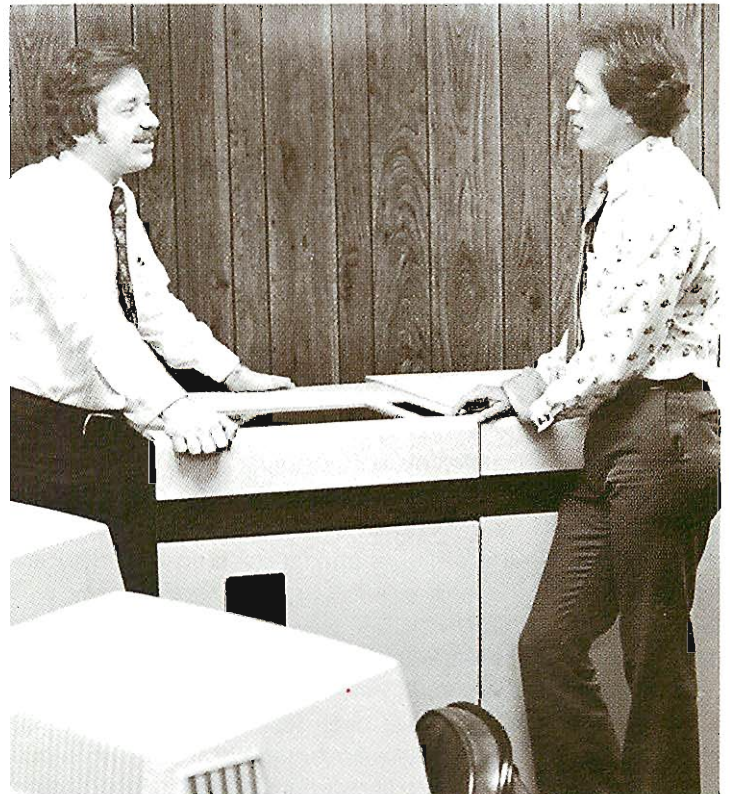# Software house expands market-adds VS

The Software Systems Company in Sherman Oaks, California, has been a Wang software consulting company since 1975. Successful in several market areas (including property management, word processing, general accounting, trust accounting, insurance, and real estate), their corporate intent was to expand services to users of systems in the $50,000 to $150,000 range.

Shortly after Software Systems Company had researched the equipment of several manufacturers, the 2200VS was announced. Software Systems was one of a group of vendors invited to attend a special VS seminar at the Marriott Marina in Los Angeles. "I spent one day there, saw the machine, and just sat in awe," Craig Freeman of Software Systems Company relates. "I didn't think that Wang would get to the level of the VS — at least not that fast. The VS is more than an engineering achievement — it is a software achievement. So far as I know, it is foolproof. The utilities represent precisely how I would write an application program if I wanted a perfect application. It does not lock up at some point. It doesn't require you to flip through a manual or have a chart on the wall. You need the machine — and that's it! That's what amazed and intrigued me the most. After I had lost my third sale because I could not bid the hardware to take care of the job, it was obvious that this was the solution to our marketing expansion needs — so we purchased one."

"The first 45 minutes I had the VS, I was apprehensive because I thought it was going to disrupt my whole organization with software conversion problems," relates Freeman. "Before the day was over, I had a grin on my face."

GBS

In an effort to consolidate application software support, various people under the direction of Joe Glavin at the Wang Data Center have assumed the responsibility for several of Wang's software products. Included in the products that they will support is GBS. For now, the Data Center will be supporting the original T and VP versions (including the Distributor's version, Diskette version, etc.), and the GBS MVP version, as it is released.

In addition to providing you with technical information,

they will also be handling all administrative and related functions regarding GBS. All orders for GBS should still be processed through your local analyst; however, the analyst will now forward all requests to Martha Creagan at the Data Center. Martha will be your GBS contact and can be reached at the Data Center by calling (617) 272-8550.

General Accounting Applications on the VS

The VS General Accounting applications developed by Mini-Computer Business Applications, Inc., of Los Angeles, California are nearing completion. At this time, the following modules are complete and available for installation:

Order Entry/Inventory Control
Accounts Receivable
Accounts Payable

Payroll and General Ledger are expected to be complete and available for installation in mid-January.

We believe that these applications offer a tremendous opportunity to Wang vendors interested in supporting VS installations. They are highly transportable in that they are easy to understand and modify, as well as extremely well documented. Because MCBA views software vendors as their primary market, very structured programming techniques have been employed.

These applications have been field tested in over 2,000 installations. Modified to take advantage of the many unique VS features, this software represents a complete accounting system. Because of this success, the software can be made available to interested vendors in North America directly from MCBA, at a fraction of your normal development cost. International licensing of this software is coordinated through Wang corporate headquarters.

If you are interested in obtaining further information with regard to supporting these applications, please contact your local Wang analyst.

New Products

Hasp Multi-Leaving Concept

Telecommunications Product Marketing has recently released another IBM batch emulator which provides HASP multi-leaving emulation. This software package enables Wang 2200 series systems to emulate the telecommunications line protocol of an IBM 360/20 HASP multi-leaving workstation.

The following discussion of HASP, multi-leaving workstations, and the multi-leaving concept provides an overview of the HASP environment.

HASP

HASP is an automatic spooling, priority scheduling system which operates in conjunction with IBM 360 or 370 operating systems. It supports an unlimited number of peripheral devices simultaneously, with normal job execution to perform the functions normally associated with off-line support computers. Included in HASP is a Remote Job Entry (RJE) feature which supports terminals and peripheral devices located remotely from the control computer via telephone lines (and modems). As a result, a user located many miles from the central computer can submit jobs as if located locally. HASP will support a variety of batch terminals, some of which are 2780, 3780, 3741 and HASP multi-leaving workstation, both locally or remotely.

HASP Multi-leaving Workstation

As mentioned previously, the batch terminals, such as 2780 and 3780, can remotely submit jobs to, and receive jobs from, the central site under the control of HASP. However, because of the design of these terminals, only one job at a time can be submitted or received. Also, if a job is being transmitted to the central site, previous jobs submitted that are awaiting output back to the remote terminal must wait.

In order to overcome this throughput problem and support high volume remote RJE communications, a special program was developed for the IBM 360, Model 20, which allows it to function as a high volume batch terminal. Running in this mode, the 360/20 is a HASP multi-leaving workstation. In this application the 360/20 is usually equipped with a card reader, line printer, and console. A card punch is available but not widely used. When the 360/20 is operating as a HASP workstation, it has the capability of concurrent transmission and reception of jobs and console messages. It can support multiple job streams with concurrent send/receive transmission to the central site. The Wang HASP emulator program enables any 2200 series system to emulate the line protocol of a multi-leaving workstation, thus providing concurrent send/receive transmission of multiple job streams.

Multi-leaving Concept

Multi-leaving is an advanced communications technique that provides for inter-leaving multiple data transmission jobs,

allowing more than one job to be communicated at the same time. Add to this the capability of concurrent send/receive transmission, and the result is an environment that allows the read and print peripherals to be active at the same time, thereby increasing system throughput. Thus, a user located at a remote site can be transmitting a file to the central site, receiving reports from either the central cite or a remote printer, and exchanging console messages, all inter-leaved so as to appear to be simultaneous. The Wang system can support up to five (5) concurrent job streams. It can transmit a job from either a card reader or disk, while receiving up to two jobs to disk and printer, plus support the sending and receiving of console messages.

HASP supports character compression to reduce line traffic by eliminating the transmission of sequential characters. The output data block is monitored; whenever more than three of the same characters (including spaces) are to be sent, HASP automatically substitutes three character strings consisting of a control character, the number of characters to be sent, and identifies the character. These characters are regenerated at the receiving station.

Wang 2200 Series — Memory Requirements

HASP emulation software requires the following memory:

RECEIVE to PRINTER only — 16K
RECEIVE to DISK   — 24K

WANG TELECOMMUNICATIONS SOFTWARE

SOFTWARE PACKAGE	PACKAGE NUMBER	CONTROLLER REQUIRED	MEMORY REQUIRED		CUSTOMIZING REQUIRED
			MINIMUM	OPTIONAL*	
ASYNC I	195-2056-3,8	2227B or 2228B			
TELETYPE	Auto-Enclosure		8K	16K	None
2741	with 2227B (OP62B)		8K	16K	None
BISYNC I	195-2057-3,8	2228B			
2780	Auto-Enclosure		8K	16K	None
3780	with 2228B		8K	16K	None
3741	(OP62B)		8K	16K	None
HASP			16K PRT RCV	24K DISK RCV	None
2200 to 2200			16K	—	None
BURROUGHS	195-0047-3, 8	2228B	16K	—	User Provided I/O Routines
TC SUPPORT UTILITIES	195-0026-3, 8	2227B or 2228B			
DATA ENTRY I	Auto-Enclosure		16K	—	None
ATOMIZE	with 2227B (OP52)		8K	—	None
DE-ATOMIZE	and 2228B (OP62B)		8K	—	None
OFF-LINE PRINT			8K	·	None
TC SUBROUTINES			8K	....	None
LIST/DUMP			8K	—	None
3275	195-0048-3 Auto-Enclosure With 2228C	2228C	16K-T 17K-VP and MVP	—	None

* Emulators support more flexible disk
handling with optional memory size.

3275 EMULATION SOFTWARE UTILITY
(Non-Polled Dial-Up Mode Only)

Wang Laboratories, Inc., has announced an additional telecommunications software emulator for the 2200 series systems. This new offering now makes available a total of 8 different terminal emulators to meet the wide range of applications for those users requiring telecommunications.

With this software utility, Wang 2200 systems emulate the IBM 3275 interactive display terminal with communications to IBM host computers in non-polled dial-up mode. The 3275 terminal is a stand-alone display terminal which is connected in point-to-point mode to an IBM host computer for interactive communications from a remote site.

The 3275 emulator further broadens the telecommunications spectrum for Wang systems, enabling users interactive display capability with IBM host computers to create, access, and update data bases stored under IMS, CICS, or other programs using 3275 compatible access methods. The telecommunications applications performed by the 3275 are remote data entry, order entry, inquiry/response, and inquiry with data base update.

This offering is directed towards the Wang user whose primary needs are remote processing, but require supplementary interaction with a host computer. The intent is not to replace 3275 installations where there is a primary need for dedicated tasks such as full-time data entry activities, but to perform the various 3275 tasks for those users with limited 3275 requirements.

Features

- IBM 3275 Bisync compatibility with speeds up to 4800 BPS.
- Supports any Wang printer.
- Data entry keyboard.
- Protected fields.
- Field checking.
- 24x80 display screen with 1,920 characters.

Restrictions

- Connection must be via a dial-up line in a non-polled environment. Only BSC point-to-point contention mode supported.
- A 2228C Communications controller is required.
- The PCS-II, WCS-15, and Disk Workstation will not support this emulator.

- The SDLC line protocol is not supported.
- Special IBM options such as light pen, repetitive keys, keyboard lock, and badge reader not supported.
- The 3275 small screen; 480-character display is not supported.
- No full-screen buffer for printing screen contents.
- Numeric lock for data entry keyboard not supported.
- Typamatic keys not supported (key holddown).
- ASCII transmission code not supported.
- Data entry into non-displayable fields not supported.

Ordering Information

Order through your local District or Branch Analyst, specifying package number 195-0048-3, which consists of a diskette 701-2356 and manual 700-4826.

Hardware

Requires a 2200-T with 16K memory, or a 2200VP or MVP with 17K memory. The 24x80 display is required along with a minimum 2270-1 diskette drive and the 2228C Telecommunications Controller.

Logistics

Automatic enclosure with the 2228C controller. The BSC I software package may be ordered in lieu of the 3275 emulator at no charge, or it may be purchased separately. In stock, allow one week for delivery.

Support

This is a Type 1, Wang-supported product. Any suspected bugs found in this package should be documented and sent to Wang Laboratories, Inc., via the local district analyst. Wang does not accept any responsibility for customer or vendor modifications to this package.

