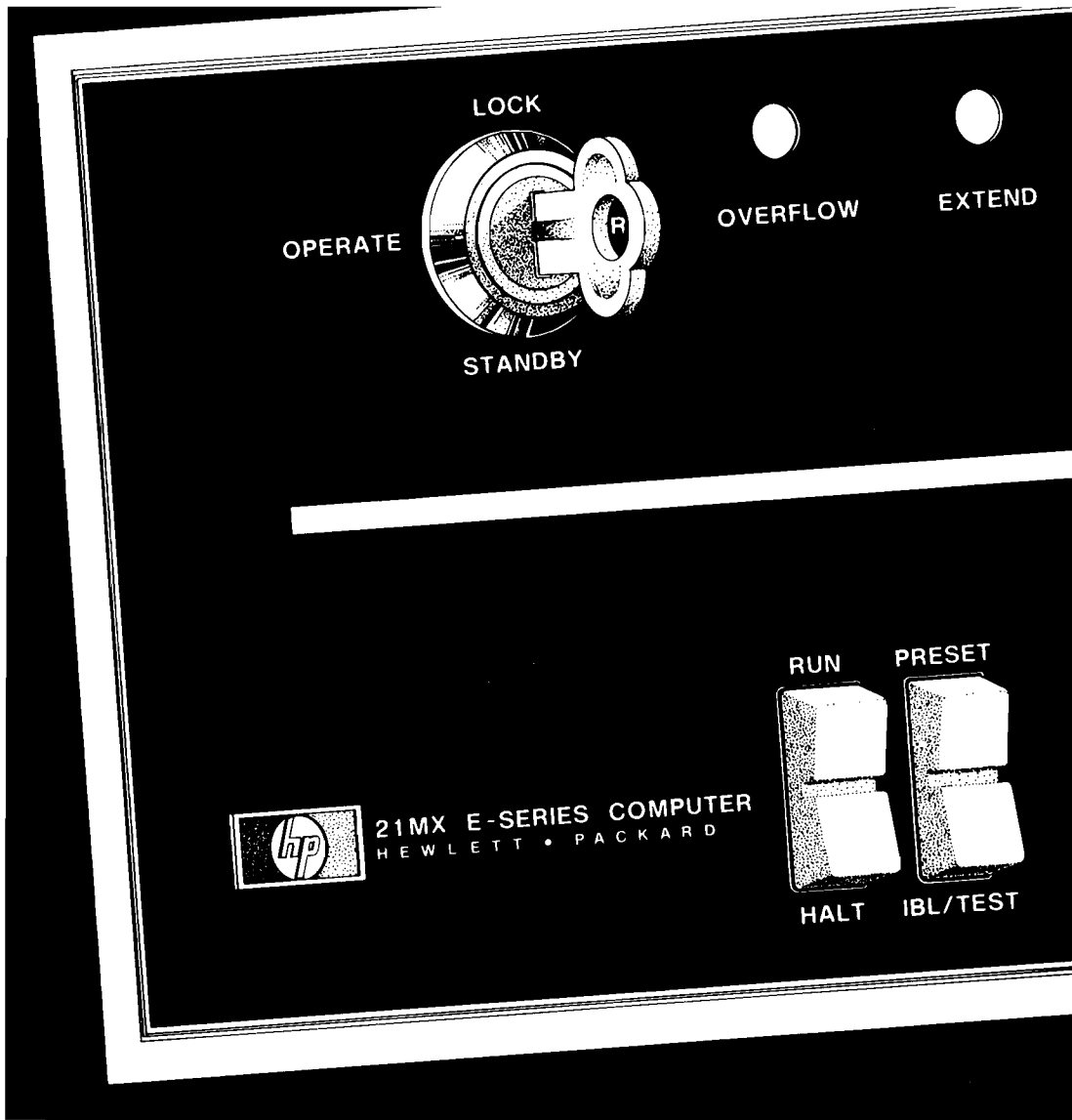# COMPUTER SYSTEMS NEWSLETTER

For H P Field Sales Personnel

HEWLETT **hp** PACKARD

Vol. 2, No. 5
Jan. 10, 1977

ANNOUNCING the

21MX E-SERIES COMPUTER
HEWLETT • PACKARD

21MX E-Series
Now Available For Stand-Alone Sale

In This Issue...

HP Computer Museum
www.hpmuseum.net

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AMD DIVISION NEWS

Product News

Multi-Station DTS-70'S — The Star of AUTOTESTCON '76!!!
By: George Low/AMD

Over 400 ATE'ers jammed the Inn of the Six Flags at Arlington, Texas on November 10-12 for "AUTOTESTCON '76" This IEEE sponsored convention, the only one of its kind, is devoted entirely to the ATE community. Virtually all major military ATE program managers, and all major prime contractors were in attendance.

To take advantage of this unique opportunity, AMD shipped two 9571A Digital Test Stations, a 9640A controller, a 2607A Line Printer, and three CRT terminals to the show.

With able assistance from *Roger Jones* (FE), *Bob Funk* (SE), *Barbara Grogan,* and *Bonnie Smith* from our SSR Richardson office, the multi-station DTS-70 was easily the star of the show. *Roger* and *Bob* set up the equipment and got it up and running in a very short time, and with the final released TEST MONITOR software *Barbara* and *Bonnie* were able to test and fault isolate boards via guided probing in very short order. The multi-station DTS-70 was demonstrated by having the girls test boards at the two 9571A Test Stations while a third program preparation station was running a TESTAID-III simulation program, ALL CONCURRENTLY, on one 9640A Controller. Even with all three events happening concurrently, several visitors stated that our FASTRACE guided probe fault isolation was running considerably faster than the GR 1792 system (which was also exhibited at the convention).

Hewlett-Packard was well represented at the convention. *Paul Accampo* (AMD Marketing) presented a paper on the technology and economics of ATPG (Automatic Test Program Generation) and *Steve Joseph* (AMD Lab) presented a paper on intelligent system switching, previewing our new microprocessor-controlled switching capabilities soon to be available on 9580A Automatic Test Systems. Many other papers by other ATE users included Hewlett-Packard computer-based equipment, and we were mentioned to have the only commercial computer with an ATLAS compiler combination.

High interest was generated for our DTS-70, TESTAID-III, and HP ATLAS among the AUTOTESTCON '76 conventioneers, who came from all over the country. Sell Hewlett-Packard Automatic Test and Measurement Systems!!!

Bob Funk (SE) showing off the DTS-70.

9611R Price Increase
By: Jim McCabe/AMD

The 9611R price has been increased from $8890 to $10,900. This represents only about a three percent price increase on a typical System 1000/9611R system of $80K.

DATA SYSTEMS NEWS

Product News

21MX-E Series Computer —
The Supportable One
By: Orrin Mahoney/DSD

Your field C.E. organization is ready and willing to support 21MX E-Series computers. Two one-week product specialist training courses have already been given and over two dozen service kits have already been distributed worldwide. Our division is committed to having a service kit in every region before an E-Series computer or HP 1000 is installed in that region, and so far we have met that commitment. The E-Series appears to be a very reliable product and we are ready to back up the field C.E. organization with product expertise and support if needed. Sell E-Series with confidence.

E-Series Compatibility Update
By: David Carver/DSD

Since the October 1976 New Product Tour several products have been added to the list of E-Series compatible products. The new additions are given in the following table. Notable for its absence is the 12979A I/O Extender. We are very close to the solution to its problem, and will advise you as soon as it is ready.

A price/configuration guide will be distributed to all sales offices in mid-January. This guide will contain complete pricing and compatibility information for Data Systems Division computer products and accessories. Until you receive the guide, use the following table, together with the E-Series Field Training Manual, as your official compatibility list. Quote prices only according to the Corporate Price List.

Additional copies of the E-Series Field Training Manual are available. Write David Carver at DSD if you need another copy.

E-Series Compatibility Update

Product Number	Description
92900A	3070A Terminal Subsystem
13178B	Multi-CPU Interface for 7905A Disc Drives
12531C/C	Terminal Interface
12880A	Terminal Interface
12618A	Synchronous Communications Interface
12554A	16-Bit Duplex Register
12556B*	40-Bit Output Register
12936A	Privileged Interrupt Fence
91200B*	Video Display Interface
9603R/9611R	Remote Measurement and Control Stations
91226A	Remote Station Communication Kit (for Distributed Systems)
91226A-001	Substitute Digital Driver for Analog Driver
91226B	Remote Station Communication Kit for HP 1000
91780A	RJE/1000
91780A-001	Delete 12618A

*Not compatible with E-Series diagnostic configurator, therefore not compatible with multimedia diagnostic distribution. Stand-alone paper tape diagnostic is available.

DSD Unveils 21MX E-Series Computers
By: David Carver/DSD

Effective January 2, 1977, the new 21MX E-Series computers are available for general sale. We will accept orders from OEM's and End Users alike, with no restriction on the quantity ordered. The introduction will occur simultaneously worldwide, with Grenoble and YHP fully on board to support your sales efforts.

The Data Systems Division is now geared up for volume production of both E-Series computers and HP 1000 systems. As of this writing (December 17), approximately 70 E-Series computers have been built, and we anticipate being able to maintain good availability on computers and systems in the coming months.

Orders have also been very encouraging. To date, we have received a total of 143 orders for the E-Series, of which 67 have been for HP 1000 systems, and 76 have been for E-Series Computers.

All E-Series components and supporting products appear in the January Corporate Price List, and in the January 2 availability schedule.

GOOD SELLING!

HP Delivers on the E-Series
By: Chuck Wain/DSD

During the HP 1000 New Product Tour, F.E.'s with OEM customers were encouraged to sell an evaluation unit to their customers. *John Malone,* Rolling Meadows, Illinois, did just that with his customer — Management Systems Technology, Inc. MST placed an order for a 2113A to be evaluated for usage in MST's product lines including pharmacy and retail pharmacy order processing systems. The order was placed 29 October — DSD shipped on December 3. The total time from order to shipment was 36 days! How's that for response?

DSD really delivers.

Good work *John*!

E-Series Publicity
By: Dave Carver/DSD

We are looking for good press coverage on the E-Series computer in addition to the ink the HP 1000 system received. See the January 2 edition of Electronic News and Computerworld, and the January/February issues of the trade magazines, for E-Series articles. We will respond to leads generated by these articles with the new E-Series brochure.

The following press release was sent out December 27:

Fast New Entry In Small-Computer Sweepstakes

A pair of new small computers in the Hewlett-Packard 21MX line claim greater speed than computers up to twice their price. The new premium-performance 21MX E-Series computers execute programs 70% to 100% faster than HP's earlier 21MX M-Series. E-Series models with comparable equipment are priced about 12% higher than M-Series. In addition to greater speed, E-Series offers much more opportunity for growth. In effect, it is a computing vehicle whose horsepower can be increased at will, without a forced switch to a new computer.

