer to floating conversion) is accomplished figuratively as follows  
$$\text{FLOAT}(x) = (x \text{ with an exponent of } 2^{**39}) - 2^{**39}$$
Thus, move the Bn variable into the lower order bytes of the F6 area, put in an exponent of  $2^{**39}$ , then subtract a floating  $2^{**39}$  from it.  
[thanks, Peter]
- (6) Alpha Accounting --- AUTOGL.BAS[33,1] branches out of FOR loops  
If you have Alpha Accounting, and are running the monthly interfacing, then you may have encountered problems with it under AMOS 4.5



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# BUG FIX CONTINUED

There are two places where a GOTO is guaranteed to leave a FOR loop.  
This is the only Alpha Accounting program where I have seen this.  
The loops are at lines 2480-2530, 2890-2940.

(7) STRIP.SBR --- doesn't pad with nulls

STRIP only puts a null after the last non-blank in a string.  
In general, all other BASIC string manipulations pad with nulls.  
Thus, STRIP treats its string arguments like neither S nor X formats.  
[thanks, Gerry]

(8) PRINT --- always 1 FF (form feed) between reports except on /NOF option

In general, the Alpha Accounting reports have a beginning & ending FF.  
Why, then, do no extra pages get ejected? Answer: the smart spooler.  
The logic goes this way:  
If the very first character of a spool file is a FF (form feed),  
and the last character sent out by the spooler was an FF,  
then this FF is ignored. Any further FF's are printed unchanged.  
After the file is finished, if the last character was not an FF,  
and the /NOF switch was not invoked, then the spooler sends out an FF.

(9) SORT --- monitor SORT does indeed work with random files

I finally tried this, and it works. Totally undocumented since 4.4  
Just type SORT <random file>, and answer the questions asked.

(10) ISAM --- some advice on locking (XLOCK or FLOCK)

AM's former ISAM programmer advises the following locking scheme.

```
Lock File
Read Record
  Lock Record
  Unlock File
  [fiddle around with record]
  Lock File
  Update Record
  Unlock Record
Unlock File
```

He says that ISAM should be considered working, and cited huge ISAM  
installations operating without a hitch over the recent months.  
[thanks, David La Verne]

(11) AM420 --- first device with >32768 blocks possible

Until now, the Phoenix had the most number of blocks per drive (29088).  
It appears that the 30 MByte Priam will have over 60000 blocks per drive.  
This is the first time that AMOS has had to be careful about "unsigned"  
vs "signed" integer distinctions with respect to block numbers.  
Assembler fans will know what I am talking about. Keep your eyes peeled.  
There may be AMOS bugs lurking in the shadows, 3 or more years old,  
that have never had the opportunity to spread their wings and fly.  
If you encounter any troubles with blocks above 32768 (100000 octal),  
tell us, before we become the lucky first on our "block" to lose data.

(12) WD16 Manual --- a cute little hint from Mr FORTH

Well, sometimes a little ingenuity goes a long way.  
If your WD16 manual isn't in the right order, change it !!  
Bob xeroxed the pages, cut them up, re-arranged them in Mnemonic order,  
and re-xeroxed them in alphabetical order.  
[thanks, Bob Berkey]

(13) PRG --- state of registers upon entry

The following are available upon entry to a PRG module from AMOS:

```
R0 = User JCB (undocumented)
R2 = input (documented)
R3 = base of free user memory (undocumented)
R1,R4,R5 = 0 (not used ?)
```

[thanks, Jeff Fisher]

(14) SYSMEM --- may be in pieces

Evidently, multiple SYSMEM lines may appear in your SYSTEM.INI.  
They may even be NON-CONTIGUOUS chunks of hardware memory.  
AMOS will string them all together into one contiguous software bank.  
Bill configured a bitmap as a 2-piece SYSMEM, and it seems to work.  
However, I would forewarn the reader to first read Buglist #18 Note #15.  
[thanks, Bill Sherman]

(15) AM-600 Tape available in SF area

Maybe once in a decade you need something moved from/to magtape.  
If you do, and live in the SF area, see Marvin Paller (408-727-8866).  
He has an AM-100 with a Hawk, Phoenix, and AM-600 tape drive system,  
and is willing to make such available to others for a nominal rate.  
[thanks, Marv]



## L.M.S. Technical Services, Inc.

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Dear Alpha Micro Users,

L.M.S. Technical Services is an independent third party maintenance firm serving the New York tri-state area. As an authorized AlphaServ member, we presently maintain over 40 Alpha systems from Philadelphia, PA. to Boston, Mass.

L.M.S. specializes in hard disk maintenance and provides an extensive inventory of disk heads, fixed media, alignment disks, off-line exercisers, filters and replacement circuit boards. Servicemen are on-call 7 days a week, 24 hours a day and a 24 hour answering service is also provided. Our men have been trained extensively on Control Data drives and Alpha MicroSystems computers.