Checklist

For proper installation of this emulator, ensure that the following conditions are met:

1. Must have a 2228C Controller.

2. Must have a 2200-T with 16K memory or a 2200VP or MVP with 17K memory. (This software is not supported on the PCS-II, WCS-15, or the Disk Workstation.)

3. Must have a 24x80 CRT display.

4. Must have a point-to-point connection that is not polled (contention mode only).

ISS RELEASE 4.0

Release 4.0 of the Integrated Support System (Package #195-0052-3) is now available for your use.

The part number for the ISS 4.0 manual is (#700-5010).

Below is a description of this current release.

I. ENHANCEMENTS

    A. Software

        1. Utilities

        The utilities have been enhanced with the following:

        a. General

- Incorporated MVP code to increase efficiency.
- Restructured logic for ease in maintenance and logical flow.
- Consistent and comprehensive error checking, reporting and recovery.

        b. Copy/Verify

- Capable of copying either program or data file exclusively.

        c. Create Reference File

- File names in both the catalog index and reference file are displayed on the CRT for ease of operation when editing or creating a reference file.
- The size of the reference file is only restricted by the amount of available memory.
- Release 4.0 reference file contains an extra sector field that is in compatible with past releases. However, the utility is modified so the user can convert past releases to present and vice versa.
- Reference file has the capability of being multiplexed.

        d. Format 2260C Disk

- This standalone utility is now available with I.S.S. 4.0.

        e. Sort Catalog Index

- There is no limit to the number of files in a catalog index. However, a sort is limited by the amount of memory available in the partition/system.

        f. Disk Dump

- CRT output is available for vertical dumps.
- If a file contains a password, the operator is required to enter the appropriate name.

        g. File Status Report

- Ability to close every station for every muxed data file.
- Lists every muxed data file for all stations.
- Capable of listing every open muxed data file for each station.
- For a specific station all muxed data files can be listed.

        h. Compression

- "INDIRECT" processing mode is supported.

        i. Decompression

- Processing in "INDIRECT" mode is now available.

        2. KFAM7

        The user file can now be multiplexed.

        3. Screen/Disk Subroutines
        The new mux routines support both the VP

and MVP. Mux Open ('217) will now issue a return code of "M" for all files which are not multiplexed when the value of the variable "S" equal -2.

B. Documentation

1. ISS Utilities were rewritten into a narrative form due to the esorteric types receiving the package and concise wording of prompts and messages.

2. Screen/Disk subroutines are contained within one chapter.

3. A record and file format table were added to Sort 4 documentation.

4. KFAM5 documentation is merged with KFAM7 chapters.

5. In the following areas memory requirement tables were added for a quick reference and an operational guide:

   a. Utility program memory requirements.
   b. Memory requirements to sort a catalog index.
   c. Memory requirements for creating a reference file.

6. All rules for processing code under Decompression and Compression were included.

II. LIMITATIONAL PROBLEMS

A. Sort 4

1. Sort 4 is limited to reading a field of 64 bytes or less. The following is a temporary solution:

   Module 401A

   Change Line 1120 from "HEX(CO)" to "HEX(FC)".

B. KFAM7

Processing in REORG function leaves an entry in the global table. A temporary solution is to perform an open and close after the REORG.

C. Decompression

Extra sectors may not be what the user specified in creating a file.

1. The program allocates an area 3 times the input file size.

2. After decompression extra sectors may only include sectors that are available within the allocated area.

Please contact your local Wang Analyst if you require this release.

MVP BASIC-2 RELEASE 1.4

Release 1.4 of MPV BASIC-2 corrects a disk drive conflict concerning 2260B-2 and 2260C-2 disk drives. If one MVP partition is accessing one of the drives of the pair and another partition attempts to access the other drive, the MVP OS causes the disk processor to forget which drive it is currently accessing. This can result in an abnormal termination of the disk operation (often error I93 is reported). The following file on the system platter differs from Release 1.3:

"@@" — MVP OS AND BASIC-2 Interpreter

A general release to the existing customer base is not being made at this time, since Release 1.5 is expected to be released in the near future. However, any existing customers with 2260B-2 or 2260C-2 drives should be upgraded to Release 1.4.

MVP RELEASE 1.4 system platter is part number 701-2294D. If you require a copy of this release, please contact your local District of Branch Analyst.

MVP-A

The new "A" version of the 2200 VP and MVP Central Processor Units is now available. This announcement coincides with our recent announcements of expanded memory on the MVP and the new 2260C/BC and 2280 series disk systems. The new disk products utilize new disk controllers, which operate the 2200 VP/MVP power supply almost to capacity. Under certain configurations, the power supply could possibly go into a marginal situation (particularly in areas with low line voltage problems). In light of this possibility and the potential for future product announcements, we have developed the "A" version of the VP and MVP Chassis. This option is mandatory on all VP or MVP systems orders containing a Model 2280 disk system or an MVP with more than 64K bytes of memory. It is recommended that the "A" option be quoted in *all* new sales situations where system growth is a factor.

The option "A" must be included in situations where customers wish to add a Model 2280 to an existing VP or MVP installation. For customers wishing MVP memory

upgrades it will not be necessary to order the "A" option provided there is not a model 2280 in the system.

Upgrades will be available for existing systems with deliveries for the "A" option scheduled to coincide with deliveries for the Model 2280 (late January 1979).

The new "A" option was included in the Oct. 15 price list. To order the "A" option you need only add the "A" suffix to the current VP/MVP model number; Example 2200 MVP-16A.

2280 FIXED/REMOVABLE DISK DRIVE

Wang Laboratories, Inc., has announced a new fixed/removable cartridge disk drive: the 2280.

General Discussion

The 2280 is available in three models: Model 2280-1 provides approximately 13.4* million bytes of removable storage and 13.4 million bytes of fixed storage for a total capacity of 27 million bytes. The 2280-2 provides approximately 13.4 million bytes of removable storage and 40.2 million bytes of fixed storage for a total capacity of 53.6 million bytes. The largest drive, the 2280-3 provides approximately 13.4 million bytes of removable storage and 67.1 million bytes of fixed storage, for a total capacity of 80.5 million bytes of on-line storage.

Features

- Removable disk platters make off-line storage capability virtually unlimited.

- Disk platters are easy to unload, store, and replace.

- Disk utilization optimized for efficient cost/performance ratio.

- Removable platter offers backup for user's critical files and data records. Files may be backed up by removable platters, removing the necessity to purchase another drive or tape transport for duplication purposes.

- Fast/efficient accessing and disk copying speeds.

- Improved storage/physical space ratio provided, as compared to 2260 series.

- The 2280 disk drive controller, the 22C14 allows two disk drives to be daisy chained, providing up to 16M bytes of on-line storage.

- Field upgrades will be permitted between models.

* Please note that storage capacity figures do not allow for small loss due to automatic error correction logic.

Restrictions

- The 2280 fixed/removable drive will *not* work with the Wang 2200T, PCSII, WCS-15, and VS Series.

- Model 2280 removable disk platter is *not* compatible with the 2260 series.

- Model 2280 controller does not support the MXA-1 at this time.

Order Information/Availability

First deliveries of the 2280 fixed/removable cartridge disk drive will be in January of 1979.

VS PRODUCT ENHANCEMENTS

Wang has announced further additions to its VS product line. These enhancements will further increase the power and flexibility of a system which is already more powerful and flexible than any product currently being sold in its price range. These announcements are of particular significance because of their implications for distributed processing and the increased upgrade-potential that they afford our customers and prospects.

Features

2280V Fixed/Removable Disk Drive provides fast, high-volume, direct-access storage for Wang VS systems. The 2280V is a free-standing unit ideally suited for integration into the office environment. The disk drive is enclosed in a functional cabinet that requires a hinged front door for the loading and removal of the disk cartridge. The 2280V comes in three models:

- 2280V-1 holds two disk platters, one 15-meg. removable and one 15-meg. fixed, for a total of 30 meg. of storage.

- 2280V-2 has one removable 15-meg. disk platter and two fixed platters. One fixed platter has a single recording surface with a 15-meg. capacity; the other has two recording surfaces with a 30-meg. capacity, for a total of 45-meg. of fixed storage. Total storage is 60-meg.

- 2280V-3 has one removable 15-meg. disk platter

and three fixed platters. One fixed platter has a single recording surface; the other two have two recording surfaces, for a total of 75-meg. of fixed storage. Total on-line storage capacity is 90-meg.

Benefits

The 2280V allows for greater flexibility in configuring, and increases the cost effectiveness of the VS System. Because of the fixed/removable features of the 2280V, the customer is now able to back up files without investing in backup peripherals. The fact that the 2280V is field-upgradable is also a definite plus when it comes time for the user to expand his system.

Limitations

The 2280V is a fixed/removable drive. The fixed represents one volume, the removable another volume. The VS will not support multivolume processing.

Features

2209V-2 dual-density 9-track tape drive supports 800 and 1600 BPI densities. The characteristics of the 2209V-2 are the same as the 2209V except that the 800 BPI speed is 60K bytes-per-second, and it utilizes NRZI encoding.

Benefits

The 2209V-2 represents another addition to the growing line of powerful VS peripherals, that will enable us to offer positive solutions to our customers' data processing needs.

Limitations

The 2209V-2 is interfaced to the new 22V05-2 IOP and subject to the same limitations as the 2209V nine-track tape drive. The 22V05-2 replaces the 22V05 as the standard tape drive IOP.

Features

22V08 is an input/output processor for disk drives. The 22V08 will support all models of the 2280V, the 2265V-1, and 2265V-2. The 22V08 replaces the 22V03 and 22V04 disk input/output device. The 22V08 will support four disk drives in any combination.

Benefits

The 22V08 IOP allows three different disk drives to be supported by a single IOP. This is a significant cost-saving and upgrade factor to the user.

Limitations

The maximum number of 22V08's supported by all CPU models is two.

Features

22V06-1	—	A one-line communication input/output processor supporting a single synchronous line. Supports a 2780/3780 emulator, (included), and provides an automatic calling unit. Can be field-upgraded to a 22V06-2 and/or 22V06-3.
22V06-2	—	A two-line communication input/output processor supporting two synchronous units. Supports a 2780/3780 emulator, (included). An automatic calling unit is provided for one of the two available lines. Can be field-upgraded to a 22V06-3.
22V06-3	—	A three-line communication input/output processor supporting three synchronous lines. Supports a 2780/3780 emulator, (included). An automatic calling unit is provided for one of the three available lines.

Benefits

The 22V06 Communications IOP gives the VS the high-powered communications capability that is demanded in the rapidly-expanding, distributive-processing marketplace. The fact that the 22V06 is field-upgradable is also a definite plus when it becomes necessary for the user to expand his operations.

Limitations

Required modems are not included. With the initial release, only half duplex will be supported. The 22V06-1 became available for limited customer installation in November; the 22V06-2 and 3 in December.

Features

2249V	—	Cluster Controller is physically a stand-

alone device. The Cluster Controller is equipped with a cable to be connected to a modem, and a number of coax connectors which are to be connected to serial workstations and serial printers. The 2249V comes in one model, the 2249V-6, and is capable of supporting up to six devices. These devices may be either the 2246S workstations or any of the serial printers.

Benefits

The 2249V will allow the VS to perform remote interactive processing. It will also allow multiple users at the remote location. The serial devices can be located as much as 2,000 feet from the cluster controller. The 2249V will allow the user to have the same benefits at the remote location as those enjoyed at the primary CPU location.

Limitations

It is important to note that the cluster is linked over telephone lines to another modem which, in turn, is connected to a 22V06 IOP resident in the VS. One of the serial devices must be a 2246S Workstation. The 2249V-6 will be available in May of 1979.

Features

22V07-1	—	An input/output processor providing up to eight serial ports supporting the 2246S workstation or serial printers.
22V07-2	—	An input/output processor providing up to 16 serial ports supporting the 2246S workstation and serial printer.

Benefits

The 22V07 Serial Input/Output Processor now allows serial devices to be located in excess of our previous 500-foot limitation. In conjunction with the increased distance, this enhancement also allows us to increase the maximum number of workstations we can support from 24 to 32.

Limitations

The maximum a serial device can be located from the input/output processor is 2,000 feet.

