

The 2200 Revolution



It's Evolutionary! From small standalone environments to large distributed information networks, the 2200 Series is the perfect solution.



WANG

Join The 2200 Revolution

WANG

July 1, 1981

To the Sales Force:

There's been a virtual explosion of 2200 Series enhancements this fiscal year. Word processing. MAILWAY. WangNet. Telecommunications. New languages, file handling aids, programmer aids and more. When you think about it, these new features combine in a very revolutionary way.

2200 Systems are Small Business Computers for Very Large Companies.

Distributed Data Processing, as the trade magazines say, is here to stay. Properly implemented, it gives remote offices, divisions and subsidiaries the local processing power they want. While giving central installation Managers the control they need.

And when it comes to DDP sales situations, there's no system on the market that puts it all together like the 2200 Series. Compare the features. *Wang word processing* — the most proven, powerful and easy-to-use WP in the world. *2200 performance* — year after year, the 2200 Series out-benchmarks every other system in its price class. *Electronic mail* — connecting 2200s with other Wang systems via MAILWAY. And *sophisticated telecommunications* — that let 2200 systems act as terminals to mainframe hosts.

What's the effect of all these product enhancements? Simple. You've got a new primary market for 2200 system sales. You won't need a shotgun to find your targets, either, because your market is composed of all the biggest and fastest-growing organizations in the world.

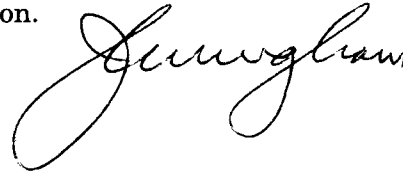
Enlist now.

Along with the many new 2200 selling features, there's a powerful new set of 2200 selling tools on the way. Including Seminars, Advertising, Direct Mail and Sales Promotion Literature.

Put these resources to work for you, and everybody benefits. Because for your customers, the 2200 Revolution means bigger bang for the buck. For you, of course, it simply means bigger bucks.

So identify your prospects. Bring in vendor software solutions when they match your client's needs. And leverage your time effectively, focusing on multi-system 2200 Series DDP sales.

I want **YOU** to lead the 2200 Revolution.



John Cunningham
Executive Vice President



LABORATORIES, INC.

ROBERT L. DORETTI
VICE PRESIDENT

UNITED STATES SALES OPERATIONS

TO: ALL NORTH AMERICA AREA DIRECTORS, DISTRICT AND BRANCH MANAGERS,
SALES AND SUPPORT PERSONNEL

FROM: ROBERT L. DORETTI

DATE: JULY 1, 1981

SUBJECT: 2200 REVOLUTION

The 2200 Series product line plays a significant role in our business plans and goals for the 1980's. A large part of this goal is targeted toward expanding the capabilities of the 2200 Series for Major Accounts in the Distributed Processing marketplace. These new product enhancements cover three significant areas:

- . The inclusion of the 2200 Series into the Wang family of Integrated Information Systems.
- . Exciting telecommunications and networking products.
- . New languages, application development tools and utilities.

The product and competitive information contained within the accompanying binder was assembled to provide you with an easy-to-use reference guide to help in your 2200 sales efforts.

During the first quarter, you will receive additional detailed marketing programs. These will include programs targeted at:

- . Distributed Processing and 3270 replacements, both horizontal and vertical within Major Accounts.
- . Integrated Information Systems for small business executives.
- . Ledger Card Replacement programs for the Commercial marketplace.
- . Programs to recruit and leverage OEM's.

ROBERT L. DORETTI

MARKETING INFORMATION

COMMERCIAL STRATEGIES

The 2200 REVOLUTION HAS ARRIVED!

During the past six months, WANG has announced enhancements for the 2200 Family of Computers that reaffirms our leadership position in the commercial marketplace.

COMMERCIAL MARKET POTENTIAL

A marketplace that has evolved from a few hardware vendors selling complicated machines for simple batch processing at very expensive prices, to many vendors selling "easy-to-use," "modular", "multi-processing" systems at competitive prices. The terms "DYNAMIC" and "CHALLENGING" seem rather dull. This evolution has occurred in a relatively short span of 10-12 years and promises to continue at an even greater pace for the next decade.

At a compound growth rate of 25% annually, the commercial minicomputer market promises to reach \$15 billion by 1985. This worldwide market potential will be attacked on the low end by simple personal micros selling for under \$5,000 and at the top by the more sophisticated systems costing \$100,000 or more. Dedicated vendor sales forces, OEMS, and retail stores will all compete for pieces of an ever increasing pie and this competition will "shake-out" many vendors who are not prepared.

In this atmosphere, the strongest vendors with proven products will continue to compete for the business of thousands of companies. Only by listening to the end-users' needs and building a large satisfied customer base can computer vendors expect to succeed in this volatile marketplace.

COMMERCIAL MARKET REQUIREMENTS

Commercial businesses, large and small, aren't looking for miracles, just solutions for their management information needs; to make decision making less intuitive and more factual thereby improving profitability and customer service. This requires timely information gathering and prompt reporting of results, wherever that information is needed.

This seems reasonable and even simple, but it requires dependable, efficient hardware running software capable of producing the desired results. While the applications demand sophistication, the operation must remain simple. All this must be accomplished at a competitive price and combined with flexible, dependable support.

Support in this marketplace is defined by the end-user as appropriate vertical application software, responsive hardware/software service, and telecommunication protocols capable of meeting a variety of needs. All of these must be supplied by a system with expansion capabilities sufficient to protect the initial investment. Additionally, vendors of this "perfect" computer must show a continued commitment toward the development of future compatible products that are easy-to-use and functionally superior to their existing systems. WANG has achieved it's leadership position in this marketplace because of its sensitivity to these needs.

Indicative of WANG's commitment to this market are the enhancements made to the 2200 product line over the past six months which cement our leadership role and impact every area of concern to end-users.

WANG's ENHANCED SOLUTION

2200 Series systems always have been fast, dependable, and easy-to-use. Wang software vendors and system houses offer the broadest range of application software available on any competitive system. Now the 2200 proclaims once again the traditional leadership that WANG has proven in the commercial marketplace.

Hardware

- . LVP memory expansion to 256K
- . LVP terminal support up to 12
- . 2236DW Integrated Information Terminal
- . 2228D Communications Controller
- . 2235 Printer - 200CPS Bi-Directional Matrix
- . 2233 Printer - 120 CPS Bi-Directional Matrix
- . Wangnet - Networking System
- . WA3451 Modems - 300/1200 Baud

Language Enhancements

- . COBOL
- . BASIC-3
- . New Integrated Operating System

Telecommunications Protocol Support

- . 3271 Bisync Emulation
- . 3274 Bisync/SDLC Emulation
- . 3275 Multi-Point
- . X.21, X.25, Teletex
- . 2780/3780 Enhanced Batch

System Integration/Productivity Tools

Remote Control and Maintenance System
2200 Word Processing
IDEAS Release 2
DATAMERGE (List Processing)

The enhanced 2200 Series systems now better meets the commercial users' needs for growth, added functionality, and reliability while protecting their investment at low incremental cost.

BENEFITS**FEATURES**

Growth/Expandability

- . 256K LVP expansion
 - . Additional terminal support
 - . Added telecommunications protocols
 - . WA 3451 Modems
-

Additional Functionality

- . DATAMERGE
 - . 2236 DW Terminal/2200 Word Processing
 - . 2228D communications controller with new protocols
 - . Option "C"
 - . Remote Control and Maintenance
 - . Wangnet
 - . Cobol/Basic-3/2200 Disk Management System
-

Dependability

- . 2235/2233 Bi-Directional Matrix Printers
 - . Remote Control and Maintenance
-

Support/Application Software

- . COBOL/Basic-3/2200 Disk Management System
 - . IDEAS Release 2
 - . Remote Control and Maintenance
 - . DATAMERGE
-

Easy-to-Use

- . 2200 Disk Management System
- . IDEAS Release 2

Terminal

- . 2200 Word Processing/2236 DW
-

THE BOTTOM LINE

While we have discussed how these enhancements will affect the Commercial Marketplace and WANG's premier position in this marketplace, we have left the best for last.

HOW DOES THIS AFFECT YOU?

As a WANG representative, you have the enviable position of selling an even better product. This means:

- More satisfied end-users
- One system does it all (Low-end IIS)
- New Vendors/System Houses as markets
- Exciting new vertical markets
- Your success in getting the business

GOOD LUCK AND GOOD SELLING!!

SALES STRATEGY

The following sales strategy was written for a wide audience. Part of the information is directed to branch and district systems managers and part is directed to sales representatives.

The commercial sales strategy or the sales strategy for commercial branches really amounts to two major concerns:

- . Effective sales time allocation between the sales opportunities represented by the two markets: major accounts (DDP) and first-time user.
- . Effective resource allocation between those two markets.

The challenge lies in being able to fill the pipeline full of first-time user business, while allocating enough remaining time to address major account opportunities. Both markets provide a solid return on time. The first-time user's business will provide a consistent source of monthly bookings, while the major accounts business will provide a long term source of business.

The trick to balancing these markets lies in the effective utilization of resources at all levels. In the first-time user market, effective time/resource utilization might mean that parts of the sales cycle could be off-loaded to a well-organized vendor network. This network could be composed of both independent vendors and OEM*. On the major account side, effective utilization of time/resource could mean account planning and proper usage of home office programs. The question commonly asked is how can I maintain strong first-time user business and have enough time to adequately address major accounts.

The answer lies in the sales plan depicted below. By properly defining target markets, vendors, and a through an aggressive seminar selling policy, a vehicle can be created to address low-end business without sacrificing time.

The district and branch offices who have implemented this strategy have found a substantial return on the time they have invested. Basically, implementation required the organization of the following areas:

- . A thorough analysis of the vertical market potential. This is typically accomplished using Dunn & Bradstreet or Chamber of Commerce listings.
- . Identify the top ten or fifteen vertical markets. Using the software Consultant's Directory and the Vendor Support Group, identify cross-licensable software which can be cross-licensed and addresses the needs of those industries.

* There are new OEM policies which will be in effect on July 1, 1981. Please consult these policies with district.

- . Split the identified verticals between the direct sales force and the OEM's
- . Layout a final plan which describes the vertical market, the market potential, the vendor/sales representatives assigned, and the potential seminar schedule. See objective 5 of the sales plan for an example.

The results reported by those branches who have used this approach is positive. Vendors became more and more proficient within their verticals and, therefore, became independent. Now the majority of vendors are self-sufficient and capable of following up on prospects (which have been identified by sales representatives). The sales representative now has more time to address major account business. Below is a detailed outline of this verticalized first time user plan. There is a similiar approach for major accounts which is located in the major account section of the binder.

2200 SALES PLAN GUIDE

The goal of the Sales Plan Guide is to be a check list to assist in the development of a sales plan to identify, monitor and penetrate 2200 markets. The objectives below provide an outline identifying action items and related resources.

1. Identify high potential verticals.
2. Review and evaluate existing vendors.
3. Identify needed sources of vertical market software.
4. Develop distribution strategy for each vertical.
5. Develop vertical sales marketing plan.
6. New vendor recruitment activity.
7. Implement seminar activity.
8. Activity guidelines/seminars
9. OEM program considerations.

Objective 1: Identify Verticals

| <u>ACTION ITEMS</u> | <u>RESOURCE</u> | <u>WHO</u> |
|---|--|-------------------|
| 1. Identify those vertical industries with high concentration within territory. | 1. Chamber Commerce | 1. Branch manager |
| | 2. D&B/IDC listing | 2. Analyst |
| | 3. Bureau of Census statistics by country | |
| | 4. Yellow pages | |
| 2. Evaluate vertical in terms of competition. | 1. Competitive advertising in trade journals | 1. Branch manager |
| | 2. Trade Association | 2. Analyst |
| | 3. Industry Marketing | |
| 3. Compile list of top verticals. | | 1. Branch manager |
| | | 2. Analyst |

Objective 2: Evaluate Existing Vendors

| <u>ACTION ITEMS</u> | <u>RESOURCE</u> | <u>WHO</u> |
|---|----------------------------------|------------------------------|
| 1. Evaluate current vendors on ability to penetrate chosen verticals. | 1. Vendor Support group | 1. Branch manager |
| | 2. District System House Manager | 2. Analyst |
| | | 3. Vendor/OEM Support groups |
| 2. Meet with qualified vendors to review software and market potential. | | 1. Branch Manager |
| | | 2. District analyst |
| | | 3. Branch analyst |

Objective 3: Identify Needed Software

| <u>ACTION ITEMS</u> | <u>RESOURCE</u> | <u>WHO</u> |
|---|---|---|
| 1. Identify sources of software for verticals not covered by existing vendors. | 1. Vendor Support group . Software Consultant Directory . Supported verticals . System House Directory | 1. Branch manager 2. Branch analyst 3. Vendor group |
| | 2. Industry Marketing . Supported verticals | 4. System House representative |
| 2. Contact Author Vendor of needed software packages. Evaluate possibilities of attracting installing vendor. | 1. Vendor Support group 2. District System House Manager | 1. Local analyst 2. District analyst |

Objective 4: Distribution Strategies

| <u>ACTION ITEM</u> | <u>RESOURCE</u> | <u>WHO</u> |
|--|--|--|
| 1. For each selected vertical, evaluate potential sales and existing sales rep/ vendor expertise to determine if it will be a direct sell or System House vertical. | 1. See objective #9. | 1. Branch manager 2. District analyst 3. System House Department |
| 2. For each direct sell vertical, assign a sales rep to develop joint vertical marketing strategy. | 1. Vendor Support group | 1. Branch manager |
| 3. <u>Branch Manager:</u> For each System House, establish a marketing and vertical penetration plan. Assign person responsible for coordinating System House activities. | 1. District System House Manager 2. See Objective #9. | 1. Branch manager 2. System House representative |

Objective 5: Vertical Sales Plan

| <u>ACTION ITEM</u> | <u>RESOURCE</u> | <u>WHO</u> |
|--|--|---|
| 1. For each vertical, establish both dollar and unit goals based on your vertical market assessment. | 1. See attached plan. | 1. Branch manager 2. Sales rep 3. Vendor 4. System House |
| 2. Establish seminar activity schedule that would attract the needed number of prospects to meet the above unit and dollar goal. | 1. Vendor Support group 2. See attached plan. | 1. Branch manager 2. Sales rep 3. Vendor 4. System House |
| 3. Develop vertical penetration plans. | 1. Schedule a talk at local industry association meetings. 2. By the association mailing list 3. Develop your own industry mailing list. 4. Develop/cultivate referenceable accounts, especially those who belong to the association. 5. Marketing Communications group for local advertising, success stories, reference selling. | 1. Branch manager 2. Sales rep 3. Vendor 4. System House |

Objective 5: Attachment

SAMPLE SALES PLAN

| <u>Vertical</u> | <u>Vendors</u> | <u># CPU</u> | <u>\$ Potential</u> |
|--------------------------|----------------------|--------------|---------------------|
| 1. Manufacturing | J.W. Systems | 16 | 608K |
| 2. Wholesale | Clark, Inc. | 12 | 420K |
| 3. Medical | Anderson Association | 8 | 288K |
| 4. Government | J.W. Systems | 8 | 288K |
| 5. Property Management | C.S.S. | 7 | 217K |
| 6. CPA - Client Write-up | Niawaka | 5 | 155K |
| 7. Legal | Somerset | 4 | 124K |
| 8. General Accounting | GBS Systems, Inc.* | 6 | 186K |
| 9. Travel Agency | Clark, Inc.* | 6 | 186K |
| 10. Insurance | Redshaw* | 4 | <u>124K</u> |
| | | | 2,596K |

2200 QUOTA = 2 MILLION

- . Number of CPU's anticipated should be determined from the raw number of businesses in territory (for instance, there are 1,600 manufacturers in the N.Y. area; we can expect to realize 1% or 16 units).
- . The dollar potential to be realized can be determined by multiplying average system price by potential number of CPU's.
- . Multiply the number of CPU's expected by the qualified closing ratio (for example, 1 in 10), to get the number of prospects you need to attract based upon this figure, the number of seminars and time scheduled can be determined. For instance, to sell 16 units, we need to speak to 160 qualified prospects which means running five seminars with an average of 32 people attending.

* OEM

Objective 6: New Vendor Recruitment

| <u>ACTION ITEMS</u> | <u>RESOURCE</u> | <u>WHO</u> |
|---|--|--|
| 1. Based on vertical potential, distribution strategy and the status of existing vendors determine the need for new vendors and OEMs. | 1. Vendor group 2. System House group | 1. Branch manager 2. Sales rep 3. Analyst |
| 2. HOLD recruitment seminar to achieve the above objectives, using the vertical sales plan as a sales tool to attract new vendors to Wang and the market potential. | 1. Vendor group 2. System House group | 1. Branch manager 2. District analyst 3. Local analyst |
| 3. Evaluate and select attendees on their ability to reach objective - vertical market penetration. | | |

Objective 7: Implement Seminar Activity

Sales Representative responsibility

- . Coordinate seminar schedule with vendors.
- . Aid in the development of an effective presentation, to be given by both vendor and sales representative. Presentation should cover Wang overview (both corporate and 2200 products, 5-10 minutes), software presentation, including sample reports (hot buttons), and software demonstration.
- . Work with vendor in developing a solid list of referenceable accounts which should be available at every seminar.
- . Develop an effective means of follow-up. Essentially, it is the sales rep's job to monitor the activities of vendor and close.
- . Meet with the local industry trade association; learn the key players; speak at their monthly or quarterly meeting; get them to do a mailing or possibly buy their mailing list.

Administrative Assistants - Should be responsible for coordinating all logistics, such as:

- . Locating site for show (depending on anticipated size, you may need hotel).
- . Coordinating delivery of proper equipment to show site in working order.
- . Assuring that the proper invitations are ready.

Qualifying Prospects

- . Prospects can generally be qualified by the parameters of the software package (i.e., Redshaw is for independent insurance agents).
- . Mailings should be sent only to those who fit parameters. A phone call follow-up should be made to determine other qualifications, such as number of employees, sales volume, present method of operation, etc.
- . The better the qualification up-front, the greater the return on the time invested.

Objective 8: Sales Activity Guidelines

- . If the sales representative is dedicated to 2200, then he should be carrying no more than four active verticals (i.e., homebuilder and C.P.A. accounting are seasonal - not always active).
- . If the sales representative is carrying a mixed product line, he should carry a number of verticals which is proportionate to his quota, branch goal and needed market coverage. In most cases, this may be one or two verticals and should never exceed four.
- . Based upon the number of verticals and estimated potential booking dollars, each sales representative should be responsible, on a monthly or quarterly basis, for seminar activity proportionate to his goal.
- . The number of attendees at these seminars should correspond to the expected potential decided in Objective #5. The closing ratio, if seminar prospects are properly qualified, is about one out of every ten. Thus, if a sales representative expects to sell ten units in that vertical a year, he ultimately has to attract 100 qualified prospects; therefore, he has to attract 20 prospects in each of his five seminars. Qualifying is key in a seminar environment. Types of qualifying depends on the vertical.
- . Goals need to be set at the sales rep level for seminar activity, prospect contacts and demonstrations. Monitoring of the activity levels is essential.

Objective 9: OEM Program Considerations

- . System Houses (OEM) should be used by the branch manager (through the district systems house manager) as an incremental source of business. That is, System Houses should be covering those verticals or geographics which are not currently covered by direct sales representatives. This type of division is essential to a good working relationship for both; the sales representative does not feel penalized by OEM activity and the OEM feels confident of a protected market.
- . System Houses could also be used by the direct salesforce in situations where the independent or nationwide vendor's package does not adequately address the need. In this case, the new System House commission split policy applies.
- . All System House activity will be coordinated by a single source at the district level through the district System House rep.

COMMERCIAL COMPETITION

IBM GENERAL SYSTEMS DIVISION

Corporate Abstract

Revenues 1980: \$26B (IBM total)

Marketing Organization

. Series/1: Only a few support specialists trained on this product, thus
the need for a "hot line."

Product line

Formerly products for small and medium users, now getting to be a grab-bag:

- . System/3 - IBM's largest selling computer ever, now near the end of the line.
- . System/32 and System/34 small business computers (S/32 fading, too).
- . 5120 desktop (formerly the 5110).
- . System/38, the big one.
- . Series/1, the plain vanilla mini.
- . The 5520, GSD's entry into the automated office.
- . The 5280 intelligent terminal.

Series/1

A mini, period. Configure it as you wish - the hardware can physically support 256 I/O devices, although in power it's a small mini. You can interface foreign peripherals, but you may have to write the software. Three operating systems, none compatible with anything else and none easy to use. Software, comes at considerable extra cost - typically over \$6K for a small system with 2200-type capability.

Marketing Strategy

- . Series 1: Sell to sophisticated users, OEM's, or anyone who can program it.
- . The "fighting machine" where GSD has tried everything else.
- . Major account distributed processing system.
- . Strong in telecommunication. It can talk to almost anything.

Knockoffs - Series/1

- . Difficult to program and to use.
- . Traditional IBM marketing and service support not present.
- . Few reps and analysts really know the product.
- . Only starting to penetrate commercial market.
- . Not compatible with other GSD products.

Comparative Specifications

| | <u>Series/1</u> | <u>LVP</u> |
|----------------------------|---|--|
| Memory (bytes) | 32-512K | 32-256K (user) |
| Disk storage | | |
| Type | fixed; diskettes | Winchester; DSDD diskette |
| Capacity | 9-256 MB | 1-9 MB 2.5-480 MB |
| Other peripherals | as configured by user | plotter, graphic CRT |
| Printers | 120 cps, 80-155 lpm, 235-414 lpm | 30-200 cps; 220-660 lpm |
| Terminals | software con- trolled; avg.to 8 | 13 |
| Languages | Cobol, Fortran, PL/1 Waterloo Basic | Basic II, BASIC III/ COBOL |
| Communications | 3270, TTY, others programmable; SDLC | 2780/3780, 3275, 2741, TTY, HASP, 3270, Teletex, SNA/SDLC, X.25, X.21, 3274, 3741 |
| Price: 1-station system | \$16,000(hardware only; 64K, 2 dis- kettes, 120 cps printer) | \$17,900 (32K, 1 MB dis- kette, 2 MB disk, 120cps printer) |
| 4-station system | \$36,435(hardware only; 128K, 9 MB disk, 120 cps printer) | \$35,100 (128K, 1MB diskette, 8 MB disk, 120 cps printer) |

LVP vs. Series/1

- . System software included in price
- . Easy to program
- . Easy to use
- . Business-oriented system software
- . More application software available
- . Part of a family of products
- . Commitment to end-user support
- . Combined DP/WP terminal.

