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COMPUTER SYSTEMS NEWSLETTER

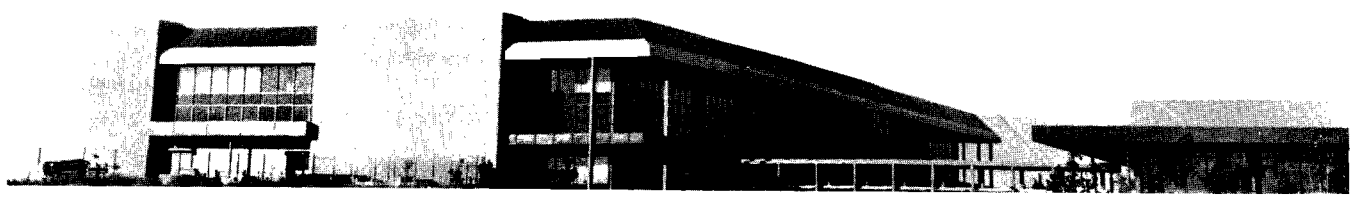
For HP Field Personnel



Vol. 5, No. 5
Jan. 14, 1980



**DATACAP
takes off . . .**



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BOISE DIVISION NEWS

Correction to "DTD Price Guide" Oct. '79

By: Mary McNally/Boise

We'd like to call your attention to an error in the DTD Price Guide for October. Referencing the HP 2631A from Boise, two options are listed incorrectly. Option 011, the line draw character set, is orderable as Option S11. It was developed originally as a special. Option 012, the high-density character set, is *NOT* available on the HP 2631A. It exists only on the HP 2631G. Please note these changes. It has been a source of confusion to several SR's thus far.

Electrostatic Discharge — A Review

By: Wayne Eskridge/Boise

In digital equipment, one of the most difficult classes of problems to deal with is failure due to electrostatic discharge. The trouble with static-induced failure is that it can manifest itself in so many ways. All digital circuits can fail as the result of noise induced by static that appears to be a valid signal. The result can be random, apparently unrelated events without a common element. Many devices do exhibit a predictable range of symptoms most of the time; however, the only reliable fact about static is its unpredictability!

Static charges accumulate on nonconductive surfaces as contact between two parts is broken. Thus, as the print wires of a unit (like the HP 2631A) strike the paper and rebound, they leave the paper with a net charge. Since this happens thousands of times per sheet a surprisingly high charge can be delivered to each sheet. In a low-humidity area, it is easy to leave 500 volts on each sheet. Clearly, if we store 500 volts per sheet in the paper stack, it won't be long before we reach a level that will give an arc discharge. Putting 20,000 volts on a paper stack is not uncommon in a dry area.

There are two ways to approach the problem. You can make the device tolerant of the discharge, or you can prevent the discharge from occurring in the first place. As a practical matter, it is desirable to prevent the incidence, as every machine in the room may be affected by a discharge and it does little good to have the printer run if the CPU goes off. In practice, it is very difficult to prevent all discharges so most systems try to handle it both ways.

Static control involves providing some form of conductive pathway to ground so that charges do not have the opportunity to build up. Various steps may be taken to provide the ground path. Some of them are:

1. Conductive mats or carpets
2. Antistatic sprays
3. Ionizers
4. Humidifiers
5. Tinsel strips
6. Grounded paper stacks
7. Corona discharge devices



Clearly, there are many ways to provide a conductive path and all will work, though their effectiveness will vary. As a practical matter, passive, relatively permanent techniques are best. A favorite method is the tinsel strip. This works well and causes few problems; however, it removes only about 90% of the charge. Thus, while it takes longer to reach a discharge, potential arcs from paper stacks can occur. It is for this reason that paper is also stacked on a grounded surface. This grounding allows charge to bleed off the paper and, except in severe circumstances, will prevent an arc. The combination of tinsel and grounding will protect most units.

The mechanism by which static affects the circuits is typically by RFI. The radiation is absorbed by signal and ground lines which then confuses the logic and the game is over. Static hardening of a device involves shielding of the electronics such that even if RFI is present it cannot reach the logic. The traditional method was to put the circuit in a metal box. The metal would absorb the RFI. The use of plastic cases complicates that problem as the RFI passes through it easily. In order to once again have a metal box, zinc metal may be sprayed on the inside of a plastic case. This method is usually called flame spraying.

Once a case is flame sprayed, it will typically have an excellent stand-off capability. Unfortunately, if you attach an unshielded I/O cable it will act as an antenna and much of the value of the flame spray will be lost as ESD impulses will enter the unit via the I/O cable. Cabling should not be overlooked as a source of ESD faults.

A problem that is rather subtle deals with the power ground. Some wall sockets have not been wired according to code, particularly in older buildings, and the ground may be defective. Clearly, this will compromise the reference needed by the device and operation may be erratic. It particularly aggravates static problems as there is no longer a shunt pathway for ESD-generated noise, and there is little stability in the circuit. Any site that continues to fail after receiving static fixes should have a thorough power analysis.

This has been a general review of static. It is not definitive; however, if the items discussed are understood, most units will yield to fairly simple procedures.

COMPUTER SUPPORT NEWS

Division News

New CSD Product Manager for Support

By: Mike Torgerson/CSD

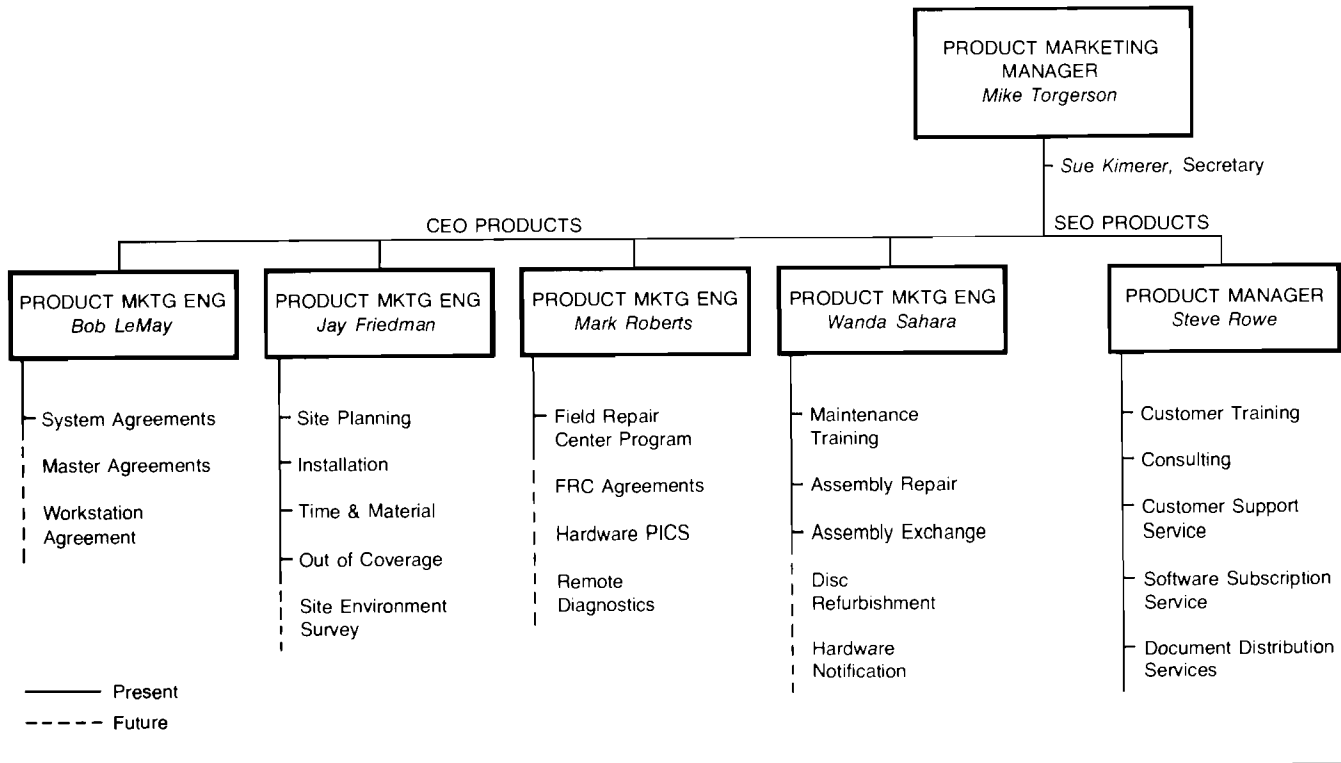


Steve Rowe is the newest member of the CSD Product Marketing team. He has been with HP for seven years, most recently responsible for Marketing Information Systems as well as EDP field support in Europe. Prior to this, Steve was with Corporate Marketing Services for 4½ years as Marketing Information Systems Manager. Steve has an engineering degree and an MBA from UC Berkeley, and spent five years with IBM, then Memorex prior to joining HP.

In his new position Steve is the Product Manager for support products including software support, customer training and consulting. In this capacity Steve will be working closely with people in the systems divisions, as well as the Systems Engineering organization, to develop and manage the marketing program for support services.

Please refer to the following revised organization chart for an understanding of the current responsibilities of the CSD Product Marketing team.

COMPUTER SUPPORT DIVISION



CSD Adds Three New SRO's

By: Ken Hunt/CSD

We are proud to announce three new service responsible offices (SRO's) to HP's worldwide service organization.

San Francisco, California: Primary SRO

The San Francisco office is located just south of the downtown area and will provide improved response to both San Francisco and the northern coastal counties of California.

Phone: (415) 877-0772
Office Code: 2425
Address: 454 Carlton Court
South San Francisco, CA 94080

Spokane, Washington: Secondary SRO

The Spokane office will provide service to eastern Washington and northern Idaho. The Bellevue (Seattle) office is the Primary SRO which will provide extended hours' coverage for Spokane's customers.

Phone: (206) 454-3971 (Bellevue)
Office Code: 2423
Street Address: 708 North Argonne Road, Suite A/I
Spokane, Washington, 99206
Mailing Address: P.O. Box 13366
Spokane, Washington 99213

Grenoble, France: Secondary SRO

This service office is located in HP's manufacturing facility and will receive assistance from the Primary SRO in Lyon, France.

Phone: (76) 25.81.41
Office Code: 6300
Address: Hewlett-Packard France S.A.
5th Avenue Raymond Chanas
F-38320 EYBENS
France

All these offices currently support our customers and will be included in the next update of the Customer Service Data Book and Corporate Service Travel Guide.

Product News

Software Support Without a Hardware Maintenance Agreement

By: Roger LeMay/CSD

The CSD Sales Development team has received many calls from the field about how to quote support services to customers who fall under the GSA Service Contract Act. One common question is: "Can a customer buy software support services without purchasing hardware maintenance services also?". The answer is yes, as long as the total value of the software services ordered does not exceed \$2,500 and the Customer Support Services Agreement is filled out properly.

In Part I of CSSA Exhibit A, the maintenance and software support charges and the periods of coverage are specified. In the maintenance agreement section, simply fill in the equipment location and write zero in the other blanks.

Fill out the software section as usual and be sure to include all software products in Exhibit B.

Please call us at Sales Development if you have any other questions about GSA/government-related support contracts.

Floppy Disc Packaging

By: Ki Haden/CSD

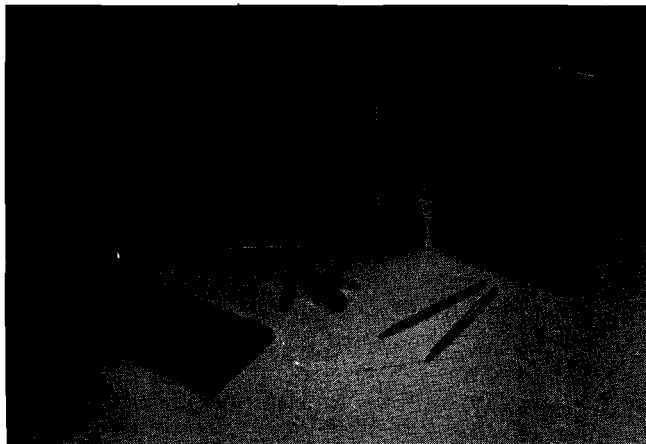
To avoid increasing physical damage to the double-sided common floppy disc drive, 45000-69914, the unit should be returned in a suitable shipping pack. Right now Fort Collins Division is shipping the unit out in a package consisting of: carton, 9211-2997; and a foam in-place insert, 9820-2988. CSD has an alternate container consisting of: carton, 9211-2997; folder with foam, 9220-2988; corrugated tray, 9220-2990 available if the Fort Collins pack is damaged or lost.

DESKTOP COMPUTER DIVISION NEWS

Division News

Desktop Computer Sales Awards

By: Steve Forbes/DCD



Congratulations to the FY '79 sales winners for desktop computing products! Beginning in FY '79, each product line within DCD will give an award to the top salesperson in each of the 11 HP regions in the world. The award consists of a laser-engraved desk or wall plaque identifying the individual's achievement, and a personalized gift. The personalized gifts from each product line are:

- PL96 (Computation) — Leather wallet for pocket-diary
- PL97 (Controllers) — Pen set
- PL98 (Peripherals) — Swiss Army Knife

In addition to these personal awards, each product line will have a worldwide plaque identifying each of the regional winners, which will permanently reside at the manufacturing division in Fort Collins, Colorado. All these items are now in process, and we expect to distribute them to the winners during January, 1980.

The regional winners are listed opposite. Please join us in congratulating these people on this significant achievement, and wishing them continued success during FY '80. Special thanks go to *Bob McCoy*, *Andy Probal*, and *Bob Galizia*,

who were the top worldwide salespeople for PL-96, PL-97 and PL-98, respectively. Together, they generated nearly \$4M in sales of DCD products during FY '79, and *Bob McCoy* broke the \$2M mark.

FY '79 Desktop Computer Sales Winners

PL-96	PL-97	PL-98
<i>Bob McCoy</i> (Southern Sales Region) Top Worldwide Sales	<i>Andy Probal</i> (Midwest Sales Region) Top Worldwide Sales	<i>Bob Galizia</i> (Eastern Sales Region) Top Worldwide Sales
<i>Alan Furniss</i> United Kingdom	<i>Lothar Motzke</i> Germany	<i>Erich Kieber</i> Europe II Sales Region
<i>Sten Andersson</i> Neely Sales Region	<i>Erich Kieber</i> Europe II Sales Region	<i>Bernhard Moeller</i> Germany
<i>Bernhard Limbeck</i> Germany	<i>Bob McCoy</i> Southern Sales Region	<i>Yoshihisa Yashiro</i> Japan
<i>Andy MacGregor</i> ICON Sales Region	<i>Bill Hoey</i> Eastern Sales Region	<i>Dennis DeCoste</i> Midwest Sales Region
<i>Tetsutaka Mizuno</i> Japan	<i>Hiroyuki Mori</i> Japan	<i>Pierre Grelhier</i> France
<i>Patrick Chivalier</i> France	<i>Bill Manak</i> Neely Sales Region	<i>Stan Bemel</i> Neely Sales Region
<i>Bob Johnson</i> Eastern Sales Region	<i>Jean-Pierre DesVeaux</i> France	<i>Clark Macaulay</i> Southern Sales Region
<i>Karl-Heinz Hinteregger</i> Europe II Sales Region	<i>Geoff Nightingale</i> United Kingdom	<i>Geoff Evans</i> United Kingdom
<i>Ken Bylsma</i> Midwest Sales Region	<i>Ian Menzies</i> Canada	<i>Denis Du Buisson</i> ICON Sales Region
<i>John Edwards</i> Canada	<i>Andy MacGregor</i> ICON Sales Region	<i>John Edwards</i> Canada

Product News

Principal Components and Factor Analysis

By: *Dave Deane/DCD*

The statistical software offerings on the HP 9845B were recently extended with the release of the Principal Components and Factor Analysis package. The package represents the most computationally intensive statistical analysis ever offered on an HP desktop.

Principal Components and Factor Analysis will be especially useful to scientists who deal in multidimensional data. The purpose of the package is to reduce complex multivariate data to a more understandable form. The technique is becoming very popular with chemists, social scientists, biologists and even electrical engineers.

The package includes routines for computation of principal components, factor extraction (principal axes or maximum likelihood), and orthogonal or oblique factor rotations. It features graphical presentation of case scores, component plots and factor plots. Principal Components and Factor Analysis contains the Basic Statistics and Data Manipulation routines which provide a database for all the statistical packages on the System 45.

The package requires the 9845T configuration and is priced at \$500.

Introducing the HP 85

By: *Evan James/DCD*

January marks the introduction of Hewlett-Packard's entry into the low-cost, "personal" computer market, the HP 85. Developed and manufactured by Corvallis Division, the HP 85 features flexible computer power packaged into a fully integrated system weighing 18 pounds. For \$3,250, it offers:

- Enhanced ANSI standard BASIC language, compatible with HP's full line of BASIC language desktop computers.
- An integrated 12.7 cm (5in.) CRT with alpha capacity of 16 lines of 32 characters each, plus full graphics utilizing 192 x 256 dots.
- A typewriter-like keyboard with separate numeric keypad and four user-definable keys that can be assigned up to eight functions, plus "soft" key labeling on the CRT.
- Mass storage via the built-in tape cartridge system, featuring 200 Kbytes of data or program storage, files catalogued by name, and file security.
- A 32-column thermal printer operating at up to 2 lps. The CRT contents may be dumped to the printer for listings, data, and even graphics hard copy.
- Editing and debug features providing ease-of-use unique in this price range.
- Three programmable timers plus a system real-time clock.
- Audible beeper with variable tone and duration.

All of these are standard features, but there is even more power available. Four input/output slots in the back of the computer accept a memory module to expand user-available memory from 16 to 32 Kbytes, a Read-Only-Memory (ROM) drawer which accepts up to six language-extension ROMs, and I/O cards for interfacing to external peripherals or instruments. No I/O cards or ROMs are currently available, but they will be introduced during FY'80. Stay tuned!

The tremendous sales potential for the HP-85 will be exploited by both the Computer Systems and Consumer Calculator Sales Forces. Sales Force 02 considers the HP-85 to be "HP's Personal Computer for Industry", and will be selling to our traditional major end user and OEM customers. The integration, high quality, and full range of HP's support will be an ideal match for our customers. Let's put one on every desk! Meanwhile, Sales Force 12 will work through selected computer stores and office equipment dealers to sell "HP's Personal Computer for Professionals".

The HP-85 is already off to a good start. Let's work together to leverage it's popularity into increased sales for our whole line of computer products.

Used Equipment Available

By: *Al Sperry/DCD*

Several items of used desktop equipment are available from customers. Prices are negotiable.

- 9815A, Opt. 001, 888 (Two available)
- 9815A, Opts. 001, 888 and 002, 888
- 9830A, 8K, string and APR ROMs, Opt. 888
- 9862A, Opt. 888
- 9871A, Opt. 888
- 9872A, Opt. 888

For further information, contact me or *Chris Stumbough* in DCD Marcom.

Training News

First New Product Training Tour of the '80s: HP 85

By: *Doug East/DCD*



The HP-85, with *Evan James* and most of the NPT Tour team.

Logging more than 15,000 air miles between 17 North American cities, four teams involving 14 people from DCD recently completed the first New Product Tour of the '80s.

The tour introduced "HP's Personal Computer for Industry", the HP-85. In addition to the training on the HP-85 we also dedicated a section of the presentation to updating Sales Force 02 on two of the most successful HP products in recent years, the 9815 and 9825 Desktop Computers.

This was the first opportunity for most of us to work with many of you since the recent 02/06 merger. Our NPT Tour goal was twofold: to successfully introduce an exciting new product to the Desktop Computer Family, and secondly, to begin establishing the kind of relationship with our new expanded sales force that will make us all successful in the coming decade. The opportunity to meet and interact personally with so many new people for the first time on this tour will go a long way toward making our job of supporting your future sales efforts much easier.

As emphasized in our training sessions around the country, the HP-85 provides a truly low-cost, high-performance, entry-level desktop computer for our traditional major account customers. Used as a door-opener for new accounts and a means of increasing penetration in existing accounts, the potential for this exciting new product is unlimited.

We appreciate the hospitality we received from the field during the introduction tour, and we're all looking forward to working with you to make the HP-85 a tremendous success.

Sales Aids

Ask Your DM About Leads

By: *Marvel Ross/DCD*

This is to clarify our procedure for handling and distributing DCD leads resulting from advertising and publicity

programs, and to explain how you can be sure the leads reach you.

Inquiries requesting a field contact or demo are sent daily by mail to appropriate DMs. Routine inquiries are mailed to the DMs each Friday. These inquiries, including both qualified and unqualified leads, are sent out either on discs or in printout form, whichever is requested. If this information is not reaching you quickly, a call to your DM should either help speed inquiries or verify that there are none to forward.

Keyboard Could Save Your Nerves

By: *Bill Sharp/DCD*

Technical sales personnel should keep in mind that the free DCD customer publication, *Keyboard*, can be a very important source of information, in addition to being a useful sales tool.

Each issue of *Keyboard* contains three or more application articles detailing how desktop computers are being used both inside the factory and by customers. Included is information about what the capabilities of the mainframes are, what peripherals have been used and the source of the software used.

A mailing list is being compiled to ensure that the entire Technical Computer Sales Force receives *Keyboard*. In the meantime, feel free to contact *Keyboard* for copies of current issues, and back issues for the past two years. DCD Field Sales Handbook includes an index of past *Keyboard* articles. For copies of *Keyboard*, contact *Chris Stumbough* at Hewlett-Packard Keyboard, 3404 E. Harmony Rd., Fort Collins, Colorado 80525, USA (303) 226-3800, extension 2235.

DISC MEMORY NEWS

Product News

DMD Product Price Adjustments

By: Cathy Salinas/DMD

Effective December 1, 1979, the list prices and BMMC prices for some of our disc drives were increased to keep product line revenues consistent with divisional objectives. Effective January 1, 1980, the price of the 79XX Option 102 was increased as well. This need to raise prices was due primarily to increases in materials and overhead.

Also on January 1, 1980, the list price of the 12960A (7900 Disc Subsystem) was raised from \$10,000 to \$12,000. With the impending obsolescence of this product, due to declining volume, the price increase is necessary to maintain product profitability through the last shipments near the end of 1980.

Please note the list prices and BMMC prices of our new H-Series Disc Drives included in the list below.

Product	New List Price	BMMC
12960A	\$12,000	\$115
7906M	15,000	92
7906MR	14,000	89
7906S	11,000	63
7906SR	10,000	60
7920M	18,000	91
7920S	14,000	62
7925M	No Change	83*
7925S	No Change	54*
79XX-102	1,000	+5
7906H	13,000	75
7906HR	12,000	72
7920H	16,000	73
7925H	19,000	65

*7925M and 7925S BMMC's have been reduced due to higher reliability statistics received from the field.