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Yours truly,

Larry Shulman  
President

LS:gz

# UP DATE

by Steve Elliott

I guess it's time for the foot in the mouth routine. In last month's letter from the president, I blasted Alpha Micro for not releasing Winchester drives as an add-on for us Alpha Owners who already have floppys, Hawks, or whatever, who want to expand our system. I just received a notice that Alpha is now offering each of the Winchester systems, and the video tape backup controller board as separate items. If you wish, you can also order PROMs that will convert your system so that you can boot off of these devices. Be sure that you and your dealer order the correct proms, since you can specify the secondary boot device. If you have only a Winchester and a video tape recorder you will want to be able to boot off of the video recorder if there is a problem with your Winchester. Otherwise, you will probably want to have your current disk drive specified as the second boot device.

Alpha Micro is currently sending our AMOS version 4.6 with all Winchester systems since it contains all of the support software for the Winchester, video, and streamer hardware. The rest of the Alpha Micro world is scheduled to start receiving 4.6 mid-December.

We just got the first document from Alpha Micro officially discussing the new CPU that will use the MC68000 processor. The CPU will be designated the AM-100L. It can address up to 16 MBytes of memory using 24 bit addressing, and Alpha claims that BASIC will run 2 times faster and Assembler 3

times faster than the 100/T. The processor card has 2 serial ports, a clock/calendar with battery backup. AlphaBASIC programs will run on the AM-100/L with no conversions. If you are using ISAM files, you will have to run them through a converter. Alpha has changed the assembler instruction set so that assembler written on other MC68000 machines will probably not run on the Alpha Micro machine. However, you will be able to use most of your hardware on your current system to upgrade to the AM-100/L as far as disk drives go. The announcement says that you can use the AM-710 memory boards, but says nothing about any other types of memory.

I personally am most pleased about the idea of having a larger processor around. Software developers should be looking forward to a new arena of customers that can be accessed now, with little or no changes to their programs, and AMUS, of course can look forward to more members.

In regards to AMUS's future, I plan to have several sessions at the AMUS convention in January concerning the future of AMUS. I am interested in hearing what services AMUS members want, and want to hold discussions on ways to improve relations with Alpha Micro, local chapters, dealers, and the 75% of Alpha Micro owners who are not members of AMUS. If you have ideas, please get them to me. I will be available throughout the convention for suggestions. If you can't attend the convention, call or write with your ideas.

## AMUS makes available:

### AM100 WD16 Assembly Language Tool Kit

by Bob Fowler \$ 3.00

### AM100

### Programmer's Manual

by Michael A. Lewis \$12.95

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The local insurance agency is an ideal customer for an ALPHA. The agency's main product is paperwork, at which a computer is much more cost effective than a staff of clerks. The reason this industry has not yet been fully automated is the peculiar nature of its business. A number of generalized systems have been adapted to it, but the low priced systems which most agents can afford are not suited to their needs.

The IAC insurance software just released for the ALPHA can be used by YOU to change this situation in your neighborhood. If you can take care of the ALPHA, our software will take care of all the requirements and idiosyncracies of the agents' business. Selling it should be easy since it is demonstrably a superior product and it is already known in the industry. Our systems are listed in the industry sponsored Insurance Institute of Research (IIR) Automation Guide under the IMA corporate name.

The IAC software system has been eight years in the making. It was designed and implemented on larger machines. We discovered the ALPHA last year and were amazed by its performance and ability to handle all our software which was designed for large sophisticated minicomputers. The system is now fully implemented on the ALPHA and is available at a reasonable license fee to dealers.

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Write to us or call Mike for further information.



**WANTED:** Used AM-300 board. Contact:

Ed Conrad  
P. O. Box 5087  
Poland, OH 44514  
(216) 757-0711

Also, if you have any information about hooking up a NEC Spinwriter to do graphics without reversing escape sequences when it's writing the line backwards, it would be appreciated.

**WANTED:** AMUS wants to make the Network into an active part of AMUS. Much work needs to be done, and we need the help of someone either in the Denver-Boulder area or with an unlimited long distance phone line. This person would document all the information being received by the Network, oversee the Bulletin Board system, and distribute programs when requested. They would also install demonstration programs, and keep track of programs sent in for evaluation, free distribution, paid distribution, or whatever. We can pay for a part time position. Contact:

Steve  
1911 11th Street  
Suite 210  
Boulder, CO 80302  
(303) 449-6917

**FOR SALE:** Complete AM100 system, including 192k, 10meg CDC Hawk, 4 Soroc terminals, 1 TI810 printer, 1 DC Hayes modem board, 1 PMMI modem board, 2 DIGICOM 300 baud acoustic modems. CPU and Disk Drive mounted in roll around cabinet. System is two years old and in perfect condition. Business and miscellaneous software also available. Make offer. Contact:

Dave Liem  
(816) 637-8638

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**WANTED:** General Ledger modification to Alpha Accounting on the Profit and Loss Statement. We need the ratios under "Cost of Sales" to use the respective "Gross Sales" category as the denominator rather than the "Total Gross Sales." This provides gross margin percentages under each area of cost. Please contact:

Vicki Thompson, System Operator  
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## SOFTWARE LEGAL GUIDES AND TIMESHARING SERVICES

CCC has published a Software License Planning Guide, authored by I. J. Kerner, Attorney, which is a useful publication containing information and forms designed to enhance the ability of the software owner to protect his proprietary interests when licensing use of his product. The guide is available for \$15.00. CCC provides DEC VAX 11/780 timesharing services via Telenet at nominal rates. For more information:

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