REINHARDT, HELMUT
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COMPUTER SYSTEMS NEWSLETTER

For HP Field Sales Personnel

HEWLETT **hp** PACKARD

DTD Introduces the 2647A Intelligent Graphics Terminal

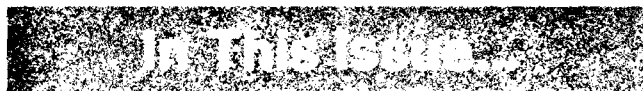# HP Computer Museum
www.hpmuseum.net

For research and education purposes only.

DTD Introduces the 2647A Intelligent Graphics Terminal .... Page 8

World-Wide CSG Area Manager's Meeting a Great Success .... Page 21

BOISE DIVISION NEWS

Product News

How Many RS-232C Interfaces Are There?
By: Larry Andrews/Boise

If you're talking about the 2630 family the answer is three. There's a simple version for use with full-duplex modems, and two versions with 202-type half-duplex modem control. The simple version is standard on the 2635A and is option 040 to the 2631A. The other two are options 041 and 051 to both the 2631A and 2635A. The following is a brief description of each:

Computer Museum

2635A-STD
2631A-040   Works with full-duplex modems and most hardwired applications.

Other characteristics:

1. Checks for parity; passes 7 bits of data to the printer. This renders 8th-bit-character-set-select unusable.

2. Unit does not operate with front panel baud rate switch in EXT position.

2631A-041
2635A-041   Includes all capabilities of simple interface plus 202-type half-duplex modem control.

Other characteristics:

1. Passing-8th-bit is selectable by a switch on the interface board.

2. When the front panel baud rate switch is set to EXT, several (15) baud rates can be selected by a 4-pole D.I.P. switch on the interface board. The 16th position allows an external clock to be used.

2631A-051
2635A-051   This interface is internally identical to option 041, the only difference being the rear connector. This option includes a 2640-type edge connector instead of the more familiar 25-pin EIA RS232 type connector. The additional contacts (and the non-EIA standard configuration) allow the terminal's internal clock to be output, as well as an external clock to be input without hardware modification. Many 21XX terminal interface boards require this configuration (12966A/DVR05, 12880A/DVR00). The connector emulates a 13260A/B and therefore can be used with many DTD cables.

Hopefully, this explanation reduces some of the confusion about the three versions of RS-232 offered on the 2630 family.

263X With DVR05
By: Steve Davis/Boise

Some customers who are using their 2631A/2635A on RTE with DVR05 have complained about receiving unwanted linefeeds when printing data.

This problem is especially apparent when a VFC command is issued. For instance, if the customer's program transmits an escape sequence commanding the 263X to slew to VFC channel 6 (next half page), the 263X will react by slewing to the next half page PLUS ONE LINE!

WHY DOES THIS HAPPEN?

It happens because DVR05 automatically transmits a LF character at the end of each line of data. However, transmission of the LF will be suppressed if an underscore character (octal 137) is inserted as the last character before each carriage return. (The underscore will not be printed.)

So, if one of your customer's 263X's is having this problem, the insertion of an underscore at the end of each line will cure it.

COMPUTER SERVICE NEWS

Computer Supplies Program
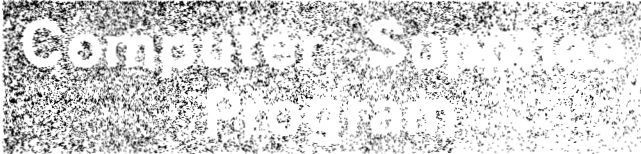
Coordinated Marketing of Supplies For HP Computing Products
By: Carl Anderson CSD

There's a new program underway to help coordinate the marketing of "Supplies for HP Computing Products", which will result in another useful sales tool for field use.

The Computer Supplies program reports to CSG via the Computer Service Division. and it is working closely and cooperatively with the Calculator Group. and the San Diego Division of the Instrument Group.

The reason, quite simply. is that HP needs to have a unified supplies marketing program which is useful to both the Computer (02) and Calculator (06) sales forces. After all. an increasing number of identical peripherals (and related supply items) are being used by customers served by both sales forces. And in the final analysis, a broad-in-scope supplies program is highly complementary to HP's position as a preferred vendor offering a broad range of computational product solutions.

What are "computer supplies"?

Broadly speaking. they are defined as anything which our customers need and personally use in operating an HP Computing Product. Magnetic media such as discs. tape and minicartridges . . . consumables such as paper products. print heads and printer ribbons . . . operator maintenance items . . . and certain low-ticket accessories all fall within this definition.

Where are the distribution points?

Most computer supply items are presently ordered from and distributed by three HP entities in the U.S.:

- *San Diego Division* (SDD-11): plotter pens and papers.
- *Computer Service Division* (CSD-50): rigid discs, plus newer supply items for Computer Group products start with FY '78.
- *Corporate Parts Center* (CPC-15): most other items.

PCE in Boeblingen handles all computer supply items for the above. in Europe.

CSD Supplies moves to Mt. View

Effective 1 May. that portion of CSD concerned with the Computer Supplies Program has physically moved to the same Mt. View facility which houses CPC. This close proximity makes it possible for CSD Supplies to take advantage of the excellent CPC shipping services. and it facilitates closer coordination of the supplies program through both HP entities.

CSD Supplies will continue to handle orders and inventory control separately from CPC. Orders for CSD Supply items should continue to be directed to COMSYS/HEART location 500**5**. which will automatically be received by CSD in Mt. View (all transmissions directed to 50XX locations other than "05" will be received at the main CSD location in Cupertino).

Who's on the Computer Supplies team?

The team presently consists of three people. *Carl Anderson* is responsible for coordinating the overall Computer Supplies marketing program. He is ably assisted by *Alex Kozera*. who additionally looks specifically after CSD Supplies. *Betty Stevenson* is in charge of CSD Supplies order processing and inventory control. You can reach them via COMSYS location 500**5**, or by Mt. View telephone (415) 968-9200 -- extensions 302 (*Carl*). 306 (*Alex*), and 307 (*Betty*).

If you have comments or suggestions regarding the program. please let us hear from you.

DATA SYSTEMS NEWS

Product News

New HP-IB Application Note: AN 201-7
By: Holly Cole/DSD

A while ago, we published AN 201-4: "Performance Evaluation of the HP-IB Using RTE Operating Systems". This application note told how to calculate the measurement speed of various instruments and unused CPU potential when using the general purpose HP-IB Driver, DVR 37.

The general purpose driver solved most HP-IB problems. However, a few of you still had some customers who desired more speed with some specific instruments. Higher performance for the 3455A DVM and 3495A Scanner was the most popular request. The general purpose driver, DVR 37, can operate the DVM/Scanner at 16 readings/second. The DVM is actually capable of operating at a little over 20 readings/second.

A new application note AN 201-7 tells how to use a special purpose driver, DVS 71, to maximize the performance and ease of use of the DVM and Scanner. This application note describes *how to run up to five 3455A's, each with multiple scanners, at speeds over 20 readings/second simultaneously.*

To implement this capability, your customer needs the standard 59310B HP-IB interface kit and the new 93592R software package. The 93592R is available for $750. Delivery is approximately four weeks.

Give us a call if you need more details. You can order copies of AN 201-7 (Document no. 5953-3004) from Sales Literature Distribution in Palo Alto.

Multipoint Performs!
By: Todd Field/DSD

Recently, SE support at Data Systems was involved in an application which showed off RTE-IV and Multipoint. A customer had a prototype repairman dispatch system already working on RTE-III using twelve terminals. The customer wanted to use the system in all their dispatch centers, but the number of terminals needed at each center ranged from six to over thirty. Also, dispatch centers would be located remotely from the computer installation, and several small dispatch centers would share each computer.