Correction to "Support of the HP Disc Drives"

By: Mark Minne/DMD

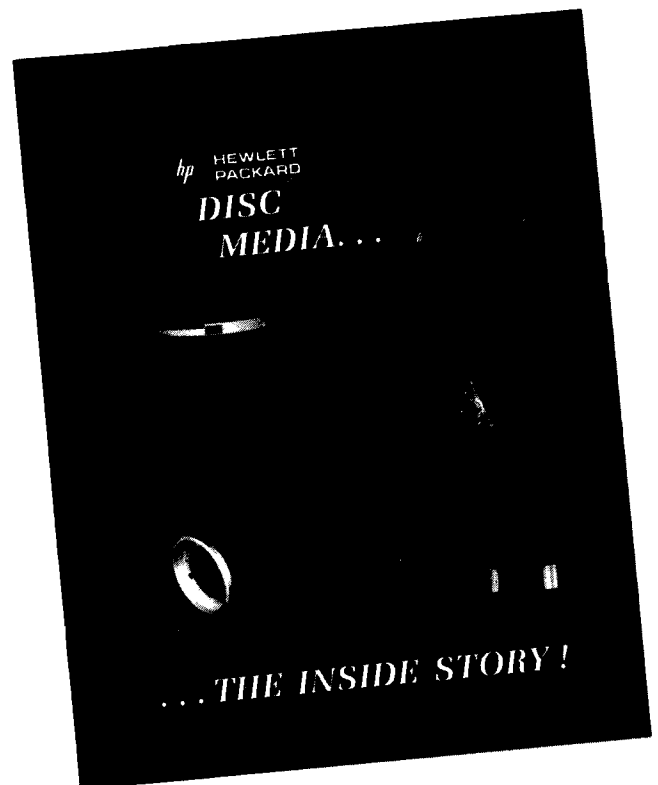
The article that appeared in Vol. 5, No. 3, Dec. 1, 1979 entitled "Support of the HP Disc Drives" had two errors in it!

1. On p. 10, in the lower left corner it indicated that the 7906 is supported on the HP 3000 Series III. The 7906 is *not* supported on the HP 3000 Series III.
2. On p. 11, in the upper left corner, "To support a Model 7920B," should read "To support a Model 7925B".

Sales Aids

HP Disc Media . . . The Inside Story

By: Rich Bowles/DMD



DMD has long recognized that disc media pricing is a very sensitive area in our product line. Certainly, our awareness of this fact has grown as a direct result of inputs from you in the field.

In response to these inputs, DMD has just completed a concise, and I might add classy, brochure that details why media quality is so essential to Hewlett-Packard disc drive performance and reliability. The *full-color* brochure includes a visual tour of our production area with many photographs highlighting those steps which are particularly crucial to achieving the highest quality; many of these steps are unique to HP media.

The intended audience is our installed users who may feel that HP's disc media pricing is inconsistent with the rest of the industry. The *Media Brochure* can also be used as a sales amplifier to portray our thorough development of disc drives in general.

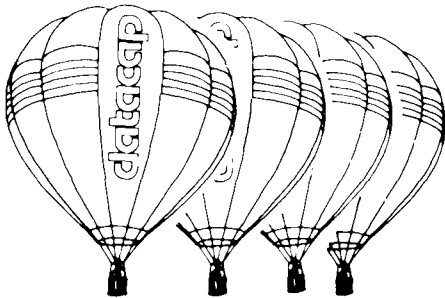
The *Media Brochure* is being distributed by Corporate Mails and should be with you by February 1, 1980. When you need more brochures, please reorder by P/N 5953-3610(48). In the future, we plan on releasing an application note which more closely examines each step of media production, and general care and handling recommendations. Stay tuned for details on the Media Refurbishment Program too!

P.S. I would appreciate hearing from anyone who would like to share a success story about converting any customer back to HP media. Likewise, I am sure the Computer Supplies Operation (CSO) would appreciate receiving your customer's media order. Remember their toll-free phone number and 24-hour turn-around service, if your customer just can't wait:

(800) 227-8020

Thanks again for your comments and input.

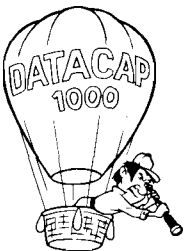
DATA SYSTEMS NEWS



DATACAP Takes Off . . . A Major Opportunity for 1980

What Is DATACAP?

DATACAP/1000 is a software tool which has been created to aid in design and management of data collection networks, as well as the interface to data capture terminals produced by the Grenoble Division of Hewlett-Packard. Although it is not a turn-key system, it is flexible, changeable, and easy to use. A key feature is its compatibility with user-written routines which can increase its flexibility, enhance its data entry validation operations, and a host of other benefits. Operating on HP 1000 computers, DATACAP/1000 is a product which reaffirms Hewlett-Packard's dedication to being the manufacturer's computer company.



HP Management Observations About Data Collection

Dick Anderson – General Manager/DSD

DATACAP/1000 is a very important step in providing software for manufacturing applications on the HP 1000. It's a good example of innovation in software. Much of the application task has been "automated" but it is not a turn-key application and allows considerable flexibility for the user to customize a system for a specific application. I

think HP customers will find the balance in this approach very attractive. It also pulls together some important hardware capabilities that can provide a real contribution to productivity for our manufacturing customers.

Paul Ely – Vice President/Computer Groups

DATACAP/1000 is a solid HP contribution which gives us a unique and needed capability aimed directly at manufacturing companies. It is a key element of our combined Technical/Business penetration of these accounts.

Doug Chance – Group Manager/Technical Computer Systems

Recently I had a chance to discuss Factory Data Collection at an Industry Analyst's meeting in NYC and indicated that "Factory Data Collection is the leading edge of distributed processing."

Cyril Yansouni – General Manager/HPG

After many years of investing in data processing equipment, manufacturing companies today are concerned by the accuracy, the timeliness and the cost of collecting all the data generated continuously in every facet of their operations — from inventory and work-in-process control, and labor vouchering to distribution, etc. HP now offers one of the most complete, friendly and easy-to-install families of data capture terminals. Together with the unique factory data link, this new product line offers a tremendous opportunity for establishing HP as a leader in the manufacturing market.

HP Products for Factory Floor Data Collection

In these days of shrinking profit margins, the value of tightly controlled material usage, labor, and quality is becoming increasingly apparent to manufacturing companies. As a result of this awareness, large companies are searching for ways to automate and improve their data collection and management reporting systems.

HP Grenoble's introduction of the 307X data capture terminal family opened up this factory floor data collection market to Hewlett-Packard. The 307X's, in addition to the HP 1000, DATACAP/1000, HP 3000, MFG/3000, and IMAGE database management packages, solidly qualify Hewlett-Packard for many of these manufacturing collection and control applications.

The data collection portion of these situations can be handled by a variety of HP products. Exactly which products you should recommend depends upon the requirements of the job to be done. Let's explore the characteristics of some typical application situations and their product match.

Situation 1. Intensive Data Collection

In the case where the heavy emphasis is on data collection, a dedicated system may be in order. The best product fit is the HP 1000 with its DATACAP software package for easy transaction development and its economical multi-drop terminal connection scheme. DSD has performance curves to aid you in configuring the HP 1000 you need to meet a specific transaction load. Some data collection buyers demand systems that are fail-safe to ensure against loss of critical data. The HP 1000 can be configured into multiple CPU redundant systems to meet this need. (See redundancy article.)

Product Match: HP 1000, DATACAP/1000, IMAGE/1000, HP 307X

Situation 2. Intensive Time and Attendance

If the emphasis is specifically on intensive time and attendance (T&A), the DATACAP software has too much general purpose overhead to allow high transaction rates. For this type of application, DSD has a sample T&A program that customers can modify to suit themselves. This program can support up to 20,000 transactions per hour, and can run concurrently with DATACAP/1000. Contact DSD Sales Development for details.

Product Match: HP 1000, HP 3077

Situation 3. Primarily Manufacturing Control, Secondary Data Collection Requirement

Some applications have manufacturing control (inventory, material requirements planning, etc.) as a primary concern, but also have a need for a few (≈ 10) data collection terminals. The HP 3000 can be used primarily for the processing requirements, and also for the data collection task if enough CPU time is available. In this case, the customer must write his own terminal monitoring, data validating and data handling programs. A customer would

only do this if the special features of the 307X's, i.e., prompting lights, mini-peripherals, and simple operation, warranted the programming investment.

Product Match: HP 3000, IMAGE/3000, HP 307X

Situation 4. Primarily MFG/3000, Secondary Data Collection Requirement

An application that requires a stockroom materials flow monitoring and planning package is perfect for an HP 3000 running MFG/3000. In this environment, terminal operators typically need more data than can be displayed on a 307X to make stocking decisions and all data collection requirements are satisfied through the use of 26XX CRT terminals. However, if this customer has a limited data collection requirement for other applications running on the same HP 3000, he may want to use several 307X terminals. He must then do some programming to tie the 307X's into the HP 3000.

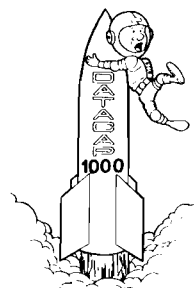
Product Match: HP 3000, MFG/3000, IMAGE/3000, HP 307X

Situation 5. Intensive Data Collection and Manufacturing Control Requirement

Finally, the situation that brings to bear all of the strengths of Hewlett-Packard is one that requires a full-blown data collection and manufacturing control system. In this case, the HP 1000 and DATACAP/1000 provide the dedicated, high volume, real-time data collection capability. The data is then sent over to the HP 3000 via the hardwired DS link, and the HP 3000 does the manufacturing control processing and other functions. While this communications process is not interactive, the user can establish variable time intervals for HP 1000/3000 communication. A joint application project is underway at DSD/GSD to make this DS communication process easily understood and implemented. (See DS application note article.)

Product Match: HP 1000, DATACAP/1000, HP 307X DS/1000-3000, HP 3000, IMAGE/1000 & 3000

In summary, our board product offering lets you propose HP configurations for many data collection and manufacturing information system applications, which we were previously not able to address. This is a large market opportunity and we have an extremely competitive offering which should generate a large amount of orders for HP in FY' 80.



**The How and Why
of Selling
DATACAP/1000**

Did you realize that DSD has a dynamic trio of products for computer-aided manufacturing? DATACAP/1000, IMAGE/1000, and DS/1000! These products can be combined in a system to effectively monitor production and

inventory flow in many manufacturing operations. But will such a system work for everyone? What can it really do for a customer? Are there any caveats of which to be aware? Read on and find out!

An Overview of Shop Floor Control

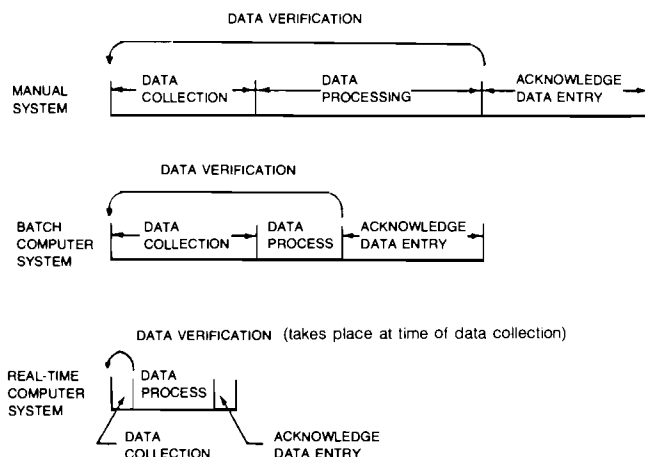
Many production managers spend a great deal of time searching for information needed for routine decisions. This leaves little time for forward planning, so problems do not receive the attention they merit until they reach a crisis stage. When this occurs, a manager must spend time searching for information on how the crisis occurred, cutting deeper into his time and creating a self-perpetuating string of crises.

The role of a shop floor control system is to provide information needed for day-to-day decisions. With this information readily available, a manager can more effectively use his time to maximize operating efficiency, minimize inventory investment, and increase customer service. In fact, the one advantage mentioned most often concerning successful shop floor control systems is the ability to keep constant tabs on job locations and status.

There are other payoffs from a successful system. Better shop floor and inventory control can almost always be justified on the basis of inventory reduction and improved customer deliveries. The system can aid in pinpointing production bottlenecks so assets can be managed more efficiently. Overtime can be reduced because current status of labor availability is obtainable. These systems can also simplify production procedures by reduction of paperwork and simplification of many manual tasks. More importantly, managers develop a different way of doing business once these systems are in use. Because they really have control over manufacturing, they can find ways to secure payback long after the initial cream has been skimmed.

Where Does DATACAP/1000 Fit In?

The key to shop floor control is timely and accurate information. This is what DATACAP/1000 provides. There are other methods of gathering this information, but a real-time data collection system such as DATACAP/1000 has clear advantages.



Alternate Data Collection Systems vs. Time

The time and cost involved in getting data into a retrievable form is a good example.

In a batch system, the transactions must be logged, sent to the data entry facility, entered into the computer, scheduled for edit run, returned to the data source for corrections, re-entered, etc. In a real-time system, the transactions can be installed in a database in a much shorter time frame. The largest savings in time occurs through the data verification loop, as seen in the preceding graph.

DATACAP/1000 can also improve the integrity of data over the other two methods. It provides a degree of integer, real number, character string, and functional verification which can be expanded when combined with IMAGE/1000 or user-written routines. And the responsibility for input accuracy is more clearly defined since fewer people are involved in data entry.

As a production facility expands and changes, its control system must follow suit. The greatest advantage of DATACAP/1000 is flexibility. In a manual data collection system, changing the system would include new paper forms, redefined information routings, extensive retraining, and mass confusion. DATACAP/1000 however, allows the user to reconfigure his data collection network with a minimum of effort.

Who Can Use DATACAP/1000?

Although any manufacturing company can benefit from an effective control system, DATACAP/1000 may not be the answer for everyone. A manual or batch data entry system can adequately satisfy the needs of many small firms. And some manufacturing companies do not have the computer expertise to maintain a real-time system. Remember, an HP 1000 computer system requires a system manager to run most effectively, DATACAP/1000 is a friendly, easy-to-use software package, but it is not a turnkey system. It is a general package which has been written to interface easily with user-written routines which can greatly enhance the flexibility of the DATACAP/1000 network.

The most effective DATACAP/1000 systems include investment in personnel, training, and software development, but a firm willing to make these investments will be assured a generous return.

Conclusion

With the rising costs of personnel, machinery and inventory, production control is a hot topic in today's manufacturing firms. A key element of any production control system is shop floor data collection. DATACAP/1000, with its terminal management, ease-of-use, and flexibility and compatibility with user-written routines, is a powerful product for this market. Combined with IMAGE/1000, DS/1000 and the HP computer family. Hewlett-Packard has unveiled the tools to help your customer create a terrific shop floor control system.

Customer Data Collection Applications

Major TV Manufacturer Goes for Redundancy

With the able assistance of *Ray Vanderhulst* in Rolling Meadows, a TV picture tube plant is building a 3 CPU redundant data collection system.

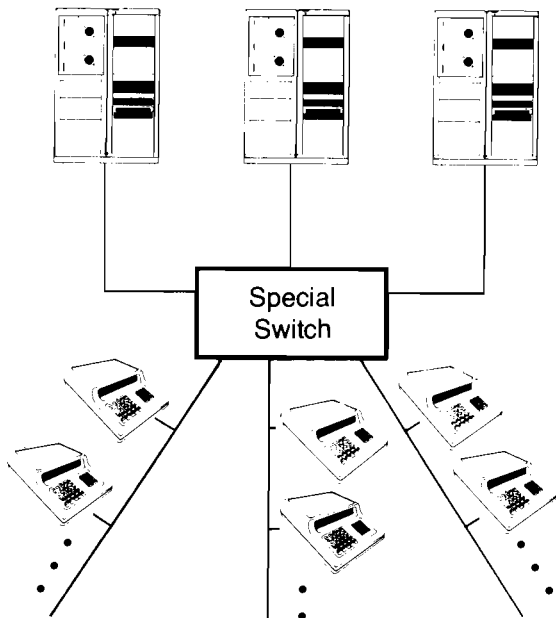
The application is a quality assurance system which will track TV picture tubes.

The configuration includes about 75 HP 307X terminals, 3 HP 1000 systems and some special devices for redundancy. The HP order totals in the \$500K range.

There will be such a high transaction rate that the customer may not be using DATACAP/1000 software (see performance article for DATACAP limits).

The concern about non-stop operation is so important that the customer has configured the system in the redundant configuration shown below. If one CPU fails, the other two take over its data collection terminals (pretty slick, huh!).

This is achieved through a special switch supplied by the specials group at DSD (see the article on redundancy for more information).



Sunnyvale Company Begins Small but Thinks Big

A Sunnyvale, CA. company that manufactures magnetic media items such as cassettes, minicassettes, tape cartridges, minifloppys and regular floppys is currently using two HP 3000 Computer Systems at their corporate headquarters.

When the company heard about DATACAP/1000, it purchased a used HP 1000 Computer System. It used the upgrade approach to add RTE-IVB, IMAGE/1000, FFP, DATACAP/1000, Multi-drop and two HP 3075A Data Capture Terminals. The HP 3075A terminals include the optional alphanumeric keyboard, the multi-function card reader and the thermal printer. This company wanted to begin with two terminals and add more as their application expanded. Training and consulting services were provided by the Cupertino SEO center.

The MIS department of this company is still in the development mode. Initially, it will install the DATACAP/1000 system on its smallest production line. Current plans call for expansion of the existing system by adding more terminals, and three new systems on other production lines over the next year. There are plans to eventually link the HP 1000 systems to their corporate HP 3000's via DS/1000-3000.

HP 1000/3000 Chosen Thanks to HP Technical/Business Team Effort

A data collection breakthrough! *Bob Stevens* and *Irwin Rubien* of the Rochester sales office have shown how the combination of the HP 1000 and HP 3000 can be used to make the most of HP's product line for manufacturers. Their customer is a manufacturer of air separation equipment and scarfing machines. These products are very complex, expensive, and often take a year or more to manufacture. To coordinate this complex manufacturing process, the company needs to keep track of such things as work-in-process, employee hours (time and attendance), and cost information. The firm previously used a card-driven data collection system where the data was collected, keypunched and batched via an RJE link to corporate headquarters in New Jersey for processing. The problem was that the system did not allow real-time control of manufacturing.

Bob and *Irwin's* solution was a system consisting of 35 data capture terminals controlled by an HP 1000 running DATACAP, connected to an HP 3000 via a Distributed Systems link. This system collects work order charges, product tracking, and employee attendance information on the HP 1000, which is then used to drive the payroll and accounting systems located on the HP 3000.

The total system cost was over \$470,000, which was less than that of the only other vendor considered — IBM. IBM had proposed a system based on an IBM 4330/8100 solution with 364X terminals. The customer found that DATACAP/1000's unique capability of processing data collection transactions without need of extensive user programming skills made its development costs significantly less than IBM's. The resulting ease of implementation was the major selling point for DATACAP.

Major US Corporation Uses DATACAP/1000 for QA in Two Diverse Applications

Many people think of DATACAP/1000 only as a great tool for inventory control. But let's look at two instances where customers have purchased DATACAP/1000 for the express purpose of improving the quality of their products . . . DATACAP for QA!

This customer's Semiconductor Products Group has an IC production facility in Auburn, N.Y. Strict quality control is critical to its success in this operation. The customer presently performs low-level testing using an HP 9825A desktop computer. High speed binary data is taken from each IC and various test waveforms are displayed using a Nicolet Scope. This data is then passed to the HP 9825A where the data is processed and plotted on the integrated CRT. Next, the data is shipped to an HP 1000 Model 40, using a 20ma Current Loop interface, where the data is stored and further manipulated for trend analysis. Extensive final testing is also performed on the IC wafers to ensure highest possible quality before the product leaves the Auburn facility. The collection of this final test data was often difficult, but paramount to assure the consistent high quality of the product . . . Enter DATACAP/1000!

DATACAP/1000 was purchased not only to solve this problem, but to provide future expansion capabilities as well. DATACAP (with *no* user software!) will initially be used to input final test data from HP 3075A terminals to the HP 1000 (backed up on 800 BPI Mag tape). The CPU can then process the data and store wafer failure data in an IMAGE/1000 database. These yield trends can then be plotted on a HP 2647A CRT on the factory floor, using multi-plot. Unattended hardcopies can be generated on an HP 9872A plotter.

Currently the system consists of a Model 40 with 484Kb memory, 5Mb and 20Mb Disc drives, 800 BPI Mag Tape, 2645A, 2647A, 2648A CRT's and two 3075A data capture terminals with alphanumeric keyboard, display and printer. Implementation is scheduled for completion in Feb. 1980.

Expansion of the system over the next year or so is planned to include 10 data capture terminals, including type 5 badge readers and some time and attendance terminals (3077A). Even more significant will be the planned later addition of a whole new level of intermediate testing using DATACAP on two more HP 1000's. Finally, DS and redundancy are planned, and an HP 3000 for MRF explosions to round out a virtual one-vendor manufacturing control/ QA system solution from HP!

According to the HP SR, *Bill Nugent*, DATACAP/1000 was chosen because of its extreme ease of generation and use. In fact, *Bill* emphasized this point by taking one of his customer's computer operators, and using the DATACAP demo tape to generate a series of data collection transactions, right before his eyes (without an SE)! DATACAP/1000's programming simplicity comes through again!!

The second DATACAP for QA application is at a large metal rolling mill automation OEM in the SSR. As in the previous example, this customer's system is not yet complete (targeted for end of Jan. 1980), but let's take a brief look at the application.

This customer is in the business of providing complicated, computer-monitored rolling mill systems to various metal producing mills around the world. For many years, HP-ATS systems have been utilized to perform various tests on the system components before they are shipped to the end-user. DATACAP/1000 was recently purchased to facilitate the capture of this testing data so that meaningful QA trends and analysis can be generated.

Presently, DATACAP *itself* is under "QA analysis" (as well as the tested products it is capturing data from). That is, DATACAP will be running on an HP Model 40 system with 256Kb memory, one 2648A CRT, one 3075A terminal, and will be evaluated for its effectiveness in solving the data capture needs in the QA environment. In addition to DATACAP, Graphics/1000 and IMAGE/1000 will also be running on the system with DS tying the various test systems together *and* providing a link to a master database on an HP 3000. A 9-track Mag Tape will provide back-up, and a 9872A will be used for graphical output.

When DATACAP proves successful in this "test-pilot" application, the customer intends to expand it's use into other data capture areas within the plant and even encourage sister divisions in the same company to consider using DATACAP/1000 for their needs. So, once DATACAP gets rollin' here, the doors may open for more DATACAP/1000 opportunities!

As you can see from these examples, DATACAP/1000 *is* a useful tool in the QA environment. Take advantage of DATACAP's leverage!

Communications Company Goes for DATACAP's Flexibility

This Palo Alto, CA. company is currently in the process of installing a DATACAP factory data collection system. The firm manufactures a wide variety of complex communications equipment in relatively small quantities. Fifteen HP 3075A terminals are being installed in five buildings to collect information on the status of various production jobs.

Previously the company used an NCR Data Pathing (DPI) data collection system. However, the firm required more flexibility in terms of user programming for making changes.

The HP 3075A's will use the same twisted pair wiring used for the Data Pathing terminals. The wiring was originally installed by the local telephone company. The 3075A's include both card and badge readers.

The biggest hurdle in installation was the implementation of an HP 1000 to Honeywell link. This was necessary to convey the data collected by DATACAP to the existing management information and accounting systems. The link was implemented using a 12966A interface and software developed by the customer with the capable assistance of HP SE *Erryl Johnson* of the Santa Clara sales office.

They Looked For, and Found, a Single Vendor Solution

An Oregon fruit growing company that cans and packs fruit products wanted to do time reporting, data collection and inventory management. However, their older Honeywell system did not offer a suitable growth path for their needs and required extensive software modification.

