alpha micro
AMSD
journal
ALPHA MICRO SERVICE DIVISION
May 1987
Volume 9, No. 5

In this issue...

May 1987 **AMSD Journal** Volume 9, Number 5

The *AMSD Journal* is published monthly by Alpha Micro Technical Publications for the Alpha Micro Service Division. Please address all correspondence to AMSD Journal, Alpha Microsystems, 3501 Sunflower, Santa Ana, California, 92704.

Subscription Information: Subscription rates are $40 per year. Back issue sets are also available for $150 per set. Each Alpha Micro dealer receives one permanent subscription to the *AMSD Journal* free. For additional subscriptions, send your name, company name, address, customer number (if applicable) with payment of $40 for each subscription to:

AMSD Journal
Subscription Department
Alpha Microsystems
P.O. Box 25059
Santa Ana, CA 92799

AMSD Telephone Numbers

Customer Service	(714) 641-7602
Customer Education	(714) 641-6330
Technical Support	(714) 641-7608
Main Switchboard	(714) 957-8500
Spare Parts/Logistics	(714) 641-6339
AMTEC (1200 Baud Bell 212A)	(714) 545-2290
AMTEC (300 Baud Bell 103)	(714) 545-8546

Article Filing Instructions

We hope you find the *AMSD Journal* to be a valuable reference tool, and that you will want to refer to its articles frequently in the future. To make it easy and quick to find information, current articles are designed to be filed with articles from past issues. The entire set of *Journal* back issues forms three volumes: "General Information," "Software Information," and "Hardware Information." (The set of back issues is available for purchase. See "Subscription Information," above.)

The title of each feature article in this issue includes a reference number. Use the reference number to file the article in the back issue volume indicated at the top of each page of the article. For example, if the top of the first page of the article "6.5.5 One Hundred New Uses for MULTI," contains the words "Software Information," you know that article is to be filed in Section 6 of the "Software Information" back issue volume after article number 6.5.4.

The last pages of the *Journal* are new Tables of Contents for the back issue volumes, updated with entries for articles included in this month's issue.

Q&A Ask Alpha Micro: Questions and Answers

Q. How can I get schematics for the VME systems?

ANSWER: Schematics for the VME systems are a part of the course materials in two of the classes offered by AMSD Customer Education. You must attend either the two-day seminar for the AM-1500 and AM-2000, or the System Maintenance Week 2 class. Please refer to the General Volume article 4.2.1 in this month's Journal for class schedules.

If you have already attended one of these classes and did not receive a copy of the schematics at that time, schematics will be mailed to you. A distribution list is currently being made of class attendees who should receive a copy of the VME schematics. If you attended one of the two classes mentioned above and do not receive a copy of the schematics in the near future, please contact AMSD Customer Education.

Q. When verifying a backup tape created by VIDEOTRAX, the tape reliability ratio is very low-- i.e., 10:1, 30:1. What can I do to ensure better reliability?

ANSWER: A low reliability ratio can be caused by a number of different circumstances and sometimes it's hard to track down. However, the list below describes some actions you can take to try to improve the ratio.

- o Adjust the tracking on your VCR during playback.
- o Be sure the video cables are shielded properly. Please see your VIDEOTRAX Owner's Manual for more information about the cables.
- o Clean the recording heads on the VCR.
- o Use 2 hour recording mode, not 4 or 6 hour.
- o The video tape itself may be bad; try using a different tape.
- o Move the VCR unit away from anything which creates electric noise which can be picked up when the VCR unit records. A light dimmer switch, fluorescent lights, the computer, the computer monitor, power supply units all generate "electrical noise."

  For example, do not keep your monitor on top of the VCR or keep the VCR on top of your computer because the noise the monitor or computer produces could interfere with the VCR's ability to record data reliably.

Q. What IACK and Bus Grant jumpers need to be removed on the AM-1500 or 2000 systems when plugging a new board into the system?

ANSWER: On intelligent boards, such as the AM-515, AM-350, or AM-640, remove jumpers:

BG-3 and IACK

The bus grant silk screen numbering is different on some 10 slot systems. On some systems the numbering is BG 0 to BG 3, and on others it is BG 1 to BG 4. Use the highest number shown, either BG 3 on those numbered 0 to 3, or BG 4, on those numbered 1 to 4.

Ask Alpha Micro: Questions & Answers (Continued)

On non-intelligent boards, such as the AM-212 and AM-630, remove only the IACK jumper.

On memory boards, no jumper needs to be removed.

At a later time, if you remove the board from the bus, remember to re-configure the jumpers so the system knows the board does not exist.

Q: There seems to be a consistent job lock-up problem with the jobs running off of the AM-350 board. Jobs on the AM-180 CPU do not have this problem. What is causing the problem on the AM-350 and what can I do to correct it?

ANSWER: This problem can occur with non-Alpha Micro software that does not correctly handle the multi-processor situation caused by the presence of the AM-350 and the AM-180.

To state it simply: programming with multiple CPUs requires strict adherence to established rules. Implementing routines incorrectly in a single processing system was and is more tolerant than in multiple processing systems.

Certain monitor calls were designed for use only at the interrupt level in the terminal service system. With the pipelined nature of a single processor system, software developers were able to incorporate these routines in their user level software without problems. However, with the addition of multiple CPU systems, incorporating these same routines in the same manner as used on single CPU systems could generate problems if the established rules are not closely followed.

For more information about the programming restrictions and established rules for the AM-350, please see the April 1987 Journal Software article 3.4.1 - "Programming Cautions: AM-350 Phase II."

2.5.15a
Errata: "AM-410/AM-415 Configurations - April 1987

We have identified a mistake in Hardware Volume article 2.5.15 - Update to Hardware Volume Article 2.5.8 - "AM-410/AM-415 Configurations" published in the April 1987 Journal, vol. 9, no. 4.

Please accept our apologies for any inconvenience this error may have caused you and amend step number 8 appearing in last month's issue to read as follows:

8. Using AlphaVUE, create a file named CRTSMD.M68 and enter one of the following patches, depending on your version of AMOS:

For AMOS/L 1.2A and earlier, enter the patch in item a.).

For AMOS/L 1.3 only, enter the patch in item b.).

For AMOS/L 1.3B and later, enter the patch in item c.).

---

a.)
```
; Patch to certification program for
; Phoenix drive with an alternate port
; address.
;

COPY        PATCH

.=^HØCE          ;For AMOS/L 1.2A & earlier.

CMP         A1,#^HØFFFF1C

END
```

b.)
```
; Patch to certification program for
; Phoenix drive with an alternate port
; address.
;

COPY        PATCH

.=^H1ØE          ;For AMOS/L 1.3 only.

CMP         A1,#^HØFFFF1C

END
```

2.5.15a (Continued)
Errata: "AM-410/AM-415 Configurations - April 1987

```
c.) ; Patch to certification program for
    ; Phoenix drive with an alternate port
    ; address.
    ;

    COPY        PATCH

    .=^H10E          ;For AMOS/L 1.3B & later.

    CMP         A1,#^H0FFFFFF1C

    END
```

This completes correction to **Hardware Article 2.5.15** - Update to Hardware Volume Article 2.5.8 "AM-415/AM-410 Configurations" appearing in the April 1987 Journal.