THE PROBLEM: Could the HP 1000 handle the expected transaction volume from 30 dispatchers?

THE POTENTIAL SOLUTION: RTE-IV, MULTIPOINT, 2645A's and the customer's own unique track-and-sector disc access scheme.

THE TEST: To test out the solution we helped the customer configure an HP 1000 E-Series with 320K standard speed memory operating under RTE-IV software and using a 7920 daisychained to a 7905, a 2645 system console, other point-to-point peripherals, two 12970 multipoint cards, forty 2645 multipoint terminals and 6K of SAM.

The customer felt that it would be an adequate test of thirty terminals to run double the load on fifteen terminals off of one multipoint card. The FE, the SE and the customer observed the peak load that one dispatcher ever had to process in one fifteen minute period, and created fifteen sets of sample sheets containing double this volume of work. Each set of sheets had about twenty-six transactions to do in fifteen minutes. Each transaction had from one to fifteen lines to be input, from one to twenty lines to be output and from one to twenty-four disc accesses for each line entered. The customer set as the goal for the test:

1. His RTE-III programs would run.
2. The fifteen sets of sample sheets could be completed in fifteen minutes, emulating the load on thirty terminals.
3. Response time on each terminal was never to be more than two seconds.

No changes to the customer's source or relocatables were made to get the programs up and running on RTE-IV. Some control codes were changed to enhance the output under multipoint.

Two tests were actually performed. The first time there was only one partition for every two terminal handling programs and only 256K words of memory. What with all the swapping, the 7920 was doing a passable imitation of the jitterbug, and the response time was simply not acceptable. The FE took the customer out to lunch. Within the hour, CE support had 64K words additional memory installed and SE support had reconfigured the system using the RTE-IV boot-up reconfigurator. This increased the performance about 300%, as no program needed to be swapped out.

THE CONCLUSION: Did it work? You bet it did! We rounded up fifteen bodies to type in the sample sheets and half were able to complete their copies within ten minutes. Even the two-fingered types among us were able to finish within fifteen minutes. Response time was never more than two seconds and was usually less than one second. The customer was convinced that the HP 1000 could easily handle his application.

The limiting factors in our implementation seemed to be disc access time to the customer's data base (not IMAGE or FMGR — the customer did his own track/sector addressing) rather than system or multipoint line overhead. Eliminating swapping drastically reduced disc contention and execution time. Although we used 62 LU's, we were able to generate more than enough terminals in the system (forty) to satisfy the customer's needs, even though he needed fifteen disc LU's for his database.

One thing to point out is that the application programs were making little use of the intelligence in the terminals (edit checks, protected fields) nor of block mode transfer. If they put some effort into this, especially in going to block transfer rather than line-by-line, performance would almost certainly have been even better.

On the whole, this was a valuable experience in RTE-IV and Multipoint for the customer and for us. This application proves that the HP 1000 with RTE-IV and Multipoint is a high performance machine in the hands of a knowledgeable user. The test shows that response time is not necessarily as much a function of the number of terminals on the multipoint line but rather a critical function of the application itself and how you and the user have configured the system.

Sales Aids

NPT Tour 35mm Slide Presentation
By: Roger Ueltzen/DSD

- How do I get a set of 35mm NPT Tour slides?

  Just send a telex to *Sylvia Cohen,* Bldg 42U DSD to reserve your copy.

  Also, send a P.O. through HEART, Attn: *Sylvia Cohen* 42U DSD for 1 each Kit #BS-12 at $100 (U.S.).

- What equipment do I need to replicate the NPT presentation?

  The equipment we used on the NPT was as follows:

  Quantity 2 — Kodak Ektagraphic Slide Projectors, Model AF-2 with zoom lenses

  Quantity 1 — Wollensak AV-33 Dissolver (manufactured by the Mincom Division of the 3M Company)

If you would like more information, please feel free to contact me or write to the above companies.

I believe that this equipment can be rented locally on a daily or weekly basis in most big cities as well as being available for purchase. (The projectors go for around $295 apiece, while the dissolver sells for $395.)

DSD NPT Tour
By: Roger Ueltzen/DSD

By the time you receive this issue many of you will have had the opportunity to attend one of our NPT sessions.

On behalf of the three NPT teams, I would like to thank you for attending and for the warm hospitality shown to all of us.

I think it was a very successful NPT and would like to share with you some of the comments made by the attendees:

- The FTM's were great — keep them coming!
- Really liked the 35mm customer presentation.
- The best NPT ever — number of products; significance of products; presentation content and media.
- Liked the demo video tapes — can I get a copy?
- Boy, I wish I was dedicated to selling DSD products!
- Most professional NPT ever from CSG!
- DEC never put on a product introduction like this!

Good selling for the remainder of FY '78!

New Applications

2240 Hero Gets Kudo's from MACS Lab
By: Peter Palmer/DSD

Kerry Roller (Louisville, Kentucky) was cheered into the Measurement and Control Subsystems lab recently when he brought a large 2240A order — fourteen units from a big tobacco company for laboratory automation on an HP 1000. As the block diagram shows, *Kerry* put together seventeen each 3070A lab data entry terminals and hung 2240's off fourteen of them, a total of 300 feet of cable stretched around three floors of their R&D laboratory. The 2240's nicely buffer the higher speed data acquisition for transmission over the slower speed 3070 link. The 3070A's are used for test run parameter setup and entry of run completion anomalies. *Kerry* found the key to using the 2240A to beat out in-house data acquisition stations. Call *Kerry* to learn how high level programming, standard HP-IB, and pre-engineered microcomputer DAS cards/firmware beat out the "chip-do-it-yourselfers".

ENGINEERING LABORATORY
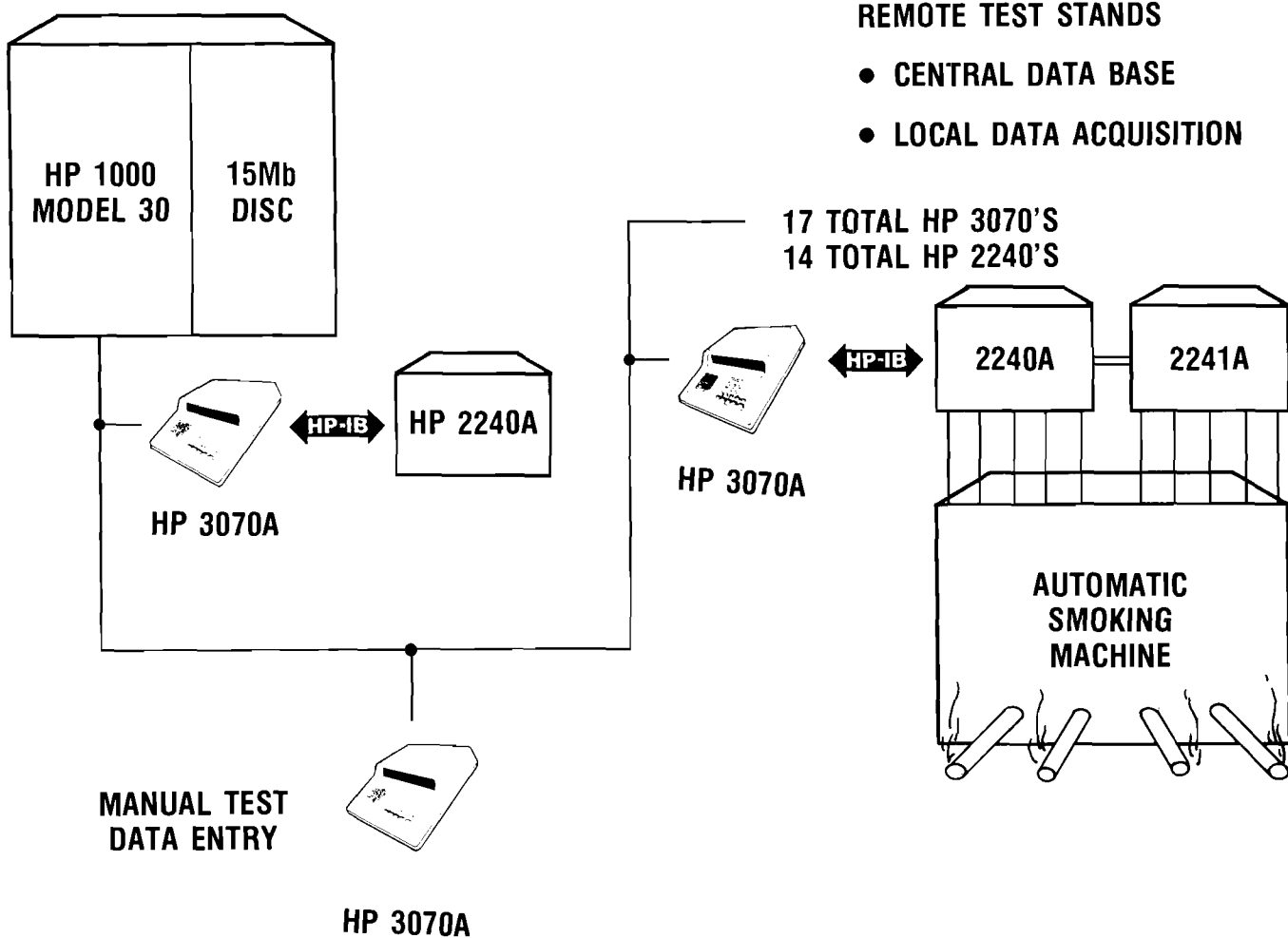
REMOTE TEST STANDS
- CENTRAL DATA BASE
- LOCAL DATA ACQUISITION