This customer was sold on HP because of the total system solution with a single vendor. They selected the HP 1000 primarily because of the DATACAP/1000 software package. IBM did not offer any user software tools with their proposed solution. The fruit grower was also very impressed with HP's solid hardware, IMAGE/1000, DS/1000 and especially the DS/1000-3000 link. The customer eventually wants to link an HP 3000, running MFG/3000, to their HP 1000 over distributed systems.

Initially, the HP 1000 Computer system will be configured with two HP 3076A Data Capture Terminals and six HP 3077A Time Reporting Terminals. The company would eventually like to expand the system to approx. 50 HP 307X Data Capture Terminals. Since there are six plant sites, DATACAP/1000 could be implemented at each site.

This firm is interested in becoming a DATACAP/1000 OEM who would design and market systems for the food processing industry.

Grenoble Terminals Bring in a System Customer

A project-oriented R&D lab has a mechanical engineering shop with a 10-year-old Singer computer and another vendor's no-longer-available data capture terminals. Their plant Engineering Dept. came to HP looking for new terminals to interface to their Singer computer. In addition to showing them the HP 3075A, 3076A and 3077A Data Capture Terminals, the HP folks demonstrated DATACAP/1000. One of those . . . oh-by-the-way approaches!

After reviewing the difficulty of interfacing new terminals to the old CPU, upgrading that CPU, plus the politics of separate groups sharing one overloaded computer, the Plant Engineering Dept. decided to purchase its own system. An HP 1000 Model 40 Computer System was configured with 512Kb of memory plus DATACAP/1000 and 10 HP 3075 Data Capture Terminals. Although HP was in close price competition with Data General, DATACAP/1000 was the clincher.

Electronics Manufacturer Converts Quickly to DATACAP, Thanks to Strong Field Support



This company manufactures a broad range of central office and outside plant telephone products. Examples range from small electrical components to mag tape drives for systems that amplify voice transmission on a telephone line to systems that collect and assemble billing information on toll telephone calls. A vertically integrated facility of more than 1,400 employees does many types of manufacturing: fabrication, welding, painting, plastics compression and injection molding, and systems integration, to name a few. With so many products and manufacturing "stations", there was a real need for factory data collection.

This firm is an experienced data collection customer, having used a Singer System 10 for several years. The system currently executes 15 different transactions, such as attendance, production labor reporting, set-up charges, product delivery from station to station, machine shop labor orders (weld shop, paint shop, etc.), and defect failure reporting. The company wanted to upgrade its system to a "state-of-the-art" data collection system. The speed with which a DATACAP system could be developed along with the edit capacity of the 307X's determined their choice of DATACAP/1000 over rewriting their Singer software. This system netted \$134K after discount.

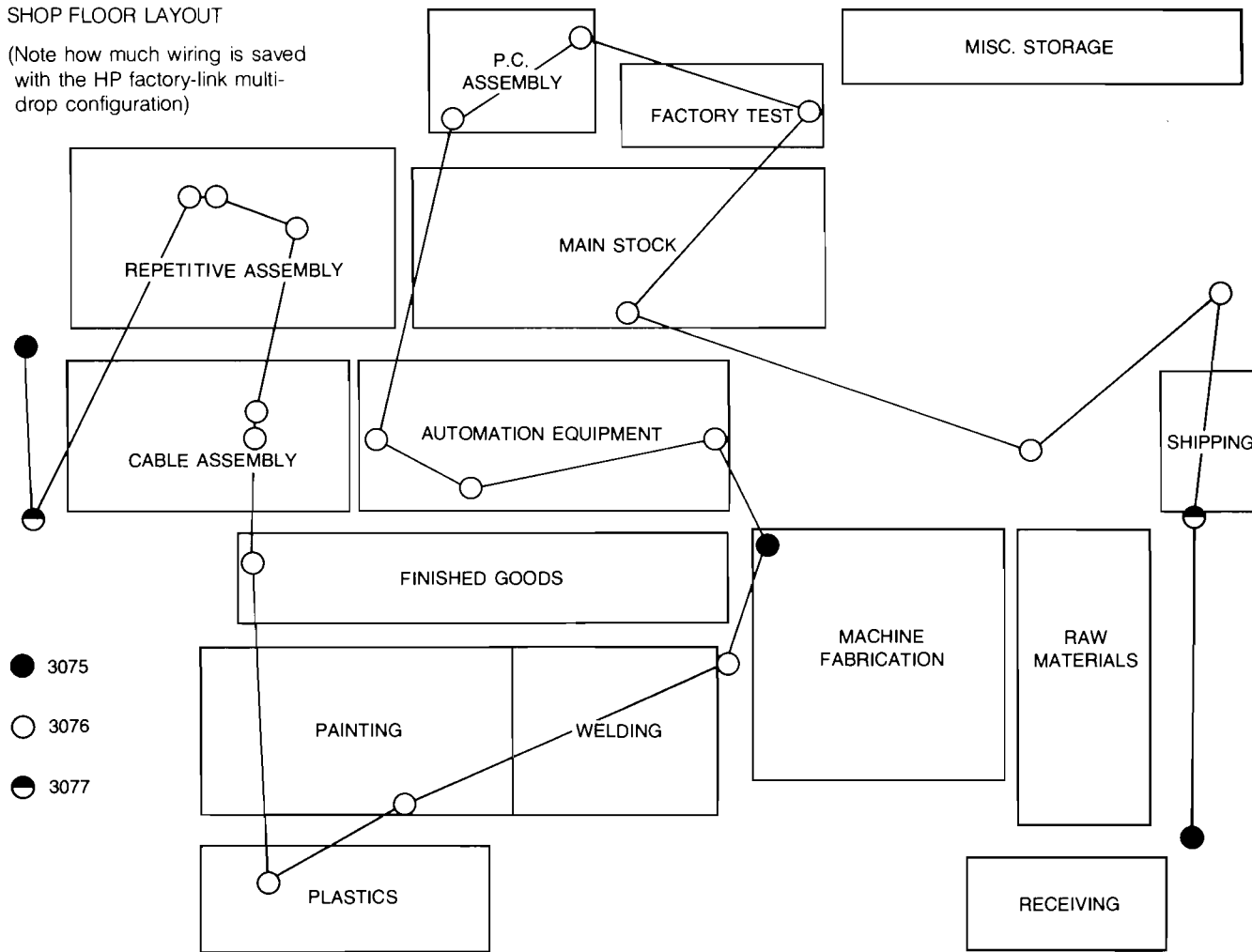
The solution: 23 data capture terminals spread over approx. 15 different departments. Some departments have two terminals. This removes the possibility of queuing, and allows for terminal backup in case of failure (see shop floor diagram). The customer had several other good ideas. For example, before they received their hardware, the system manager borrowed an HP 3076 terminal and trained the production supervisors by introducing the terminal and its features as "something to look forward to." Thus, employees eagerly awaited installation of the new system. They also color-coded the transaction keys so that non-English speaking employees could easily learn and remember transactions.

Note: An executive of this company was "sold" on HP after he created his own transaction at a DATACAP demonstration at HP Rolling Meadows.

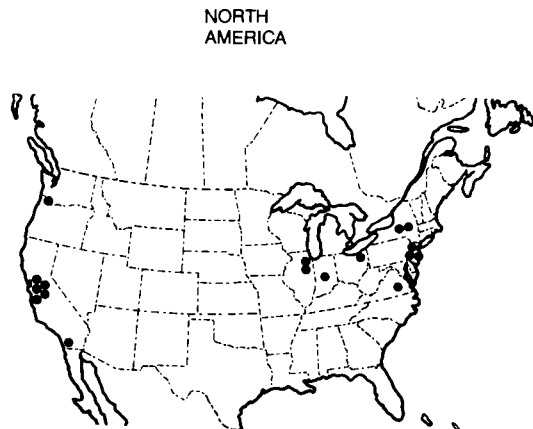
The system is now running in parallel with the Singer System. Thanks to excellent field support HP has a satisfied DATACAP customer. With the continued success of this system should come an upgrade to the new version of DATACAP and more HP 1000 and HP 3000 manufacturing system opportunities.

SHOP FLOOR LAYOUT

(Note how much wiring is saved with the HP factory-link multi-drop configuration)



DATACAP/1000 Sales



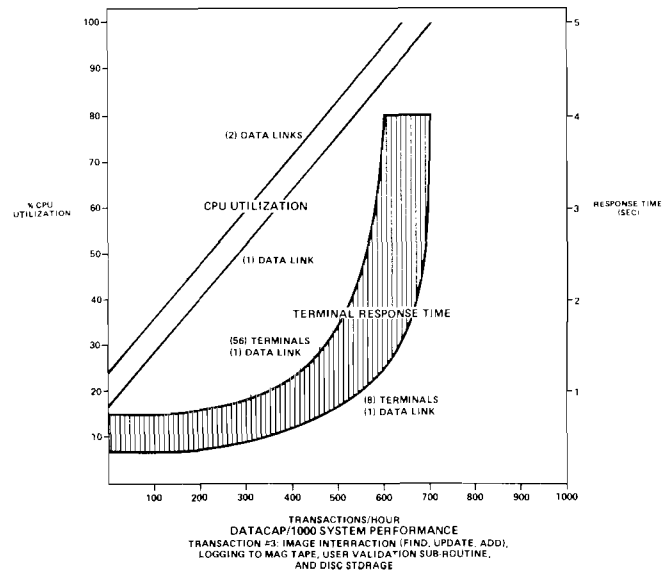
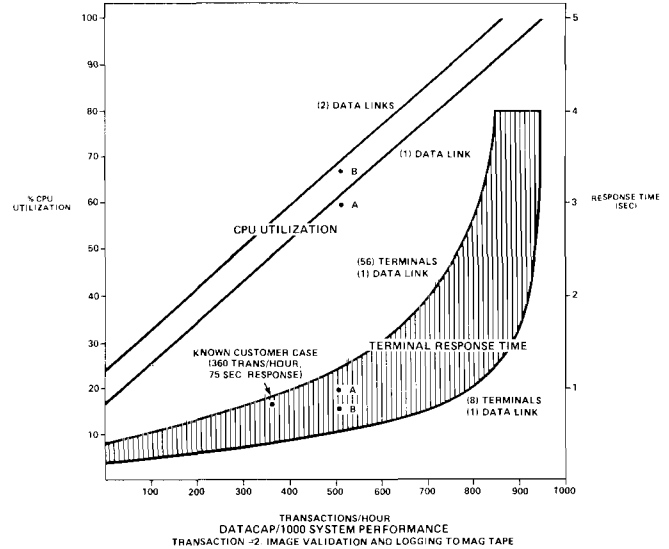
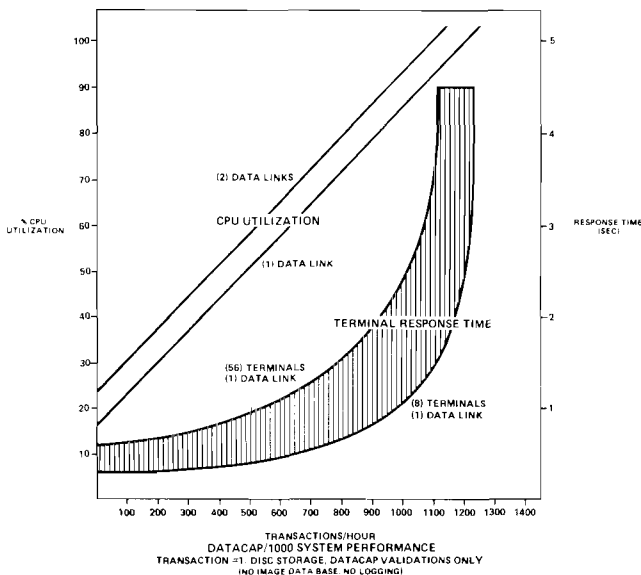
DATA CAP/1000 Performance Data!

Performance testing of DATA CAP/1000 is complete and we're anxious to share the results with you. We will be publishing a performance brief with much more detail but I think a review of the following data will show that the quick information given here will be immediately useful. Also, an article with more technical detail will be submitted very soon which should answer many SE questions.

Performance testing was accomplished with the use of SIMUL, a piece of software which simulates a person making inputs on a 3075A/3076A terminal. Tests with 8, 16, 32, 48 and 56 terminals on a single multi-point line along with 32 and 56 terminals split between two multi-point lines were run. Not only does each SIMUL terminal act as a 3075A/3076A does, but it also simulates what an operator would do in that it responds with predefined entries transmitted after specified reaction times. Varying the reaction time allows for the different transaction rates tested.

An entry consists of a person's reaction time, the form of the input — be it keyboard, badge, or card reader, and the actual text of the entry. A set of entries answering specific DATA CAP questions, sandwiched between one to select and one to complete a DATA CAP transaction make up a SIMUL transaction. DATA CAP was run on an E-Series CPU with high speed fault control memory. Sufficient memory partitions were set up to eliminate the need for swapping. Refer to DATA CAP manual for partition sizes.

Three basic DATA CAP transactions (TR1, TR2 and TR3) were tested. All three used the same entries consisting of employee (10 byte string), work order (10 byte string), and part numbers (10 byte string), hours worked (type real), and quantity worked (type integer). TR1 processed the entries to a disc file using masks and range checking only. TR2 validated the work order number against an IMAGE data base and logged the data to mag tape. TR3 used IMAGE, mag tape logging, a user validation subroutine and disc file storage in a rather strenuous system test. The throughput rates of the transactions versus the *average* response time and CPU utilization are shown on the graphs.



Graphical Interpretation: The ranges shown are composites of the different tests run. In general, the CPU utilization graphs indicate a dependency on the transaction rate. The terminals operating. (0.1% overhead per terminal) the graphs indicate also number of multi-point lines used, each line accounting for about 8% overhead. In the case of response time, the vertical width is due to the terminal counts. Lower response times were achieved through the use of fewer terminals, i.e., the response time for eight terminals running TR1 every two minutes was .35 seconds where as the response time for 16 terminals running TR1 every four minutes was .49 seconds. The result of adding a second multi-point line on tests of 32 and 56 terminals showed a decrease in the response time. The labeled points on the second graph indicate a response time of .90 seconds at 58.8% CPU utilization (points A) using one multi-point line. The respective figures were .68 and 63.2% (points B) with the use of two multi-point lines. Both transaction loads were 490/hour.

An actual customer case was tested which required 360 transactions/hour, and compared with the graphical data to see where it fit in. The transaction was a combination of TR1

and TR2, but with 2.5 instead of 5 entries/transactions. The response time indicated graphically lies around .75 seconds with 48.55% CPU usage. The actual tests showed respective figures of .81 seconds and 44.3% CPU usage. Attributing the lower CPU figure to a shorter transaction, these figures are very much in line.

This testing has definitely shown that DATACAP provides a *very viable* performance capability other than for the most stringent time and attendance applications (which can be supported with very simple custom programming. More on this later.) We hope to make this testing capability available to the SEs so that custom benchmarks for specific customer application requirements will be possible in the field which could be a powerful sales aid. In the meantime we will try to support your *key benchmark requirements here at the factory.*

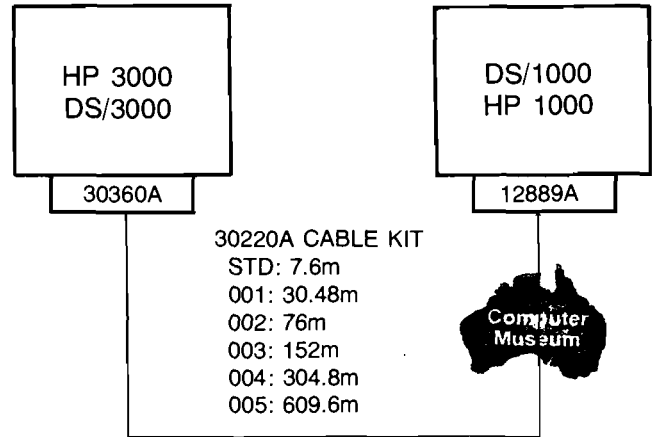
Connecting the HP 1000 to the HP 3000 in CAM Applications

With the advent of DATACAP/1000, the necessity of communication between HP 1000 and HP 3000 systems has become more pronounced than ever. Primarily this is due to the CAM applications where DATACAP is being used. In a manufacturing organization, the data is collected and verified at remote systems on the production floor. The processing of the data on these data capture systems may be minimal. The bulk of the value is gained by the transport and processing by a central system(s) performing the EDP functions of the operation.

A good example is the basic concept of labor collection. Using DATACAP/1000 and a 307X terminal, a worker will enter identification information, the job he/she has worked on, and the length of time. The final storage destination in many cases will be an HP 3000 system in the EDP center. Here the labor information collected on the HP 1000 can be used by a number of EDP systems: (1) Payroll System to determine the hours worked for each employee, (2) Inventory System to track the location and quantity of inventory in production and FGI, and (3) Materials Control System through production. These commercial applications may be on one or more HP 3000's.

The task of getting this information from and to HP 1000's and HP 3000's can be done in a variety of ways. Past history of data collection has given us punched cards for input and mag tapes and/or punched cards for output. These methods of data transfer were very prone to errors from key punch operators and system operators. The use of DS/1000 and DS/3000 can replace these methods and provide more flexibility.

In reviewing capabilities of DS/1000 and DS/3000, we first need to look at the physical method connection. Currently, the only method of communication is by way of hardware link. This means that the two systems must be cabled together directly. The following diagram shows the hardware connection required.



With this hardware configuration, the communication is done via the DS/1000 software, 91740A/B and 91740A, along with the 32190A DS/3000 software. There are currently two main methods of communication available. The first is Program-to-Program (PTOP). Here, in a master-slave configuration, a program in one system can call a program in another system for the purpose of exchanging data buffers. The programs are user-written software modules. Data buffers between an HP 1000 and HP 3000 can be up to Kbyte in size. The data transfer rate is a maximum of 4 KBytes per second. The other method of communication is by way of Remote File Access (RFA). This capability allows access to files in both an HP 1000 and HP 3000 by use of operator commands and by program calls. Again, this operation depends on user-written programs.

With these capabilities in DS/1000/3000, development programmers have the ability to collect the data at the HP 1000 using DATACAP/1000, log the information into an IMAGE/1000 database and/or a log file on the HP 1000, and pass this information to a HP 3000 using PTOPT or RFA. Today, many data collection requirements can be done without user programming using DATACAP/1000. However, the DS programs (1000/3000) require programming both at the HP 1000 and HP 3000.

Enough of the review, now for some previews. On the hardware side, new capabilities for communication protocol will enhance speed and methods of communication.

On the software side, for many manufacturing customers, the programming staff may be commercially or technically oriented, probably not both. This leads to difficulties for completing the data collection network. To overcome these difficulties, there are some projects in the offing:

1. The DSD Lab is working on enhancements to the DS/1000 products that will provide two programs, one in the HP 1000 and one in the HP 3000, that will do file-to-file transfers of data. These programs can be scheduled from either system. This will provide the ease of RFA with the speed of PTOPT without user programming.
2. Applications Development at DSD is developing an Application Note(s) to aid in the programming between HP 1000 and HP 3000's.
 - a) A COBOL program for the HP 3000 to move IMAGE/3000 data to an IMAGE/1000 database, and vice-versa.

- b) A FORTRAN program for the HP 1000 to move IMAGE/3000 data to an IMAGE/1000 database, and vice-versa.
- c) COBOL and FORTRAN PROGRAMS to transfer a file between the two types of systems and load the data into an IMAGE/3000 database.

Besides the Application Note(s), we will be contributing the software to the contributed library during the first quarter of FY80. Also there will be a demonstration of this capability at the HP 3000 Users Group in San Jose CA early in 1980.



Questions and Answers About DATACAP

Q. How can I demo DATACAP/1000 to my prospective customers?

A. The DATACAP Demo System (DDS/1936) is available from DSD's SE On-Line Support Group. This is a pre-configured system on mag tape that makes it easy to demonstrate DATACAP/1000.

Q. I've heard it's difficult to install DATACAP/1000. Is this true?

A. Installing DATACAP/1000 may require a system generation to ensure that enough System Common, System Available Memory, ID segments, and other resources have been included in the system. In addition, the MULTI-POINT Subsystem must be installed before DATACAP/1000 can be installed. A DATACAP/1000 Configuration Guide (92080-90002) has been published to make the installation process as efficient as possible.

Q. Is it really possible to generate an RTE-4B system to include SESSION MONITOR, RJE, DS, DATACAP/1000, all the SAM, SYSTEM COMMON, GRAPHICS and everything else that my customer might need?

A. Unfortunately, all the "how much will fit" information for all the different system resources, subsystems, drivers, etc. is not well documented. The SE is left with the responsibility for knowing how and where to whittle the requirements to fit the system. DSD's on-line support group has access to people who have GEN'ed a variety of systems including DATACAP/1000, DS, etc., and who might be able to suggest a solution to a tough GEN problem.

Q. My customer wants to do some data validation beyond the standard edits provided by DATACAP/1000. How can this be done?

A. Your customer can include his own validation subroutines written in FORTRAN. DATACAP/1000 also provides for the addition of user-written display and storage subroutines. These additional subroutines can be used to take advantage of many RTE-4B features not specifically addressed by the standard DATACAP/1000 package.

Q. Are there any sources other than HP for the multi-drop cable? Is there any way that a customer can use cables already installed in his facility?

A. There is a NEW preferred alternate source for the multi-drop cable: Belden part 9463. The Belden 9182 specified on pp. 2-9 in the HP 3075 manual (3075-90011) does not work well. See the article about the Data Link System for more information concerning operation and electrical specifications of the Data Link to determine if existing wiring may be used.

Q. If the HP 1000 system should fail, will any of the collected data be lost?

A. In addition to using the standard disc file, mag tape, or IMAGE/1000 database to store data, DATACAP/1000 provides an optional Transaction Logging feature which signals "Transaction Complete" to the user only after his data has been recorded on magnetic tape. This feature guarantees that the entered data is safe in the event of a system failure. If it becomes necessary to use this tape to reconstruct a disc file or IMAGE/1000 database, the user must provide his own Transaction Logging recovery program. An upcoming DATACAP/1000 Production Change Order will provide a recovery routine for IMAGE/1000 databases.

Q. What about the data security of IMAGE/1000 databases accessed by DATACAP/1000?

A. DATACAP/1000 write locks any databases that it accesses. This prevents any other program from inadvertently corrupting the databases and insures the best possible data capture terminal response time. While the reading of the database contents can occur concurrently with data capture, writing to the database is prohibited except through the use of a DATACAP/1000 transaction running on a 307X terminal. Watch out — this is a potential problem if the data capture system must be on-line 24-hours per day AND the validation database must be changed so radically that a maintenance program must be employed. There have been some imaginative solutions to this problem that have been brought to our attention. *Sharon Jacobs* in Sales Development has further information on these get-arounds. An upcoming DATACAP/1000 PCO will address this problem.

Q. What about the use of the Mag Tape drive by other programs?

A. If the Mag Tape is used as a data storage file it is locked only when DATACAP/1000 is actually writing data. At other times, it is available to other programs and can be used as a means of passing collected data from DATACAP/1000 to other applications. When a Mag

Tape is used for Transaction Logging, the drive is always locked for data security reasons. When DATACAP/1000 is shut down, a Transaction Logging tape drive will rewind and go off-line to prevent overwriting the data without manual intervention at the drive.