Features

2246S	—	A serial workstation connected to the 22V07 via coaxial cable. Maximum distance is 2,000 feet. The workstation has an 80x24, 12-inch CRT with the same features as the 2246P. The 2246S can also be connected to the 2249V Cluster Controller at a distance of up to 2,000 feet.
2246R	—	2246R is a 12" U/L CRT (80x24) remote workstation. Includes communications controller which allows it to operate as a remote standalone workstation. The 2246R also has a built-in parallel interface which enables it to support a single parallel printer.

Benefits

The 2246S and the 2246R are new workstations. The 2246S now allows operation at increased distances from the CPU or the 2249V-6 cluster controller, a fact that will allow us to address many application requirements that in the past we could not fulfill. The 2246R enables single remote workstations to be placed at locations that don't have a multi-user requirement but do have a need for remote processing.

Limitations

The 2246S will be deliverable 12 weeks after receipt of order. The 2246R will be available May of 1979.

Features

Serial printers are the same models as the current parallel models that are now available on the VS. All performance characteristics remain the same; however, there are modifications to the equipment. The new serial printer model numbers are: 2221V-S, 2231V-2S, 2231V-6S, 2261V-S, 2263V-1S, 2263V-2S, 2263V-3S, 2281V-S.

Benefits

The introduction of a full line of serial printers allows the user a broad range of peripherals from which to choose. Whether his needs are for increased distance at his primary location or a high-volume operation at a remote site, the serial printers will fill the bill.

Limitations

Serial printers will only be supported by the 22V07 Input/Output Processor and the 2249V-6 Cluster Controller.

2260BC DISK DRIVE

Introduction

Wang Laboratories, Inc., has announced a new fixed/removable cartridge disk drive, the 2260BC. This new drive is functionally identical to the 2260C with one major exception: the 2260BC provides for disk multiplexing.

Differences Between 2260C and 2260BC

The physical difference between the 2260C and the 2260BC is in their respective controllers. The 2260BC uses a new controller, the 22C13, which has an additional connector into which the cable from a 2230-MXA-1 is attached. Unlike the 2260B drive, where the 2230-MXA replaces the 22C02 disk controller in multiplexed configurations, the 2230-MXA-1 provides the multiplexing function only and occupies a separate I/O slot on the central processor unit. Therefore a total of two I/O slots are required on the CPU.

Features

- The 2260BC includes a cabinet/stand which supports the drive. This stand contains an internal area in which a 2200T, VP or MVP central processing unit may be installed.

- Cuts down need for subsequent furniture purchases.

- Standardizes the Wang family of hard-disk based systems. The new 2260BC drive will be phased into delivery while the 2260B drive begins its phaseout.

- Offers inexpensive hard-disk-based system with upgrade capabilities within Wang product line.

- Offers upgrade capabilities with other systems via multiplexing configurations.

Upgrade From 2260C Drive

For those customers who need multiplexing capabilities and have a 2260C drive already installed, we are pleased to announce a kit to upgrade the 2260C to the 2260BC. The upgrade kit includes a replacement 22C13 controller and cables.

Restrictions

- No upgrade capabilities from 2260B to 2260BC.

Order Information/Availability

First deliveries of the 2260BC and the new upgrade conversion kit started September of 1978.

MVP MEMORY UPGRADE

Introduction

Wang Laboratories, Inc., recently announced memory expansion allowing up to 245K bytes on the 2200MVP series small business computer.
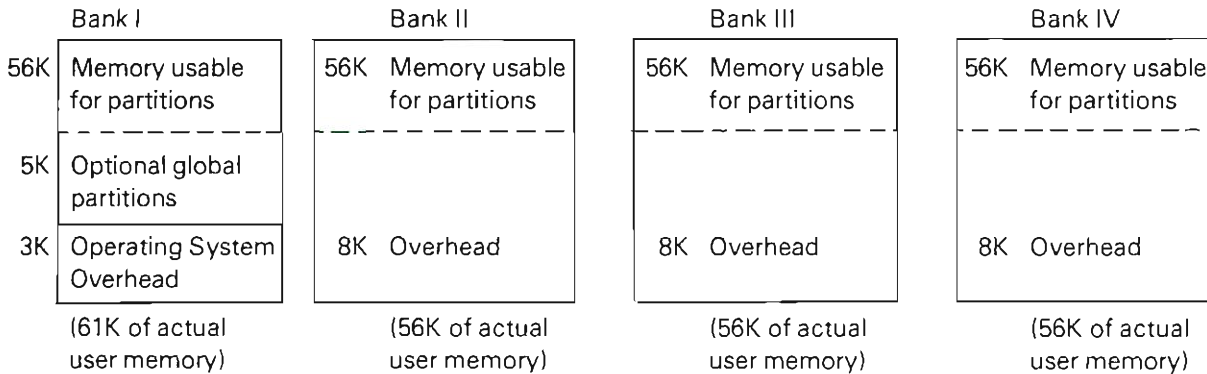
General Discussion

The 2200MVP series processor now may be ordered (or upgraded) to the following memory sizes: 16K, 32K, 48K, 64K, 96K (88K partitionable), 128K (120K partitionable), 192K (176K partitionable), 256K (232K partitionable).* No memory figures specify the 3K lost to operating system overhead.

Total memory of the 2200MVP is divided into a maximum of four (4) independent banks. Each of these banks can contain up to 64K bytes. The first bank holds the MVP operating system which controls the functions of the computer, requiring 3K bytes of memory and can reference partitions in any bank. A 5K block of memory is available in this first bank for universal global partition(s), accessible to all other memory banks in the system. Ideally this area would be used for variables and subroutines required by partitions stored in any of the banks (for example, KFAM-7 tables containing file and record protection information). The balance of the memory available in the first bank (56K) is partitioned normally.

The second, third, and fourth memory banks can each have up to 64K bytes of memory. They are configured at partition generation time into customer-defined partitions which may be global within that bank. The customer has up to 56K available from the maximum 64K bytes for user code, the initial 8K bytes of each bank (after the first) being required by the system. In addition to the 56K available to the user in these banks, the universal 5K global partition area in bank I is

also accessible. Memory allocation is shown in the following diagram:

Bank I		Bank II		Bank III		Bank IV	
56K	Memory usable for partitions	56K	Memory usable for partitions	56K	Memory usable for partitions	56K	Memory usable for partitions
5K	Optional global partitions						
3K	Operating System Overhead	8K	Overhead	8K	Overhead	8K	Overhead
(61K of actual user memory)		(56K of actual user memory)		(56K of actual user memory)		(56K of actual user memory)	

*Please note: 1K per partition is also claimed by the system.

Features

- Matches memory to full terminal capability.
- Larger application range.
- Universal global partition space of 5K available.
- Provides extended memory expansion range.
- Allows existing software to be run untouched in each partition.
- Lower cost per terminal position.
- Maintains in-range product compatibility.
- Each memory block supports its own global partitions.
- 56K bytes of memory available for customer partitions in expansion banks.

Restrictions

- 8K bytes overhead per bank beyond first 64K.
- If more than one bank of memory addresses the disk, multiple copies of access system code must be used.
- Maximum program size is 61K in the first memory bank and 56K in the other banks.

Order Information/Availability

First deliveries of the MVP memory upgrade were in November of 1978. Documentation has been upgraded to reflect memory expansion on the 2200MVP.

IBM 3270
Information Display Systems

Wang Laboratories, Inc., recently released a new telecommunications terminal emulator. This emulator allows the Wang 2200 Series to emulate the 3275 display terminal. The following article is included to give those people not familiar with the IBM 3270 family an overview and an understanding of the product, and the marketplace in which it is sold.

Introduction

Telecommunications (TC) is becoming a more important facet of the total business picture at Wang. As we come into greater contact with people in the TC field, we must be able to communicate to them what our products can and cannot do. Generally, we describe our devices' TC capability by comparing them to other devices which are "industry standards." For instance, we can provide 2780 support. This indicates that our device communicates to another device using the telecommunications message structures, length, codes, and protocol of an IBM 2780 Data Communications Terminal. Wang presently provides several communications emulation devices and will introduce others in the near (and not so near) future. One of the most common devices in telecommunications is the IBM 3270 Information Display System. Wang presently provides communications emulation for the IBM dial-up 3275 system. A basic understanding of

the 3270 is desirable for anyone likely to become involved in telecommunications.

IBM 3270 Style Interactive Telecommunications

The 3270 is an interactive display device (or series of devices). These devices operate under the control of a central processor regardless of the physical network, and do not support a data base at the device. The 3270 operates in two general modes: data entry and inquiry/response.

During a data entry operation, the 3270 device operator keys information into the display. When a screen of data is finished, the operator touches an "enter" key. Meanwhile, the Central Processing Unit (CPU), or a device attached to the CPU, has been polling its attached devices, including the 3270, with a TC program. When the next poll message addresses the 3270 with "enter" flagged, that device will send the data from the screen to the CPU. This may be a full screen of data, or only a few lines. After the CPU acknowledges receipt of the data, the screen is reset to a normal state (which usually is a blank format), and the operation is repeated. Because the CPU knows which device sent the data, it can input this data to the correct applications program for storage at the CPU.

The inquiry/response operation is similar. The operator enters a certain amount of information (generally a customer number, etc.) and then touches either "enter" or another preselected key. The CPU has been polling, and will allow the 3270 to send its message (for instance, the customer number). The CPU supplies this information to an applications program. The applications program accesses its data base and presents the resultant data (in this case, customer name and address) to the CPU. The CPU then sends that data to the 3270, where it is displayed; the operator is then able to enter more data.

There are a number of other interactive devices in use. Generally, however, they all operate much like the 3270. Essentially, all operations are Data Entry, Inquiry/Response, or some variation of the two.

3270's are hardwired devices which operate in a specific manner. Because their operations cannot be altered to meet different conditions, they are often referred to as "dumb" devices. Many of the 3270 replacement devices are "intelligent" (they contain memory and are programmable) but are programmed to emulate the "dumb" 3270.

Host systems that can operate with the 3270 include most models of 360/370 and System 3 Model 10 and 15.

IBM introduced the 3270 early in the 1970's. Synchronous Data Link Controllers, printers, and display devices were added in 1977. The entire 3270 family consists of a number of component devices with similar numbers.

Specific 3270 Device Descriptions

A 3270 Device Summary Table, located at the end of this article, lists these devices and their different models. Figures A-E illustrate the basic configurations of these devices.

The first devices to be introduced were the 3271, 3272, 3275, 3277, 3284, 3286, and 3288.

The 3275 is a remote, stand-alone, display station which can support a non-buffered 40-cps printer. This display station has internal control circuitry and can operate using either Binary Synchronous Communications (BSC) or SDLC. Under BSC, this device provides dial-up operation making it the only 3270 device to operate with other than dedicated lines. The 3275 can also operate on multipoint, non-switched lines and is often found in this environment. Two screen sizes are available, 480 and 1,920 characters. See Figure A.

The 3271 is the remote cluster controller. It can interface up to 32 terminal devices, either displays or printers, to a BSC or SDLC line. One device must be a display. The 3271 can operate on a multipoint line. Because any Transmission Control Unit (TCU) line at the host site can support multiple 3271's, and each 3271 can support multiple terminals, line loading analysis is extremely important. The 7200-bps (maximum) line speed supported by the 3271 restricts the number of terminals per line. Commonly, a 2400-bps line will support to more than 12 terminals, even though there may be multiple 3271's attached to the line. See Figure B.

The 3272 local controller functions in much the same manner as the 3271, except that the 3272 connects terminals directly to the CPU channel. This device supports up to 32 terminals across a coax cable. The IBM channel interface is very complex, and the bulk of the 3270's are supported remotely using TCU's like IBM's 270X or 370X. Therefore, it is unlikely that Wang will provide 3272 support. See Figure C.

Both the 3271 and 3272 support the same display terminal: the 3277. The 3277 may have two different screen sizes, either 480 or 1,920 characters. There are many different keyboards which can be attached to the 3277 by cable. These are variations of typewriter, keypunch, or data entry keyboards with many foreign keysets available. The 3277 can optionally be obtained with keylock, photopen, or badge reader. The photopen is useful for item selection from lists. The keylock and badge reader provide system security. (The 3275 display is the same as the 3277.)

