data systems newsletter

HEWLETT **hp** PACKARD

FRANKFURT

REINHARDT HELMUT

For HP Field Sales Personnel

Volume I
No. 16
October 1
1974

DIVISION NEWS

21MX NEWS

Above is MX No. 1 being boxed for air express to Western Electric — they could hardly wait so they paid extra for air freight. Left to Right is Dan Wallis, Dick Ellis, Don Kehl, Wally Johnson, Wes Brooks, Wayne Ashby.

by Ed Hayes

21MX RELIABILITY ON TARGET

The MX reliability tests are exceeding expectations. We have over 24,000 processor hours with reliability looking much better than the 2100 MTBF of 3000 hours with 16K memory. On top of that, we have over 1,300,000 X/2 chip hours with our expected MTBF goal a certainty! The X/1 has not passed the reliability tests. We are solving the problems right now with Mostek.

Remember, we will document these tests in a sales hand-out (October).

The 21MX should be 2-15 times more reliable than core machines — it's really happening.

21MX MANUFACTURING RELEASE COMPLETED — SHIPMENTS BEGIN

On September 3, the first two 21MX's were shipped — only eight working days after our target date of August 22.

Congratulations on a job well done to the 21MX Manu-

In This Issue . . .

facturing and Engineering team that made it possible. We will ship 73 — 21MX's in September — how's that for a fast take-off?

NO QUANTITY 5 REQUIREMENT FOR 21MX

The quantity five policy for the 21MX has been cancelled. Effective August 12, the 21MX is available for end users or for OEM's and in any quantity.

CUPERTINO SPECIALS

by Cle Riggins

Manufacturing has established a hardware "specials" capability to respond to your customer's needs. There are, however, some requirements to qualify for a special design.

1. It should be relatively minor. (A special interface, for example, would qualify.)

CUPERTINO SPECIALS - (Continued)

2. It must be approved by Data Systems "Big Deal" committee.
3. It must be a Cupertino produced product. (The mag tape is produced in Boise.)

Our goal is to provide fast response to your requests. To accomplish this goal, *Frank Liss* has been assigned the task of handling special requests.

To keep you informed of the specials that are available, we will utilize this publication.

Our first special is an interface P.C. board that provides 2100A multiplex I/O signals in a 21MX. This special may be ordered as follows:

PRODUCT NUMBER	PRICE	AVAILABILITY
12894A-E01	$490	November 1974

PAPER SHORTAGE

by John Hill

Boise Data Systems is unable to obtain sufficient quantities of paper to continue shipping a full box with each line printer or hard copy terminal.

In order to reduce our paper requirements, we will begin shipping sufficient quantities for installation and checkout in lieu of full boxes as in the past.

As it will require a few weeks to revise the specification sheets for those products to reflect this change, we urge you to inform your customers so that they may order their operating supplies with sufficient lead time.

WINE DISTRIBUTION

by Bob Hoke

Legal restrictions have forced us to use trucking as the means of distribution. The trucking companies have informed me that the temperature inside the truck sometimes goes as high as 150°F on summer days. High temperature is wine's worst enemy and since we had spent the time to select quality wines, we didn't want them to arrive as quality vinegar. I have purposefully held off the shipping until October so we can minimize the effect of the temperature. We will be shipping within a month.

PRODUCT NEWS

21MX MICROPROGRAMMING MANUAL AVAILABLE

by Han Park

The long awaited microprogramming manual on HP21MX is now available through the Data Systems Software Distribution Department. The part number of the 21MX Microprogramming Manual is 02108-90008.

The 21MX Microprogramming Manual contains all the technical information which was described in three different manuals for the 2100. In addition, the manual describes the

usage of Writable Control Store. The manual is very descriptive, and has many examples of microcodes.

With very minimal assistance from an expert microprogrammer and by reading the manual one can start writing microprograms. When you visit the customers and prospects, take the manual along with you and leave it with them.

THE "LINK" (RTE-DOS, THAT IS)

by Sherry Washing

Multiprogramming, data acquisition and control with concurrent data management using IMAGE and TCS, are all possible using the "LINK" (HP 12889A Hardwired Serial Interface). The pictured Application Brief by *Vijay Kapoor* explains how to do it.