2.10.2
AM-520 Disk Defect Management

by R.J. Wilcox
Design Engineer, Advanced Systems Specialist
Advanced Products Division

[Editor's Note: The January 1987 issue of the Journal contained an introduction to the AM-520 SMD Disk Controller. The following article contains information on how the AM-520 will handle disk defects. The AM-520 is still undergoing development and testing, and is not yet available for shipment.]

Winchester technology disks, because of their extremely high data density, are inherently susceptible to media flaws. Thus, it is very common for such disks to contain disk blocks that cannot be read or written reliably. It is the computer system's responsibility to detect and avoid these problem areas on the disk.

With the advent of the AM-520 SMD Disk Controller, Alpha Micro introduces a new method of handling disk defects.

Other Alpha Micro disk controllers rely on AMOS to keep track of media flaws (known as "bad disk blocks") by building, maintaining, and referring to an alternate track table in memory that tells AMOS what disk areas to use instead of the bad disk blocks.

The AM-520 SMD Disk Controller, however, is itself responsible for keeping track of the media flaws and known defects on the disk drive, thus allowing AMOS to treat the AM-520 controlled disk drive as an error-free drive.

Because the goal of the AM-520 is high performance, the method it uses to keep track of the media flaws is highly efficient.

AM-520 Defect Management Features

The AM-520 disk defect management method, implemented by the software supporting the AM-520, provides the following features:

Incorporates Manufacturer's Defect List: Many disk drive manufacturers include a list of the defects for a particular drive on the recording surface of the drive itself.

If such a list is on the drive, Alpha Micro has always included it in the BADBLK.SYS file for that drive during the initial formatting of the drive at the Alpha Micro factory. (This capability was not available in the formatting programs released to customers.) This method of formatting ensures better reliability than simply writing a specific pattern and reading it back to determine defective areas, which sometimes allows marginal areas to escape detection.

Such a procedure ensures maximum reliability in data storage and retrieval. The new CRT520 program provides additional capabilities by allowing the defect list to be managed in the following manner:

- The manufacturer's defect list may be read directly from the drive during the formatting procedure.
- The defect list can be read from a disk file saved from a previous formatting session or from a file created by the user using AlphaVUE. (The user creates this file by typing in the hardcopy list of defects shipped with the drive by the manufacturer.)

2.10.2 (Continued)
AM-520 Disk Defect Management

- Media flaws can be keyed directly into the defect list by using the CRT520 program in disaster recovery situations.

Adds Defective Blocks without Clearing the Drive: With current controllers, changing the BADBLK.SYS file modifies the file structure of the disk, requiring the user to: back up all files on the disk, modify BADBLK.SYS, initialize the disk, and then restore all of the files.

The user of an AM-520 controlled disk may add alternate blocks to BADBLK.SYS any time a disk failure occurs. Adding a block in this manner does not change the file structure of the disk, and does not require saving and then restoring the disk files. In addition to adding alternate blocks to BADBLK.SYS, the user can incorporate the alternate blocks in the defect list during subsequent formatting if desired.

Advanced Formatting Method Provides Better Performance: One of the performance features of the AM-520 is its ability to read multiple sectors from the disk during a single disk access. The formatting method used by the AM-520 ensures that bad blocks do not interfere with the ability to read a full track. Bad blocks are simply "bypassed" on the fly. This increases the efficiency with which the AM-520 controlled disk can transfer data.

Hidden Bad Block Map: The Bad Block Map is kept in an area of the disk which is inaccessible to AMOS and the user during normal operation. The AM-520 reads this special area when the disk is mounted, and uses the Bad Block Map information internally.

Although BADBLK.SYS in [1,2] is a copy of this information, its presence is not necessary for normal operation of the drive. Even if a user program destroys the disk file structure (or BADBLK.SYS), the Bad Block Map information will remain intact. Although this method does not remove all possibilities of disk failure, it eliminates a major cause of disk-related disasters. (For more information on the Bad Block Map, see "Defect Management Overview," below.)

Ability to Reformat Disk, Incorporating Alternate Blocks: "Grown" defects which have been added to the Bad Block Map as alternate blocks through the BADBLK.LIT program can be incorporated directly into the "sector slip" list of the Bad Block Map during a subsequent formatting procedure. This provides better performance in accessing those blocks. ("Grown defects" are new defects that appear during normal system operation after initial formatting of the disk.) See "Defect Management Overview," below, for a discussion of "sector slip" and "alternate blocks."

Enhanced System Diagnostic Block Mapping: During the initial format procedure a list of diagnostic blocks is created and stored in the Bad Block Map. These diagnostic blocks cannot be accessed by AMOS or user programs. This allows system self test and diagnostic procedures to gain access to a block under each head without requiring an entire cylinder be allocated for diagnostic use.

Defect Management Overview

The AM-520 uses two methods to bypass disk blocks that contain defective areas. The first method is referred to as "sector slipping." When the drive is formatted,

2.10.2 (Continued) AM-520 Disk Defect Management

known bad blocks are formatted with a special header that dictates they are not to be used in normal read and write operations. The AM-520 then skips these blocks during operation. This method provides better performance since the heads are not required to move more than one cylinder to compensate for the bad block. Normally, no extra head movement is required at all. Since the drive format is modified to reflect these bad blocks, no extra blocks may be added to the sector slip list without reformatting the drive.

The second method the AM-520 uses to bypass bad blocks is referred to as "alternate blocking." Blocks that cannot be read or written after the initial formatting may be added by the user to an alternate block list by using the BADBLK.LIT program.

When the AM-520 recognizes one of the blocks in the alternate block list, it simply substitutes another block in an unused area of the drive. This normally requires the heads to move to another cylinder to retrieve the alternate block. Because of this, performance may be degraded when accessing this block. However, bad blocks may be added to the alternate block list at any time without requiring drive reformatting or file structure changes. The drive may subsequently be reformatted, incorporating these bad blocks if the user wishes-- these blocks are then "sector slipped" for best performance.

The AM-520 manages media defects by interpreting the data in a hidden area of the drive called the Bad Block Map. The Bad Block Map consists of the following items:

- **List of Alternate Blocks:** This is a list of blocks added to the Bad Block Map by the BADBLK.LIT program. These blocks are simply translated into alternate blocks on an unused area of the disk. Although not very efficient, adding alternate blocks through this method allows continued use of the disk until reformatting can be performed at a more convenient time. When the drive is formatted, no alternate blocks may exist.

  Alternate disk blocks are "logical": that is, they exist as a disk block number to AMOS, which is not the same as the physical block on the drive.

- **A List of Bad Blocks:** This is the list of actual bad blocks on the drive (also known as the "sector slip" list). Any alternate blocks which are added to the list through the format procedure are translated into physical block numbers to be included in this list.

- **A List of Diagnostic Blocks:** The AM-520 maintains a list of diagnostic blocks for self-test procedures. These blocks are not accessible by the user.

- **The Media Defect List:** A copy of the manufacturer's media defect list is stored with the Bad Block Map in the hidden area to ensure this information is not lost. Although this information is kept on the drive, we recommend you save the media defect list as a separate disk file and print a hardcopy version for extra protection.