17 TOTAL HP 3070'S
14 TOTAL HP 2240'S

HP 1000 MODEL 30 | 15Mb DISC

HP 3070A · HP 2240A · HP 3070A

2240A | 2241A

AUTOMATIC SMOKING MACHINE

MANUAL TEST DATA ENTRY

HP 3070A

DATA TERMINALS NEWS

Division News

Introducing The 2647A Intelligent Graphics Terminal
By: Rich Ferguson/DTD

Yes!! It's here!! DTD's first programmable graphics terminal . . . the 2647A. All the features of the 2648A

PLUS:

- USER PROGRAMMABILITY
- HIGH LEVEL GRAPHICS COMMANDS
- SHARED PERIPHERALS
- FLEXIBLE HARDCOPY
- GRAPHIC MEMORY INPUT/OUTPUT
- SIMPLE USER INTERFACE
- DUAL CARTRIDGE TAPES STANDARD
- MULTI-PLOT

Now I ask you—where can you get a terminal that has:

- RASTER SCAN
- ZOOM AND PAN
- RUBBER BAND (OHHH, MAN!)
- INDEPENDENT ALPHA AND GRAPHICS MEMORIES
- SELECTIVE ERASE
- FLEXIBLE GRAPHICS TEXT
- AUTOMATIC PLOTTING
- COMPATIBILITY MODE

PLUS:

- FORMS MODE
- ALPHANUMERIC CHECKING
- PROTECTED FIELDS
- LINE INSERTS AND DELETES
- CHARACTER INSERTS AND DELETES
- WRAPAROUND
- MOVEABLE MARGINS
- OFF-SCREEN STORAGE

AND SO MUCH MORE!!

All this for a mere pittance—$8300. Now, for your reading pleasure here is a copy of the official press release announcing the 2647A.

INTRODUCING THE 2647A INTELLIGENT GRAPHICS TERMINAL

HEWLETT **hp** PACKARD

PUBLIC RELATIONS DEPARTMENT · 1501 Page Mill Road, Palo Alto, California 94304, Phone 415-856-1501

NEW PRODUCT
INFORMATION

CONTACT: Michael S. Fournell
(415) 856-4225

FOR IMMEDIATE RELEASE
May 10, 1978

HEWLETT-PACKARD ENTERS INTELLIGENT TERMINALS MARKET
WITH NEW PROGRAMMABLE GRAPHICS CRT TERMINAL

A new low-cost graphics CRT terminal that is programmable
in a high-level language and offers new ease of operation and
flexibility in graphics applications is Hewlett-Packard's entry
into the intelligent terminals market. The top-of-the-line HP
2647A graphics terminal, which also offers full interactive
alphanumeric capability, features multiple display workspaces,
shares output peripherals, displays data as graphs, pie or bar
charts and provides dot-by-dot hardcopy of its screen display
with optional companion plotter/printers.

PROGRAMMABLE IN BASIC

Using a subset of HP BASIC in the HP 2647A raster-scan
graphics terminal, the unit's operational characteristics can
be tailored to meet specific needs of users to solve a variety
of problems in engineering, scientific and business environments.

- more -

- 2 -

By sharing intelligence with the microprocessor-controlled
terminal, a host computer's resources are freed for more compli-
cated tasks saving computer time and communications costs. The
terminal accepts BASIC programs that are downloaded from the
host CPU and then executes them under local control. With BASIC,
the terminal's graphics and alphanumeric functions and facilities
can be modified, output from a computer can be changed into for-
mats defined by the user and the keyboard can be reconfigured by
assigning each key a different code. With such flexibility, no
software changes may be required to adapt "canned" programs to
users' applications.

The BASIC used in the terminal has integer and floating
point numbers, string variables, string arrays, array variables,
trig functions including natural log, callable subroutines and
parameter passing. An optional interface also enables up to
four terminals to share the same plotter or printer to save the
cost of using several such output devices.

EASE OF OPERATION

Multiple workspaces enable the terminal's display memory to
be partitioned into four separate sections. These can be varied
in size using dynamic memory allocation and used for such tasks

- more -

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as conducting an interactive session with the computer, display-
ing an output of an applications program, showing a local BASIC
program and acting as a scratch pad for computation. When com-
putation is needed during an interactive session with a host
computer, the user can switch to another workspace, perform the
calculation through several BASIC statements, and then switch
back to enter the results.

English-like commands from a host computer or a locally-
entered BASIC program may be used to control the graphics fea-
tures of the HP 2647A. Commands like PLOT, AXES, LOCATE, DRAW
and LABEL are an extension of BASIC that give users an easy to
use set of instructions designed to minimize the costly and time-
consuming process of preparing and implementing graphics programs.

Another feature that minimizes software investment is that
the terminal can generate multiple automatic plots from either
horizontal or vertical columnar data. A feature that is inde-
pendent of system and software, automatic plotting enables users
to generate fully labelled pie charts, bar charts and X-Y
Cartesian graphs with a few keystrokes. Different types of
shading are available to distinguish various chart areas. Little
or no programming skill is needed to plot data since the user is
guided through a simple menu of key questions about the data.

- more -

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Data to be plotted may be from the host computer, from the
terminal keyboard or from the standard integrated dual cart-
ridge tape drives that provide a total of 220K bytes of local
data storage.

To control data paths among terminal facilities and periph-
erals the user is guided by a command display at the bottom of
the screen which labels the functions of the eight command keys.
The same keys also serve as softkeys whose user-assigned functions
are also displayed in an eight-character format to remind the
user of their content.

WIDE RANGE OF CAPABILITIES

The new HP 2647A is compatible with programs developed for
the HP 2648A -- HP's first graphics terminal. It offers all the
capabilities of the earlier terminal including independent graph-
ics and alphanumeric memories, a bright display of 360 x 720 in-
dividually addressable points, selective erase, system-independent
zooming and panning, and rubber-band line drawing that can be used
without CPU support.