TEXAS INSTRUMENTS

Corporate Abstract

Revenues 1980: \$4B

Besides processors, calculators and a home computer, the well known semiconductor giant's product lines include a wide line of printing terminals and the DS 990 small computer series. Computers have generally taken a back seat.

Marketing Organizations

- . Large supplier of OEM printers and printing terminals
- . Due to difficulties with OEM's, they are now on campaign to recruit a new dealer network.
- . Sales locations have been selected at random.
- . Support, previously geared to terminal servicing, is being strengthened.

At this stage of market development, application software and support are only as good as the dealer of OEM - and it's not likely to be abundant.

Product line

Most of TI's packaged computers and intelligent CRT's have been consolidated into the DS 990 line. They use the 990 and 9900 minis that TI formerly offered at board level. The line slices roughly into three parts:

- . DS 990 Models 1 and 2 - small, inexpensive, microprocessor-based, OEM-oriented; limited in software and peripheral support.
 - . 990/10 based systems - a range of languages, user aids and peripherals; can support 8 terminals in a pinch.
 - . 990/12 based systems - cache, more processor power, more storage.
- There's some upward compatibility through the line.

DS 990 Model 3

This is a multi-user, multi-tasking COBOL system described by TI as a logical step from the low-end processors to the larger systems of the DS990 family. This product was announced in April to fill in a product hole. It will use the 990/10 CPU with 96K of memory and mass storage is in either two forms: dual sided double density diskettes and cartridge disks. The DX7 operating system will only provide only 30K of user memory with a 96K system. The system provides COBOL program development and execution, sort/merge, utilities such as a text-editor, macro assembler, link editor, and an interactive debugger.

Marketing Strategy

- . TI is relatively unestablished in the commercial market.
- . Larger systems are seen mainly in major accounts.
- . Highly visible in some geographical areas, invisible in others.
- . Sell on low price.
- . Maintenance pricing is relatively high.
- . Heavily discount prices to dealers and OEM's, but support is spotty.

Knockoffs

- . Limited in terminals and peripherals; growth path not smooth
- . Inefficient operating system
- . Support varies with the area and the OEM
- . OEM network is volatile

Comparative Specifications

| | | |
|-----------------------------|--|---|
| | DS 990 Mod 3 | LVP |
| Memory (bytes) | 96-256K | 32-256K (user) |
| Disk storage Type | DSDD diskettes, F/R disk | Winchester; Fixed/Removable DSDD diskette |
| Capacity | 20 MB | 2.5-480 MB |
| Other peripherals | | plotter, graphic CRT |
| Printers | 150 cps | 30-200 cps; 220-600 lpm |
| Terminals | 4 | 12 |
| Languages | COBOL assembler | Basic II, BASIC III/ COBOL |
| Communications | 2780/3780, async | 2780/3780, 2741, TTY, 3275, HASP, 3270, SNA/ SDLC, Teletex, X.25, X.21 |
| Price: 1-station system: | \$21,405 (96K, 2.4 MB diskette storage, 150 cps printer) | \$17,900 (32K, 1 MB diskette, 2 MB disk, 120 cps printer) |

LVP vs. the DS 990 Mod 3

- . Higher performance
- . Expandable within the same price range
- . Wider choice of peripherals
- . Excellent word processing
- . Organization geared to end-user support
- . Application software offerings

DATAPOINT

Corporate Abstract

Revenues 1980: \$318M
No. Employees: 5,939

Originally a terminal supplier, Datapoint has realized a revenue growth of \$47M in 1976 to \$318M in 1980. Their growth can be attributed to various configurations that stem from basically one product: a small computer/intelligent terminal.

Marketing Organization

- . locations: 63 major U.S. cities
- . marketed internationally mainly through TRW; have acquired Inforex to gain own international organization.
- . building vendor organization after abortive try at OEM selling.
- . Frequent reshuffling in sales and marketing.

Product line

Datapoint CPU's, from the 1500 desktop to the 6600 which allegedly supports 24 users on 256K memory, are small and low-powered. A Datapoint user who wants to expand can acquire an ARC, a high-speed coax network of small "file" and "application" processors which can share files. Any Datapoint product except the 1500 can attach to an ARC, so you never have to throw anything away.

Datapoint offers a variety of languages, but the only multi-user interactive language it supports on small systems is a proprietary one. (Interactive COBOL requires a dedicated 1-user system.) Its strength is communications.

The only non-8-bit system is the new 16 bit 8800. This has been announced but Datapoint has not been selling it yet.

The 1800

Datapoint's smallest ARC-compatible product. This is a small low cost diskette or cartridge disk system. There are now nine members of this system, the 1802, 1804, 1812, 1814, 1816, 1817, 1818, 1819 and the 1820. Memory ranges from 60K to 128K. These systems can run Datapoint's primitive word processing - only on the CPU, not on any of the terminals. It's an expensive route to WP.

Marketing Strategy

- . 80% of U.S sales are to end users.
- . Concentrate on major accounts.
- . Sell dispersed (distributed) processing concept.
- . The lease rather than the sale has been encouraged.
- . Smaller systems sold on price.
- . Attacking office automation market.

Knockoffs

- . Slow processors (suggest a benchmark).
- . Multiterminal operation requires proprietary language.
- . Application software is weak, lacks vendor network.
- . Slave terminals can only run Datashare applications.

Comparative Specifications

| | | |
|-------------------|---|--|
| | 1820 | LVP |
| Memory (bytes) | 128K | 32-256K (user) |
| Disk storage | | |
| Type | single-sided dual-density diskettes (2-8) 10MB removable cartridge | Winchester; DSDD diskette Fixed/removable |
| Capacity | 40 MB | 1-9 MB 2.5-480 MB |
| Other peripherals | card reader, mag tape | plotter, graphic CRT |
| Printers | 30-240 cps; 300-900 lpm | 30-200 cps; 220-600 lpm |
| Terminals | 9 | 12 |
| Languages | Datashare, Basic, Fortran Cobol, RPG-II, assembler | Basic II, BASIC III/ COBOL |
| Communications | 2780/3780, HASP, ARC, "Multilink" | 2780/3780, 2741, TTY, 3275, HASP, 3270 SNA/SDLC, X.25, X.21 Teletex |
| Price: | | |
| 1-station system: | \$17,800 (60K, 2 MB diskette storage, 160 cps printer) | \$17,900 (32K, 1 MB diskette, 2 MB disk, 120 cps printer) |
| 4-station system: | \$29,195 (128K, 10 MB diskette storage, 160 cps printer) | \$32,400 (64K, 1 MB diskette, 8 MB disk, 120 cps printer) |

LVP vs. the 1800

- . Higher performance
- . Easier to program
- . Industry standard multi-user language
- . More storage capacity
- . More available application software
- . Upgradeable without going to multiple systems
- . Excellent multi-terminal word-processing

BASIC FOUR

CORPORATE ABSTRACT

Revenues 1980: \$200M approximately

Employees: 2,500

BASIC FOUR began operations in 1971. They are a subsidiary of Management Assistance Inc. A nationwide sales force and independent dealerships are located in 78 U.S. cities. Their primary customers are small and medium sized businesses, especially first time users.

Marketing Strategy

- . Heavy emphasis on going after target applications. Emphasis is on specialized applications.
- . Concentrate marketing efforts on first time users.
- . Maintenance is provided by SORBUS, INC. Another wholly owned subsidiary of MAI, INC.
- . Seminar selling techniques as well as heavy reference selling are emphasized.

Product Line

Spectrum 80 - Just announced in October, 1980. It utilizes floppy disks and has DP/WP 64K memory. The smallest system costs \$18,000 - and a daisy wheel printer has to be added. This is primarily a word processing system. It does feature Business BASIC.

210 - Supports 16 terminals, 60 MB disk, and replaced the 200 and 410 systems. Winchester disk with mag tape cartridges for back-up.

510 - 64K to 256K memory, 16 terminals, 300 MB disk, 120 CPS and 300 LPM printer. Removable disks system.

610 - Will support a 600 LPM printer, otherwise the same maximum disk, memory and terminals.

730 - Up to 512K memory, 32 terminals, 600 MB disk. This is the top of the line.

Dataword word processing is available on the Basic Four systems 210, 510, 610 and 730. Concurrent word and data processing is offered.

Knockoffs

- . Systems can be purchased only, no rental agreement.
- . Upgrade difficulties going from 210 to the 730.

- . The system is slower than the 2200.
- . BASIC FOUR's parent company has financial difficulties.
- . Weak word processing capability.

Comparative Specifications

| <u>BASIC FOUR 210</u> | <u>LVP</u> |
|--|---|
| Memory (bytes) 64-256K | 32-256K |
| Disk Storage Type - fixed (Winchester) Cartridge Tape | Winchester; DSDD diskette, Fixed/Removable |
| Capacity - 10-57 MB | 480 MB |
| Printers - 80/120/160 CPS 300, 600 LPM | 30-200 CPS 220-660 LPM |
| Terminals - 16 | 12 |
| Languages - Business BASIC | BASIC II, BASIC III/COBOL |
| Communications - 2780/3780 | 2780, 3780, 3275, 2741, TTY, HASP, Teletex, SNA, SDLC, X.25, X.21 |
| Price: 1 -station system - \$24,990 (64K, 10MB, 80 CPS printer 1 Mag Tape Cartridge Drive) | \$20,600 (32K, 1MB diskette, 8 MB disk, 120 CPS printer) |

LVP vs. 210

- . Easier to program.
- . Easier to use.
- . Part of a family of products that offers the user tremendous flexibility and growth.
- . Excellent word processing with full functionality.
- . Faster response time.
- . IDEAS - software development tool.
- . Superior communications capability.

MAJOR ACCCT.
STRATEGIES

2200 MARKETING RELEASE

Market Definition

The 2200 Series, typically known for its strength in the small or first-time user marketplace, has now expanded to include the Distributed Information Processing marketplace. Distributed Data Processing has been defined as putting data processing power in the hands of the users. Distributed Information processing is defined as putting information in the hands of the users; data processing and word processing. Any company that decentralizes some computing power can be said to have distributed information processing. The potential to expand and perfect this capability is virtually limitless.

Any company with this need to decentralize computing power is a prime target market for the 2200 Series. There is no limit on size of customer, number of employees, or revenue dollars. The true test lies in the requirements of each account. If you have a customer who requires that remote branches have access to local data processing applications, word processing capabilities and communicate with the home office computer all simultaneously, then you have reason to consider the 2200 Series. Generally a "small" computer is associated with small users, however, remote offices are exactly that; small users. Their needs are similar to the first time user marketplace because they are non-technical in nature and need an easy to use system. The enhanced strength of the 2200 Series lies in its ability to perform in several ways:

1. Processing power
2. Multifunctional capability
3. Telecommunications capability
4. Ease of use
5. Development tools

These enhancements prove that a small "business computer" can get the job done for the remote office while communicating with the mainframe. In the past year, 2200 Systems Marketing has spoken to a multiple number of large accounts. Prospect reactions to the power and potential of the 2200 Series are impressive. The 2200 will be a major contributor to the corporate realization of its 1990 goal. Its future is included in Wang's stated plans for the 80's. As a link to Wangnet, the 2200 Series, with its own unique strengths, will continue to expand its market potential as the industry demands more and more power for remote end users. Sold in multiple quantities, the 2200 Series can realize tremendous revenue potential for you.

2200 MARKETING RELEASE

Target Market Requirements

The complexity of a large account generally calls for a "committee" or "task force" to investigate and recommend major company investments. The purchase of hardware and software for a distributed information processing system certainly falls in this category and is generally handled by a "committee". A key reason for this committee concept is that the equipment selected must satisfy the needs of several different areas within the company. Let's consider each one individually:

A. Users

The actual "end user" of the system. Generally this includes positions such as clerks, secretaries, and office managers. Users are located anywhere, usually in remote sales offices, warehouses, distribution centers, etc. They are non-technical in nature, being proficient in their own job and industry but unknowledgeable with respect to computers and high technology.

Needs: The needs of the users are very similar to the needs of the "First Time User" because in many cases, they are actually small businesses. Their needs are as follows:

1. Easy-to-use and fast implementation

Since the users are non-technical, a system must be simple with good documentation. In many cases these users will be afraid of the computer, not wanting to "let go" of the old faithful bookkeeping machine or manual typewriter.

2. Access to Information on the Host System

Currently, information stored at home office is obtained via mail or telephone calls which means time delays, errors and/or misinformation.

3. Service/Support

Since many users are located far away from home office, support is critical to the non-technical user. They need to know that help is only a phone call away and service only a few hours away.

4. Industry and Business Applications

Specialized software to meet the specific requirements of their business plus general business applications such as order entry, invoicing, accounts payable, etc.

5. Documentation Creation and Distribution

This refers to general word processing requirements in an office.

B. Centralized Data Processing Department OR MIS Department

This internal group, generally located in the home office, consists of application and system programmers, mainframe experts, telecommunication experts, and project leaders (analysts). They are technical in nature and very aware of current technology. Their prime functions are:

- a) applications development
- b) implementation of applications
- c) network connection to mainframe equipment
- d) application maintenance and documentation

Due to their technical responsibility, the concerns of the MIS Department includes:

1. Maximization of programmer productivity. Developing software packages, modifying and maintaining existing packages and documentation.
2. Compatability among purchased equipment.
3. Interfacing remote site systems with centralized mainframe equipment to provide an on-line interactive network or batch communication.
4. Control over entire network; hardware and software.

C. Senior Management

Looking out for the financial side of the corporation, such concerns are:

1. Return on investment
2. Vendor stability
3. Future product direction of the vendor. Is this direction compatible with their direction?
4. System obsolescence

D. Committee Members

Generally, the recommending committee consists of people directly responsible for a segment of these needs. Together, all of the above needs are considered. For this reason it is vital that each committee member be treated as individual decision makers. Their background, experience, and goals all differ.

The 2200 Series as a Solution to D.D.P.

Wang has announced many major enhancements to the 2200 Series over the past 6 months. These enhancements directly relate to the requirements of major accounts with the need to decentralize information processing.

The following is a list, to date, of the enhancements. Following this list are the benefits to major accounts.

Languages: COBOL - Based on ANSI 74 specifications
 - Highly compatible with VS COBOL
 BASIC III - Enhanced version of BASIC II

Development Tools - Ideas release 2 - highly enhanced version of IDEAS. Includes program and screen chaining, hierarchical security precautions, sub-screening, data entry range checking and much more.

Advanced System Software - 2200 Disk Management System - enhanced file management capabilities to include disk I/O capabilities, dynamic file re-allocation, file security, print spooling, and file recovery procedures.

Hardware - Two new printers; 2235 and 2233; both bidirectional, line printers capable of 10 or 12.2 pitch. Printing speeds are 181 (10-pitch) characters per second and 222 (12.2) pitch characters per second.

TC Controller - Model 2228D - Micro-Processor based intelligent telecommunications controller.

Telecommunications - Several major new announcements include:

- . 3270 emulation with virtual terminal capability
- . 3274 SNA/SDLC emulation
- . Teletex interfacing
- . Remote Control and Maintenance - allows the ability to perform remote diagnostics from a central site, plus the ability to transfer files to perform software updates
- . X.21/X.25 supporting HDLC

Integrated Capabilities

- . "Wang" Word Processing available on the 2200 Series - integrated DP/WP terminal
- . The capability to merge data file information with word processing letters

How the 2200 Series Enhancements relate to the needs of the Major Account Marketplace.

Referring back to the concerns of the committee members, the representatives included:

- Users
- Centralized MIS Department
- Senior Management

Users

Requirements

Solutions

Easy-to-use and implement

- . 2200 Series is end user oriented. No difficult system generator to load each day. System is up and running at the touch of 3 keys. ✓
- . Modern office design with the SVP and LVP. The 2200 Series will be installed quickly (approximately 1 hour installation time). Quiet and compact, the 2200 offers minimal office disruption.

Access to information on Host System

- . The 2200 Series support a full array of industry protocols. This means the 2200 will be compatible with current networking plans as well as future plans.

Service/Support

- . Wang's worldwide service location means service and support anywhere in the world. For remote users outside of our service network, Wang will still service the equipment; only requiring a service charge.

Industry and Business Applications

- . The 2200 Series, since its inception in 1972, has accumulated hundreds of application packages from over 1 thousand vendors worldwide. If an account wishes to purchase software rather than write their own, this can be easily done. These are proven packages that can be implemented with minimal effort. ✓

Document Creation and Distribution

- . "Wang" word processing, the easiest and most advanced word processing package in the industry, is available on the 2200 series.

CENTRALIZED MIS DEPARTMENT

Requirements

Solutions

Maximization of programmer productivity

- . The 2200 Supports multiple industry standard languages such as COBOL and enhanced BASIC.
- . IDEAS RELEASE 2, a development tool, will produce fully coded, completely documented BASIC programs without writing a single line of code. IDEAS greatly increases programmer productivity.
- . 2200 Disk Management System - increases programming productivity by handling all disk I/O functions.

Compatability among purchased equipment; compatible via media (3741), software, and communications

- . Programs are compatible between all members of the 2200 Series. Transfer of programs is easy.
- . In addition, WP documents are compatible with the Wang VS, OIS, and WP systems.

Interfacing Remote Site equipment and centralized host systems

- . Full array of telecommunications protocols are available.

Control of network

- . With Remote Control and Maintenance, control of program updates and troubleshooting are easily controlled by the central site.
- . In addition, with in-depth security features, files and fields within files can be protected from unauthorized personnel.

Senior Management

Their needs and requirements are easily resolved with Wang's current financial position and strong product direction.

EVALUATING SALES POTENTIAL

Potential Prospects

Penetrating major accounts can be a long and difficult process until you hit the right person who is ready to listen. Therefore, your best strategy is to first approach current Wang customers. This includes currently installed word processing, OIS and VS systems. The advantage of current customers is that they already know Wang as a Corporation, plus the high quality of our products. In addition, you may have already established contact with the key decision-makers. In most cases, however, a new committee will be formed to investigate decentralizing their operation.

When calling on new business, keep an open mind as to product solution. Some major 2200 deals were originally VS discussions and vice versa.

Look for Replaceable Equipment

When inside an account, look for potentially replaceable equipment. For example, noticing some IBM Series 1's, 8100's, 2780, 3780, 3277 terminals, TTY, etc., could mean that there are dozens more being used in remote branches, and it's very possible that discussions on decentralizing information have already begun. The account may not be aware that Wang has a solution in the small "business computer" market. The best approach is to inquire what each system is used for.

Listen to Common Complaints

When talking to users, several common complaints usually arise if their current system is inadequate:

- . Long turn-around time from host system
- . Problems accessing data base on the host system
- . General throughput problems
- . Manual typing of letters, documents, etc.
- . Local printing needs not currently being handled
- . Non-upgradeable

Investigating and pursuing these complaints may lead to the general need of upgrading remote office equipment.

Update your Prospects

Even if decentralizing is not in the budget for this year, take the time to periodically update your key contacts on the 2200 and its enhancements. This time will pay off in the end because Wang, as a solution, will stay in their minds.

There are several slide presentations available in the home office that contain overviews and product direction of the 2200. These can be very useful for brief product overviews.

Promote Office of the Future

With Wang's 6 key technologies for the 80's, Word Processing, Data Processing, Networking, Image and Audio Processing, and Human Factors, Wang will be a leader in the Office of the Future. Start discussing this concept now with your customers and prospects. Promote Wang's aggressive leadership in Office Automation.

The 2200 Series

Why, What, How and Where Used in a Major Account Environment

Why is the 2200 Series a successful major account offering?

Because it has evolved into a distributed information system capable of meeting the requirements of a distributed environment.

What is a distributed environment?

"A distributed environment is one in which the computing functions are dispersed among several physical computing elements. These elements may be colocated or geographically separated."

Let's take this textbook definition a few steps further, as distributed systems may take many forms.

First, a distributed system may mean a collection of multiple computers working together in the solution of a single problem. An example might be an on-line banking system comprised of several minicomputers linked to a mainframe. Each minicomputer processes a subset of banking transactions and updates a portion of a common data base.

Second, a distributed system may mean computers located at the point of use to give local organizational elements more responsive computer support. An example might be an insurance company with multiple independent agents, geographically distributed and responsible for client management, policy write-ups, life illustrations, etc. When necessary, these systems communicate with remote host computers.

Third, a distributed system may mean collections of geographically dispersed, independent computers linked together to allow the sharing of software and hardware resources. These systems are commonly referred to as computer networks. An example might be a network developed by a collection of educational institutions, each with its own computer facilities. This network allows a user, at one installation, to access a program or a file resident at another facility.

Fourth, a series of minicomputers to off-load functions from a large mainframe. An example would be a large brokerage house using minicomputers to perform portfolio analysis, financial computations and a variety of application programs, thereby off-loading CPU intensive tasks from the mainframe.

The common thread linking these four types of distributed systems is the use of multiple computers to perform jobs that were previously performed on mainframes, performed manually, or not performed at all.

In addition, the users of these different types of distributed systems have common concerns.

These concerns are:

- . reliability
- . control
- . optimal functionality
- . back-up
- . security
- . software development
- . optimal communication capabilities
- . linking of systems
- . cost

How does the 2200 Series of distributed information management systems deal with these common concerns?

First, let's discuss the concern - cost.

Computer costs have decreased by a rate of 17% annually since 1970. An \$18,000 system today cost \$100,000 in 1970. For those of us who haven't been in the industry for 10 years, let's look at it this way. If the auto industry experienced a similar reduction in price, in 1970 a Ford Mustang would have cost you \$2,700. Today, in 1981, that same car would cost \$480.00.

This trend for the information processing industry will increase in the future. Low cost computing power in the form of minicomputers presents an attractive alternative to large computers for many computing tasks. It can even be argued that economy of scale now favors the small computer. The cost per unit of computing power should be less in a large number of small computers than in a small number of large computers.

A further potential of cost-reduction exists in systems which are geographically dispersed. Local processing capability can be used to reduce the volume of data transmission between sites. The savings in telecommunication costs for lines and modems could more than pay for the cost of local computers. Couple reduced cost with the added functionality of information processing, both data and text; multiple program development tools and languages; and the extensive communication capabilities of the 2200 Series, and the result is a cost-effective, distributed solution for all prospects.

Reliability

Redundancy, although the best, has traditionally been too expensive to consider as an approach to improving reliability. However, redundancy can be achieved in a relatively inexpensive manner in a distributed system.