The Formatting Program, CRT520

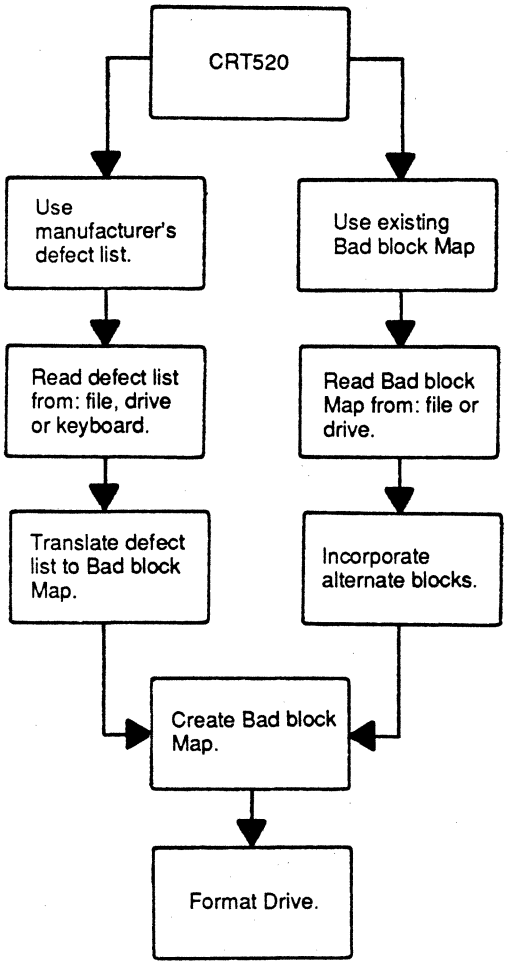
The new formatting program, CRT520, that will implement the features discussed above will operate a little differently than past formatting programs. This section gives an overview of CRT520 operation.

CRT520 formats a disk drive by writing a specific record format on each drive

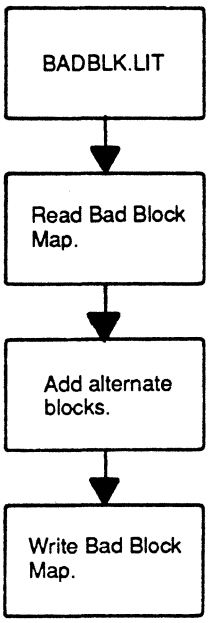
2.10.2 (Continued)
AM-520 Disk Defect Management

track-- the entire track. Since many manufacturers store media defect information on the first sector of each track, CRT520 saves this information in the Bad Block Map it creates on the drive. That means once the drive is formatted, the original manufacturer's defect data is no longer in the first sector of each track.

In addition to writing the defect information as the Bad Block Map, CRT520 also allows the user to save the data in another file of the user's choice. We recommend that this file be created during the initial formatting of the drive. Further, it is a good idea to print a hard copy version of this file and physically attach it to the outside of the drive to assist in any future disaster recovery.



CRT520 Creates Bad Block Map in Two Different Ways



Using BADBLK to Add Alternate Blocks

The steps CRT520 goes through in formatting a disk drive are:

1. **Identify the Type of Disk Drive:** CRT520 asks the user to provide information on the disk drive (e.g., number of cylinders, number of heads, number of sectors per track, sector size, number of logical units, etc.). To assist the user in answering these questions, CRT520 displays a menu of supported disk drives.

2. **Record the Drive Serial Number:** CRT520 asks for a serial number so media defect lists and Bad Block Maps can be related to a specific drive.

2.10.2 (Continued)
AM-520 Disk Defect Management

3. **Read the Media Defect List:** CRT520 requires a media defect list for initial formatting. This list includes cylinder, head, position, and length for each media flaw on the drive. This information is stored on the drive when it comes from the manufacturer. CRT520 reads this information to create a Bad Block Map. If CRT520 is not able to read the information from the drive, it can be read from a file or the user may input it directly from the keyboard.

   After an AM-520 controlled disk has been formatted for the very first time, the user has the option of formatting the disk from the existing Bad Block Map. The user may choose to read the Bad Block Map from the actual Bad Block Map area on the disk or from a user-specified disk file.

   When formatting from an existing Bad Block Map that has had alternate blocks added, the user is asked whether to incorporate the alternate blocks in the new Bad Block Map. If so, the alternate blocks are translated and added to the Bad Block Map. The drive is then formatted, incorporating these blocks directly into the format. If the user wishes to ignore the alternate blocks, they are deleted from the Bad Block Map; the drive is then reformatted as it was during the previous format.

4. **Save the Media Defect List in User File:** The user is given the option of saving the defect list in a disk file.

5. **Translate the Media Defect List into the Bad Block Map:** The AM-520 requires a list of bad blocks in a specific format to achieve optimum performance. The Bad Block Map is a special file used to properly format the drive. This file is saved in an area which is accessible only by the AM-520 for media defect management purposes.

6. **Save the Bad Block Map in a User Specified File:** The user has the option of saving the Bad Block Map as a disk file.

7. **Format the Drive:** CRT520 now formats the drive using the information in the Bad Block Map. CRT520 writes each track with header information for each disk block indicating whether the block is good, bad, or diagnostic.

8. **Initialize the Disk:** CRT520 now initializes each logical device on the disk drive with the correct MFD, UFD, and bitmap information. Additionally, the Bad Block Map is written as the file BADBLK.SYS on the first logical device in account [1,2].

13.2.1
Installation Site Checklists

The following checklists have been prepared by Mike Wsol, a Senior Regional Support Specialist in the Alpha Micro Service Division Field Engineering Department to help you plan an installation. These checklists will be part of a future Installation Planning and Site Preparation Guide currently being developed by Alpha Micro.

Although the final site preparation guide will not be available for some time, we thought you might appreciate the following preview.

We have included three checklists:

- **Alpha Micro Computer Pre-installation Site Planning Checklist,** to be used while planning a computer installation, before the installation begins.
- **Alpha Micro Computer Installation Inspection Checklist,** to be used at the time of installation.
- **Alpha Micro Computer Site Audit Checklist,** to be used when reviewing an existing installation.

Please feel free to photocopy these checklists for your own use.

ALPHA MICRO COMPUTER PRE-INSTALLATION SITE PLANNING CHECKLIST
CHECKLIST #1

This checklist should first be filled out by the customer and then reviewed by the Field Engineer.

Please complete the following information:

1. Customer Name: _____ Date: _____
2. Site Coordinator Name: _____

   Alternate Coordinator: _____

   Telephone Number: _____
3. Hardware Service Personnel: _____

   Telephone Number: _____
4. Alpha Micro Dealers (Hardware and Software Sales)

   Name: _____ Telephone: _____

   Name: _____ Telephone: _____

The following is a list of items that will affect the performance and reliability of your Alpha Micro computer system. Some of the requirements are mandatory; others are advisory. Your Dealer or Field Service Engineer will review all of them with you to ensure you understand them and their potential impact on system performance. The *Alpha Micro Installation Planning and Site Preparation Guide* should be used in conjunction with this checklist.