In addition to these features, the intelligent graphics
terminal gives users all the capabilities of the HP 2645A display
terminal including data communications flexibility, user-defined

- more -

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softkeys, off-line data preparation and editing capability, microprocessor-controlled memory allocation, built-in self test and both page and character-mode operation. The unit's 5" x 10" high-resolution display presents data in a 24-line by 80-column format and provides clear and easy-to-read alpha-numeric characters using 9 x 15-dot character cells.

The terminal has 64K bytes of random-access memory (RAM) for BASIC, 32K bytes of RAM for graphics and 56K bytes of read-only memory for terminal control functions.

OPTIONAL HARDCOPY

High-quality, vector-drawn hardcopy for the terminal can be provided by both the HP 9872A multi-color graphics plotter and the HP 7245A plotter/printer. A newly introduced option to the HP 7245A enables users to get a dot-by-dot hardcopy of the HP 2647A graphics display memory. Price of the HP 9872A is $4,200, while the HP 7245A is priced at $4,600. The new option adds $250 to the plotter/printer's base price. (U.S. prices only)

PRICE AND DELIVERY

The Hewlett-Packard 2647A intelligent graphics terminal is priced at $8,300 (U.S. price). First deliveries are sched-uled for July.

If you choose to review this item, fastest response to your readers' inquiries will be assured by mailing them to INQUIRIES MANAGER, Hewlett-Packard Company, 1507 Page Mill Road, Palo Alto, California 94304.

Order Processing

2647A Data Comm Ordering
By: Larry Roth/DTD

When ordering a 13260 series Data Communications Card for the 2647A Intelligent Graphics Terminal, you must order Opt. 006 for the 13260. This provides, at no charge, 2647A-compatible firmware.

EXAMPLE:
2647A Intelligent Graphics Terminal
Opt 030   Delete Standard Data Comm.

13260B Extended Asynchronous Data Comm.
Opt. 006   2647A-compatible firmware

Option 006 is not on the price list until 1 July 1978, so your Order Processing people will have to override HEART. They should do the following:

1. Enter Option 006 for the 13260

2. Do not enter the checkdigit

3. Price is $0.00

4. Description is 2647A-compatible firmware

Sales Aids

Here's Looking At You . . .
With A New Monitor
By: Bill Swift/DTD

Dating back to the introduction of the Video Interface for 264X terminals, DTD has recommended only one monitor, the CONRAC QQA series. Price for the 21" version of this monitor is about $2200 and delivery is twenty weeks ARO. Based on a customer suggestion, we did some further investigation with CONRAC and determined we can also operate with their SNA series of monitors. This monitor comes in 9", 14" and 17" versions, costs about half as much, and has sixteen week availability. When ordering the SNA series for use with our terminal, you will have to order the "High Line Rate" option and the 20 MHz video amplifier option. These are the model numbers and approximate prices including the above options and standard cabinet:

Model No.	Size	Approx. Price
SNA9/C	9	$ 930
SNA 14/C	14"	$ 1010
SNA 17/C	17"	$ 1110

The 264X Is Not A Chameleon!
By: Maurice Poizat/HPG

The modular architecture of the 264X is very useful when you want to modify the configuration of a terminal. You all undoubtedly know it!

For your demo purposes, you have probably changed a standard 2645A into a "2649A", by adding some RAM boards to load special demo programs; or a pseudo 13290B, by adding 8K RAM boards jumpered in an appropriate way.

Although this is useful and convenient for you because of this flexibility, you SHOULD NOT advise your customers to do the same.

Many customers want to convert one of their 2649A's into a 13290B, or their 13290A into a 13290B. OK! But what about the accessories (tapes, manuals) which go along with the 13290B? What about servicing their new 13290B!

Believe us, there are good reasons why the 13290B exists as a product as such!

GENERAL SYSTEMS NEWS

Product News

Series I Supports 212A Modem In Place of 202C
By: Jon Jacobson/GSD

The Series I group, under a "We Try Harder" banner, is continuing to prove HP's dedication to satisfied customers. In the February 15th issue of the *CS Newsletter, Ross Hunt* discussed a bug in the Bell 202C modem that could cause a Series I user an inadvertent break from a subsystem. Well, I'm here to tell you we've also found a Bell solution!

On June 1, the Corporate Price List will no longer carry Option 110 for the Series I. This means the Series I will no longer support a half-duplex modem. *Ross's* article testified to the Vadic sell-around and now the Series I support group has the answer to those customers that need a Bell solution.

We have completed testing of the Bell 212A modem on the Series I and found it to provide the better Bell solution. Consider the following:

1. The 212A is Opt-103 compatible saving $1,240 over the 202C on system purchase;
2. The 212A runs at 300/1200 baud;
3. The 212A is full duplex;
4. The 212A monthly cost is $41 vs. the 202C at $45 (in California);
5. The 212A installation charge is $120 vs. the 202C at $75 (in California).

The 212A can be your Bell solution with the Series I — the Series I group is lean and mean and totally dedicated to supporting your customers!!!

Contributed PASCAL Compiler For the HP 3000
By: Taylor Pohlman/GSD

After much discussion, speculation and rumor, a contributed version of the P4 PASCAL Compiler will be added to the HP 3000 Contributed Library. HP Labs has made available an implementation of "Portable PASCAL", which is a three-pass version of the popular highly structured language sometimes described as a "successor to ALGOL". Here are the details:

- PASCALP/3000 is a modification of the P4 PASCAL compiler developed by AMMAN, NORI and JACOBI at the INSTITUT FOR INFORMATIK at the TECHNICAL UNIVERSITY in Zurich.

- For a description of PASCAL, refer to:
  1. The Jan/Feb issue (Vol. 1 No. 5) page 5 of the *Journal of the General Systems Users' Group.* An article by *John Earls* of *Arthur A. Collins, Inc.* briefly describes PASCAL.

  2. *PASCAL User Manual and Report* by *Kathleen Jensen* and *Niklaus Wirth* Springer-Verlag 2nd ed. 1974. This "Bible of PASCAL" can be found in some libraries and university bookstores.

- The June release of the General Systems Users' Group Contributed Library will contain program files, source files and stream files for the compiler along with brief documentation on installation and use. Complete information on the June library release (which contains lots of other goodies as well) will be available shortly.

NOTE: This compiler system is *not* a supported product. Nor, because of its three-pass compile process, memory utilization, etc.,.is it a "production" product. Most PASCAL users, however, are already living with these restrictions on various machine implementations and may be happy with any workable implementation on the HP 3000.

Sales Aids

Add Sex Appeal To Your Presentations
By: Larry Hartge/GSD

Project Prelude, which demonstrated communications of the 80's, is an exciting topic to the business community. All potential customers want more advanced knowledge of business applications of the 80's — and you can fulfill their desires.

A vivid four-color annotated 35mm slide presentation tells the entire Project story — from the lift-off of the rocket through the usage of HP's state-of-the-art products that were used in the demonstrations. The use of these slides in *any*

presentation can further elevate the potential customer's image of Hewlett-Packard and reaffirms our leadership role in commercial distributed data processing.

Take advantage of this opportunity to demonstrate that HP's Distributed Systems are unique contributions to meet tomorrow's data processing needs today! This fantastic set of slides is only part of the out-of-this-world CARE package.

Try it — you'll like it! Supplies are limited to one copy per district office. Check with your DM to see if he has ordered his copy. If not, have him phone or TWX *Bea Cornejo* in GSD Sales Development at (408) 249-7020 X2777. Use it for two weeks — if you're not as impressed as we think your customers will be, then send it back. Otherwise simply send *Bea* an IOS or HEART order for Part No. 32190-90006 Prelude CARE Package at a price of $60.