Via the multiplexing capabilities of the 2200, multiple users can share single resources such as disks, CPU's and printers. Thereby, insuring the required degree of availability without replicating the entire system. For example, each LVP and MVP CPU can support up to thirteen terminals via two four-port 2236 MXD boards and one three-port 22C32 board supporting an additional terminal, diskette and a printer. Via the 2280 Disk Multiplexer, three 2200 CPU's can share a single disk resource which can be expanded from 26 to 160 megabytes.

By replicating the storage media configuration, these same 200 CPU's can access (add, modify, delete) the duplicated data and programs concurrently. Thereby, providing maximum redundancy at minimal cost.

Control

The Remote Control and Maintenance System software available on the 2200 Series allows a 2200 operator at a central site to control a network of remote 2200 systems through RCM which effectively connects the central site operator's terminal to the remote 2200 system.

This capability enhances control over a distributed environment because the central site operator can download software and run diagnostic test and maintenance programs.

This feature can be enhanced via the File Transfer facility which allows programs and/or files to be transferred within the remote 2200 network and between the central site.

Optimal Functionality

The 2200 Series is an integrated information system. Via the 2236DW multi-function terminal, total data and word processing capabilities are supported. In addition, via telecommunication emulation software, this same terminal can function as an IBM 3277 or 3278 display station, for example.

Add to the above, the support of COBOL, BASIC and IDEAS release 2 as an application development tool, the 2200 Series provides optimal functionality as a development system.

Backup

The trend towards distributing a company's information processing requirements functionally by task, geographically by location and organizationally by department, is indicative of the realization that one cannot maintain a duplicate data center for contingency purposes, but that like fire insurance, backup systems are a necessity of doing business.

The multiple disk configurations supported by the 2200 Series, combined with its resource-sharing capabilities and system software utilities, provide the distributed user with the most advanced technological alternatives for fast, reliable backup.

Security

The 2200 Series of distributed information management systems addresses security on two levels - hardware and software. For example, the File Management capabilities of the COBOL/BASIC-3 operating system provides security passwords at the file level and, in addition, are dependent on the level of user authorization privileges. IDEAS provides menu password protection.

The operating system provides security precautions at system configuration time in addition to the ability to scramble protect code.

In summary, the first line of defense in providing security features on the 2200 is at a functional level by limiting use of specific programs to authorized individuals.

The second line is at an organizational level by restricting the retrieval and/or update of a particular data base record.

Software Development

As a development system, the 2200 Series supports BASIC, COBOL and a variety of system support utilities and program development tools, such as IDEAS Release 2.

In addition, the 2200 software vendor network supplies proven, installed software to meet the application requirements of all vertical and horizontal markets.

Optimal Communications Capability

There is an extensive range of telecommunications for the 2200, both batch and interactive. In a batch environment, the 2200 can communicate with 2780, 3780, 3741, while in an interactive environment, we support TTY 3275, 3271/6/8. In addition, the 2200 can function in an IBM SNA environment emulating the 3274 controller and operate on a multipoint line that runs the SDLC protocol.

With the support of the X.25 interface, the 2200 Series can communicate through Packet Switched Networks.

The Wang Teletex Terminal Facility provides a gateway to the International Teletex Service and underscores the aggressive posture of the 2200 with respect to meeting the requirements of our international users.

Linking of Heterogeneous Systems

In addition to the 2200 Series of Distributed Information Management Systems, extensive telecommunication capabilities which link Wang 2200 to Wang VS, OIS and non-Wang systems, WANGNET rounds out our ability to address the concern of linking heterogeneous systems together in a distributed environment.

Wangnet's Interconnect Band allows all systems to communicate with one another as long as a common protocol is supported.

Where can the 2200 Series of Distributed Information Management System be used as a distributed system for major accounts?

Example #1

Consider a large, national wholesale company with two mainframe information processors, one located on the East Coast, the other on the West Coast. An important reason for distributing the workload of these two information processors via the location of multiple 2200 systems in the distribution centers is the cost of transmitting data to/from remote locations.

Example #2

Consider a complex banking system where the central information processor maintains the master data base of customer accounts. The installation of 2200 systems as satellite processors, each maintaining a data base containing the account information for local customers, greatly offloads the processing demands of the bank's mainframe.

The local 2200 data bases are created by copying the necessary information from the mainframe. These local data bases are essentially work files refreshed each night from the master data base on the mainframe.

Example #3

Consider an insurance company with a large mainframe handling all corporate level processing with a corporate data base attached. Each division of this company, life, group, etc., has its own satellite processor - a 2200. Each 2200 has its own data base associated with that division and performs functions unique to that division or department. Information is exchanged in both directions. Corporate level reports require information from the divisional or departmental data base for consolidation purposes. Corporate data such as goals, budgets, etc., are passed down to the divisional or departmental level.

In summary, the 2200 Series of Distributed Information Management Systems turns the benefits of Distributing Information Processing requirements, such as increased cost-effectiveness, increased control and increased security into realities.

MAJOR ACCCT.
COMPETITION

IBM DATA PROCESSING DIVISION

Corporate Abstract

Revenues 1980: \$26B (IBM total)

Marketing Organization

Legendary in marketing and support.

Product Line

The classic 370 series.

The 303X large mainframes.

The 8100 distributed processing system.

The H (3081) series of super-large mainframes.

The 3730 communications system and its offspring, the 3730 word processor.

The 4300 series: 4331 and 4341.

The 8100

This is DPD's only true Distributed Processing product. There is no compatibility with 370, 303X, 3081, and 4300. There are two models. The 8130 uses 64K chips and has memory that goes from 256K to 1M bytes. The 8140 has 16K chips and offers 60% more processing power than the 8130.

There are two operating systems - DPCX (Distributed Processing Programming Executive) - no local programmability with this system; IBM reps sell this as a plus to executives for security reasons who want to maintain central control over a company's data. Word processing is available only under DPCX. The other operating system is DPPX (Distributed Processing Programming Executive) - which supports high level languages and utilities. These two operating systems cannot coexist in one 8100 system. DPPX is described as "virtual-like", it uses paging but makes inefficient use of memory. COBOL, FORTRAN and an Assembler are offered. These compilers are totally new and are not compatible with any other IBM compilers. 8100 word processing is weak. WP workstations have little local functionality. Need to access CPU for WP causes severe degradation. Software is heavily command-oriented. This is a good system for large document handling.

Marketing Strategy

- . Sold only in large accounts.
- . Designed for distributed processing in mainframe-connected environments.
- . Concept of Central Control stressed.
- . SNA communications capability stressed.

Knock-Offs

- . Slow performer.
- . Limited upgrade path.
- . Full-function DP and WP not possible on same system.
- . DP/WP system difficult to use.
- . Large central staff required for support of DP/WP.
- . Unbundled software carries perpetual charges.
- . Customer set-up or pay for installation.

Comparative Specifications

| <u>IBM 8100</u> | <u>MVP</u> |
|--|--|
| Memory (bytes) 256K-1MB | 32-256K |
| Disk Storage Type fixed capacity 637 MB | Diskettes, F/R 2.5-480 MB |
| Printers 40 cps, 120 cps matrix, 350, 650 LPM | 40-200 cps 220-600 LPM |
| Languages COBOL, FORTRAN and Assembler under DPPX | Basic II, BASIC III/COBOL |
| Communications BSC or SDLC to mainframe. Downstream 2780/3780, 2741, TTY, 3270 | 2780/3780, 2741 3270, TTY, HASP, 3275, SNA/SDLC, X.25/X.21, Teletex |
| Terminals Physical Support for many terminals. 12 is recommended maximum on 8130 | 13 |
| Price (4 Terminals, 8130, CPU, 256K, 64MB disk, 1-500 LPM, 1-120 CPS printer) | (4 terminals, 128K 53.6 MB disk, 600 LPM and 120 cps printers) |
| \$65,390 | \$60,200 |
| \$510 Monthly Software charges. | |

MVP vs. 8100

- . Easier to program.
- . Excellent word processing.
- . Easy to use BASIC language.
- . Ideas.

HONEYWELL INFORMATION SYSTEMS

Corporate Abstract

Revenues 1980: \$4.9B:

A major mainframe manufacturer, and the heir to GE's computer business, Honeywell has always been an important presence but has never taken the market by storm. It's been slow to innovate; Level 6, introduced in 1976, was a departure in hardware but not in software. Level 6 is just starting to appear beyond Honeywell's borders. The DPS 6 now represents Honeywell's entry into the commercial packaged systems market. The Level 6 will continue to be available for the mini-based OEM customers. The DPS is based on the Level 6 architecture.

Marketing Organization

- . Level 6 marketed by dedicated sales forces. To date, there have been OEM and end-user sales forces.
- . Small/medium systems division recently formed for Level 6 and other small computer products, has been restructured several times.

Product line

- . Full line of mainframes.
- . DPS 6, a general purpose mini - spans the range from the limited-configuration Model 30 to Model 96 with 16MB memory.
- . Level 62, a System/3 replacement, being revamped for distributed processing.

DPS 6

The DPS 6 family of minicomputers features field upgrade capabilities from a series of 16-bit processors to fully compatible 32-bit systems. Ten models, based on Level 6 architecture, compose the family. There are two 32-bit systems, four low-end 16-bit systems and four 16-bit field upgradeable systems in this family. Memory can be expanded to 16MB!! When Honeywell announced the DPS 6 they also announced a word processing package and document distribution software. List processing and math are not yet available; document distribution is still very primitive.

Available operating systems are three subsets of GCOS, which Honeywell has used since the '60's. Mod 200 is menu-driven but limited to simple, usually single-user transaction processing. Mod 400 and Mod 600 lack the user-friendly features; they're back to command languages, etc.. The system itself is known for poor handling of priorities and weak file handling - no multiple keys, etc.. (You can buy the TOTAL DBMS.) Many customers are going to the "Ultimate" operating system supplied by a third-party vendor. Word processing appears to be very similiar in features to our systems.

Marketing Strategy

- . Has never been coherent, due to frequent organizational changes.
- . Current targets for DPS 6: commercial and national accounts.
- . Have just recognized the importance of commercial sales.

Wang's Advantages

DPS 6 shares our advantages of modularity and of solid hardware. It lacks the efficiency and ease of programming provided by our virtual operating system and our utilities. It's new to the commercial world, and its software is not yet responsive to commercial needs. Market planning and support are bound to suffer from the continual organizational changes. Our systems and our company can promise a large account the answer to all his distributed processing and office automation needs, and deliver on the promises.

Knockoffs

- . Antiquated operating system.
- . Commercially-oriented system software and utilities barely out of development stage.
- . Marketing and support for business users not organized.

Comparative Specifications

| | DPS 6/34 | MVP |
|-------------------|--|---|
| Memory (bytes) | 128-256K | 32-512K |
| Disk storage | | |
| Type | fixed/removable; removable; diskettes | Diskettes, fixed/ removable |
| Capacity | 80 MB | 2.5 MB - 480 MB |
| Printers | 120, 160, 165 cps; 300, 600, 900 lpm | 40-200 cps; 250, 600 lpm |
| Terminals | 24 | 13 |
| Languages | COBOL, FORTRAN, RPG II, BASIC, assembler | BASIC II, BASIC III/ COBOL |
| Communications | 2780, 3780, HASP, 3270 | 2780/3780, 3270 2741, TTY, HASP, 3275, Teletex, X.25, X.21, SNA/SDLC |
| Price: | | |
| 1-station system: | \$30,340 (128K, 26 MB disk drive, 160 cps printer) Software-\$5610 OTLF | \$31,900 (32K, 26 MB disk, diskette, 120 cps printer) |
| 4-station system: | \$48,620 (256K, 80 MB disk, 300 lpm printer Software-\$5610 | \$52,800 (128K, 53.6 disk, diskette, 250 lpm printer) |

MVP vs. DPS 6

- . Efficient, easy to program operating system.
- . Proven in commercial data processing.
- . IDEAS.
- . Price/Performance advantage.
- . Organizational commitment.

NIXDORF COMPUTER

Corporate Abstract

Revenue 1980: \$855M

Nixdorf was founded in Paderborn, West Germany in 1953. Worldwide, the Nixdorf group is operating in more than twenty eight countries. They have an installed base in excess of four thousand customers in North America - almost all of these are data entry. Sales in 1980 increased 25%, while earnings dropped 50%. According to NIXDORF this was caused by an introduction of several new products.

Marketing Strategy

- . Product strategy is a puzzle to many analysts.
- . Development is often in joint ventures with specialized companies.
- . Nixdorf's own research and development is focused heavily on end user systems such as specialized computer and banking terminals rather than basic electronic technology.
- . Marketing organization has an excellent reputation as does its service organization.
- . Traditional market strength is in Germany (weak in U.S.).

Product Line

- . Data Entry systems
- . Retail point-of-sale terminals
- . Banking terminals
- . 8840 Word Processing system
- . 8845 new Data Processing/Word Processing system
- . Small business computers - 8870 family
- . IBM compatible mainframe

Futures

- . Personal computers?
- . Color display terminals?
- . Private Branch telephone exchanges?

8870

The Nixdorf 8870/1 and 8870/3 are available in two basic configurations. Maximum memory is 512K. The 8870/1 can handle as many as sixteen users simultaneously with a batch task in the background. The 8870/3 will handle 32 users simultaneously, the NIROS operating system provides for multiple partitions. Application software is written entirely in Business BASIC. Both Real-time and batch processing are offered. Nixdorf does its own application programming for the 8870.

Comparative Specifications

| | |
|--|---|
| Nixdorf 8870/1 | LVP |
| Memory (bytes) 64-96KB | 32-256K (user) |
| Disk storage | |
| Type | Fixed/Removable |
| Capacity | 6/10 MB disks 6-66 MB |
| | Winchester; DSDD diskette 1-9 MB 2.5-480 MB |
| Printers 30, 100, 165 CPS 240, 300 LPM | 30-200 CPS 220-600 LPM |
| Terminals 1-14 local or remote | 1-12 |
| Languages Business BASIC | BASIC II, BASIC III/COBOL |
| Communications 2780, 3780, 3741 | 2780, 3780, 2741, TTY, 3275, HASP, SNA, SDLC, X.25, X.21, Teletex |
| Price - One Terminal System | |
| \$29,500 | \$17,900 |
| \$50/Month Software | |
| (1 terminal, 64K memory, 6MB disk, 165 CPS printer) | (32K, 1MB diskette, 2MB disk, 120 CPS) |
| Four Terminal System | |
| \$50,150 | \$46,400 |
| \$50/Month Software | (128K, 1MB diskette, 8MB disk, 400 LPM printer) |
| (96K, 10MB disk, 300 LPM printer) | |
| MVP vs. 8870/1 | |
| . | Better price performance |
| . | Superior user utilities |
| . | Word Processing capability |
| . | Compression of code feature |
| . | Sort and text editor utilities |
| . | Ease of use features |
| . | Extensive vendor supplied software |

ICL

Corporate Abstract

Revenues 1980: 1.7B

International Computers, Ltd., of London was founded in 1968, with worldwide headquarters in Putney, England. ICL has been in financial trouble for some time, and has been trimming its operations recently. ICL claims to be the largest European based DP company. New management is concerned with lack of customer confidence in the company.

Marketing Strategy

- . Always match competitive configuration if possible.
- . Would practically give away software to get the business.
- . Appears to be marketing driven, market focused.
- . Sell total solutions by selling hardware and software together. They sell the single vendor concept.

Product Line

- . ICL System 10 Model 320, 60K to 200K of memory. This is a small business system that is marketed to first time users.
- . ME 29 which replaced the 2903/4 systems. This product was targeted as a System 3 replacement product and was introduced in Europe in March 1980. This is an IBM System 38 equivalent system.
- . 2900 family of mainframe computers that have competed against IBM mainframes. These systems are sold for commercial applications or sometimes for process control operations.

ICL System 10 Model 320

System is primarily used in accounting, sales, distribution or insurance environments. The operating system is included in the system price and can support 20 concurrent tasks.

Knockoffs

- . Company has serious financial difficulties.
- . No word processing on system.
- . Limited communications capability for IBM emulation.
- . No BASIC language.

Comparative Specifications

| | | |
|---------------------|---|--|
| ICL System 10 Model | 320 | MVP |
| Memory (bytes) | 60K-200K | 32-256K (user) |
| Disk Storage | | |
| Type | Cartridge disk, F/R 20, 40, 60, 80 and 160 MB disks | Diskettes, fixed/ removable |
| Capacity | 20-320 MB | 2.5-480M bytes |
| Printers | 60, 120, 180 CPS 75, 150, 300, 600 LPM | 30-200 CPS 220-600 LPM |
| Terminals | 1-200, local or remote | 13 |
| Languages | COBOL, RPG II Assembler II | BASIC II, BASIC III/COBOL |
| Communications | Asynch, Synchronous BSC, TTY | 2780, 3780, 2741, 3270, TTY, HASP, 3275, SNA/SDLC, X.25/X.21, Teletex |
| Price | (one-station system, 60 CPS printer, 20MB disk drive and CPU 60K memory) | (one terminal, 26 MB disk, 70 CPS printer 32K user memory) |
| | \$35,000 | \$32,000 |
| | (4 station system, 40 MB 120K memory, 150 LPM printer) | (4 terminals, 250 LPM printer, 128K memory, 53.6 MB disk) |
| | \$48,155 | \$52,800 |

MVP vs ICL System 10

- . Higher performance
- . Easier to program
- . Word Processing
- . Easy to use BASIC language
- . Company has the financial strength to provide excellent end-user support.
- . Disk File Management System
- . Program Development tools

TECHNICAL
INFORMATION

C.P.U.s

(various data sheets removed)

PERIPHERALS

(various data sheets removed)

TELECOMMUNICATIONS

(various data sheets removed)

SOFTWARE

(various data sheets removed)

2200 WORD PROCESSING SOFTWARE SYSTEM

PRODUCT POSITION

As a result of the 2200/WP direct mail shot of April 13th to our 2200 user base, a total bookings figure of \$406,788.70 was realized from the recipients of the package as of May 31, 1981. This figure reflects seventeen new DW workstations, three DE upgrades, seven CPU's and eleven additional terminals - all in only one and a half months of sales follow-up.

These results are indicative of:

- . The huge volume sales potential of Wang's latest Integrated Information System offering.
- . That our market strategies have a proven successful record.
- . That the 2200 Word Processing Software System represents maximum return on investment; both for the Wang sales rep's time and the customer's dollar.

The 2200 Word Processing Software System and the 2236DW multi-function workstation completes the incorporation of integrated DP/WP functionality on all three Wang product lines. With the entry of the 2200 Series into the Wang family of Integrated Information Systems, Wang has moved to a three product strategy toward the integrated information marketplace.

Each of the integrated products, 2200/WP, OIS/BASIC, and VS/WP address a distinct subset of the integrated information marketplace. 2200/WP addresses distributed data processing that demands integrated functionality from a small business system. This marketplace encompasses three distinct opportunities:

- . Existing 2200 users who now have the opportunity to easily and inexpensively expand their data processing systems to include Wang word processing.
- . First-time users who see the opportunity to improve control of their business through the use of both data processing and word processing but cannot justify separate systems for each function.
- . Major accounts who wish to distribute word processing, stand-alone data processing and interactive host communications to departments and remote locations with the same system at a low cost per workstation.

PRODUCT INFORMATION

The 2200 Word Processing Software System is available on VP, MVP, SVP or LVP CPU's equipped with the new 2236DW integrated workstations. Existing 2236DE workstations can be upgraded to 2236DW integrated workstations.

MEMORY REQUIREMENTS

The 2200 Word Processing Software System requires 28K bytes of user memory within a single partition on an LVP or MVP. When operating multiple word processing terminals, each terminal must be allocated its own 28K byte partition. Based upon these memory requirements of the word processing system, a minimum of 32K bytes of user memory is required.

DISK REQUIREMENTS

The 2200 Word Processing Software package requires approximately 3/4 of a megabyte or 3,000 sectors of resident disk storage. There is no limit to the number of documents which can be stored. The only limiting factor is the amount of on-line storage available. With 2200 Word Processing, a page may be as large as 4,000 characters, and constitute as many as 120 pages per document. Documents require 2K of storage per document on the system disk regardless of the number of pages. In addition to the text, 2200/WP documents require the same administrative overhead on archiving diskettes as the OIS.

PERFORMANCE

The performance of the 2200 Word Processing software is largely determined by the speed of the primary disk storage device being utilized. Either a Dual Sided Double Density (DSDD) diskette or hard disk system (i.e., a 2260, 2280 or Winchester style disk) are required to operate the 2200 Word Processing software. Another influence on the performance of 2200 Word Processing is the number of tasks that are operating on a multiple terminal system. In most cases, up to a maximum of EIGHT word processing terminals will operate with acceptable performance.

OTHER WORD PROCESSING CONSIDERATIONS

. Communications Support

The new 2236DW integrated workstation is supported by all 2200 TC facilities, e.g., it may emulate the IBM 3277 using the 2200/3271 package, or it may operate as a 2741 or TTY.

The 2200 will support document transmission in two forms:

- . Using Wang's WPS protocol (a modified Bisync) to another 2200, VS, OIS or WPs for word processing document transmission;
- . In data record format, without special document codes of administrative information, using 2780/3780/3741 Bisynchronous protocols to another computer or terminal.

A MailwayTM facility and an integrated Batch/Document Communications package will be available in December 1981.

- Remote Terminals

Because modems that will transmit faster than 2400 baud on dial-up lines are currently unavailable, it is extremely difficult to utilize the 2200 Word Processing software remotely. Wang Laboratories recommends that the 2236DW terminal be set at a baud rate of at least 9,600 baud when using the 2200 Word Processing software. To summarize, operation of 2200 Word Processing software on remote terminals is impractical and is not recommended for all except minor revisions and printing of previously entered documents.

- Archive Compatibility

Wang 2200 Word Processing software allows the operator the flexibility to create archive volumes on any available disk media. However, if a single-sided hard sector white label diskette is used, the archive can also be written or read by Wang OIS, WPS or VS equipment. The standard drive to read and write to single-sided hard sector white label diskettes on the 2200 Series is the 2270A diskette drive; this may be installed on either a VP, an MVP or LVP.

FUNCTIONALITY

The 2200 Word Processing System is being released in two initial phases. Release One provides basic word processing functionality. Release Two will extend the capabilities of the software and will more fully emulate the functions currently supported by Office Information Systems. 2200/WP will continue to be enhanced subsequent to Release II.