M-Series computers will continue in production as a companion line, and are expected to find preference where E-Series high speed and expandability are unnecessary. E-Series computers are expected to broaden the possibilities for multi-terminal use, the more-complex forms of data analysis, high-speed graphics, and computer-aided design.

In contrast with practice that has been common in the past, Hewlett-Packard offers full support for systems applications of the E-Series computers, as they are introduced. Indeed, the first use of the fast new models was in the HP 1000 System, introduced in October. A 16K-word E-Series computer, chosen today for its economy in some single application, can later become a 304K-word, multi-user, multi-programmed distributed system central computer with a full complement of supporting equipment. In the course of expansion, the user need never switch computers, re-write software, or change any I/O devices.

Added Speed

Added speed has been accomplished without additional power consumption. Although faster Schottky TTL circuitry is used, and the memory cycle is down from 650 to 560 ns, the most important contribution to E-Series' 70-100% speed improvement is variable microcycle timing (VMT) in the 24-bit microprogrammable control processor that manages registers, logic, memory, and I/O structure. This "computer within a computer" now runs in cycles of dynamically variable length. Instead of the formerly-needed 325 ns for the longest microinstructions, microcode fine-tuning has brought the few worst-case conditions down to 280 ns. Most instructions, however, now can run in 175 ns, and that is the new control processor's basic period, but with VMT it knows enough to stretch a single cycle out to 280 ns for those few instructions that need it.

Growth Power

The power of E-Series computers can be expanded at any time. Three features make this possible. First, the new computer places at the user's disposal a control processor address space ultimately expandable, in convenient, modular increments, to 8.5K 24-bit words. This is enough to write a whole new operating system, if that were desirable, and certainly enough so free use can be made of microcoded subroutines that run up to 20 times faster than from main memory. Second, to make it easy to exploit the new control space, a complete set of microprogramming software is offered, including micro-assembler, micro-editor, loader, and debug utilities. Third, with E-Series computers it is now possible under software control to transfer routines from disc or other sources directly into microcode store, making the fast control processor available dynamically, as a resource under operating system control.

High-speed data transfers under microprogram control are possible in two new ways. E-Series computers provide a microprogrammable processor port (MPP) directly onto the main data bus. Through this port, data transfers are possible at burst rates up to 5.7 million words a second. A second way to transfer data at higher speeds than are possible with conventional direct memory access methods is with microprogrammable block I/O (MBIO). MBIO uses the computer's standard I/O structure, but three new signals at the backplane now permit the use of special interface cards that can move blocks of data at rates up to 1.5 megawords per second. MPP and MBIO, both under microprogram control, enable the user to custom-design intelligent channels that operate at control-processor speeds.

New Self-Test Diagnostics

On E-Series models, self-test is automatic on power up, or on command from the front panel. Using three separate microcoded diagnostics, it checks all CPU logic, without affecting the contents of registers or memory. When destruction of data is allowable, however, the entire main memory is subjected to the same sophisticated test procedure HP developed for memory parts testing, a procedure based on the industry's most extensive experience with semiconductor memory.

Compatibility

The instruction set of the 21MX E-Series computers is entirely compatible with 21MX M-Series and 2100 equipment, and most I/O cards and peripheral subsystems are interchangeable. Since E-Series computers are significantly faster, certain time-dependent loops will function differently, and routines involving them will require revision. A few interface cards will not be immediately offered with E-Series models.

Configurations, Prices, and Delivery

Distinguished in appearance from 21MX M-Series computers by their gold trim, 21MX E-Series computers will be offered in two sizes, the 2109A with 8 3/4" height, and the 2113A with 12" height. The smaller model has space for 9 powered I/O cards and up to 5 memory cards (providing as much as 80K words of main memory). 2113A will support 14 I/O cards and 10 memory cards (maximum memory 160K words).

Standard with all 21MX computers of both series are parity checking, extended arithmetic unit, floating point, data communication instructions, and brownout-proof power supply.

U.S. list price of a basic E-Series computer, a 2109A with 16K words of main memory, is $8,550. In more typical form, with 32K memory, Fast Fortran processor, and 1K Writable Control Store, the 2109A has a U.S. list price of $13,900. At the higher end, a 2113A with maximum (160K) main memory, Fast Fortran processor, and maximum user-accessible microprogrammable instruction store would be $36,150 in the U.S. HP OEM quantity discount schedules apply; they range from 15% to 35%. Delivery estimates currently are 9 to 12 weeks.

DSD Configuration Literature

By: Dave Hendrix/DSD

From the passing of Fiscal '76 into the birth of Fiscal '77 our systems configuration philosophies have changed a great deal, specifically with the addition of the new HP 1000 configurations and the deletion of all the 96XX's except for the 9640A. With these changes some clarification to our configuration material must follow.

The system configuration guides are designed to help you mold a customer desired configuration as a system. The point I'm trying to make is that our manufacturing operations

in building a system are different than those of building a field installed product or subsystem. Products or options ordered on a system order are manicured "in-house" for system integration and, in most cases, are installed at the factory. Line item orders with no system associated to it may differ with respect to what is supplied with the product since the assumption is that it will be field installed vs. factory integrated.

Another thing to consider is the fact that the configuration guides do get outdated. Updates do occur but because of that time lag between updates or new revisions you can only use that information provided as a *guide*, not the gospel, to what is received with what is ordered (the same is true for data sheets).

Periodically we get calls concerning what a customer received vs. what is assumed they should get. In most cases, what the customer received is what they should have received in accordance to the way it has been set up in our manufacturing area (again, with respect to a system option vs. the stand-alone product).

So, when you are laying out a system configuration for your customer and there is some question as to what is provided with each option, use the Configuration Guide, Data Sheets or the newly published (in microfiche form) Product Content Guide as a guide to what is received. As to a published commitment to what is supplied, DSD stands behind what is published in the CPL. If more exact information is required contact your friendly sales development engineer. We are here to please. Sell 1000's, they are the cleanest, easiest to order products we have.

Eg: The 9600 Price/Configuration Guide is over one year old and it is still the only means to configure 9640's. Beware of information changes.

Image/1000 Giveaway Ended January 1
By: Fred Gibbons/DSD

The program for including IMAGE/1000 free with each HP 1000 Model 80 and 81 ended on January 1, 1977. Only orders transmitted prior to January 1 qualified.

The elimination of the giveaway program has however been accompanied by a price reduction for IMAGE/1000 software. As of January 1, 1977 IMAGE/1000 was reduced from $6,000 U.S. List to $2500 U.S. List. All the better to beat the competition with.

Sell IMAGE/1000 — It Sells Systems!

91700A Configuration Guide Error
By: Dave Bunch

OOPS! 91700A as a line item for HP 1000 is $3500 (as on the Corporate Price List) instead of $3250 (as in the 1000 Configuration Guide). Please change your copy.

1K and 4K PROM Generation
By: Frank Jackson/DSD

Please be aware that the 12909 PROM WRITER is neither supported by 21MX E-Series nor by RTE II or III. The following matrix shows compatibility of the PROM WRITER with the various CPU's and operating systems:

COMPATIBILITY MATRIX (Y = YES; N = NO.)

PROM WRITER \ CPU	2100A	2100S	2105A	2108A	2109A	2112A	2113A	BCS	DOS III	RTE II	RTE III
12909A	Y	Y	N	N	N	N	N	Y	Y	N	N
12909B	Y	Y	Y	Y	N	Y	N	Y	Y	N	N

Because the 12909 PROM WRITER Kit is only capable of blowing 1K chips it is necessary that your customers have another means of getting 4K chips (or 1K) fused into ROMs.

I have talked with the chip vendors and they assure me that their local offices or local representatives usually have the capability for fusing chips purchased from them. It is necessary that your customer supply a paper tape in the appropriate format as shown. Any of the formats can be produced by the PROM TAPE GENERATOR Program (PTGEN) which is part of the 92061A RTE Microprogramming package.

Vendor	Format
Intel	BPNF format as defined in Intel's 1976 data catalog.
MMI (Monolithic Memories, Inc.)	TWX ASCII BHLF format as defined in MMI's 1973 through 1976 pROM device data sheets.
Signetics	Accepts both the Intel and MMI formats given above.
HP	This format is recognized by the HP pROM Writer (part no. 12909-16005), which is supported only in DOS and BCS environments.

HP 1000 and 7 Track MTS Available As The Odd Couple
By: Dave Hannebrink/DSD

You need not further deprive that long-standing 7 track mag tape shop of the benefits of the HP 1000. DSD can now provide, through our specials group 12971A support on the 1000.

The standard 12971A diagnostic includes the mag tape SIO driver and requires output to an SIO supported interface heretofore making 1000 compatibility a problem on two fronts: the diagnostic is incompatible with the standard 1000 diagnostic configurator and the 2645A block mode interface, 12966A, does not have an SIO driver.

As a special, we are prepared to supply a revised 12971A diagnostic on mini-cartridge, loadable from the 2645A system console. However, an auxiliary terminal (2640A, 2762A, 2762B, or 2752A) and the appropriate interface (12880A or 12531D) must be included to allow proper output of the diagnostic on 2 SIO supported devices. From our experience, one of these subsystems is included with most 1000 orders anyway, making the additional cost a bit more bearable.

Consult DSD sales development for further details concerning this special.

Parts that HP has used with PTGEN tapes are:

pROM Part	21MX	21MX E-Series
4K	Signetics 82S115	Signetics 82S141
1K	MMI 6301	MMI 6301
1K	Harris 1024-5VB	Harris 1024-5VB

Listed below are the contacts for the various vendors which your customer may contact if he is having difficulty in finding a source for generating PROM chips.

VENDOR	U.S.A.	CANADA	EUROPE	s. AMERICA	JAPAN
Harris	Harris Corp. P.O. Box 883 Melbourne FL. 32901 (305) 724-7430	Munro Electronic Components, Ltd. 2684 Slough St. Mississauga Ontario L4T 1G3 (416) 676-1042	Harris Semiconductor Inc. 53 BD De Waterlou BTE 5 B1000 Brussels (02) 428-3602	Same as U.S.A.	Harris Semiconductor Time Life Bldg. 2-3-6 Otemachi Chiyodaku, Tokyo (03) 279-1691
Intel	Intel Corp. 3065 Bowers Ave. Santa Clara, Ca. 95051 (408) 246-7501	Same as U.S.A.	Intel International Rue Du Moulin A Papier 51 – Boite #1 B-1160 Brussels Belguim (02) 660-3010	Same as U.S.A.	Intel Japan Corp. Flower Hill – Shimanchi E. Bldg. 1-23-9, Shimanchi, Setagaya – Ku Tokyo 154 (03) 426-9261
MMI	Monolithic Memories 1165 E. Arques Ave. Sunnyvale, Ca. 94806 (408) 739-3535	Future Electronics Montreal Quebec (514) 735-5775	Monolithic Memories Inc. c/o Memory Devices Ltd. Central Ave. East Moseley, Kent KT8 OSN England (851) 929962	Same as U.S.A.	MMI Japan K.K. Parkside – Flat Bldg. 4-2-2 Sendagaya Shibuya-Ku Tokyo 151 (03) 403-9061
Signetics	Signetics 811 E. Arques Ave. Sunnyvale, Ca. 94086 (408) 739-7700	Philips Electron Devices Toronto (416) 425-5161	Philips Nederland B.V. Eindhoven Nederland (040) 79 33 33	Signetics Int'l. Corp. 811 E. Arques Ave. Sunnyvale, Ca. 94086 USA (408) 739-7700	Signetics Japan Ltd. Tokyo (93) 230-1521

HP 1000

PERSPECTIVE

If you have been reading this scandal packed rag for the last few issues you must have noticed that we have begun a series of articles meant to focus the HP 1000 in its three main application areas.

