COMPUTER SYSTEMS NEWSLETTER

For HP Field Sales Personnel

In This Issue...

BOISE DIVISION NEWS

Division News

Boise Sales Development Contacts

By: Chuck Ulfers/Boise

Over the past several months we have made a number of changes in regional support responsibilities in Boise. We have prepared the following Sales Support Matrix to make it easier for you to determine who to call for help in Boise.

	Primary Contact	**Backup**
Canada	*Thad Webster*	*Gary Sherwood*
Eastern	*John Klonick*	*Robert McCaleb*
Midwest (East & West)	*Thad Webster*	*Gary Sherwood*
Neely	*Gary Sherwood*	*Thad Webster*
South	*Steve Davis*	*Mary McNally*
HPSA	*Robert McCaleb* (263X Family– Grenoble Sales Development)	*John Klonick*
ICON	*Steve Davis*	*Mary McNally*

The matrix shows primary and secondary contacts for each region. We try to plan our travel, vacations, etc. so that one or the other of your contacts will be in Boise at all times; however, if for some reason you can't reach your normal contact, please feel free to call on anyone else in Sales Development if you need help.

Product News

2630 Family Prognosis: Linguistic Proliferation

By: Robert McCaleb Boise

The 2630 printer family is coming of age with an array of available secondary character sets, plus some new capabilities in the works!

2631A Options which are currently available are:

001	Swedish/Finnish	006	Spanish
002	Norwegian/Danish	007	Cyrillic
003	French	008	Katakana
004	German	009	Extended Roman
005	United Kingdom	010	Math Greek

Special character sets may be designed for specific applications, provided that all such characters are legibly reproducible with a 7 × 9 dot matrix. The Boise division has in-house capabilities to help customers design their own character set.

If you have any questions regarding 2630 family character sets, don't hesitate to call your intrepid Boise Sales Development Engineer!

2631A Functions Programmed By 264X Softkeys

By: Gary Sherwood/Boise

Several customers have approached us as to how the 264X softkeys might be used to control 2631A functions. This procedure is simple to do and makes a very effective demo when using a 264X/2631A pair.

First: On the 264X, display the current key assignment by simultaneously pressing the "CNTL" and "NEXT PAGE" keys.

Second: On the chosen 264X softkeys, establish the "TYPE" as either local (L) or normal (N).

Third: Turn on display functions. In the "STRING" portion of the 264X softkeys, enter the escape sequence to turn on "DISPLAY FUNCTIONS", using "ESC Y".

Fourth: In the "STRING" portion, enter any combination of 263X escape sequences you desire. (Be certain you observe the rules regarding using the same prefix and intermediate terminators.)

Fifth: Again in the "STRING" portion, end your escape sequence by turning off "DISPLAY FUNCTIONS", using "ESC Z".
Turn off display functions.

(Remember the 264X has an 80-character "String" limit for softkey assignments.)

A typical demonstration/application might look like this:

Softkey	Function Desired	String Code*
f1	compressed print mode	esc Y esc &k2S esc Z
f2	normal print mode	esc Y esc &k0S esc Z
f3	expanded print mode	esc Y esc &k1S esc Z
f4	select primary character set	esc Y cntl O esc Z
f5	select secondary character set	esc Y cntl N esc Z
f6	turn on auto underline	esc Y esc &dD esc Z
f7	turn off auto underline	esc Y esc &d@ esc Z
f8	formfeed	esc Y cntl L esc Z esc &p3s4dM

When you use the 264X softkeys, the appropriate escape sequence(s) will be entered into the CRT screen memory, at the cursor position. This procedure will also eliminate the need to remember lengthy escape sequences for demonstrations. When the desired text has been typed into the CRT display memory, the text, including the codes input from the softkeys that have been used, can be dumped to the printer using the normal CRT keys.

f8 has been defined in this example to transmit the desired code to the printer immediately by using the additional escape code sequences.

*esc means the escape key.
cntl means the control key pressed simultaneously with the following character.

2635A Supported on HP 3000!
By: Larry Andrews/Boise

The 2635A is now fully supported as both a console and session terminal on HP 3000 Series I, II, and III!

Either the Standard 2635A or option 041 can be used in the full-duplex environment of the HP 3000. Term types 15 and 16 are dedicated to the 2635A. Watch the GSD section of the next CS Newsletter for more details.

Please remember that the 2630 family supports only asynchronous point-to-point protocols on serial interfaces. It does not support synchronous protocols or multipoint.

HP Computer Museum
www.hpmuseum.net

For research and education purposes only.

DISC MEMORY NEWS

Two More "On Track" in DMD Marketing

By: Jim Stinehelfer DMD

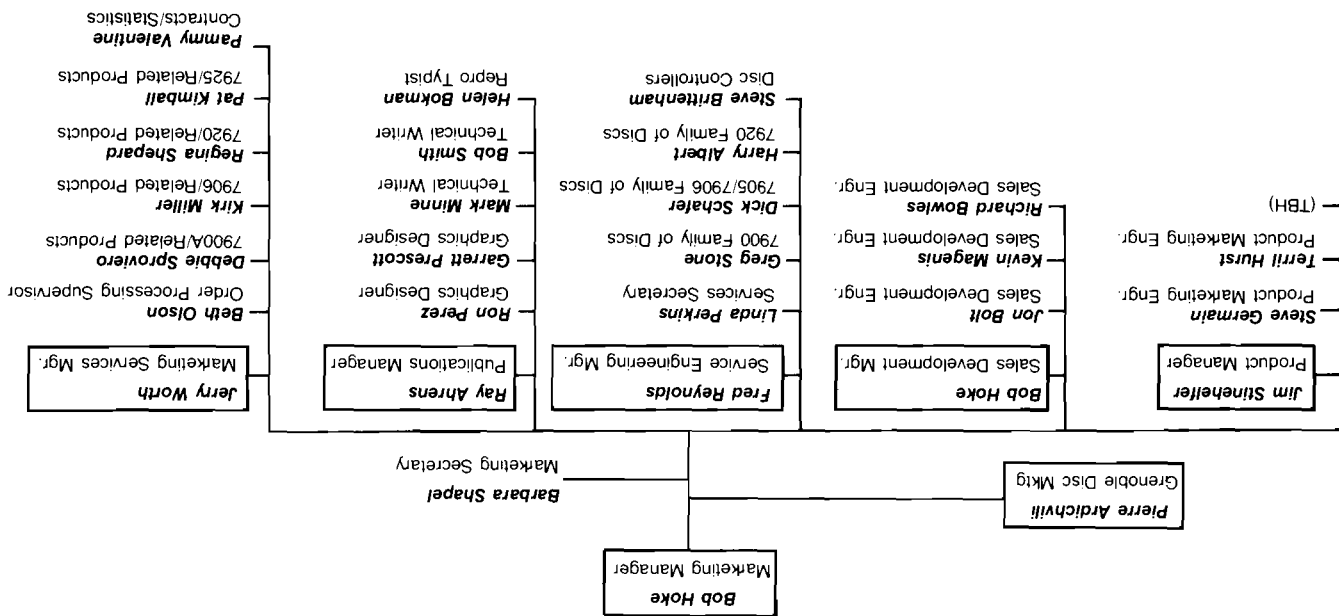The latest to join the greatest are *Richard Bowles* and *Jim Stinehelfer.*

Richard is from Oroville, California and has just graduated from Stanford with a BSME. While at Stanford, *Richard* worked as the equipment and business manager for the football team. Being mechanically inclined, he also worked as a technician on a race car crew. *Richard* will be joining the Sales Development group and stands ready to fight those fires for you.