Before You Start	**Yes/No**
1. Did you receive an *Alpha Micro Installation Planning and Site Preparation Guide*?	____

Location of Equipment	**Yes/No**
1. Has the final decision been made on a site for the new computer system?	____
2. Is there a sketch of the Master Site Plan?	____
3. Is the room going to be constructed? If so, were general guidelines followed from the *Alpha Micro Installation Planning and Site Preparation Guide*?	____
4. Is the room adequately large for the currently purchased computer system?	
a. AM-1200 desktop: minimum room size 6 X 6'.	____
b. AM-1500/AM-2000 desktop/tower model: minimum room size 8 X 8'.	____
c. AM-1500/AM-2000 rack mount cabinet: minimum room size 9 X 12'.	____

Location of Equipment (Continued) **Yes/No**

5. Is the room adequately large to also include a printer, terminal, and other furniture (minimum room size 12 X 12')? ____

6. Have future electrical, environmental, and space requirements been considered? ____

7. Is the computer equipment to be installed on a building floor other than the first? ____

   If so, is there an elevator available to access the desired floor? ____

   If no elevator is available, can the computer system be delivered to the proposed site location? Consider stairs, width of doors, height of cabinet, and weight of computer system. ____

8. Is there other electronic equipment, air conditioners, or large motors near the proposed site that might affect the computer system? ____

Site Layout **Yes/No**

1. Have you used the layout form in the *Alpha Micro Installation Planning and Site Preparation Guide* to work out a simple layout? Did you make sure you left the minimum clearance around the computer system for maintenance, work area, cabling and airflow? ____

2. Have you determined the exact locations of the terminals? Are power outlets located within four to six feet of each location? ____

3. Can cables be run to terminal locations with direct connections? ____

4. If employees are going to work in the computer room, has sufficient space been provided for them and the necessary furniture? ____

5. Has space been provided for storage cabinets for storing magnetic tapes, VCR tapes and printer paper and ribbons? ____

6. Has the Master Site Plan been finalized, including the following items:

   a. CPU room ____
   b. Power wiring for all computer system components ____
   c. Printers ____
   d. CRTs (terminals) ____
   e. Modems ____
   f. Power conditioners ____
   g. Cabling system routing ____

Electrical Requirements

Yes/No

1. Has the possibility of additional electrical circuits for expansion been considered? If so, are they on the Master Site Plan? ____
2. Can additional (new) electrical circuits be installed at the proposed site? ____
3. Do you understand the need to have correct wiring installed, with isolated ground outlets? ____
4. Has the type of electrical receptacle needed been explained to you? ____
5. Will there be a separate circuit for the computer and dedicated lines for line printers? ____
6. Has the benefit of power conditioning been explained to you? ____
7. Has the customer consulted the power conditioning appendix in the *Alpha Micro Installation Planning and Site Preparation Guide*? ____
8. Has a dedicated, isolated Earth Ground been installed? ____

Environment

Yes/No

1. Is there a window in the room that will affect the ambient temperature and introduce unnecessary radiant energy? ____
2. Is there an air handling system capable of maintaining a room temperature between 60 and 85 degrees Fahrenheit, seven days a week? ____

   If no, will one be installed? ____
   When? ____
3. Because of possible static electricity buildup, has the requirement for a humidifier/dehumidifier been discussed? ____
4. Has the need for eliminating carpets and providing a static-free floor in the computer room been explained? ____
5. If the computer system is to be installed on low-static carpet, do you plan to place a grounded Static Mat under the computer system? ____
6. Heat is dissipated by the computer system and all of the peripherals connected to it. Have you consulted the *Alpha Micro Installation Planning and Site Preparation Guide* for help in planning air conditioning requirements? ____

   The BTU ratings for each module of the computer system are included in the *Alpha Micro Installation Planning and Site Preparation Guide.* Remember, people in the computer room also give off heat (400 BTU/person) and should be included in the air conditioning requirements.
7. Have the hazards of SMOKING in the computer room been explained? ____

Environment (Continued) **Yes/No**

8. Will there be a heating system in the computer room? ____
9. Is there anything in the computer room that will prevent it from being as dust-free as possible? ____

Communication Cables **Yes/No**

1. Have you determined the cable length and baud rate requirements for the terminals and printers? ____
2. Have you consulted with the appendix on cabling information in the *Alpha Micro Installation Planning and Site Preparation Guide* for the correct connector types and connector covers? ____
3. Have you routed the cabling away from other electric circuits? ____
4. Are the long-run cables going to be pulled through conduit? ____
5. Are pre-made cables being purchased from Alpha Micro? ____
6. Have the FCC rules and regulations concerning electromagnetic interference been reviewed? ____
7. Have the local codes been determined, and are there any special requirements that will affect how the cables will be installed? ____

Recommendations: _____

Fire Protection **Yes/No**

1. Has a sprinkler system been installed in the computer room? ____
2. Has a portable fire extinguisher of the CO2 or Halon type been purchased? ____
3. Is there a fire-resistant cabinet in the computer room to properly protect magnetic tape backups? ____
4. Will emergency lights and smoke detectors be installed? ____

Miscellaneous **Yes/No**

1. Have you received information on the type of VCR tape to use for backups? ____
2. Have you received information on what reel size and quality of magnetic tape is preferred? ____
3. Has the advantage of off-site magnetic tape storage been discussed? ____
4. Do you know and understand what consumable products (e.g., printer paper) you need? ____

Miscellaneous (Continued) **Yes/No**

5. Has the extreme importance of a telephone near the CPU and a modem attached to the computer system been discussed? ____

PRE-INSTALLATION SITE PLANNING SIGN OFF

Performed by Customer: _____ Date: _____

Dealer or Field Engineer Acknowledgement: _____ Date: _____

ALPHA MICRO COMPUTER INSTALLATION SITE INSPECTION CHECKLIST
CHECKLIST #2

This checklist should first be filled out by field service personnel and then reviewed by the customer and Field Engineer at the time the computer system is installed.

Site Layout	Yes/No
1. Is there a Master Site Plan? (If not, sketch one up right now!)	____
2. Has space and maintenance service access been allocated for:	
a. Desk- or file-high cabinet?	____
b. Tower or desktop computer cabinet?	____
c. Printers and terminals?	____
d. Computer furniture?	____
e. Storage?	____
f. Cabling system?	____
g. Future expansion?	____
h. Modems and/or line drivers?	____
Recommendations: _____	
3. Are cabling and power cords in cable troughs, or are they affixed to the floors or walls?	____
4. Are data terminal interface cables routed and properly terminated?	____
5. Are cables within specifications?	____
6. Is the traffic pattern in the room affecting productive work?	____

Safety Guidelines Compliance/Fire Prevention	Yes/No
1. Is a fire sprinkler system or a CO2-type system installed?	____
2. Are fire extinguishers installed?	____
3. Are emergency lights installed?	____
4. Is a single emergency power shut-off switch installed?	____
5. Is a smoke detector installed?	____
6. Are fire-resistant storage cabinet or files installed?	____
7. Does the installation appear to meet local and state fire codes?	____

Environment Control

Yes/No

1. Is an air conditioning system installed? If yes, will it maintain a 60 to 85 degree Fahrenheit temperature seven days a week? ____
2. Are air filters installed? ____
3. Is a heating system installed? ____
4. Is there a humidifier/dehumidifier installed? ____
5. Is an electronic air purifying system installed? ____
6. Is the computer room posted as a NO SMOKING area? ____
7. Are carpets removed from the computer room, with tile floor for the computer area? ____
8. If commercial grade carpeting is being used, is there a Static Mat under the computer system (for tower systems)? ____
9. Is the computer system away from direct sunlight, or is the light filtered? ____
10. Are the glass windows tinted? ____