Release One Functions:

Document Creation - When a document is created, its ID number is automatically assigned by the system in a library specified by the operator. A library name (indicated by a single upper- or lower-case character) follows the document ID number.

Editing - Text editing features include a format line which can be easily modified, Automatic Centering, Indent, Insert, Delete, Search, Replace, Move and Copy. Text manipulation is further facilitated by Super Copy and Super Move, which allow text rearrangement between documents.

Print Document - The Print Document menu establishes the desired document print standards. Choices made within this menu control the number of copies to be printed, pages to be printed, page numbering, lines per page, type of forms being printed and other draft-related decisions which affect the appearance of a printed document.

Special Print Functions - One function allows a document to be printed directly from an archive diskette (no filing to system disk necessary). Another allows an operator to view a graphic representation of each page of a document before printing.

Document Index - Creates a CRT display of all the documents in any library, along with the operator, author and comments relating to each of those documents.

Document Filing - Document storage, retrieval and back-up is handled by filing and copying onto floppy diskettes (archives), which can currently contain up to 116 pages of text. Document compatibility with Wang Office Information Systems is possible, depending upon the diskette medium employed.

Utilities - Allow the operator to display the current system configuration, change the system date and recover documents from damaged diskettes.

Supervisory Functions - Includes a wide range of Supervisory Functions which give the key operator the ability to set terminal, printer and archive defaults, and to configure and maintain document libraries and volumes.

Glossary - Allows commonly used words, phrases, or standard paragraphs to be stored and instantly retrieved and displayed on the screen through a two-keystroke sequence.

ENHANCEMENTS PLANNED FOR SECOND RELEASE (Planned for Release-Fall 1981):

Background Printing - The ability to print a word processing document without tying up a terminal.

Merge Print - The ability to combine two documents in printed output. For example, a mailing list with a form letter.

Repagination - Allowing the system to determine where page breaks will appear in a document without operator intervention.

Integration of Word Processing and Data Processing - Subroutines that will allow data processing applications to access word processing documents.

Global Hyphenation - Scans through an entire document to allow hyphenation decisions and produce more professional looking copy.

Print Document Index - To provide a hard copy of the documents stored on a disk or diskette.

Wang's Office Automation Products

Comparative Analysis

| <u>Operator Input/Edit Aid Key</u> | <u>OIS/BASIC</u> | <u>VS/WP</u> | <u>2200/WP</u> |
|---|------------------|--------------|----------------|
| Indent | yes | yes | yes |
| Page | yes | yes | yes |
| Center | yes | yes | yes |
| Decimal Tab | yes | yes | yes |
| Format | yes | yes | yes |
| Merge | yes | yes | Release II |
| Note | yes | yes | yes |
| Stop | yes | yes | yes |
| Search | yes | yes | yes |
| Replace | yes | yes | yes |
| Global Search | yes | yes | yes |
| Global Replace | yes | yes | yes |
| Copy | yes | yes | yes |
| Move | yes | yes | yes |
| Super Copy | yes | yes | yes |
| Super Move | yes | yes | yes |
| Command | yes | yes | yes |
| Superscript/Subscripts (not displayed on screen) | yes | yes | yes |

| <u>Operator Input/Edit Aid Key</u> | <u>OIS/BASIC</u> | <u>VS/WP</u> | <u>2200/WP</u> |
|------------------------------------|------------------|--------------|-------------------------------|
| Go To Page | yes | yes | yes |
| Underscore | yes | yes | yes |
| Delete | yes | yes | yes |
| Insert | yes | yes | yes |
| Hyphenation (Global) | yes | yes | Release II Non-interactive |
| Repagination | yes | yes | Release II |
| Header/Footers | yes | yes | yes |
| Glossary | yes | yes | subset |
| Decision Processing | yes | yes | no |
| Advanced Functions | yes | yes Oct.'81 | no |
| Dual Column | yes | yes | no |
| Justification | yes | yes | yes |
| Half Justification | yes | yes | no |
| Horizontal Scroll | yes | yes | Nov.'81 |

| | <u>OIS/BASIC</u> | <u>VS/WP</u> | <u>2200/WP</u> |
|---------------------------|------------------|-------------------------|---------------------|
| Sort | yes | yes | Not currently |
| Math | yes | yes | no |
| Password Security | yes | yes | yes |
| Document Archiving/Filing | yes | yes | yes |
| List Processing | yes | not currently available | Aug. '81 Data Merge |

Utilities:

| | | | |
|------------------|-----|-----|------------|
| Duplicate Disk | yes | yes | yes |
| Library Catalog | yes | yes | yes |
| Recover Diskette | yes | yes | yes |
| Document Sort | yes | yes | Data Merge |

File Utilities:

| | | | |
|-----------------------------|-----|------------|-----|
| Single/Multiple File Copy | yes | yes | yes |
| Single/Multiple File Delete | yes | yes | yes |
| Assign Password | yes | equivalent | no |

Supervisory Functions: (Password Protected)

| | | | |
|-----------------------------|-----|---------------|-----|
| Change Doc. Password | yes | yes | yes |
| Clear In Use Condition | yes | yes | yes |
| Create Library | yes | yes | yes |
| Rename Documents | yes | yes | yes |
| Set Workstation Defaults | yes | yes | yes |
| Document Summary Collection | yes | not currently | no |

| | <u>OIS/BASIC</u> | <u>VS/WP</u> | <u>2200/WP</u> |
|--------------------------------------|--------------------|----------------------------|------------------------------|
| <u>Printers</u> | | | |
| Final Quality Printer | 35 cps | 35 cps | 30 cps |
| Final Quality Wide Carriage | 35 cps | 35 cps | 30 cps |
| Matrix Printers | 120 cps 200 cps | 120 cps 200 cps | 70 cps 120 cps 200 cps |
| Line Printers | 425 lpm | 430 lpm 600 lpm | 400 lpm 600 lpm |
| Band Printers | | 250 lpm 600 lpm | 250 lpm 600 lpm |
| Twin Head Printer | yes | no | no |
| Intelligent Image Printer | yes | not currently | no |
| <u>Printer Options</u> | | | |
| Twin Sheet Feeders | yes | yes | yes |
| Bi-directional Pinfeed Forms Tractor | yes | yes | yes |
| Envelope Feeder | yes | not currently available | not currently available |
| Plastic Print Wheels | yes | yes | yes |
| <u>Output Peripherals</u> | | | |
| Typesetter 48Z | yes | yes | not currently available |
| Paper Tape Interface | yes | no | yes |
| OCR Interface | yes | via Bisynchronous TC | via Bisynchronous TC |
| Magnetic Card Reader | yes | no | no |

Telecommunications

OIS/BASIC

VS/WP

2200/WP

Bisynchronous

yes

yes

yes

Asynchronous

yes

no

yes

3270

yes

yes

yes

Mailway

yes

yes

Dec. '81

Keyboard Features

Numeric keypad

optional

yes

yes

Multilingual

optional
French, German,
Spanish, English
with all char-
acters and the
language for
memos

support
English, Dutch and
German available
Aug. '81

U.K., German, French,
Latin American,
Dutch and French
Canadian will be
available with Release II

TARGET MARKETS AND SUGGESTED SALES STRATEGY

We have targeted three distinct markets for 2200/WP: our currently installed 2200 user base, first-time user and major accounts. Although these markets differ in size, number of employees and annual sales revenues, they share certain buying criteria as dictated by industry trends.

Your selling edge is Wang's ability to meet these criteria.

CURRENTLY INSTALLED 2200 USER BASE

2200/WP to our currently installed 2200 user base means the opportunity to realize the same benefits their 2200 provides them in processing data:

- . Improved customer relations through timely, accurate and personalized correspondence.
- . Increased customer satisfaction via Wang's demonstration of continued commitment to the information processing requirements of its customer base.
- . Elimination of the expense of hiring additional staff, or having employees work overtime during peak work periods to generate mailings, etc.
- . Enable employees to be more productive by giving them a total system to get the job done.

Sold as "value added", the availability of word processing on the 2200 is a cost-effective method of doubling the functionality of the initial system at low incremental cost., e.g:

| | | | |
|----------------|-----------|------------|-----------------|
| Initial system | 2200 VP-8 | 32K CPU | \$ 4,500 |
| | 2270A-1 | Diskette | \$ 3,200 |
| | 2236DE | Terminal | \$ 2,700 |
| | 2231-W-2 | Printer | \$ 3,200 |
| | 22C32 | Controller | \$ 1,000 |
| | 2260C 1/2 | 5 MB Disk | \$ 9,200 |
| | | | <u>\$23,800</u> |

UPGRADE TO WP

| | | |
|------------------------------------|--------------------------|----------|
| Conversion to combined workstation | | \$ 1,000 |
| 2200/WP | | \$ 2,000 |
| 2281W Printer | | \$ 4,500 |
| | Total booking dollars | \$ 7,500 |
| | Total commission dollars | \$ 375 |

* Please note all prices are U.S. dollars.

2200/WP also serves as a solid base for enhancing the initial system via additional terminals and memory upgrades to meet the expanded data and word processing needs of your installed base.

| | | | |
|----------------|-------------|--------------|-----------------|
| Initial system | 2200 MVP-16 | 64K CPU | \$ 9,000 |
| | 2270A-1 | Diskette | \$ 3,200 |
| | (2) 2236DE | Terminals | \$ 5,400 |
| | 2236 MXD | Controller | \$ 1,200 |
| | 2231W-2 | Printer | \$ 3,200 |
| | 22C11 | Controller | \$ 300 |
| | 2280-1 | 26.8 MB Disk | \$19,000 |
| | | | <u>\$41,300</u> |

ADD

| | | |
|--|--------------------------|-----------------|
| 2236DW Workstation | | \$ 3,500 |
| 2200/WP Software | | \$ 2,000 |
| 2281W Printer for letter quality output (Connected to DW workstation) | | \$ 4,500 |
| Memory upgrade to 128K | | <u>\$ 5,000</u> |
| | Total booking dollars | \$15,000 |
| | Total commission dollars | \$ 750 |

* Please note all prices are U.S. dollars.

FIRST-TIME USER

Today, the first-time user is rapidly recognizing the fact that he can not afford to run his business without some form of office automation. He is concerned with cost - the initial investment.

Successful sales strategies in closing the first-time user involve stressing the expansion capabilities of the hardware, insured by commonality of the programming language, the peripherals and the VP based architecture.

More importantly, Wang's strategy involves a total solution sell-hardware and vendor developed application software. Now you have an additional sales strategy - add word processing to your list of solutions. 2200/WP is a software package developed by the leader in word processing, the industry recognized expert - WANG. It is designed to enhance the data processing power, ease of use, and multi-functional design of the 2200 Series small business computer.

When selling small business systems, especially to the first-time user, there are three predominant issues which confront the sales rep. These are selling relatively low cost items at a high enough volume to meet quota, supporting the first-time user who traditionally demands costly, timely hand holding and quality application software that meets their office automation requirements.

The Wang sales rep can effectively meet these issues in the following manner:

First, selling relatively low cost items at high volume:

- . Maximize your sales contacts via seminars (For example: Introduction to Automation and Ledger Card Replacement Seminars).
- . Leverage your vendor and OEM network in the application selling portion of the sales cycle.

Second, meeting the support requirements of the first-time user:

- . Sell the WP self-training packages, the Corporate Systems Support Center and your vendor to support and train your users.
- . Sell the self-diagnostic features of the DE/DW terminal and the VP/MVP based operating systems.

Third, the availability of quality, proven, fully documented application software:

- . Sell the cost effectiveness of "off the shelf" software and our network of software consultants who are cross licensed to provide local support and modifications, if required.

- . Sell the availability of word processing as a software application - emphasize the advantages of word processing over the traditional office typewriter, such as:
 - . elimination of re-typing repetitive information, as with contracts, shipment acknowledgements and lengthy documents which are updated frequently.
 - . the ease of error correction.

All at the low incremental cost of \$2800.*

(\$800* more for the multi-function workstation and \$2000* for the software)

*U. S. Price

MAJOR ACCOUNT MARKET

The major account market is characterized by a recent trend toward distributing their information processing requirements functionally by task, geographically by location and organizationally by department for increased effectiveness and control.

Wang's 2200 family of small business systems offers unparalleled capabilities as distributed processors to meet the demands of this multi-functional environment.

Sell the advantage of a remote processor, which can perform both data and word processing functions, while concurrently providing interactive inquiry/response capability to the major accounts mainframe through 3270, and be monitored and regulated by a central control operator from the home office, all concurrently.

First, the demand for multi-functional central processing units:

- . Remote Control and Maintenance System (RCM), whereby a central control operator can monitor remote 2200 systems by inspecting each system, loading software and running tests and diagnostics.

Benefit - Increased cost effectiveness and control for the large distributed processing environment. RCM reduces the cost of software distribution for transporting program changes and updates and the concern of unauthorized personnel modifying the system configurations. A major benefit of RCM is the ability to save large amounts of time and manpower cost in diagnosing and correcting software errors on remote systems.

- . Ability to load data processing application software, word processing software, and communication emulation software from the same terminal.

Benefit - A stand-alone data processor; a stand-alone word processor; an interactive display unit emulating an IBM 3277 terminal each functioning independent of the total system, while at the same time sharing costly components of the total system such as printers and storage mediums.

Second, the demand for enhanced communication capabilities:

- Wang's 2200 family of small business computers has the most comprehensive communications options for a system in its price range available on the market today.

| | |
|------|------|
| TTY | 3741 |
| 2741 | HASP |
| 2780 | 3275 |
| 3780 | 3270 |

Benefit - Provide communication capabilities in both decentralized or distributed environments Wang to Wang or Wang to non-Wang systems.

Third, the demand for fast, reliable, high density storage mediums:

- 2280 Disk Multiplexer, whereby multiple users share a single resource.

Benefit - Increased reliability via the simultaneous posting of information to a back-up disk drive; Increased storage capacity via the ability for up to three VP, LVP or MVP CPU's to access 480 million characters of information on-line.

SALES POLICY

- . All Wang sales personnel who currently have 2200 product responsibility may sell 2200/WP. Commissions on hardware, software and supplies will be paid at the existing 2200 product line schedule in the North American Compensation Plan.
- . 2236DW integrated workstations can be purchased, leased, or rented. However, the 2200 Word Processing Software System is available for purchase or lease only.
- . System Houses that currently have 2200 product responsibility contracts may add the 2236DW and 2200 Word Processing Software System to their contracts by filing a contract addendum. Discounts on hardware will be at the rates currently in their existing contracts. System Houses will be expected to support and train their customers. Multiple installation software licenses are available. 2200/WP software is not subject to discounts. System Houses are expected to sell 2200/WP along with their own value added application software. In no circumstances should 2200/WP be sold as a word processing only application.

SUPPORT POLICY

SCOPE

Covers the WP/2200 application post-sale responsibilities performed by the Field Technical Support organization exclusive of hardware support provided by Customer Engineering.

RESPONSIBILITIES

WANG

- . Will provide customer one (1) self-instructional package per customer site.
- . Will deliver a complete set of current updates to user - reference documentation.
- . Will provide a toll-free telephone number (800-225-0970) for customer calls for support, questions and problems.
- . Will provide on-site technical assistance during normal working hours at a rate of \$35.00 per hour, with a minimum of 4 hours per call, and an additional charge for reasonable traveling and expenses outside Wang's support area.
- . Will provide the customer with software maintenance updates.
- . Will provide the customer new feature updates to software at a charge of 10% of its initial cost. The exception to this policy is Release II for which there will be no upgrade charge.

CUSTOMER

- . Will train two (2) people with the self-instructional package.
- . Will maintain current releases of documentation and software.
- . Will issue appropriate billing authorization before on-site technical assistance can be supplied.

WANG VARIATION AUTHORITY

- . Approval of Area Director and written notification to Corporate Systems Support Center.

POST-SALE FIELD RESPONSIBILITIES

MARKETING REPRESENTATIVE

- . To obtain appropriate billing authorization from customer before on-site technical support is scheduled.

CUSTOMER SUPPORT ANALYST

- . To provide on-site customer support assistance when approved by management and/or authorized by customer.
- . To prepare site visit report which will contain nature of assistance, solution, future actions, portal to portal time spent, and any related expenses.
- . Responsible for providing all updates to software and documentation to customer in a timely manner.
- . To route site visit report to Technical Support Center, Marketing Representative and any other appropriate personnel.
- . Insure that all on-site technical support is billed.

CORPORATE SYSTEMS SUPPORT CENTER

- . 800 number will be provided for customer telephone assistance (800-225-0970).
- . Respond to all customer calls.
- . Timely reporting of all customer calls to Marketing Representative and appropriate personnel.

PRICING

- . 2236DW Integrated DP/WP Terminal \$ 3,500.00
- Monthly maintenance \$ 28.00

- . Software package licenses available
 - Quantity 1 \$ 2,000.00 each
 - Multiple site license \$10,000.00
 - Vendor license &
 System House license An update to the pricing policy for Vendors and Systems Houses will be available prior to 8/31/81.

Following Release II there will be a 10% software upgrade charge for any future release of the 2200 Word Processing Software.

TERMINAL UPGRADES

- . UJ-5020 - 2236DE to 2236DW \$ 1,000.00
plus installation

Please note that there is no upgrade from 2236D terminals to 2236DW terminals.

ORDERING INFORMATION

- . Product Part Numbers

| <u>Part Number</u> | <u>Description</u> |
|--------------------|--|
| 177-3249-DW | 2236 DW Integrated DP/WP Terminal |
| 195-2174-3 | 2200 Word Processing Software on single-sided single density diskettes (MVP/VP) |
| 195-2174-5 | 2200 Word Processing Software on double-sided double density diskettes (LVP/SVP) |

DELIVERY

Available to all North American cities - March 1981.

DEMONSTRATION UNITS

2236DE workstations will be upgraded to 2236DW integrated workstations. Consignment requests should be made for workstation upgrades (UJ-5020) and 2200 word processing software on appropriate diskettes.

20 QUESTIONS - SALES REPS

1. Q. What is the principle market thrust of the 2200/WP?
 - A. Wang word processing on the 2200 is geared to fill a gap in the marketplace for those prospects requiring a small business system with powerful data processing capabilities, application software and word processing, as well as the major account with similar needs in a distributed or branch environment.

2. Q. Are enhancements to the initial release planned?
 - A. The second release of 2200/WP will follow in summer or early fall of '81 and include global hyphenation, repagination, horizontal scroll, document sort, background printing and integration of word processing and data processing.

3. Q. Who can sell 2200/WP?
 - A. Any sales rep who is currently selling 2200 Series systems or authorized software vendor or systems house.

4. Q. Will there be any charge for upgrading the installed 2200/WP software as subsequent new features are announced?
 - A. Yes, after Release II the upgrade charge will be 10% of the initial cost of the software.

5. Q. What are the differences in capabilities of the glossary functions between OIS and 2200/WP?
 - A. The 2200/WP glossary function will limit the user to recall of text only. This means that phrases, paragraphs, and formats can be stored and recalled but no command strings, mathpak or decision-processing will be supported. Glossaries in the 2200/WP system will be stored in a letter library and must be re-verified when transferred to an OIS system and vice versa.

6. Q. Are there any limitations when inserting, deleting, copying or moving text?
 - A. At this time, these operations will be limited to working with one full page at a time until Release II.

7. Q. Is there any limit to the size of a page?
- A. Yes, a page will be limited to 4,000 characters. When inserting text, a warning will be issued to the operator when the limit is reached.
8. Q. Can the Wang 2236DW work as a remote terminal?
- A. Yes, the functionality of the 2236DW will allow it to function as a remote data processing terminal; however, the use of word processing is not recommended due to the available speed of asynchronous communications.
9. Q. Does the 2200/WP keep keystroke statistics?
- A. Yes, although time statistics will be saved and displayed, summary statistics will not be updated initially.
10. Q. Is document filing accomplished in the same way as a OIS?
- A. At this time, documents can be filed and retrieved one at a time (Single) or within a range of document numbers (Range). Release II will allow multiple selected document filing and retrieval.
11. Q. Which printer should be used on the 2200/WP system?
- A. Any printer available for use on the 2200 Series can be used with the 2200 WP; however, it is suggested that a 2281W or 2281WC be used so that final quality output can be achieved for word processing documents.
12. Q. Can the 2236DE be upgraded to a 2236DW?
- A. Yes, at a cost of \$1,000 plus installation.
13. Q. Can the 2236D be upgraded to a 2236DW workstation?
- A. No.
14. Q. Can documents be transferred via archive diskettes between OIS, VS/WP, WPS and 2200/WP?
- A. Yes, when a single-sided single-density, hard sector diskette (white label) is used to archive. This diskette media is supported by the 2270A series diskette drives.

15. Q. Can a printer be connected locally to a 2236DW?
 A. Yes, a terminal printer can be connected directly to the 2236DW.
16. Q. How many pages can a document be?
 A. Currently, 116 pages.
17. Q. What types of printwheels can be used on the 2281W printer?
 A. All 10-pitch and 12-pitch printwheels can be used on the 2281W and WC. Proportionally spaced printing is not supported. The printwheels may be plastic or metal.
18. Q. Is the 2200/WP page-oriented or document-oriented?
 A. Like the WPS, OIS and VS/WP system, the 2200/WP system is document oriented.
19. Q. What communication support will be provided for document transmission?
 A. The 2200 system supports a broader range of TC options than any other system of its size:

| | |
|------|------|
| TTY | 3741 |
| 2741 | HASP |
| 2780 | 3271 |
| 3780 | 3274 |
| WPS | 3275 |

20. Q. What kind of support will Wang supply the 2200/WP customer?
 A. (1) 1 self-instructional package per customer site.
 (2) Complete set of user reference manuals and the updates.
 (3) A home office toll-free telephone number (800-225-0970) for customer calls for support, questions and problems.
 (4) Provide on-site technical assistance during normal working hours at \$35.00/hour with a minimum 4 hours per call, plus charge for traveling and expenses outside Wang's support area.
 (5) Provide new feature updates to the original software at a charge of 10% of the initial cost of the software.