- Q. Can I put non-DATACAP/1000 terminals on the same Multi-drop or Multi-point line with DATACAP/1000 controlled terminals?
- A. Yes. While DATACAP/1000 has exclusive access to any data capture terminals that it controls, other HP 3075 family and HP 2645 family terminals can be included on the line and run by other programs for other purposes.
- Q. My customer wants to use DATACAP/1000 to collect employee time and attendance information from HP 3077's. Can this be done?
- A. Yes, provided that the transaction rate is within the limitations shown in the DATACAP/1000 performance article in this newsletter. If not, a dedicated time and attendance application is relatively simple to write and can provide the very high throughput (and low response times) necessary for large-scale shift turnover applications. Such a program (TMATT) has been written, documented, and submitted to the contributed library (Plus/1000) as an example. (Contact *Darrell Krulce* at DSD for more information).
- Q. What about performance information?
- A. See the "DATACAP/1000 Performance Data!" article in this issue. The SIMUL simulator is being reviewed for inclusion in the next Software Support Kit (SSK). If you feel the nature of your customer's application doesn't fall into one of the categories described by the models in the performance article, your best bet is to run a benchmark using SIMUL. For more details, see the "Communicator", Issue No. 5, Dec. '79.
- Q. My customer would like communication between his DATACAP/1000 system and an HP 3000. Can this be done?
- A. Yes, DS/1000 and DS/3000 can be used. A typical use would be to capture data on the HP 1000 using DATACAP/1000, use DS to maintain a transaction file on the HP 3000 for reporting and further processing, and to periodically transmit updates of the validation database to the HP 1000. DATACAP does not provide directly for this DS interfacing, so there must be some additional programming effort made to implement such an application. See "Connecting the HP 1000 to the HP 3000 in CAM Applications" for information on an upcoming Application Note describing such an application.
- Q. My customer would like batches of data collected on the DATACAP/1000 system to be transmitted to a large mainframe at his EDP center. Can this be done?
- A. Yes. RJE/1000 provides a 2780 emulator capability for transmitting data to a 2780 compatible host. Other methods that have proved effective include physically carrying a mag tape reel of data from the DATACAP/1000 system to the host system or DS-ing to

an HP 3000 for transmission via RJE/3000 or MRJE/3000. DATACAP/1000 systems have also been connected to other manufacturer's mainframes. Contact your Sales Development engineer for more information.

- Q. Help! My customer requires more than 56 terminals in his RFQ.
- A. First, make sure that your customer has thoroughly analyzed his terminal requirements in terms of transaction volume and physical layout. Once you have established the terminal count, the solution to any count greater than 56 is to add additional systems until both the system EQT limit (56) and performance objectives (see "DATACAP/1000 Performance Data!"), have been met. Often the need for multiple system's to solve the EQT limitation will help provide a reserve capacity or provide the back-up capability desired by the customer.
- Q. How much memory does DATACAP/1000 require? Does it have to be high-speed? Can DATACAP/1000 software be allowed to swap?
- A. The recommended increment of memory for including DATACAP/1000 in a system varies with the number of terminals to be controlled and the number of IMAGE/1000 databases to be accessed. A system monitoring 32 data capture terminals and one IMAGE/1000 database would require an additional 448 Kbytes of memory beyond the requirements of the RTE-4B operating system and any other sub-systems to be included. Our performance measurements have shown us that the use of standard memory can degrade response times as much as 40% above those shown in the performance graphs in the accompanying performance article. RTE-4B can be used to manage a lesser amount of memory, but the results of some limited testing of DATACAP's performance while swapping have not been consistent with the requirements of typical factory data collection installations. It is recommended that a suitable benchmark be run using the SIMUL simulator before any less-than-recommended memory configuration is quoted. It may be helpful to remind the customer that he is actually buying a combination of software (DATACAP/1000) and hardware (memory) in place of TIME spent in developing and maintaining his own customized application code.
- Q. Can I utilize the relay mounted in the HP 92904A wall cradle?
- A. Yes, your SE has information (which is not yet documented in the DATACAP/1000 user's manual) about how to extend the use of the data capture terminals in the context of the DATACAP/1000 software.
- Q. What about using multi-point instead of multi-drop with DATACAP/1000?
- A. No problem. In fact, under some circumstances it may be necessary (modems) or more convenient to use the multi-point rather than the multi-drop configuration. The interface must, as with the multi-drop, be strapped for asynchronous operation.
- Q. What about using DATACAP/1000 with RTE-M?
- A. DATACAP/1000 is not supported on RTE-M.

- Q. Will future data capture terminals from HP be supported by DATACAP/1000?
- A. Yes, the DATACAP/1000 project team is working on a PCO that will considerably enhance DATACAP/1000 and include the features to be added to the data capture terminals by HP Grenoble.
- Q. What about using DATACAP/1000 with non-HP display and data capture terminals?
- A. DATACAP/1000 has been designed for use solely on the HP 1000, using the HP 2645A or HP 2648A for design and control of the DATACAP/1000 application, and using the HP Grenoble data capture terminals:

Terminal	Interface
HP 3075A	HP 91730A Multi-Point Subsystem
HP 3076A	cabled as either multi-point or
HP 3077A	(w/ the HP 3074A) multi-drop
HP 3070B	HP 40280A Serial Link Interface
HP 3070A	

- Q. What about the use of the HP 2645A or HP 2648A on multi-point or multi-drop to design transactions or to control data collection under DATACAP/1000?
- A. Although these terminals can be interfaced via the MULTI-POINT Subsystem, and in fact can be on the same cable as data capture terminals running under DATACAP/1000 control, it is necessary to perform all design and control of DATACAP/1000 from an HP 2645A or HP 2648A interfaced via the HP 12966A (DVR05).
- Q. Can I run DATACAP/1000 with SESSION MONITOR?
- A. Yes, However, DATACAP/1000 should be run out of session from the system console. If DATACAP/1000 were run from a session terminal, there would be the danger of accidentally logging-off that session and aborting DATACAP/1000. Other considerations are addressed in the DATACAP/1000 Configuration Guide (92080-90002).
- Q. What is the HP Data Link?
- A. The HP Data Link (HPDL) is a party line data communications system which utilizes optically isolated drivers and receivers which are connected at random distances along a doubly-shielded, twisted pair cable.

The system features good immunity to external noise and currently runs at 9600 baud with a cable length of up to eight Km. Future systems will run at 19.2 Kbaud and perhaps at 38.4 Kbaud.

The noise immunity is achieved by the doubly shielded cable and optical isolation, which allows noise spikes of up to 1000 volts peak between the link and Earth ground without damage to the hardware. Both the transmitter and receiver are quite sensitive to noise induced between either of the twisted pairs and the shield of the cable. This sort of noise in excess of two volts peak to peak will cause data errors, and if it is greater than five volts, it can cause circuit damage. Fortunately, the double-shielded cable is of a sufficient quality to prevent the noise between the twisted pair and the

shield from ever approaching these levels. If another cable should be substituted, great care should be taken to guarantee that this kind of noise is limited.

The question of running the link between buildings arises quite often. The standard Factory Data Link is not intended to be run outside a building. Even when it is run inside a raceway and buried, damaging transients can be induced by lightning strikes. The drivers are particularly susceptible to high energy transients, and the isolation of some of the peripherals on the link is as low as 600 volts rms (much too low to withstand a close miss of a lightning strike).

Surge absorbers are available to limit the induced transients on data lines. The important features of the surge protection scheme are that it can withstand enormous fast current spikes, doesn't add excessive series resistance to the data line, and must not upset the line impedance by resistive or capacitive loading.

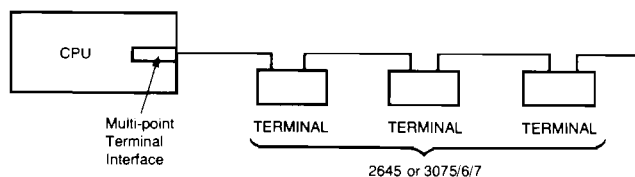
The very long length specification of the link (8000 meters) is achieved through a combination of good quality 20 gauge transmission cable, a driver which transmits data at an electrical level which is twice that transmitted by a standard RS-422 driver (but within the limits of RS-422), and a receiver which is both more sensitive and has a higher input impedance than RS-422.

Finally, the large number of devices allowed on the link (56) is a result of the high input impedance of the receivers, and the ability of the transmitters to be put in a tristate mode with very low leakage current while they are not transmitting. Since the HPDL uses a subset of Terminal Bisync protocol (the data is actually sent in asynchronous mode), only one driver is on at a time, and all communication is always between the HPDL master and one slave.

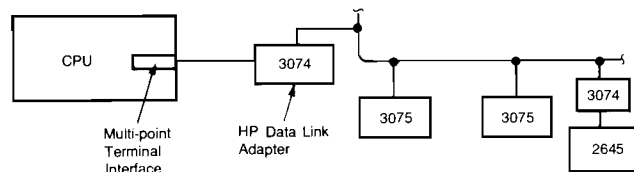
The attractiveness of our factory data collection systems is made possible by the combination of a variety of products including a very flexible set of data communications interfacing hardware and software from DSD and HPG — the MULTI-POINT TERMINAL SUBSYSTEM in both a multi-point and multi-drop form.

MULTI-POINT vs MULTI-DROP

MULTI-POINT A multi-point terminal subsystem allows multiple terminals to share a common communications line. Terminals are active links on the line, so if one terminal is disconnected all terminals not between it and the CPU will also be disabled unless power-failure protected.



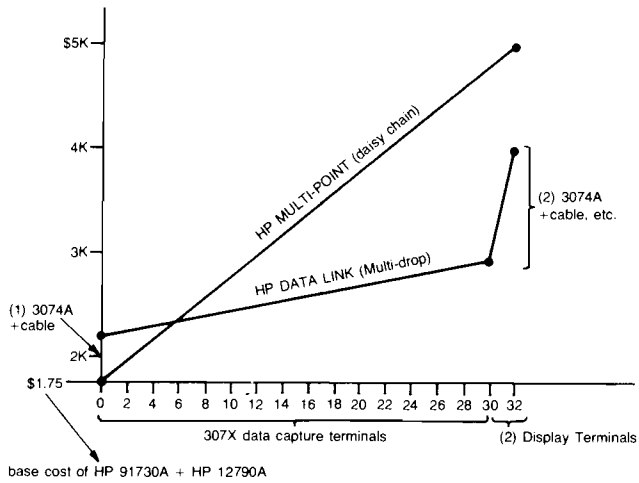
MULTI-DROP: The passive sharing of a common communications line. Multi-Drop is implemented using the Multi-point Interface Card, Driver, and the Grenoble 3074 Data Link Adapter. Its advantage is that disabling any one terminal will not affect the operation of other terminals on the line.



The table below summarizes the key differences between the multi-drop HP Data Link and the multi-point.

	Multi-drop HP Data Link	Multi-point (daisy chain)														
Components	HP 91730A MPTISS — S/W HP 12790A MPTIS — PCA HP 3074A Link Adaptor HP 92905A Link to 3074/5 cable HP 92902A or equivalent cable HP 92901A Junction Box (qty 5)	HP 91730A MPTISS — S/W HP 12790A MPTISS — PCA HP 13232P HP 13232Q HP 13232T HP 13232R or equivalent cable														
Costs (see graph)	HP 91730A — \$1500 HP 12790A — \$ 250 HP 3074A — \$ 400 HP 92905A — \$ 90 HP 92902A — \$0.50/ft \$0.15/ft Belden 9463 HP 92901A — \$ 30 (\$6/box)	HP 91730A — \$1500 HP 13232Q — \$ 90 (30 ft) HP 13232T — \$ 185 (30 ft) HP 13232R — \$0.75 \$0.15 Brand Rex 2448 HP 13232P — \$ 115														
	per terminal	per terminal														
	<table border="1" style="width: 100%;"> <tr> <td>HP 3075A/6A/7A</td> <td>HP 2645A/8A</td> </tr> <tr> <td>HP 92901A — \$6</td> <td>HP 3074A — \$400</td> </tr> <tr> <td></td> <td>HP 92905A — \$90</td> </tr> </table>	HP 3075A/6A/7A	HP 2645A/8A	HP 92901A — \$6	HP 3074A — \$400		HP 92905A — \$90	<table border="1" style="width: 100%;"> <tr> <td>HP 3075A/6A/7A</td> <td>HP 2645A/8A</td> </tr> <tr> <td>HP 13232Q — \$90</td> <td>HP 13232Q — \$ 90</td> </tr> <tr> <td></td> <td>Or</td> </tr> <tr> <td></td> <td>HP 13232T — \$185</td> </tr> </table>	HP 3075A/6A/7A	HP 2645A/8A	HP 13232Q — \$90	HP 13232Q — \$ 90		Or		HP 13232T — \$185
HP 3075A/6A/7A	HP 2645A/8A															
HP 92901A — \$6	HP 3074A — \$400															
	HP 92905A — \$90															
HP 3075A/6A/7A	HP 2645A/8A															
HP 13232Q — \$90	HP 13232Q — \$ 90															
	Or															
	HP 13232T — \$185															
Modem Support	No	Yes (incl. synch. modems w/ HP 2645/8)														
Group Polling Functions	No	Yes														
Can Remove terminal w/o bringing line down	Yes	Yes using HP 13232T w/2645A/8A (not applicable for 307X)														
Distance	8 Km, max 4 Km from CPU to term	50' to 1st term., 2000- term to term														

Cost Comparison — HP Data Link & Multi-point



Notes:

1. This is an example of a system with up to 30 data capture terminals and 2 display terminals (not including terminal cost or installation labor which should be roughly equivalent).
2. Assumed 100' between each terminal.
3. Multi-point costs do *not* include power-fail protection (only available for 264X multi-point terminals.)

Q. What is a "Data Link Tester"?

A. It is a special cable which can be used instead of the standard device-to-data link cable (92905A) to monitor Data Link traffic and locate cable faults. (See Figure 1.)

If a customer has installed a 5-mile long Data Link, localizing a cable fault (especially a short circuit) can be a real problem. The Data Link Tester (included in Option 030 of Data Capture Terminals or available as a part under number 03075-60021) plugs into any Data Link junction box (see Figure 2). Switches mounted in the connector allow the user to disconnect the section of the

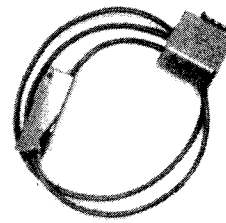


Figure 1

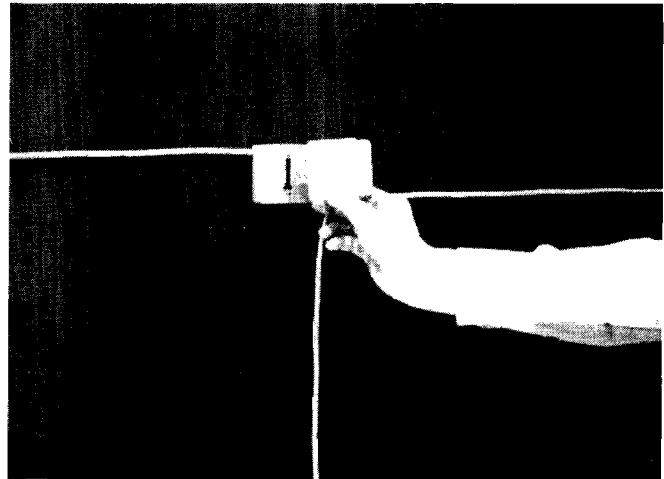


Figure 2

Data Link to either the left or right of the junction box, while still maintaining signal connections to the particular terminal at that site. Three LED's also mounted in the test connector indicate Data Link activity.

Obviously, the tester makes sense only in systems using junction boxes (i.e., 3075-based systems), and can only localize faults to somewhere between two junction boxes.

CSD Inventory Tracking System

NORMAL BOARD FLOW THROUGH CSD

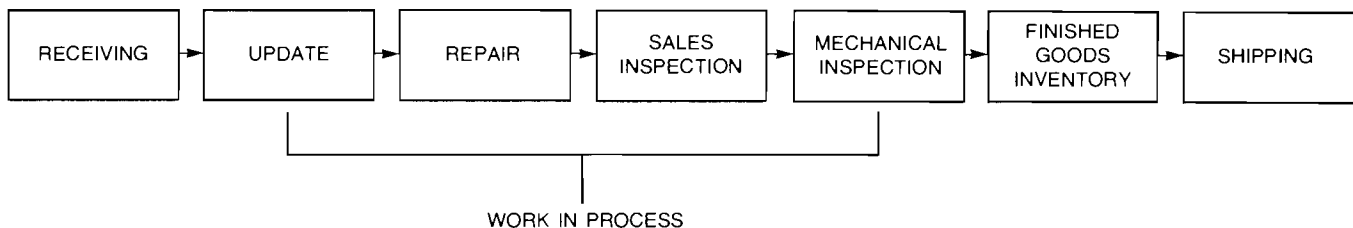


Figure 1

When the decision was made to track PC boards through Computer Service Division on a real-time basis (Figure 1), we started looking for the tools within HP.

We decided on the HP 1000 and HP 3075 terminals. The 3075s were chosen because they are so simple to use for production data collection. We picked DATACAP/1000 because it provides the complex re-entrant code needed to poll the terminals. Another deciding factor was DATACAP's IMAGE/1000 interface for fast transaction validation. The HP 1000 provides two functions: board tracking through work in process and diagnostics for bench repair. Incoming boards are assigned a unique control number and sequence of routings by the HP 3000. This information is then passed on to the IMAGE/1000 database.

Transaction	Description
1	Normal move through predefined sequence
2	Abnormal move, out of sequence
3	Move to hold
4	Move to scrap
5	Multiple move from MI to FGI
6	Multiple move from FGI to shipping
7	Control number look-up
8	Remove from hold
9	Restore scrapped or shipped control number

Figure 2

Twelve 3075 terminals and nine DATACAP transactions (Figure 2), allow users to move boards at the completion of each repair process. DATACAP steps the users through each transaction with a sequence of question displays and answer validations (Figure 3). After the transaction is completed and logged to magnetic tape, DS and user routines keep the HP 1000 and HP 3000 databases synchronized with the updated board movement.

Twelve 3075 terminals and nine DATACAP transactions (Figure No. 2), allow users to move boards at the completion of each repair process. DATACAP steps the users through each transaction with a sequence of question displays and answer validations (Figure No. 3). After the transaction is completed and logged to magnetic tape, user routings keep the HP 1000 and HP 3000 databases synchronized with the updated board movement.

Two 2100 CPU's and Octopus software allow 168 repair stations to download one of 256 binary diagnostics from the HP 1000 file system.

The system is scheduled to be implemented January 14, 1980. At this time, we expect to have real-time tracking of all exchange assemblies flowing through the board repair process.

Additional projects will use the HP 1000 and DATACAP for labor collection on component parts usage and serialized board history.

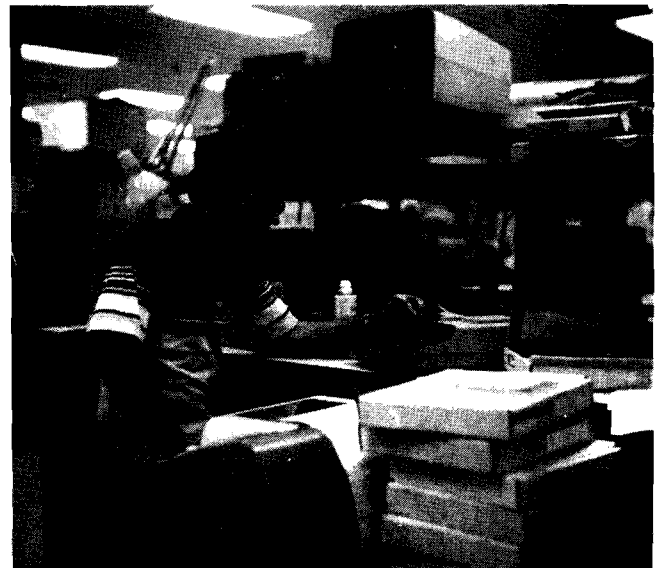


Figure 3

At CSD, 3075 Data Capture Terminals will be located at board repair stations on the floor to maintain up-to-the-minute information on current inventory.

DATACAP at the Data Systems Fabrication Shop

DATACAP/1000 works for us! Data Systems Metal Fabrication Shop has been using DATACAP/1000 for a little more than one year. Cost savings resulting from the installation were so great that the system paid for itself in just a few months. Examples of these savings are the elimination of one full-time keypunch operator, a significant reduction in labor voucher errors, and the establishment of timely and accurate manufacturing data. DATACAP/1000 will also save the shop money through a tremendous time savings for finance and shop supervisors in error correction, better data for setting production standards, and reliable job tracking information.

Combined with application software, manufacturing control is one of the highest leverage opportunities available through DATACAP/1000. We were able to utilize this new and accurate source of manufacturing data to reduce work-in-process inventories by \$1.7m and dramatically increase our customer service level, all within four months of installation!

In the long term, this reliable source of manufacturing data has helped management identify other areas for improvement such as individual operators, job positions and work centers. One of the most remarkable things about the DATACAP/1000 system was its rapid installation. This was the first HP 1000 configuration and DATACAP/1000 application for a newly-trained programmer. We implemented Phase I of this project which included cabling the facility, developing the systems, training users,

debugging, pilot run and a fully operational system, in a three-week time frame. DATACAP/1000's menu-oriented screens allow the project team to solve design problems with terminal transactions and be back on-line in the same day. We feel very good about the success of our current Factory Data Collection installation and are looking forward to future system enhancements which will enable us to do even more.

Shop Floor Data Collection at Manufacturing Division

Collecting data from the shops has been an area of concern at the Manufacturing Division for many years. The former method of Mark Sensing Labor Voucher Cards had been in existence for 12 years. With the implementation of additional shop systems the number of documents and the amount of time required to fill them out had increased to the point where each Direct Labor employee spent about 10 minutes a day at these clerical functions. Apply our wage rate to this effort and it reveals that the division is spending around \$400K to capture shop related data. This large cost made it very obvious that there was a potential cost savings in this area.

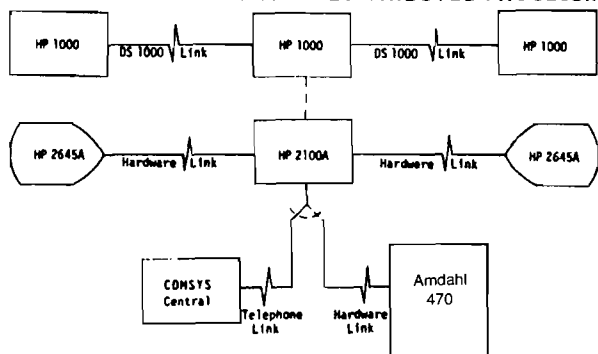
After setting objectives for what the division would want from a new Data Collection System various alternatives were explored. To meet the following objectives our division management chose to use HP equipment, which would consist of the HP 3070B Badge/Card Reader/Terminal from Grenoble and HP 1000 computers from Data Systems.

Objectives

- Reduce shop personnel time for clerical functions.
- Provide more accurate information.
- Require minimum input by shop personnel.
- Must be able to function in shop environment.
- Maximum terminal queue time of 3 minutes with average of 20 seconds.
- Must be daily system.
- New employees should be able to use system the day they start.
- Reduce paper handling and distribution.
- Ability to add new shop floor system with ease.
- Use standard software to minimize programming time.
- Entry time per labor voucher of 15 seconds.
- Backup system for when system is down.
- Must have on-line editing capability.