    If not, do the windows have drapes or shades installed? ____

    Recommendations: _____

Electrical Power

Yes/No

1. Has dedicated power to the CPU cabinet been installed with isolated ground receptacles, and is voltage correct with proper current rating? ____
2. Is there dedicated power to the printers with isolated ground wall sockets? ____
3. Are auxiliary power lines/receptacles installed for modems, CRTs, printers, air conditioners, and humidifiers? ____
4. Are lighting fixtures, switches, and controls installed? ____
5. Is the computer system properly grounded? ____
6. Is the location of the emergency shut-off switch (breaker) clearly marked, and also marked on the Master Site Plan? ____
7. Is a proper air conditioner installed for the computer system and its peripherals? ____
8. Are there adequate power receptacles for the terminals, and is the power properly wired? ____

    Recommendations: _____

Miscellaneous **Yes/No**

1. If tower systems are located on carpet, are Static Mats installed under the computer systems? ____
2. Are telephone service and modems installed? ____
3. Are magnetic tapes on hand for backups (either magtape or VCR)? ____
4. Is standard size printer paper (14 X 11") on hand? ____

Comments

_____

_____

_____

_____

I understand the information contained in this Installation Inspection checklist, and agree to comply except as noted.

Customer signature: _____ Date: _____

Items not meeting required minimum standards will be corrected by:

Date: _____ Customer Signature: _____

Follow Up Completed

Dealer or service representative: _____ Date: _____

ALPHA MICRO COMPUTER INSTALLATION SITE AUDIT CHECKLIST
CHECKLIST #3

Customer Name: _____ System Serial #: _____

Location: _____ Customer Field Engineer: _____

Area Manager: _____ Installation Date: _____

This checklist should first be filled out by the Field Engineer prior to accepting a computer system under a maintenance contract or when a customer has been experiencing multiple problems.

Site Layout	Yes/No
1. Is there adequate room to fully open all doors on the computer system and the printers at the same time?	____
Recommendations: _____	
2. Are peripheral cables neat, well laid out, have service loops and are not running parallel to AC power cables or fluorescent lighting fixtures?	____
Recommendations: _____	
3. Is the computer system area clean and does it have access for cleaning?	____
Recommendations: _____	
4. Is the computer system area free of carpets, or does it have Static Mats?	____
Recommendations: _____	
5. Has a telephone circuit for a modem been installed next to the computer?	____

Environment	Yes/No
1. Is the air conditioning/heating system in the computer room adequate to maintain a room temperature between 60 and 85 degrees Fahrenheit?	____
Recommendations: _____	
2. Is the humidity level of the computer room within the specified range (20 - 80% non-condensing)?	____
3. Is the computer room free from large dust sources?	____

Environment (Continued) **Yes/No**

4. Is the computer room posted as a NO SMOKING area? ____

5. Is the computer room posted with a NO EATING OR DRINKING sign next to the computer? ____

Electrical **Yes/No**

1. Is there an isolated, dedicated three-wire circuit (separate conduit) installed for the CPU with an I.G. (isolated ground) socket (orange)? ____

2. Are there three-wire isolated ground power circuits installed for all of the computer hardware (e.g., terminals and printers)? ____

   Recommendations: _____

3. Has the power subpanel been checked for NO Neutral to Ground bond? ____

4. Is the power wiring the correct size for the Load Current in amps (minimum 15 amp service for AM-1200 and Tower AM-1500)? ____

5. For rack mount computers (e.g., AM-2075, AM-2095, AM-1575, and AM-1595), is power wiring properly sized for the load (should be a minimum of a 20 amp circuit; if a power conditioner is used, you may need a 30 amp twist-lock connector for this power service). ____

6. Are there a sufficient number of auxilliary power receptacles installed for the modems, CRTs, and printers? ____

7. Is there a properly matched power conditioner installed for the CPU? ____

   If so, what type? _____

8. Are there properly matched power conditioners installed for the peripherals? ____

   If so, what type? _____

9. What are the measured outputs of each circuit and their noise levels?

Device	AC Power	Polarity	Normal Mode	Common Mode
CPU				
Printers				
Modems				
CRTs				

10. Are the Common Mode noise levels on the AC power within specifications (CM <= 0.5 Volts peak to peak)? ____

Electrical (Continued) **Yes/No**

11. Are the Normal Mode noise levels on the AC power within specifications (NM <= 10.0 Volts peak to peak)? ____

Recommendations: _____

Communication Cabling **Yes/No**

1. Do terminal and printer cables meet Alpha Micro specifications for low capacitance cable with a foil shield and drain wire? Refer to the cabling section of the *Alpha Micro Installation Planning and Site Preparation Guide.* ____
2. Do modem cables meet the specifications? ____
3. Are all cable shields terminated to ground at the CRT end or patch panel? ____

Recommendations: _____

4. Are the cables tie-wrapped and mounted down to the walls, to avoid tangling and to provide service loops? ____

If not, has the customer signed a release to Alpha Micro? ____

5. What is the length and baud rate specifications for each cable run? ____
6. If cable runs are over 100 feet, is the customer using RS-422 interface? ____
7. Is there a need for one or more patch panels? Cable extenders? ____

Recommendations: _____

8. Has the Master Site Plan drawing documented the cable locations and are the cables numbered for future troubleshooting? ____

Recommendations: _____

Software and Hardware **Yes/No**

1. Has the latest software been installed on the computer system? ____
2. Are all currently known patches installed in the system software? ____
3. Are regular backup tapes being made? ____

How often? _____

System files? _____

Data files? _____

Recommendations? _____

Software and Hardware (Continued) **Yes/No**

4. Has the system history label been updated? Check serial numbers and revision levels. ___
5. Are all the ground straps and cables properly tightened or fastened down? ___
6. Has the customer been maintaining a system Error/Problem log? ___
7. Has the Error/Problem log been reviewed by Alpha Micro personnel? ___

Recommendations: _____

Miscellaneous **Yes/No**

1. Has the customer received an Alpha Micro service contract quote? ___

This document should be reviewed with the customer by the Dealer or field service personnel. Recommendations should be implemented as soon as possible.

Customer: _____

Field Service Engineer: _____

Alpha Micro Dealer: _____

3.1.15
Announcing New AMOS/32 Release and New Operating System Release Procedures

Announcing AMOS/32 1.0A Availability

Effective 20 April 1987, AMOS/32 1.0A will be available on all AM-2000 systems.

AMOS/32 1.0A counts the number of user-ports, providing for 32, 64, 128 and unlimited ports to the operating system, each having its own license fee. AMOS/32 1.0A also incorporates a number of features previously shipped separately, such as Magnetic Tape support for the AM-640.

Most importantly, this AMOS/32 1.0A release incorporates all patches which have been generated since AMOS/32 1.0 was released.

New Operating System Patch Releases

Incorporating patches to operating system releases is a first step in a new program designed to assure what Alpha Micro ships from the factory is the most current software available. We developed this program in response to many requests for an easier way to keep the operating system current.

Under our new operating system release procedures program, a fully patched version of AMOS will be released and incorporated into system shipments on a fiscal quarterly basis-- every 90 days beginning the first week of our 2nd quarter (25-31 May 1987). The next patch release will be during the first week of our 3rd quarter (24-30 August 1987), and so on.