The second new face at DMD is mine, *Jim Stinehelfer.* I have been with HP for 13 years as a designer in the R & D group and as a Product Manager in Marketing. Coming from Stanford Park Division in the Instrument Group, I have a great deal to learn about the computer side of the house.

I will be assuming the duties as the Product Manager for the Disc Product line. I am looking forward to helping define products that fill your customer needs and helping you any way I can.

Welcome *Richard!*

DISC MEMORY DIVISION

MARKETING DEPARTMENT ORGANIZATION

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                        Bob Hoke
                     Marketing Manager
                            |
        ┌───────────────────┴──────────────────┐
Pierre Ardichvili                        Barbara Shapel
Grenoble Disc Mktg                     Marketing Secretary
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Jim Stinehelfer Product Manager	**Bob Hoke** Sales Development Mgr.	**Fred Reynolds** Service Engineering Mgr.	**Ray Ahrens** Publications Manager	**Jerry Worth** Marketing Services Mgr.
Steve Germain Product Marketing Engr.	*Jon Bolt* Sales Development Engr.	*Linda Perkins* Services Secretary	*Ron Perez* Graphics Designer	*Beth Olson* Order Processing Supervisor
Terril Hurst Product Marketing Engr.	*Kevin Magenis* Sales Development Engr.	*Greg Stone* 7900 Family of Discs	*Garret Prescott* Graphics Designer	*Debbie Sproviero* 7900A/Related Products
— (TBH)	*Richard Bowles* Sales Development Engr.	*Dick Schafer* 7905/7906 Family of Discs	*Mark Minne* Technical Writer	*Kirk Miller* 7906/Related Products
		Harry Albert 7920 Family of Discs	*Bob Smith* Technical Writer	*Regina Shepard* 7920/Related Products
		Steve Brittenham Disc Controllers	*Helen Bokman* Repro Typist	*Pat Kimball* 7925/Related Products
				Pammy Valentine Contracts/Statistics

Product News

New MAC Family Gives DMD Bigger Byte
By: Jon Bolt/DMD

With the announcement of the 7925M/S disc drive, DMD now has the "MEAT" in its product line to form a new drive family—the Multi-Access Controller disc drive family (BIG MAC). Combining two previously existing products—the 7906 and 7920—with the 7925 (BIG CHEESE), DMD can provide capacities from 20 to 960 megabytes, and a complete selection of both cartridge and pack drives. With this "MENU" we can satisfy even the most peculiar mass storage appetite.

The "SECRET SAUCE" behind the family is the MAC Disc Controller (A.K.A. 13037B). Each drive in the family is fully compatible with this controller, and, in fact up to eight family drives of any variety can be "SPREAD" out on one controller. In certain applications, a system can even be "COOKED UP" with eight CPU's on one controller.

Now don't have a "BIG MAC" attack because you've seen no documentation as yet; the family data books describing the entire family, as well as a new Product Reference Guide treating all DMD products, are now being distributed.

GOOD SELLING!

More About the 7925 Controller Upgrade Service
By: Steve Germain/DMD

Some customers desiring to expand their existing disc storage capabilities with the new 7925 will need to upgrade their 30229A disc controllers. Compatibility with the MAC family controller was retained by increasing the capabilities of critical Formattor/Separator circuitry contained on the integral Device Controller PCA. System 3000's shipped after June 1 will support the 7925 without modification. Older systems shipped prior to June 1 will need the upgrade service which may be purchased with the first add-on disc drive by ordering the 7925S Option 250. Only the first 7925S added to an existing MAC disc subsystem will require the Option 250.

For convenience only, a new 13037-60028 Device Controller PCA is being shipped to the field CE with each 7925S Option 250 ordered. This PCA will be exchanged with the incompatible 13037-60002 PCA at the time the 7925S is installed. The 13037-60002 PCA will then be returned to CSD. A few installations will require a new Error Correction ROM PCA in addition to the Device Controller PCA. The Option 250 will also remedy this situation. Because of the small percentage of installations that will require this service, the required 13037-60024 ECC/ROM board will not be supplied with the Option 250. Instead, the CE performing the installation service will utilize a 13037-60024 from his/her product support kit at *no* additional charge to the customer.

If you have any doubts as to whether or not an Option 250 is required, check the board configuration of the 30229A disc controller. The required complement is:
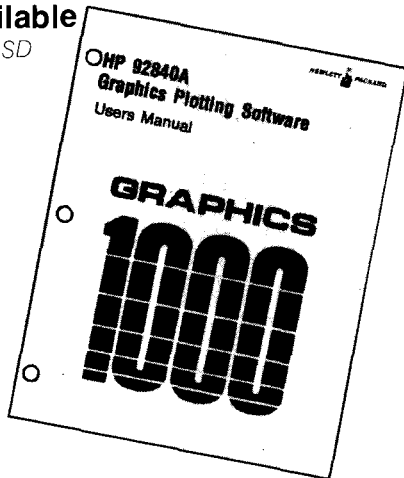
Description	Part Number	Minimum Acceptable Date Code
ECC/ROM	13037-60024 or 13037-69024	B-1650
Device Controller	13037-60028 or 13037-69028	—
Microprocessor	13037-60001 or 13037-69001	C-1530

DATA SYSTEMS NEWS

Product News

Graphics/1000 Software and Manual Available

By: Mike Scott/DSD

All HP Sales Offices should now have the July Cupertino Binary that includes the 92840A Graphics Plotting Software. Many SE's have needed this software to help create graphics demos in addition to the one created for the April NPT Tours.

Also available is the 92840A Graphics Plotting Software Users' Manual (92840-90001). A great deal of time was spent trying to make the manual complete and yet easy to use for both the experienced and novice programmer. Graphics principles are thoroughly described and illustrated with examples created using the 92840A software. The Users' Manual will help bring you up to speed with the GRAPHICS/1000 software and can also be used effectively in a pre-sales situation.

Graphics/1000 Will Add Support for Additional Graphics Peripherals

By: Mike Scott/DSD

As discussed during the April NPT Tour, the architecture of the GRAPHICS/1000 software allows us to add support for additional graphics peripherals. Presently we support the 2648A Graphics Terminal, 7245A Plotter/Printer, and 9872A Graphics Plotter. We plan to add support for many additional HP graphics peripherals. The software required to support these graphics peripherals will be added to the 92840A

Graphics Plotting Software. Try to sell to your customers Software Subscription Service (92840S) or Comprehensive Software Support (92840T) so that they will automatically receive these enhancements.