DDP Success Stories to "CARE" For You
By: Larry Hartge/GSD
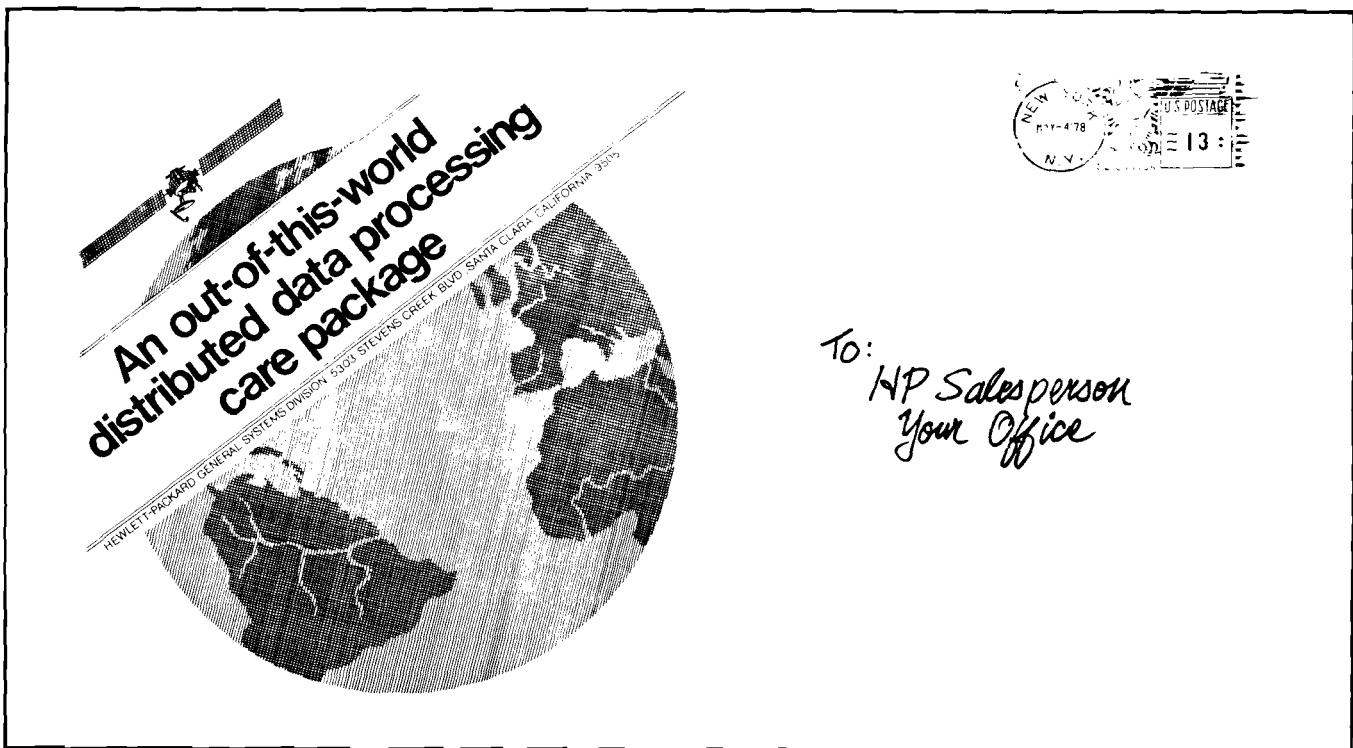
How are HP's state-of-the-art distributed data processing products being used by our customers? The answer to this question can be found in the set of application stories you will be receiving soon. By relating these applications to the applications of your potential customers, you will be able to give them even more reasons why they should buy from HP.

Your own personal CARE package will arrive soon with this information.

NOTE:

If your district doesn't yet have the original Project Prelude CARE package, this one is not a substitute (see April 1st issue of the *CS Newsletter*). By combining the insights gained with your personal CARE package and impact of the promotional materials in the district's Prelude CARE package, your customer will be ready to give you the order when you ask for the sale!

Distributed Systems Survey

By: Jerry Epps/DSD

To back up our market assessment concerning Distributed Systems, earlier this year we asked an outside agency to survey several important HP 3000 customers on their view of the future of DS. The interviews solidly affirmed the potential of Distributed Processing.

The survey results were reported in the April issue of *Computer Decisions* magazine. We've reproduced the article here, and think it will give you an insight into what knowledgeable DP managers expect from DS.

This article, along with the just-published DS brochure (#5953-0543), should help you present the Distributed Processing concept to your customers.

Distributed systems seen as next edp step

Distributed data processing is the wave of the future say edp managers from diverse organizations. They believe the distributed approach has many advantages over the centralized approach, although there are some issues of system security and control that must be dealt with.

A series of in-depth interviews conducted recently with five chiefs of edp revealed also that the move towards distributed processing takes a fair amount of courage in some organizations where the sole central mainframe is as much an institution as it is a machine for dp.

The survey, conducted for Hewlett-Packard, was limited to users of mid-sized computers who have built distributed networks based on the HP 3000. The respondents agreed that besides reliability, which comes from not putting all your dp on one machine, the concept of distributed data processing (ddp) is inherently logical in that the edp organization reflects the organizational and geographical structures.

Natural outgrowth

According to Gary Specker, director of systems and data processing for the Consumer Food Group of General Mills Inc., ddp is a natural outgrowth of the evolutionary process in edp.

"The current highly centralized environment was brought on by the economies of scale of early generation computers, but these economies have begun to disappear. We saw the opportunity to move quickly and realize a greater payoff from rapidly declining hardware costs than if we had stayed with a strict mainframe approach."

Al Viste, finance systems manager for Boeing in Seattle, said: "Our company is decentralized so why shouldn't our database be?"

Distributed processing fits well into the hierarchical concept of computer configurations held by Pat Daniels, automated systems superintendent of the Production Department at Hudson's Bay Oil and Gas in Calgary.

"It seems to me generally more logical to provide facilities where they're needed rather than to centralize them. But there is often a natural tie-in between the functions performed in a distributed system and in a central mainframe computer."

The type of information that top management requires and that which is needed by the operating divisions are viewed as separate but with some overlap by Choulgere Guruprasad, director of the corporate systems branch for Canada's Supply and Services Department.

"There is the core information and a series of partial subsets held by the operating divisions. Each subset is different although there is some commonality. The economic advantage of this is that each user maintains his own database and there is no unnecessary buildup of redundant information at each subset," explained Guruprasad.

Guruprasad believes that about 40 percent of the cost of data validation can be saved by having the minicomputer perform validation before the data is passed on to the central mainframe.

With regard to costs, Daniels of Hudson Bay Oil and Gas believes that software maintenance costs are rising today because of growing complexity. "Central systems attempt to do too much for too many people. By splitting up complex functions into a number of different software modules placed on separate computers, maintenance costs can be minimized," said Daniels.

But there are many imponderables, such as communications expenses. The trend in hardware should result in economic advantages, but by pumping data all over the country on a regular basis, "you can probably blow yourself out of the water on communications costs," said one manager.

Mainframe incorporated

For most of those interviewed, a large mainframe computer at a central site is arranged to work in conjunction with the distributed computers. Most say they are not leaving the IBM fold, but still use it as the central system. "But," said one manager, "we're not allowing the mainframe to drive us, we're driving the mainframe. That's the big difference."

All of those interviewed expressed concern about data integrity and security when controlling a ddp system. Maintaining strong control over the system is considered essential. Control can assure that individual users don't overstuff the database so that response time goes down, add data or programs that don't meet network standards, or otherwise misuse the network.