This means every 90 days all patches generated in the previous 90 days will be installed in the operating system and will be shipped with new systems.

The one difference between receiving a patch release operating system from us and patching the operating system yourself is the directory list of the system files. The directory is just like the AMOS.DIR file containing the file specification, version and edit level and hash total, except its contents reflect the patch release files. The patch release directory list is named PRXXXX.DIR, where XXXX represents the number of releases since the base release of the operating system. Like AMOS.DIR, PRXXXX.DIR is included so you can use the VERIFY command to ensure you have the right files.

Of course, operating system patches will still be available individually as before. Check the Journal's monthly "AMSD New Patch Release" article for new ones.

Beginning 20 April 1987, we will load the current version of the operating system disk on new systems, with the operating system port configuration version matching the Customer Sales Order. A warm boot tape for the system will be made and included with the shipment, for use if for some reason the hard boot process fails during initial boot-up. The warm boot tape, of course, will not have a full operating system, but only certain system files so you can troubleshoot and correct disk problems.

3.2.21
AMOS/L 1.3C Monitor Patch - SPN-260-02

The SPN-260-02 patch for the the AMOS/L 1.3C Monitor resolves six problems:

1. Fixes LOKSER problem during OUTPTL.
2. Resolves AM350 semaphore deadlock.
3. Resolves scheduler problem with small quanta.
4. Preserves D1 through failing GETMEM.
5. Provides staging for AM350 Phase II.
6. Resolves problem with failing Assign calls.

IMPORTANT NOTE: This patch applies only to 8, 16, 32, and no limit user versions of AMOS/L 1.3C. For 64 and 128 user systems, please refer to SPN-263-01.

Installation Instructions

If you use the AlphaNET Video Network software, before you proceed with installation of this patch, make sure the system on which you are installing this patch, and all systems it is connected to, have NODECHECK set to on.

Before installing this patch, use the MONHSH program to verify that you have the correct monitor hash total of LSYS.MON.

Old version and MONHSH as shown below:

For 8 users:
214-334-024-244 1.3C(157)

For 16 users:
417-461-270-264 1.3C(157)

For 32 users:
622-353-061-444 1.3C(157)

For no limit:
071-734-605-745 1.3C(157)

To install this patch, create a copy of LSYS17.M68, by using AlphaVUE to enter it from the attached listing. A copy of LSYS.MON should be copied from DSK0:[1,4] to the account where you have created LSYS17.M68. Now enter the command:

PATCH LSYS.MON WITH LSYS17

You will see the patch file being assembled and installed. You should see no error messages. If you do, check to make sure that you have entered the patch file correctly and are trying to patch the correct version of LSYS.MON. Further information on installing patches is contained in AMOS/L System Operator's Guide, DSS-10002-00, Part 3.

After installing the patch, use the MONHSH program to verify that the monitor hash total of the patched file is correct. Enter the command:

MONHSH LSYS.MON

New version and MONHSH as bellows:

For 8 users:
276-320-123-724 1.3C(157)-1

For 16 users:
671-667-614-065 1.3C(157)-1

For 32 users:
001-406-011-554 1.3C(157)-1

For no limit:
745-645-664-003 1.3C(157)-1

If the hash total does not match, then check the patch file for errors and enter the patch again or contact Technical Support.

3.2.21 (Continued)
AMOS/L 1.3C Monitor Patch - SPN-260-02

If the hash total is correct, then you must use the MONGEN program to install the correct disk driver for your system disk. Once you have completed the MONGEN procedure, use MONTST to make sure that the system will boot properly. After the system has booted correctly, rename LSYS.MON to AMOSL.MON. For example,

```
;RENAME AMOSL.MON=LSYS.MON/D
```

After the patch has been installed correctly, and you have successfully booted the system via MONTST, the patched version of LSYS.MON should be copied on to DSK0:[1,4].

```
;Patch #3 to SYS:AMOSL.MON Version 1.3C(157)
:  **      For 8, 16, 32 and No limited users system only.  **
;
;Copyright (C) 1987 - Alpha Microsystems
;

        COPY    PATCH

        OVER    1,3,3,157.,0
        NVER    1,3,3,157.,1

        .=2204
        BYTE    -1

        .=7340
        JMP     220$

        .=10760
        JMP     230$

        .=11212
        WORD    61400,326

        .=11526
        JMP     230$

        .=11656
        JMP     240$

        .=14544
        PUSH    D1
        CALL    340$
        POP     D1
        NOP

        .=15154
        WORD    1777
```

(Continued next Page)

3.2.21 (Continued)
AMOS/L 1.3C Monitor Patch - SPN-260-02

```
                .=16122
                CALL    300$

                .=16522
                CALL    300$

                .=17346
                CALL    310$

                .=20374
                JMP     260$

                .=22042
                WORD    400

                .=22312
                WORD    177436

                .=24674
                CALL    360$

                .=24756
                JMP     370$

                .=45066
                WORD    4

                .=54702
220$:           TSTB    2204
                WORD    63400,132422
                MOVB    2(A1),D0
                CLRB    2204
                WORD    47372,132420
230$:           WORD    6615,4
                MOVB    #100,@A5
                SETB    2204
                CLRB    2300
                REST    A0-A6,D0-D7
                RTE
240$:           BNE     250$
                WORD    6415,4
                MOVW    D6,216(A6)
                SUBW    D6,222(A6)
                ORW     #4000,2(A6)
                CLR     D6
                WORD    6615,4
```

(Continued next Page)

3.2.21 (Continued)
AMOS/L 1.3C Monitor Patch - SPN-260-02

```
250$:   MOVB    #100,@A5
        SETB    2204
        REST    A0,A5,A6,D6,D7
        CLRB    2330
        RTE
260$:   LEA     A3,46(A5)
270$:   MOV     @A3,D7
        BEQ     280$
        MOV     D7,A3
        CMP     4(A3),#12
        BNE     270$
        RTN
280$:   WORD    47272,143530
        WORD    47372,143314
300$:   BCALL   320$
        JWAIT   J.TOW
        RTN
310$:   BCALL   320$
        JWAIT   J.IOW
        RTN
320$:   MOV     A5,D7
        BEQ     330$
        MOV     2(A5),A6
        CMP     -4(A6),#1032357560
        BNE     330$
        OR.W    #20000,2(A0)
330$:   RTN
340$:   MOV     #124,D1
        MOV     #1003,D6
        SMSG
        RTN
360$:   MOV     D6,D4
        MOV     A6,A1
        JLOCK
        RTN
370$:   JUNLOK
        REST    A0,A1,D4,D5
        RTE

        END
```

3.2.22
AMOS/L 1.3C Monitor Patch - SPN-263-01

The SPN-263-01 patch to the AMOS/L 1.3C Monitor resolves six problems:

1. Fixes LOKSER problem during OUTPTL.
2. Resolves AM350 semaphore deadlock.
3. Resolves scheduler problem with small quanta.
4. Preserves D1 through failing GETMEM.
5. Provides staging for AM350 Phase II.
6. Resolves problem with failing Assign calls.

IMPORTANT NOTE: This patch applies only to 64 and 128 user versions of AMOS/L 1.3C. For 8, 16, 32 and unlimited user systems please refer to SPN-260-01.

Installation Instructions

Before installing this patch, use the MONHSH program to verify that you have the correct monitor hash total of LSYS.MON.