The accompanying flowchart shows a composite of our long range plans for distributed processing.

MANUFACTURING DIVISION – DISTRIBUTED PROCESSING



The HP 1000 systems will be located in our three manufacturing sites and will provide our interface to the shops. All shop floor data will be transmitted to the on-site* HP 1000. The HP 1000 systems will communicate to each other via the DS 1000 software.

Initially the HP 1000 in Building 8U will batch all input from these systems and transmit the data at night via RJE to the Amdahl 470 at Corporate BAEDP. If we go to HP 3000 systems to replace the Amdahl 470 the HP 1000 systems can communicate to the HP 3000 via another DS 1000 link.

This configuration offers many advantages over present systems of shop data collection. A few of the advantages are:

- Minimum input for shop personnel.
- Custom designed inputs by work station/terminal.
- Data collection off-loaded from main computer.
- Increased response time.
- Editing on-line terminal.
 - 3 HP21MXE CPU's 192K memory
 - 3 HP 7905 Disc Drives
 - 3 HP 2645 Terminals
 - 17 HP 3070B/HP 2075 Terminals

We are using standard software consisting of:

- IMAGE/1000
- DATACAP/1000
- DS 1000
- RTE IV

Our development and start-up costs are estimated at \$106K. Total annual operating cost is estimated at \$174K. We believe the operating cost is a very conservative number as we allowed five minutes a day per employee for terminal input but we feel this time could drop to as low as 2-3 minutes. Apply these costs to our current costs for data collection and you come up with a very healthy 99% internal rate of return.

Implementation will be in phases:

Phase I

Install terminals in Metal Fab Building as initial test location for labor only.

Phase II

After successful testing, install terminals at remainder of Palo Alto Site (Plastics, Tool Shops).

Phase III

Implement system at the Harbor Site for cables and transformer shops.

Phase IV

Implement system in the Printed Circuits Shop.

Phase V

After implementation of all shops for labor only, then add capability for machine logs, scrap reporting, etc.

Our Shop management is very excited about the capabilities of the system and cognizant of the problems it will obliterate.

DATACAP/1000 Advertising and Promotion

A very strong and exciting program is underway. We've already received some very good press coverage and are now involved in a major advertising effort.

Advertising


The advertisement on the following two pages has just been released and will run at various times in the next six months in the *Wall Street Journal* (see Dec. 5), *Business Week* (see Dec. 24), *Industry Week* (see Dec. 10) etc. It's basically an HP software ad featuring both DATACAP/1000 and MFG/3000. This ad will be followed by a Factory Data Collection System ad which will feature the HP 1000 (running IMAGE and DATACAP) positioned with 307X terminals. The two ads will run concurrently.

We also have had two corporate ads produced, one appeared in *Scientific American* (Aug. '79), and one in *Business Week* (Nov. 26) which will run several more times.

What if you chose Hewlett-Packard as a computer partner?

As Hewlett-Packard's HP 1000 computer-based systems have helped us eliminate a major inventory problem, we'll do it again with our new HP 3000.

HP's computer-based systems are the most powerful and productive for improving productivity.


You can count on results with  **HEWLETT PACKARD**

Business Week

Hewlett-Packard computer advances extend your possibilities.

Factory data collection made economically viable.

The HP 3000: A new generation puts high-powered, flexible computing into a small, compact console.

 **HEWLETT PACKARD**

Scientific American

Computer Advances (Vol. 4, No. 4) also featured DATACAP/1000 and MFG/3000. This piece also appeared in *Computerworld*, etc. and was modified and reprinted for use at the APICS '79 exhibit and used as a special show handout. The APICS exhibit (American Production and Inventory Control Society) was an important part of our promotional effort, giving us direct exposure to many potential customers.

Lifting the ceiling on productivity

Hewlett-Packard computer systems: keeping manufacturers competitive in the 1980s.

APICS

Computer Museum

Factory data collection: putting it to work

DATA BASE

Computer Advances Vol. 4, No. 4

HP presents the ma you might have d

One of the problems manufacturers face with setting up a computer system these days is the software dilemma: the convenient, less costly off-the-shelf packages are never exactly what you need. And a start-from-scratch, do-it-yourself project means an investment in time, staff and money that could put a serious dent in your bottom line.

But now you can get the best of both worlds. Because with powerful software products from HP, there's plenty of room for tailoring to meet your exact needs. Most of the groundwork has already been done, so you won't be causing a heavy drain on your EDP department. Or your budget. Instead, you'll be getting a lot quicker return on a lot smaller investment.

Data: before you use it you have to collect it.

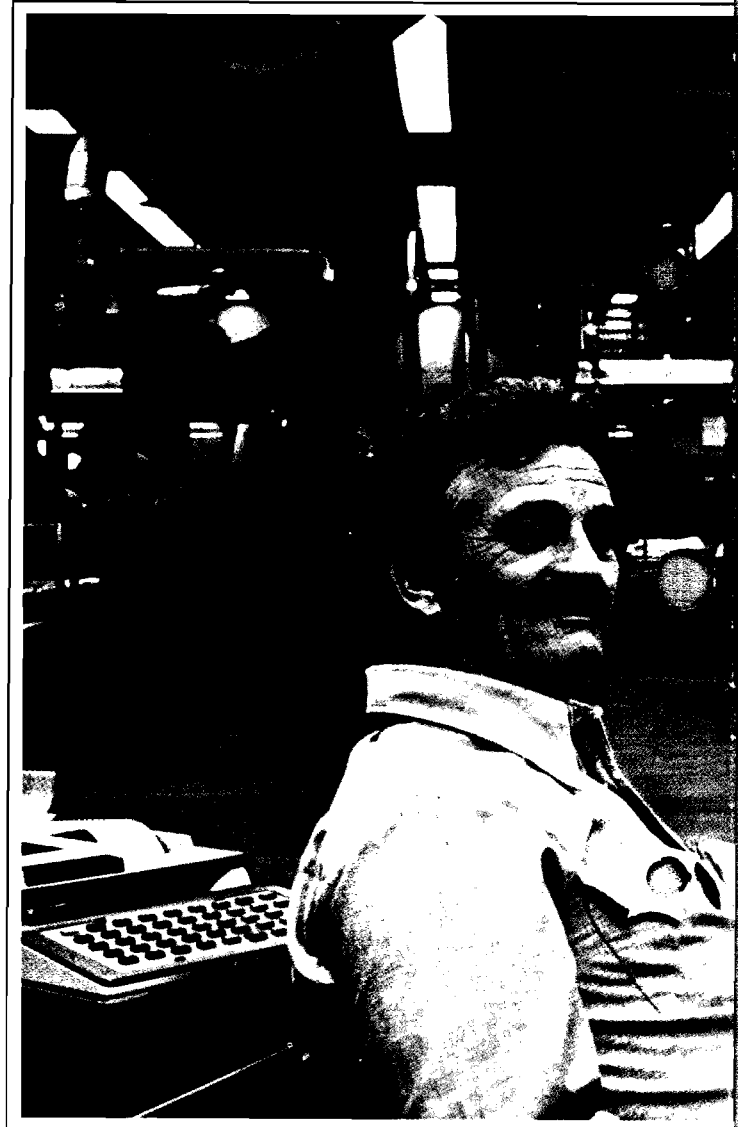
Our new DATACAP/1000 software lets you create a factory data collection system with very little programming. Just sit down at a terminal, and answer a series of questions—in plain English—about the kind of information that's needed, how it will be entered (punch cards, keyboard, plastic badges, etc.), and what you want done with it (store it on tape or disc, or enter it into your data base). Your data then can be immediately available to provide status or for processing in a central computer program.

Used in combination with our HP 3070 Series data capture terminals and our HP 1000 computer, DATACAP/1000 is as easy to operate as it is to set up. The terminals show your plant personnel how to enter data step-by-step to keep track of jobs like work-in-progress monitoring. Labor data reporting. Materials tracking. Any job that calls for accurate information about events as they occur.

Shrink your materials inventory without stretching delivery schedules.

For effective materials management, we've developed MFG/3000, a flexible software package that can easily be fine-tuned to your requirements. Designed to run on our HP 3000 computer, MFG/3000 is on-line and interactive. So your data is always accessible, with up-to-the-minute accuracy. What's more, you'll use familiar forms for entering and reporting data. That way, your manufacturing people won't have to get into the computer business; instead, they can get on with the business of making things.

There are four modules. One gives you accurate recording of your bills of materials, including part numbers, product descriptions, costs, routings—even



engineering changes. Another monitors stockroom movement such as scheduled or unscheduled issues, receipts from purchase and work orders, back-orders and adjustments. The third helps your cost accounting department calculate current costs of each subassembly, assembly and finished product you make.

The final module pulls this information together into a proven Materials Requirements Planning (MRP) program that you can use to help reduce your investment in inventory and still meet delivery commitments to your customers.

Manufacturing software developed yourself.



Let's talk shop.

Our systems engineers include consultants who specialize in applying computer systems to the needs of manufacturers. They can help you plan a system from the ground up that is exactly right for the way your company operates.

After your system is installed, we can continue to provide you with full support, training, documentation and supplies. Our phone-in consulting service can put the answers to your technical questions right at your fingertips. And our Customer Engineers are typically

on-site in less than two hours to solve any hardware-related problems.

Come in for some down-to-earth shop talk and a demonstration of our manufacturing products. Call your local HP office listed in the White Pages. Or write for more information to Hewlett-Packard, Attn: Dave Sanders, Dept. 000, 11000 Wolfe Rd., Cupertino, CA 95014.



**HEWLETT
PACKARD**

CSG902HP84

HP Computer Museum
www.hpmuseum.net

For research and education purposes only.

You can see this is a very strong promotional program and we know you will be able to capitalize on the results.

Press Coverage

Our press efforts actually started with the July NPT Tour. For the first time we really went after the manufacturing industry trade journals — with excellent results!

Publications which ran coverage as a result of the press tour and releases:



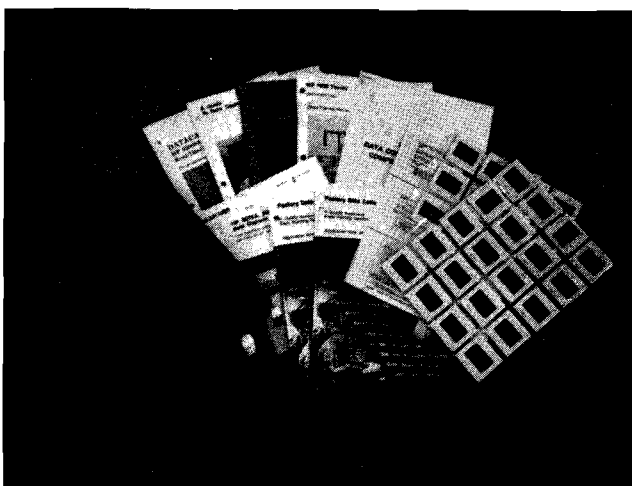
Instruments &
Control Systems
July '79

- Production Engineering
- Iron Age
- Assembly Engineering
- Production Magazine
- Industrial Product Ideas
- Plant Management and Engineering
- Canadian Data Systems
- Electronics Weekly (U.K.)
- Usine Nouvelle (France)
- Computing Canada
- Appliance Monthly
- Minicomputer News
- Electronics

Plus others in
Germany
Finland
U.K.
etc.

In addition, over 30 specialized press releases were sent out in October to specific manufacturing industry segments (i.e., automotive to textiles) which offered "free" literature and the Quality Assurance application note. We're pleased with the attention we have received from the press and have generated several opportunities for feature articles which we will follow up on in the next few months. This kind of coverage is very important and adds credibility to our direct advertising efforts.

DATACAP/1000 Sales Tools



Yes! The following DATACAP/1000 sales tools are available TODAY!

- *Color Brochure:*
DATACAP/1000 (5953-4224)
Data Capture Terminals (5953-0123)

- *Application Notes:*
Quality Assurance Early Warning System: A Manufacturing Application of HP 1000 Computer Systems (5953-3087)
Factory Data Collection: An example of how to implement an HP 1000 based labor and job status reporting system (5953-4225)
A Guide to Data Capture (5953-0126)
- *Data Sheet:*
Part of the Active Software Data Book (5953-4206)
- *Programming and Operating Manual:*
92080-90001
- *Customer Slide Presentation:*
DATACAP/1000 Part of DSD Product Presentation Slide Kit (BS-18)
- *Customer Seminar (BS-19)*
The Computer — A Management Tool for the Factory Floor
DATACAP/1000 is featured (see article this issue)

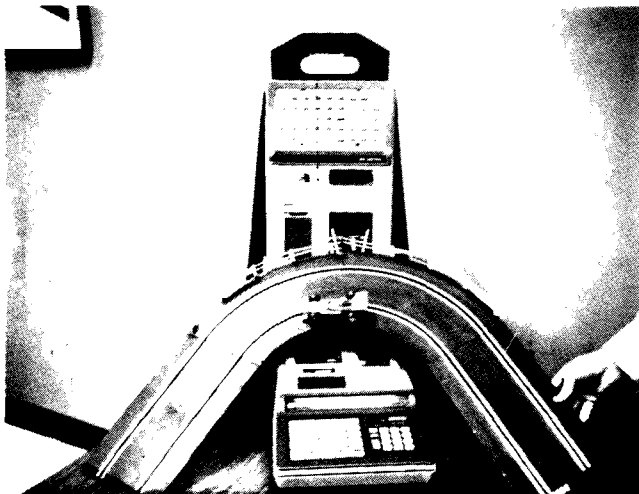
- **Videotape Demo:**
Transaction creation & run; 12 minutes (90914Z) (See CS Newsletter Sept. 15, '79)
- **Competitive Analysis:**
IBM 5230 Data Collection System (available from *Guenter Kloeppe/DTD*)
- **DATACAP/1000 Performance Analysis:**
CS Newsletter (Oct. 1, '79)
HP 1000 Communicator (#5 Dec. '79)
- **Field Training Manuals:**
DATACAP/1000 (FTM-1 DSD)
3075A/3076A/3077A Data Capture Terminals (HPG)
- **Future:**
DATACAP/1000 Performance Brief
DS/1000 — DS/3000 Application Note

Planning a Manufacturing or DATACAP Seminar?

There is an excellent, fully-scripted slide presentation available covering the features and benefits of source data collection, database management, graphics, distributed systems, and automated machine monitoring and control, all at a conceptual level. The slide set consists of 77 33mm slides plus a script, and sells for the incredibly low price of \$50.

To order your set, send a HEART order to Division 22/Bldg. 42U/Cupertino/Attn: *Chris Carney*. The P/N is BS-19 and the description is "Customer Management Seminar".

Go Racing For a Day With DATACAP: A New Field Seminar



If the topic of data collection has always breezed by you, the Rolling Meadows sales office may change your gear. On January 30, 1980, a DATACAP seminar is scheduled to

inform participants of data capture. Twenty participants from five major accounts, namely Motorola, Gould, Baxter, Northrop and Zenith, will not only be taught data capture but will see that HP offers an overall solution to the data collection problem.

What makes this adventure into data capture so exciting? First, each seminar participant will receive a mark-sense card as his invitation. This card (which is intentionally folded) will be inserted in a data capture terminal located at the entrance to the seminar room to show the HP 3077 Data Capture Terminal's ability to read a crumpled card. The information on each card will then update a database, evidenced by a welcome greeting displaying the participant's name, company, and the time of day on an HP 2648 graphics terminal.

If the HP 3077/2648 combination did not catch the participants' attention, the simulated manufacturing area utilizing 50 slot cars certainly will. The Data Collection Seminar room has been designed to explain data capture's role in manufacturing, showing how the use of turn-around documentation can augment manufacturing. Eight stations have been designated to show such data collection areas as production flow, inventory control, automatic measurement, parts inventory, production efficiency, and overall production tracking. In addition to using HP 3075 and 3076 data capture terminals, an HP 2240 will be used to test slot cars after voltage is applied to them. Each participant will receive a type III badge, as souvenir, on which is inscribed "I built formula 1's with Hewlett-Packard at their Data Collection Seminar".

Not only will the participants see Data Capture, they will experience it. After the initial walk-through seminar they will be invited to man the stations for "Hands On" experience. Following the demo, the seminar will continue with two guest speakers who have been impressed by HP's solution to data capture (these speakers are not HP employees, but actual customers!)

For more information concerning this seminar, contact *Phil Conway* at the Rolling Meadows sales office. The Data Collection Seminar is a joint effort of the Rolling Meadows sales force under *John Malone* (the DM for major accounts), and the Midwest Technical S.E. Group under DM *Bob Mollis*. Under such leadership, Rolling Meadows will no doubt race to success.

DATACAP/1000 Training

Never fear . . . Product training for DATACAP/1000 is here!

For customers, we are readying a new course on DATACAP. It's planned to last two days and cover topics such as:

- Transaction Specification Generation
- Transaction Monitor Program Generation
- System Capabilities
- Interfacing DATACAP to an IMAGE database
- Writing user subroutines
- Installation and configuration

The prerequisite for this course will be RTE-IVB and IMAGE/1000. The planned availability is second quarter, 1980.

SE DATACAP/1000 training will be given at two new classes. The first is *Introduction to Factory Data Collection and Database Management*, and is scheduled for late first quarter, 1980. This two-week course will be part of the required level one curriculum. It will include approx. one week on Database Concepts and IMAGE/1000, and one week on Factory Data Collection and DATACAP/1000. Selected topics from the Database Concepts/IMAGE section are:

- Physical organization of databases
- Data Model
- Data Manipulation Languages
- Codasyl concepts
- IMAGE/1000, especially as it relates to the database concepts discussed

The week on Factory Data Collection will include all material from the customer course plus the following subjects:

- Factory data collection
- Shop floor control

- Overview of MFG/3000, especially in regard to data requirements.
- Performance and Competition

The second course will get the SE's up to speed on exactly how things work. It's a one-week course on DATACAP and IMAGE internals, tentatively scheduled for third quarter, 1980.

In addition to the training scheduled for technical SEs, we are cooperating with GSD in the cross-training of HP 1000 and HP 3000 SEs. As you can see, we are presenting an overview of MFG/3000 in our SE training. Correspondingly, in the Industry Specialist training at GSD, we will be presenting a module on DATACAP/1000 and Factory Data Collection. We hope that this cross-training will allow the SEs in both areas to recognize the package best suited to a particular application in a pre-sales situation, and to support installed systems that include both HP 1000 and HP 3000 manufacturing applications packages.

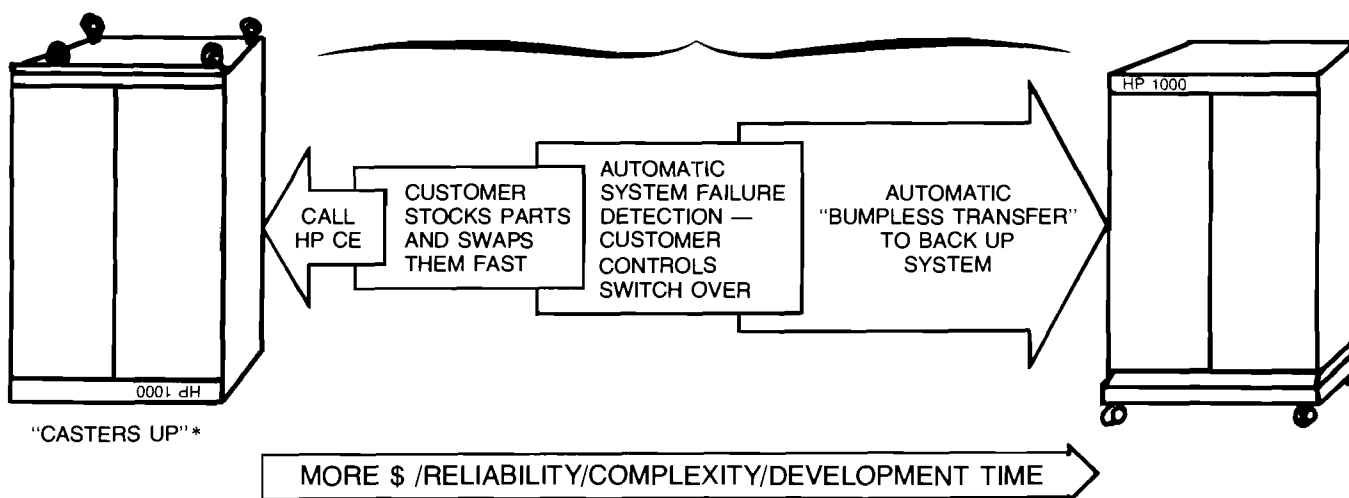
Product training for our customers and SEs is as important as the product itself. The broad range of training courses now available will provide a better understanding of the products, thus increasing both our ability to support them and their usefulness to customers.

Redundancy (or System Back-up)

With our interest at DSD gravitating more and more toward factory floor manufacturing applications like data collection, we are obligated to consider the subject of "redundancy". Redundancy, as it refers to the HP 1000, implies back-up for failures which normally would bring the system down. By back-up, we mean a spare system which can be called into service if the active ones die.

We have found that customers have varying needs when it comes to system back-up. The system back-up continuum below illustrates this point.

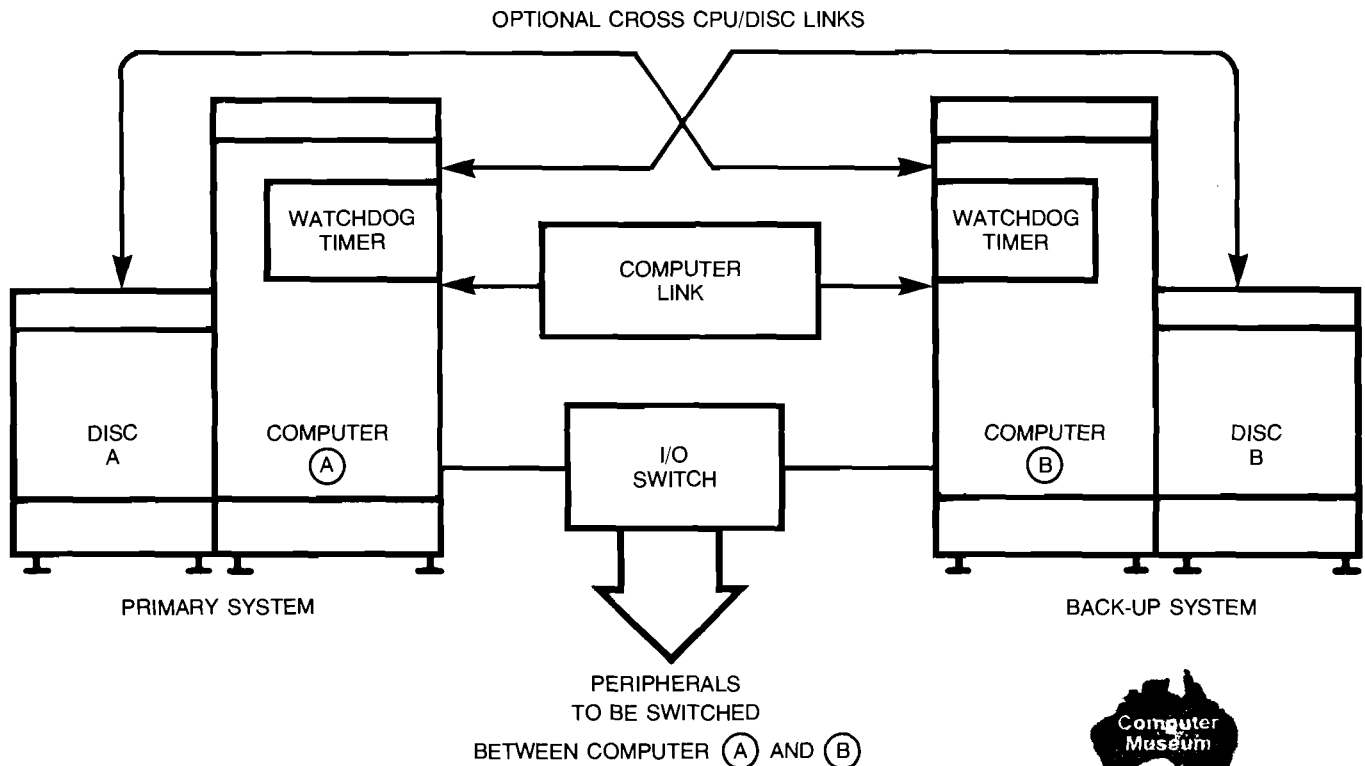
SYSTEM BACK-UP CONTINUUM



* Informal terminology to describe a Failed System

In its normal stand-alone configuration, the HP 1000 is *very reliable*; it is known for this in the industry. What people are striving for with *redundant systems* is increasing system availability (total up-time in per cent) from something like 99.6% to 99.9+%. It isn't uncommon to see a "burned in" HP 1000 go a year without a fatal failure. However, there are no guarantees with any *one* system, so for some applications back-up may be an issue.