The 3284, 3286, and 3288 printers were introduced with the 3271 and 3272. The 3284 is a 40-cps matrix printer and can be used with 3271, 3272, or 3275. The 3286 is a 66-cps matrix printer, and the 3288 is a 120-lpm belt printer. The 327 cannot support the 3286 or 3288.

In May of 1977, IBM announced a major revision in the 3270 product line. This version consisted of price reductions

to the foregoing devices and the introduction of a new series of controllers, displays, and printers. The 3274, 3276, 3278, 3287, and 3289 were added to the product line. These devices, in general, offer better price and performance than the older devices, even after the price cuts. They also provide features which eliminate some of the undesirable characteristics of the earlier models. The features include up to 9600-bps communications, low glare screens, local print (no mainframe intervention), and many others.

The 3274 is the cluster controller. It can interface up to 32 new Terminal devices either via BSC or SDLC, or locally to multiplexer or selector channels (either Systems Network Architecture (SNA) or non-SNA compatible). Or the 3274 can support up to 16 of the older (3277, 3284, etc.) terminals. Old and new terminals can be mixed within some restrictions. See Figure D.

The 3276 provides remote small cluster support. The 3276 can function as a stand-alone controller/display and can also support an additional seven terminal devices. The 3276 display is available with 960, 1,920, 2,560, or 3,440 characters. See Figure E.

The new 3278 display is available in the same screen sizes as th 3276. Up to seven 3278's can be attached to a 3276 and up to 32 to a 3274. This device displays a 94 upper- and lower-case characters set. There are many keyboard variations available, as well as keylock, photopen, and badge reader.
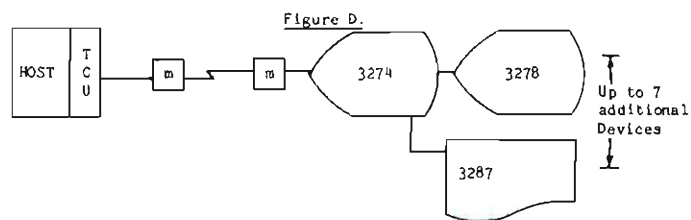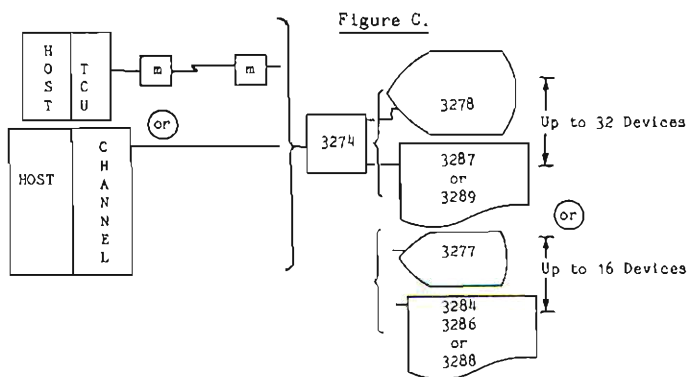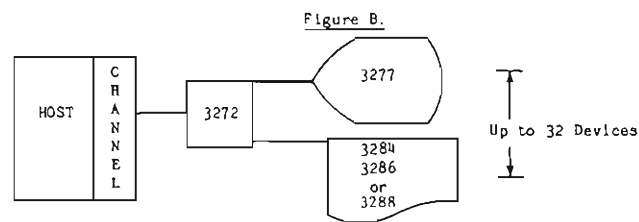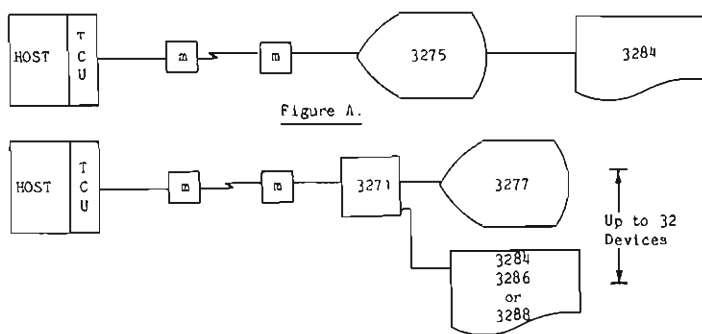
Two new printers are available. The 3287 is a bidirectional matrix printer which is supported by 3274 or 3276. There are two models available with 80- or 120-cps (maximum) speeds. A new, higher-speed belt printer, the 3289 can print from 80- to 400-lpm, depending upon character set and line length. The printer is supported by the 3274 either remotely or locally, but not by the 3276.

3270 SUMMARY TABLE

DEVICE	MODEL	MAJOR FEATURES
3271	1	Remote Cluster Controller — 480 Character — BSC
	2	Remote Cluster Controller — 1920 Character — BSC
	11	Remote Cluster Controller — 480 Character — SDLC
	12	Remote Cluster Controller — 1920 Character — SCLC
		(up to 32 devices per controller)
3272	1	Local Cluster Controller — 480 Character
	2	Local Cluster Controller — 1920 Character
		(up to 32 devices per controller)
3274 (new)	1A	Local Cluster Controller — SNA
	1B	Local Cluster Controller — non-SNA
	1C	Remote Cluster Controller — BSC or SDLC
		(up to 32 new devices or 16 old devices per cluster)
3275	1	Stand-alone — 480 character — BSC
	2	Stand-alone — 1920 character — BSC
	11	Stand-alone — 480 character — SDLC
	12	Stand-alone — 1920 character — SCLC
3276 (new)	1	Stand-alone/small cluster controller — 960 character — BSC
	2	Stand-alone/small cluster controller — 1920 character — BSC
	3	Stand-alone/small cluster controller — 2560 character — BSC
	4	Stand-alone/small cluster controller — 3440 character — BSC
	11	Stand-alone/small cluster controller — 960 character — SDLC
	12	Stand-alone/small cluster controller — 1920 character — SDLC
	13	Stand-alone/small cluster controller — 2560 character — SDLC
	14	Stand-alone/small cluster controller — 3440 character — SDLC
		(up to 8 devices per cluster)

3277	1	Display Station — 480 character screen
	2	Display Station — 1920 character screen
3278	1	Display Station — 960 character screen
(new)	2	Display Station — 1920 character screen
	3	Display Station — 2560 character screen
	4	Display Station — 3440 character screen
—		
3284	1	40-cps printer — 480 character buffer
	2	40-cps printer — 1920 character buffer
	3	40-cps printer — no buffer
—		
3286	1	66-cps printer — 480 character buffer
	2	66-cps printer — 1920 character buffer
3287	1	80-cps printer 480-3440 character buffer available
(new)	2	120 cps printer 480-3440 character buffer available
3288	2	120-lpm printer — 1920 buffer only
3289	1	120-lpm printer (64 char. set) 960-3440 character buffer available
	2	2000lpm printer (64 char. set) 960-3440 character buffer available
Keyboards		Many variations of three basic keyboards; data entry, keypunch, and typewriter are available.

Figure A.

Figure B.

Figure C.

Figure D.

Technical Notes

The 2200 systems upgraded to 2200 MVP's are required to replace existing consoles with 2236D terminals. The 2236D is the only terminal supported by the MVP. It may be advantageous for some systems to make limited use of the old console in the MVP, rather than trading-in or scrapping the console.

CRT (2216, 2226, 2220, 2210, 2292)

The CRT can be used on the MVP in the same manner as any other printer-type device. It's particularly useful for monitoring background jobs. A portion of the screen can be reserved for each job's status messages; $OPEN, $CLOSE and PRINT AT can be used to control where information is displayed and to prevent jobs from interspersing their messages on the screen. The CRT controller address cannot be set to /005 since this is a reserved MXC address; the printer addresses /015, /016, or /017 are logical settings for the monitor.

Keyboard (2215, 2222, 2223, 2226, 2220, 2210)

The use of keyboards, other than in the 2236D, is quite limited on the MVP and is, in general, not recommended. The following restrictions apply to the use of auxiliary keyboards:

1. The keyboard controller address cannot be /001 since that conflicts with the MXD; /008 can be used. The triple controller does not have address switches for the keyboard and, thus, cannot be used.

2. The keyboard operations CI, INPUT, and LINPUT are legal only to the MXD/22236D. Only KEYIN and $GIO can be used with the auxiliary keyboard.

3. The RESET and HALT keys must be physically disabled since depressing them will RESET or HALT whichever partition happens to be executing at that moment. RESET may also lock the system up, requiring re-initialization in order to restore operation.

4. Typing rates are severely limited since the keyboard contains only a single character buffer. The MVP does not poll the keyboard frequently enough to support typing; thus, data may be lost, even at moderate typing speed. It is possible, however, to use the keyboard to initiate or control tasks if a single character input is sufficient. For example, a menu might be displayed which the operator responds to by pressing a Special Function Key.

Storage Devices (2210, 2220)

Cassette drives and mini-floppies are not supported on the MVP.

2236D Terminals on a 2200T or 2200VP

In order to facilitate a possible upgrade to an 2200MVP, a 2200T or 2200VP can be configured with an MXD and one (and only one) 2236D. The terminal behaves like a 2226 in all respects except:

1. The communication rate is considerably slower than that of the 2226. However, at 19.2K baud with the automatic compression capability of the MXD/2236D, the transfer rate is generally quite adequate.

2. The keyboard arrangement is different.

The 2236D provides additional capability:

1. Remote terminal hookup.

2. Terminal printer jack.

2200VS Manuals and Miscellaneous Material

Part Number	Description
800-1200AS-02	2200VS Assembler Language Reference Manual
800-1201CB-02	2200VS COBOL Language Reference Manual
800-1102SO-02	2200VS System Operation Guide
800-1100PO-02	2200VS Principles of Operation
800-1101PI-02	2200VS Programmer's Introduction
800-1103SP-03	2200VS System Programmer's Guide
800-1300FM-01	2200VS File Management Utilities
800-1105EI-01	2200VS Executive Introduction
800-1104SM-01	2200VS System Management Guide
800-1203RP-01	2200VS RPG-II Manual
800-1106PG-01	2200VS Physical Planning Guide
800-1202BA-01	2200VS Basic Language Reference Manual
800-5100-01	2200VS Configuration Summary
800-5101-01	2200VS Data Conversion-Media

800-5103-01	VS Design Change Request
800-2100-01	2200VS Configuration Guide
800-2101-02	2200VS Data Sheet — System
800-2102-02	2200VS Data Sheet — Peripheral
800-2201-02	2200VS Data Sheet — Language
700-4507	2200VS Brochure
700-4573	2200VS Accounting Brochure

RPG Coding Forms

800-5200-01	Extension & Line Spec.
800-5201-01	Output Spec.
800-5202-01	Workstation Spec.
800-5203-01	Input Spec.
800-5204-01	Calculation Spec.
800-5205-01	Control & File Description Spec.

| 700-4675-A | 2200VS Domestic Price List |

Recent Publications

The following items have been released from Lowell between July 1, 1978 and November 30, 1978.