The steps we go through to add support for additional HP graphics devices are as follows:

1. DSD and the division that manufactures the peripheral device decide whether it makes sense to support the device with GRAPHICS/1000.

2. If we decide to support the device, a device subroutine is written. The device subroutine is checked out by both our R&D organization and our Quality Assurance organization. The development and verification of a device subroutine for a new graphics peripheral requires that we have a production quality unit available.

3. An update to the 92840A Users' Manual is written to include any device specific information relating to the new graphics peripheral.

4. The 92840A software is updated with the new device subroutine.

All these steps are taken to insure a high quality product that we can all be proud of. The drawback, however, is that there may be a time delay between when the graphic peripheral is introduced and when we can support it with the GRAPHICS/1000 software. Stay tuned to future *CS Newsletter* articles with announcements of support for additional graphics devices!

Operating System Support of Special MUX Software

By: Bill Stevens/DSD

The factory has received a number of requests for quotation of DSD's Special Engineering 12920B Multiplexor Software on RTE-IV based systems. DSD's Special Engineering MUX software operates on RTE-III based systems but it will *not* operate on RTE-IV based systems. DSD plans to release a fully lab-supported and QA'ed MUX software product to operate on RTE-IV based systems. This will help us ensure that your customer will be satisfied with the product's reliability. We plan to have the 12920B MUX software updated for RTE-IV support available in the January, 1979 time frame.

New Features Are Added to BASIC/1000D
By: Van Diehl/DSD

Several new important features have been added to BASIC/1000D. (92101A). The most important is the addition of formatted output capability, via the PRINT USING statement.

Formatted output, with PRINT USING, gives you a simple way to generate reports, as shown in the attached example.

PRINT USING statement specifies the format that the variables specified in the statement are to be printed. This format can be in a literal string, in a string variable, or in a special statement called the IMAGE statement. In contrast, the standard PRINT statement *does not* allow the specification of a format.

With PRINT USING the user has explicit and exact control over the format of the program output:

- Numbers can be printed in three different representations: integer, fixed point and floating point.
- The exact position of plus and minus signs can be specified.
- String values can be printed in specified fields and literal strings and blanks can be inserted wherever needed.
- Full control over carriage returns and line feeds is possible.
- Arbitrary long lines can be printed without the carriage returns and line feeds normally provided by the PRINT statement.

Another important addition to BASIC/1000 is the INVOKE statement. The INVOKE statement complements the CHAIN statement. The INVOKE statement is used to schedule a second BASIC program from a calling program. The called program may also call another program and so on. When the currently executing called program terminates, control is returned to the calling BASIC program. BASIC data files remain open when one program INVOKES another and any TRAPS previously enabled will remain enabled.

The CHAIN statement instead terminates the currently executing program and begins execution of another program. No files are left open or TRAPS enabled.

These features now complement the extensive set that is provided by BASIC/1000D, such as:

- Multi-User Operation.
- Disc file access for programs and date.
- BASIC/1000D can call FORTRAN, ASSEMBLER or microassembler coded subroutines.
- Commands for tracing, setting breakpoints and simulating subroutine calls to non-implemented subroutines.
- Character string variables.
- **NEW** CHAIN and INVOKE statements to implement larger programs (larger than the 1500 statements — ballpark number) that can be loaded in a RTE-IV partition.
- **NEW** FORMATTED OUTPUT with PRINT USING.
- Interface calls to IMAGE/1000.
- Decimal string arithmetic.
- Instrumentation interface.
- Time scheduling of BASIC tasks via START and TRNON statements. Event scheduling of BASIC tasks via TRAP statement.
- Bit-manipulation statements for setting, clearing, shifting and performing Boolean arithmetic.
- Interface to GRAPHICS/1000, allowing easy access to the 2648 graphics terminal, 7245 plotter-printer, and 9872 graphics plotter.

How Do Customers Get the
New Enhanced BASIC/1000D?

All subscribers of the Comprehensive Software Support and Software Subscription Service will be (or have been already) updated, with the revision 1826 of the BASIC/1000D software. Customers that do not subscribe to these services can get the enhanced version of BASIC by purchasing the 92101A product and Option 001. The Option 001 price is –$500 (minus five hundred) and will be included in the Corporate Price List, September 1st.

REPORT GENERATION EXAMPLE

This program is a sample report generator. It first requests a school number from the terminal, then reads and prints out information about the school's teachers from a file. Note that a carriage control character is used to advantage (statement 100), slashes (/) are used (statement 200) string and fixed-point fields are used (statement 210), and an error occurs in the output for the eighth teacher (number too large for field; therefore, it is printed in E format on a separate line).

Program:

```
10 REM THIS PROGRAM GENERATES A REPORT ON TEACHERS
50 DIM A$(25),B$(19),C$(19)
60 FILES SCH1,SCH2,SCH3,SCH4,SCH5
100 IMAGE #,"ENTER SCHOOL NUMBER:"
150 IMAGE "TEACHER..",13X,"SUBJECT",13X,"SALARY",4X,"ATTND."
175 IMAGE "-------",13X,"-------",13X,"------",4X,"------"/
200 IMAGE "CENTRAL CITY SCHOOL DISTRICT"/"DAILY REPORT OF ",25A//
210 IMAGE 20A,20A,"$",DDD.DD,DD.DDDD
230 PRINT USING 100
250 INPUT Z
260 READ #Z;A$,N
270 PRINT
500 PRINT USING 200;A$
550 PRINT USING 150
555 PRINT USING 175
557 FOR A1 =1 TO N
560 READ Z;B$,C$,A,B
600 PRINT USING 210;B$,C$,A,TAB(50),B
620 NEXT A1
1000 END
```

```
ENTER SCHOOL NUMBER:?1

CENTRAL CITY SCHOOL DISTRICT
DAILY REPORT OF B. BAKER HIGH SCHOOL
```

TEACHER	SUBJECT	SALARY	ATTND.
MISS BROOKS	ENGLISH	$450.34	12.5000
MISS CRABTREE	REM. READING	$400.00	64.3200
MISS GRUNDIE	HISTORY	$350.00	1.0010
MRS. HUMPREY	SPELLING	$700.00	99.9900
COLONEL MUSTARD	CRIMINOLOGY	$700.00	21.4500
MISS PEACH	LIFE PREPARATION	$232.00	23.2320
PROF. PLUM	AGRICULTURE	$777.77	65.0050
MISS H. PRYNNE	SOCIAL STUDIES	$100.25	
+5.00500E+02			
MISS SCARLETT	P.E.	$205.10	25.0000
MR. SIR	HOME ROOM	$890.00	99.9000
MR. T. TIM	MUSIC	$ 10.99	0.0500
MR. WEATHERBY	ECONOMICS	$767.99	10.0400

Using RTE in a Multiple CPU/Single Disc Environment

By: Van Diehl/DSD

Often we receive inquiries about the operation of multiple CPU's and a single disc configuration.