These first articles are only preliminary ones which will be followed up with more indepth material in subsequent newsletters. (Incidentally, the ghost writer of the last issue referring to computation was *Carlos Avila*.)

This issue we are addressing the world of instrumentation and the part the HP 1000 plays there. Future articles on instrumentation will get specific about our capabilities, qualifying customers and various customer applications.

Instrumentation

Everything you wanted to know about the HP 1000 measurement and control capabilities but were too confused to understand.
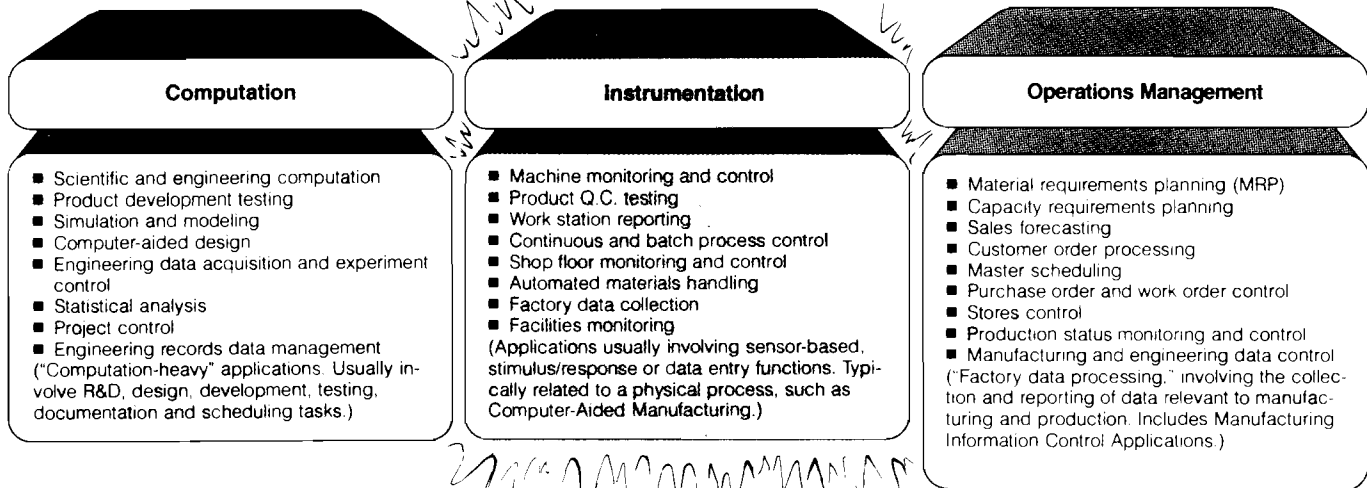
Computation	Instrumentation	Operations Management
■ Scientific and engineering computation ■ Product development testing ■ Simulation and modeling ■ Computer-aided design ■ Engineering data acquisition and experiment control ■ Statistical analysis ■ Project control ■ Engineering records data management ("Computation-heavy" applications. Usually involve R&D, design, development, testing, documentation and scheduling tasks.)	■ Machine monitoring and control ■ Product Q.C. testing ■ Work station reporting ■ Continuous and batch process control ■ Shop floor monitoring and control ■ Automated materials handling ■ Factory data collection ■ Facilities monitoring (Applications usually involving sensor-based, stimulus/response or data entry functions. Typically related to a physical process, such as Computer-Aided Manufacturing.)	■ Material requirements planning (MRP) ■ Capacity requirements planning ■ Sales forecasting ■ Customer order processing ■ Master scheduling ■ Purchase order and work order control ■ Stores control ■ Production status monitoring and control ■ Manufacturing and engineering data control ("Factory data processing," involving the collection and reporting of data relevant to manufacturing and production. Includes Manufacturing Information Control Applications.)

Figure 1. Typical HP 1000 Applications

Instrumentation, Computation, Operations Management
By: Dave Hendrix/DSD

Where does the HP 1000 fit with respect to instrumentation? Where does the HP 1000 fit in measurement and control? Where are we going? Questions we all want answered? You bet your sweet amp!!

We have added a lot of new blood in the field in the past year and we feel its important to talk about the HP 1000 instrumentation capabilities, the market places we shoot for, sales qualifying, and the nitty-gritty considerations associated with an instrumentation type sale.

The direction of our articles-to-come will be to provide as much information as we can surrounding instrumentation. We will emphasize general concepts such as performance levels of "front ends". Why is the medium-to-low performance level front ends the direction we have chosen to pursue? How can we still satisfy higher performance requirements?

We will emphasize the advantages of our products and our product line. Did you know that the 2313B is the only box in the industry that provides low level multiplexer (LLMPX) measurement capability and high level multiplexer measurement (HLMPX) capability together? We will also talk about our software capabilities, its pluses and minuses. We will provide as much detail as we can gather in the way of hardware/software performance.

Won't it be nice to have a finger-tip reference to all the questions you ever had about our instrumentation capabilities? Won't it be nice to be able to take that RFQ and answer most of its requirements right from one information source rather than having to have a desktop full of reference material? Won't it be nice to help your customer mold that RFQ without having to make ten different trips because you didn't have the proper reference material? You just ain't a shortin'!!

This is our goal, read on for more detail.

The HP 1000: What's Available
By: Dave Hannebrink/DSD

Because of our instrumentation expertise we have an impressive list of available HP 1000 supported plug-in I/O hardware, front end measurement subsystems, computer compatible bench instrumentation, and real-time software utilities to help solve a broad spectrum of application problems. However, with such a long list, we're often puzzled as to what solution to pursue.

For instance, we sell primarily into either lab or industrial environments. What makes these different selling situations? Why do we build both 9603R and 9611R front ends?

Both our analog (2313B) and digital I/O subsystems (91063A) have several plug-in card options. High level multiplexing, low level multiplexing, event sense, event counter, etc. What does all this really mean in terms of customer needs?

Then there's always the self sufficient, do it yourself hardware whiz. What general interfaces can we offer him? What about HP-IB? Where does it fit into the picture?

Peripherals. The right ones can make the job easier. Everybody knows about the familiar I/O devices. How about something more special — plotters, for instance? What can we sell as a package?

Finally, there's always software. Very few individuals, even experienced customers, are both application and computer experts. What often lies between a user, knowledgeable of his problem, and a successful computer solution is the software offering of the vendor. Where does HP excel in this aspect?

A lot of questions, for sure — we'll devote a full article to their discussion.

The HP 1000: Qualifying the Instrumentation Sale
By: Dave Hannebrink/DSD

HP can't be all things to all customers. A gray area often exists in deciding what to offer, what to commit to, and what

to get involved in when mulling over that potential big sale.

What do we expect of customers and their understanding of their application problems? An ill-defined instrumentation, problem has no computer solution. On the other hand, a little pre-sales savvy in helping the prospect write a spec or a benchmark can lock us into the solution. How should we approach these situations?

What determines if the prospect wants to talk "turn-key?" Hardware and systems *software*? Hardware only? Where do we feel most comfortable?

If we can't (or won't) do the job for a customer, can one of our OEM's?

Often we can use both current needs and future wants in selling HP 1000 based instrumentation systems. The lab and production applications of today could become the distributed network nodes of tomorrow. How can we identify these opportunities?

What hardware configurations are typical of our traditional customers, i.e., when can we expect to sell 96XX front ends, or HP-IB building blocks? Can we provide special offerings? What's the rule-of-thumb on special content to a sale? When should we pursue these special configurations? When should we steer clear?

No one can give unqualified answers to these questions. Guidelines are available though, and we will outline them in follow-on articles.

Getting Down to the Nitty Gritty
By: Dave Hendrix/DSD

The last of our sequence of articles will detail the nitty gritty considerations of putting a system together. Figure 2 pictures a good measurement and control type system. There is a lot of detail that has to be considered to mold the right type of system for your customer.
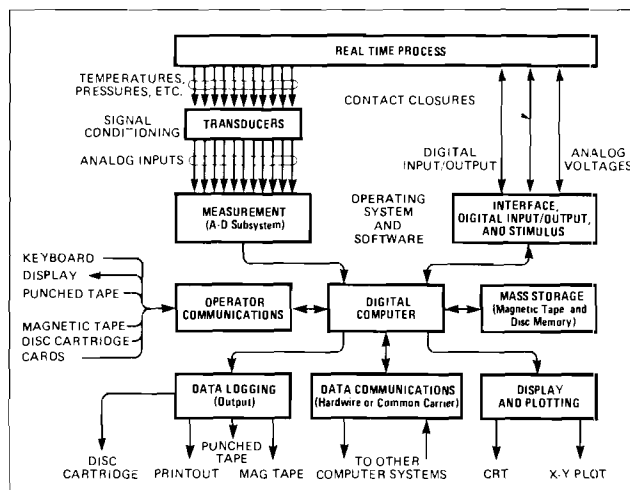

Figure 2.

The Major Functions of HP Measurement and Control Systems are Shown in This Block Diagram

Questions that have to be asked are questions such as:

1. What is to be measured? Or monitored?

2. How many points are to be measured?

3. What resolution is required?

4. How often must each point be sampled?

5. What is to be done with the data?

6. What controls are required?

7. Is signal conditioning required?

8. Will remoting the measurement/control capability be more beneficial than local capability?

Plus many others! But not only do we want to attack the above type questions we want to define instrumentation concepts.

You can not answer the overall questions without understanding the individual concepts. What are TTL, CMOS characteristics? What is signal conditioning? What has to be considered when distance becomes a factor in the measurements (noise, grounding, common mode voltage, etc.)?

We want to put a truly chock-full-of-meat instrumentation reference article together. Something you can reference that will answer most of your measurement/control questions.

Summary

Needed? Does an electron fill a hole?! And we're open to suggestions. What would you like to see in an article like this? We would like your inputs. Twx or call *Dave Hendrix* or *Dave Hannebrink.*

Sales Aids

HP 1000 Installation
By: Frank Jackson/DSD

Please be aware that the Installation Policy for HP 1000 is different to the HP 9640A. The matrix below shows the recommended and allowable charges to Data Systems Division.