OPERATION DIFFERENCES
BETWEEN 2200 WORD PROCESSING
AND OIS/WP

OPERATIONAL DIFFERENCES
BETWEEN 2200 WORD PROCESSING
AND OIS/WP

Text Editor

- I. When Edit Old Document has to recover an improperly closed document, a message is displayed on the CRT indicating the program's progress in the recovery.
- II. The document summary screen in Edit Old Document and Create New Document has some minor cosmetic differences from the OIS.
- III. When transferring control from one page to another (including Next and Previous screen across page boundaries) there will be a noticeable pause; a message on the CRT will indicate that the system is saving and loading pages.
- IV. There will be a pause whenever a Delete, Format, Search, Replace, Copy, Move, Super Copy or Super Move keys is struck.
- V. The 2200 Word Processor displays no end-of-text character (the dotted space), although the cursor will be sent to the proper place (i.e., the position for entry of the next character) when the cursor is moved to the end of text and the "(End of Document)" message is displayed.
- VI. The center function is noticeably slower than on the WP and OIS systems.
- VIII. Page size will be limited to 4096 characters. When inserting text, the message "Page "Full" will appear when the operator reaches the limit. When retrieving from archive, page breaks will be inserted at the nearest word break if necessary to preserve the limited page size; a warning will be displayed to the operator.
- IX. Glossaries will be text recall only. No command strings, decision processing, or mathpak will be supported. The traditional glossary library of space will not be supported. Glossaries will be stored in letter-name libraries. Because the scheme for storing verified glossaries is different from the OIS, any glossary documents transferred from the OIS will have to be re-verified on the 2200, the "verified glossary" is deleted separately from the "source" glossary and glossaries can be edited at one terminal while they are attached at the same or another terminal. It is not possible to attach or detach during edit.
- X. Keystroke statistics will use a slightly different approximation than OIS/WP. Until a time-of-day clock is generally available through the 2236 MXE controller, time statistics will be saved (when recalled from archive) and displayed, but not updated.

- XI. Single character inserts and deletes will be allowed while in Insert mode, and Overstrike mode. This will be invoked by the shift of the Insert and Delete keys.
- XII. Horizontal scroll will be deferred to Phase II. At best, it will be much slower than on the OIS because of communication time between the CPU and the terminal.
- XIII. Command Note, Global Hyphenation and Repagination will be deferred to Phase II.
- XIV. In Phase I, Insert will be terminated when a Page character is struck. In Delete, and while specifying text to be copied or moved, the system will not allow the cursor to move beyond the end-of-page character.
- XV. Passwords cannot be entered during editing.
- XVI. In Phase 1, keying FORMAT while in the format line will not bring in the format line from the prototype document.
- XVII. In Phase I, keying TAB as a line end in an indented line will not bring you back to the indent. It will end the line the same way RETURN does.
- XVIII. Some minor differences in messages are listed on the following page.

| <u>ACTION:</u> | <u>OIS</u> | <u>2200</u> |
|---|---|--|
| COMMAND-MOVE, INSERT and DELETE at End of Text | 'Move Cursor' | 'Unknown Command' |
| COMMAND-BACKSPACE at End of Text | 'No Next Screen' | 'Unkown Command' |
| INSERT at End of Text | 'Insert What' | 'Move Cursor' |
| In Format Line press spacing character when not at spacing position | 'Move Cursor' | 'Invalid Key - Ignored' |
| In imbedded Format Line press FORMAT | Replaced with Page Format Line | 'Invalid Key - Ignored' |
| In Format Line press GLOSSARY | 'Which Entry' | 'Invalid Key - Ignored' |
| In Format Line press COMMAND | 'Which Command' | 'Invalid Key - Ignored' |
| Press DELETE in Page Format other than Page 1 | Entire page is deleted | 'Invalid Key - Ignored' |
| SEARCH-UNDERSCORE (SHIFT/HYPHEN) | Cancels SEARCH and returns user to normal editing | Underlines the next character entered and executes search on that character |
| SEARCH-PAGE | Cancels SEARCH and returns user to normal editing | Executes SEARCH for PAGE graphic () |
| SHIFT/REPLACE-PAGE | 'Cannot Globally Replace that' | 'Invalid Key - Ignored' |
| Press NEXT SCRN at last screen | 'No Next Screen' | If cursor is not on last character of screen, it is moved there. Otherwise, 'No Next Screen'. |

(continued)

ACTION:

OIS

2200

Press PREV SCRN at
last screen

'No Prev Screen'

If cursor is not on first
character of screen, it is
moved there. Otherwise,
'No Prev Screen'.

Print

- I. In Phase I, printing will be done in foreground only, i.e., the terminal will be tied up until the print job is done. While the document is being printed, it will also be displayed on the CRT, to show the operator that the printer is working, and has not jammed or de-selected.
- II. All of the items on the present OIS Special Print Functions menu will be deferred to Phase II.
- III. Two new items will be placed on the Special Print Functions menu. Print From Archive Diskette will function in every way like the normal print except that the source of the document will be an archive diskette. CRT image of Printed Document produces a compressed image of the printed page showing the relative location of text on the page. This can be used to help in formatting and positioning text on the printed page.
- IV. It is not possible to sense top-of-page to trigger reprinting of a page.
- V. Stop codes will not be honored (although they may be entered in the editor).
- VI. The operator must enter a valid printer number; the system cannot default printer number.
- VII. The character set and pitch parameters have no effect on the print function. Pitch is selected by a switch on the printer, and only one (standard) character set is supported.
- VIII. The system does not allow the operator to specify delete after printing.
- IX. A CRT-only option is allowed for device specification.
- X. Bold print, double underscore, and overstrike with slash will be supported.
- XI. Multiple levels of superscripts and subscripts will be supported.

Supervisory Functions

I. The following system-management functions will be available from the supervisory functions menu:

- . Clear In-Use Condition
- . Alter Passwords
- . Terminal Default Assignments
- . Archive Assignments
- . Peripheral Device Selections
- . Volume Maintenance
- . Library Maintenance
- . System Disk Assignment
- . Catalogue Display/List
- . Transfer Archive
- . Recover Archive
- . Rename Document
- . Delete Glossary
- . Recover Damaged Volume (Deferred to Phase II)
- . Advanced Filing Functions (Deferred to Phase II)

General

- I. Menus will incorporate the OIS/DOS feature of an implicit search by the first letter of the item name. The currently selected item will be highlighted. Initially, time will not be displayed, and date will be accurate only if an operator manually changes it.
- II. Because the typical 2200 has more than one diskette drive, there will be a Supervisory Function to assign logical names to the drives. Any other function which references archives (e.g., document index, document filing) will request the name of the archive to be used; a default value will be supported as a terminal default.
- III. On general option and text-entry screens, TAB will advance the cursor to the next field. Shift TAB will move the cursor to the previous field. On option-selection fields, the current selection will be highlighted (high-intensity); a selection can be made by pressing the first character of the item name. The cursor can move to any spot on the CRT screen.
- IV. Because of character set limitations, we will not be able to support underlined NOTE and STOP codes.
- V. When entering document number in Edit Old Document, Print Document, and Document Filing, you must press execute after entering the document ID.
- VI. The next and previous screen keys are not active when entering document ID.

Document Filing

- I. The multiple filing option will not be supported until Phase II.
- II. The range of filing option will request starting and ending document ID's rather than starting ID and number of documents.
- III. The archive location must be entered.
- IV. OIS compatible archive diskettes must be formatted before the Prepare New Archive function is run. On the WP and OIS systems, the formatting is part of the Prepare function.

Document Index

- I. The "Which Ones" column will support By Title and By Comment, in addition to the usual WP/OIS options.
- II. Because there is no background printing, the printers option is removed.
- III. The archive location must be entered whenever indexing an archive.

Some Limits of 2200 WP:

| | |
|--|--|
| Number of pages per document: | 116 text pages, plus header, footer and work pages. |
| Search: | 125 characters |
| Replace: | 1024 characters |
| Copy, Move, Super Copy, Super Move: | 4096 characters |
| Format Line: | 80 characters, containing up to 39 tab positions. Any format line greater than 80 characters (e.g., retrieved from OIS archive) will be truncated to 80. |
| Page Size: | 4096 characters. Any pages larger than this will be split when retrieved from archive. |
| Copy, Move, Super Copy, Super Move, Insert, Delete: | All can handle up to the end of the page (including the page break character), but they cannot span pages in a single operation. |
| Copy, Move, Super Copy, Super Move, Global Replace: | Will abort (with a message) but without performing the action, if the operation would result in a page larger than 4096 characters. |



LABORATORIES, INC.

PRELIMINARY MARKETING RELEASE

TO: DISTRIBUTION
FROM: 2200 SYSTEMS MARKETING
SUBJECT: IDEAS RELEASE 2
DATE: JULY 1, 1981

Wang Laboratories is pleased to announce IDEAS Release 2, a greatly enhanced version of IDEAS (Inquiry Data Entry Access System) first released in January, 1980. Like the first release of IDEAS, IDEAS 2 is a powerful application development tool to aid programmers in the creation of software systems.

IDEAS 2 can be used to create and maintain data files, generate sophisticated screen formats and menus with or without password protection, solicit and validate operator-entered data, and produce complex reports.

IDEAS Release 1 and Release 2 are Wang-developed and supported software packages which offer state-of-the-art software technology not previously available on the 2200. As such, IDEAS adds power to our 2200 product line so that it provides increased sales potential by spanning a broader range of applications and markets.

Benefits to Sales Force

How can IDEAS help you? Because it reduces the programming effort required to produce exact, comprehensive, well-documented application software and reports in a user-designed format.

IDEAS

- . Increases penetration (via your Vendor Network) of the First Time User Market.
- . Establishes your position in the Major Account Market.
- . Reinforces your relationship with your Vendor Network.
- . Provides Add-on Software Sales to your Customer Base.

The bottom line? Increased \$\$\$ in System and Software Sales with decreased costly, time-consuming hand-holding and support.

Market Position

Because IDEAS was designed to be an applications development tool, it means many things to many people.

First, as an offering to our vendor network.

By facilitating our vendors' development efforts, we increase their productivity while at the same time decreasing their cost.

These savings in time and money can be passed on to your customers. Your selling time is maximized both in profit and productivity.

Depending on the level of programming expertise, IDEAS can create complete systems for general accounting applications such as Accounts Payable, Receivables, and General Ledger.

IDEAS can inquire into countless inventory control systems, generate mailing lists of many kinds - from personnel files to customer listings - and through its support of mathematical functions, provide statistical test scores, totals in financial reports and budget projections.

Armed with IDEAS, you can provide your vendors with a data management utility which not only increases your penetration of the first-time user market, but also provides you with the opportunity of add-on software sales to your Wang accounts with minimal development time and effort.

Second, as an offering to Major Accounts.

As an application development tool, IDEAS is attractive to the Major Account Market either for software development within individual departments in a decentralized processing environment or for data transmission via telecommunications to the host computer in a distributed processing environment.

The addition of IDEAS to Wang's family of software offerings establishes Wang's ability to provide sophisticated EDP/MIS professionals with the hardware and software utility tools to perform tasks unique to their environment.

Now you can provide large data processing shops with a solid base which can be easily built into a comprehensive, maintainable system.

The key here is maintainable. Remember, IDEAS handles all disk I/O, management, and storage automatically.

As the small or mini computer increases significantly in capability and performance due to advances in computer technology - programming becomes more complex. By providing you with a software offering that simplifies application development, IDEAS enhances your market opportunities both to the first-time user and the sophisticated data processing shop.

Included in this package is a description of the IDEAS Release 2 enhancements, and a comparison between IDEAS Release 1 and Release 2.

IDEAS Release 2 offers extensions of almost all the field and file sizes of IDEAS. For example, record length has been increased from 1008 to 4095 bytes, fields per file from 128 to 249, files per report from 4 to 7, and files per screen from 1 to 7. In addition, IDEAS Release 2 allows for the creation of subscreens and "help" screens, more extensive field checking and processing during data entry, and incorporates usage of many of the graphic capabilities of the 2236DE and 2236DW terminals.

IDEAS Release 2 includes a Sort utility, enhanced security features, and easier methods of telecommunicating data files than the first release.

IDEAS RELEASE 2 ENHANCEMENTS

1. Much less BASIC coding will be required by the vendor or the user's programming staff. This is because the IDEAS-generated data entry programs are much more flexible and complete. Subscreens can be created, and screens can be chained together. There is more control over fields and the flow of processing through the fields.
2. Greatly enhanced security is provided; any combination of User ID, User Class, and password security can be used, or none at all.
3. Applications will be easier to revise. For example, it will be able to easily add or delete fields from a record, without worrying about the record becoming garbled. Also, the user will have direct control (if desired) over the position of each field within a record.
4. It is easier to organize and document a whole IDEAS application, because each component contains optional fields named "Version," "Application," and "Function." For example, one could do a "batch documentation" of all data files, screens, data entry programs, menus, and reports belonging to Application "XYZ."
5. It will be much easier to move back and forth between the development phase and the actual running-of-an-application phase. It is possible to move directly from an application menu to the main IDEAS development menu, and back.
6. IDEAS 2 takes advantage of Phoenix and Winchester disk handling; data records are blocked so as to maximize accessing speed.
7. "START" modules can be "chained" together, allowing greater flexibility at run time. One application menu could contain several other applications.
8. IDEAS 2 contains a Sort utility that can be used to create an interactive sort program with parameters that can be modified by the operator at run time. The program can sort multiple files, and can produce a key file or pointer file.

9. Many of the "maximums" have been increased: record size, number of fields, field length, key length, file types, files per screen and report, modulês per menu, and options per field. (Details are included later in this release.)
10. IDEAS 2 will be easier to support and debug, because the use of \$GIO and DATA SAVE/LOAD BA statements has been minimized, and because there is no more T compatible code.
11. Applications will be more directly integrated to TC. TC options are included with the field processing options of screens.
12. Only one IDEAS-generated "control file" is created on disk (IDEAS 1 creates four). One of these accompanies each data file.

The following is a list of differences between specific components of IDEAS 1 and IDEAS 2.

DATA FILES

1. There are 7 files types, as opposed to 5 in IDEAS 1. The two new types are "0" - a reference file containing only keys, and "3" - a primary file in which the key contains all the data, so that there is no pointer-to-data needed.
2. Data files are simpler. There are no record blocking or random/sequential options. (With data files optimized for the Phoenix and Winchester disk drives, such options are unnecessary.) There is also only one level of indexing within buckets, as opposed to having both gross and fine index sectors, as IDEAS 1 does.
3. Subfields may be defined to any number of levels of nesting. For example, "Month," "Day," and "Year" could be defined to be subfields of a field "Date." Subfields are also recognized as fields.
4. Several new attributes have been added for fields. They are character type, right justification (Y/N), zero filled (Y/N), number of decimals, and security user class.
5. Key length has been increased from 58 bytes to 80 bytes, and can be made up of 5 fields, instead of 3 fields.
6. Maximum record length has been increased from 1008 to 4095 bytes.
7. The number of fields in a record has been increased from 128 to 249.

DATA ENTRY PROGRAMS

1. Creation of these will operate in a way similar to IDEAS 1. Programs will be more complex, in order to be able to handle the enhanced screens, but this will be transparent to the user.
2. Because the user has direct control over the reading and writing of data records, the many different program types (5) found in IDEAS 1 have been eliminated.

"START" PROGRAMS

1. These will be faster and more easily modified. One will be able to selectively inform a "START" program to open some data files and not others.
2. There will no longer be an associated data file.

MENUS

1. There will be password protection at the program level, as well as (optional) User ID and User Class security.
2. If an item is not available for a user of a certain class, it will not even appear on the menu.
3. There can be up to 17 items per menu, as opposed to 11 in IDEAS 1.
4. There will no longer be an associated data file.

REPORTS

1. Up to 249 fields can be used, and fields can be used more than once. Fields can be selectively retrieved from any data file.
2. More elaborate math results can be used.
3. Reports will be simpler, faster, and more flexible.
4. A design-time execution option will be provided for inclusion in developed applications. This will allow the ultimate user to create his/her own reports and/or generate one-time reports and/or generate one-time reports without an involved system generation process.

SCREENS

1. A screen can access up to 7 different data files, as opposed to 1 in IDEAS 1. Data can be retrieved from and deposited into any one or combination of these 7.
2. Up to 249 total fields will be supported in a screen mask.
3. Sub-screens can be created. The lines of sub-screens need not be contiguous. For example, a screen could load different sub-screens depending upon the contents of some operator modifiable field.
4. "Help" screens can be created. These contain text only. After display, control returns to the original screen.
5. Boxes can be created as part of the screen mask. Underlining can easily be done with a box of zero height.
6. There are 4 display options, as opposed to 2 in IDEAS 1. These are "bright," "blinking," "normal," or "not displayed."

7. A screen can be "chained to" another screen, or another user-written program. Chaining can be invoked at any field on the screen.
8. Whole lines of text can be moved, with or without the fields within them, up or down on the screen mask.
9. Most important, there are 28 field processing options, as opposed to 14 in IDEAS 1. The new ones are:
 - a. Non-bypassable (Y/N). A non-bypassable field is one that cannot be skipped over when the skip-ahead keys are enabled.
 - b. Retrieve/modify (Y/N). A field can be created such that, once it has been saved, it cannot be modified. (Such as an account number.)
 - c. The current date, or time, or "next transaction number," or any hex code can be supplied as a default to any field.
 - d. The user ID, the terminal number, or the screen name can be supplied as a default to any field.
 - e. A field can be a math result, the result of complex calculations involving values from other fields.
 - f. A wide variety of IDEAS-controlled pre-entry processing is available to provide defaults for fields.
 - g. The user can write his/her own pre-entry processing, in the form of subroutines which will be run just before data entry is accepted into a field.
 - h. A field can be tested to see if it conforms to a money format.
 - i. A field can be tested to see if it falls within a specified range, or set of ranges.
 - j. A field can be checked against a table, and the contents of another field can be supplied from the table.
 - k. A wide variety of IDEAS-controlled post-entry processing is available.
 - l. The user can write his/her own post-entry processing, in the form of subroutines to be called after data has been entered into the field.
 - m. A field can be designated as transmittable (TC).
 - n. At screen design time, the user can specify the data file (if any) from which the field comes, so that field specifications like length, type, etc. are supplied by default.

SECURITY FEATURES

1. Each user of the IDEAS utilities and programs is assigned a user ID and one of 16 hierarchical User Classes. Access to programs, screens, and data files can be restricted by User ID or User Class.
2. Programs, screens, and data files can also be protected by passwords.
3. Programs not available to a user are not displayed on IDEAS-generated program menus.

BATCH PROCESSING

1. Record selection criteria can be pre-defined or modified by the user at run time.
2. There is a choice of processing options on each field.
 - a. Set a field equal to another field.
 - b. Set a field equal to a constant.
 - c. Perform math operations on a field.
3. There is a choice of output operations on each record.
 - a. Create and save a new record.
 - b. Update a record.
 - c. Delete a record.
 - d. Combinations of the above. Example: DELETE a transaction record after CREATING a shipping record and UPDATING the inventory master file.

The following is a list of numerical comparisons between various aspects of IDEAS 1 and IDEAS 2.

| | | |
|------------------------------|------|-----------------------|
| Maximum record length | 1008 | 4095 |
| Fields per data file | 128 | 249 |
| Max. field length (files) | 64 | 255 |
| Max. field length (screens) | 64 | 80 |
| Maximum key length | 56 | 80 |
| Maximum fields per key | 3 | 5 |
| Number of file types | 5 | 7 |
| Max. files opened by START | 124 | 60 Primary, 960 total |
| Files per report | 4 | 7 |
| Files per screen | 1 | 7 |
| Display options (screen) | 2 | 4 |
| Modules per menu | 11 | 17 |
| Extra files created by IDEAS | 4 | 1 |
| Options per field | 14 | 28 |
| Types of data entry programs | 5 | Only 1 |

HARDWARE REQUIREMENTS

IDEAS 2 will operate on a Wang 2200 SVP, VP, LVP, or MVP.

Memory: 32K

The system utilities require a 30K partition on the MVP. When running applications, a 17.5K global partition is required and individual terminals may operate in smaller partitions. The memory requirements for individual partitions are dependent on the file characteristics, number of files, and operations to be performed. An algorithm exists for estimating memory requirements (see Operator's Manual).

Disk: A dual standard diskette system is sufficient, a 2270A-2 is strongly recommended. Any larger disk configuration is supported.

CRT: An 80x24 screen is required. IDEAS 2 screens can support many of the graphic features of the 2236DE and 2236DW terminals.

SOFTWARE

The IDEAS system utility diskette enables the generation and documentation of data files, screen masks and programs for data entry and inquiry, report programs and menus.

CAUTION:

Although it is standard practice to keep a backup copy of any disk, this is especially important for the IDEAS System Utilities Disk.

When the system is being used, the PROTECT TAB MUST BE IN PLACE, and the disk may be written upon. This is necessary because of the device address selection procedures.

FILE MANAGEMENT

HIKAM, the IDEAS file management system, combined hashing and indexing techniques to provide excellent performance in both random and dequential storage and retrieval environments.

HIKAM files are formatted under software control in a way which optimizes search and access time, provides efficient disk usage, and eliminates the need for periodic file reorganization. Compression of numeric and alphabetic data is completely automatic.

The maximum file size on an IDEAS-developed system is virtually unlimited, since multi-volume as well as single-volume files are supported. A logical file may span up to eight disk platters on-line. Thus the maximum file size is limited only by available memory and disk space and, in extreme cases, key size.

CAUTION:

IDEAS HIKAM-created files are incompatible with KFAM-created files. For example, IDEAS cannot currently be used in conjunction with GBS.

COMPATIBILITY WITH IDEAS 1

Since the IDEAS 2 file structure is different from IDEAS 1, conversion utilities will be written to convert data files into a format readable by IDEAS 2. In addition, some user-generated code in IDEAS 1 programs dealing with data files may have to be rewritten.

DOCUMENTATION

IDEAS 2 Data Sheet 700-660B
Operator manual available at time of release.

ORDERING INFORMATION

Release Date: August 31, 1981
Delivery Dates: Available at time of release
Package Number: Available at time of release

PRICING:

Available at time of release.

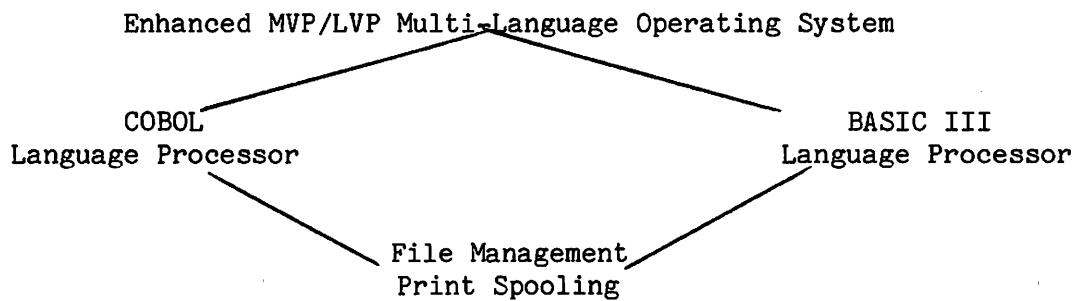
2110E

Marketing Release

2200 Interactive COBOL

Product Description

2200 Interactive COBOL consists of several major software subsystems supported by an enhanced version of the 2200 MVP/LVP operating system. The COBOL Language Processor, BASIC-3 Language Processor, and the File Management System including their related utilities as well as system utilities such as print spooling, and diagnostics are the major components.