To clarify some of these questions we are printing excerpts of Appendix B of the RTE-IV On-Line Generator Manuals here.

In a multiple CPU system environment, the 7905/7906/7920 disc drivers and the controller prevent destructive interference during transfers of data to and from the disc. The drivers and controller provide adequate protection if a CPU is not to share access to the same physical disc addresses with any other CPU.

If, however, a file or set of files is to be shared by more than one CPU, a procedure is needed to prevent the following possible events:

- CPU A reads a sector to update it.
- CPU B reads the same sector to update it.
- CPU A writes its updated sector back to the disc.
- CPU B writes its updated sector back to the disc, destroying the effect of CPU A access.

To allow software to be written to effect multiple CPU — 7905/7906/7920 system operation without destructive interference — the HP 7905/7906/7920 driver (DVR32) services a lock/unlock function call. This call can be issued from one CPU to lock the disc during an I/O operation or set of I/O operations. No other CPU can access the locked disc until an unlock function call is issued by the original CPU.

The lock/unlock function codes are provided to alleviate any CPU contention problem.

The sequence described previously for CPU A and CPU B using the lock/unlock function would now be:

Step 1: CPU A requests a lock from the driver and it is granted (no other CPU has a lock in force).

Step 2: CPU A reads a sector to update it.

Step 3: CPU B requests a lock from its driver. Because CPU A has a lock, CPU B must wait.

Step 4: CPU A writes its updated sector back to the disc.

Step 5: CPU A releases its lock.

Step 6: CPU B disc driver gets an interrupt from the disc controller informing it that the lock is now available and completes the lock requested by B at Step 3.

Step 7: CPU B reads the same sector to update it.

Step 8: CPU B writes its updated sector back to the disc. The sector now has both updates.

Step 9: CPU B releases its lock.

Remember, however, that more than that is required for operation of redundant configurations, to take care of failure conditions. Normally, a hardware link between the CPU and some application software will be required.

RTE-IV and Special Software

By: Mike Cohn/DSD

Certain software items are available from the factory Special Software Development Group to accomplish special jobs or achieve higher performance under specialized conditions than is available with Active or Mature software.

Support for special software is negotiated at the time of purchase. This software is warranted and supported for a given operating system and its then current date code.

If you have a customer with RTE-II or RTE-III and some special software *and* they plan on upgrading to RTE-IV, be advised that the special *MAY NOT WORK*. If this situation applies to your customer, please call Sales Development to confirm the status of the software. Special Engineering has plans to test all current software on an as-needed basis. Obsolete software may or may not be tested for compatibility dependant upon availability of hardware to do the testing. Most obsolete software will require a special quote to test and guarantee compatibility with RTE-IV.

Software Sources and Listings

By: Van Diehl/DSD

We have received many, many requests for sources and listings for DSD software products.

Presently, we are in the process of creating sources and listing products for operating systems and sources for most subsystem products.

Listings will be provided for major parts of the operating system for users that require a knowledge of the system beyond the level of our reference manuals, in order to better utilize our software. Listings will be printed in a manual format and they will be updated every three months, synchronously with the software update cycle.

Sources will be provided for the operating systems and most subsystems. They will be provided in a mag tape media only.

Sources will be provided for customers that require modification of the operating system. To better protect DSD software investment, sources will be available under a license.

When will all of this be available? We hope to have most of the listings and sources available by the end of summer, together with the required license contract documentation.

Any comments? This is the right time for your feedback. If you have any comments, call or TWX me at DSD.

"In-Core-Igible" 2100 Memory Returns!!!
By: Bill Elmore/DSD

Although the 2100 and all its accessories have been removed from the Corporate Price List, there continues to be some demand for 2100 Core Memory. In order to "core-rect" this problem, the 12885A 8K core memory module will reappear on the September 1 CPL. The list price will be $3600 (discountable). Until September, DSD will accept HEART override orders for the 12885A. Initial availability is anticipated to be about 20 weeks.

Benchmarking and the F-Series
By: Jim Long/DSD

HOW DO I COMPARE THESE MACHINES?

What Is a Benchmark?

A benchmark, as it applies to the world of computers, is any program(s) run to determine the capabilities of a computer or its related software. Benchmarks are often used in sales situations. For instance. a company has a need for a computer and must decide which vendor to use. A benchmark can be used by the customer to evaluate the different computers. But. the benchmark must be relevant to the customer's needs or else the results will be misleading. So where does the customer get the benchmark?

1. Write his own benchmark; this is the preferred method because it helps assure that the benchmark is related to the customer's needs. But, it can be costly even if the customer has the resources available to do it.

2. Industry known benchmarks; these relate to programs already written by either another company or "research institution". A benchmark of this type can be useful because information concerning its results may already be available. But. again, it must relate as closely as possible to the customer's needs. This could be a very cost-effective solution.

3. A vendor supplied benchmark; we continue to be amazed at the number of times a benchmark of this type is used. Aside from the obvious bias that may be involved, (the program could be tuned to a particular computer) the benchmark may only apply to the customer's needs from that particular vendor's point of view.

Analysis of benchmark results is another problem and it is usually more subjective than objective. An "apples-to-apples" comparison can rarely be made. Thus, a purchase decision should not be based solely on benchmark results. Indeed. it should be only one of many considerations.

There are many different types of benchmarks, but most fit into two broad categories, those that test operating systems, and those that test CPU performance. Benchmarks which test the operating system usually consist of a number of programs which schedule each other and do a lot of input/output. An example of this type is the General Electric Benchmark which was run by a number of computer vendors back in 1976. The results were published by G.E. under report #76SPC003-A entitled "RESULTS FROM REAL-TIME SYSTEM BENCHMARK PROGRAM, MINICOMPUTER PRODUCT COMPARISONS FOR FORTRAN MULTI-TASKING PROGRAMS". CPU testing benchmarks are usually single compute-bound programs. Some may test a number of CPU operations (i.e., floating point, integer, transcendentals . . .) others may only test a specific operation. The WHETSTONE benchmark, which will be discussed later. is an example of this type of benchmark.

What Is DSD's Interest in Benchmarks?

Applications Development has been running a series of thirteen benchmarks on various HP 1000 and competitor's systems. The project was begun because there was a need to know how well the new F-Series computers performed when compared to other 21XX computers. The competitive analysis was added later, and will be enhanced in the future.

All thirteen benchmarks are compute-bound FORTRAN programs which require only a small amount of memory. Most were designed to measure CPU performance although some check compiler efficiency. The benchmarks B1 through B11 were written by the National Physical Laboratory in England. They were modified slightly by Lawrence Livermore Labs so they would run on 16-bit machines. NPL designed the benchmarks so they would execute in roughly one minute on an IBM 360/65. The last two benchmarks (FLOATSP. FLOATDP) were written at Data Systems. A brief description of each benchmark follows (the first eight listed are considered the most significant):

1. (B1) (WHETSP) is the Whetstone Single Precision benchmark. It's perhaps the closest thing resembling an industry standard benchmark available. The program is written in FORTRAN from the Whetstone algorithm designed by B. 4. Wichman & H. J. Curnow at NPL in England. The algorithm was derived from the analysis of 1000 ALGOL 60 programs as an attempt to represent an average program instruction mix. Thus the algorithm includes many different operations, among them being: floating point and integer calculations. transcendentals, array manipulation and conditional jumps. The universality of this algorithm has also been substantiated by subsequent analysis of FORTRAN programs. It was designed to be non-optimizable so that it would test the CPU and not the compiler. There has also been a lot published about the Whetstone

Benchmark. There are two articles concerning it in the book: "BENCHMARKING, COMPUTER EVALUATION AND MEASUREMENT" John Wiley & Sons, New York — pages 89–114.