Product	Options	Site Prep	Hardware Install	Software Installation/ Assistance
2170A	All		X	
2171A	All		X	
2172A	All		X	
9640A		X	X	
	A00 thru A02			X
	A04 thru A26		X	X
	P11 thru U06		X	
	U25 thru U53		X	X

Consult the Data Systems Installation Matrix for more detailed information.

Notice of Return Policy for DSD — Effective January, 1977
By: Bonnie Boeck/DSD

Per the corporate marketing policy of October 15, 1976. the following will apply regarding Notice of Returns for DSD. Material being returned to the factory must have prior approval from factory before returning. Products for approval must be returned within 30 days after initial shipment. All approved returns must reference customer name, sales order number. and reason for return on packing slip. If material returned is $500. or more, 5% restocking will apply or if $500. or less, a flat $25.00 charge will apply. Refurbishing charges can apply to either of the above. Any products returned after 30 day grace period will not be accepted for return. All products returned for any form of credit will be inspected for possible electrical or mechanical problems. The products must meet HP quality standards both electrically and mechanically for full credit to be issued. If products do not meet the above, restocking and/or refurbishing charges will apply. The field will be notified immediately if product does not meet standards and will be informed of restocking and/or refurbishing charges at that time. All products returned must have all cables and accessories returned with unit.

Consignment units will not be accepted for return for credit.

Software and manuals will not be accepted for return for credit.

All credits transmitted are "tentative" until product returned has met the above criteria. if change is necessary field will be asked to retransmit.

Returns directly from customers (not routing through sales office) are not to be allowed. All returns should be routed through sales offices unless factory is notified in advance.

Obsolete products will not be accepted for return. If any questions, feel free to contact me.

Fire Sale on 1009A System Work Table
By: Joe Schoendorf/DSD

The System Work Table, (see page 481 in the 1975 HP catalog) is now on sale at $130. It originally sold for $275. These can serve as accessory tables for the HP 1000. The dimensions are 30" high, 60" long and 20" wide.

21MX E-Series Literature Hot Off The Press

By: Linda Schefter/DSD

Now you've got a complete, up-to-date list of E-Series literature at your fingertips! Most is stocked on your shelves right this minute. Some is so current, it's not even off the presses as of this writing — but will be soon. Choose from:

	LITERATURE NUMBER	AVAILABILITY	ORDER FROM
BROCHURES			
New 21MX Computers (four-color brochure) (Features the new E-Series, yet covers the entire MX Family as well, all under one cover.)	5953-0842	February 1 (will be bulk distributed)	9B – Corp. Literature Dist.
Price/Configuration Guide	5953-0000	February 1 (will be bulk distributed)	9B
DATA SHEETS			
21MX E-Series Computer (2109A, 2113A)	5953-0827	Now	9B
21MX E-Series Fast FORTRAN Processor (13306A)	5953-0832	Now	9B
21MX E-Series Firmware Accessory Board (13304A)	5953-0830	Now	9B
21MX E-Series Semiconductor Memory System (2102B, 12994A, 12998A, 13187A)	5953-0828	Now	9B
21MX E-Series Writable Control Store (13197A)	5953-0824	Now	9B
21MX E-Series Dual Channel Port Controller (12897B)	5953-0822	Now	9B
21MX E-Series Memory Protect (12892B)	5953-0823	Now	9B
21MX E-Series Dynamic Mapping System (13305A); also includes Memory Expansion Module (12731A) and DMS Instruction Group (13307A)	5953-0826	Now	9B
21MX M-Series and E-Series DISComputers (2124B, 2125A, 2126A)	5953-0833	Now	9B
REFERENCE MANUALS			
New 21MX M-Series and E-Series I/O Interfacing Guide	02109-90006	Mid-January	CPC
21MX E-Series Operating and Reference Manual	02109-90001	Now	CPC
21MX E-Series Microprogramming Reference Manual	02109-90004	Now	CPC
21MX E-Series Installation and Service Manual	02109-90002	Now	CPC
FIELD TRAINING MANUALS			
21MX E-Series Field Training Manual		distributed 9/76	
21MX Computers: A Guide to Selling Memory Reliability		distributed 9/76	
21MX Family Competitive Analysis		distributed 9/76	
APPLICATION NOTES			
New Remote Program Load	5953-0816	Mid-January (will be bulk distributed)	9B
New Microprogrammable Block I/O	5953-0837	Mid-January (will be bulk distributed)	9B
Microprogrammable Processor Port	5953-0835	Now	9B
E-Series Microprogramming	5953-0836	Now	9B

RJE 1000 Update

By: Jim Eckford/DSD

Be sure and remember that the new improved RJE 1000 package requires the new enhanced versions of RTE II/III, 92001B and 92060B respectively. All the new systems that are shipping have the new RTE's and all the customers on the Software Subscription Service are getting it mailed to them in January. Therefore the ones to watch out for are all the old system customers with "A" version RTE software (92001A and 92060A). Upgrades must be purchased in

order to be compatible with the new RJE 1000. These upgrades are:

RTE II	92001B	$5000
	Opt. 001	−4500
		$ 500
RTE III	92060B	$6000
	Opt. 001	−5500
		$ 500

NOTE: These upgrades are only good for customers having 92001A or 92060A software now.

RTE II and III upgrades for other HP operating systems can be obtained by consulting the factory.

Training News

Satisfying Your Customers' Needs
By: Paul McGillicuddy/DSD

During the last several months, training has been restructed. Your customers' software training requirements can be satisfied through DSD while their hardware training requirements can be satisfied through CSD. Here is the organization — cut out and save.

Training Manager Registrar Courses

CSD (408) 735-1550
Tom Lowe EXT. 2667
Laura Kohl EXT. 2670

DSD (408) 257-700
Paul McGillicuddy EXT. 2370
Judy Barrick EXT. 2952

- 21MX Oper. & Maint. (10 days)
- 2100 Oper. & Maint. (5 days)
- 7900 Oper. & Maint. (5 days)
- 7905 Oper. & Maint. (5 days)

- RTE II/III (10 days)
- Dist. Syst. (5 days)
- IMAGE (5 days)
- Assembler (5 days)
- MProgramming (5 days)
- HP-IB Basics (3 days)
- HP-IB Programming (2 days)
- BASIC (3 days)

There are data sheets on all the above courses that discuss the content, pre-requisites, etc. There are also schedules showing the frequency, cost and dates of all the above courses. Both can be ordered from Corp. Literature Bldg. 9B. I am looking forward to working with you in the future. If training can help you, let us know — GOOD SELLING!

DSD Training Materials
By: Jane Seligson/DSD

Many people have written asking how and where they can get DSD Training Materials and what items we use in our classes. Here's the answer. Data Sheets describing our courses are available from Corporate Literature, Bldg. 9B c/o Dave Asplund. They are free. Europe can order the same data sheets from stock held in Amsterdam c/o Fred Plantinga. The part numbers are as follows:

DATA SHEET NUMBERS

5952-9913	RTE II/III Course Data Sheet	DSD
5952-9915	DOS II Oper.	DSD
5952-9918	21MX Microprogramming	DSD

5952-9919	Distributed Systems	DSD
5952-9920	2100 Series Assembler	DSD
5952-9921	Measurement & Control Subsystem	DSD
5952-9922	2100 IMAGE Data Base Mgmt.	DSD
5952-9923	Terminal Control System B	DSD
5952-9924	Multiterminal Real Time Basic	DSD
5952-9944	IMAGE DBMS	DSD
5952-9945	HP-IB Mini Computer Bus Basic	DSD
5952-9946	HP-IB Programming Under RTE	DSD

Complete class material lists are available by writing or TWX me. All usual DSD publications and training material (except Instructors Aids) can be obtained by ordering from Division 2200. Training materials are designated by a 22999 prefix and can be ordered from me directly on an I/O only if no other part numbers are mixed in. Instructor material is not available to customers. If someone wants an Instructor Guide of tape they must contact me personally. Orders for those items on an I/O will not be accepted. As of November 1st, the content and production of all DSD training materials was assumed by the software group (George Taylor) and/or hardware group (Orrin Mahoney) in Bill Senske's Technical Marketing Department. The training group (Paul McGillicuddy) is responsible only for actual classroom teaching, so if you have any input or critiques, please address it to the appropriate person.

Order Processing

HP 1000 Order Problems
By: Bill R. Johnson/DSD

We are having some confusion with orders for HP 1000 systems. In addition to the 2170,71,72, some of these orders contain line items for software such as Multiuser BASIC (92101A), DS1/B (91700A) and IMAGE (92063A) with no options on the software. When this software is ordered as a standard on a paper tapeless HP 1000, we ship it as unintegrated paper tape. If you want the software on mini-cartridges and integrated, you must order option 020. When you don't order 020, we are not certain whether you made a mistake or intended the paper tape software.

Consequently, we will handle this situation as follows:

When we receive an order for 2170,71,72 with line item software without option 020, our O/P department will TWX your O/P department informing them that you have ordered and we will ship the unintegrated paper tape version of the software. If you want the integrated mini-cartridge version, you must transmit a change order adding option 020. If this change order arrived within four weeks of the scheduled ship week, the system will be rescheduled.

I want you to be clear that it is your responsibility to see that the order is transmitted correctly. We are willing to let you know when we see an order which does not appear correct. Then it is your responsibility to correct it or accept it shipped as ordered.

DATA TERMINALS NEWS

Division News

### WHAT RELIABILITY REALLY MEANS!
By: Rich Ferguson/DTD

A lot of to-do is made about reliability on different HP products. It's interesting to note what this really means to customer applications.

Pictured here is a very interesting example of what customers can do with HP equipment because of the inbred rugged design and reliability that is built into the 2644 (and the 21MX. . .).