COBOL Language Processor Features/Benefits

Feature - Incremental Compilation

Benefit - Because Wang's 2200 COBOL incrementally compiles user programs, it interpretes each statement line as it is entered. This line of text is

- (a) immediately checked for syntax, thereby providing the programmer with immediate validity of text entered
- (b) atomized or compressed into machine language and deatomized or regenerated from this compressed form upon request thereby eliminating storage requirement for both source and object code and providing for efficient memory utilization.
- (c) processed in a manner which utilizes to the fullest advantage the 2200 operating system as a decoding device thereby eliminating the need for timely compiles, debugs, re-writes and re-compiles inherent in compiler based systems' architecture.
- (d) This high degree of memory efficiency results in the ability to load and run large COBOL programs which heretofore has been a significant limitation on small systems supporting COBOL.

Feature - Descriptive Error Messages

Benefit - Because Wang's 2200 COBOL supports descriptive error messages, the programmer's task of locating and identifying errors at resolution (execution time) is simplified via

- (a) execution diagnostics appearing on the screen in English-like messages
- (b) the ability to stop or halt step program execution in order to display and modify the values of variables
- (c) the ability to trace the value of variables through program execution
- (d) the ability to provide extensive documentary information such as cross-reference listings of data items, paragraph names and text strings
- (e) Substantially reduces overall program development time.

Feature - ANSI (X3.23-1974) Level 1 compatible

Benefit- - Because COBOL is a standardized programming language, it enjoys dominance as the most widely used language for data processing applications.

The Wang 2200 series support of the ANSI standard (X3.23-1974) Level 1 version of COBOL provides transportability of existing COBOL programs thereby broadening Wang's network of software suppliers and an incentive to COBOL shops to develop software on the 2200 series..

Feature - VS COBOL Compatible

Benefit - Because a large subset of 2200 COBOL is VS compatible, the 2200 series can be utilized for program development of software for execution on Wang's VS.

For Wang's network of software suppliers, and users alike, support of COBOL on the 2200 series offers a software migration path between the two families.

For a distributed processing environment, networking of VS and 2200 systems is enhanced via the support of a common language.

Feature - Concurrent processing of BASIC-3 and COBOL programs on the enhanced MVP/LVP.

Benefit - Utilization of the proven 2200 architectural design features and operating system ensures the high performance characteristic of the 2200 series not only in terms of storage and speed, but also in terms of execution time diagnostics, debugging features and uniformity.

This uniformity protects the initial investment by user and software supplier alike while enhancing the systems functionality.

BASIC-3 Language Processor

Feature - New Extentions

Benefit - BASIC-3 supports
- Multicharacter Variable Names and Program Labels thereby improving program readability and documentation. For example,

(a) BASIC-3 supports real and longer variable names. Instead of using the variable X for sum, as in BASIC-II, BASIC-3 supports the name "SUM."

(b) BASIC-3 allows branching to paragraph names. On a "GO TO" statement, branch to paragraph "ENTER."

Feature - Numeric Functions and Alphanumeric manipulation.

Benefit - BASIC-3 is a high level language effective in the scientific application area as well as the data processing (commercial business) application area.

For example, BASIC-3 supports floating point data types and related arithmetic operations. The results of which are accurate to 13 digits.

Feature - Improved Program Structure.

Benefit - BASIC-3 supports statements that increase program efficiency, control, and structure.

For example, extended loop control is provided by the statement While/Until. This statement allows statements to be executed repeatedly until the specified condition becomes true or false thereby eliminating the need for "counters."

Additionally, a group of statements can be specified for conditional execution with IF/THEN/ELSE and ERROR constructs.

2200 FILE MANAGEMENT SYSTEM

Feature - Language Independent

Benefit - The file management subset of Wang's 2200 enhanced MVP/LVP operating system can be accessed by either COBOL and BASIC-3 and is therefore language independent. Consequently, other "users" in addition to COBOL and BASIC-3 such as telecommunications and network codes can be interfaced with the file management code in accordance with the specifications.

Feature - Volume Management on the disk.

Benefit - The user (programmer) is free from the responsibility of disk operations such as Data Load BA. Disk operations are controlled by file commands to create, open, close and delete files.

The system automatically maps the location of each file on the disk allowing it to be accessed by name without regard for the particular location on the disk.

File space is dynamically allocated, depending on program need, within limits set up by the user at configuration time. For example, a user can move, rename, or delete files, reuse the space occupied by deleted files and expand and shorten existing files.

Dynamic disk space allocation becomes increasingly important in a multifunction environment supporting data processing, word processing, print spooling, and telecommunications simultaneously. This is feature virtually unique within small computer system.

Feature - All File types supported.

Benefit - Indexed files as well as non-keyed files are supported. Records may be of fixed or variable length. Consequently, Wang's file management system frees the programmer from file access method constraints such as KFAM. Thereby improving the transportable of software supplier's code.

Feature - Increased Security.

Benefit - Passwords are assigned to individual files and each file has several passwords for specific groups of privileges. For example, a file may be assigned an exclusive read only, exclusive read/write shared read/write, shared read only and exclusive modify. This prevents access by unauthorized personnel and prevents possible conflicts with other users having the same file open.

Feature - Enhanced Recovery Procedure

Benefit - The file management system provides duplicate or redundant information storage to aid in recovery of data inadvertently destroyed.

When a file is created, parameters specific to that file such as volume, file name, etc., are stored twice and one may be used to reconstruct the other. For example, an indexed file (including the Catalog file) will normally have the keys redundantly stored both in the key section and in the data section of the file.

Feature - Print Spooling

Benefit - Printer output may be placed in a disk file instead of sending it directly to the printer. Printer usage is thereby optimized to handle total system requirements. In addition, the individual terminal or background program is free from operating at printer speed and the user can continue processing at the terminal without interruption.

Target Markets/Selling Strategy

Major Account/Distributed Processing Market

Wang's 2200 series of small business systems is continually evolving to meet the trends of the distributed information environment. Today, the 2200 series is competitively positioned as an offering to major accounts.

Let's examine those trends and the ways in which the 2200 series' support of COBOL, BASIC-3 and an enhanced operating system meet these trends.

Users of information processing systems are looking to decentralize or distribute their information processing requirements functionally by task, geographically by location, and organizationally by department.

The advantages such a distributed environment affords are three-fold: increased cost effectiveness; increased control; and increased security.

Selling these advantages to prospective users and how these advantages can be realized with the enhanced 2200 MVP/LVP system.

Benefit

1. Increased Cost Effectiveness - How realized with 2200

- The language processors supported by the enhanced 2200 MVP/LVP operating system Option "C", i.e., COBOL and BASIC-3 are incrementally compiled.

The advantages of an incrementally compiled language are three-fold.

- . Elimination of large memory requirements since there is no storage of source and object code.
 - . No timely and costly compiles.
 - . Increased user productivity - Since syntax is checked immediately upon entering a line of code, timely and costly compiles, edits, debugs and recompiles are eliminated.
- 2200 COBOL compatible with VS COBOL

The advantage of such compatibility easily promotes the networking of 2200 and VS systems because they support a common language.

- 2200 COBOL ANSI 1974 level 1 compatible

Since COBOL is a standard programming language, it enjoys wide-use in data processing applications in the commercial environment.

The advantages of such compatibility with the ANSI standard COBOL is that COBOL programmers are immediately productive on the 2200.

In addition, the user can distribute program development by developing programs on the 2200 for execution on the host system or VS. The mainframe, or VS, is therefore, free to process, not develop, and the programmer is more productive on the highly interactive 2200 system.

- 2200 COBOL co-resident with BASIC-3

Wang's implementation of COBOL on the 2200 took advantage of the systems' proven architecture. Consequently, the same high performance is ensured when using COBOL or BASIC-3. In many ways, BASIC-3 is a companion language to COBOL, i.e., when certain COBOL verbs are atomized or compressed, they share the same microcode logic of BASIC-3. No separate procedure language is necessary.

- Print Spooling

Print spooling is part of the operating system. Consequently, no user memory overhead is required.

Print spooling, as supported by the enhanced MVP/LVP system Option "C", optimizes usage of a printer by placing printer output to a disk file.

The cost-effectiveness of such an implementation is realized in two ways. First, print spooling enables printers to be scheduled to handle the total system requirements, and two, it frees the terminal and/or background partition from operating at printer speeds. The user is free to continue processing without costly, timely interruption.

2. Increased Control - How realized with 2200

- The 2200 file management system supported by the enhanced version of the MVP/LVP operating system Option "C" is shared by both COBOL and BASIC-3.
- Wang's implementation of file management on the 2200 series is consequently language-independent. It frees the programmer from the constraints of disk I/O operations.
- The system automatically maps the location of each file, allowing it to be accessed by file name rather than by location on the disk.
- File space is dynamically allocated - insertions, deletions, and moves can be made without programmer intervention.
- Keyed, as well as non-keyed files are supported and records may be of fixed or variable lengths.

3. Increased Security - How realized with 2200

- The distributed processing capability of the 2200 Series is widely recognized via its support of extensive communications.

This ability meets the demand for security against natural disasters, such as fire and flood issues that concern the users of large centrally located processing power.

But there is second level of security that up until this time, had not been adequately addressed - security against unauthorized access to files and the ability to recover from system failures.

- Wang's file management system addresses this second level on two fronts.

The first line of defense is functional - the ability to limit use of specific files to individuals on a privilege basis.

The second line of defense is organizational - the ability to restrict the retrieval and/or update of particular data base records.

- Extensive recovery procedures are inherent in the 2200 file management system. As soon as a volume is mounted, certain integrity checks are performed. If the volume is bad, recovery utilities may be called. Such recovery utilities provide catalog reconstruct ensuring security of the sytem at file level.

File identification parameters are stored twice. This duplication or redundancy assures data integrity.

Software Suppliers - System Houses, Software Vendors

The Wang sales rep deals with the small business computer market - a market inhabited typically by the first-time user or the major account market - inhabited by the sophisticated EDP professional.

Throughout the Wang sales rep's exposure to these markets, he/she has leveraged a resource known as a Systems House or software vendor. This resource is critical to closing business successfully. As a sales strategy in recruiting qualified software suppliers, let's look at markets from their perspective and how the 2200 series effectively addresses these markets.

Software suppliers are concerned with markets which differ in concept from those of the Wang sales rep. These markets are actually application areas of which there are four: the scientific application area, the data processing application area, the text processing application area, and the systems programming application area.

1. Scientific Application Area

Requirements

- . Manipulation of numbers and arrays of numbers, e.g. statistical tabulation, linear programming regression analysis curve-fitting.
- . Often CPU-bound

2200 Solutions

- . BASIC-3's extensive capability for processing both numeric and alphanumeric character strings.

- . Complete set of matrix arithmetic statements.
- . Data manipulation at bit and byte levels.
- . Boolean and binary operations.
- . Fastest execution time of any CPU in its class, reference the Association of Small Business Computers - negating the CPU bound characteristics of this application area.

2. Data Processing Application Area

Requirements

- . Manipulation of files and the generation of reports from these files, e.g., order entry, payroll, administrative support.
- . Require careful program organization and coding.
- . High volume data
- . Input-output bound

2200 Solutions

- . Support of Ansi COBOL 1974 level 1, via a highly interactive incremental compile version - a language noted for its structured program techniques and documenting facilities.
- . Intelligent controllers, e.g., disk cache that minimize the I/O bound characteristics of this application area.
- . Support of 2236DE or DW terminal which facilitates data entry applications via character display attributes, business graphics and human-engineered keyboard.
- . File Management System which is language independent supporting both COBOL and BASIC-3. The file management code frees the programmer from responsibility of allocating disk resources.
- . Dynamic allocation of file space.
- . Provides security at file level and extensive recovery utilities.
- . Supports indexed, as well as non-keyed files and both fixed and variable length records.

- . Print spooler which optimizes printer usage by spooling printed output to disk. This frees the terminal or background partition from operating at printer speed and allows the user to continue processing without interruption.
- . BASIC-3 with proven editing, debugging and data verification features.

3. Text Processing Application Area

- . Manipulation of data in form of free-running text of unstructured data, e.g., letters, memos, mailing lists.
- . The 2200 series supports Wang Word Processing. The 2200 WP package is a direct emulation of the Wang OIS, including workstation keyboard layout and archive diskette compatibility.

4. Systems Programming Application Area

- . Expedite the interface between the programmer and the computer.
- . An operating system that supports incrementally compiled languages - BASIC-3 and COBOL which are highly interactive. The programmer receives immediate syntactical checking upon entering a line of code and descriptive error messages at execution time. Can modify and re-run without wasteful, lengthy re-compilation.

Ordering Information

Option C - Expanded version of the MVP/LVP operating system.

MVP = . Expanded CPU capacity
 . Multi-language capabilities

LVP = . 7 I/O
 . Expanded CPU capacity
 . Multi-language capability

Pricing Information - U.S. List

| | | |
|----------|---|-----------------|
| Option C | \$2,000 additional to current LVP/MVP base models | |
| | e.g. 2200 LVP-8 | \$ 8,000 |
| | Option C | \$ <u>2,000</u> |
| | Total | \$10,000 |

Upgrade to Option C

| | |
|--------------|----------|
| VP - MVP = | \$ 2,000 |
| VP - MVPC = | \$ 4,000 |
| MVP - MVPC = | \$ 2,500 |
| LVP - LVPC = | \$ 2,500 |

plus installation

Model number is therefore 2200 LVPC8D.

Delivery Information

Available November, 1981 - 8 weeks from receipt of order.

Additional Technical Information

Subsequent documentation on the expanded MVP/LVP operating system supporting COBOL, BASIC-3, the File Management System and print spooling will be distributed in the form of a 2200 Technical Bulletin in May, 1981. Updates will follow every eight weeks.

ANSWERS TO QUESTIONS

A. General Operating System

1. What is the release/availability date of the new 2200 COBOL/BASIC-3 operating system?

The new operating system that supports 2200 COBOL and BASIC-3 will be available in December of 1981. However, the hardware needed for this operating system, referred to as option C, will be available in September of 1981.

2. What hardware do I need to use the new operating system?

In order to use the new operating system, you need a MVP or LVP with option C. Option C is priced at \$2000 U.S. on new orders, and is field upgradeable at a charge of \$2500 U.S. on existing systems.

3. Why can't the VP and SVP use the 2200 COBOL/BASIC-3 operating system?

Due to control memory limitations, these CPU's will not support this operating system. However, VPs can be upgraded to MVPs that will support the operating system. The cost of VP to MVP with Option C (MVPC) is \$4000 U.S.

4. Can I use the BASIC-2 operating system and BASIC-2 applications with the option C?

Yes, but not simultaneously with the COBOL/BASIC-3 operating system.

5. Does the 2200 COBOL/BASIC-3 operating system still use the "bank" type architecture?

Yes, banks and partitioning is the same with 2200 COBOL/BASIC-3 as it is with existing operating systems (BASIC-2).

6. What is this "FMS" that I keep hearing about?

FMS is a home office designation of the file management system that is an integral part of the 2200 COBOL/BASIC-3 operating system. It is the operating system macroinstructions that control all access to the disk.

7. What is "INCREMENTALLY COMPILED"?

Incrementally Compiled is the correct terminology for the way the 2200 processor executes user programs. In the past, we have referred to this as an interpretive procedure. Unlike all other vendors, we perform the added step of atomization, which significantly saves user memory and aids in speeding execution time. Thus, we are not a true interpreter, but use even more efficient methods.

8. Will my programs still be atomized with the new operating system?

Yes, for more information see question #7.

9. Will Wang Laboratories still offer and support the BASIC-2 operating system?

Yes, we will continue to offer and support the BASIC-2 operating system.

B. BASIC-3

10. Can BASIC-2 programs work under the 2200 COBOL/BASIC-3 operating system?

Not until some conversion process is performed. Wang is currently investigating the exact procedures and utilities that will be needed to make BASIC-2 programs compatible with BASIC-3. We will continually provide you with updated information on this development effort.

11. What are the differences between BASIC-2 and BASIC-3?

The differences between BASIC-2 and BASIC-3 are:

a) BASIC-3 programs are atomized in a different manner than BASIC-2 programs. Wang will, however, supply a utility to convert BASIC-2 programs to BASIC-3 type atomization.

b) BASIC-2 differs from BASIC-3 in that BASIC-3 utilizes the advanced File Management System which is integrated with the 2200 COBOL/BASIC-3 operating system; and BASIC-2 does not have this feature.

12. What are the advantages of BASIC-3 over BASIC-2?

- a) BASIC-3 will allow the programmer to use multicharacter variable names. For example, NAME\$ instead of N\$.
- b) BASIC-3 will have descriptive error messages. For example, 'FILE NOT FOUND' instead of D82.
- c) BASIC-3 will allow statement labels that can be used with GOTO and GOSUB statements. For example GOSUB READ-RECORD-PARA instead of GOSUB 5000.
- d) BASIC-3 will allow the developer to call sub-programs. For example, a sub-program will return to the calling program when it executes a RETURN statement. This is extremely useful when a program module is used in several applications, such as a date verification module.
- e) BASIC-3 will have the verbs WHILE and UNTIL. These allow programmers to better structure their programs.

13. Will it be possible to execute BASIC-3 programs and BASIC-2 programs concurrently?

No, the operating systems are mutually exclusive.

14. Will current versions of ISS and I.D.E.A.S. be supported using the 2200 COBOL/BASIC-3 operating system?

No. However, the functions being performed by ISS will be handled by the operating system directly and other utilities will be developed. I.D.E.A.S. will be modified to work under the 2200 COBOL/BASIC-3 operating system.

C. COBOL

15. Is 2200 COBOL an interpretive COBOL or is it compiled?

2200 COBOL is not interpretive, but it is also not compiled in the common sense. For more information, please refer to question #7.

16. What is the best way of describing 2200 COBOL?

2200 COBOL is the only interactive COBOL on the market. It contains almost all of Level 1 ANSI 74 COBOL and a large subset of Level 2 ANSI 74 COBOL.

17. What is the transportability between 2200 COBOL and VS COBOL?

There is a high degree of transportability between 2200 COBOL and VS COBOL. However, the programmer must be sensitive to the architecture of the system that they are developing software for. For example, when developing COBOL programs on the VS for implementation on the 2200, the programmer must remember that the 2200 is a fixed partition machine that does not make use of paging or virtual memory schemes. Wang Laboratories will distribute the exact COBOL verbs that are available on both systems in the near future. At this time, we expect 2200 COBOL to support a majority of VS COBOL, including method 1 of DISPLAY AND READ.

18. What are the factors which determine the size of a 2200 COBOL program?

Besides the number of lines of code and the number of COBOL verbs per line, the following factors must be taken into consideration:

- a) The number of files being opened.
- b) The size of the DATA elements described in the data division.
- c) COBOL programs are atomized, therefore, they will take less room than non-atomized systems.
- d) There is no object-source relationship, i.e., the user does not have to keep two files resident on disk.

19. Are BASIC-3 data files readable by a COBOL program?

YES, all BASIC-3 files are readable by 2200 COBOL programs.

20. Can BASIC-3 programs be called from a 2200 COBOL program?

YES.

ANSWERS TO QUESTIONS

A. General Operating System

1. What is the release/availability date of the new 2200 COBOL/BASIC-3 operating system?

The new operating system that supports 2200 COBOL and BASIC-3 will be available in December of 1981. However, the hardware needed for this operating system, referred to as option C, will be available in September of 1981.

2. What hardware do I need to use the new operating system?

In order to use the new operating system, you need a MVP or LVP with option C. Option C is priced at \$2000 U.S. on new orders, and is field upgradeable at a charge of \$2500 U.S. on existing systems.

3. Why can't the VP and SVP use the 2200 COBOL/BASIC-3 operating system?

Due to control memory limitations, these CPU's will not support this operating system. However, VPs can be upgraded to MVPs that will support the operating system. The cost of VP to MVP with Option C (MVPC) is \$4000 U.S.

4. Can I use the BASIC-2 operating system and BASIC-2 applications with the option C?

Yes, but not simultaneously with the COBOL/BASIC-3 operating system.

5. Does the 2200 COBOL/BASIC-3 operating system still use the "bank" type architecture?

Yes, banks and partitioning is the same with 2200 COBOL/BASIC-3 as it is with existing operating systems (BASIC-2).

6. What is this "FMS" that I keep hearing about?

FMS is a home office designation of the 2200 Disk Management System system that is an integral part of the 2200 COBOL/BASIC-3 operating system. It is the operating system macroinstructions that control all access to the disk.

7. What is "INCREMENTALLY COMPILED"?

Incrementally Compiled is the correct terminology for the way the 2200 processor executes user programs. In the past, we have referred to this as an interpretive procedure. Unlike all other vendors, we perform the added step of atomization, which significantly saves user memory and aids in speeding execution time. Thus, we are not a true interpreter, but use even more efficient methods.

8. Will my programs still be atomized with the new operating system?

Yes, for more information see question #7.

9. Will Wang Laboratories still offer and support the BASIC-2 operating system?

Yes, we will continue to offer and support the BASIC-2 operating system.

B. BASIC-3

10. Can BASIC-2 programs work under the 2200 COBOL/BASIC-3 operating system?

Not until some conversion process is performed. Wang is currently investigating the exact procedures and utilities that will be needed to make BASIC-2 programs compatible with BASIC-3. We will continually provide you with updated information on this development effort.

11. What are the differences between BASIC-2 and BASIC-3?

The differences between BASIC-2 and BASIC-3 are:

- a) BASIC-3 programs are atomized in a different manner than BASIC-2 programs. Wang will, however, supply a utility to convert BASIC-2 programs to BASIC-3 type atomization.
- b) BASIC-2 differs from BASIC-3 in that BASIC-3 utilizes the advanced 2200 Disk Management System which is integrated with the 2200 COBOL/BASIC-3 operating system; and BASIC-2 does not have this feature.