APPLICATION BRIEF

MULTI-PROCESSOR CONFIGURATIONS USING HP'S HARDWIRED SERIAL INTERFACE (12889A)

Imagine the avenues of new applications now open to the HP field engineer! In science and industry, for example, an S/310 Real-Time System could be collecting data, controlling processes with concurrent program development while an S/250 is being used by up to 40 terminals doing inventory control or various analyses or management of these same data.

The "LINK" is a fast, versatile and reliable tool to implement multiprocessor configurations. Be sure to pick up a copy of Application Brief 5952-4633(22) and become an expert.

OPTICAL MARK READER RETROFIT KITS

by Dave Hancock

For your customers whose Optical Mark Reader applications have changed or expanded, the following eight field installable options are available in kit form from CSC.

Option		CSC Number	Price *
450 Card Hopper		07261-80010	$ 30
Encoder		07261-80030	275
Bell		07261-80040	55
50 Hz Pulley		07261-80060	5
Nulls	(0)	07261-80017	55
Image	(0)	07261-80019	10
2100 Interface	(1)	07261-80016	1,200
7261A-12602 Cable	(1)	07261-80020	55

(0) = 7260 only
(1) = 7261 only

HP Computer Museum
www.hpmuseum.net

For research and education purposes only.

OPTICAL MARK READER RETROFIT KITS -
(Continued)

*These are new prices effective October 1, 1974. Keep your
customer aware of the various features that make the HP
Optical Mark Readers (OMR) among the most versatile in
the business.

DOS-IIIB PRICING AND NEW FEATURES

by Dan Jorgenson

DOS-IIIB PRICING

DOS-IIIB is now available for distribution under the product
number 24307B. It's our desire that customers who are
currently using DOS-M or DOS-IIIA upgrade to the most
current version of DOS if they have the appropriate config-
uration (16K memory minimum and EAU). Your customers
may do this by ordering a special option to DOS-IIIB,
24307B-100, at a net price of $500.00. This option allows
existing HP DOS customers to order DOS-IIIB at a reduced
price. DOS-IIIB (24307B) is still available to new customers
at a price of $2500.00

DOS-IIIB FEATURES

- Data Communication Support — privileged interrupt
  capability to allow fast (100 μsec) interrupt recognition.
  All DOS communication drivers (logical/physical) use
  this feature

- Timing Capability — setting, resetting, and cancelling
  interval timers, e.g. timeout communication lines.

- Programmatic File Control — user may programmatically
  create, purge and rename files.

- Memory Management — user may allocate or release
  blocks of available memory and obtain status on avail-
  able memory.

- Increased Disc Storage Capacity — support up to 94M
  bytes.

- New Assembler — supports 2100A and 21MX computers.

WHAT'S INCLUDED

There is a note on May 1 Corporate Price List that mentions
drivers must be ordered separately. This is incorrect — drivers
as well as languages and utilities are included. The DOS-IIIB
standard package (orderable under product #24307B) in-
cludes the following components:

System Nucleus

- Job Processor
- Disc Monitor
- Exec Modules

Extended File Management Package (EFMP)

Language Translators

- Assembler
- FORTRAN IV Compiler
- ALGOL Compiler

Micro Programming Support

- Micro Assembler
- Micro Debug Editor
- WCS Utility Routines
- DVR33 WCS Driver

System Libraries

- EAU relocatable subroutines
- FTN4 relocatable subroutines
- Floating Point subroutines
- FFP library

I/O Subsystem Drivers

- DVR00 TTY-like console/terminal
- DVR01 Paper Tape Reader
- DVR02 Paper Tape Punch
- DVR05 TTY-like console
- DVR11 2892B Card Reader
- DVR12 2610A/2614A Line Printers
- DVR12 2707A Line Printer
- DVR12 2767A Line Printer
- DVR23 7970B/E Mag Tape, 9 track only
- DVR26 2762A/2615A Console Terminal
- DVR31 7900/7901/2883 Disc
- DVR31 2883 Disc (24307B-001 contains additional
  DVR31 for 2883 disc)

Communication Drivers

- DVR67 12889B high speed serial interface driver
- DVR72 12587B asynchronous data set interface
  physical driver
- DVR73 12920A/B multiplexer interface physical
  driver
- ATD01 asynchronous terminal device logical
  driver #1

  NOTE: ATD01 is a terminal driver which must be
  linked to a separate interface driver
  (currently DVR72 or DVR73 in the user
  program. ATD01 supports the following
  terminals:

2752A	2615A
2754A	2749A
2600A	2762A

Manuals

DOS-IIIB	24307-90006
FORTRAN IV	5951-1321
DOS Cross-Ref.	5951-1366
System Configuration	5951-1374
Error Message	5951-1377
Microprogramming Guide	5951-3028
Reference Booklet	5951-4431
Micro Prog Booklet	02100-90133
DOS Microprogramming	02100-90146
Assembler	24307-90014
ALGOL	02116-9072
Relocatable Subroutines	02116-91780
DOS Terminal Driver	02762-90004
DOS WCS Driver	12908-90004
DOS/DOS-M Driver	13024-90010
2607 DOS Driver	12987-90011
HSI Driver (DVR67)	12889-90007
12587B Physical Driver (DVR72)	12587-90011
12920A MUX Physical Driver (DVR73)	12920-90004
ATD01 Logical Driver	24307-90008

DOS-IIIB PRICING AND NEW FEATURES - (Continued)

NEW ASSEMBLER

- The assembler noted above handles all new instructions on the 21MX and is also compatible with the 2100A Computer. This new assembler is supported only on Version B of DOS-III. Several significant new features are listed below. Only feature 5 is specific to the 21MX Computer.

  1. Ability to enter control statements from the console.
  2. Ability to accept ABS and COM statements as entry points.
  3. Ability to use external declarations for I/O select codes.
  4. Ability to accept multiple source files as input.
  5. Change in loader format to permit byte and bit addressing

- XREF (cross reference table generator) revised to handle new instructions

- 21MX RTE/DOS DEBUG program module may be generated into the system to replace the existing DEBUG in the system library.

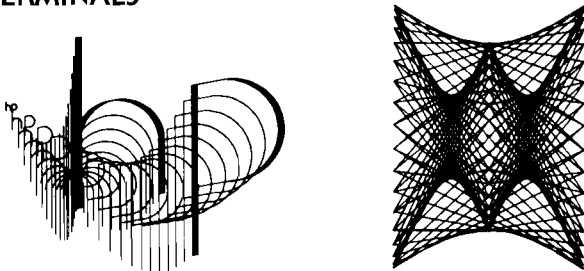   NOTE: XREF and 21MX RTE/DOS DEBUG are included in the standard package.

MEDIA

The standard DOS-IIIB package will include a DSGEN disc cartridge (HP7900 type) which contains relocatable modules used to generate the system. Customers ordering option 24307B-001 will receive the equivalent modules on paper tape.

SERVICE

DOS-IIIB software service is included in the price of the DOS hardware service contract.

TIMESHARED GRAPHICS FOR TEKTRONIX TERMINALS

by Bill Ansley

Timeshared Graphics (HP 20311A) is a new BASIC applications product for the 2000F Timeshared System. This product consists of two related packages of BASIC subroutines which are appended to a user's program. The user can control all functions of the popular Tektronix 4010 or 4012 terminals by calling various subroutines in the Primary Package.

With the tools provided by HP 20311A software, the user can create figures, rotate or scale them, produce and label coordinate systems, automatically plot stored data in any of many conventions, among other tasks. The Plotting Package can automatically produce, from the same data, line graphs, range charts, bar charts, or step charts; all may be appropriately labeled.

This product has potential uses in all areas including business, science, education, etc. A press release announcing the product has been widely circulated and has already been published by a variety of trade journals.

Incidentally, we already have a user written application package that further extends the types of graphical manipulations that can be performed. This has come to us via the Curriculum Project from Professor Herbert Peckham (see announcement in this issue). Professor Peckham's software operates with either the HP 7200/7202 Plotter or the Tektronix terminals. His contributed software stands alone for the 7200 or 7202 but *requires* that the user have the Timeshared Graphics package for use on Tektronix terminals.

VITAL STATISTICS

PRODUCT NAME: Timeshared Graphics for Tektronix Terminals
PRODUCT NUMBER: 20311A
PRICE: $500 one time licensing fee
SOFTWARE MAINTENANCE: 90 day service for no extra charge. Extended service contract available.
TERMINALS SUPPORTED: Tektronix 4010 and 4012
MANUALS: *Timeshared Graphics for Tektronix Terminals* (20311-90001). Covers the use of the Primary Package.
Timeshared Graphics Plotting Package (20311-90003)
DATA SHEET: 20311A Timeshared Graphics for Tektronix Terminals. Order number 5952-4620 (22).