When sensitive data concerning individuals is transmitted, it was noted that unauthorized users must be prevented from access by encryption to make the data difficult to decipher.

Guidelines in setting up network

In setting up ddp network, several guidelines were given by the managers surveyed. Specker said one approach is to select an application area and develop a plan for that area. Daniels agreed, adding, "The beauty of a distributed system is that you don't have to tackle the entire job all at once. You can break it up into manageable bits."

Viste said his approach is to group his problems and then find a machine with architecture designed to solve that type of problem.

Selecting a vendor can be perhaps a more significant factor than in the case of a centralized system since you're committing yourself to a large array of hardware from that vendor over a long period of time. Most of those interviewed felt that a key factor in the vendor selection was vendor commitment to distributed processing and the company's financial stability.

"If you're going to enter a fairly new area such as distributed processing you should have vendors in whom you have some faith. It's important that they be around in say three years when you really get into the heat of it," noted Dennis R. Eickoff, vice president, systems and data processing, of Nationwide Financial Services Corporation in St. Louis, MO.

"As the edp professional, you have to ask yourself on behalf of management," comments Specker, "is there a better way to do the job than just simply putting up another big central system? Today, there are other ways to do the job that weren't there even two and three years ago. The edp man has the responsibility to inform top management of these new processing alternatives."

Series I Brochure
By: Jerry Epps/GSD

We've just reprinted the Series I brochure and it's now back in stock at the Literature Distribution Center in Palo Alto. A new front cover photograph was used and only a few minor changes were made inside. So, if you have copies of the older version, go ahead and use them up first.

If you need copies of the brochure, just send your order to the Literature Center.

Incidentally, congratulations to the sales force for making March a super sales month for Series I systems.

DS/3000 to DS/1000 Demo Package
By: Mel Brawn/GSD

A demo package has been developed to help demonstrate the DS/3000 to DS/1000 link. It consists of program files and graphics. The programs reside in an "RTE, DEMO" group on the HP 3000.

The purpose of the package is to describe the link capability for customers in the pre-sales environment. It provides examples of remote commands, remote file access, program to program, and DEXEC.

The package is written and documented at the level suitable for an S.E. presentation by individuals who have completed the DS/3000 training course.

Contact *Mel Brawn*, GSD Data Comm Support, for information on transmitting the program files, and obtaining the documentation.

Eight DS/3000 Contributions to the State-Of-the-Art in Commercial DDP
*By: Larry Hartge/GSD*

Dataquest stated that DS/3000 represented the state-of-the-art in minicomputer network design (see April 15th issue of the *CS Newsletter*, p. 24). DS/3000 truly is the state-of-the-art, and the following list enumerates the breakthrough contributions that DS/3000 makes to commercial distributed processing.

- Management may assign each user different capabilities on different computers in the network with each operating system *automatically enforcing* the capability assignments. This affords functional dedication of each computer in a network. For example, all program development done on one machine, all batch on another, and all on-line transaction processing on a third computer.

- Full data security is afforded *automatically* for *each* computer in the network. Full control of which users can read or write (change) specific data is provided.

- Resource usage is *automatically* logged for CPU time, disc space, and connect time for *all* users, whether remote or local.

- DS/3000 provides access to the *full* power of other directly connected computers by permitting the execution of *all* system commands simply by placing the word REMOTE in front of the command.

- DS/3000 allows programmatic access to remote data files using the *normal* input/output statement of *each* programming language. The programmers can access remote data files just as if they were local.

- *All* computer resources such as peripherals and languages can be shared by users of directly connected computer systems just as if they were on the local computer system.

- Changes in network topology can be made with *no* reprogramming. For example, another computer can be added to the network with existing files moved to it and the existing application programs need not be changed to access the files on the new computer.

- The user need not differentiate between coaxial links or telephone links. This is handled *transparently* and *automatically* by DS/3000.

It is essential that commercial DDP networks have most of these capabilities — and HP is the *only* vendor in the world that has such capabilities!!! Use these DS/3000 contributions to get those DDP sales.

Extra! Extra! Read All About It!

By: Barry Klaas/GSD
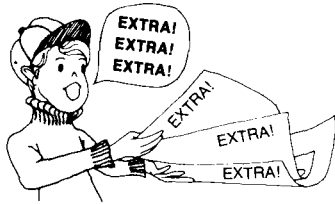
In the April 1st issue of the *CS Newsletter* you read an overview of the market opportunity for selling HP 3000's to newspapers. Now let's find out about the prime application; a circulation system.

What is Circulation?

Circulation is all the activity related to identification of whoever receives the paper —name and address record-keeping, complaint handling, delivery start and stop instructions, truck and carrier routes, billing and collection, carrier draw (quantity of papers sent to carriers), records as well as press orders for the total draw (number of papers to print).

Why is it important?

The revenue of a newspaper (its life blood) is based on circulation. Income from advertising, the largest source (75%), and happy paid-subscription customers (25%) are both dependent upon accurate and timely circulation records. Limitations of what advertising services can be offered are based on limitations of the information in the circulation database. The paper's customer service reputation has a basis in the quality of the circulation system.

What do I sell?

HP 3000's of course! Sell two to each publisher! Emphasis on database management is the key along with service. Application software is available from a software house, or may be acquired from other end-user papers.

What would a newspaper say about a circulation system?

This is an extract of what a newspaper of 100,000 circulation would say about its circulation system:

" . . . for us, a completely integrated system does an admirable job. And yet we can see that it must become far more sophisticated in the future if we are to handle the many new approaches that will be necessary to reach a greater audience with several different products in a single day.

For instance:

● We need to know the names and addresses of our subscribers and which special supplements, if any, they are to receive;

● We need non-subscriber address lists so that we can devote our sales efforts to the areas of greatest potential; and

● We must know why a subscriber discontinues his subscription and initiate a follow-up to each stop in an attempt to resell.

We'll use the computer to improve our communications between the newspaper and the carrier, improving the ratio of deliveries made promptly and properly after a start order is received. In fact, use of the computer in our future distribution system seems almost without limit."

"Every facet of the circulation department's accounting functions is handled through the computer. But, the system goes far beyond that point. Each order we process automatically updates carrier and circulation records; carrier draws are adjusted and carrier labels produced. The totals each day give us our press orders by editions; the mailroom is told exactly how many bundles of a specific size it must process and has a checklist to use in making certain it accomplishes that task; the truck driver receives his manifest detailing not only the number of papers he will handle, but also the number and type of bundles to be left at each dropoff corner . . . . "

HP 3000's are selling very well at newspapers.

GOOD SELLING!

Order Processing

So, These Are the People Who've Been "Ordering" You Around.
By: Sharon Bradley GSD

Left to right: *Sharon Bradley, Julie Gustafson, Tom Carrico, Linda Little, Maria de Souza, Ralph Pritchett,* and *Judy Jaime.*

For those of you who are new to Hewlett-Packard, let me introduce you to my great team in order processing!

Tom Carrico	— Midwest, Southern, ICON and Inter-Division (Ext. 3047)
Linda Little	— HPSA, Canada, and Southern Neely (Ext. 3048)
Judy Jaime	— Northern Neely and Eastern (Ext. 3046)
Ralph Pritchett	— Contracts and Returns (Ext. 3032)
Julie Gustafson	— Coordinated Shipment, Billings, Bookings, and Acknowledgements
Maria de Souza	— Coordinated Shipments, Billings, Bookings and Acknowledgements
Sharon Bradley	— Order Administration Supervisor (Ext. 3045)
Tim Fuller	— Order Administration Manager (Ext. 3054)

Now I'll give you a little background on our people.