12. What are the advantages of BASIC-3 over BASIC-2?

- a) BASIC-3 will allow the programmer to use multicharacter variable names. For example, NAME\$ instead of N\$.
- b) BASIC-3 will have descriptive error messages. For example, 'FILE NOT FOUND' instead of D82.
- c) BASIC-3 will allow statement labels that can be used with GOTO and GOSUB statements. For example GOSUB READ-RECORD-PARA instead of GOSUB 5000.
- d) BASIC-3 will allow the developer to call sub-programs. For example, a sub-program will return to the calling program when it executes a RETURN statement. This is extremely useful when a program module is used in several applications, such as a date verification module.
- e) BASIC-3 will have the verbs WHILE and UNTIL. These allow programmers to better structure their programs.

13. Will it be possible to execute BASIC-3 programs and BASIC-2 programs concurrently?

No, the operating systems are mutually exclusive.

14. Will current versions of ISS and IDEAS be supported using the 2200 COBOL/BASIC-3 operating system?

No. However, the functions being performed by ISS will be handled by the operating system directly and other utilities will be developed. I.D.E.A.S. will be modified to work under the 2200 COBOL/BASIC-3 operating system.

C. COBOL

15. Is 2200 COBOL an interpretive COBOL or is it compiled?

2200 COBOL is not interpretive, but it is also not compiled in the common sense. For more information, please refer to question #7.

16. What is the best way of describing 2200 COBOL?

2200 COBOL is the only interactive COBOL on the market. It contains almost all of Level 1 ANSI 74 COBOL and a large subset of Level 2 ANSI 74 COBOL.

17. What is the transportability between 2200 COBOL and VS COBOL?

There is a high degree of transportability between 2200 COBOL and VS COBOL. However, the programmer must be sensitive to the architecture of the system that they are developing software for. For example, when developing COBOL programs on the VS for implementation on the 2200, the programmer must remember that the 2200 is a fixed partition machine that does not make use of paging or virtual memory schemes. Wang Laboratories will distribute the exact COBOL verbs that are available on both systems in the near future. At this time, we expect 2200 COBOL to support a majority of VS COBOL, including method 1 of DISPLAY AND READ.

18. What are the factors which determine the size of a 2200 COBOL program?

Besides the number of lines of code and the number of COBOL verbs per line, the following factors must be taken into consideration:

- a) The number of files being opened.
- b) The size of the DATA elements described in the data division.
- c) COBOL programs are atomized, therefore, they will take less room than non-atomized systems.
- d) There is no object-source relationship, i.e., the user does not have to keep two files resident on disk.

19. Are BASIC-3 data files readable by a COBOL program?

YES, all BASIC-3 files are readable by 2200 COBOL programs.

20. Can BASIC-3 programs be called from a 2200 COBOL program?

YES.

CONFIGURATION GUIDE

CONFIGURATION GUIDE

PLEASE REFER TO THE FOLLOWING GUIDE TO DETERMINE THE COMPATIBILITY OF ITEMS LISTED

| Item | VP | SVP | LVP | MVP | Notes | ! Item | VP | SVP | LVP | MVP | Notes |
|------------|----|-----|-----|-----|--------------|------------|----|-----|-----|-----|-------|
| 2236DE | X | X | X | X | | ! 22C02 | X | | X | X | |
| 2236DW | X | X | X | X | | ! 22C03 | X | | | X | |
| 2236MXD | X | | X | X | | ! | | | | | |
| 2211M | X | X | X | X | | ! 22C11 | X | | X | X | |
| 2221W | X | X | X | X | | ! 22C13 | X | | X | X | |
| 2231W-X | X | X | X | X | -1,-2,-3,-6! | 22C32 | X | | X | X | |
| 2263-X | X | X | X | X | -1,-2,-3 | ! 22C80 | X | | X | X | |
| 2273-X | X | X | X | X | -1,-2 | ! 2280MUX | X | | X | X | |
| 2281W/WC | X | X | X | X | | ! 2207A | X | | | | |
| 2282 | X | X | X | X | | ! 2227B | X | | X | X | |
| TSF-20/21 | X | X | X | X | 2281W Only | ! 2228B | X | | X | X | |
| TSF-22/23 | X | X | X | X | 2281WC Only | ! 2228C | X | | X | X | |
| | | | | | | ! 2228D-4A | | | X | X | |
| 2209A | X | | X | X | | ! 2228D-4 | | | X | X | |
| 2260C | X | | X | X | | ! 0P27B | | X | | | |
| 2270A-X | X | | X | X | | ! 0P28B | | X | | | |
| 2280/80N-X | X | | X | X | | ! 0P28C | | X | | | |
| 2244B | X | | X | X | | ! | | | | | |
| 2227N | X | X | X | X | | ! 2228N | X | X | X | X | |

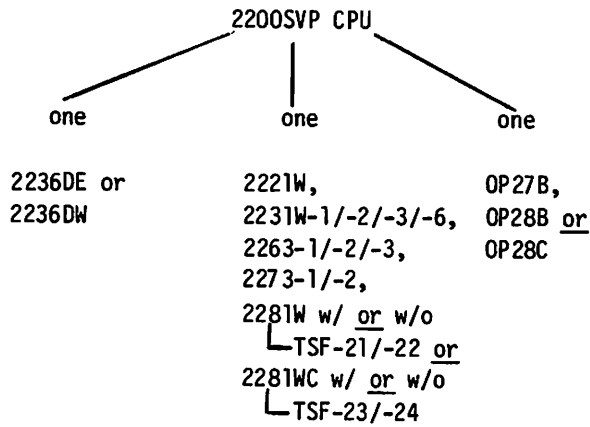
An "X" designates compatibility of the specific item and specific CPU.

CONFIGURATION GUIDE FOR 2200 SERIES PRODUCT LINE

MODEL: 2200SVP

The SVP supports a maximum of:

- one (1) 2200 Series Product Line Workstation
- one (1) 2200 Series Product Line printer attached to the CPU AND/OR
- one (1) 2200 Product Line printer attached to the WORKSTATION
- one (1) Telecommunications option



MODELS: 2200VP, 2200LVP, 2200LVPC, 2200LVPE, 2200MVP, 2200MVPC

The total number of peripherals supported by a VP, LVP, LVPC, LVPE, MVP or MVPC processor is a function of the number of I/O slots available and the number and type of controllers used.

IN GENERAL:

ONE (1) PERIPHERAL is supported per CONTROLLER (using ONE (1) I/O SLOT)

*** EXCEPTIONS are :

2236MXD which supports one to four Workstations (on LVP or MVP, one on VP)

22C32 which supports one Workstation, one Printer and one Diskette

22C11 which supports one Printer and one Diskette unit

EACH PERIPHERAL MUST BE ATTACHED TO A CONTROLLER (except Terminal Printers)

There is no practical limit to the number, of a specific type, of controllers that can be attached to a CPU except for the following maximums:

| <u>CPU TYPE</u> | <u>VP</u> | <u>LVP</u> | <u>MVP</u> |
|-----------------|-----------|------------|------------|
| 22C32 | 1 | 1 | 1 |
| 2236MXD | 1 | 3 | 3 |

THE TOTAL NUMBER OF CONTROLLERS IS LIMITED BY THE NUMBER OF I/O SLOTS AVAILABLE ON THE CHASSIS. The total available per CPU are as follows

| <u>PROCESSOR</u> | <u>VP*</u> | <u>LVP</u> | <u>LVPE</u> | <u>LVPC</u> | <u>MVP*</u> | <u>MVPC</u> |
|------------------|------------|------------|-------------|-------------|-------------|-------------|
| I/O SLOTS | 9 | 3 | 7 | 7 | 9 | 7 |

* new MVP processors shipped from Tewksbury after February 1980 and VP processors shipped after June 1980 are equipped with "A" Options.

CONTROLLER/PERIPHERAL SUPPORT

The following show graphically which peripherals may be supported by a specific controller.

A DOUBLE LINE from I/O SLOT to the CONTROLLER (i.e 2236MXD, 22C11) represents the usage of a single I/O slot on the chassis.

A SINGLE LINE from the CONTROLLER to the listed PERIPHERALS illustrates that one of the listed devices that can be supported by a specific port on the Controller.

For example: The 22C32 uses a single I/O slot in the chassis.

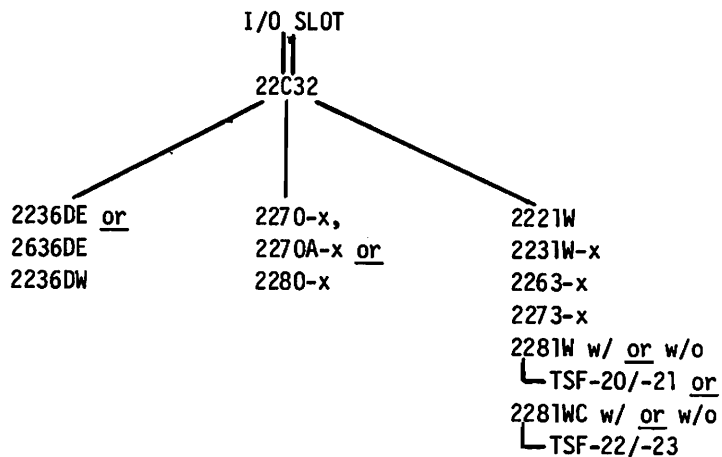
The 22C32 has three (3) ports which support:

One port supports one 2200 Series Product Line Terminal

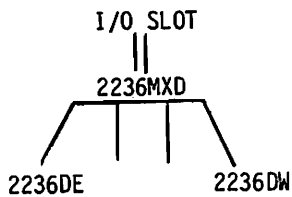
One port supports one 2270 Series Diskette Drive

One port supports one 2200 Series Product Line Printer

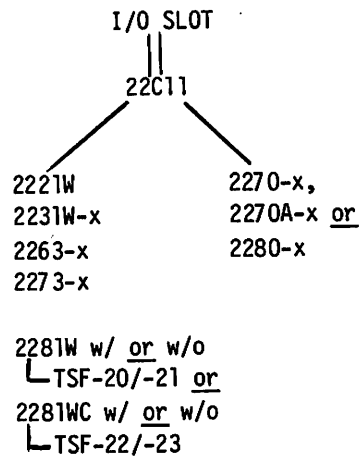
(a Twin Sheet Feeder may be attached directly to the 2281W or 2281WC printer
this does not effect the number of ports used)



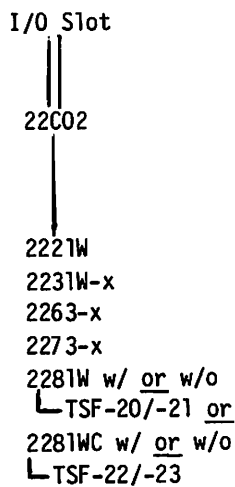
(supports one from each column
-Up to three peripherals)



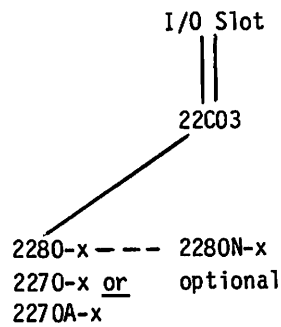
(supports up to four workstations)



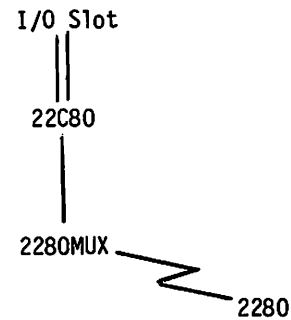
(supports one from each column. - Up to two peripherals)



(any one printer)



(one 22C03 is standard with all 2280 Series Disk Drives. Controller will support one additional 2280N Series Disk Unit)



(connects to 2280MUX which shares the 2280 Disk with up to two other 2200VP, 2200LVP or 2200MVP CPU's)

NOTE: -x denotes that any peripheral in the series is compatible

2200 SERIES CONFIGURATION AIDES

These charts can be used to plan the configuration of a specific 2200 Series system.

The graphs represent the specific CPU and the number of available I/O slots. The branching structures to the right represent possible Controllers for attachment and their support capabilities. Refer to the previous pages to determine what specific peripherals are supported by each controller.

MAXIMUM NUMBER CONTROLLERS PER CPU refers to the maximum of the specific controller that may be installed in the CPU chassis.

MAXIMUM NUMBER OF PERIPHERALS PER CONTROLLER refers to the maximum of the specific peripheral listed on the line versus the controller.

The following is an example of how to configure a 2200LVP with 32K and 2MB system:

- 3 Workstations
- 1 Printer
- 1 TC option

| | SUPPORTED PERIPHERALS/ EMULATIONS | CONTROLLER MODEL NUMBER | MAXIMUM NUMBER CONTROLLERS PER CPU | MAXIMUM NUMBER OF PERIPHERALS PER CONTROLLER |
|----------------------------------|---|-------------------------------|--|--|
| <u>2200LVP CPU</u> | * workstation | | | |
| * _____ * | <u>1</u> * workstation | 2236MXD | 3 | 4 |
| *2200 LVP- <u>8</u> <u>B</u> * | --* workstation | | | |
| * (MEMORY) (DISK) * | * workstation | | | |
| * _____ * | * workstation | | | |
| *I/O SLOT * <u>2236MXD</u> _____ | <u>1</u> * printer | 22C02 | | 1 |
| *I/O SLOT * <u>22C02</u> _____ | --* disk/diskette drive | 22C03 | | 1 |
| *I/O SLOT * <u>2228B</u> _____ | --* printer | 22C11 | | 1 |
| * _____ * | * disk/diskette drive | | | 1 |
| * _____ * | * workstation | | | 1 |
| *SYSTEM BASED DISK OPTION * | --* printer | 22C32 | 1 | 1 |
| * _____ * | * disk/diskette drive | | | 1 |
| MEMORY | --* <u>2280MUX to 2280</u> | 22C80 | | 2 |
| OPTION <u>SIZES</u> | ***** | | | |
| <u>8</u> 32K user memory | --* TC SOFTWARE | 2227B | | 1 |
| <u>16</u> 64K user memory | <u>1</u> * SEE PRICE LIST | 2228B | | 1 |
| <u>32</u> 128K user memory | --* FOR DETAILS OF | 2228C | | 1 |
| <u>48</u> 192K user memory | --* SUPPORTED PROTOCOLS | 2228D-2/-2A/-2X | | 1 |
| <u>64</u> 256K user memory | --* AND EMULATIONS | 2228D-4/-4A/-4X | | 1 |
| DISK | | | | |
| OPTION <u>DISK SIZE</u> | | | | |
| <u>X</u> OMITTED | | | | |
| <u>B</u> 2 MB | | | | |
| <u>C</u> 4 MB | | | | |
| <u>D</u> 8 MB | | | | |

SUPPORTED PERIPHERALS/EMULATIONS
 CONTROL NUMBER
 CONTROL MODEL
 MAXIMUM NUMBER OF PERIPHERALS PER CPU
 MAXIMUM NUMBER OF PERIPHERALS PER CONTROLLER

| | | | | | |
|---|---|-----------------|---|---|--|
| 1 | 1 | 2236MXD | 1 | 1 | workstation workstation workstation |
| 1 | 1 | 22C02 | 1 | 1 | workstation printer |
| 1 | 1 | 22C03 | 1 | 1 | workstation disk/diskette drive |
| 1 | 1 | 22C11 | 1 | 1 | workstation printer disk/diskette drive |
| 1 | 1 | 22C32 | 1 | 1 | workstation printer disk/diskette drive |
| 2 | 2 | 22C80 | 2 | 2 | workstation printer disk/diskette drive 2280MUX Multiplexer Controller |
| 1 | 1 | 2227B | 1 | 1 | TC SOFTWARE ***** |
| 1 | 1 | 2228B | 1 | 1 | SEE PRICE LIST |
| 1 | 1 | 2228C | 1 | 1 | FOR DETAILS OF |
| 1 | 1 | 2228D-2/-2A/-2X | 1 | 1 | SUPPORTED PROTOCOLS |
| 1 | 1 | 2228D-4/-4A/-4X | 1 | 1 | AND EMULATIONS |

| | |
|--------------|-------------|
| * 2200 VP | workstation |
| * 2200 VP- | workstation |
| * (MEMORY) | |
| * * | |
| * * | |
| * * | |
| * * | |
| * * | |
| * * | |
| * 1/0 SLOT * | |
| * 1/0 SLOT * | |
| * 1/0 SLOT * | |
| * 1/0 SLOT * | |
| * 1/0 SLOT * | |
| * 1/0 SLOT * | |
| * 1/0 SLOT * | |
| * 1/0 SLOT * | |
| * 1/0 SLOT * | |

MEMORY OPTION
 8 32K user memory
 16 64K user memory

NOTES: While the 2200VP does support the 2236MXD it is limited to one terminal operations.

SUPPORTED PERIPHERALS/EMULATIONS
 CONTROLLED PERIPHERALS/EMULATIONS
 MODEL NUMBER
 CONTROL NUMBER
 MAXIMUM NUMBER OF PERIPHERALS PER CPU
 MAXIMUM NUMBER OF PERIPHERALS PER CONTROLLER

| | | | | |
|---|---|-----------------|---|---|
| 4 | 3 | 2236MXD | workstation workstation workstation | 1 |
| 1 | | 22C02 | --*printer | 1 |
| 1 | | 22C03 | --*disk/diskette drive | 1 |
| 1 | | 22C11 | --*printer *disk/diskette drive | 1 |
| 1 | 1 | 22C32 | workstation *printer *disk/diskette drive | 1 |
| 2 | | 22C80 | --* 2280MUNIX to 2280 | 2 |
| 1 | | 2227B | --* TC SOFTWARE ***** | 1 |
| 1 | | 2228B | --* SEE PRICE LIST | 1 |
| 1 | | 2228C | --* FOR DETAILS OF | 1 |
| 1 | | 2228D-2/-2A/-2X | --* SUPPORTED PROTOCOLS | 1 |
| 1 | | 2228D-4/-4A/-4X | --* AND EMULATIONS | 1 |

| | |
|----------------------------|------------------|
| 2200LVP CPU | |
| * 2200 LVP- | |
| * (MEMORY) (DISK) | |
| * I/O SLOT * | |
| * I/O SLOT * | |
| * I/O SLOT * | |
| * SYSTEM BASED DISK OPTION | |
| * workstation | |
| MEMORY | |
| OPTION | SIZES |
| 8 | 32K user memory |
| 16 | 64K user memory |
| 32 | 128K user memory |
| 48 | 192K user memory |
| 64 | 256K user memory |
| DISK | |
| OPTION | DISK SIZE |
| X | OMITTED |
| B | 2 MB |
| C | 4 MB |
| D | 8 MB |

SUPPORTED PERIPHERALS/ EMULATIONS
 CONTROLLED PERIPHERALS/ EMULATIONS
 MODEL NUMBER
 MAXIMUM NUMBER OF PERIPHERALS
 MAXIMUM NUMBER OF PERIPHERALS
 MAXIMUM NUMBER OF PERIPHERALS

| | | | | | | | |
|-----------------|---|---|--|-----------------|---|---|--|
| 2236MXD | 3 | 4 | *workstation *workstation *workstation | 2236MXD | 3 | 4 | *workstation *workstation *workstation |
| 22C02 | | 1 | --*printer | 22C02 | | 1 | --*printer |
| 22C03 | | 1 | --*disk/diskette drive | 22C03 | | 1 | --*disk/diskette drive |
| 22C11 | | 1 | --*printer | 22C11 | | 1 | --*printer |
| 22C32 | 1 | 1 | *workstation --*printer | 22C32 | 1 | 1 | *workstation --*printer |
| 22C80 | | 2 | --*2280MUX Multiplexer Controller | 22C80 | | 2 | --*2280MUX Multiplexer Controller |
| ***** | | | | | | | |
| 2227B | | 1 | --* TC SOFTWARE | 2227B | | 1 | --* TC SOFTWARE |
| 2228B | | 1 | --* SEE PRICE LIST | 2228B | | 1 | --* SEE PRICE LIST |
| 2228C | | 1 | --* FOR DETAILS OF | 2228C | | 1 | --* FOR DETAILS OF |
| 2228D-2/-2A/-2X | | 1 | --* SUPPORTED PROTOCOLS | 2228D-2/-2A/-2X | | 1 | --* SUPPORTED PROTOCOLS |
| 2228D-4/-4A/-4X | | 1 | --* AND EMULATIONS | 2228D-4/-4A/-4X | | 1 | --* AND EMULATIONS |

2200MVP CPU

| | |
|----------------------|-----------|
| * 2200 MVP- (MEMORY) | * * * * * |
| * 1/0 SLOT * | * * * * * |
| * 1/0 SLOT * | * * * * * |
| * 1/0 SLOT * | * * * * * |
| * 1/0 SLOT * | * * * * * |
| * 1/0 SLOT * | * * * * * |
| * 1/0 SLOT * | * * * * * |
| * 1/0 SLOT * | * * * * * |
| * 1/0 SLOT * | * * * * * |
| * 1/0 SLOT * | * * * * * |

MEMORY OPTION SIZES

| | |
|----|------------------|
| 8 | 32K user memory |
| 16 | 64K user memory |
| 32 | 128K user memory |
| 48 | 192K user memory |
| 64 | 256K user memory |

SUPPORTED PERIPHERALS/EMULATIONS
 CONTROLLER MODEL NUMBER
 MAXIMUM NUMBER CONTROLLERS PER CPU
 MAXIMUM NUMBER OF PERIPHERALS PER CONTROLLER

| | | | |
|---|---|-----------------|--|
| 4 | 3 | 2236MXD | *workstation *workstation *workstation |
| 1 | | 22C02 | --*printer |
| 1 | | 22C03 | --*disk/diskette drive |
| 1 | | 22C11 | --*printer *disk/diskette drive |
| 1 | 1 | 22C32 | *workstation --*printer *disk/diskette drive |
| 2 | | 22C80 | --*280Mux Multiplexer Controller |
| 1 | | 2227B | --* TC SOFTWARE |
| 1 | | 2228B | --* SEE PRICE LIST |
| 1 | | 2228C | --* FOR DETAILS OF |
| 1 | | 2228D-2/-2A/-2X | --* SUPPORTED PROTOCOLS |
| 1 | | 2228D-4/-4A/-4X | --* AND EMULATIONS |

| | |
|-------------|--------------|
| 2200MWP CPU | |
| * | * 2200 MWP- |
| * | * (MEMORY) |
| * | * * * * * |
| * | * 1/0 SLOT * |
| * | * 1/0 SLOT * |
| * | * 1/0 SLOT * |
| * | * 1/0 SLOT * |
| * | * 1/0 SLOT * |
| * | * 1/0 SLOT * |
| * | * 1/0 SLOT * |
| * | * 1/0 SLOT * |
| * | * 1/0 SLOT * |
| * | * 1/0 SLOT * |
| * | * 1/0 SLOT * |
| * | * 1/0 SLOT * |

| | | |
|---------------|----|------------------|
| MEMORY OPTION | 8 | 32K user memory |
| SIZES | 16 | 64K user memory |
| | 32 | 128K user memory |
| | 48 | 192K user memory |
| | 64 | 256K user memory |

NOTES: The 2200MWP is capable of supporting both BASIC-3 and COBOL.