Old version and MONHSH as shown below:

For 64 users:
771-451-612-237 1.3C(157)

For 128 users:
022-262-655-415 1.3C(157)

To install this patch, create a copy of LSYS18.M68, by typing it in (using VUE) from the attached listing. A copy of LSYS.MON should be copied from DSK0:[1,4] to the account where you have created LSYS18.M68. Now enter the command:

```
PATCH LSYS.MON WITH LSYS18
```

You will see the patch file being assembled and installed. You should see no error messages. If you do, check to make sure that you have entered the patch file correctly and are trying to patch the correct version of LSYS.MON. Further information on installing patches is contained in AMOS/L System Operator's Guide.

After installing the patch, use the MONHSH program to verify that the monitor hash total of the patched file is correct. Enter the command:

```
MONHSH LSYS.MON
```

New version and MONHSH as bellows:

For 64 users:
412-033-537-625 1.3C(157)-1

For 128 users:
567-725-322-172 1.3C(157)-1

If the hash total does not match, then check the patch file for errors and enter the patch again or contact Technical Support.

If the hash total is correct, then you must use the MONGEN program to install the correct disk driver for your system disk. Once you have completed the MONGEN procedure, use MONTST to make sure that the system will boot properly. After the system has booted correctly, rename LSYS.MON to AMOSL.MON. For example,

```
RENAME AMOSL.MON=LSYS.MON/D
```

After the patch has been installed correctly, and you have successfully booted the system via MONTST, the patched version of LSYS.MON should be copied on to DSK0:[1,4].

3.2.22 (Continued)
AMOS/L 1.3C Monitor Patch - SPN-263-01

```
;Patch #2 to SYS:AMOSL.MON Version 1.3C(157)
;         **  For 64 and 128 User Systems Only **
;
;Copyright (C) 1987 - Alpha Microsystems
;
          COPY     PATCH

          OVER     1,3,3,157.,0
          NVER     1,3,3,157.,1

          .=2204
          BYTE     -1

          .=7340
          JMP      220$

          .=10760
          JMP      230$

          .=11212
          WORD     61400,326

          .=11526
          JMP      230$

          .=11656
          JMP      240$

          .=14544
          PUSH     D1
          CALL     340$
          POP      D1
          NOP

          .=15154
          WORD     1777

          .=16122
          CALL     300$

          .=16522
          CALL     300$

          .=17346
          CALL     310$

          .=20374
          JMP      260$
```

(Continued next Page)

3.2.22 (Continued)
AMOS/L 1.3C Monitor Patch - SPN-263-01

```
                .=22042
                WORD    400

                .=22312
                WORD    177436

                .=24674
                CALL    360$

                .=24756
                JMP     370$

                .=45072
                WORD    4

                .=54706
220$:           TSTB    2204
                WORD    63400,132416
                MOVB    2(A1),D0
                CLRB    2204
                WORD    47372,132414
230$:           WORD    6615,4
                MOVB    #100,@A5
                SETB    2204
                CLRB    2300
                REST    A0-A6,D0-D7
                RTE
240$:           BNE     250$
                WORD    6415,4
                MOVW    D6,216(A6)
                SUBW    D6,222(A6)
                ORW     #4000,2(A6)
                CLR     D6
                WORD    6615,4
250$:           MOVB    #100,@A5
                SETB    2204
                REST    A0,A5,A6,D6,D7
                CLRB    2330
                RTE
260$:           LEA     A3,46(A5)
270$:           MOV     @A3,D7
                BEQ     280$
                MOV     D7,A3
                CMP     4(A3),#12
                BNE     270$
                RTN
```

(Continued next Page)

3.2.22 (Continued)
AMOS/L 1.3C Monitor Patch - SPN-263-01

```
280$:   WORD    47272,143524
        WORD    47372,143310
300$:   BCALL   320$
        JWAIT   J.TOW
        RTN
310$:   BCALL   320$
        JWAIT   J.IOW
        RTN
320$:   MOV     A5,D7
        BEQ     330$
        MOV     2(A5),A6
        CMP     -4(A6),#1032357560
        BNE     330$
        ORW     #20000,2(A0)
330$:   RTN
340$:   MOV     #124,D1
        MOV     #1003,D6
        SMSG
        RTN
360$:   MOV     D6,D4
        MOV     A6,A1
        JLOCK
        RTN
370$:   JUNLOK
        REST    A0,A1,D4,D5
        RTE

        END
```

3.2.23
New Software Patches Available from AMSD

The following list gives a description of the new software patches now available from AMSD. The products affected by these patches are: AMOS/L 1.3C and AMOS/32.

Patches in the following list include SPNs 254 through 272, released as of 20 April 1987 beginning where the list appearing in the April Journal article left off (see Journal Vol. 9, #4 - Software Article 3.2.19).

The SPN description in the purpose column ends with the software version(s) this patch is intended for.

SPN #	Module	Purpose
254	AM1213.IDV	Corrects a problem with the parallel printer port where the RESET bit was set low instead of high. This patch applies to AMOS/L version 1.3C.
255		Released last month.
256		In test.
257		In test.
258	515DVR.DVR	Corrects a problem working with the micro code under heavy disk use conditions when many jobs were accessing the disk. This patch applies to AMOS/L version 1.3C.
259	AM515.MIC	Corrects a problem where the micro code would run out of its own queue blocks under heavy disk use conditions when many jobs were accessing the disk. This patch applies to AMOS/L version 1.3C.
NOTE: Re: 260 thru 265		One SPN number was used for each user version of the AMOS/L 1.3C monitor. Although there are only two different patches, SPN numbers were assigned in this way for record keeping. The problems resolved by SPNs 260 through 265 are: 1. A problem with LOKSER and OUTPUT monitor calls. 2. Resolves AM-350 semaphore deadlock. 3. Resolves scheduler problem with small quanta. 4. Preserves D1 through failing GETMEM calls. 5. Provides staging for AM-350 Phase II. 6. Resolves problem with failing ASSIGN calls.
260	LSYS.MON	This patch applies to AMOS/L version 1.3C - 8-user limit and fixes the problems shown in NOTE above.
261	LSYS.MON	This patch applies to AMOS/L version 1.3C - 16-user limit and fixes the problems listed shown in NOTE above.
262	LSYS.MON	This patch applies to AMOS/L version 1.3C - 32-user limit and fixes the problems shown in NOTE above.
263	LSYS.MON	This patch applies to AMOS/L version 1.3C - 64-user limit and fixes the problems shown in NOTE above.
264	LSYS.MON	This patch applies to AMOS/L version 1.3C - 128-user limit and fixes the problems shown in NOTE above.

3.2.23 (Continued)
New Software Patches Available from AMSD

SPN #	Module	Purpose
265	LSYS.MON	This patch applies to AMOS/L version 1.3C - unlimited-users and fixes the problems shown in NOTE above.
266		Released last month.
267		In test.
268		In test.
269		Used internally.
270		In test
271	FIXCRC	Adds an option to abort without writing under some conditions. This patch applies to all AMOS/L 1.3 and AMOS/32 versions.
272	FLPWIN	Corrects a problem restoring large files residing on two or more diskettes. This patch applies to all AMO/L 1.3 and AMOS/32 1.0 versions.