One article in a COMPUTER JOURNAL, Vol. 19 number 1, entitled "A SYNTHETIC BENCHMARK", and a whole report about it published by the National Physical Laboratory as NPL Report NAC 62, November 1975.

2. (B2) (WHETDP) This is the Whetstone Double Precision benchmark which is just a double precision version of B1, above.

3. (B3) (OPT1) This benchmark tests compiler efficiency as well as single precision floating point by using single dimension array accesses.

4. (B5) (TRANSP) This benchmark tests the transcendental capabilities of the computer it is run on. The program loops around the FORTRAN library routines SQRT, SIN, COS, EXP, and ATAN. It does not call TAN, TANH, LOG, or LOGE which all run very fast using the F-Series scientific instruction set.

5. (B6) (TRANSDP) This is the double precision version of B5 although the main loop has been cut from 26,400 iterations in B5 to 1000 iterations for B6. (This was done so it would run in one minute on the IBM 360/65.)

6. (B10) (Opt. 2) This benchmark consists of 24 IF statements of the form: IF (I) 101,999,999. It is used to compare FORTRAN compilers. In theory an optimising compiler could reduce the whole program to nothing, because no useful work is done. In fact, Lawrence Livermore Labs ran the benchmark on an SEL 32-bit machine and it did optimize the benchmark down to nothing.

7. (B12) (FLOATSP) This short program was written at Data Systems and does nothing but single precision floating point calculations. It uses an equal number of add, subtract, multiply and divide operations, about 800,000 each. However, there are additional driving statements.

8. (B13) (FLOATDP) This is just the double precision version of FLOATSP. It does the exact same number of calculations.

The remaining five benchmarks are:

9. (B4) This is the double precision version of B3.

10. (B7) This is a small FORTRAN program designed to give a crude check of the floating point capabilities of a machine. It calculates the Gamma function for integer values using two methods, one of which uses Simpson's rule. The F-Series performs well on this one because of the heavy presence of the FORTRAN function EXP.

11. (B8) This program was originally written as a core memory exercisor and not as a performance test. An optimising compiler can do a lot with it, so it can be used to help judge compilers. B8 was designed to run in six seconds on an IBM 360/65.

12. (B9) This program is a floating point test similar to B7. It uses a binomial expansion which accumulates rounding error to test floating point. It is not supposed to be easily optimized.

13. (B11) This program uses double precision floating point and transcendentals. Its output can be used for accuracy checks. It can be optimised, however, and thus is not a pure performance test.

What Have These Benchmarks Shown Us?

Table #1 shows how different HP 1000 configurations compare to each other with respect to the thirteen benchmarks. Except for B8 & B10, all benchmarks are strictly number crunchers and thus show a significant difference between configurations. The biggest difference involves the addition of the FAST FORTRAN PROCESSOR (FFP) to an E-Series CPU. The double precision benchmarks B2, B4, B6, B10 and FLOATDP show increases of up to 22 to 1. Even B2, which has a lot of non-double precision code, shows a 14 to 1 improvement. These improvements are due mainly to the double precision floating point microcode found in FFP. But, programs with no double precision can also show significant improvement with FFP. The other firmware routines in FFP accounted for over a 50% improvement in B1, a program which has no double precision calculations.

High performance memory can also result in significant improvement in a program's execution speed. B10 got a 45% performance increase when run with high performance memory because IF statements contain many memory references. Most programs will get between a 15–25% increase. The less time a program spends crunching numbers, the better the performance increase due to the addition of high performance memory. Our average computational FORTRAN program (The Whetstone Single Precision) achieved almost a 100% performance increase by adding FFP and high performance memory to an E-Series CPU.

Thus, for E-Series users who are also concerned about maximum performance, FFP and high speed memory are very cost-effective additions. They can easily account for a 25–75% improvement in program execution speed, and up to a 15:1 improvement when using double precision.

But what about the F-Series? Hopefully, the numbers speak for themselves. For most computation intensive applications, the F-Series will show a 2–3 times performance increase over the fastest E-Series configurations. For the single precision floating point benchmark, for the F-Series is 2.8 times faster than the fastest E-Series, and for the double precision floating point benchmark, it is over three times faster. The F-Series Scientific Instruction Set makes itself known with a whopping 7.5 to 1 improvement over the E-Series for single precision transcendentals. So how did the Whetstone single precision benchmark do? It ran over 2.5 times faster on the F-Series than it did on the E-Series. Thus, for computation intensive programs, the F-Series easily outperforms any other computer Hewlett-Packard has offered to date.

Table 1. HP vs. HP*

	M-Series Reg Mem FFP	E-Series Reg Mem	E-Series Reg Mem FFP	E-Series H. S. Mem FFP	F-Series Stan. H. S. Mem	F-Series Error Correcting H. S. Mem
WHETSP (B1)	2.033	2.02	1.2	1.02	.400	.4333
WHETDP (B2)	3.23	29.88	2.06	1.8	.86	.95
OPT1 (B3)	3.2	1.966	1.96	1.58	.917	1.0167
B4	1.81	13.13	1.18	1.0	.55	.6167
TRANSSP (B5)	5.85	3.56	3.36	3.0	.40	.4167
TRANSDP (B6)	.466	4.20	.283	.25	.10	.1167
B7	5.48	3.28	3.10	2.75	.58	.6333
B8	.35	.30	.2167	.15	.15	.1667
B9	5.0	2.86	2.86	2.5	1.11	1.2167
B10	3.05	1.88	1.88	1.28	1.28	1.5
B11	3.53	18.96	2.23	1.88	.92	1.0
FLOATSP (B12)		1.76	1.75	1.63	.58	.65
FLOATDP (B13)		71.2	3.2	2.91	.93	1.033

*All times in minutes.

Table 1 also shows the performance difference for the F-Series with and without fault control memory. (The F-Series comes standard with high performance memory.) Again, B10, because of the many memory accesses, showed the biggest difference. (14.7% faster with standard high performance memory as opposed to fault control.) The Whetstone benchmarks showed about an 8% difference. And the average program can expect between an 8–11% performance difference between the two types of memory.

Thus, the F-Series offers two memory paths:

1. High performance memory for applications where maximum speed is required.

2. High performance fault control memory for fault control critical applications. Note that high performance fault control memory is quite a bit faster than standard performance fault control memory!

What About Competition?