As mentioned earlier, each requirement varies depending on the specific application, but there are some common aspects. Most situations employ two computers that communicate with each other, some sort of watchdog timer (failure detector) in each, and a facility for switching I/O from one computer to the other. Below is a typical configuration demonstrating the use of these components.



A number of experienced HP 1000 end users and OEMs have tackled redundancy on their own. Using their ingenuity, and some goodies from our Specials Group at DSD, their efforts have been quite successful. DSD's Sales Development group should be contacted for more information regarding these specials. Here's what's available:

1. A watchdog timer card (one in each CPU) can be used to detect system failures (93768A watchdog timer with options for driver and cable ≈ \$1500. ea.).
2. A battery-powered clock card for restoring the RTE system clock after a power failure or back-up switchover. This is helpful in many applications where it is necessary to react differently based on the amount of time the system was down (93770A Clock Card with options for LED display, cable and driver. ≈ \$1500. ea.)
3. I/O switch for transfer of critical peripherals from primary system to back-up system when a failure is detected. This switch operates both manually and automatically (93550A Switch containing many options to expand it, power it and rack mount it ≈ \$3000. per I/O channel).

A word of caution! DSD does not have a redundant, fail-safe system that we can quote and ship. Don't let this discussion mislead you into talking freely about supplying a system that can do this. What we have is:

- A number of OEM's and end users that are doing it themselves.
- Some special products (listed previously) that your customer can use to get the job done himself. It's not easy, so they should be well qualified.
- An applications project underway at DSD, managed by *Jim Bridges*, which will greatly enhance our knowledge on how to configure and implement redundant systems.

You will hear more from us on this subject as soon as we learn more. In the meantime, if you know of any customers planning to embark on a project like this, let us know about them.

How Much Does an HP 1000 Data Capture System Cost?

NO. OF TERMINALS	TOTAL COST OF TERMINALS	TOTAL SYSTEM COST (TERMINALS + SYSTEM)	AVERAGE TOTAL COST PER TERMINAL
4	\$12,410	\$66,310	\$16,578
8	25,205	79,105	9,888
12	38,635	95,435	7,953
16	52,065	108,865	6,804
19	61,310	120,010	6,316
23	74,740	135,440	5,889
27	86,515	149,115	5,523
32	102,475	165,075	5,159

	HP 1000/Model 40 ^{1,2}
SYSTEM TYPE	HOST/CONTROLLER
SYSTEM MEMORY	320 Kb ³
DISC/DISKETTE	20 Mb
MAG TAPE	NO
PRINTER	NO
CRT's	CONSOLE
LANGUAGES	FORTRAN
COMMUNICATION TO IBM HOST	RJE
DATABASE	IMAGE/1000
APPLICATION SOFTWARE	DATA CAP/1000

- ¹ These systems provide interaction and can be used simultaneously for other applications (additional hardware and/or software may be required).
- ² A smaller, less expensive system could be configured if the user does not want DATA CAP/1000.
- ³ 384 Kb for 12, 16 and 19 terminals; 512 Kb for 23, 27 and 32 terminals.

The Data Capture Terminals were configured as follows:

HP 3075A and HP 3076A: Multifunction Reader and Type V Reader

HP 3077A: Standard (includes Type V Reader)

The Terminal Mix was: 40% Table Top Terminals; 40% Wall-Mounted Terminals and 20% Time Reporting Terminals.

Prices *do not* include any discount.

This analysis was based on systems that include the following hardware and software.

The Ruggedness Issue

There are two aspects to the ruggedness issue. The first is: "How well does a terminal stand up to malicious abuse?" Frankly, if a prospective customer has a vandalism problem in his facility, he has a problem more fundamental than data capture. Making a terminal out of 2mm sheet steel only means vandals have to invent a new way to wreck it . . . and they will. The way to solve that sort of problem is through management techniques.

The second aspect of the issue is much more practical and serious, and that is: "How well does the terminal stand up to harsh environments?" At this point, we really need to come out and say that the 307X series of terminals are designed for light-to-medium manufacturing environments. They were not designed for the steel mill or foundry. The terminals are

not hermetically sealed — they have a fan; if the customer's site contains corrosive gases or excessive amounts of fine conductive dust (metallic or carbon) our MTBF figures will almost certainly not be attained. However, this does not mean you should walk away from a deal if a prospect is going to want a terminal in anything other than an office environment. Recent tests performed in a brake lining plant, an aluminum foundry, a steel foundry and a paper mill (sulphate and chloride atmospheres) were very encouraging. A 3077A for example, functioned perfectly for the duration of a 5-week test in the steel foundry, while competitive products which are billed as "rugged" had to be serviced weekly.

What we do suggest however, is that if you have a deal involving a harsh environment, either get the prospect to purchase an evaluation unit for testing, or loan a demo for that purpose.

DATACAP/1000 Sales Hints

FIELD REPRESENTATIVES! This article contains the most current DATACAP/1000 sales hints. They should help you focus on DATACAP's major selling points and thus get more orders.

DATACAP Features

- Provides timely and accurate data
- Fast system implementation

DATACAP Benefit

- Reduces the cost of developing, implementing, and maintaining in-house data capture software packages.

Applications and Benefits of Timely and Accurate Data

Application: Work order status reporting.

Benefit: Drives down work-in-process (WIP) inventory because supervisors have a better understanding of actual work order status. Lower WIP inventory means less capital tied up in it.

Application: Work in process tracking.

Benefit: DATACAP can tell you exactly where work orders are thus eliminating the unproductive time managers used to spend chasing them down.

Application: Monitoring quality trends.

Benefit: It costs less (by about 99%), to replace a defective chip at the factory before it goes into a board than it does to send a CE out to fix an on-site computer that went down as a result of the same defective chip. DATACAP's timely data lets you catch quality problems in the early stages when they are less expensive to fix.

Application: Tracing contents of assembled products (e.g., U.S. government regulations).

Benefit: Reduced data capture costs because DATACAP is easy to implement and operate.

Application: Production management.

Benefit: DATACAP's timely and accurate data gives production managers the information they need to make intelligent operating decisions to effectively manage their facilities.

DATACAP is Not Restricted to Manufacturing Applications!!!

- Order processing
- Hospitals
- OEM/software houses
- Cost accounting

Potential Problem

DP people think that DATACAP is their responsibility, thus the buy decision maker might be a MIS person. DATACAP benefits, however, relate more to the production engineering people.

1980 Sneak Preview

The Lab Team is alive and well and continuing their work on DATACAP. The enhancements you will see in 1980 take two major forms:

1. We've received a lot of feedback from you and current users, and have some major plans for DATACAP feature enhancements. These enhancements will answer the most frequent requests for changes and much more!
2. New Data Capture Terminal features will be available in 1980 and DATACAP/1000 support will be added as soon as possible. Watch HP Grenoble for news on these features.

Don't forget that *all* these feature enhancements will be available to all customers with SSS or CSS without additional charge.



Thanks!

*Paul Ely
Doug Chance
Dick Anderson
Cyril Yansouni
Jim Eckford
Sandra Metz
David Bylund
Sharon Jacobs
Ed Brummit
Darrell Krulce
Billie Meyers
Eric Boettcher*

*Jess Logan
Larry Sanford
Jeff Williams
Bill Becker
"Bruno"
Serge Daoust
Martin Phillips
Steve Richard
Mel Sibony
Ben Heilbronn
George Crow
Ray Nicarus*

*Guenter Kloepper
Audrey Dickey
Mike Bowman
David Waliszewski
John Tonkin
Betty Smith
Roger Ueltzen
Bob Bond
Eric Isaacson
Millo Fenzi
David Borton
Connie Pick*

Division News

DSD Changes Ordering Procedures On HP 1000 Systems

By: David Carver/DSD

Effective January 1, 1980, a new ordering procedure will be required for HP 1000 disc-based systems, the Model 40 (2176C/D) and Model 45 (2177C/D). The procedural change is to order the system disc and system console directly from the peripheral divisions. I want to describe the change, the reasons we're doing it, and the benefits of the change for your customers. See the new HP 1000 Systems price/configuration guide supplement which describes the changes in detail. Bulk copies of this update should have reached, or will soon reach all the sales offices.

Quotes written on or after January 1, and orders transmitted on or after February 1, *must* specify an option (number 019) which deletes the disc and console from the system; these system peripherals *must* then be ordered *on the same order* from DMD and DTD as line items. These line items must be coded for coordinated shipment and will be installed by HP customer engineers at the customer site. Note that we're in reality now treating the system peripherals exactly as we've treated add-on peripherals in the past. The Configuration Guide Supplement has all the details.

An important point: The 217XX product with Option 019 (now called the System Processing Unit) is still a "system" and still carries with it all the system benefits like site

preparation, installation, on-site warranty, and coordinated shipments. The System Processing Unit includes all cabinetry, cables, extra disc packs, etc.

Why are we doing this? Fundamentally, it makes our operation more efficient by eliminating unnecessary shipment, inventory, and factory "integration." We'll save hundreds of thousands of dollars in shipping and inventory costs. System integration is to the point now where it takes a minimum of time and we've proven that it can be done very well in the field. Making our operations more efficient will benefit the customer in the long run through lower prices.

What are the customer benefits? First, customers will soon be able to order the new Integrated Controller Discs (7906H/HR, 7920H, and 7925H) which will benefit them by \$2000. Although the 1282A Integrated Controller Disc interface is on the current Corporate Price List, DSD is not yet accepting orders for it because of some system problems. We'll let you know when this product is available. Second, OEM customers can now buy the 7906MR (and later the 7906HR) off the component OEM schedule. This amounts to a 10% *additional* discount on the system disc.

Read future *CS Newsletters* for ordering examples and selling hints to aid in answering your customer's questions. These should clear up any confusion. If you have more questions, your sales development contact is fully equipped to handle them.

DATA TERMINALS NEWS

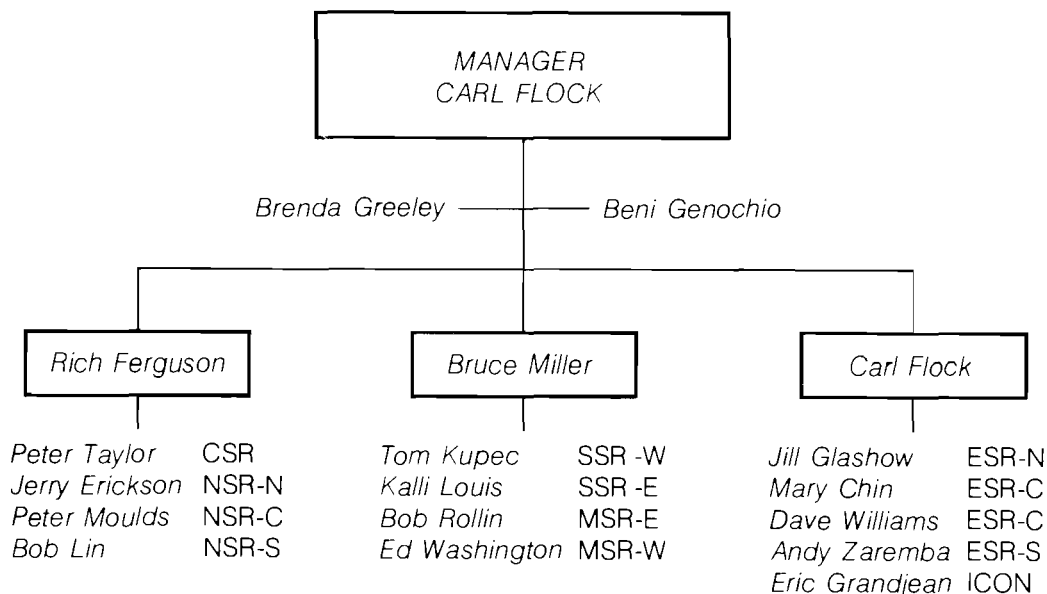
Division News

DTD Sales Development Organization

By: Carl Flock/DTD

Notice any changes? You're correct. *Norm Choy* and *Dave Goodreau* are missing! *Norm* has accepted the position of DTD Training Manager reporting to *Ed Hayes* and *Dave* is now the Product Support Manager for DTD. Replacing *Norm* is *Bruce Miller* as Sales Development Manager for Southern and Midwest. Keep those calls and orders coming!

SALES DEVELOPMENT



Sales Aids

HP 2621A/P vs IBM 3101/3102

By: Christian Graffi/HPG

IBM is now entering the "TTY-compatible" CRT market with the introduction in November of the 3101 Display Terminal and its associated 3102 Thermal Printer. I am sure you would like some insight into these two new products so that you can effectively compete against them with the HP 2621A/P terminals.

The IBM 3101 is a 12-inch CRT keyboard display, with a 1920 character screen (24 lines x 80 characters) operating in character mode only. It is available in three versions:

Model 10	RS-232C	\$1295
Model 12	20mA	\$1320
Model 13	RS-422-A	\$1320

The IBM 3101 features 8 program function keys, upper/lower case characters, cursor positioning, auxiliary printer interface port, numeric keypad and a 25th line for machine status messages.

The HP 2621A, in addition to these capabilities, has a 2-page memory, operates in line mode as well as modify

mode (modify and retransmit previous lines while in character mode), and features character/line insertion and deletion. HP also has a more aggressive volume end user discount schedule than IBM, which contributes to increase the price/performance advantage of the HP 2621A when large numbers of units are involved.

The IBM 3102 is a receive-only thermal printer which has been specially designed for continuous hardcopy of data appearing on the screen of the IBM 3101 and local hardcopy via operator request. The 3102 features a 95-printable ASCII character set, a basic 5 x 7 dot matrix character cell and prints 80 character lines at a speed of 40 cps over RS-232C serial connection to the 3101 CRT. It is priced at \$1295 which brings the price of the 3101 CRT/3102 Printer combination to \$2590.

The HP 2621, priced at \$2650, features an integral thermal printer with 126 character set (upper case, lower case and control codes), a 7 x 9 dot matrix character cell, and prints 80-character lines at 120 cps. Also the underline display enhancement is available on the printer as well as the screen. The price/performance advantage of the HP 2621P over the IBM 3101/3102 combination is obvious and you should have no problem outselling IBM in competitive situations.

But IBM is planning to announce in March 1980 a block mode version of the 3101 priced at \$1495 with line and page mode operations, as well as protected, blinking, highlight, non-display, modified transmit fields: be ready for a challenge!

Comparison Summary

Features	HP 2621A	IBM 3101
1. Character mode operation	x	x
2. Line mode operation	x	
3. Modify mode operation	x	
4. Multiple pages of memory	x	
5. 8 program function keys	x	x
6. Numeric keypad	x	x
7. Underline display enhancement	x	
8. Character/line insertion/deletion	x	
9. Price (\$)	\$1495	\$1295

Features	HP 2621P	IBM 3101/3102
10. Printer speed (cps)	120	40
11. Character cell size	7 x 9	5 x 7
12. Character set	95	126
13. Underline display enhancement	x	
14. Price (\$)	\$2650	\$2590

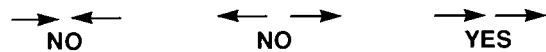
**Cable Connections:
Battle of the Sexes**

By: Jill Glashow & Wendi Brubaker/DTD

Here at DTD we have been experiencing many returns on misordered cables.

When determining the correct cable to make the proper connection, matching the sex is not enough. If your terminal has a male plug it does not necessarily imply a female connector will do the trick.

For example, connecting the HP 9825 desktop computer with an HP 98036A option 001 interface cable (male) to the HP 2621A terminal, choosing a 13222C cable (female) will NOT work. Both cables are acting like terminals, which means they are both talking on the same line and listening on the same lines. Consequently, nobody can hear or speak to the other, i.e. deadlock.



This problem can be solved by ordering the 13222W cable. This cable crosses the signals in such a way that the HP 2621A terminal will talk on the line that the HP 9825A desktop computer is listening on.

For your convenience we have built a quick reference cabling table for terminals hooked to HP systems.

NOTE: If you order the HP 98036A interface (female) without an option 001 a 13222N will work like a charm.

System	264X	262X
1. HP 3000/III ATC	13232Y Hardwired	13222Y Hardwired
2. HP 3000/33 ADCC	*13232N US Modem or Hardwired	*13222N US Modem or Hardwired
3. HP 3000/30 ADCC	13232M European Modem or Hardwired	*13222M European Modem or Hardwired
4. HP 250 ASI		
5. HP 1000 12966A	12966-001 Hardwired *13232N US Modem *13232M European Modem	12966-005 Hardwired *13222N US Modem *13222M European Modem
6. HP 1000 12531D 12880A	*13232C Hardwired 12880A-001 Hardwired	*13222C Hardwired
7. HP 300 ADCC	13232W Hardwired	13222W Hardwired

*Please check your systems literature to ascertain which cable is needed from the system.

On non-HP systems, you will run into the same problems, so please check the actual pin outs and sexes in your cabling manual before placing your order. If there are any problems, please call your friendly Sales Development contact with the sex AND pin outs from the computer cable you wish to hook up to.

Remember, sex is not enough!

Making HP 2647/9872 Multi-plot/Slide Better

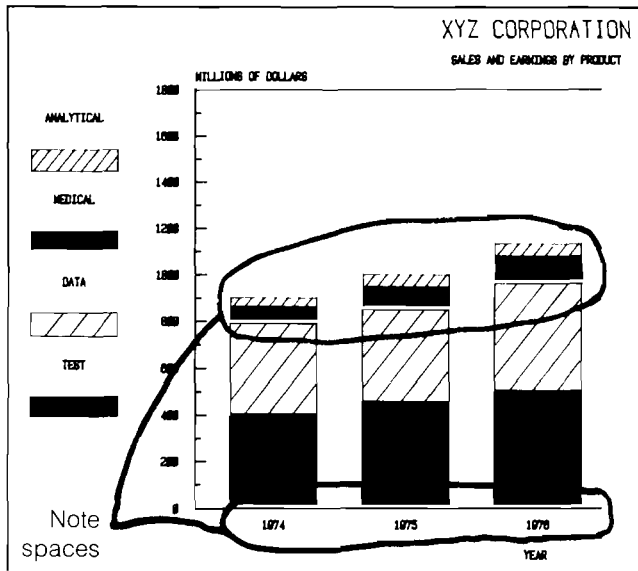
By: Mary Chin!DTD

Brian Tasch, Terminal Specialist in our Manhattan office, has isolated two ways to improve multi-plot/slide.

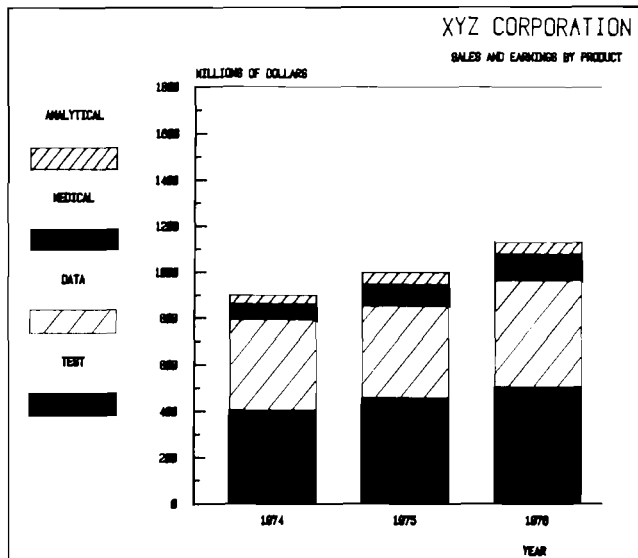
The first improvement involves bar charts. When selecting solid shade (7) for use in a bar chart, a space is left between the bar and the adjacent horizontal line below it. This was done originally to avoid smearing or blending of the two lines. Brian's solution is to provide such a space but to reduce its size so it is not discernable.

Solution: Load in BASIC REVC-1945-42
 Load in Bar Chart Menu
 CNTL Prev Page
 CNTL A
 9362 IF (J MOD 10) = 7 then y1 +Y1+1
 Run (Returns to Menu)

Before:



After:



The second improvement involves slide. The current program predefines Pen 1 and Pen 2 on 9872 to 8½"x11" size page. Brian's solution expands slide to plot on paper the full size of the 9872 plotter bed. This enlarges the text of slide proportionately.

Solution: Load in BASIC REVC-1945-42
 Load in Slide Menu
 CNTL Prev Page
 CNTL A
 51 IF P5+0 and Dir+1 then 141 Else Limit
 (B.5,939,9.6,259)
 Run (Returns to Menu)

Good Selling!

HP 264X "Fix For Frustrated Programmers"

By: Bobby Burrough!SSR

As the heavy hand of disgust and frustration falls on the HP 264X keyboard, the space bar usually becomes defective. The defect? The tabs that hold the torsion spring in place on the end housings (either left, right, or both) are broken.

As the CE surveys the poor, ill-fated keyboard, he normally chooses one of two alternatives: replace the keyboard (expensive), or order a space bar kit HP P/N 02640-60170 (time consuming). However, there is another alternative which costs nothing and makes use of existing parts — provided this fix has not been implemented in the past.

There are two tabs on each end housing. The torsion spring uses one tab at a time. If you simply move the right end housing to the left position and the left end housing to the right position, you have a new set of tabs to effect repair of the space bar.

Your customer is happy, your DM is happy, and hopefully our profit-sharing checks will be greater.

HP 2647A Program Tape

By: Program Person!DTD

Our wait is over, the HP 2647A Program Tape is finished. It combines 39 contributed programs that demonstrate the power of the HP 2674A. Included are new games, statistical, financial and general type programs. To get a copy, fill out the following form and send it to your DTD Sales Development contact along with a cartridge. Go get em' DTD Tigers! As always, for those of you in Europe, send your requests to Grenoble.

Enclosed is my cartridge tape. Please send me my copy of the "2647A Program Tape".