Tom Carrico has been with HP for nearly six years and has worked in order processing at GSD from the beginning, and previously in O.P. at DSD.

Linda Little joined GSD O.P. last August from Stanford Park. *Linda* has been with HP for eleven years.

Judy Jaime has been with HP for almost nine years and joined O.P. last June from A.P.D.

Ralph Pritchett has been with HP for five years and almost two years with GSD order processing and previously with DTD and DSD O.P.

Julie Gustafson is new to our department. She came on board in February and worked in the S.E. Training Group for about one year. *Julie* has been with HP about five and one-half years.

Maria de Souza is the latest person to join our team. *Maria* comes to us from DSD Order Processing. *Maria* has worked for HP about five years.

I've been working for HP six years and have fifteen years of order processing experience.

As you can see, we have a very strong experienced team to assist you on your order situations. Each of the three coordinators is responsible for about 7 million dollars of backlog which is a very big job. Please be sure to keep them abreast of your sales situations so we can do the very best job for you and our customers.

Please contact us if we can be of any assistance on acquiring an earlier ship date on a coordinated shipment, on order status, pull-up, or any general help to you.

General News

Get On the PR Bandwagon!
By: Ross Hunt/GSD

Of all the avenues available to get the HP 3000 message across to prospective customers, publicity, because of its perceived unbiased nature, can be one of the most effective.

The GSD Marcom department has mounted a campaign to get more and better PR for our products. Working with *Bob Ingols* in Computer Systems Group. *John Kane* and *Ross Snyder* in Corporate PR, and the *Paul Purdom* Agency, we plan to intensify our PR effort to get more coverage.

But — we need your help. Leads on application and other types of stories are needed. If you have a customer who has a nifty application or is doing something interesting with his HP 3000, contact *Rudann Ramsey* or *Jerry Epps* at GSD and let them know about it. *Jerry* and *Rudann* will follow up on the lead, and you may find one of your customers highlighted in a national publication!

HP GRENOBLE NEWS

Sales Aids

Terminal Specialist Kit (Second Part)
By: M. Poizat/HPG

Finally, here are the essential items of literature and sales aids you will find useful for your Terminal Specialist's activities:

264X Family		
	Data Sheets	**Part Number**
2640B	Terminal	5952-9965 (42)
2640C	Terminal	5952-9952 (42)
2640N	Terminal	5952-9960 (42)
2640S	Terminal	5952-9961 (42)
2641A	Terminal	5952-9973 (42)
2645A	Terminal	5952-9963 (42)
2646A	Terminal	5953-2003 (42)
2647A	Terminal	5953-2004 (42)
2648A	Terminal	5952-9985 (42)
2649/13290	Terminal	5952-9970 (42)
13231A	Display Enhancements	5952-9954 (42)
13245A	Character Set Generation	5952-9955 (42)
13246A/B	Printer (9866) Subsystem	5952-9405 (42)
13250B	ASYNC Data Comm/Serial Printer Interface	5952-9953 (42)
13245A	Video Output Interface	5952-9962 (42)
13260A/B/C/D	Data Communications on the 2645A	5952-9964 (42)

	Manuals	**Part Number**
2640B	Users	02640-90109
2640B	Reference	02640-90110
2640B	Service	02640-90115
2640C	Owner's Service/ Supplement	02640-90037
2640N	Users	02640-90111
2640N	Reference	02640-90112
2640N	Service	02640-90115

264X Family		
	Manuals	**Part Number**
2640S	Users	02640-90113
2640S	Reference	02640-90114
2641A	Users	02641-90001
2641A	Reference	02641-90002
2641A	Service	02641-90003
2640S	Service	02640-90115
2645A	Users	02645-90001
2645A	Reference	02645-90005
2645A	Service	02645-90003
2646A	Users	02646-90001
2646A	Reference	02646-90002
2647A	Users	02647-90001
2647A	Reference	02647-90002
2648A	Users	02648-90001
2648A	Reference	02648-90002
2648A	Service	02648-90003
13250B	Service and Installation	02640-90042
13254A	Service and Installation	02640-90001
2641A	Sales Training Supplement	5952-9974
2645A	Sales Training Supplement	5952-9966
2646A	Sales Training Supplement	5953-2006
2647A	Sales Training Supplement	5953-2005

	Application Notes	**Part Number**
13245A	Character Generation	13245-90001
2640A/2644A	Printer Application Brief	5952-9959

264X Family		
	Application Notes	**Part Number**
2645A	Systems Considerations Brief	5952-9967
2640 Series	Cabling Application Brief	5952-9975
	Video Tapes/ Cartridge Tapes	**Part Number**
2645A	User Instruction Cartridge	02645-90016
2648A	User Instruction Cartridge	02648-13301
2645A	Sales Demo Cartridge	(contact Sales Development)
2648A	Sales Demo Cartridge	(contact Sales Development)

263X Family		
		Part Number
2631A	Brochure	5953-9418
2635A	Brochure	5953-9419
2631A	Data Sheet	5952-9424

263X Family		
		Part Number
2635A	Data Sheet	5952-9425
2630 Family	Reference Manual	02635-90905
2631A/2635A	Field Training Manual	5952-9423
2631A	Operator's Manual	02631-90901
2631A	Service Manual	02631-90802
2635A	Operator's Manual	02635-90901
2635A	Service Manual	02635-90902

307X Family		
		Part Number
307X	Brochure	5953-0104
3070A	Data Sheet	5953-0102
3071A	Data Sheet	5953-0103
3070B	Data Sheet	5953-0118
3070A	User's Manual	03070-90003
3070A	Operating and Service Manual	03070-90001
3071A	Operating and Service Manual	03071-90002
3070B	Brochure	5953-0119
3070B	User's Manual	03070-90007
3070B	Operating and Service Manual	03070-90005

Sales Literature Obsolescence
By: John Willett/HPG

Please make a note that the following item of sales literature is now obsolete: A Better Way to Handle Data . . . (HP Part Number 5952-2777).

Please use the following manual in its place: Form Design and Turn-Around Document for HP Optical Mark Readers (HP Part Number 07260-90015).

This manual, which can be ordered from Boise (for the USA and ICON) or Grenoble (for Europe), gives you all the information you need to design your own punched/mark sense forms.

CS GROUP NEWS

CSG News

World-Wide CSG Area Manager's Meeting A Great Success
By: Doug Chance/CSG

Thirty-seven CSG Area Sales Managers and CSG Area CE Managers attended a three-day meeting at Cupertino during the last week of April

We spent the first half-day discussing our Computer Service Division plans and strategy; the role of the HP Corporate Service organization and our CSG Small Business Systems Strategy.

Day two was devoted to hearing Sales Region status reports (HPSA, HPIC, NSR, ESR, SSR, CSR, MSR-E, MSR-W), followed by presentations on Training/Recruiting and Advertising/Public Relations. A rap session on "hot topics" rounded out the day.

The final morning was devoted to hearing all the CSG Division marketing plan updates with a short final wrap-up at noon.

One humorous event took place on the final morning which totally disrupted *Bill Murphy's* marketing plan presentation: a team from *Larry Lopp's* LSI facility burst into the

auditorium blowing horns and waving banners to announce that a grand total of 12,749 LSI components had just been shipped to Boise Division.

All in all it was a great meeting: we had an excellent opportunity to bring the worldwide Sales and Service Area Managers together and to expose them simultaneously to the challenges of the years ahead.

DSD's LSI facility makes presentation to Boise. Left to right: *Fred Reynoso, Gulu Advani, Bill Murphy* (Boise), *Larry Lopp, Rolf Murchison, George Hwang.*

All Shook Up!