There is a company in Canada that mounts the 2644 in a specially designed airplane that cruises at an altitude of 2000 feet to take geological surveys, looking for natural resources and minerals, etc. As you might imagine, cruising at several hundred miles an hour at only 200 feet above ground would cause an extremely bumpy ride. (The terminal is shock-mounted but still takes a horrible beating, according to the customers.)
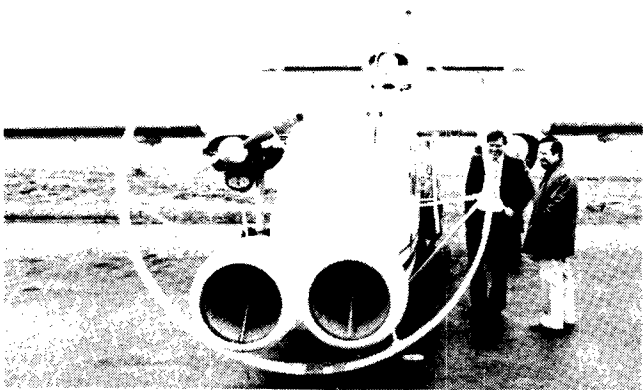
This company chose the 2644 terminal because of its rugged design and modularity, since it is very easy to repair in the field. This is quite important, simply because the areas in which the airplane flies are usually remote, quite a distance from any HP field office.
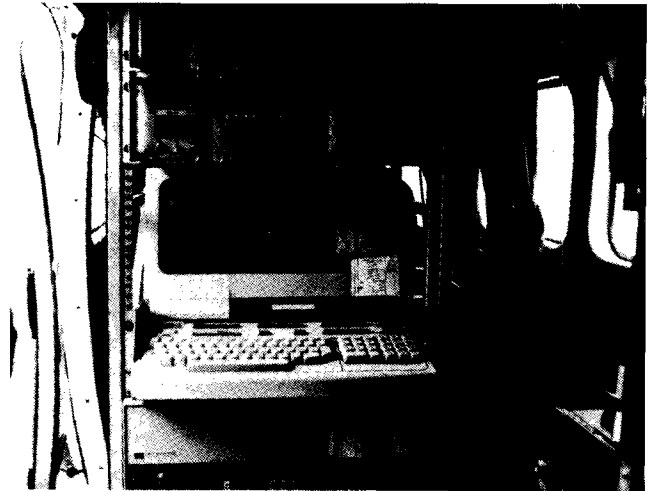
So, next time you're talking about reliability and the ruggedness of our terminal product line, mention this application to your customer. It will really drive home the point!

Our thanks to our Canadian sales force who found one of the most interesting applications to date for the 2640 terminals.
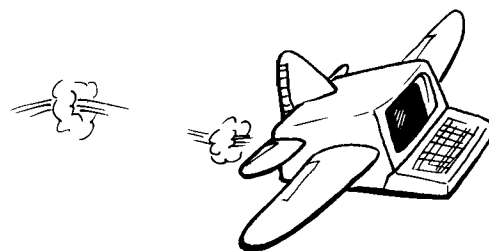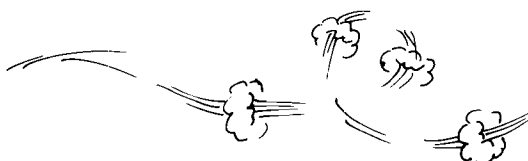
Product News

DATA COMM OPTIONS REVEALED!
By: Eric Grandjean/DTD

The following table should answer a lot of questions that we have recently received regarding data communications options on the 2641 and 2645A:

ITEM	PART NUMBERS			
	13260A*	13260B	13260C	13260D
Interface Printed Circuit Assembly	02640-60086	02640-60089 (13250A)	02640-60106	02640-60107
ROM IC's	1818-0213	1818-0213	1818-0214 (std only) 1818-0261 (opt 001 only) 1818-0288	1818-0214 (std only) 1818-0261 (opt 001 only) 1818-0288
Keyboard Overlay	02644-00002	02644-00002	02645-00003	02645-00003
Baudrate Label	7120-5486	7120-5486	7120-5485	7120-5485
Test Connector Assembly	02645-60002	02645-60003	02645-60002 02645-60004	02645-60002 02645-60004

*The 2641 or 2645 Option 030 deletes from the terminal exactly what the 13260A contains.

Sales Aids

APL DEMO TAPE
By: Eric Grandjean/DTD

The slides on the following pages are extracts of your new APL demo tape.

One APL demo cartridge will be provided with each demo 2641A. Please make sure that your demo 2641A has option 001, 8K of memory and option 202 to obtain a correct display. (This tape will not give a useful display on 2645's. . .)
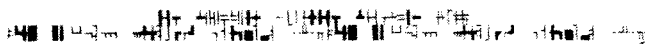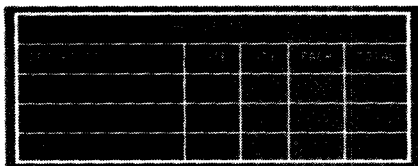
Have fun with (APL) and good selling!
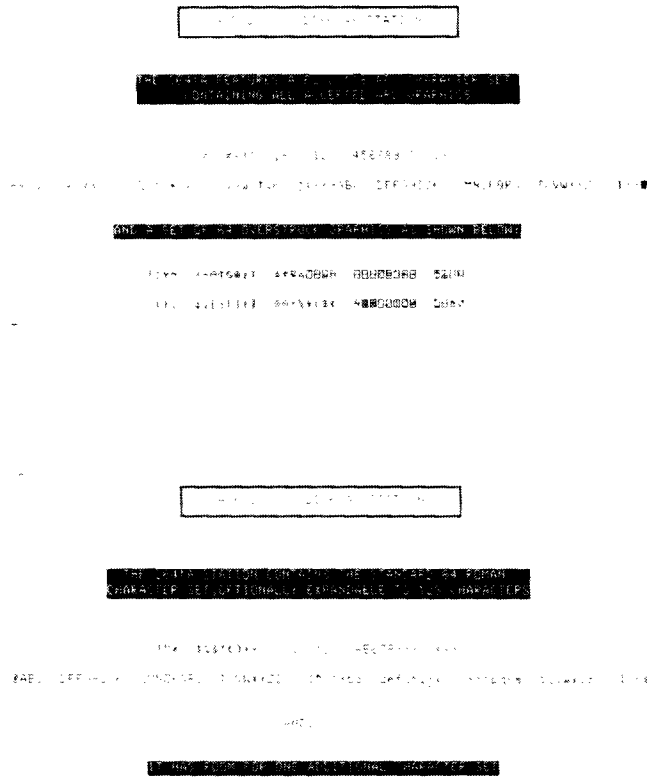
43

FOR INSTANCE :

OPTIONAL **THE DRAWING** SET

These microvector elements can be used as building blocks to partition the display, or to reproduce complete business or procedural forms.....

44
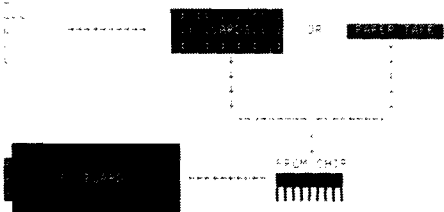
2641A DISPLAY STATION
FEATURES

YOU CAN TEST IN YOUR OWN CHARACTERS

DOT MATRIX

...PAPER TAPE

...ROM CHIP

45

A P L DISPLAY STATION

DATA IS ENTERED FROM THE

(Roman legends are shown on front side of keycaps only where assignments differ from APL legends')

46

A P L DISPLAY STATION

Operator may type several characters, backspace as far as necessary, proceed to overstrike the appropriate character(s), press "return" in character mode, or "enter", if in block mode.

Here is an example:

... OR ...

SPACING, in APL mode, performs the "cursor right" function.(In a non-APL field, spacing will over-write existing characters with blanks).

47

A P L DISPLAY STATION

The 2641A actually displays the overstruck characters for immediate visual verification

For example:

... : O,"backspace",+ results in a B....

... : O,"backspace",u results in an \....

(\ indicates invalid symbol)

48

A P L DISPLAY STATION

Backspace in APL does not stop at the first column of the current line, but automatically "wraps up" to the end of previous line...for instance:

(normally, backspace stops at column 1)

49

A P L DISPLAY STATION

Contains up to 10? bytes of RAM semiconductor memory. (4k standard)

Up to 110? bytes per cartridge

Saves computer time and transmission time

Automatic data logging...Numeric/Alpha field checking....Movable margins character wraparound...Transmit only fields...Formatted fields...and more

As shown in the following general sections

410

2641A DISPLAY STATION
FEATURES

FLEXIBLE HIGH SPEED COMMUNICATIONS

o **UP TO 9600 BAUD**		ALSO CUSTOM AND SPLIT BAUD RATES
o **ASYNCHRONOUS**		START/STOP OR OPTIONAL IBM BISYNC PROTOCOL
o **SYNCHRONOUS**		IBM MULTIPOINT BISYNC PROTOCOL
o **RS232C AND CURRENT LOOP**		TELETYPEWRITER COMPATIBLE
o **FLEXIBLE DATA NETWORKS**		COMBINATIONS OF SHARED LOCAL OR REMOTE LINES

411

DATA COMMUNICATIONS

THE
2641A MAKES POSSIBLE
FLEXIBLE DATA COMMUNICATION NETWORKS

POINT TO POINT (LOCAL)   (STAND ALONE)

COMPUTER   REMOTE POINT TO POINT

MULTI-POINT POLLED (LOCAL)

DAISY CHAINED CLUSTER   REMOTE MULTIPOINT POLLED
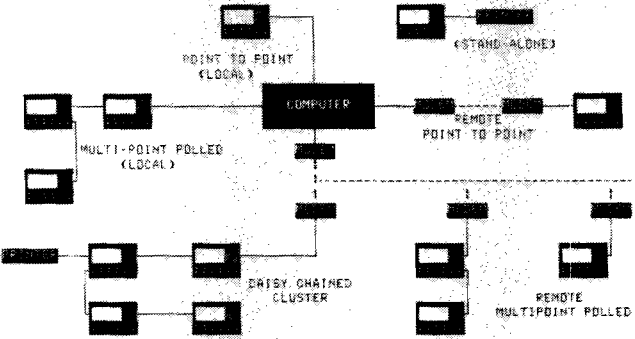
A12

2641A DISPLAY STATION
FEATURES

INTEGRATED MASS STORAGE OPTION

o DUAL MINI CARTRIDGE   PROVIDES 220K BYTES MASS STORAGE FOR CONVENIENT OFF-LINE DATA ENTRY

o EASY FILE MANIPULATION   DIRECT FILE ACCESS WITH HIGH SPEED SEARCH

o ASCII OR BINARY DATA   READ OR WRITE ASCII AND BINARY DATA

o AUTOMATIC DATA LOGGING   STORES DISPLAY INFORMATION AUTOMATICALLY

A13

2641A DISPLAY STATION
FEATURES

EASY TO READ DISPLAY...AND ENHANCEMENTS

o HIGH RESOLUTION DOT MATRIX   LARGE 9 X 15 MATRIX FOR PRECISE CHARACTER DEFINITION

o RACE LINE WRITING   GENERATES CURVED TYPEWRITER-LIKE CHARACTERS

o FOUR DISPLAY ENHANCEMENTS

NORMAL
BLINK

AND COMBINATIONS:

A14

2641A DISPLAY STATION
FEATURES

EASY TO USE EDITING CAPABILITY

o INSERT AND DELETE LINES OR CHARACTERS   SINGLE KEYSTROKE OPERATION

o CHARACTER WRAP AROUND   PREVENTS END OF LINE CHARACTER LOSS

o MOVABLE MARGINS   FORMATS TEXT THE WAY YOU WANT IT

o FIELD CHECKING   BOTH ALPHA AND NUMERIC CHECKS REDUCE DATA ENTRY ERRORS

o POSITIONAL MEMORY LOCK   FREEZES PORTIONS OF THE SCREEN OR PREVENT MEMORY OVERFLOW

A15

2641A DISPLAY STATION
FEATURES

USER DEFINED KEYS

o 8 USER DEFINED FUNCTION KEYS   THE F1 THRU F8 KEYS

o 80 CHARACTERS PER KEY   CAN BE TEXT OR CONTROL CODES

o SEVERAL OPERATIONS WITH ONE KEY   CUSTOMIZES THE KEYS TO YOUR APPLICATION

o SIMPLIFIES OPERATOR PROCEDURES   REDUCES ERRORS BY PERFORMING SEVERAL OPERATIONS WITH ONE KEY

o LOCAL OR TRANSMIT   PERFORM LOCAL OPERATIONS OR TRANSMIT MESSAGES OR BOTH

A16

2641A DISPLAY STATION
FEATURES

RELIABLE AND MODULAR

o SINGLE BUS ARCHITECTURE   ALLOWS EASY FIELD UPGRADES AND REPAIRS

o MICROPROCESSOR IMPLEMENTED   SOPHISTICATED INTELLIGENCE FOR EASY OPERATION

o SEMICONDUCTOR DRAM MEMORY   UP TO TWELVE KILOBYTES DISPLAY MEMORY

o SELF TEST DIAGNOSTICS   ONE KEYSTROKE VERIFIES PROPER TERMINAL OPERATION

APL KEYBOARD

CRT

RS232C I/F

SINGLE BUS

OPTION SLOTS (5)

BASIC 2641A ARCHITECTURE
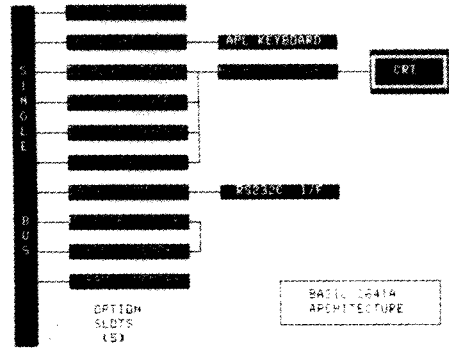
A17

FEATURES SUMMARY

128 APL CHARACTER SET

64 CHARACTER OVERSTRIKE SET

DUAL APL ASCII OPERATING MODE

SINGLE KEY MODE SELECTION

BIT PAIRING KEYBOARD

A18

FEATURES SUMMARY

COMMUNICATIONS

UP TO 9600 BAUD

ASYNCHRONOUS OR SYNCHRONOUS

POLLABLE

RS232C AND CURRENT LOOP

DISPLAY

HIGH RESOLUTION DISPLAY

MULTIPLE CHARACTER SETS

CUSTOM CHARACTER SETS

16 POSSIBLE DISPLAY ENHANCEMENTS

MASS STORAGE

SEMICONDUCTOR DISPLAY MEMORY

DUAL MINI CARTRIDGE

AUTOMATIC DATA LOGGING

ASCII OR BINARY DATA

DATA ENTRY & EDITING

ALPHA AND OR NUMERIC FIELD CHECKING

FULL EDITING CAPABILITY

PROTECTED FIELDS

TRANSMIT ONLY FIELDS

A19

FEATURES SUMMARY

TEXT ENTRY & EDITING

CHARACTER WRAP-AROUND

MOVEABLE MARGINS

CHARACTER INSERT OR DELETE

LINE INSERT OR DELETE

RELIABLE AND MODULAR

SINGLE BUS ARCHITECTURE

MICROPROCESSOR CONTROLLED

SELF TEST DIAGNOSTICS

AND MORE...

USER DEFINED KEYS

EIGHT USER DEFINED KEYS

SIMPLIFIES OPERATOR PROCEDURES

CUSTOMIZES TERMINAL TO YOUR APPLICATION

LOCAL OR REMOTE CAPABILITY

A20

THIS CONCLUDES THE FIRST PART OF THIS DEMONSTRATION

THE ... BEING A MULTIPURPLE TERMINAL HAS A LOT OF ADDITIONAL CAPABILITIES IN THE AREA OF DATA ENTRY AND COMPUTER APPLICATIONS

PRESS ... TO CONTINUE WITH GENERAL PURPOSE APPLICATIONS
OR
PRESS ... TO RETURN OR REPEAT DEMONSTRATION

HP GRENOBLE NEWS

Sales Aids

More Sales Aids from Grenoble

By: Marc-Henry Bricquet/HPG

Building on your success with the HP 3070A, we have developed a comprehensive new demo program for use with the 2000 System. Completely written in friendly BASIC, the program manges up to 14 terminals connected on an HPG serial link. The demo program is designed to illustrate the collection of manufacturing labour information (who is doing what for how long). It will be ideal to show to your key manufacturing accounts.

Send me or *Bernard Guidon* in Boise, a blank mini-cartridge and we will return you a copy of the program and manual which includes explanations of the program and layout of the keyboard definition label.

Computer Museum

NOW PLAYING

THE HP 3070 HELPS SELL 2000 SYSTEMS

What Are We Doing To Help You Sell Data Collection Systems In U.S. And Canada?

By: Bernard Guidon/Boise

The 3070A and 3071A terminals offer new opportunities for selling HP equipment. They are opening a new segment to the computer market to HP systems, especially those used in manufacturing and tests and measurements. We are launching an aggressive plan to help you sell 3070A's and 3071A's in these markets and here are the guidelines of this campaign. A detailed product sales plan has been mailed to each DM in the U.S. and Canada and you may refer to it if you need further information.

Our primary target market is the light manufacturing environment, where the 3070A will fit for shop — floor data collection, control of HP-IB test stations and general purpose data collection. Our approach will be directed as follows:

1. The end user who values the feature of one supplier, total systems, distributed data collection and appreciates the key contributions of the 3070A.

2. The OEM software systems houses, and especially those specializing in manufacturing applications.

Tactical approaches to manufacturers will be made at different levels according to the location of the company and to the existing depth of HP penetration.

1. **HP National Accounts**
   Largest and well known manufacturing companies will be one of our primary targets. We will be calling on each company to arrange a presentation. These presentations will be prepared by the factory (Boise). Action on the HP national accounts will be coordinated with *Jerry Klemushin*, CSG, who will assist us in getting the most out of each presentation.

2. **Large Manufacturers**
   Large manufacturing companies will be reached in cooperation with DSD. The 3070A will be a part of the presentation of the HP 1000 to such large companies. Offering the 3070A with the HP 1000 will strengthen the HP total solution for manufacturing.

3. **OEM**
   Often small and medium size manufacturing will not possess the software expertise required to manufacture the information system software necessary to operate HP systems and 3070's.

   Therefore, our tactics will be to identify and qualify OEM software system houses. This should give you a list of available software and system houses that you can then recommend to your customers. Additionally these identified software and systems houses will act as extra "HP Sales Representatives" by recommending 3070's to their customers and will, therefore, be among our best customers. OEM seminars will be held in sales offices in cooperation with DSD to present the HP 1000 and 3070A to OEM software and systems houses.

   Direct and detailed presentations will be arranged for manufacturing types of OEM's to ensure that they have a technical understanding of our products.

4. **Shows — Computer Caravan — NPT's**
   The 3070A will be included in the promotional group plan to reach the manufacturing market. Plans are being made to promote the 3070A at shows such as APICS, Computer Caravan, etc.

5. **CS Newsletter**
   Communicating new applications, new literature, competitive information, system performance, etc. will be done via the CS newsletter.

We are helping you sell more 3070A's!

Moore Business Forms is Helping You Sell More OMR's
By: Bernard Guidon/Boise

Moore Business Forms is one of the most important form businesses in the U.S. and Canada, but is also represented in Europe. Very good business relationships have been established between HP and Moore so that Moore Business Forms has a very good understanding and knowledge of the HP OMR's and has provided an excellent service in designing a continuous stock of forms for our customers.

Moore Business Forms has provided me with the complete listing of their offices in the U.S. and Canada, including phone numbers and the appropriate person to contact. Therefore, if one of your customers is interested in designing his own cards, call me or drop me a telex and I will supply you with the local contact. We want to help you sell OMR's and are making OMR applications as easy as possible.

Direct Mail for 7260A's
By: Bernard Guidon/Boise

John McLellan (High Point, N.C.) has initiated a direct mail campaign for the 7260A optical mark readers in the State of North Carolina. *John* has prepared a package of literature which focuses on the mini RJE station aspect of the 7260A, so that additional business can be expected for 2640 series terminals and 9866 or 9871 printers. Such packages have been mailed to about thirty users of an ACCESS system. If you plan to direct a similar campaign in your territory, contact me at Boise and I will supply you with the proper material and a copy of *John's* package.

Congratulations to *John* for his fine job.

Why the 3070A As a Light Manufacturing Factory Floor Data Collection Device?
By: Bernard Guidon/Boise

One of the keys to the manufacturing information system is the data entry process. Without it, there is just no manufacturing control, since no data is available. In manufacturing operations, Real Time Data Entry is provided by input terminals widely distributed on the factory floor. There are three types of terminals available:

1. The very primitive small pushbutton terminal which usually is slow to operate or very limited in information capacity.

2. The application terminal where there is extensive use of "canned messages." A single button represents a part identity or a particular function.

3. The CRT terminal with a keyboard

Types 1 and 3 miss the light manufacturing industry as an application area. Type 1 terminal is really designed for heavy industry operations and Type 3 CRT terminals require typing skills which are not available on the factory floor. In addition, CRT terminals are too expensive for wide use. Therefore, only applications terminals similar to Type 2 will fit for factory shop floor data collection in light manufacturing.

The HP 3070A and HP 3071A are Type 2 terminals, whereby input can be sent by a few key strokes. Indicator lights operated by the computer guide the operator in the correct message-entry sequence. "Canned messages" are available with the 10 special function keys of the keyboard.

But it's from that point on that 3070A's demonstrate their unique features. Whereas most of Type 2 terminals available on the market are simply RS 232C and require one interface per terminal, the 3070A offers multi-drop communications with up to 63 terminals on a single twisted-pair cable and therefore only one interface. Furthermore, error free communications, afforded by a special handshaking protocol, are another plus for HP. Finally, the internal HP-IB structure definitely makes the 3070A a winner on the competition.

There Is Just No Better Real-Time Terminal Available Today on the Market for the Factory Shop Floor In Light Manufacturing than the 3070A.

Sell the 3070A's — it will help you sell the system, too!

CE CORNER

Who Supports the 3070A?
By: Phil Price/Boise

There has been some confusion in the field regarding the support of the new 3070A/3071A Data Entry Terminal from Grenoble Division. 3070A/3071A hardware and RTE II/III driver software are being supported from Boise Division by myself for the U.S. and Canada, and by Grenoble Division (*Maurice Richez*) for the rest of the HP world.

3070A software for System 2000, being an integral part of the operating system, is supported by GSD Division.