DATA SHEETS

Word Processor Numeric Keypad Option Model 5595-8 Data Sheet (700-4795)

2260BC Fixed/Removable Disk Drive Data Sheet (700-4819)

Word Processor 5571 Line Printer Data Sheet (700-4824)

Word Processor 5, Model III Data Sheet (700-4837)

Word Processor 5541W Daisy Printer Data Sheet (700-4788)

Word Processor 5541WC Wide Carriage Printer Data Sheet (700-4786)

2236D Interactive Terminal & 2236MXD Terminal Processor Data Sheet (700-4807)

2280 Fixed/Removable Disk Drive Data Sheet (700-4843)

3275 BSC Emulation Software Utility Data Sheet (700-4821)

Word Processor Photocomposition System Data Sheet (700-5018)

Word Processor Office Information System 140 Data Sheet (700-4840)

PCS II Data Sheet (700-5014)

ERRATA SHEETS

2209A Nine-Track Tape Utilities Manual Addendum (700-4325.01)

GBS Mod-IV System Manual Update #1 (700-4710.01)

2200 Integrated Support System Release 3.7 User Manual Errata (700-4768.01)

2200 HFAM Hashed File Access Method User Manual Addendum (700-4721.01)

2200 Client Accounting System User Manual Update #4 (700-4406A.01)

TC Support Utilities I User Manual Addendum (700-4086.01)

Graph Utility System (GUS) Manual Addendum (700-4335.01)

MANUALS

Word Processor 5541W Daisy Printer User Manual (700-4790)

Word Processor 5541WC Wide Carriage Printer User Manual (700-4789)

Manufacturing Management System Operator Guide (700-4789)

Manufacturing Management System Installation Manual (700-4619)

VS Payroll Application (800-1403PR-01)

Internal Sales Reporting System User Manual (700-4836)

2200VS Basic Language Reference Manual (800-1202BA-01)

Word Processor System 5, Model 1 Operator's Reference Guide (700-4682)

2200 Integrated Support System User Manual Release 3.7 (700-4768)

2200 Easyform III User Manual (700-4775)

2200 Mortgage Management System System Manual (Disk) (700-4770)

2200 Mortgage Management System User Manual (Disk) (700-4772)

Word Processor 5581WC Wide Carriage Printer User Manual (700-4736)

2200 Integrated Support System (ISS) Release 4 User Manual Interim (700-5010)

GBS-Mod IV (Diskette) Operator's Manual (700-5011)

Word Processor System 150 Configuration (700-4841)

Word Processor Photocomposition System Editor 7 Configuration (700-5015)

Word Processor Photocomposition System Configuration (700-5013)

Word Processor 5571 Line Printer User Manual (700-4825)

GBS/MVP Mods I & II Technical Guide (700-5022)

Word Processor 5571 Line Printer User Manual (700-4825)

3275 Emulator User Manual (700-4826A)

Word Processor Phototypesetting Systems Operator's Instruction Manual (700-5037)

Word Processor Guide for Office Systems Supervisors (700-5043)

Word Processor System 5, Model I Operator's Guide (700-4738)

Binary Synchronous 1 (BSC 1) Telecommunications Package Operator's Manual (Interim) (700-4719)

PRODUCT BULLETIN

#172 2260BC/2260C Series Disk Drives
#173 Word Processor Multi-lingual Support Package
#175 Word Processor System 5, Model III
#149 Word Processor 5571 Line Printer
#168 Word Processor Numeric Keypad Option — Model 5595-8
#174 2280 Fixed/Removable Disk Systems
#177 2200 VS
#178 Word Processor System 140
#179 Word Processor Photocomposition System & Editor 7
#137A 2228C Communications Controller
#180 Word Processor Column Edit
#181 Word Processor System 5 TC-B3 Bisynchronous Communications Option

REPRINTS

2292 Auxiliary Display Data Sheet (700-3538C)
2200VP Disk Reference Manual (700-4081D)
2200VP Basic-2 Language Reference Manual (700-4080B)
VS Accounts Payable Application Manual (800-1402AP-01)
Word Processor 10A Configuration (700-3979B)
Word Processor 5 Model II Data Sheet (700-4735A)
2200 Disk Reference Manual Addendum (700-3159.01)
PCS II Text Editing Utilities User Manual (700-4452A)
Integrated Support System User Manual Release 3.2 (700-4254B)
Integrated Support System User Manual Release 3.7 (700-4768A)
Word Processor 5595-9 Optical Character Recognition (OCR) Option Data Sheet (700-4713A)
Word Processor 5595-5 Bisynchronous Commmunications Option Data Sheet (700-4657A)
Word Processor 5508 Photocomposition Option Data Sheet (700-4420A)
Word Processor 5581 Daisy Wheel Printer Data Sheet (700-4179C)
Word Processor 10A Data Sheet (700-4170D)
Word Processor 20 Data Sheet (700-3892E)
Word Processor 5595-4 Asynchronous Communications Option Data Sheet (700-4733A)
Word Processor Glossary Auxiliary Functions User Manual (700-4642A)
Word Processor 5521 Line Printer User Manual (700-4327A)
GBS Mods I-IV (Diskette) Technical Guide (700-4072C)

2260B Fixed/Removable Disk Drive Data Sheet (700-3483E)
Word Processor 30 Data Sheet (700-3897E)
Word Processor 5531-2 120 CPS Line Printer Data Sheet (700-4333B)
2200VS System Programmer's Guide (800-1103SP-03)
2200 Client Accounting System (CASH) User Manual (700-4406A)
2230MXA-1/MXB-1 Data Sheet (700-3740C)
Word Processor Photocomposition Option User Manual (700-4418A)
2200 Text Editing Utilities User Manual (700-4043C)
Word Processor Glossary Decision Processing User Manual (700-4614A)
Mortgage Management System User Manual (Diskette/Minidiskette) (700-4397A)
Word Processor Glossary of Terms (700-4417A)
GBS-Mod II (Disk) System Manual (700-4277A)
VS Accounts Receivable Application (800-1400AR-02)
2200VS Cobol Language Reference Manual (800-1201CB-02)
Word Processor 25 Data Sheet (700-4683A)
2200VS Configuration Guide (800-2100-01)
Word Processor 5521 200CPS Line Printer Data Sheet (700-4103C)
2200VS Data Sheet (800-2101.02)
GBS-Mod I (Diskette) Operator's Manual (700-4071B)
GBS-Mod I & II (Diskette) Operator's Manual (700-4163A)
VS Peripherals Data Sheet (800-2102.02)
Word Processing System Security Option Operator's Instruction (700-4673B)
Basic Language Summary Card (700-3500D)
2231W-6 Line Printer Data Sheet (700-4677A)
Word Processor 30 Data Sheet (700-3897F)
Basic Language Pocket Guide (700-3030E)
VP Central Processing Unit (CPU) Data Sheet (700-4051A)
Word Processor 25/30 (CDC Disk) Power Procedures (700-4424A)
2236D Interactive Terminal & 2236MXD Terminal Processor Data Sheet (700-4807A)
ISS 3.2 Programmer's Summary Sheet (700-4249A)
Life Insurance Illustration System User Manual (700-4326A)
Word Processor 25 Configuration (700-4685B)
Word Processor Ribbon Cartridge & Print Wheel Replacement (700-4066C)

Shows and Exhibits

1979
February

12 - 15   American Rental Assoc.
          Convention   Anaheim, CA

March

13 - 14	Federal Office EquipmentExpostion	Washington, DC
20 - 22	5th Annual Federal DP Expo	Washington, DC
28 - 30	Word Processing Exposium '79	Lake Geneva, WI

April

3 - 5	Chicago Land Business Exposition	Chicago, IL
9 - 12	Interface '79 (National)	Chicago, IL
16 - 18	Data Processing Management Assoc.	Atlanta, GA
23 - 25	Tri-state Hospital Assembly	Chicago, IL
30 - May 2	1979 Accounting Show and Conference	New York, NY

June

4 - 7	1979 National Computer Conference (National)	New York, NY
19 - 21	'79 AFCEA	Washington, DC

Sept.

6 - 8	Graphic Arts '79/The Charlotte Show	Charlotte, NC

■■■■ Hello.Tech Center. ■■■■ May I help you?

We would like to clear any confusion that may exist on the different 2200 series *disk drives*, and provide you with the do's and don'ts of configuring them with the 2200:

1. The disk platters of the old 2230 drives *are not* *interchangeable* with the newer 2260BC and 2260C drives. In other words, the 2260BC and the 2260C series disk drives cannot read, write, or format the 2230 series disk drives, and vice versa.

2. The 2260BC drives must always be configured with the 22C13 controller plugged into the main CPU. The 2260BC can also be multiplexed; if it is, then the disk multiplexer controller 2230MXA-1 must be used *along with* the 22C13 controller. Therefore, multiplexing the 2260BC will involve *two* I/O slots.

3. The 2260C drive *cannot* be multiplexed. The 22C12 disk controller must always be used when configuring the 2260C.

4. The 2260B, 2260BC, and the 2260C disk *platters* are all interchangeable. Therefore, the BC and C platters can be formatted, read from, or written onto when mounted in any 2260 series drive.

5. 2260C and BC drives cannot be connected to 2260B controllers.

PCS-II/PCS-IIA

The PCS-II has no disk controller and, therefore, *cannot* be configured to any of the hard disk drives. The PCS-II has its own mini-floppy drives mounted on top of the console; and, presently, that is its maximum configuration.

The PCS-IIA, on the other hand, has disk multiplexer closely resembling the 2230MXB and can therefore be configured with 2200T, VP and MVP systems containing 2260B, BC or C drives.

VP/VP-A and MVP/MVP-A

The new model disk products utilize new 2260BC, C and 2280 integrated disk controllers which operate the 2200VP/MVP power supply almost to capacity. Under *certain* configurations, the power supply could possibly go into a marginal situation (particularly in areas with low line voltage problems). In light of the possibility and potential future product announcements, we have developed an "A" version of the VP and MVP chassis.

The "A" option is mandatory on all new VP or MVP

system orders if the order contains (a) a 2280 disk system, (b) an MVP system with memory greater than 64K bytes, or (c) both. In addition, the "A" option is required when a model 2280 is added on an already installed system. The purpose of the "A" option is to provide adequate expansion room in situations where system growth is a factor.

If you have any additional questions on the above information, contact Mike Chen at ext. 2672 in Lowell.

Questions, Corrections and Amplifications

GUS is now (not "not") available on minidiskette 195-2061-8 as previously stated in Newsletter #10.

Disk Model 2280 Capacity

The recent announcement of the 2280 disk drives raised some questions as to their precise capacity.

Each platter on a 2280 drive has 819 tracks. There are 64 sectors on a track or 52,416 sectors; this yields a total of 13,418,496 bytes per platter.

The storage capacity for the three models are:

MODEL	STORAGE IN BYTES
2280-1	26,836,992
2280-2	53,673,984
2280-3	80,510,976

In all cases, 13,418,496 is removable; the remainder is on from 1 to 5 fixed surfaces, depending on the model.

In addition, there are 256 sectors (4 tracks) reserved on the fixed platters for error correction. The total usable space on a fixed platter is 13,484,032 bytes; however, at no time will the user be able to access more than 13,418,496 bytes.

Wang Laboratories, Inc., is the only vendor to offer the flexibility of fixed/removable disk drives with a capacity in excess of 20 megabytes.

Discontinued Products

Effective October 15, 1978, the following products will no longer be available.

Model 2260B (all versions)	— Disk Drive System
Model 2260B-2	— Disk Drive
Option 20A	— Extended Chassis ("T" CPU)

We completly switched over to 2260C/BC type disk drives during the week of October 10, 1978. You may be aware of the 2260C/BC drives being delivered against orders prior to that date. For customers requiring 2260B-2 drive additions, there will be a limited number of these units available until January 1, 1979. After that date, only 2260C/BC-2 drives will be shipped.

Option 20A has been discontinued due to low demand. No Option 20A's will be available after October 15, 1978.

The price lists dated October 15, 1978 reflect these changes.

Software Package Listing

Accounting (GENERAL)

VENDOR:	Computer Consultants of Alaska 454 Business Park Boulevard Anchorage, AK 99503
CONTACT:	Phyllis Fast
TELEPHONE:	(907) 274-0021
APPLICATION:	A/R System I
DESCRIPTION:	System provides user with reliable control of A/R. Besides billing statements, system produces an aged trial balance, account master lists, S/A, cash flow analysis, a write-off accounts list, and a billing edit list. User has direct control over chargeable amounts, service fees, and discounts on each account. Transactions are keyed into batches on diskettes, then posted to the data master disk for processing after editing and correcting the batches. Optional programs include product S/A, dunning notices, and mailing labels.
MINIMUM H/W CONFIGURATION:	2200T-4 (16K) 2270-2

VENDOR: Computer Consultants of Alaska (same as previous)

APPLICATION: A/R System II

DESCRIPTION: System provides user with quick, reliable, open entry invoice system. User is able to mark specific invoices as paid; and each billing statement lists the unpaid invoices, whether or not they occur in the current billing period. Billing statement will also display current aged trial balance of client's account. Other output includes billing edit list, aged trial balance, account master lists, S/A, cash flow analysis, and a write-off accounts list. Optional programs include salesmen's commission reports, S/A, mailing labels, and dunning notices.