SOFTWARE

| <u>Item</u> | <u>VP</u> | <u>SVP</u> | <u>LVP</u> | <u>MVP</u> | <u>Notes</u> |
|-------------------|-----------|------------|------------|------------|---|
| IDEAS Release 1 | X | X | X | X | Minimum of 32K |
| IDEAS Release 2 | X | X | X | X | Minimum of 32K Release on 8/31/81 |
| 2200/WP Release 1 | X | X | X | X | 28K per terminal |
| 2200/WP Release 2 | X | X | X | X | 28K per terminal Release on 8/31/81 |
| ISS Release 5.2 | X | X | X | X | 16K per terminal (Not including KFAM or Sort-4) |
| GBS | X | X | X | X | 32K or 3 terminals per Bank |
| MBS | X | X | X | X | 32K or 3 terminals per Bank |
| RCM-Local System | X | X | X | X | 17K |
| RCM-Remote System | | X | X | X | 17K |
| 3271 | | | X | X | 5K Universal, 6KMCT 28K per terminal |
| 3275 | X | X | X | X | 32K |
| ASYNCH | X | X | X | X | 16K per Partition |
| BISYNCH | X | X | X | X | 16K per Partition 24K for Hasp |

COMPATIBILITY GUIDE

Product Compatibility Table

| <u>Model II</u> | <u>Status</u> | <u>Type</u> | <u>Description</u> | <u>A</u> | <u>B</u> | <u>C</u> | <u>S</u> | <u>T</u> | <u>PCS</u> | <u>PCS II</u> | <u>VP</u> | <u>MVP</u> | <u>LVP</u> | <u>SVP</u> |
|-----------------|---------------|------------------------|--|----------|----------|----------|-----------|----------|------------|---------------|-----------|------------|------------|------------|
| 2200WS | Avl. | Work Station | Independent 2200 processor which uses 2200 extended Basic. Up to 3 2200WS' can be multiplexed to a fourth 2200 with a 2230MXA to share a disk. | | y | y | Opt 22 | y | | | | y | y | y |
| 2201 | N/A | Output Writer | Modified IBM Selectric typewriter. | y | y | y | y | y | y | y | | | | |
| 2201L | N/A | Output Writer | Modified IBM Selectric II typewriter capable of printout at 15 cps. | y | y | y | y | y | y | y | | y | y | y |
| 2202 | N/A | Plotting Output Writer | Modified IBM Selectric II typewriter capable of plotting and printing at 15 cps. | | y | y | y | y | | | | | | |
| 2207 | N/A | Interface Controller | Obsolete RS232C Controller use 2207A. | | | | | | | | | | | |
| 2207A | N/A | Interface Controller | Interface 2200 Series CPU with RS232C compatible device. Not a buffered controller. | y | y | y | y | y | | | | | | y |
| 2209 | N/A | Tape Drive | Nine track tape drive capable of reading or writing 800BPI tapes. | | | y | | y | | | | | y | |

| <u>Model II</u> | <u>Status</u> | <u>Type</u> | <u>Description</u> | <u>A</u> | <u>B</u> | <u>C</u> | <u>S</u> | <u>T</u> | <u>PCS</u> | <u>PCS II</u> | <u>VP</u> | <u>MVP</u> | <u>LVP</u> | <u>SVP</u> |
|-----------------|---------------|-----------------------------|--|----------|----------|----------|--------------------|----------|------------|---------------|-----------|------------|------------|------------|
| 2203 | N/A | Paper Tape Reader | Reads punched paper tape at 30 char/sec. | | y | y | Opt y 22 | | | | y | | | |
| 2209A | Avl. | Tape Drive | Nine track tape drive capable of reading or writing 1600 BPI tapes. | | | y | Opt y 23, 24 | | | | y | y | y | |
| 2210A | Avl. | CRT/Key-board/Mini-diskette | A 2200 Series console which combines a 64x16 screen with a BASIC keyword keyboard and either one or two SSSD mini-diskette drives. | | y | y | y | y | | | y | | | |
| 2210B | Avl. | CRT/Key-board/Mini-diskette | A 2200 Series console which combines a 80x24 screen with a BASIC keyword keyboard and either one or two SSSD mini-diskette drives. | | y | y | y | y | | | y | | | |
| 2211M | Avl. | Printer Multiplexor | Allows one 2200 Series printer or plotter except the 2232 Flatbed Plotter, to be shared by up to four 2200 Series CPU's. | y | y | y | y | y | y | y | y | y | y | y |
| 2212 | N/A | Analog Plotter | A Flatbed Plotter for point or continuous line plotting. | | y | y | Opt y 22 | | | | y | | | |
| 2214 | N/A | Card Reader | A mark sense card reader that will manually input marked sense cards. | y | y | y | y | y | | | | | | |

| <u>Model #</u> | <u>Status</u> | <u>Type</u> | <u>Description</u> | <u>A</u> | <u>B</u> | <u>C</u> | <u>S</u> | <u>T</u> | <u>PCS</u> | <u>PCS II</u> | <u>VP</u> | <u>MVP</u> | <u>LVP</u> | <u>SVP</u> |
|----------------|---------------|--------------------------------|--|----------|----------|----------|-----------|----------|------------|---------------|-----------|------------|------------|------------|
| 2215 | N/A | Keyboard | Keyboard with ability to input both standard characters or BASIC keywords. | y | y | y | Opt 22 | y | | | | | | |
| 2216A | N/A | CRT | CRT console used commonly with 2222 or 2223 keyboards. | y | y | y | y | y | | | | | | |
| 2216A/ 2217 | N/A | CRT/ Cassette | Combined 2216A CRT with a single cassette drive. | y | y | y | y | y | | | | | | |
| 2217 | N/A | Cassette | Single cassette drive to store BASIC programs and sequential data. | y | y | y | y | y | | | | | | |
| 2218 | N/A | Cassette | Dual cassette drive to store BASIC programs and sequential data. | y | y | y | y | y | | | | | | |
| 2219 | N/A | Extension Chassis | CPU option to allow for 5 additional I/O slots. Adds 6" to length of CPU. | y | y | y | | | | | | | | |
| 2220 | N/A | CRT/Key- board/ Cassette | A combined CRT/Basic keyword keyboard and single cassette drive. | y | y | y | y | y | | | | | | |
| 2221M | N/A | Printer Multiplexor | Obsolete printer multiplexor. Same capabilities of 2211M but mechanical. | y | y | y | y | y | y | y | | y | y | y |

| <u>Model#</u> | <u>Status</u> | <u>Type</u> | <u>Description</u> | <u>A</u> | <u>B</u> | <u>C</u> | <u>S</u> | <u>T</u> | <u>PCS</u> | <u>PCS II</u> | <u>VP</u> | <u>MVP</u> | <u>LVP</u> | <u>SVP</u> |
|---------------|---------------|--------------------|--|----------|----------|----------|----------|-------------|------------|---------------|-----------|------------|------------|------------|
| 2231W-6 | Avl. | Printer | Full ASCII character set matrix printer at 70 cps. Letter quality print quality. 10 or 12 pitch, 132 column. | y | y | y | y | y | y | y | y | y | y | y |
| 2232A | N/A | Plotter | Flatbed plotter with bed size of 31x48". Stepping increment of .0025 m. | | y | y | | Opt y 22 | | | y | y | y | |
| 2232B | Avl. | Plotter | Flatbed plotter with bed size of 31x48". More accurate than 2232A. | | y | y | | Opt y 22 | | | y | y | y | |
| 2234A | Obs. | Card Reader | Hopper feed card reader, able to read punched cards at a rate of 300 cards per minute. | | y | y | y | y | | | y | y | | |
| 2236 | N/A | Terminal | Obsolete, use either 2236D or 2236DE terminal. | | | | | | | | | | | |
| 2236MXC | N/A | Terminal Processor | Obsolete, use 2236MXD terminal processor. | | | | | | | | | | | |
| 2236D | N/A | Terminal | Interactive terminal. Connects to either 2236MXD, 22C32 controller or directly into SVP. | | | | | y | | | y | y | y | y |

| <u>Model #</u> | <u>Status</u> | <u>Type</u> | <u>Description</u> | <u>A</u> | <u>B</u> | <u>C</u> | <u>S</u> | <u>T</u> | <u>PCS</u> | <u>PCS II</u> | <u>VP</u> | <u>MVP</u> | <u>LVP</u> | <u>SVP</u> |
|----------------|---------------|----------------|--|----------|----------|----------|----------|----------|------------|---------------|-----------|------------|------------|------------|
| 2236DE | Avl. | Terminal | Interactive terminal. All features of 2236D plus repeating keys, multiple field attributes and business graphics. | | | | | y | | | y | y | y | y |
| 2236DW | Avl. | Terminal | Interactive terminal. All features of 2236DE plus the ability to do all word processing functions. | | | | | | | | y | y | y | y |
| 2241 | N/A | Printer | Thermal printer using matrix characters. Printing speed of 30 characters per second using 8 1/2" roll of heat sensitive paper. | y | y | y | y | y | y | y | y | y | y | y |
| 2242 | N/A | Diskette Drive | Double removable diskette drive using .25 megabyte "memorex" diskettes. | | y | y | Opt | y | | | | y | | |
| 2243 | N/A | Diskette Drive | Triple removable diskette drive using .25 megabyte "memorex" diskettes. | | y | y | Opt | y | | | | y | | |
| 2244A | N/A | Card Reader | Hopper feed card reader able to read mark sense or punched cards, at a speed of 300 cards per minute. | | y | y | y | y | | | | y | | |
| 2244B | Avl. | Card Reader | Same specifications as 2244A but compatible with LVP and MVP. | | y | y | y | y | | | y | y | y | |

| <u>Model #</u> | <u>Status</u> | <u>Type</u> | <u>Description</u> | <u>A</u> | <u>B</u> | <u>C</u> | <u>S</u> | <u>T</u> | <u>PCS</u> | <u>PCS II</u> | <u>VP</u> | <u>MVP</u> | <u>LVP</u> | <u>SVP</u> |
|----------------|---------------|-------------------------|--|----------|----------|----------|----------|----------|------------|---------------|-----------|------------|------------|------------|
| 2250 Opt 67 | Avl. | Interface Controller | 8 bit parallel input/output controller. Not a buffered controller - needs \$GIO commands. | | y | y | y | y | y | y | y | | | |

| <u>Model #</u> | <u>Status</u> | <u>Type</u> | <u>Description</u> | <u>A</u> | <u>B</u> | <u>C</u> | <u>S</u> | <u>T</u> | <u>PCS</u> | <u>PCS II</u> | <u>VP</u> | <u>MVP</u> | <u>LVP</u> | <u>SVP</u> |
|----------------|---------------|----------------------|--|----------|----------|----------|----------|----------------|------------|---------------|-----------|------------|------------|------------|
| 2251 | Avl. | Printer | Compact matrix printer, has 40 character line uses only 3 3/4" paper. | y | y | y | y | y | y | y | y | y | y | y |
| 2252 | N/A | Interface Controller | Obsolete, use 2252A interface controller. | | | | | | | | | | | |
| 2252A | Avl. | Interface Controller | Scanning input (10 digit BCD) controller. Input only and not a buffered controller. Needs \$GIO commands. | y | y | y | y | y | | | y | | | |
| 2254 Opt 65 | Avl. | Interface Controller | I-EEE compatible I/O interface controller, not a buffered controller - needs \$GIO commands. | | y | y | y | y | Opt 65 | Opt 65 | y | | | |
| 2260 | N/A | Disk Drive | Fixed/removable disk drive providing storage capacity of 2.5, 5, 10, 20 megabytes divided evenly between two platters. | y | y | y | | Opt y 23 | | | y | | | |
| 2260B | N/A | Disk Drive | Fixed/removable disk drive providing storage capacity of 2.5, 5, 10, 20 megabytes divided evenly between two platters. | | y | y | | Opt y 23 | | | y | y | y | |

| <u>Model #</u> | <u>Status</u> | <u>Type</u> | <u>Description</u> | <u>A</u> | <u>B</u> | <u>C</u> | <u>S</u> | <u>T</u> | <u>PCS</u> | <u>PCS II</u> | <u>VP</u> | <u>MVP</u> | <u>LVP</u> | <u>SVP</u> |
|----------------|---------------|-------------|--|----------|----------|----------|-----------|----------|------------|---------------|-----------|------------|------------|------------|
| 2272-1 | N/A | Plotter | Single pen drum plotter with a built-in alphanumeric character set. Accuracy of .01 inch. Paper width of 16" is mandatory. | y | y | y | y | y | y | y | y | y | y | y |
| 2272-2 | Avl. | Plotter | Same capabilities of 2272-1 but has three pens. | | y | y | y | y | y | y | y | y | y | y |
| 2273 | Avl. | Printer | Microprocessor controlled band printer. Has both programmable VFU or form selector switch. Prints 132 columns at 10 pitch. Print fonts binds easily changeable. 2273-1 250 LPM 2273-2 600 LPM | y | y | y | Opt 22 | y | y | y | y | y | y | y |
| 2280/ 2280N | Avl. | Disk Drive | A high speed fixed/removable disk drive. Uses disk cache technology. 2280 comes without 22C14 DPU. 2280N includes 22C14 disk DPU. 2280-1/2280N-1 = 13.4MB removable 13.4 MB fixed 2280-2/2280N-2 = 13.4MB removable 40.2MB fixed 2280-3/2280N-3 = 13.4MB removable 67MB fixed | | | | | | | | | y | y | y |
| | | | | | | | | | | | | y | y | y |
| | | | | | | | | | | | | y | y | y |

| <u>Model #</u> | <u>Status</u> | <u>Type</u> | <u>Description</u> | <u>A</u> | <u>B</u> | <u>C</u> | <u>S</u> | <u>T</u> | <u>PCS</u> | <u>PCS II</u> | <u>VP</u> | <u>MVP</u> | <u>LVP</u> | <u>SVP</u> |
|----------------|---------------|-----------------|---|----------|----------|----------|----------|----------|------------|---------------|-----------|------------|------------|------------|
| 2281 | N/A | Printer | Daisy wheel printer. Prints either at 10 or 12 pitch at 40 cps. | y | y | y | y | y | y | y | y | y | y | y |
| 2281P | N/A | Printer Plotter | Same capabilities of 2281 but also has plotting and form filling capabilities. Needs Op-121 for plotting or form filling. | y | y | y | y | y | y | y | y | y | y | y |
| 2281W | Avl. | Printer Plotter | Same capabilities of 2281P but product built by Wang must have BFT-1 for plotting and form filling. | y | y | y | y | y | y | y | y | y | y | y |
| 2282 | Avl. | Graphic CRT | Output only graphic CRT. Connects to 2231W-6 matrix printer for hard copy output. | | y | y | y | y | y | y | y | y | y | y |
| 2290 | Avl. | CPU Stand | | | | | | | | | | | | |
| 2291 | Avl. | Plotter Stand | For 2232 flatbed plotter. | | | | | | | | | | | |
| 2292 | | CRT | Auxillary CRT for multi-viewer capabilities. | y | y | y | y | y | | | | | | |

SOFTWARE

| <u>Item</u> | <u>VP</u> | <u>SVP</u> | <u>LVP</u> | <u>MVP</u> | <u>Notes</u> |
|-------------------|-----------|------------|------------|------------|---|
| IDEAS Release 1 | X | X | X | X | Minimum of 32K |
| IDEAS Release 2 | X | X | X | X | Minimum of 32K Release on 8/31/81 |
| 2200/WP Release 1 | X | X | X | X | 28K per terminal |
| 2200/WP Release 2 | X | X | X | X | 28K per terminal Release on 8/31/81 |
| ISS Release 5.2 | X | X | X | X | 16K per terminal (Not including KFAM or Sort-4) |
| GBS | X | X | X | X | 32K or 3 terminals per Bank |
| MBS | X | X | X | X | 32K or 3 terminals per Bank |
| RCM-Local System | X | X | X | X | 17K |
| RCM-Remote System | | X | X | X | 17K |
| 3271 | | | X | X | 5K Universal, 6KMCT 28K per terminal |
| 3275 | X | X | X | X | 32K |
| ASYNCH | X | X | X | X | 16K per Partition |
| BISYNCH | X | X | X | X | 16K per Partition 24K for Hasp |

DEMONSTRATION GUIDE

WANG 2200 MULTIFUNCTIONAL COMPUTER

DEMONSTRATION GUIDE

This Guide tells how to use the new "2200 Multifunctional Computer" demonstration software, which will be mailed to all Branch Offices in July, 1981. The demonstration was written to include modules on the many capabilities of the 2200 Series:

1. Graphics
 - Screen Attributes
 - Available Characters
 - Use of Screen Attributes
 - Bar Graphs
 - Boxes
2. Computing Speed
 - Benchmark Results
 - Number Crunching
 - Matrix Inversion
3. Word Processing
 - Sample "Insert"
 - Data Merge
4. Telecommunications
 - 3270 Emulation
 - 2780/3780 Emulation
 - Remote Control and Maintenance
 - X.25 Packet Network Interface
5. Program Development
 - Cross-Reference Listings
 - Tracing Variables
6. Data Entry
 - IDEAS
 - File Inquiry

How to Use

The demonstration software will be on a single 2200 diskette, available in both MVP and LVP formats.

It can be loaded in one of two ways:

1. Place in a diskette drive. SELECT the diskette drive. LOAD RUN RETURN. (This requires that the diskette remains in the drive during the entire time the demo is running.)

2. Move the program files to a hard disk. (All programs begin with the letters "GH". Example: "GH BOXES".) SELECT the disk. LOAD, RUN, RETURN.

Note

The demo uses the program "START" or "GHSTART" to display the first screen. If your system also uses "START", do not copy it from the demo diskette. Instead, copy all other files and begin the demo by LOAD RUN "GHSTART" RETURN.

After two preliminary screens, the main demonstration menu will be shown, listing the various options. To run any of these, touch the corresponding Special Function Key.

At the end of any of the programs, you have the option of continuing to the next program (RETURN) or going back to the main menu (SF Key '15).

When on the main menu, you have the option of letting the demo run unattended. In this case, the programs will be executed in sequence with no operator intervention. This choice is recommended for shows.

Purposes of Each Program

1. Screen Attributes ("GHATTRIB") - Shows the various available attributes of the 2236DE and 2236DW terminals. Bright, blinking, reverse, underscored, and combinations.
2. Available Characters ("GHCHARS") - Displays the Standard Character set (128 ASCII plus 64 graphics) plus the Alternate Character Set.
3. Use of Screen Attributes ("GHDATA") - Uses screen attributes and bar graphs to display a sample report.
4. Bar Graphs ("GHGRAPH2") - Generates 120 random numbers and plots them as bar graphs on a grid.
5. Boxes ("GHBOXES") - Demonstrates some of the box drawing capability of the terminal.
6. Sample Number Crunching ("GHBENCH") - Shows the results of the ACU Benchmark Report on the VP. Then runs a short program to show number crunching ability. The program adds the numbers from 1 to 1000 (1+2+3, etc.). Finally, the operator is asked to input the beginning and ending numbers. Suggestion: enter beginning = 1, ending = 5000.
7. Matrix Inversion ("GHMATINV") - Uses random numbers to create a 15 x 15 matrix, then inverts the matrix 5 times. Prints the matrix, the inverted matrix, and the product of the matrix times the inverse.

8. Sample Insert ("GHWPMENU" and "GHWORD") - Displays the 2200/WP Main Menu. Emulates 2200/WP as it inserts a sentence in the second paragraph. No operator keying is required. (Note: watch the status line as it changes.)
9. Word and Data Processing ("GHWPDP") - Shows how List Processing Data Merge can combine a Word Processing document with data files to produce merged letters.
10. 3270 Emulation ("GH3270") - Shows graphically the 2200 to host connection. Shows how 3270 can run in background (CRT "releases to do payroll") under the Virtual Terminal Emulator.
11. 2780/3780 Emulation ("GH3780") - Shows graphically the batch file transfer from 2200 to another system. (The CRT that initiates the session "releases to do payroll" as 2780/3780 operates in background.)
12. Remote Control and Maintenance ("GHRCM") - Shows graphically the capabilities of RCM. CRT emulates a remote CRT, runs diagnostics, looks at data files, and transfers files.
13. X.25 Packet Network Interface ("GHX25") - Shows graphically how the 2200 interfaces to and sends messages through a packet network. The "message" is divided into separate packets which are routed randomly, then assembled at the receiving 2200.
14. Reserved for a future program.
15. Returns to the Main Menu.
16. Cross-Reference Listings ("GHCROSS") - Loads in a program (a slightly modified version of "GHMATINV"), then does a LIST# for cross-reference list of line numbers, and a LISTV for a cross-reference list of variables. These lists would be used by the programmers during program development.
17. Tracing Variables ("GHTRACE") - Lists and runs a simple program that multiplies "1x1, 1x2, 1x3, etc.". Then runs it under TRACE, which shows the value of each variable as it changes, plus each program line that is branched to. Finally, SELECT P is used to slow down execution so that we can see the TRACE.
18. IDEAS ("GHIDEAS") - Emulates some of the steps for developing Data Entry/Inquiry programs using IDEAS.
19. File Inquiry ("GHASK") - Emulates an IDEAS-generated File Inquiry program. Asks for product numberr (1-10), then displays the corresponding product data.

Hardware Requirements

The demonstration will run on any 2200 MVP or LVP with BASIC-2. The programs can be resident on a diskette, or can be copied to a fixed disk.

Memory Requirements

Programs are loaded one at a time into memory. The demonstration requires a 10K (or larger) partition.

Package Number

Not yet available.

Availability

Diskettes and instructions will be mailed to all Branch Offices by July 30, 1981. Ordering information and Package Number will be available at that time.

SUPPORT

Wang Laboratories' Corporate Support Policy
covering all products, systems and software,
will be distributed to the field in the near future.
In the interim, all support questions should be directed
to your area Support Managers.