For further information, contact Rich Ferguson in Sales Development.

NEW IMAGE/21000 AND TCS DEMO

by John Pavone

A new demo program (22999-10002) using IMAGE/2100 and TCS-A is now available from *Jane Seligson* in the Systems Engineering Group at Cupertino. The price is $25.00 for the mag tape containing the demo.

This demo called BASIC AIR SHIPMENTS INFORMATION SYSTEM (BASIS) provides multi-terminal (1-12 terminals) access to an IMAGE/2100 data base. The application illustrates a shipper, shipping material by air freight, and maintenance of a data base containing shipment status information.

Program options allow you to show the following capabilities:

- On-line mag tape logging of transactions which change the data base.
- On-line formatted report of change transactions
- Log tape to printer report of transactions

The demo package includes operating procedures, system configuration information, test procedures, data base restore procedures, as well as the operating programs.

Good Selling!

ANY QUESTIONS ON RTE DRIVERS?

by Sherry Washing

In case you have had questions relating to what drivers go with what peripherals and subsystem on the S/310, this chart should help. The console and paper tape reader driver (DVR00) and disc driver (DVR31) come standard in the S/310 system. Line printer, card reader and magnetic tape subsystem orders should specify option 422 (include RTE driver), starting November 1, 1974

RTE DRIVERS

Peripheral or Subsystem	Description	Driver	Part No.
12987A	2607 Line Printer	DVR12	92200-16001
12980A	2610 Line Printer	DVR12	29028-60001B
12982A	2614 Line Printer	DVR12	29028-60001B
12653A	2767 Line Printer	DVR12	29028-60002A
12970A	7970B Mag Tape	DVR24	13025-60001
12972A	7970E Mag Tape	DVR24	13025-60001
12985A	2892A Card Reader	DVR11	29030-60001A
12986A	7261A Card Reader	DVR15	92201-80001
12935A	7210A Plotter	DVR10	07210-16001
12560A	Calcomp Interface	DVR10	20808-60001
12889A	High Speed Serial Interface	DVR67	24341-16002
12604B	Data Source Interface	DVR40	20295-60001
2752, 2600 2762, 2615 and 2748	Terminals and Paper Tape Reader	DVR00	29029-60001B
12960A	7900 Disc	DVR31	29013-60001C

CARD READER/PUNCH READY TO SELL

by John Hill

Data Systems is ready to accept orders for the 12989A Card Reader/Punch subsystem. Spec sheets are on the way.

The subsystem provides your customer with not one but three 80 column card peripheral functions in one package! The 12989A reads cards at 200 cards per minute, punches and/or prints at 45 to 75 cards per minute depending on the number of columns involved. Each function has its own data buffer which allows the information printed across the top of the card to be independent of the information read or punched. Dual input hoppers and output stackers are provided for deck duplication or sort/merge operations.

The basic configuration provides the 2894A Reader/Punch and 12930A/003 interface for operation with 2100/21MX computers in the DOS-III environment. The DOS-III driver will be shipped automatically with orders received prior to 1 November. After 1 November, specify Option 421 (no charge) for this driver.

Other configurations (see chart below) offer off-line operation as a data recorder (keypunch), 50 Hz operation and a Scandinavian character set.

The data recorder (keypunch) feature offers your customer a powerful tool for off-line card preparation. Up to four formats to be punched may be stored in memory for rapid operator selection. No more changing of cards on a drum as with the IBM 029. Data to be printed and/or punched is keyed into a memory buffer which allows correction of any characters prior to printing and/or punching of the whole card.

The VERIFY mode includes features such as automatic feeding of blank cards from the secondary hopper and rejection of errored cards into a separate output stacker.

Prices are in the 1 September Corporate Price List as follows:

STD, 015 and 020 configurations:	$12,450 U.S.
002, 017 and 022 configurations:	$14,250 U.S.
Option 421 (DOS-III Driver):	No charge if specified at time of order.

No OEM discounts apply to this subsystem as the 2894A is manufactured by Decision Data to HP's specifications. OEM's may purchase the 2894A, 12930A/003 and DOS-III driver separately to receive a discount on the interface. The service contract price is $123/month.