MINIMUM H/W
CONFIGURATION: 2200T-4 (16K) 2270-2

VENDOR: Computer Consultants of Alaska (same as previous)

APPLICATION: Certified Payroll

DESCRIPTION: Originally for job cost and construction-oriented business, but works for most. Output-union reports, J/C distribution reports, payroll reports, displays employee files. Files include year-to-date earnings and deductions w/emp. data. Pay each emp. unlimited number of rates within pay period. Processes up to 30 different unions w/several dues calculations. Items subject to frequent changes (i.e., FICA) under operator control by tables. In active use since 1974.

MINIMUM H/W
CONFIGURATION: 2200T-4 (16K) 125 employees = Floppy disk

6,000 employees = 10 Meg Disk

VENDOR: Computer Consultants of Alaska (same as previous)

APPLICATION: General Ledger

DESCRIPTION: Based on dual-entry bookkeeping; provides 2 major reports — balance sheet, income statement. Also an analytical tool to define financial position of company. Employs 2 data files — chart of accounts that stores 37 months' transactions, journal entry file. Depending on requirements and system purchased, journal can derive data from payroll, inventory, equipment, depreication, A/P, and A/R files. Recommend minimum of once a week posting, moreover tighter control is necessary. Records updated at EOM and all figures are accumulated continuously, except income totals, which are set to zero at end of year.

MINIMUM H/W
CONFIGURATION: 2200T-4 (16K), 2270-2

VENDOR: Computer Consultants of Alaska (same as previous)

APPLICATION: Inventory Control

DESCRIPTION: Keeps complete records on up to 20,000 items. Orders, receipts and sales are recorded, then posted to update on-hand, on-order, and sales quantities in inventory master file. Back-order file maintains complete information on back orders and special orders, and alerts operator of necessary action. Capable of determining cost of goods by LIFO, FIFO, or Average Cost method. Permits monitoring cross-referencing parts to allow substitution part sets to individual items, and automatic flags on entered cost or price changes. Expandable to include EOQ, ROQ, formula ordering as well as many of the more sophisticated inventory techniques.

MINIMUM H/W
CONFIGURATION: 2200T-4 (16K), 2270-2

VENDOR: Computer Consultants of Alaska (same as previous)

APPLICATION: Complaint File Management

DESCRIPTION: Keeps track of complaints by case number, type of complaint, the location by grid number, offender of property owner, investigative officer,

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and court action status. Maintains up to 1,021 cases at any one time. Closed cases can be transferred to a historical file from which analytical abstracts may be taken. As an aid to prevent duplication of corrective action, system will search for similar complaints. If there are none, it will generate a new case file.

MINIMUM H/W CONFIGURATION:	2200T-4 (16K), 2270-2
VENDOR:	J. R. Cornelison Systems, Unlimited 6161 North May, Suite 4W Oklahoma City, OK 73112
CONTACT:	J. R. Cornelison
TELEPHONE:	(405) 843-1474
APPLICATION:	Genasys General Accounting System
DESCRIPTION:	Payroll, Accounts Payable, Accounts Receivable, Universal Input, General Ledger, Inventory, Checkwriter, Capital Assets, interactive flow-through. Nearly all input is to Universal Input which is capable of preliminary Trail Balance reporting, adjusting HNO. File updating accepts data from EASY automatically.
MINIMUM H/W CONFIGURATION:	WCS-30 w/floppy, F/R disk, printer. July release on GENASYS EASY presently running w/TC 360C software approximately 5,000. Hardware configuration customized according to numbers of accounts (all options considered).
VENDOR:	Manlius Valley Enterprises, Inc. P.O. Box 232 Manlius, NY 13104
CONTACT:	James J. O'Keefe, Jr., President
APPLICATION:	Order entry, inventory control, purchasing, accounts payable invoicing, accounts receivable, credit and financial reporting.
DESCRIPTION:	Well-established and thoroughly tested system written in RPGII. Modular in design, it allows the software system

to be configured to the user's needs. Handles multilocation inventory multistate payroll, and multicompany or divisional organization.

MINIMUM H/W CONFIGURATION:	2200VS system capable of supporting RPGII. Disk storage as required by data files.
VENDOR:	Productive Resources, Inc. 115 Northwest 15th Street Corvallis, OR 97330
CONTACT:	Judy A Witt, Customer Relations
TELEPHONE:	(503) 757-7225 (or 7226) (503) 752-5704 (24 hrs.)
APPLICATION:	Payroll Processing
DESCRIPTION:	Mini-Mis Payroll System is an 8K package that can batch process a variety of payroll at once. Each employee is assigned a data file that is automatically updated as payrolls are processed. Payroll checks are printed with details (customized checks available) and time summary and tax reports are furnished. Up to 5 types of pay can be customized for each employee in addition to salary, regular, and overtime. Includes W-2 (forms available) and 941 information, FICA, and Federal Tax.
MINIMUM H/W CONFIGURATION:	Dual minidiskette PCSII with a 31W printer. WCS/20 with a printer.

Agricultural

VENDOR:	J. R. Cornelison Systems, Unlimited 6161 North May, Suite 4W Oklahoma City, OK 73112
CONTACT:	J. R. Cornelison
TELEPHONE:	(405) 843-1474
APPLICATION:	E.A.S.Y. Elevator Accounting System
DESCRIPTION:	Grain Accounts Payable, Settlement Records, Scale Tickets, Purchase Contracts, Warehouse Receipts, Position, Sales Contracts, Load Outs,

Board (futures) Transactions, Checkwriter. Interactive flow-through compatible with GENASYS (below).

MINIMUM H/W CONFIGURATION: PCSII, 2 floppy, printer to WCS-30 2-10 megabyte disks with high speed printer. Software price range 3,600-9,600 depending on options.

VENDOR: J. R. Cornelison Systems, Unlimited (same as previous)

APPLICATION: E.A.S.Y. TC Telecommunications Option to E.A.S.Y.

DESCRIPTION: Remote entry of Scale Tickets, Miscellaneous Input, Warehouse Receipt Redemption, Check Request, Checkwriter, return of file updates for purchase contracts, settlement records, check register, position, average purchase price, average sale price, warehouse receipts.

MINIMUM H/W CONFIGURATION: Home office-WCS-40 with TC. Remote-PCSII with TC.

Automotive

VENDOR: Computer Consultants of Alaska
4546 Business Park Boulevard
Anchorage, AK 99503

CONTACT: Phyllis Fast

TELEPHONE: (907) 274-0021

APPLICATION: Auto Dealer Package

DESCRIPTION: Computes and saves data for sale of automobiles. Designed to meet Alaska's requirements, the system computes values of loans including 10-8 percent interest rates. Includes programs to type such forms as loan contracts, title applications, etc.

MINIMUM H/W CONFIGURATION: 2200T-4 (16K), 2270-2

Construction

VENDOR: Arden Business Consulting, Ltd.
926 Roslyn Boulevard
North Vancouver, BC Canada V7G IP3

CONTACT: Nick Arden

TELEPHONE: (604) 929-7614

APPLICATION: Job Costing, Accounts Payable, Accounts Receivable, Multiunion Payroll, Multicompany General Ledger.

DESCRIPTION: Fully integrated systems utilizing keyed access files. Emphasis is on ease of use by inexperienced operator, including extensive data validation. Orientation is on-line (c.f. Batch) transaction processing, well documented at user and program levels. Job costing includes breakdown of job activities, with each activity having several cost categories. Full multicompany features. Job cost types, payroll rates and deduction; and benefits are table-driven for easy customizing.

MINIMUM H/W CONFIGURATION: 24K-T Dual Floppy

Communication

VENDOR: R. J. Erhardt & Company
4800 N. Milwaukee Avenue
Chicago, IL 60630

CONTACT: William Erhardt

TELEPHONE: (312) 736-5442

APPLICATION: Radio Station Management System

DESCRIPTION: Maintains orders, enters/maintains logs, auto purge of completed orders, automatic affidavit print, split billing maintains 7 logs (one for each day of the week) for both AM and FM. Fully integrated accounting system, A/R, A/P, PR, G/L.

MINIMUM H/W CONFIGURATION: 2200 (24K) 5 Meg 31W Printer, 80x24 screen.

Distribution — Wholesale/Retail

VENDOR:	The MacNeill Group, Inc. 6520 Powers Ferry Road, NE - Suite 130 Atlanta, GA 30339
CONTACT:	R. Scott MacNeill
TELEPHONE:	(404) 955-5889
APPLICATION:	2200MVP Multiterminal 'point-of-sale' invoicing, accounts receivable, and general accounting system.
DESCRIPTION:	Point-of-sale invoicing, perpetual inventory, and accounts receivable system integrated with accounts payable, general ledger, payroll, and order entry (with back orders). Point-of-sale terminals handle any type of payment and/or combination of payment methods (i.e., cash, checks, credit cards, customer credit check, and batch confirming invoice printing). Detailed sales slip is printed at time of sale via 2251 printers at each POS terminal. Each POS terminal may inquire against customer and/or inventory data bases at any time (including during partially completed sale) but cannot update any data except as provided by invoicing system. Sales data for daily reports and cash control are accumulated for each terminal. Daily, month-to-date, and year-to-date sales tax data is accumulated for each of up to fifty (50) sales tax jurisdications. Individual perpetual inventory control is provided for up to six (6) stores and/or warehouses. Two levels of salesman's commission calculation and accrual are supported.
MINIMUM H/W CONFIGURATIN:	2200MVP CPU 48K will support 2 terms & background. 64K will support 4 terms & background. 2260B or C Disk Drive. 2221W System Console Printer. 2236D Interactive Terminal(s).

2251 Printers (Ex. System Console Term).
2236MXD Terminal Multiplexer.

VENDOR:	Manlius Valley Enterprises, Inc. P.O. Box 232 Manlius, NY 13104
CONTACT:	James J. O'Keefe, Jr., President
TELEPHONE:	(315) 682-2182
APPLICATION:	Order entry, inventory control, purchasing, accounts payable invoicing, accounts receivable, credit and financial reporting.
DESCRIPTION:	Well-established and thoroughly tested system written in RPGII. Modular in design, it allows the software system to be configured to the user's needs. Handles multilocation inventory multistate payroll and multicompany or divisional organization.
MINIMUM H/W CONFIGURATIN:	2200VS system capable of supporting RPGII. Disk storage as required by data files.

Education

VENDOR:	Compleat Computer Solutions 382 Hitching Post Drive Orange, CT 96477
CONTACT:	Dr. Michael Zabinski
TELEPHONE:	(203) 795-9069
APPLICATION:	Huntington II Educational Simulations
DESCRIPTION:	Eighteen simulations in social science, biology, and physics: POLICY, GENE1, SCATR, CHARGE, MARKET, USPOP, MALAR, STERL, etc. These simulations were originally developed at SUNY as an extension of the Huntington I project and are now available to Wang users exclusively through Compleat Computer Solutions.
MINIMUM H/W CONFIGURATION:	8K core, line printer, 1 floppy disk drive. Cost $100.

VENDOR: Compleat Computer Solutions (same as previous)

APPLICATION: Student Government Election

DESCRIPTION: Custom printed card is mark sensed by student body to elect 5 officers: President, Vice President, Treasurer, and one additional officer. Up to 5 candidates for each office. Report tallies the total number of votes obtained by each candidate and lists the election winners. Can also be used to conduct an opinion poll.

MINIMUM H/W CONFIGURATION: 8K core, line printer, mark sense card reader. Cost $300.

VENDOR: Compleat Computer Solutions (same as previous)

APPLICATION: School Staff Attendance

DESCRIPTION: Attendance records are maintained for up to 1,000 staff members including administrators, teachers, nurses, custodians, clerks, and substitutes. The system keeps track of substitutes pay scales, and accounts payable. Reports: daily, weekly, monthly, and year-to-date absentees and substitute reports, sick leave reports, staff mailing labels, staff directory.

MINIMUM H/W CONFIGURATION: 16K core, 112 character printer, 2 floppy disk drives or 10 Meg drive. Cost $1,000.