IS B 50% SLOWER THAN A OR IS A 33% FASTER THAN B?

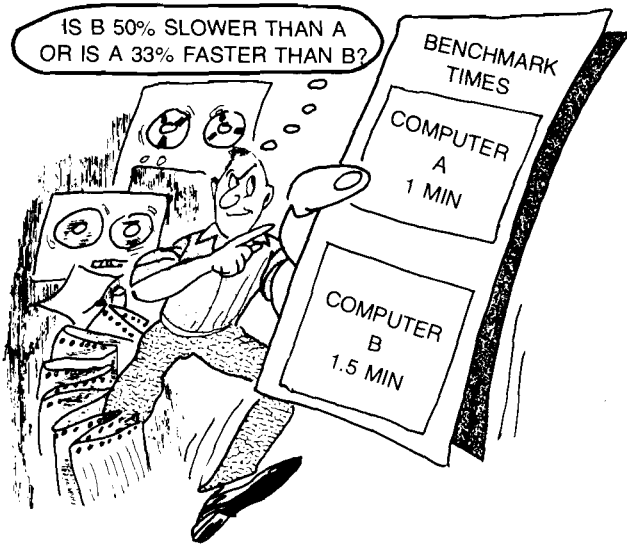BENCHMARK TIMES

COMPUTER A 1 MIN

COMPUTER B 1.5 MIN

Table 2 lists benchmark execution times for the F-Series, Digital PDP 11/70, Data General Eclipse S/230, Prime 300, Modcomp 2. and the HP 3000. Both the 11/70 and Eclipse S/230 represent the highest performance 16-bit machines offered by DEC & DG respectively. Both machines are very fast and generally can outperform the F-Series. Their speed advantage is most pronounced in floating point calcula- . tions. For the single precision floating point benchmark (FLOATSP), the 11/70 is 58% faster and the S/230 is 36% faster than the F-Series. For double precision (FLOATDP), the 11/70 is 65% faster and the S/230 is 50% faster than the F-Series. But remember, these programs do nothing but floating point calculations. Let's see what happens to the "performance gap" as the programs get more complex. B3 combines single precision floating point calculations with single precision dimensional arrays. This complicated addition cuts the S/230's gap from 36% faster for FLOATSP to 22% faster than the F-Series. The 11/70 was less affected, dropping from 59% faster to 54% faster. But, by using an

Table 2. Competitive Results*

	F-Series H. S. Mem	Digital 11/70 Cache FP11-C FORTRAN 4+	Digital 11/60 Cache FP11-E FORTRAN 4+	Digital 11/34 FP11-A FORTRAN 4	Data General Eclipse S230 FORTRAN 5	HP 3000 Series II	Prime 300	Modcomp 2
WHETSP (B1)	.40	.3366	.396	2.25	.397	.8399	1.52	.75
WHETDP (B10)	.8667	.4164	.535	2.95	471	2.03	2.279	.959
OPT1 (B3)	.9167	.4180	.54	4.41	.715	1.26	2.004	1.6
B4	.55	.1919		2.01	.317	.956	.973	
TRANSSP (B5)	.40	.6778	.93	2.97	.813	2.45	3.098	1.29
TRANSDP (B6)	.10	.0369	.047	.1827	.042	.299	.269	.08
B7	.5833	1.124	1.55	3.71	.420	3.04	3.865	
B8	.15	.1791		.34	.09	.1838	.301	
B9	1.11	.4827		4.58	.697	1.857	3.634	
OPT2 (B10)	1.28	.9491	1.39	10.23	.771	1.548	2.269	2.7
B11	.9167	.4238		2.59				
FLOATSP (B12)	.5833	.24	.227	2.31	.370	1.079	1.316	.84
FLOATDP (B13)	.9333	.33	.356	3.46	.471	2.829	2.216	1.1

*All times in minutes.

even more complicated program, for example, our "average" program the Whetstone Single Precision Benchmark, the performance gap diminishes remarkably. For WHETSP, the 11/70 is only 16% faster and the Eclipse S/230 no faster than the F-Series. Thus, the F-Series is very competitive when compared to other "high performance" 16-bit minicomputers. And if a program uses single precision transcendentals, the F-Series really shines. For TRANSSP (B5), the 11/70 is 67% slower and the Eclipse S/230 is over 100% slower than the F-Series. One would be hard pressed to find any computer that outperforms the F-Series for single precision transcendentals.

Again, these benchmarks only compare CPU performance. For a true competitive analysis of the 11/70 and S/230 many other factors, such as operating system power and friendliness, peripherals, customer service, etc., would have to be considered. If anything, CPU performance is a weakness of the HP 1000 computers and these benchmarks have shown that it is not a significant weakness, especially when one looks at the price of the 11/70 and S/230 as compared to the F-Series. (See Figure 1).

The Prime 300, Modcomp 2 and HP 3000 Series II are included in Table 2 for reference purposes. The Prime 300 is Prime's least expensive computer system. The Prime 400 and 500 are more powerful, but also much more expensive. From the benchmark results, it appears that the F-Series is a much better computational machine than the Prime 300.

The Modcomp 2 is the intermediate member of the Modcomp computer family and was designed for real-time system operation. It has floating point hardware.

The HP 3000 Series II was included here to clarify the fact that, for technical applications, the HP 1000 is Hewlett-Packard's best solution.