12989A CONFIGURATIONS

Features Options	2894A Card Reader Punch Option Supplied	Provides On-Line Capabilities	Keyboard, Expanded Control & Off-Line Features	ASCII 64 Character Set	Swedish/Finnish 64 Character Set	115 VAC 60 Hz Operation	220 VAC 50 Hz Operation
Standard	Standard	X		X		X	
002	002	X	X	X		X	
015	015	X		X			X
017	017	X	X	X			X
020	020	X			X		X
022	022	X	X		X		X
421	Adds DOS-III Driver Software DVR34 (part no. 12989-16002						

The following is supplied with all options:

12930A Option 003 Universal Interface for 2100 Series Computer. Includes 50 ft. cable (maximum permissible length).
12989-90002 Subsystem Operating and Reference Manual
12989-16001 Card Reader Punch Diagnostic Test Tape (binary paper tape)
9320-1430 Box of 2000 80-column cards, 2 boxes supplied
9260-0373 Ink Cartridge, 2 supplied
1535-3089 Card Removal Tool

The following service documentation is available:

12989-90001 Manual of Diagnostics for Subsystem
02894-90004 Service Manual for 2984A Card Reader Punch
02894-90005 Diagrams Manual for 2894A (Standard, Options 015, 020).
02894-90006 Diagrams Manual for 2894A (Options 002, 017, 022)
12930-90001 Operating and Service Manual for 12930A-003 Universal Interface
12930-90004 Manual of Diagnostics for 12930A-003 Universal Interface

RECENT CLOSES

OEM MYTHS DEBUNKED

(Servico Federal De Processamento De Dados–SERPRO)

by Norman Choy

SERPRO, a software systems house located in Rio de Janeiro, Brazil, signed a purchase agreement for 21MX's in August. Total dollar volume exceeds $1.5 million.

The sales situation was started by HP Do Brazil after the official Latin American introduction of the 21MX in late April. Working very closely with the customer to satisfy his requirements, *Oscar Barbosa* and *Antonio Taliberti* success- fully overcame the competitive thrusts of DEC and DG. With the signing of this agreement SERPRO becomes the largest OEM under contract with HP for 21MX computer systems.

The contract calls for releases of 33 systems in fiscal 1975, with first deliveries in November. The customer, who will be developing data entry software systems, is ordering 2124A OEM Disc Systems with 16K memory and the 12972A Phase Encoded Magnetic Tape Subsystems as the principal devices in his configuration.

Several myths were explored when SERPRO and HP agreed to conduct business together:

Myth 1: OEM selling is possible only in the USA.

Myth 2: OEM's don't make quick decisions; it takes over a year to reach agreement. (The 21MX was introduced to this customer in April, demonstrated in August, and closed that same month.)

Myth 3: The 21MX is not price competitive. (In HPIC, the price to the customer includes a 10% surcharge which is nondiscountable.)

AGREEMENTS SIGNED IN AUGUST

by Penny Matlock

The following OEM agreements were signed during the month of August. New Accounts are indicated with an asterisk. Congratulations to the following Field Engineers.

Customer	Field Engineer	Equipment
Allen Bradley	Dick Peake	50 Systems
Honeywell	Alan Greenfield	12 Tapes
Dicomed	Tom Rappath	10 Tapes
Custer Research	Dave Murphy	7 Systems
Gerber Scientific	John Kupiec	50 Systems
*Service Data Processing	John Tourkolias	5 Systems
Magnavox	Joe Sigismonti	50 Systems
*McMasters University (Volume End User)	Conway Reimer	5 Systems

Myth 4: HP's peripherals are overpriced and obsolete. (SERPRO's evaluation of our tapes and discs placed HP equal to or greater than the devices offered by competitors. The subsystem price was acceptable to SERPRO.)

The next time you hear the old OEM myths, remember the HP Do Brazil–SERPRO success story. Do yourself a favor. Sell OEM!
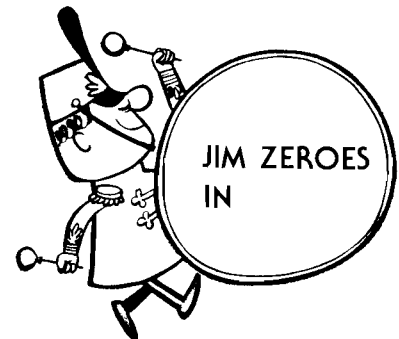

EDUCATIONAL NEWS

MINI'S HIT THE BIG TIME

by Paul Myhre

The Association of School Business Officials Show will be held at the Fountainbleau Hotel in Miami Beach, Florida on October 15–17. Over 4,000 business officials, administrators, directors, and school management personnel are planning to attend. Most of the attendees have purchasing influence or actually make the final purchasing decision.