Don't fool around and don't be misinformed — CALL US — we love your calls.

CSRC Ready to Repair 3070A's for U.S. and Canada
By: Phil Price/Boise

The Computer Systems Repair Center in Mountain View is ready to receive (and repair) domestic and Canadian 3070A's and 3071A's which eventually fail, *Hal Smith* and *Jesus Preciado* have received one week's training on the new data entry terminals and cannot wait to receive the first units, *Hal* and *Jesus* are very excited about the 3070A and are certainly the only people in the U.S./Canada wishing units to fail. But we designed them strong so that they may have to wait for a while!

Welcome to the 3070A team.

Product News

Telex Interface Resurrected as Special
By: Guenter Kloepper/HPG

Remember the 15253A 5-level telex interface?

Due to popular demand from a lot of you out there in the field, we have transferred all of the manufacturing documentation from Boeblingen and we will build a run of thirty cards on a special basis (some of these will go into the board exchange pipeline).

If you would like technical data on this interface, drop a line to *Catherine Clay*. Since this is a special and involves a lot of non-routine effort, we are charging $1200 for the card. We expect to be in a four-week delivery situation by the end of January.

Complete systems

Software is available to support the use of the HP 3070A terminals with the Hewlett-Packard Timesharing and Real-Time Operating Systems of the HP 21MX series of minicomputers. Each operating system features a unique group of capabilities, one of which will normally be optimum for your application.

Real-Time
The Hewlett-Packard Real-Time Operating Systems range from small, low-price systems without a disc memory to large, multi-user disc-based systems which can be linked to similar or smaller systems to form a distributed computing network. Applications programs may be written in FORTRAN IV/II, conversational multi-user real-time BASIC, ALGOL or HP Assembler. The systems provide for time, event, operator and program-to-program scheduling of applications programs. Typically, up to fifty-five HP 3070 terminals can be linked to an RTE II or RTE III system.

Timeshare
The Hewlett-Packard 2000 Computer system offers powerful stand-alone local data processing for multiple terminals plus concurrent remote job entry (RJE) to an IBM or CDC computer. The system supports up to thirty-two conventional interactive terminals plus up to thirty-one HP 3070 terminals. Programming is done in the powerful yet easy-to-learn HP Extended BASIC language.
Data entered via 3070 terminals may be processed completely by the 2000 system, or simply pre-processed before transmission to a larger central system.
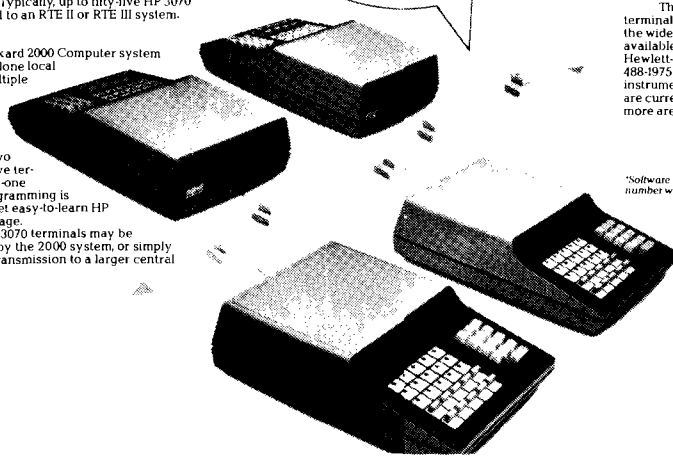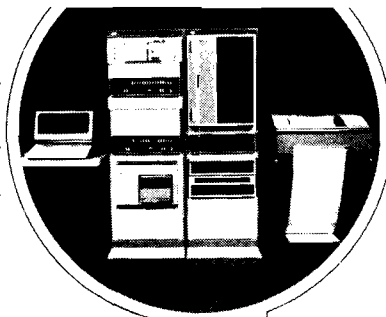
Multi-Drop
As many as sixty-three HP 3070 terminals can be physically* connected to a single serial link cable (shielded twisted pair). The cable, which connects to a single HP Computer Interface Card, may be any length up to 1.24 miles (2 km) and terminals can be connected at any point on the cable. This lowers overall installation costs and provides excellent flexibility in locating and re-locating terminals.

Error-free communications
The unique communications protocol used in the serial link is enhanced by sophisticated error detection and automatic re-transmission facilities incorporated in each terminal. Extensive use of hardware buffering in the computer interface further minimises unnecessary waste of computer processing time.

Remote control of HP-IB devices
The capabilities provided to each user of a 3070 terminal can be expanded by the addition of any of the wide range of HP-IB Compatible devices available. The Hewlett-Packard Interface Bus is Hewlett-Packard's implementation of the IEE Standard 488-1975 "digital interface for programmable instrumentation." Over 100 HP-IB Compatible devices are currently available from Hewlett-Packard and more are being introduced each year.

Software considerations will normally reduce the number which may actually be connected and used

GENERAL SYSTEMS NEWS

Product News

APL PERFORMANCE IMPROVED 50%

By: Jean Danver/GSD

The performance data in your APL data sheet and Field Training Manual is obsolete! Ever since announcement, the APL Lab team has been working on the performance of the product and the results are nothing short of extraordinary.

512K bytes of memory will now support 16 terminals of hardworking, dedicated APL, a better than 50% improvement. The performance results were so good that we failed to discover the minimum system (that memory configuration which supports 4 terminals) and need to redo the 256K byte tests with a different number of terminals.

APL/3000 now makes sense for current Series II customers using less than 16 terminals. Lowering our cost per terminal by more than $4000 can't help but get your sales!!!!

The performance charts below give you the good news for large memory 3000 Series II's.

4 FORTRAN 4 BASIC 8 APL	6 BASIC 6 APL	3 FORTRAN 3 BASIC 6 APL	1 COBOL 12 APL
512K bytes	384K bytes	384K bytes	512K bytes
1 — A script	1 — A script	1 — A script	2 — A scripts
1 — B script	1 — B script	1 — B script	2 — B scripts
2 — C scripts	1 — C script	1 — C script	2 — C scripts
2 — D scripts	1 — D script	1 — D script	2 — D scripts
1 — E script	1 — E script	1 — E script	2 — E scripts
1 — F script	1 — F script	1 — F script	2 — F scripts
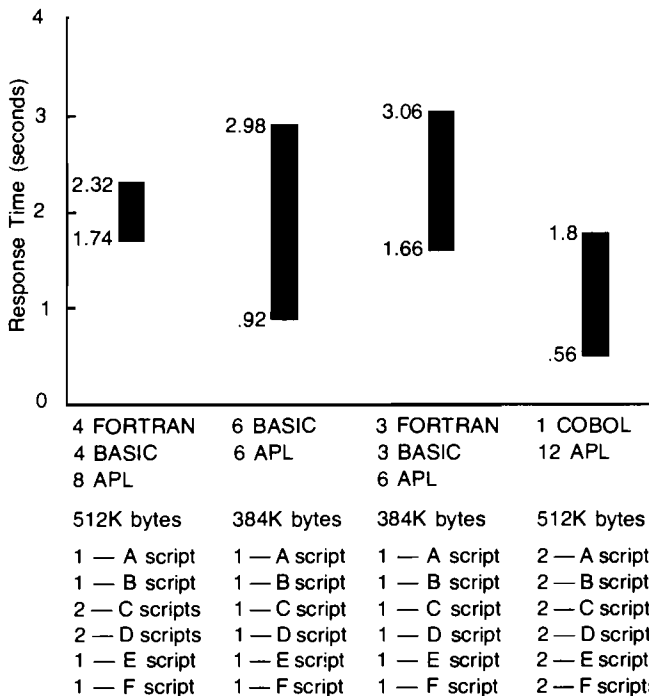
Average Response times for a Range of APL activities on a multi-lingual system.

Medium Mix 512K bytes	Heavy Mix 512K bytes	Light Mix 384K bytes
5 — A scripts	3 — A scripts	5 — A scripts
3 — B scripts	3 — B scripts	3 — B scripts
3 — C scripts	2 — C scripts	2 — C scripts
2 — D scripts	3 — D scripts	1 — E script
3 — E scripts	3 — E scripts	1 — F script
2 — F scripts	2 — F scripts	
18 Terminals	16 Terminals	12 Terminals
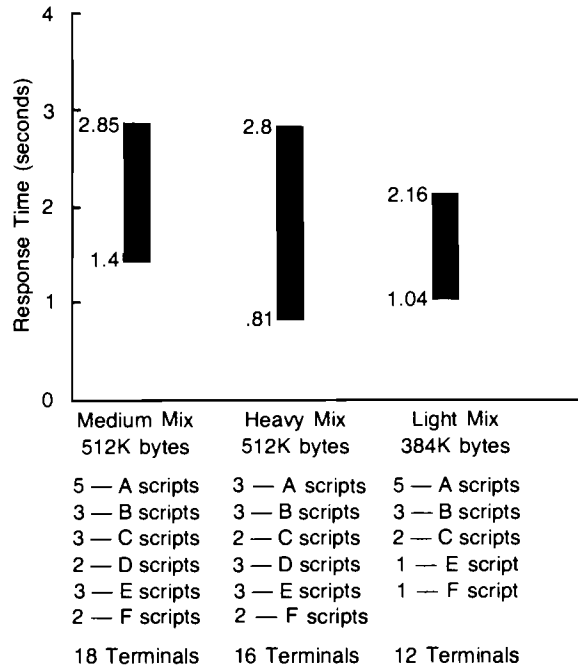
Average response times for a range of activities on a dedicated APL system.

Script descriptions:

A — Edit interactive program and execute.
B — Edit simple calculation program and execute.
C — Assignments and addition in calculator mode.
D — Compute bound large workspace swapping program.
E — Compute bound simple calculations.
F — Compute bound primes program

IMAGE NOW CALLABLE FROM BASIC

Yes, It's Official, Folks!!!

Now, IMAGE/3000 has been extended so that it can be called from BASIC/3000. Both interpreted or compiled programs may now call the full set of IMAGE/3000 intrinsics, giving customers a new capability which none of our competitors can match, namely, the ability to interface to a major database from 5 different languages — simultaneously if necessary.

BASIC/3000 is also an excellent vehicle for less computer-oriented people to get data out of a database and manipulate it in ways too complex for QUERY/3000. In business applications, where DP managers are always faced with requests for special reports, the interactiveness of BASIC/3000 now lets them get those reports out quickly and easily.

How It Works

The problem in the past was that when BASIC/3000 made a "call" to an external routine (like those in IMAGE) it did so in a way different to that which IMAGE/3000 expected. This has been solved by adding a set of interface routines which translate the BASIC/3000 call into another call to IMAGE/3000 itself. For every IMAGE/3000 intrinsic there is a corresponding interface routine with the same name but with an X in front of it. For example, to call DBOPEN a BASIC/3000 user would call XCBOPEN. Those extra routines will become part of the supported IMAGE/3000 product.