VENDOR: Compleat Computer Solutions (same as previous)

APPLICATION: Student Test Scoring System

DESCRIPTION: System scores up to 250 tests consisting of up to 100 questions; each test may have up to 4 parts. System uses custom printed, mark-sense cards with 2 to 5 responses (true/false, or A, B, C, D, E) per question. Questions may be weighted, results curved. Many reports, including grade distribution, bar charts, means, standard deviations, item-analysis.

MINIMUM H/W CONFIGURATION: 16K core, 1 floppy disk, card reader, line printer. Cost — $300.

VENDOR: Compleat Computer Solutions (same as previous)

APPLICATION: Student Grade Reporting (Grades 8-12)

DESCRIPTION: System designed to maintain files used to store course information, student data, and grade records. System generates the following reports: Proof (edit) grade lists, quarterly and end-of-year report cards, class ranking, academic deficiency lists, cumulative class ranking, permanent record labels, and grade distribution tallies by teacher or course. The system is compatible with the student attendance system.

MINIMUM H/W CONFIGURATION: WCS-20, 16K core, 3 floppy disk drives, card reader, and a 112-column printer.

VENDOR: Compleat Computer Solutions (same as previous)

APPLICATION: Student Scheduling (Grades 8-12)

DESCRIPTION: System designed to store, on diskette, the student course selections, school master schedule, course structures, teacher and room assignments. Diskette is then sent to the Wang Data Center where the actual scheduling reports are generated.

MINIMUM H/W CONFIGURATION: WCS-20, 16K core, 3 floppy disk drives, card reader and a 112-column Printer.

VENDOR: Compleat Computer Solutions (same as previous)

APPLICATION: Student attendance (Grades 8-12)

DESCRIPTION: System maintains a file of absentees, tardies, and dismissals by student and date. System generates daily attendance, tardy, and dismissal reports as well as quarterly and year-to-date reports. System capable of responding

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to inquiries about a specific student's attendance record, and lists all the dates on which the student was absent since the start of the academic year. System is compatible with the student grade reporting system.

MINIMUM H/W
CONFIGURATION: WCS-20, 16K core, 2 floppy disk drives, a marksense/punched card reader, and a 112-column printer.

Engineerng

VENDOR: Computer Consultants of Alaska
4546 Business Park Boulevard
Anchorage, AK 99503

CONTACT: Phyllis Fast

TELEPHONE: (907) 274-0021

APPLICATION: Highway Grade and Staking

DESCRIPTION: Calculates the elevations and offsets of points to be staked for various courses of material in highway construction. It computes elevations for vertical curve data as well as super elevations and transitions from horizontal curve data. The program allows for variable curve thickness, curbs, non-standard transitions, etc. This program is compatible with our Volumetric Earthwork program for template generation and can also be interfaced to a plotter.

MINIMUM H/W
CONFIGURATION: 2200T-4 (16K), 2270-1

VENDOR: Computer Consultants of Alaska (same as previous)

APPLICATION: State Plane Conversion

DESCRIPTION: System converts state plane coordinates to geodetic position, and vice-versa. It computes scale factors and convergence angles. Specify which state or U.S. possession desired. Point storage for disk or tape is completely compatible with CCA's geodetic geometry program.

MINIMUM H/W
CONFIGURATION: 2200T-4 (16K), 2270-1

VENDOR: Computer Consultants of Alaska (same as previous)

APPLICATION: Volumetric Earthwork

DESCRIPTION: Computes quantities of material excavated or deposited along a specific route when cross-section surveys have been taken before and after the movement of materials. The disk oriented version has automatic file cataloging and storage procedures. There are adequate special functions for modifications and correction of erroneous input. Special template options or custom modifications are optional.

MINIMUM H/W
CONFIGURATION: 2200T-4 (16K), 2270-1

Financial

VENDOR: Computer Consultants of Alaska
4546 Business Park Boulevard
Anchorage, AK 99503

CONTACT: Phyllis Fast

TELEPHONE: 9907) 274-0021

APPLICATION: Mortgage Management

DESCRIPTION: Designed as control system for housing finance corporation that doesn't service its own mortgage portfolio, but purchases mortgages from a seller-servicer, which continues to service mortgage for a fee. Provides distributions of mortgage investment portfolio with regard to interest rates, mortgagor name, and pledged bond issues of series. Reports include delinquency reports, amortization of discounts, and cash flow projects based on current portfolio performance projected over the entire life of the mortgage. Records transactions by a debit or exception method. Half-inch mag tape can be used to transfer

information form servicer to your system through tape drive.

MINIMUM H/W
CONFIGURATION:

VENDOR: Computer Consultants of Alaska (same as previous)

APPLICATION: Stock Ownership Registration

DESCRIPTION: Designed to keep track of ownership of corporate stock and audit corporate elections. Can maintain registration data on eligible stock owners (voting or non-voting), calculate number of votes each proxy holder represents, determine a quorum, print ballots for each stockholder attending annual meeting in person, and tally results of election. Output includes voter master lists, registration lists, ballots, mailing labels, proxy forms, and election returns. Originally written for Arctic Slope Regional Corporation and tested at their 1977 Annual Meeting.

MINIMUM H/W
CONFIGURATION: 2200T-4 (16K), 2270-2

General

VENDOR: Computer Consultants of Alaska
4546 Business Park Boulevard
Achorage, AK 99503

CONTACT: Phyllis Fast

TELEPHONE: (907) 274-0021

APPLICATION: Mail List I — Mail List II

DESCRIPTION: Mail List I maintains names, addresses, and identifiers from which it produces a variety of lists and mailing labels - 10 identifiers of 6 characters each. Virtually no limit to number of categories or means of selecting for printout. Easily modified to meet most needs. Unlimited file size by chaining diskettes, limits system to diskette only. 1023 addresses/diskette. Mail List II has more streamlined classification system, but not as versatile as Mail List I. Quite a bit faster than ML-I, but limited to 6,000 addresses.

MINIMUM H/W
CONFIGURATION:

VENDOR: Kern Computer Systems
8471 Jacqueline Avenue
Manassas, VA 22110

CONTACT: Douglas P. Kern

TELEPHONE: (703) 791-3860

APPLICATION: Subscription Lists

DESCRIPTION: Diskette-based system allows maintenance and printing of address labels. Unlimited number of names kept in zip code — alphabetical list, with Wang integrated support system. Renewal lists and automatic deletions. Base price $3,500.

MINIMUM H/W
CONFIGURATION: 16K 2200T/2270-2 Dual Diskette/2231 Printer.

VENDOR: Productive Resources, Inc.
115 Northwest 15th Street
Corvallis, OR 97330

CONTACT: Judy A. Witt, Customer Relations

TELEPHONE: (503) 757-7225 (or 7226)
(503) 752-5704 (24 hrs.)

APPLICATION: Word Processing

DESCRIPTION: Each page contains 14 names and addresses (up to 5 lines and 62 characters) or 868 characters of text. Any number of pages may be concocted together. For example, a minidiskette for PCSII may contain either 952 customers' names and addresses or 71,176 characters of text. Triple these numbers for floppy. 36 pages, fully documented shipped with sample data.

MINIMUM H/W
CONFIGURATION: PCSII (8K) with dual minidiskette drive, printer or output writer or WCS/15 (8K) with dual floppy. Single disk version is also available, but not recommended.

VENDOR: Teikor Software, Inc.
7529 Big Bend Boulevard
St. Louis, MO 63119

CONTACT: Mr. Takuri Tei

TELEPHONE: (314) 962-6875

APPLICATION: Computation of Federal Income Tax

DESCRIPTION: This program is designed to prepare Federal Income Tax and is able to prepare Form 1040, pages 1 and 2, schedules A, B, C, D, E, F, TC, SE, and G. Also, will prepare Forms 3903, 2106, 2441, 3468. License Fee $1500-1040 only. Annual Maintenance $500.

Government

VENDOR: Kern Computer Systems
8471 Jacqueline Avenue
Manassas, VA 22110

CONTACT: Douglas P. Kern

TELEPHONE: (703) 791-3860

APPLICATION: Job Cost Accounting for Gov't Contractors

DESCRIPTION: Modular General Ledger Accounts Payable, Accounts Receivable and Payroll systems provide detailed cost information for auditors. Process from invoice to financial reports is fully integrated for ease of operation by staff. Standard Wang utilities make modification or customization less costly. Will license to vendors or install for end-user. Base price $10,000.

MINIMUM H/W
CONFIGURATION: 24K 2200T/5MB Disk/2231 Printer

VENDOR: On-Site Computer Systems
P.O. Box 622
Savannah, GA 31402

CONTACT: G. Harm

TELEPHONE: (803) 726-5363
(912) 354-0851

APPLICATION: Water and Sewer Billing System
Accounts Receivable/Payroll

DESCRIPTION: System provides complete accounts receivable for utility billing of water and sewer billing for small to medium municipals. Documentation available with complete overview of system. License fee $500.

MINIMUM H/W
CONFIGURATION: WCS-20-4, Dual Flexible disk, 2221-W.

VENDOR: On-Site Computer Systems (same as previous)

APPLICATION: Tool or equipment allocation and control.

DESCRIPTION: System provides on-line control of tool/equipment inventories, which may be issued for later recall. Maintains inventory by issue, location accountability as to who has been issued an item, how long he has had it. Terminals check items in and out and inquiry on tools or employee data.

MINIMUM H/W
CONFIGURATION: WCS-30 VP-8, 10 or 20 meg, 2221W, 2228B'S. Terminals are Bell DS-40/3, 1200 baud dedicated lines. Maximum terminals system will support = 30 at 10 per 2228B port. License fee $5,000.

Hotel/Motel

VENDOR: Computer Consultants of Alaska
4546 Business Park Boulevard
Anchorage, AK 99503

CONTACT: Phyllis Fast

TELEPHONE: (907) 274-0021

APPLICATION: Hotel Reservations/Room Management

DESCRIPTION: Provides hotels with accurate records regarding the availability of rooms and their current occupancy status. Every room is stored in the computer, including meeting rooms, current occupant, room prices, and availability. In addition, maintains a list of current reservations by room date, type of room, and name of party, along with

quoted room price. Optional package allows computer to print individual room bill at check out, and adds the bill to A/R. Bill can include bar and restaurant charges as well as tips and room fees.

MINIMUM H/W
CONFIGURATION: 2200T-4 (16K), 2270-2

Medical

VENDOR: Thomas M. Carpenter, Systems Engineer
703 North Avenue P
Clifton, TX 76634

CONTACT: Thomas M. Carpenter

TELEPHONE: (817) 675-6253

APPLICATION: Medical Accounting and Billing

DESCRIPTION: Complete Accounting and Billing application designed for individual physicians, as well as multi-physician group practices; itemized patient statements; third party claim forms (insurance) including Medicare, Medicaid, Blue Cross/Blue Shield and AMA Standard; aging Shield, lists and automatic notification, detail accounting and statistical reports, and diagnosis/procedural analysis are some of the main features.

MINIMUM H/W
CONFIGURATION: Triple Floppy WCS-20 with 16K "T" processor and 2231 Printer.

NOTE: Seven current installations including internal medicine, radiology (2), family practice, cardiovascular, ear-nose-throat, and neuropsychiatric.

VENDOR: On-site Computer Systems
P.O. Box 622
Savannah, GA 31402

CONTACT: G. Harm

TELEPHONE: (803) 726-5363
(912) 354-0851

APPLICATION: Obstetrics Patient Profile Monitor for Term of Pregnancy.

DESCRIPTION: System provides Ob. doctors on-line data for each patient term of pregnancy. With terminals in delivery room, any doctor can view patient history on-line. Terminals communicate at 1200 baud, dedicated line to WCS-30 via polling processor. License fee — $1,500.

MINIMUM H/W
CONFIGURATION: WCS-30-4, 10 MEG, 2227B's remote PCSII's as needed with 2227B, 2200T-4 polling processor.