HP is planning to exhibit in a 10 X 30 foot booth with terminals to both the 3000 and 2000 systems. HP personnel will be showing Administrative and Instructional Demos. A special feature will be the announcement of the Student Assignment System (SAS/3000), the newest member of the TOADS family. THIS WILL BE THE FIRST COMMERCIAL PACKAGE THAT WILL ALLOW ON-LINE STUDENT REGISTRATION IN THE ELEMENTARY-SECONDARY MARKET.

HP will be exhibiting at this show for the first time. We're expanding our participation in trade shows to include admin- istrative groups now that we have the new TOADS adminis- trative packages.

The show would be a good opportunity to have your prospects see HP's capabilities and to meet many educational decision makers (potential customers!). Hope to see you in Miami.

JIM ZEROES IN

by Pat Danzer

Jim VanSlambrook started his sales career with Data Systems in Dayton, Ohio, eight months ago. In that eight months, *Jim* has sold four systems. They include three 2000F's and one 2000E to the University of Dayton, Worthington High School, Ohio Department of Education, and the Metropoli- tan Dayton Educational Cooperative.

JIM ZEROES IN - (Continued)

After arriving in Dayton, *Jim's* first effort was to become familiar with existing customers. That included meeting the people involved and understanding the application at their particular school. Learning how to demo their equipment was very important, so that when the time came (and it did!) to bring prospects to the customer site, he could demo this equipment with proficiency and ease. To sell new customers, *Jim* has found referencing existing customers and then following up with an on-site demo to prove the capability of HP's systems is the best plan to follow.

Jim has also discovered that established customers are the best prospects for new sales. This has proven to be true because two of his sales have been to existing customers, and he has converted two prospects into customers

Jim has recently transferred to Pittsburgh. We wish him the best of luck there and if he follows his own advice — he's sure to be successful!

CURRICULUM GRAPHICS BOOK

by Pat Danzer

A new book has just been released from the Hewlett-Packard Computer Curriculum Project entitled:

"Computer Graphics: Three Dimensional Projections" authored by *Herbert D. Peckham,* Gavilan College

As the price of computer-driven graphic display devices drops, the interest in computer graphics increases. It is routine and simple to generate plots of the form $y = f(x)$. However, if one attempts to work in three dimensions and generate transformations or projections upon planes, the situation is quite different.

The purpose of this book is to set down a complete set of tools for computer graphics utilizing a common approach of matrix mathematics. The material is not intended to be a definitive work, but has two goals. First, to set down and illustrate the various mathematical procedures which will permit the novice to quickly become proficient in some of the techniques of computer graphics. Second, to show how these techniques may be implemented on graphic display devices. The main subject treated in the unit is transformation and projection utilizing homogeneous coordinates. Topics include rotations, translations, scaling in two and three dimensional space and axonometric, oblique and perspective projections. The first part of the unit presents examples to illustrate the theory, all of which are worked out in complete detail.

The second part of the unit illustrates implementation of graphic techniques on the computer. This material is designed to be used with the Hewlett-Packard Timeshared BASIC/2000, Level C' or Level F systems equipped with a Hewlett-Packard 7200 or 7202 plotter or a Tektronix 4010 or 4012 graphics terminals, or a Hewlett-Packard 3000 System with BASIC and a HP 7200 or 7202 plotter. TSB/2000 users with a Tektronix terminals need the HP Timeshared Graphics for Tektronix Terminals software package (HP 20311A).

Priced at \$5.50, *Computer Graphics* is a well written and illustrated book and should be a good seller!

To receive a desk copy — fill out the coupon below and mail it to *Carol Scheifele* in Cupertino.

Please send me a desk copy of:

Computer Graphics: Three Dimensional Projections

Name _____

Location _____

TRAINING NEWS

CUSTOMER TRAINING COURSE PROCEDURES

by Frank Jackson

New Training Course Registration Forms (22999-90008) have been distributed to the Literature Department in each sales office. Please start using these for all hardware and software classes at any Training Center.