NAME: _____

OFFICE: _____

Send European Requests to Grenoble!

2647A PROGRAM TAPE		INSTRUCTIONS
GAMES	STATISTICAL	
3 Fig	23 Mean & Std. Deviation	1. The number of the program corresponds to the file number the program is at.
4 *Space Invaders	24 Binomial Distribution	2. Find the file of the program you wish.
5 Quest	25 *Linear Regression	3. Type in 'get', press carriage return. Program will now load.
6 *Tank Blaster	26 *Multiple Linear Regression	4. Type in 'run', press carriage return. Program will now execute.
7 *Mystery Plot	27 *Nth Order Regression	
8 *Clock	28 *Exponential Regression	
	29 *Growth Rate & Projection	
	30 *Histogram	
FINANCIAL	GENERAL	NOTES
9 Principle On A Loan	31 *Linear Interpolation	A * Indicates optional graphics output to screen or plotter.
10 Payment On A Loan	32 *Lagrange Interpolation	These programs are not supported by Hewlett-Packard. They can be used as programming examples for individual purposes. The results obtained by these programs are deemed to be correct but are not guaranteed.
11 Last Payment Due	33 *12 Month Table/Graph	
12 *Future Value	34 System Reliability	
13 *Future Value Of	35 Total Assembly Cost	
14 *Regular Payments	36 Anglo/Metric Conversion	
15 *Maximum Withdrawal	37 Alphabetize	
16 *Investment For A Future Value	38 Simultaneous Equations	
17 *Nominal Interest Rate	39 *Crosshatch Fill To Plotter	
18 *Minimum Investment	40 Prime Factors	
19 *Depreciation Rate	41 *Area Of A Polygon	
20 *Depreciation Amount		
21 *Salvage Value		
22 *Discount Amounts		
23 *Earned Interest Table		

Product News

New Screen Data Transfer Program from DTD

By: Jerry Erickson DTD

Have you ever had a screen full of data on your HP 2647A and wanted to have it output as a hardcopy on a plotter rather than by a raster dump to a printer? Now all you lucky people can do just that — and pick the color it plots in, too! — with the help of a new program written at DTD.

This new program was written to help those of you who like to format a text on the screen of the terminal, and then need to transfer that alphanumeric text to a plotter for a slide or chart in color. The program also allows you to select only specific lines if you wish, and you can choose the size of characters that it outputs. It is hoped that this new program aid will prove helpful. A copy of it follows. If you have questions or comments, or requests for other programs you'd like to see, please address them to DTD and we'll see what we can do to assist.

```

10 PRINT "*****"
20 PRINT " * THIS PROGRAM WILL INPUT DATA DISPLAYED ON THE TERMINAL SCREEN * "
30 PRINT " * AND TRANSFER IT TO THE PLOTTER WITH HP-IB ADDRESS #5. TO USE THE * "
40 PRINT " * PROGRAM, DISPLAY DATA ON THE SCREEN FIRST. THEN START PROGRAM * "
50 PRINT " * AND SPECIFY HOW MANY LINES OF DATA YOU WANT TRANSFERRED BY * "
60 PRINT " * MOVING THE CURSOR TO THE START OF THE DATA TO BE TRANSFERRED. * "
70 PRINT " * MOVE THE PLOTTER PEN TO THE POSITION WHERE YOU WANT IT TO START, * "
80 PRINT " * THEN PRESS CARRIAGE RETURN AND THE TRANSFER WILL BEGIN. * "
90 PRINT "*****"
100 PRINT
110 PRINT
120 PLOT < DIM L$(85)
130 INPUT "INPUT THE NUMBER OF LINES TO BE TRANSFERRED " ,N
140 INPUT "WHAT SIZE CHARACTERS DO YOU WANT? (1<SMALL> - 8<LARGE>) " ,S
150 CSIZE (S)
160 INPUT "INPUT PEN NUMBER (PEN #1,2,3,4 = LINE #0,2,3,4 ON PRINTER) " ,P
170 PEN (P)
180 PRINT
190 PRINT "PUT PLOTTER PEN INTO DESIRED POSITION"
200 LINUT "PUT SCREEN CURSOR IN 1ST LINE TO BE READ- PRESS RETURN",A#
210 PRINT MOVCR(-1,0);
220 FOR I=1 TO N
230 L$=DSPIN#(-80,X)
240 PRINT #0;L$
250 PRINT MOVCR(1,-1);
260 NEXT I
270 PRINT
280 END

```

GENERAL SYSTEMS NEWS

Product News

STARS and the HP 250

By: Gretchen Snowden/GSD

The HP 250 is joining the STARS! From January 1, 1980 the HP 250 will join the HP 300 and HP 3000 on the STARS bug-tracking system. This will allow automatic tracking of known problems, enhancement requests and documentation errors. In addition, the shift from the current manual system will enable marketing to better monitor the status of known problems.

Customers and SE's will now use the same service request forms used for the HP 300 and HP 3000 to submit problems or enhancement requests to GSD. One less form for the field! Requests will then be entered into STARS and will be tracked through marketing and the lab. The field will receive notification upon receipt of the problem, and when the solution has been found.

The Software Status Bulletin (SSB) will also be printed by STARS in the same format as for the HP 300 and HP 3000. One more publication that is consistent across product lines! The distribution channels are already in place and will enhance the timeliness of the HP 250 SSB. In addition, with an automated system all known problems will be reported. Since the number of problems on the HP 250 is small, the SSB will continue to be published on a monthly basis rather than bi-monthly. These changes should complement our continued dedication to superior support!!

HP 30418A Upgrade Clarified

By: Dave Butt/GSD

Option 001 has been causing a good deal of confusion in recent months. This option is used to order a second power supply for memory.

There are two cases in which this option needs to be considered. First, all customers who purchased the original HP Series III (32421A) will need this option. Low-Cost Series III's (32435A or B) introduced in Feb. 1979 do not

need this option. And second, where customers upgraded from an HP Series II to an HP Series III, it is not as straightforward.

With a customer who upgraded to an HP Series III, the memory size of his HP Series II before upgrading is the determining factor. If he had 256Kb or less in his Series II, then he will need the additional power supply provided by Option 001. If he had 320Kb or more of memory, he will not need the additional power supply, and therefore should not order Option 001. Inspecting the customer's system is the most accurate way to verify the presence of one or two power supplies. There is always one power supply in the CPU bay under card cage #4. The second power supply, if present, will be found in the I/O bay under card cage #7.

To summarize, the following table identifies when you need to order HP 30418A with Option 001.

System Was:	Order Option 001
Series III (32421A)	YES
Series III LC (32435B)	NO
Series II with 256Kb or less	YES
Series II with 320Kb to 512Kb	NO

Pre-Series II Discontinuance Announced

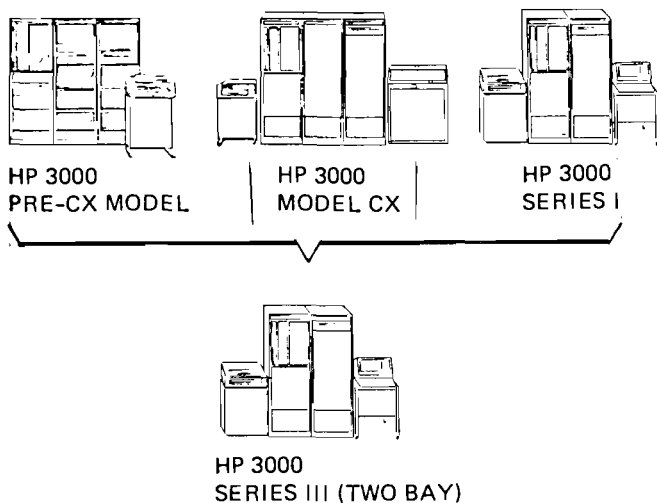
By: Dave Butt/GSD

As of March 31, 1980, we will formally discontinue the Pre-CX, CX, and Series I HP 3000 systems. Within the next few days, the District Managers with customers using these systems should be receiving copies of the Pre-Series II Discontinuance Guide. This manual will contain copies of the letters that are being sent to the customers explaining discontinuance. It also contains information on how to take advantage of this situation and turn it into a WIN — for both HP and the customer by upgrading him to an HP Series III. In the appendices, you will find the list of discontinued products, manuals, and a clear explanation of how discontinuance will affect the support of both hardware and software during the next five years. This is a good opportunity to again demonstrate to the customer HP's total commitment to him on a continuing partnership basis.

HP 3000s: THE EASY WAY TO PLAN YOUR FUTURE

Pre-Series II Upgrades

By: Dave Butt/GSD



MEMORY: up to 128Kb error detection core memory.

OPERATING SYSTEM: MPE-C for multiprogramming application environment.

DATA MANAGEMENT TOOLS: HP IMAGE/3000, QUERY/3000, and INDEX/3000 are available products purchased as high level tools to enhance productivity of applications development.

PERIPHERALS: distinct from the HP Series III are 7905 (15Mb) cartridge disc, 30103A (2 or 4Mb) fixed head disc, 30102A (47Mb) disc subsystem, 2749B teleprinter terminal and support of some non-HP terminals (e.g., IBM 2741).

MAINTENANCE: between \$650 and \$799 for 128Kb memory systems

- Up to 2Mb high speed, error-correcting semiconductor memory.
- MPE III for high performance multiprogramming job loads with ongoing enhancements that facilitate applications development and system management (for example, user and database logging, removable disc volumes, user defined commands, HELP facility).
- HP IMAGE/3000, QUERY/3000, KSAM/3000, and VIEW/3000 all part of the standard system at no extra charge.
- New peripherals available are HP 2608A 400 lpm line printer, HP 2621AP low cost terminals, HP 2619 1000/lpm printer.
- INP & data comm for HP-DSN.
- \$628/mo. for standard system with 256Kb memory.

Questions and Answers About Discontinuance

By: Dave Butt/GSD

- Q:** What does discontinuance mean to me as a CX, pre-CX, or Series I user?
- A:** Discontinuance means that computer systems and related software and hardware products no longer actively marketed by Hewlett-Packard enter into a formal 5-year support phase. HP will continue to provide the high level of support that you have come to expect. Full support will be provided for a 5-year period beginning March 31, 1980 on both software and hardware. This support will be made available to you through the Support Services Agreements with which you are already familiar.

During this period no enhancements are planned for the operating system MPE-C or software subsystems. Additional peripheral devices will not be supported on discontinued systems as they become available on other HP 3000 systems, and new software products will, in general, not be offered.

- Q:** Will current pre-CX, CX, and Series I users be able to purchase existing software and hardware products during discontinuance?
- A:** Yes. Ordering of discontinued hardware products is handled on a specials basis with price and availability quoted through the GSD factory Sales Development representative. This procedure will enable the purchase of add-on products (such as memory arrays) as the need arises.

Ordering of discontinued software products is handled on a specials basis with price and availability quoted through the GSD factory Sales Development representative. New product numbers have been assigned for software products in discontinuance. Refer to the Upgrade Products Price/Configuration guide for details.

Support services for software purchased during the 5-year discontinuance period will be available throughout that period only. Thus, support services for software purchased on January 1, 1985 will be available only until March 31, 1985, less than a 5-year period. Support services may be contracted for any period of three months or more.

- Q:** What alternatives for growth are available?
- A:** Hewlett-Packard will continue to offer products that enable users to expand their HP 3000 system or alternatively grow to higher capability HP 3000 systems. In this way users can plan on adding to the power of their HP 3000 system as their needs require.
- See the most recent edition of the Upgrade Products HP 3000 Price/Configuration guide for descriptions and prices of HP 3000 growth path products and I/O expansion.
- Q:** Will source code of discontinued software be available?
- A:** Yes. Source code may be made available for purchase in special situations. Contact your GSD factory Sales Development representative for details. However, note

that Hewlett-Packard will not offer support services or software consulting for software modified by the customer.

Q: Will I continue to receive Installation Tapes?

A: Yes. Installation Tapes (IT's) will contain fully tested solutions to major bugs. These installation tapes will be issued as soon as the permanent solution to the bug is available, and will fall on the normal quarterly IT distribution cycle.

Q: I would like to convert my service contract from Customer Support Service to Software Subscription Service.

A: No problem. As soon as your current service agreement terminates simply specify the desired number of months of SSS for your software instead of CSS.

Q: Are there any other dates, other than March 31, 1985, that are important to remember?

A: Yes. March 31, 1982 is the end of discontinuance for a number of the peripherals that are currently found on Pre-Series II systems. Examples are the ISS and Fixed Head disks.

Q: What happened to the manual set? Can I still get manuals?

A: Yes, but the appropriate manuals must be ordered under their individual product numbers. The complete set can no longer be ordered as one number.

Q: What are the economics of upgrading?

A: An example using the Upgrades P/C Guide of upgrading from a Series I shows:

Start with a Series I			List/BMMC Series I/694
Purchase	30307A	Upgrade to 256Kb system	\$58000/351
	001	Additional power supply	5000/15
	132	Upgrade selector Channel	3000/0
	credit		
	200	128Kb Series parts returned	-100000/ -356
	202	Series I selector channel	-500/0
	Net		55500/704
Result	A Series III with growth potential to 2Mb memory and 64 terminal ports.		

For the current prices and BMMCs, refer to the Hewlett-Packard Price Book.

Q: What kind of software conversion is required to upgrade from a Series I to a Series III system?

A: MPE-C and applications written on the Series I can be executed on the Series III with MPE III without program modification. A simple recompilation will serve to assure proper code transfer. The same applies for pre-CX and CX systems.

Note that some features of MPE-III and IMAGE/3000 on the Series III enable more efficient usage of system resources, and some planned code conversion may be desirable to set the stage for applications growth on the Series III. An example of this would be FORTRAN double precision or BASIC long data types.

MTS/3000 Strategy Outlined

By: Ron Fountain/GSD

Multi-point Terminal Support on the HP 3000 offers HP significant advantages in the minicomputer market. To effectively capitalize on these advantages, HP 3000 Product Marketing recently revealed a program to:

1. attain a customer satisfaction second to none for a data comm product, and
2. make MTS the preferred terminal connection for block mode operation.

The successful achievement of these objectives first requires the identification and resolution of outstanding customer problems, and second, ensuring that MTS is sold and installed in the correct environments. Steps have already begun to ensure this happens. These include the new data comm MIT with several MTS enhancements. In addition, *Tom Black* (HP 3000 Product Marketing) and *Ed Turner* (HP 3000 SE Support) recently undertook a field tour to identify and resolve any problems.

To assist in selling MTS, all SRs and SEs are encouraged to contact me for assistance in evaluating the suitability of potential MTS sales. All SEs and CEs are encouraged to call *Steve Bitondo* of SE Support for pre-installation assistance. When desired and appropriate (local offices without communication specialist and no prior MTS exposure, is an example), GSD will provide personnel to assist in the installation. All SEs are encouraged to inform GSD as soon as possible of problem MTS sites if additional assistance is desired. Finally, a major reintroduction of MTS to the field is planned for 2nd Quarter 1980 with enhancements scheduled for the 4th Quarter 1980.

HP 3000 lab and marketing remain firmly committed to MTS/3000 feeling it offers every SR numerous selling opportunities. It is hoped that everyone will take advantage of our assistance to capitalize on these opportunities.

Sales Aids

HP 3000 SR's Recognition Campaign

By: John Celii/GSD

Fiscal '79 was an outstanding year for HP 3000 order performance. Many commercial sales personnel were extremely successful selling HP 3000's. Unfortunately, their success is only recognized in their respective districts, areas, and regions. In Fiscal '80, the HP 3000 Sales Development group will implement the following program that will allow top sales personnel to acquire recognition from all their peers. In addition, the HP 3000 program will provide an incentive to become a top performer!

Monthly Honor Roll

Each month, the HP 3000 Sales Development group will determine which SRs sold at least \$100K for the HP 3000 program. We should point out that only the HP 3000 portion of the total order will apply for this recognition. After determination of the winners we will:

- Send a congratulations letter to all winners, copying their DM, AM, RSM and GSD management;
- Place their names on the HP 3000 program monthly Honor Roll;
- Insert the monthly Honor Roll in the *CS Newsletter*.

**HP 3000 PROGRAM
HONOR ROLL
NOVEMBER, 1979**

NAME	OFFICE
JULIE ANTHONY	LOS ANGELES
DON BACASTOW	ROCKVILLE
DON BECKER	TUALATIN
RAY BITTERMAN	SACRAMENTO
JOHN BOUTSIKARIS	SALT LAKE CITY
BYRON BROWN	SACRAMENTO
JOHN CONROY	LOS ANGELES
JIM COOPER	SAN ANTONIO
DENNY COURRIER	VANCOUVER
ALLYN FIELDS	DALLAS
BOB GUHL	LOS ANGELES
DON MCAVOY	KING OF PRUSSIA
MITCH MCCARROLL	LEXINGTON
DENNIS MCDONALD	SANTA CLARA
DAVE POLLEY	ST. PAUL
IRWIN RUBIEN	ROCHESTER
PHIL SAMUELSON	DALLAS
MIKE SCHMIDT	COLUMBUS
DAVE SEDIVY	ROLLING MEADOWS
FRANK SIMS	TULSA
MIKE VASILEFF	ST. LOUIS
PHIL WEAVER	OTTAWA
STEVE WIEBER	ROLLING MEADOWS
DENNIS WOOLLEY	ST. PAUL

CONGRATULATIONS!!!

HP 3000 Outstanding SR of the Month Award

Each month, we will determine which SR achieved the highest total of HP 3000 orders. Then we will:


- Issue the winning SR a certificate stating his/her achievement as the top SR of the month. This certificate will be suitable for framing. Also, a facsimile of this certificate will appear in the *CS Newsletter*.
- Place his/her name on the HP 3000 Outstanding Sales Representative of the Month plaque which will be displayed in the lobby of Bldg. 48.
- Allow that individual to have dinner locally with the person of his/her choice at the HP 3000 program's expense. SR will forward the receipt to my attention for reimbursement.

NOVEMBER, 1979 — WINNER!!!

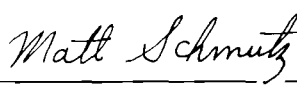
**HP 3000 PROGRAM
OUTSTANDING SALES REP
OF THE MONTH
NOVEMBER, 1979**

This is to acknowledge that *Dave Polley* of *HP St. Paul* achieved the highest HP 3000 Order Performance for the Month of November, 1979.

Congratulations from the entire HP 3000 Program!



HP 3000
Sales Manager



HP 3000
Program Manager

\$\$\$ Million Dollar Club \$\$\$

For all SRs who reach the magic \$1 million mark for HP 3000 sales, the HP 3000 program will:

- Issue to the newly elected members of the Million Dollar Club a certificate suitable for framing. This certificate will recognize their outstanding performance for the HP 3000 program.
- Place their names on the HP 3000 Million Dollar Club list. This list will be published monthly in the *CS Newsletter*.
- Issue an HP 3000 Million Dollar Club Membership Card.

GSD
HP3000 PROGRAM
\$MILLION DOLLAR CLUB\$

Name _____
Office _____

 **HEWLETT PACKARD**

This card enables the member to request any *visiting* HP 3000 program manager to have dinner with the Million Dollar Club member and the guest of their choice at the HP 3000 manager's expense.

Or . . .

While the Million Dollar Club member is visiting Cupertino, this card enables him/her to have dinner with their sales support engineer and the HP 3000 program manager of *their choice* at the HP 3000 manager's expense.

HP 3000 PROGRAM
FY'80
MILLION DOLLAR CLUB

?

Who Will Be The First Member????


As I have indicated, the Monthly Honor Roll, Outstanding Sales Representative, and Million Dollar Club members will be published monthly in the *CS Newsletter*. In order to eliminate any confusion, remember *only* the HP 3000 portion transmitted to GSD is applicable for these recognitions.

GOOD SELLING IN FY'80!

GSD Application Software Products
"Measure Up"

By: David Sohm/GSD

Under the theme of "working smarter, working together", the most recent issue of *Measure* focused on improving productivity as a major challenge for the 1980's. As I'm sure you saw in the magazine, HP has many programs underway to improve productivity internally. As a close, *Measure* discussed HP marketing efforts to customers with this theme.



The sale is the HP solution...

HP's customers buy HP products because they have problems. One has a problem in computation. Another needs a system to accurate time measurement. The customer is looking about improving his specific cost rate. The other is interested in chemical computation in his process. And that the manufacturer is looking to make his most efficient operations. Each of these can be related in one way or another to a product in production. The customer may be other goods or services, greater cost, quick service, or other fields in his industry. Look at some of the cases.

A GSD software product, SPC/3000, part of MFG/3000, was featured as an example of HP efforts to market increases to customers' productivity. Our applications software programs began the productivity theme with SPC and will continue to carry this theme into the 80's. To make all our marketing and selling programs hit home in 1980, this theme can be exploited. The *Measure* article is continuing reinforcement that smart businesses, like HP, will continue to make investments in products and services that contribute to productivity. Marketing "productivity" is certainly one key to our success in the 80's.

General News

First California HP 250 Applications Class a Success!!

By: Ralph White/GSD



MFG/250 SE class members.

The sixth MFG/250 SE Class ended December 7 in Cupertino. This class was significant in that it was the first HP 250 Applications Class taught in California. The class has been taught in Ft. Collins, Germany, Japan, and Australia. This class brings the number of trained North American SEs to 27, and worldwide to 49.

According to instructor, *Stacy Plémmons*, the class was a complete success: "The students were very enthusiastic and picked up the material very quickly, even though none had any previous manufacturing background." One student, *Francesca Alfino* (HP-St. Louis), wanted to cannibalize the code for other applications. "The Bill of Materials/ Parent-Component Idea is applicable to a whole range of problems beyond manufacturing," said *Francesca*.

Perry Knight (HP-Bellevue) and *Dale Stonerook* (HP-Cincinnati) were more impressed with the documentation. "I've been having questions from OEMs for quite some time," said *Perry*. "The documentation will help me answer those questions with ease."

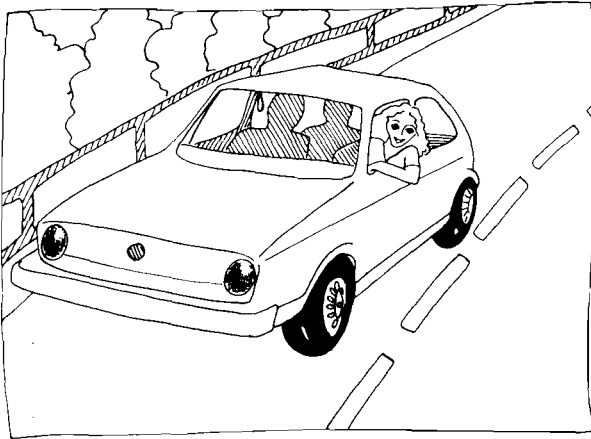
The class worked hard and was the first class actually given an opportunity to modify the MFG code. Under the revised format, students discuss the documentation, then use the OEM Set to make *minor code modifications*.

The next Applications Class will be February 4-15 in Cupertino, and will include OM Training. What we want to know is how *Stacy* ended up *fifth* in a four-person class? How about it *Stacy*?

HP 300 Eases Energy Crunch!!!

By: *Pat Wilcox/GSD*

Join a Carpool . . .