The competitive machines were all owned by HP customers who had some interest in the outcome of these tests. None of the machines or benchmarks were "tweeked" in any way to improve run times. An experienced operator may be able to affect run times, but this would make an improper test. Slight variations also occurred in run times on the same machine for no apparent reason, but in all cases, the "best" times have been used. Thus, these times and comparisons should not be taken as "gospel truth", but never-the-less, they do represent actual execution times as run on the various computers.
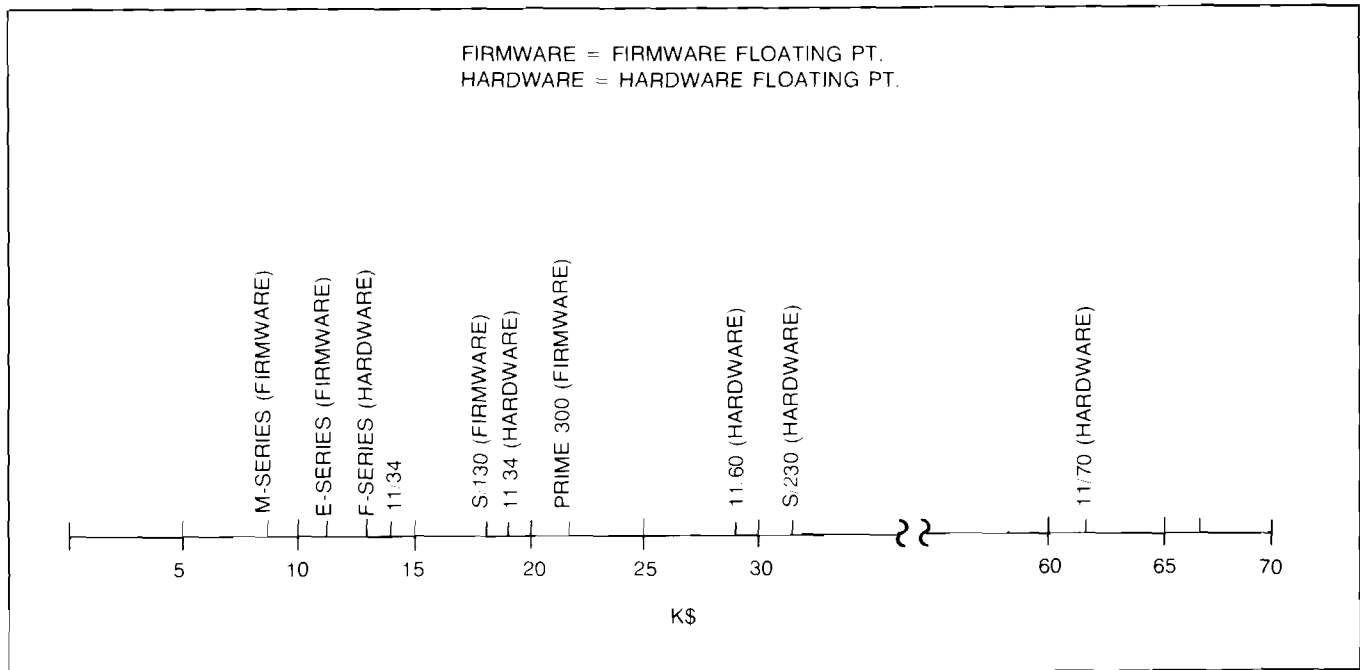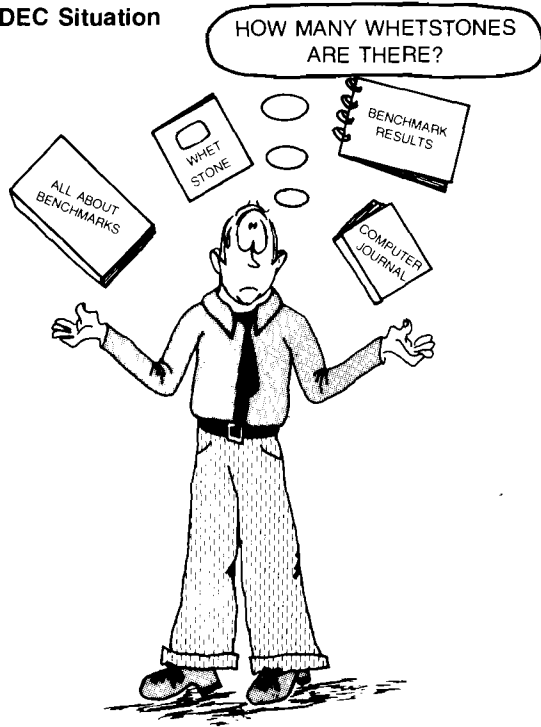

Figure 1
PRICE COMPARISON

The DEC Situation

HOW MANY WHETSTONES ARE THERE?

A rather interesting situation has developed concerning the DEC machines and the Whetstone benchmark, but more about that in a minute. First, let's look at the 11/60 results. It does have faster floating point hardware than the 11/70 and thus does single precision floating point calculations a bit faster. The 11/70 does double precision floating point faster because there are more register moves involved and the 11/70 is a faster machine. The 11/70 also appears to be much faster with respect to memory accesses as shown by program OPT-2. In fact, the 11/60 ran slower than the F-Series on Opt-2. The F-Series was also over twice as fast as the 11/60 with regard to single precision transcendentals, but more importantly, the 11/60 was no faster than the F-Series when running the Whetstone single precision benchmark. These imply that the 11/60 is a very fast floating point machine, but on the whole, THE 11/60 PERFORMS AT ABOUT THE SAME LEVEL AS THE F-SERIES. It's a lot more expensive too! Again, these benchmarks don't compare everything, most notably integer arithmetic.

The 11/34 used included hardware floating point, but no cache. Unfortunately, it didn't have DEC's best optimizing FORTRAN compiler, FORTRAN 4+. It did have the optimizing version of FORTRAN 4 though. Apparently, DEC continues to upgrade both these compilers to the point that regular FORTRAN 4 sometimes includes new features not yet found in FORTRAN 4+. The times shown are much slower than expected as the 11/34 appears to be slower than the E-Series. But, the compiler can make a significant difference as evidenced by the ten minute 11/34 run for OPT2. This is where things get interesting.

I've gotten DEC times for the Whetstone on different DEC computers. These times were received from such sources as field personnel and customers involved in sales situations. The times I received are reproduced as Table 3. It is not clear whether the Whetstone benchmarks involved are exactly the same.

Note the differences between the DEC times and the times we got for the same configurations. The biggest difference is with the 11/34 for the single precision Whetstone, but again, the compilers are different. Could the compiler account for an almost 3 to 1 difference? It's doubtful, but let's look at the other DEC numbers to see. Comparing the two DEC numbers for the 11/60, one can see a 5 to 1 improvement by only adding hardware floating point. The 11/70 shows a 7.6 to 1 improvement with the addition of hardware floating point and the better compiler. The 11/34 shows a 7 to 1 improvement by adding hardware floating point and the better compiler. If the compiler is responsible for 3 to 1 improvement, then the floating point hardware on the 11/70 and 11/34 only accounts for a 2.5 to 1 improvement. This is only half the improvement the 11/60 got, but 2.5 to 1 is about the same performance gain we received by adding a floating point box (E-Series vs. F-Series). One would also expect the 11/60 to have the biggest improvement because it does have the fastest floating point box. So it's really hard to say if the FORTRAN 4+ compiler is that much better, though one could wonder why DEC continues to develop the other compiler if FORTRAN 4+ is so much better. What we really need to do is run the benchmarks on an 11/34 with hardware floating point and FORTRAN 4+.

Table 3*

	Reported Digital Times							HP Experiences			
	11/34 F4	11/34 FP11-A F4+	11/34 Cache FP11-A F4+	11/60 Cache F4+	11/60 Cache FP11-E F4+	11/70 Cache F4	11/70 Cache FP11-C F4+	11/70 Cache FP11-C F4+	11/60 Cache FP11-E F4+	11/34 FP11-A F4 OPT	F SERIES
Whetstone Single Precision	5.85	.82	.64	1.42	.28	1.9	.25	.37	.396	2.25	.40
Whetstone Double Precision	24.15	1.08	.85	4.21	.38	7.8	.33	.42	.53	2.95	.87

*F4 = FORTRAN 4
FP11-? = Hardware Floating Point

That's not the whole dilemma either. Why the difference in run times between DEC's runs and our runs on DEC equipment with the same configuration? (Our run for WHETSP was 32% slower than DEC's on the 11/70 and 41% slower than DEC's on the 11/60.) We ran on a totally dedicated CPU, so either they boosted the performance somehow, modified the benchmark in some way. or different 11/70's and 11/60's run at different speeds. Most likely their version of the benchmark differs from the real Whetstone as produced by NPL. The benchmark we used was the actual Whetstone produced by NPL. It's important to realize that different versions of the Whetstone may be being used by different vendors and customers.