TRAINING REGISTRATION AND BILLING PROCEDURES

1. **POLICY**

   Training classes offered are accounted for in one of the following ways:

   a. **UNBUNDLED** —Customers are charged for the course separately to the system purchase.

   b. **BUNDLED** —The cost of the course is included in the system purchase. Please refer to the complimentary policies.

   c. **PROMOTIONAL** —The charge for the course is I/C billed to the appropriate sales office and discipline offering the course to the customer.

   d. **HP PERSONNEL** —All HP personnel are offered free courses on a "space available" basis. Should they desire "positive space" they will be I/C billed at full price.

   Division marketing personnel and the field sales personnel are always free.

2. **REGISTRATION PROCEDURE**

   a. The normal process for registration in a class is to submit a Training Registration Request to the appropriate Training Center.

   b. Registration requests will be confirmed in writing to the customer after receipt of a sales order indicating course purchased or in the case of bundled training a check that complimentary training is approved.

   c. G.S.A. complimentary training requests must be accompanied by a copy of the systems sales order indicating the G.S.A. contract number.

CUSTOMER TRAINING COURSE PROCEDURES
(Continued)

    d. Phone reservations must be confirmed with complete registration information within 10 days or the student will automatically be dropped from the class.

    e. Should the class be filled alternate methods of satisfying the request will be suggested to the Field Engineer by the Training Manager.

3. CANCELLATIONS

    a. If, after enrolling in a training course a student wishes to cancel or enroll in a later course it is requested that the appropriate training registrar be notified promptly and at least 10 days prior to the start of the course.

    b. Hewlett-Packard reserves the right to cancel a scheduled course if insufficient registrations are received 10 days prior to the course starting date.

4. ORDER PROCESSING PROCEDURE

Unbundled or purchased training follows the normal HP order processing procedures. Before the customer is entitled to attend a class a sales order must be transmitted to the division (22 Data Systems, 06 AMD). This applies irrespective to where the training is held in the U.S.A.

5. CONFIRMATION OF REGISTRATION

    a. An acceptable registration will be confirmed in writing to the customer indicating course description, date, starting time, length, and motel reservations if requested. A copy of this letter is also sent to the local field engineer for his information.

    b. Included in the package to the customer is a map of the local area, and motel brochure (if applicable and available).

    c. Customers attending courses should contact the motel directly if they anticipate late arrival.

6. CLASS PROCEDURE

    a. Every effort will be made to satisfy customer requests while he is visiting Hewlett-Packard. The course instructor must meet class requirements first and special requests will be handled out of normal class time or by other personnel.

    b. Courses are divided into classroom instruction and lab "hands-on experience". The amount of lab time is dependent on the particular class.

    c. Phone calls for students attending courses will be taken by the receptionist and a message left for him, except in emergencies when he will be called out of the classroom.

HP 3000 SELF-STUDY COURSES READY

by Frank Jackson

The long awaited self-study courses developed by the Systems Engineering group are now available. The two courses presently orderable are HP 3000 BASIC (*Joe Dietzgen*) and HP 3000 COBOL (*Orly Larson*). These courses presume the student has access to a 3000 for running labs and prescribed problems which are an integral part of the course. Both courses are specifically designed for the student with prior programming experience and provide indepth coverage by means of audio cassettes, special programmed workbooks, card deck or tape and necessary reference materials.

Ordering information is as follows:

HP 3000 BASIC SELF-STUDY COURSE	$325.00
HP 3000 COBOL SELF-STUDY COURSE	$325.00
*HP 3000 COBOL STUDENT MATERIALS	$ 25.00
*HP 3000 COBOL ADVISORS GUIDE	$ 25.00

*These are additional sets. One each is included in the HP 3000 COBOL SELF-STUDY Course.

The above materials can be ordered through standard order procedures. Please transmit to Division 22 with charge code of M32.

NEW SOFTWARE COURSES

by Frank Jackson

Three new software courses will be offered to customers at Cupertino as follows:

1. 21MX Assembler developed by *Hal Frazier* and *Gary Koerzendorfer* — 1 week course November 11th - $400.

2. 21MX Microprogramming by *Jack Howard* — November 18th for 5 days — $400.

3. DOS-IIIB by *Paul McGillicuddy* — week of September 28th — $400. This course is appropriate for customers with DOS-M, DOS-III A & B software.