By: Carol Scheifele/CSG
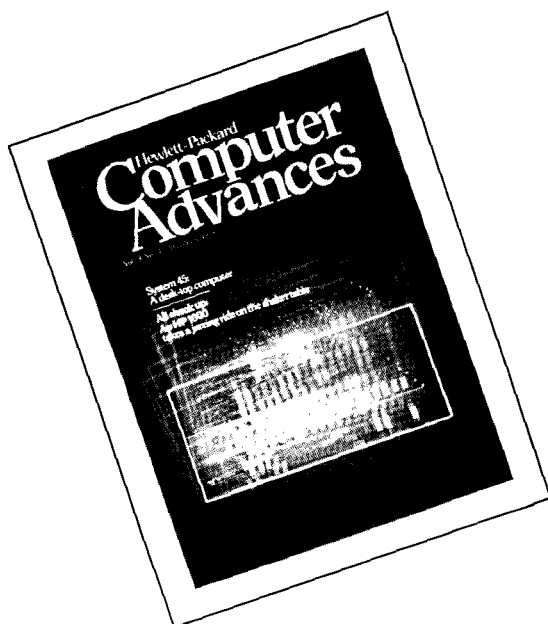
"All shook up" — the shaker table is just one of the 16 environmental tests that CSG products are subjected to. They are aptly described in the latest May/June issue of *Computer Advances*.

The issue also talks about the popular College Information System for the HP 3000 and the System 45 desk-top computer.

More copies are available. Check your literature shelves, or send a COMGRAM to *Vic Kirmes*, Building 9B, Palo Alto and request publication number 5953-3028 — domestic or foreign.

Computer Products Purchase Agreement: Changes, Additions, Clarifications

By: Walt Reichert/CSG

1. Use form 5953-3011 (R4-78) "Amendment to R8-77 or R10-76 Versions of Purchase Agreement" to allow your customer to purchase new DSD computers, memory and HP 1000 Systems by amending his old agreement. The form is for both OEM or End Users.

2. The 2635A is now OEM component discountable for a short time since the Boise 2639A, designed for the OEM is not yet orderable. Exhibits A1 and A3 should be amended to reflect this additional discount effective until the 2639A is released at which time the 2635A will no longer be OEM component discountable.

3. End-users wishing to sign up for a small number of HP 3000's on a purchase agreement must sign up for a minimum of 8 functional units if price clause B-2 (Milestone) is selected. Smaller functional units can be signed for if B-1 or B-3 price clauses are selected.

4. The 2240A is now added to the A-4 Peripheral Exhibit as an OEM *component product with one (1) functional unit count.

5. The additional 5% discount for those OEM's wishing to delete system installation and reduce warranty to 30 days is still available only for Agreements with 25 or more functional units.

6. Clause 10E was revised on May 1st, 1978 as follows:

   "On-site service contracts are available for HP computers and peripherals. Installation services and 90 day on-site warranty are provided free of charge if a 12-month HP service contract is purchased concurrent with the purchase of any product and the product is an add-on to an existing HP system and maintenance agreement. In addition, if a service contract with extended coverage is ordered concurrently with any product, the extended coverage will be provided during the warranty period at no additional charge. For products not covered above, installation may be available on a special quote by the local HP office."

   What we are saying is that installation and 90-day warranty are only available for add-ons to existing HP installed and maintained systems and not for stand-alone components or components installed on non-HP systems or computers.

7. Magnetic Tape Subsystems for HP 1000 Computers.

   Effective May 1, 1978, R8-77 and R10-76 Purchase Agreement customers purchasing HP 1000 computer systems should order the following new S/S numbers:

   a. 7970B #236 = 12790A STD.

   b. 7970B #230 = 12970A w/opt. 010

   c. 7970E #236 = 12972A STD.

   d. 7970E #230 = 12972A w/opt. 005

   e. 7970E #231 = 12972A w/opt. 010

   OEM buyers use discount schedule "B". VEU buyers use discount schedule "A".

CSG Sales Training Hosts Largest-Ever Graduation Dinner

By: Bob Lindsay CSG

Thursday, April 20th, 1978 was the date. The *Villa Felice* restaurant in Los Gatos, California was the location. A combined Graduation and Mid-Term dinner for three separate CSG Sales Training Classes was the occasion for sixty-eight students and forty-two factory persons to get together for the largest social function ever hosted by CSG Sales Training.

Present on that auspicious (suspicious?) occasion were eight SE's from a GSD Industry-Specialist-Manufacturing course; twenty-four attendees from a CSG Industry Applications Course, (I/A-16); and thirty-four attendees from CSG Overview Course-18.

Left to right: *Mike Matteo, Art Monk, Kerry Potter, Byron Brown, Jack Mathewson.*

Dick Anderson (DSD General Manager) was the after-dinner speaker. *Dick* was followed by *Bill Krause*, GSD Marketing Manager, who presented seven CSG Graduation Diplomas to the first-ever graduates of the complete CSG new-hire Training Program (CSG Overview, Factory Product Training, I/A Course).

As the evening progressed, representatives from all three classes gave out mock graduation diplomas to suitably-qualified factory instructors and fellow classmates. The evening was climaxed by a presentation from four repre-sentatives of the CSG Overview-18 class: *Mike "Daddy-O" Matteo* (NSR), *Art "Killer" Monk* (CSR), *Jack "The Ripper" Mathewson* (SSR) and *Byron "Fumblefingers" Brown* (NSR). Recipient of the award was *Kerry Potter* (DSD Order Processing-ESR/NSR) who was named "Miss CSG Overview-18".

Report of OEM Pre-sales Seminar in Japan
By: Yuji Mineyama/YHP

21MX Hardware/Software pre-sales Technical Seminars for OEM's were held at the Osaka sales office March 19 and at Tokyo April 6 and 7. The purpose of the seminars was to make OEM's who are currently using our competitors' minicomputers pay more attention to us.

The seminars were full one-day courses consisting of a general HP introduction by Marketing Manager *Tezuka-san*, a hard-ware overview by *Abe-san*, a software overview presented by *Takahashi-san*, the OEM discount schedule by *Mikuni-san* (*Sashida-san* at Osaka), and were fully planned and accomplished by the PL65 marketing team. IMAGE and microprogram-ming demos were done after the presentation. The attendees were divided into two groups and "Environmental Qualification Testing" videotape exhibition and 2648A graphic display demos were done with one group while other group was attending an HP 1000 demo.

Twenty persons from thirteen companies attended at Osaka and forty persons from thirty-one companies attended at Tokyo. Many companies were very interested in our powerful microprogramming and OS capabilities; some of them are expected to sign an OEM purchase agreement with us.
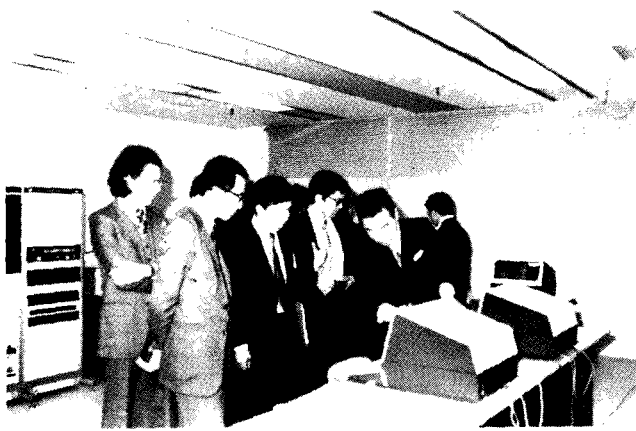

Abe-san presented MX-Series hardware overview.

Enthusiastic discussion continued even during coffee break time.

Manome-san demonstrated IMAGE and speed of μ-program.

Video tape exibited was translated by *Mineyama-san* simultaneously.