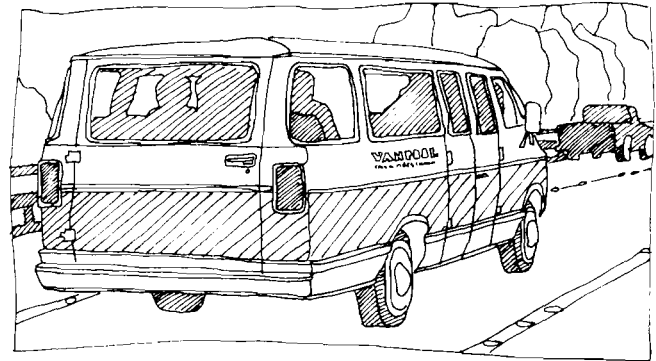
and fuel around with your friends!

A Southern California software supplier has installed Ride Matching software for the HP 300. The ride-sharing service using the HP 300 is located in the San Francisco Bay area.

The system uses the features of the HP 300 (including IMAGE) and provides on-line matching of prospective car and van poolers. The riders are matched based on origin, destination, work times and desired mode of transportation. The software also provides for van maintenance and driver reporting and keeps information regarding mass transit carriers available in the community.

The software is designed to run on both the IDS and any 264X terminal. The menu-driven Ride Matching software

Announcing...VANPOOLS The newest way to commute.



includes a word processing module (IDS only), an integrated database backup module and a database inquiry facility.

If you have an OEM that might be interested in providing this type of software in your metropolitan area, the software is available for cross-licensing. As the energy crunch gets worse, more cities will need to install a ride-matching system. The solution is available on the HP 300!! Contact me on extension 3733 for more details.

ATTENTION! Next Executive Seminar Scheduled!

By: *John Celii/GSD*

Advance Notice!!!!

This is to inform you that the next Executive Seminar on Distributed Systems will be hosted by the HP 3000 Sales Development Group on March 10 and 11, 1980.

Further information on logistics, speakers, etc. will follow.

Presenting the HP 300

By: John Whitesell/GSD



Debbie Dvorak and Marje Hulin contrasting the HP 300 with the IBM System/34.

As part of HP 300 product training for new salespeople, we have recently added a session on student mini-presentations that most of the students agree has proven a lot of fun as well as being informative.

Teams of two or three students prepare and give a 5-minute presentation on a specific aspect of the HP 300 or the HP 300 selling process. Such topics as "The advantages of the HP 300 over the IBM System/34", "The office-oriented features of the HP 300", "HP 300 System growth potential", and "Contrast the HP 300 with the HP 250" have been very creatively presented.

Congratulations to all these new salespeople on doing an excellent job with their presentations!

Canada Says, "Thanks, Dennis!"

By: Regina Fanelli/GSD



At a recent HP 3000 Sales Development staff meeting, *Bill Richion* presented a certificate of appreciation and a 1980 proof set of Canadian coins to *Dennis Carelli*, Canadian Region Sales Development Manager. The Canadian Region asked *Bill* to do this on their behalf in order to give special recognition to *Dennis* for his excellent support during FY'79, (which ended for them at an impressive 134% of quota) and to thank him for his efforts in coordinating successful factory and field involvement with the MacMillan Bloedel major account. Congratulations, *Dennis*!

Training News

New Pricing for Customer Training

By: Pete Cressman/GSD

HP 3000 customer training courses will have new prices as of January 1, 1980. The new prices are based on the courses' actual costs and should reflect their true value to our customers. The price changes are part of a CSG-wide effort to establish a consistent pricing policy for customer training. The prices below for HP 3000 customer training courses match similar changes made to DSD and DTD courses.

Training Center Courses

Course Name	Course #	Old Price	New Price
Programmer's Intro	22801 B	500	625
System Mgmt. & Oper.	22802B	500	750
IMAGE	22956A	500	625
VIEW	22830A	400	500
Special Capabilities	22804A	500	875
SPL/File	22805A	500	875
MFG	32378A	500	750

On-site Courses

Course Name	Course #	Old Price	New Price
Programmer's Intro	22801X	4500	6500
System Mgmt. & Oper.	22802X	4000	6500
IMAGE	22956X	4500	6500
VIEW	22830X	3600	5200
KSAM	22828X	1150	2600
DS/3000	36900E	3000	5400
EDC/SPC	32383A	1150	2600
IOS	32387A	1150	2600
MRP	32391A	575	1300

Option 001 (cost per additional student over 10 for all on-site courses)

New Price	Old Price
100	50

Customer training course prices have been changed to reflect their value. The major factors that affect the value of a training course are:

- The amount of time an SE needs to prepare for and present a training class. Some courses require additional set-up and customizing by the instructor.
- The amount of system resources needed for the course. Some courses can share a system, others need a dedicated system, and still others require multiple systems and special devices.
- The number of students who can be taught effectively. Some courses offer individualized attention to the student which means that classes must be kept small.

The following table shows how these factors have determined generic price categories for our customer training courses.

Course Type	Price per day per student	SE Preparation	System Requirements	Class Size
Standard	\$125	Average	Average	Average
System Admin.	\$150	Average	Dedicated System	Average
Advanced	\$175	High	Dedicated System	Small
Specialized	\$200	Very high	Very high	Very small

Even with the price changes, we remain in a good position relative to the competition. Here are the prices per day per student for some of our favorite vendors.

Course Type	DG	DEC	IBM	HP
Standard	120	110-133	112-189	125
System Admin.	120	110-150	115-205	150
Advanced	120	120-158	171-205	175
Specialized	—	—	245-247	200

The Corporate Price List will contain the new prices effective January 1, 1980. Orders at the old prices will be honored for 30 days after January 1. All quotations, either verbal or written, should be made at the new prices after January 1, 1980. The customer should be notified that his order will be honored at the lower price if it is received within the 30-day grace period; that is, presently booked orders will be adjusted to the old prices until February 1, 1980.

Help your customers understand they get training for the function they need, at a value per dollar second to none in the computer industry. The quality is there — get your customers signed up to use it.

New Pricing For HP 250 Customer Training

By: Stacy Plemmons/GSD

The HP 250 customer training courses will have new prices as of January 1, 1980. The new prices are based on their actual costs and should reflect their true value to our customers. The price changes are part of a CSG-wide effort to establish a consistent pricing policy for customer training. The prices listed below for HP 250 customer training courses match similar changes made to other GSD, DSD and DTD Courses.

Course Name	Course #	Old Price	New Price
Comprehensive Introduction to HP 250			
At Training Site	45103A	\$ 500	\$ 625
At Customer Site	45104A	\$4500	\$6000
MFG/250 Comprehensive Intro	45186A	\$ 350	\$ 600
OM/250 Comprehensive Intro	45196A	\$ 500	\$ 750
MFG/250 Consulting	45187A	\$1850	\$2100
OM/250 Consulting	45197A	\$2000	\$2250

Please consult your HP 250 Price/Configuration Guide for complete course descriptions. For more details concerning this price increase see related articles in this issue.

The Corporate Price List will contain the new prices effective January 1, 1980. All quotes prepared after January 1, must use the new pricing. Confirmed reservations will, of course, be billed at the old prices. Presently booked orders will be adjusted to the old prices until February 1, 1980.

Help your customers understand they get training for the function they need, at a value per dollar second to none in the computer industry. The quality is there — get your customers signed up to use it.

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HP GRENOBLE NEWS

Division News

Terminal Training Schedule at Grenoble

By: Maurice Poizat/HPG

Terminal courses available at Grenoble are:

For SRs:

- **ATT (Advanced Terminal Training)**
A one-week course for HP employees who have completed Corporate/CPG Overview, and will be SRs with a medium to high terminal quota. After completion of this course, SRs will have a good understanding of the capabilities of the terminal products in their respective marketplace.

For SEs:

- **SE I TT (SE Level I Terminal Training)**
A one-week course for HP employees who have completed Corporate/CPG Overview and will be SEs in either the technical, commercial or horizontal areas. After completion of this course, SEs will have a basic understanding of the capabilities and operation of all current terminal products (262X, 263X, 307X, and relevant accessories and external peripherals).
- **SE II TT (SE Level II Terminal Training)**
A two-week course for all terminal field personnel who have completed the SE Level I course, or have equivalent experience and knowledge of the terminal product lines, and will be area terminal SEs. After completion of this course, the SEs will have a thorough understanding of the terminal products operation, programming and use in a systems environment. They will be able to teach the customers 2645A, 2648A, 2647A users courses and consult customers on any terminal application.
- **SE III TT (SE Level III Terminal Training)**
A one-week 2649 customer course (13294A) offered to terminal SEs who have completed the SE II training for in-depth technical insight into the 264X terminals.

For CEs and Technical Support Engineers:

- **CE/TSE Class**
A 2-week currently available class covering 264X and 263X hardware.

Schedule

ATT (1 week):	Jan. 7; Feb. 11; Mar. 10; Apr. 14; Jun. 9; Jul. 21; Sep. 8; Oct. 13.
SE I TT (1 week):	Jan. 14; Feb. 18; May 5; Jun. 30; Aug. 18; Oct. 20.
SE II TT (2 weeks):	Feb. 25; Aug. 25.
SE III TT (1 week):	June 16.
2649 Customer Course (13294A) (1 week):	Mar. 31; Sep. 15.
CE/TSE Class (2 weeks)	Mar. 17; Sep. 22.

Class size: 10 students maximum

For more information contact your Terminal Support Group at Grenoble.

Data Systems Grenoble

Division News

"HT" At Grenoble

By: Tony Gunn & Francis Marc/HPG



Michel
Cormon
HPG

Geoff
Evans
Birmingham

Roland
Fleischmann
Vienna

Ewdot
Costeris
Amsterdam

There was something electric about the atmosphere when the Horizontal Technical Districts' Managers came to Grenoble.

The 29 visitors took part in a 2-day overview of Computer Systems strategy and products. *Heiner Blaesser* and *Alex Sozonoff* outlined CMG strategy and the opportunity to achieve rapid growth in our European Computer Systems business by taking advantage of the incremental sales volume. *Roger Ueltzen* outlined DSD business strategy and *Cyril Yansouni* explained the role of HP Grenoble and its position in our European organisation.

Other guest speakers included *Rudolf Weber* on support services and *Chuck Ulfers* on peripherals. Other sessions included HP 1000 hardware and software, data terminals, data capture terminals and the SEO. There was ample time for discussion on how the Horizontal Technical districts would tackle the challenge to obtain incremental sales by moving up-market. Topics during these discussions included: systems cross-training for SRs, selling techniques, Computer Systems quota and new market opportunities. At the end of the two days the whole group was extremely positive about their new role and summing up, it seemed as if the District Managers were saying: "Leave it to us! We'll show you".



William Koenig Orsay

Joe Vigier Orsay

Rudi Greuter Zurich



Roger Ueltzen DSD

Arild Aspas Oslo

Bennett Gilbert HPG

Model 10 Contest Awards Given

By: *Dave Borton/HPG*



Left to right *Dave Borton, Helmut Reinhart — The Winner, Peter Schoeltzel.*

The three European Model 10 award winners recently received their plaques in ceremonies in Italy and Germany. The L-Series systems were scheduled for early shipment to them as well. *Roger Ueltzen* and I presented the awards to *Antonio Brogi* (Milan) and *Helmut Reinhart* (Frankfurt). *Fritz Rombach* of Boeblingen was in the US with an L-Series prospect, so he received his plaque later.

Congratulations to each of them!

Sales Aids

New Data Capture Demo Kit Available

By: *Guenter Kloepper/HPG*

This month we are shipping to all US offices which have HP 307X demos, a comprehensive kit of prepunched cards, prepunched badges and mark sense cards. The kit, which comes in a smart attaché case, will allow you to make even better demos on systems or stand-alone terminals. If we have missed your office, send me a note at DTD, along with the serial number(s) of the terminal(s) at your office. Remember, we can only supply this to offices with demo units. ICON people! This goes for you too. Europeans, *Francis Marc's* group will be supplying your demo locations with similar sets.

And best of all, just as with the demo stands and the HP 3000 demo kit which many of you ordered during the last few weeks, the kit is FREE!

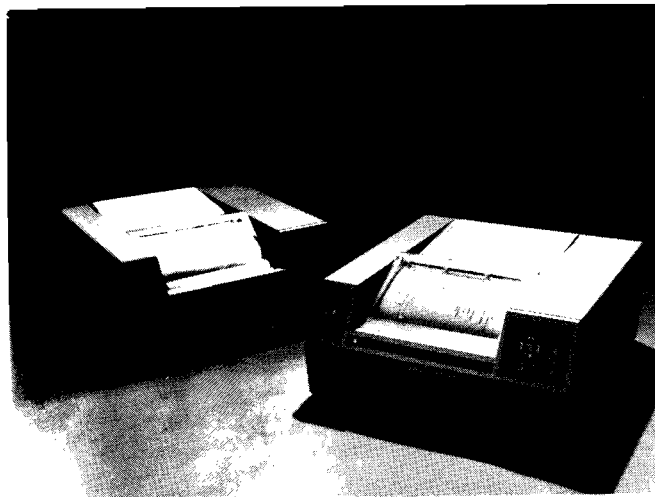
CS GROUP NEWS

SAN DIEGO DIVISION

Product News

Introducing. . . The 7240A and 7245B Plotter/Printers

By John Koon/SDD



- High-contrast quality documentation
- Plots and text on the same page
- Unattended, quiet operation
- Flexible Labeling
- Fast dot matrix printing
- Enhanced plotting line fonts and symbols
- Black or blue-trace thermal paper
- RS-232-C (CITT V.24) interface - 7240A only
- HP-IB (ANSI/IEEE 488-1978) interface - 7245B only

Greatly improved quality hardcopy with graphic excellence

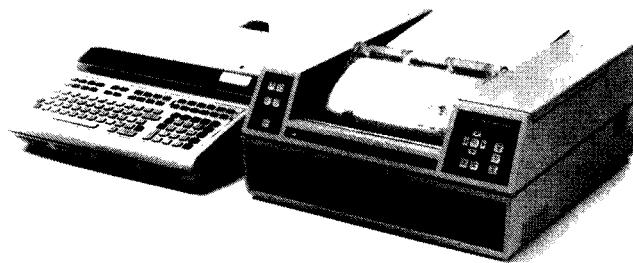
. . . The San Diego Division announces the HP 7245B and the HP 7240A thermal plotter/printers. These quiet, compact

desktop units are both high-speed vector plotters and also fast, clean printers, satisfying a wide range of hardcopy needs. The ability to produce high-quality graphics and sharp, high-contrast text on the same page makes these units the ideal peripherals for quiet, in-office use or rugged laboratory conditions.

Interfaces

The HP 7240A is designed with an RS-232-C (CITT V.24) interface. This model is ideal for use with a modem for remote computer systems or in a hardwire configuration with a local computer system or desktop computer with an RS-232-C interface.

The HP 7245B is designed with an HP-IB (ANSI/IEEE 488) interface. This model is designed to be used with computer, desktop computer, and microprocessor-based systems with an HP-IB interface or with an interface that is compatible with the IEEE specification. In addition, the 7245B provides a raster graphics image printing capability and an additional dot matrix font with 132-column condensed characters.



7245B Plotter/Printer with the HP 9825A Desktop Computer

Features

The improved writing quality of both the plotting and the printing is the most outstanding new characteristic of these units. This was accomplished through two major developments:

1. New soft-platen technology
2. Improved paper quality

The soft platen is a poor heat conductor and allows a higher temperature build-up at the point of printing. The combination of the existing thin film printhead and the development of the soft platen results in higher quality graphics and text printing. Beyond improving the quality of the hardcopy, the choices have been expanded to include blue and black.

Program Control

Program control provides both plotting and printing power. The HP 7240A and HP 7245B have 55 plotting commands and 41 printing function commands. In addition, the HP 7245B has 18 raster control and 5 raster binary data transfer commands. These sets of easy-to-use commands provide the following:

1. Vectors in 7 dashed line types for trace differentiation.
2. Orthogonal graph rotation for best data presentation.
3. Single commands for arc and circle generation.
4. Includes 9 dot matrix and 5 drawn character sets to produce international documentation.
5. On the HP 7245B, raster graphics will allow dot-for-dot reproduction of CRT images on HP graphic terminals.

Sales Aids and Demonstration Aids Available

To demonstrate the enhanced capabilities of the new HP 7245B Plotter/Printer from the San Diego Division, use your HP 7245A desktop computer demo tapes, Graphics 1000 demo, or the HP 2647A Multi-plot tape. The existing HP 7245A desktop computer demo tapes are:

Part No. 07245-18001, Revision A for the 9825
 Part No. 07245-18002, Revision A for the 9835 and 9845

With the HP 2647A terminal, use Multi-plot to create a graph. Then, for a vector reproduction, type a "Y" in the Plotter slot and press the Multi-plot key. For a raster reproduction of the CRT screen, press the terminal's command key and the following sequence:

TRANSFER ALL GRAPHICS HP-IB#

Then type the plotter address (factory preset at 5) and press RETURN.

Also, try listing a demo program to show how the HP 7245B works as a printer, as well as showing your customer how easy it is to program. You can list the program simply by setting the plotter address at 5 and:

on the 9825: LIST # 706
 on the 9835 and 9845: LIST # 7,6

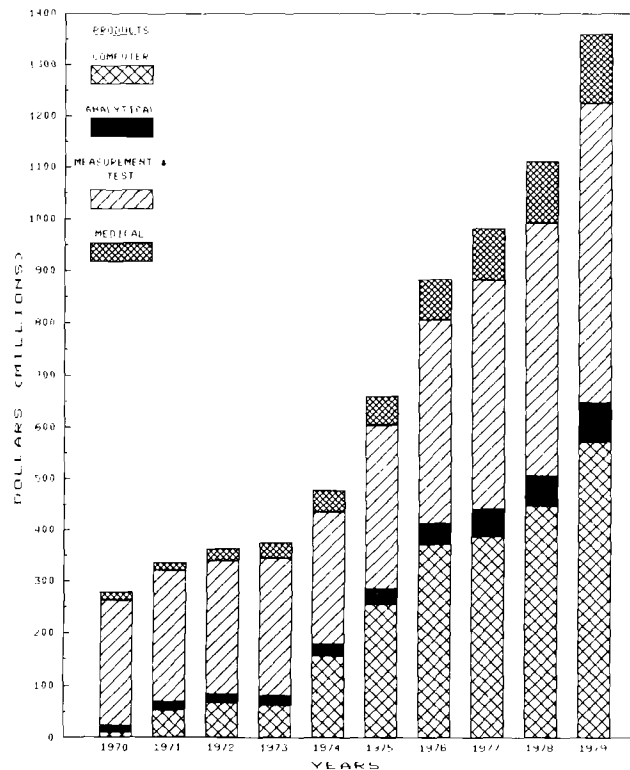
We are currently working on additional tapes for both the HP 7245B and the HP 7240A in order to increase your effectiveness in demo-ing these units. Their availability will be announced soon. Happy demo-ing!

An informative and attractive data sheet has also been published to provide you and your customers with promotional information on features and technical specifications. This will assist you in deciding that the HP 7245B or the HP 7240A is your best match for the customers' needs. It may be ordered from the literature depot as P/N 5953-4049. This data sheet cleverly outlines the plotter/printer versatility, graphics capabilities, program control, and hardware design of the HP 7245B and HP 7240A, explaining the individual major features which contribute to these areas. Visual display tools include hardcopy samples of specific applications and clear, concise descriptions to complement these. The data sheet is designed to direct you to the right selection and easy ordering of the HP 7245B and HP 7240A.

All product ordering information and prices are included. The price of each unit is \$5200 with 4-6 weeks delivery. The HP 7245B and HP 7240A Plotter/Printers will be placed on the Corporate Price List on January 1, 1980. The HP 7245A will be removed from the Corporate Price List as of February 1, 1980.

The new data sheet, together with sample plots demonstrating the outstanding quality of the HP 7245B and the HP 7240A, have already been mailed to you. If you have not received them or would like additional samples, please contact San Diego Sales Support at (714) 487-4100.

MARKET DIVERSIFICATION AND GROWTH
 1970-1979



Plot Sample

Sales Aids

HP 7310A Demonstration Tapes Available

By: Tom Tremble/SDD

Two demonstration tapes for the HP 7310A Graphics Printer are available from the San Diego Division. One tape, P/N 07310-18001, Rev. A, is used with the HP 2647A Intelligent Graphics Terminal and the other, P/N 07310-18002, Rev. A, is used with the HP 9835A desktop computer. Both tapes illustrate the many features and customer benefits of the HP 7310A by printing several pages describing the character set selections, enhancements, forms and page formatting, and high resolution graphics capabilities. The program may be operated on a continuous basis or one page at a time to illustrate a particular capability in detail.

The demo tapes may be obtained in any of three ways:

1. Order an HP 7310A for your consignment demonstration needs and specify one or both of the demo tape part numbers on the order. We'll send them with the HP 73120A at no charge.
2. Tape your business card to a new (unopened) blank tape cartridge and mail to the San Diego Division, attention *Bill Fuhrer*. In Europe, send the tape to *Myron Hunt* at BID. Be sure to indicate which demo tape you want on your card. We'll copy the programs onto your tape and return it directly to you.
3. Order the individual tape you need directly from San Diego Division.

Remember -- the demo tape is a great way to make sample output copies to give to your customer. It's the easiest way to illustrate the HP 7310A's advanced features and capability for your add-on printer sales.

Computer Supplies Operation News

Literature Display Racks Promote Computer Support Services

By: Fran Jefferies/CSO



Left — *Barbara Peters*, SE Administrator, right — *Sue Murphy*, Registrar — Paramus office.



Left to right: *Priscilla Lane*, Midwest area's SE Administrator, and *Joanne Liebig*, Registrar, at the Farmington Hills office.



Left — *Jean Mitchell* — SEA, Right *Carol Ann Shafer* — Registrar Rockville

Providing information on HP computer support services in areas where customers congregate is the focus of Computer Supplies Operation's new promotional program.

Literature display racks with the message "HP Computer Support Services . . . dedicated to your ongoing success" were installed in December in the training center lobbies in Eastern Sales Region's Rockville and Paramus offices and in Midwest's Farmington Hills and Rolling Meadows offices.

The attractive brown and rust-colored racks offer three types of literature:

- *Computer Supplies Catalog* — from CSO (P/N 5953-2450D) with a sticker affixed promoting CSO's direct phone ordering service.
- *Computer Systems North American Customer Training Schedules* (P/N 5953-0841) (All literature available from Corporate Literature Distribution Center) Registrars at each area training center are responsible for keeping the display racks filled.
- Overview brochures from Computer Support Division.

Other training centers throughout the US will have racks installed in the near future — spreading the message to customers about HP quality support services.

Corporate Training & Management Development

NEW VIDEOTAPE INFORMATION

New Videotapes from Corporate Training

By: Chuck Ernst/Corp.

Title: HP 85: The Analytical Probe
 Audience: Field Engineers, Dealers, Customers
 Purpose: To introduce and demonstrate the HP 85 Personal Computer.

Content: This program introduces the HP 85 Personal Computer. It creates enthusiasm and awareness of the product's unique features and benefits through an innovative demonstration. It is to be used as a direct sales aid at trade shows and in selling applications.

Time: 11 mins.

Part No.: 90861Z

Date Released: November 1979

How To Order: Transmit a HEART (COCHISE) 1-2 order to Video Products, Palo Alto: Supplying Division 0700, Product Line 95, Sales Force 09, Marketing Division 07. Order 90861Z for a videocassette.

COMPUTER SYSTEMS NEWSLETTER

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