Miscellaneous

VENDOR: Computer Consultants of Alaska
4546 Business Park Boulevard
Anchorage, AK 99503

CONTACT: Phyllis Fast

TELEPHONE: (907) 274-0021

APPLICATION: Aircraft Maintenance Mangement

DESCRIPTION: System keeps accurate, up-to-date records of rotable, time rated aircraft components. Stores such data as component location, date and reason for removal, and more. User can produce parts lists by code number, locations, part number, as well as aircraft ID code. Component reliability reports can also be printed. Approved by Federal Aviation Agency and in active use since 1974.

MINIMUM H/W
CONFIGURATION: 2200T-4, 2270-2

VENDOR: Computer Consultants of Alaska
(same as previous)

APPLICATION: Inspection Documents Control

DESCRIPTION: System will print and maintain accurate records of inspection procedures, and the types of inspections to which they apply. The system is currently used to print aircraft inspection forms for "visits" on Nihon YS-11A aircraft. Forms should be signed and submitted to the Federal

Aviation Agency. The system saves considerable time and money over manually operated systems.

MINIMUM H/W
CONFIGURATION:

VENDOR: Matador Computing
P.O. Box 6931
Houston, TX 77005

CONTACT: Stuart Maudlin

TELEPHONE: (713) 498-5464

APPLICATION: Computerized Oil and Gas Lease Economic Evaluation — COGLE

DESCRIPTION: COGLE is an easy-to-use system for producing Economic Evaluations of Oil and Gas Leases. COGLE is capable of handling complex production, royalty, pricing, investment, and tax scenarios.

MINIMUM H/W
CONFIGURATION: 16K 2200T, 2270-2, printer.

VENDOR: Mini Max Data Systems, Inc.
4646 Poplar, Suite 240
Memphis, TN 38117

CONTACT: Pat Montgomery

TELEPHONE: (901) 767-6942

APPLICATION: Exterminators — Accounting Management Information.

DESCRIPTION: System name: "EXSYS". Functions: Accounts Receivable, Scheduling, Customer Inquiry, Management Information, Chemical Control, Form Letters. Target Companies: $250K to 3M annual sales volume.

MINIMUM H/W
CONFIGURATION: 2200T-4, 60C-1/2, 31W-1. VP-8 recommended 3 screen MVP-16 has been installed.

Personnel Services

VENDOR: R. J. Erhardt & Company
4800 N. Mailwaukee Avenue
Chicago, IL 60630

CONTACT: William Erhardt

TELEPHONE: (312) 736-5442

APPLICATION: Employment Agency Management System

DESCRIPTION: System maintains key information for jobs/applicants. Jobs/applicants may be selectively extracted and printed, based on any or all of sixteen (16) fields which hold key information. Reports available are: Qualified Job/Applicant Reports, Open Job/Applicant Reports, Placed Job/Applicant Reports.

MINIMUM H/W
CONFIGURATION: PCS-II, Dual Drive, 16K, 31W Printer

Printing

VENDOR: Kern Computer Systems
8471 Jacqueline Avenue
Manassas, VA 22110

CONTACT: Douglas P. Kern

TELEPHONE: (703) 791-3860

APPLICATION: Contract Maintenance and Invoice Preparation for Custom Job Shops

DESCRIPTION: Integrated system provides editing of text and price coding of items in custom contracts. Produces mail-ready contracts and invoices from contract prices. Prices may be updated by cost code. Flexible format has proven its versatility for major magazine publisher. Will license to vendors, or install for end user. Base price $4,000.

MINIMUM H/W
CONFIGURATION: 16K 2200T/2270-3 Triple Diskette/2281 Printer

VENDOR: Printing Systems (Pty) Ltd.
P.O. Box 48535 Roosevelt Park
2129 Transvaal
Republic of South Africa

CONTACT: Austin Daly

TELEPHONE: Johannesburg 726-3008

APPLICATION: For Administration and Management System

DESCRIPTION: The following functions are un-dertaken: — Estimating, Work tickets, Wages, Debtors, Creditors, General Ledger, Stock Control, Production Control, Cost Recovery.

MINIMUM H/W
CONFIGURATION: 16K Dual Floppy

Programming Support and Utilities

VENDOR: Arden Business Consulting, Ltd.
926 Roslyn Boulevard
North Vancouver, B.C. Canada V7G IP3

CONTACT: Nick Arden

TELEPHONE: (604) 929-7614

APPLICATION: Line Editor "Simple"

DESCRIPTION: Very simple, self-documenting line editor used to prepare letters. Forms documentation by computer or non-computer operators-features full "T" edit capabilities. Has 18 other special functions (additionally 10 screens of instruction) and fast print — system all core-resident — "crude but effective."

MINIMUM H/W
CONFIGURATION: 8K — A with Edit ROM

VENDOR: Custom Software Systems
6565 Beach Boulevard, Room 107
Jacksonville, FL 32216

CONTACT: Steven P. Frizzell

TELEPHONE: (904) 724-7537

APPLICATION: MVP Spooler Utility

DESCRIPTION: Resides in a 5K Global partition. Spools printed output via subroutine calls from application programs. Allows multiple print files to be open simultaneously within a program. Runs in a "Background" partition and does not require a dedicated terminal for control purposes. Utilizes the printer audio alarm to request mounting of special forms. Special control program displays spooler status and allows print files to be deleted, restarted, or reprinted. System does not require that all programs utilize the spooler. License Fee — $200.

MINIMUM H/W
CONFIGURATION: 32K MVP with printer at device 215.

VENDOR: Matador Computing
P.O. Box 6931
Houston, TX 77005

CONTACT: Stuart Maudlin

TELEPHONE: (713) 498-5464

APPLICATION: Data Management System — Matabase II

DESCRIPTION: Matabase II creates, operates on, modifies, and prints reports from data files. It is a record-oriented system to develop and maintain small data bases.

MINIMUM H/W
CONFIGURATION: 16K 2200T, 2270-2, printer

VENDOR: Matador Computing (same as previous)

APPLICATION: Abstract Retrieval System — Matabase I

DESCRIPTION: Matabase I is a data base system to retrieve summaries of articles, letters, and documents. Retrievals are by keyword and combination of keyboards.

MINIMUM H/W
CONFIGURATION: 16K 2200T, 2270-2, printer.

VENDOR: Productive Resources, Inc.
115 Northwest 15th Street
Corvallis, OR 97330

CONTACT: Judy A. Witt, Customer Relations

TELEPHONE: (503) 757-7225 (or 7226)
(503) 752-5704 (24 hrs.)

APPLICATION: Program Debugging Aid; Emergency Data and Program Fix-up.

DESCRIPTION: PRI Disk Editor (PRIDE) is a versatile 8K-byte editor that lets a programmer get into any program or data disk and display the content of any sector in text, hexadecimal, or both, forms.

String search, replace, and remove can be performed locally or globally, and use either a character string or hexadecimal string. Printer and output writer copies are available. The program occupies only 8K and may be made to reside in core with other PRI software.

MINIMUM H/W CONFIGURATION:	PCS-II (8K), or WCS-15.
VENDOR:	Productive Resources, Inc. (same as previous)
APPLICATION:	Decompressed Program Listing for an 8K CPU.
DESCRIPTION:	Program Lister will let the user give a series of names of programs to be decompressed and listed on a line printer. The program will verify the existence of the requested program files on the disk and then print a Table of Contents and listing of all programs on the list, using decompressed format. Special characters are printed preceding the statement atoms, to facilitate debugging, and the CRT lists statement numbers appearing in each statement.
MINIMUM H/W CONFIGURATION:	PCSII (8K). A cruder version is available for 2200B (4K)

MINIMUM H/W
CONFIGURATION: WCS-30, 2200T CPU, 16K, 3/I/O slots. 2260B Fixed/Removable Disk Drive (10 megabyte), 2226 CRT. Two 2231W-1 Line Printer.

Travel

VENDOR:	TMS Technical Marketing Service, Inc.
CONTACT:	L. Turi
TELEPHONE:	(212) 697-6965
APPLICATION:	Travel Agency Management System (Travel Guide)
DESCRIPTION:	A computerized business system for use by travel agents.

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> Mr. Thomas M. Carpenter
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CWP was designed to handle tasks from spec writing to mass mailings and is easily modified for use in conjunction with other software. It is priced competitively, and cross-licensing agreements are available.

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Many features of the THREE D/ONE method are designed to provide benefits for anyone who comes in contact with the application software development process.

The system analysts and programmers who actually use the method as a development tool realize many of the advantages in their day-to-day work. There is more time for creative thinking because the THREE D/ONE method eliminates (or at least lightens) the burden of a lot of the mundane, routine work they're normally required to do. Basically, their work is made easier for them because the documentation is standardized.

Another major benefit to the programmers/analysts is the improvement in communication with the users of their systems and with their own non-DP-oriented management.

Now, for the first time, DP management and system designers have the ability to successfully estimate, measure, and control the development process, because the method includes a unique time accounting feature.

A major feature of THREE D/ONE is that it makes the system development process auditable. Auditors, both internal and external, who understand this method can easily review any work in process where the method is being used. They are assured that all of the documentation is current and complete, that all data elements, files, records and reports are properly identified and cross-referenced, and that the appropriate security keys are in place.

Auditors who have reviewed the THREE D/ONE method have stated that, everything else being equal, they would recommend a computer system that uses this method.

THREE D/ONE is constructed as a self-learning programmed instruction (P.I.) course. The system designers are first presented with the Overview. At each step (procedure) is a reference back to the "road map" so that the reader always know where they are in the process. They're then shown what has to be done in that procedure, what the parameters are, and why it's being done that way. They then simply answer questions in a Workbook made up of questionnaires. That Workbook becomes an element of the controlled documentation library. Then, as in any good P.I. course, they review the work done, where they are in the process, and then go on to the next procedure. Their documentation is current and complete through the completed step.

A very general benefit accrues to any non-DP oriented people that come in contact with the THREE D/ONE method: it's an excellent educational tool for the uninitiated. It helps users, auditors, management people, and any others, to understand the problems and the progress for the system development process. This means considerable improvement in the communication between such people and the EDP development team, and results in faster system implementation, and improved results.

The standardization of the development process lowers the cost of system support activities. The computer manufacturers or system house trouble-shooters have a complete and immediate understanding of the project status and method being used, so that considerable time is saved in analyzing problems.

In summary, THREE D/ONE provides many benefits to everyone involved in the design, development, and documentation of application software. It helps users to understand the system development process and their responsibility in supporting it. It increases the creativity and productivity of the systems development staff. Auditors are able to validate the system designs and data integrity. And, finally, corporate, financial, and EDP management has a tool with which to measure and control the system development process.

Any organization involved in computer application system design can afford the manual version of THREE D/ONE — it's priced at only $995. Increases in staff productivity will pay for that on just one project.

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Last Minute Item

DISK RESET/SYSTEM LOCKUP PROBLEM

Several 2200MVP installations have been experiencing system lockups when RESET is pressed while another partition is accessing a disk. In order to restore operation, the system must be powered off and on and reconfigured.

The problem occurs because the Master Device Table (MDT) was improperly setup by the user during system configuration. The MDT is setup by using the Edit Device Table function in the "@GENPART" utility. As described in the "2200MVP Introductory Manual" and Ch. 16 of the "2200VP/MVP Reference Manual," for disk controllers that respond to more than one address, only the primary address is specified. To be more specific, only one address is specified for each disk controller plugged into the CPU. For example, if a controller for a 2260C-2 was to address 10, 310 would be entered into the MDT; even though the disk responds to other addresses such as B10, 350, B50, 390 and 3DO, these addresses MUST NOT be entered into the MDT.

An existing configuration can be checked for multiple disk address entries by executing a LIST DT statement. The MDT entries are listed after the partition's device table. If the same address appears more than once in the display, the MDT has been improperly setup.

In order to prevent this problem from occuring in the future, the next release of the MVP OS (Rel. 1.5) will automatically eliminate redundant disk addresses.

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MINIMUM H/W CONFIGURATION: _____
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History: Dr. An Wang earned his Ph.D. in Applied Physics at Harvard University. His early work in magnetic core memory development contributed to one of the giant steps that made computers a part of modern life. Reliable, large-capacity memory was one of the biggest needs that had to be filled before the computer could become a commercial reality.

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