3.2.4
New Documentation Release

The following document is available for sale in May. (See the May Alpha Micro Dealer Price List for prices.)

VIDEOTRAX 3.1 Release Notes
DSO-00032-00

4.2.1
AMSD Training Class Schedule

ALPHA MICRO CUSTOMER EDUCATION ANNOUNCES AlphaC LANGUAGE CLASS

Alpha Micro is offering a hands-on class in AlphaC taking you through the development of a collection of programs ranging from introductory to advanced. The programs illustrate AlphaC features using modern programming exercises. This in-depth course covers various aspects of AlphaC: expressions, declarations, initializations, arrays, pointers, structures, macros, I/Os, AMOS system call interfaces and more.

5 Day Class - Tuition $725.00/week. Offered: June 22-26, 1987, 9:00 am to 4:00 pm, Monday through Friday. Where: Alpha Micro Corporate Headquarters, Santa Ana, California.

For reservations or more information, contact Customer Education (see below.)

General Information

Descriptions and tuition rates for each class shown on the schedule are given in a previous Journal article. Please refer to December 1986, General Volume Article 4.1.15 - "AMSD Training Information." Additional classes are available on request: AlphaWRITE, AlphaCALC, AlphaLEDGER, using ISAM and LOKSER and writing Terminal Driver Programs.

The Alpha Micro Customer Education Department, part of the Alpha Micro Service Division (AMSD), offers a variety of training programs for Alpha Micro users:

- o Hardware/Maintenance Courses
- o Software Operating Courses
- o Language Courses
- o Word Processing Courses
- o Video Training Tapes
- o Customized Classes
- o Courses at Your Location
- o Courses at Our Facilities
- o Training Manuals for Classes
- o AMSD Journal - technical newsletter

Our classes offer hands-on experience and lab time in which students put into practice the theory and information presented in the class.

Enrollment Procedures

To enroll in any one of our classes please use the enrollment form below and mail to:

Customer Education Training Classes
Alpha Micro
P.O. Box 25059
Santa Ana, California 92799

Receipt of class tuition with your enrollment form lets us reserve your seat in the class. If we do not receive payment at least ten working days prior to the first day of class, we must offer the seat to the next person on our waiting list.

If you have enrolled in a particular class and for some reason cannot attend or must change the date, please notify us at least ten working days before the class start date. This lets you avoid the ten percent service charge necessary for class cancellation. If we do not receive notification that you wish to cancel a class at least five working days before the start date of that class, it will not be possible to refund your tuition fee.

For more information contact Nancy Steen in the Customer Education Department at (714) 641-6330.

4.2.1. (Coninued)
AMSD Trainling Class Schedule

= = = = = = = = = = = = = = = Enrollment Form = = = = = = = = = = = = = =

Class (Title & Date) ______________________________

Student Name(s) ______________________________

Company Name ______________________________ DI# ________

Address ______________________________

City ______________________ State ______ Zip ________

Phone# (   ) ________________ Tuition $ ________________

= =

CUSTOMER EDUCATION CLASS SCHEDULE
JUNE to DECEMBER 1987

Class/Date	Jun	Jul	Aug	Sep	Oct	Nov	Dec
AlphaBASE	22-26						7-11
AlphaBASIC			10-21				
Assembly				28-	2		
C Language	22-26				12-16		
UNIFY Database		20-24			19-23		
Intro. to AMOS		13-17		14-18		9-13	
Advanced AMOS		20-24		21-25		16-20	
System Maint. Wk 1	8-12		3-7		5-9		
System Maint. Wk 2	15-19		10-14		12-16		
AM-1500/2000		13-14		28-29		2-3	

REGIONAL CLASSES

Class/Place	Dallas	Atlanta	Chicago
AMOS/L - AMOS/32	Oct. 19-23	Aug. 24-28	Jun. 8-12

AMSD JOURNAL TABLE OF CONTENTS UPDATE PAGES

The next pages of the Journal are updated Table of Contents pages for your back issue volumes. The updated pages are:

HARDWARE INFO. VOLUME:	- Hardware Volume Table of Contents (2 pages) - Section 2 - Disk Controllers & Disk Drives (2 Pages) - Section 13 - Maintenance, Troubleshooting & Compatibility
SOFTWARE INFO. VOLUME:	- Section 3 - AMOS/L Operating System (3 pages) - Section 8 - AMOS/32 Operating System
GENERAL INFO. VOLUME:	- Section 3 - Manuals - Section 4 - Training

- A footer line at the bottom of each table of contents page shows you revision information. This line shows month, year, volume and issue number of the Journal this table of contents page arrived with.

- All table of contents pages have a title line showing which volume they belong in: Hardware, Software or General Information.

- Entries for articles published since 1983 show the month and year of publication.

- Cross reference article entries use this format:

  "Article Name" - Cross reference: See Volume Name Article #.#.# - [Month Year]

  Where Volume Name is Hardware, Software or General Information. Where #.#.# is the article number designating section, category and article number. (For example, article 6.4.3 is filed in section 6, under category 4 and is the 3rd article in category 4.) [Month Year] is the Journal publication date for the article.

VOLUME I - HARDWARE (continued)

(continued on next page)

VOLUME I - HARDWARE (continued)

SECTION 2 - DISK CONTROLLERS & DISK DRIVES (continued)

2.5 AM-415

2.6 AM-420

(continued on next page)

SECTION 2 - DISK CONTROLLERS & DISK DRIVES (continued)

SECTION 13 - MAINTENANCE, TROUBLESHOOTING & COMPATIBILITY

13.1 Maintenance, Troubleshooting & Compatibility

13.2 Site Preparation

SECTION 3 - AMOS/L OPERATING SYSTEM

3.1 AMOS/L Releases: General Information

3.2 AMOS/L Patches

PTCH.LIT	- SPN-001L-00
AMOSL.MON	- SPN-002L-01
RUN.LIT	- SPN-003L-02
PRINT.LIT	- SPN-005L-00
WRMGEN.LIT	- SPN-006L-00
ISAM.SYS	- SPN-007L-01
ISMBLD.LIT	- SPN-008L-01
ISMDMP.LIT	- SPN-009L-01
DSKANA.LIT	- SPN-010L-00
ISAM.SYS	- SPN-011L-02
ISMBLD.LIT	- SPN-012L-01
ISMDMP.LIT	- SPN-013L-01
LABEL.LIT	- SPN-014L-00
VUE.LIT	- SPN-015L-00
XEBDVR.DVR	- SPN-016L-01
XLOCK.SBR	- SPN-017L-00
AMSORT.SYS	- SPN-018L-00
SORT.LIT	- SPN-019L-00
CRT420.LIT	- SPN-020L-00
DSKPAK.LIT	- SPN-021L-00
610DVR.DVR	- SPN-022L-00
RUN.LIT	- SPN-023L-00

(continued on next page)

Section 3 - AMOS/L Operating System (continued)

Section 3 - AMOS/L Operating System (continued)

3.3 AMOS/L Utilities

3.4 Programming Information

SECTION 8 - AMOS/32 OPERATING SYSTEM

8.1 AMOS/32 Releases

8.2 AMOS/32 Patches

8.3 AMOS/32 Utilities

8.4 Programming Cautions

SECTION 3 - MANUALS

3.0 Manuals

3.1 Part Number Information

3.2 Documentation Releases

SECTION 4 - TRAINING