The IMAGE/3000 manual is being updated to specify this new feature, complete with examples on how it can be used. You should be aware that these manuals will be out before the software actually reaches customers.

When

It will be included in IMAGE/3000 Version A.4.2 on MIT date coded 1701. This should be in the hands of your CE by end of Feb '77, and as of that date all new systems shipped will have this feature.

Cost

Included in IMAGE/3000 at no extra charge.

Maintenance

The extension is an integral part of IMAGE/3000 and is fully supported by HP.

Competition

As far as we know, the 11/70 with IAS is the only system with a database callable from BASIC. Not even the big mainframes can do it and this is our key: if you have a customer who is contemplating decentralizing his database from a big system to a 3000, point out how BASIC/3000 will get his users closer to the data than is achievable on his mainframe with its compiler languages.

Sales Aids

APL DEMONSTRATIONS
By: Jean H. Danver/GSD

General Systems Division has APL/3000 available on its demonstration 3000 Series II. We can make time available on this machine for customer demonstrations. Your sales development engineer can make arrangements.

To help you with demonstrations and to share useful APL/3000 programs, several demonstration workspaces are in the public library of the DEMO account.

Right now, the following workspaces are available under the DEM account:

1. The DEMOWS workspace explains the APL/3000 Demos on the system. Upon loading, it automatically gives a summary.

2. The FILEWS workspace contains several well-documented programs using files.

3. The EXTENDWS workspace contains several programs demonstrating the extended control functions.

4. The APLGOL workspace contains several programs written in APLGOL with the APL/3000 equivalent.

5. The DEMO2641 workspace contains programs which require the 2641 APL Terminal.

6. The USEFUL workspace has a number of useful or interesting functions.

We welcome documented additions to these demos. Please send them to either *Bob Crum* or *Jean Danver* so a backup tape can be made. To obtain these workspaces, once signed on to the DEMO account in APL/3000, type:

)LOAD wsname.PUB

This will replace your workspace with the one named. Either *Bob* or I will gladly send copies of these workspaces to anyone who sends us a mag tape.

Some advice on customer demonstrations:

1. The answer to the 'do you have' question is almost always yes except:

   a. File Commands (we use shared variables to access MPE files)

   b. Formatting (we only have IBM's thorn Φ in monadic and dyadic versions)

2. Since our APL/3000 EDITOR is different than the standard APL editor, the prospect will have to be shown how to use it.

3. Both *Bob* and I are willing to answer any questions your prospects have. However, experience has shown that it is not advisable for us to talk to the prospect directly. The answers frequently require explanations of the 3000 file system and the like, which can not be explained easily over the telephone. Since you already know the 3000, we can quickly explain the APL/3000 to you and you can handle the 3000 part.

By the way, APL/3000 is available to be installed in field demo centers. Contact *Sam Boot*/GSD Sales Development for details.

European Isolation Transformer

By: Fritz Joern/BBN

We are happy to announce that after a frustrating and long search, and after a lengthy in-house evaluation of different types of isolation transformers, we are now able to offer you an address of a German transformer manufacturer who makes them to our specifications. The most used model in Europe will be a transformer with three equally balanced phases on the primary side, costing less than DM 1500,—. The input can be set to three voltages (380V + /— 10%) and the output is 230V 45 AMPS, just the right thing for our 3000's. The other transformer will be the single phase transformer for under DM 1000.—. At least one is required for each 3000, but we suggest that you add another transformer for 3000's with additional peripherals. You should also consider transformers with 2000 ACCESS Systems and in cases where interrupted processing with bad power lines is needed. Ordering details have been distributed by *Uwe Jensen* to the European sales and service managers.

Order Processing

Does Your Order Require A Coordinated Shipment?

By: Sharon Bradley/GSD

If you are ordering line printers or magnetic tape options from Boise for a 3000 system. . .it certainly does!

Due to the shift in manufacturing responsibility of line printers and magnetic tape units, 3000 orders requiring certain Boise products must be coordinated with GSD products to ship at approximately the same time. Only a small percentage of our coordinated shipments have been coming in coded as such.

When ordering a line printer from Boise for a 3000 system, you must also purchase a 30209A interface from GSD. And mag tape options # 304 and # 305 from Boise also require an interface (# 30215A) from GSD. Please refer to pages 24 and 25 in Volume 2, Number 1 of the *Computer Systems Newsletter* for a breakdown of both GSD's and Boise's product responsibility.

Keeping customer satisfaction in the forefront means placing these items in your quote or instructing your order processing personnel about these products requiring coordination due to installation specifications.

Division News

HP BOASTS TWO SPEAKERS AT CIPS SEMINAR

By: Larry Hartge/GSD

The 1976 annual *Canadian Information Processing Society's* seminar held in Toronto had over 350 paid attendees. For a mere fee of $120, the attendees listened to three days of talks on Intelligent Terminals, Data Bases and Small Busi-

ness Systems. Hewlett-Packard was the only firm with more than one speaker.

Bob Bowden of the Data Terminals Division gave a speech titled, "When Do I Need Intelligent Terminals?" on the first day. *Larry Hartge* from General Systems Division kicked off the second day as the keynote speaker on Data Base, with a talk titled "Data Base on Minis."

Both talks were very well received; there being a large number of requests for copies of both. In addition to the fine reception, the speakers were rewarded with a beautiful proof set of Olympic Coins.

Hewlett-Packard had terminals in their booth at the show which were running stand-alone and in a dial-up basis to the HP 3000. The seminar schedule was arranged such that all attendees were able to observe HP's offerings at the booth.
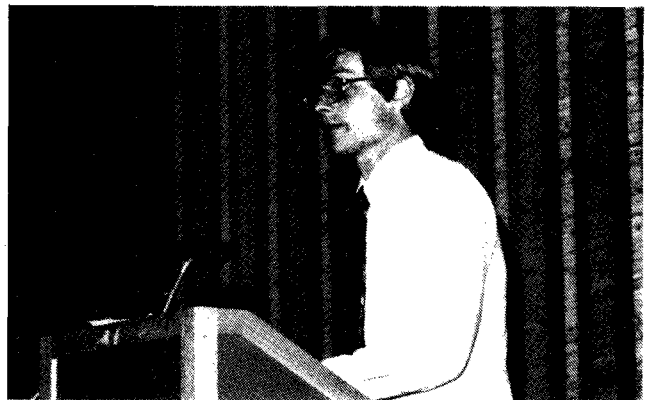
Bob Bowden Delivering "When Do I Need Intelligent Terminals?"

"Data Base on Minis" being presented by Larry Hartge.

The prospect on the far right brought a check into the office the next day for his own terminal! Working the booth are Larry Hartge (second from left) and Mark Turner (second from right).

CS GROUP NEWS

YHP SHOWS: A GREAT SUCCESS!

By: Masaaki Tagami/YHP
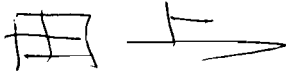
The eighth YHP show was held in Tokyo and Osaka last October 6th through 8th and 14th through 15th respectively. All products were shown in this show. We occupied the second largest booth in which we displayed the 9600 with HP-IB, a Distributed System, a 9570, a 3000 (terminals only), 2645/2644's and the 21MX/K.

There were almost 1000 visitors at the show, so it was very crowded. We hope we will get many orders in FY '77.

Everyone at YHP appreciates HP people at the factory who worked hard to get the equipments delivered to us on time for our show.
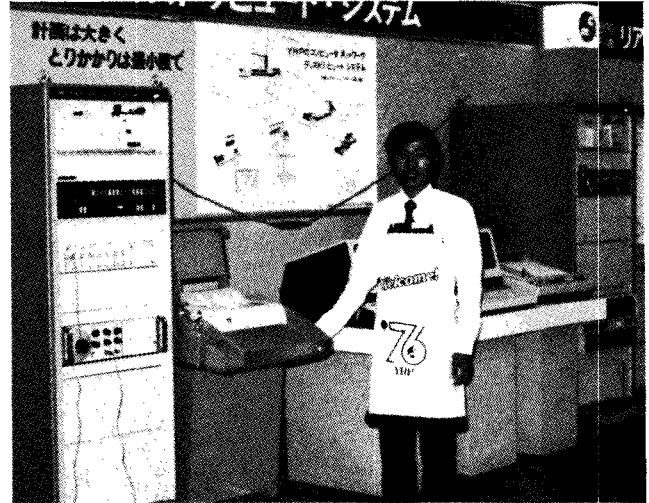
Kawai-San, FE, Shows Our Distributed System Wearing YHP '76 Show Apron.

9600 RTE With HP-IB and TV Interface and Counter.

2640A Family CRT Terminal

Takahashi-San Discusses the 3000 With One Attendee

CSG PURCHASE AGREEMENT CUSTOMERS
by: Ampy Soriano/CSG

Below are additions to the current list of CSG purchase agreement customers we have on file.

CUSTOMER NAME	EFFECTIVE DATE	AGREEMENT TYPE				AGREEMENT NO.	SALES REGION				
		OEM	COMBO	VEU	TERM		NSR	ESR	SSR	MSR	HPCL
A. I. Cybernetics	Dec. 8, 1976	X				CS-281	X				
Association of American Medical Colleges	Dec. 7, 1976				X	-279		X			
Automated Marine International	Nov. 23, 1976	X				-265	X				
Avco Everett Research Lab	Nov. 18, 1976		X			-264		X			
American Totalisator	Dec. 10, 1976	X				-284		X			
Alexander Grant	Nov. 24, 1976		X			-286	X				
B-C Systems	Nov. 29, 1976	X				-270	X				
B & D Computer Services, Inc.	Dec. 1, 1976	X				-274	X				
Computer Timesharing Corp.	Nov. 29, 1976	X				-268	X				
Cyberdata	Nov. 30, 1976	X				-273	X				
Edward Don & Company	Nov. 30, 1976		X			-272				X	
Gen. Tel. & Electronics	Nov. 1, 1976		X(MR)			-251		X			
Graham Computer Systems	Dec. 16, 1976	X				-276			X		
Henry Scalleti	Nov. 30, 1976	X				-271		X			
Leasecomp Management Corp	Dec. 14, 1976	X				-285	X	X			
Logic Associates	Sept. 28, 1976	X				-230					
Martin-Marietta Corp.	Nov. 24, 1976				X	-267	X				
Microcomputer Systems	Dec. 13, 1976	X				-283	X				
Milo Beauty & Barber Supply Co.	Nov. 23, 1976				X	-266				X	
Quazar Systems Ltd	Dec. 1, 1976	X				-275					X
Silton Data	Nov. 29, 1976	X				-269	X				
Sportscomm, Inc.	Oct. 28, 1976	X				-263		X			
Trodyne Corp.	Dec. 7, 1976	X				-278		X			
Union Oil Company of Calif.	Dec. 8, 1976		X			-282	X				

(MR) = MULTI-RELEASE

Happy New Year!