What About Handling Benchmarks?
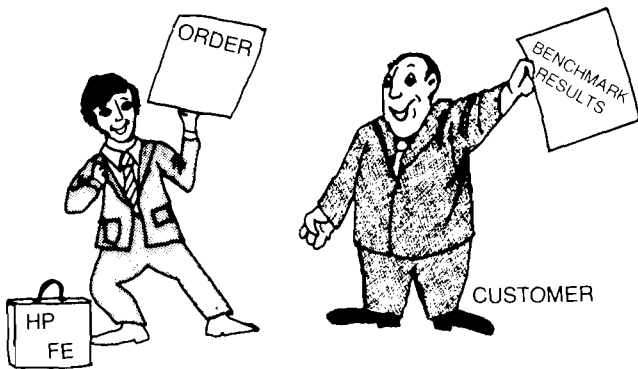
With the introduction of the F-Series the number of benchmarks run for sales bids should increase. The F-Series dramatically strengthens our offering in areas involving computation applications and thus will certainly let us qualify for a lot more sales situations. But, we don't recommend selling on benchmark results alone. If a sales bid involves a computation type benchmark, the F-Series should perform well, giving HP a good foundation from which we can sell our strengths.

Benchmarks can easily take a lot of time to run. so it is important to be aware of a few things:

1. Is the customer really interested in HP, or is he just putting us on hold by tying us up with a benchmark?

2. Does the benchmark really represent something which the customer can use to evaluate which vendor has the best solution to his problem?

3. Does the sale. or importance of the benchmark to the sale, justify spending the time to get the benchmark results?

4. What benefits might HP get by running the benchmark? i.e.. times and output for the benchmark run on other vendors' machines.

Furthermore, the responsibility for running the benchmarks rests with the Field. But, Product Management would be interested in the sources of any benchmarks, if the results of those benchmarks. run on competitive machines. were also supplied. This gives us a chance to consolidate more competitive data which should help the field sell more computers!

Some More Numbers?

Figure #1 shows that on a price basis, the F-Series competes directly with the Digital 11/34 and the Data General Eclipse S/130. Unfortunately. we have not run the benchmarks on the S/130. But we do have some limited performance data concerning other computers.
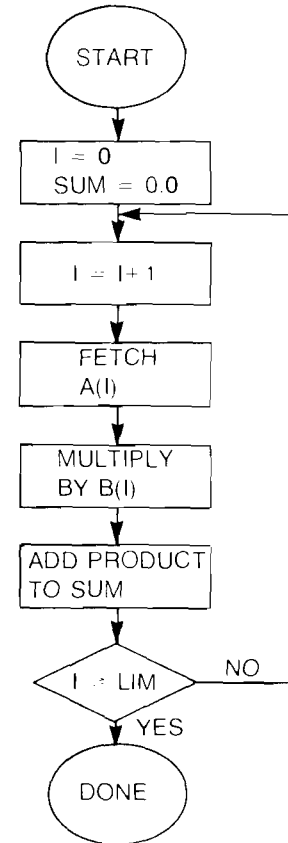
We obtained some information concerning the 11/34, 11/60. and IBM Series-1 from a couple of sales bids. From one. we found that the FORTRAN statement:

$$C = C + A*B \text{ (Where A,B,\&C are single precision real numbers)}$$

Execution time was:

11/34 with hardware floating point	Series-1	F-Series
50 microseconds	70 microseconds	36.4 microseconds

In another sales bid, the algorithm:

was implemented in both assembler and microcode on the F-Series and PDP 11/60, the results were: (per iteration)

	F-Series	11/60
ASSEMBLER:	14.7 msec	6.4 msec
MICROCODE:	3.9 msec	3.6 msec

We have also run other benchmarks for sales bids and in most cases. have had excellent results. Again, if you get times for benchmarks on competitor's machines, get the information back to Data Systems.

Let's Get This Over With

Running the benchmarks was a lot of fun as well as work. The hardest part involved just getting the programs onto the various computers. I felt quite archaic as I carried around boxes of computer cards and, who says paper tape isn't used anymore? I learned quite a bit about competitive hardware and software, as well as the computer world through the eyes of a customer. Many people helped me on this project and I would like to thank a few notables: From DSD most notably *Craig Chatterton* as well as *Chuck Geber, Bill Gibbons* and *Bill Elmore*. From the field: Thank you to *Marty Fluke, Tom Gulczynski, Ron Cornett*, and *Neil Gloier* as well as *Jim Francis* from GSD.

Finally, we are interested in continuing these benchmark tests. We hope to run on a VAX 11/780 very soon but are still looking for a Data General S/130 as well as a DEC 11/34 with floating point hardware and FORTRAN 4+. Any knowledge about customers who have any of these machines should be directed to Applications Development at Data Systems.

Sales Aids

Slide Kits
By: Tom Freed/DSD

Just another reminder that 35 mm slide kits of the new HP 1000 products are available. A HEART order to the attention of *Sylvia Cohen*, Bldg. 42U Data Systems Division, Cupertino, asking for kit number BS-12 @ $100 U.S. is all that it takes. Anticipate your seminar, allow 2 to 3 weeks for delivery. For other sales aids, please consult the CS *Newsletter* Vol. 3, No. 14 June 1, 1978; page 21–23. Your DM should know if your office has the slide kit since there was an initial purchase of 100 slide kits during the April NPT Tour.

RTE-II/III to RTE-IV Upgrade Course Available
By: Phil Ebersole/DSD

If one of your customers is planning to upgrade their existing RTE-II or RTE-III operating system installation to the new RTE-IV operating system, take note: A two day *RTE-II/III to RTE-IV Upgrade Course* is available. This course, which assumes a thorough knowledge of RTE-II/III as a prerequisite, will provide the customer with detailed information on all of the new features of RTE-IV. Class time is divided between lecture material which explains the new features, and hands-on lab time with the RTE-IV operating system. Also supplied is a complete set of new manuals, such as the RTE-IV Programming and Reference Manual and the RTE-IV Generation Manual. Course fee is $250.00 in the United States.

Data sheet number 5953-3048 contains a complete description of the course. Contact your sales librarian for free copies.

Upgrade courses will be given at various locations worldwide. A partial list is given below. Contact the training center nearest you for a complete list.

RTE-II/III to RTE-IV Upgrade Course Schedule

Customer Training Center—Cupertino, Ca.
(Contact *Judy Barrick*: (408) 996-9383 x248)
Aug. 14, 15
Aug. 28, 29

Customer Training Center—Fullerton, Ca.
(Contact *Joyce Roberts*: (213) 691-6711 x216)
Aug. 7, 8
Sep. 6, 7
Oct. 11, 12
Nov. 20, 21

Customer Training Center—Rockville, Md.
(Contact *Carol Shafer*: (301) 948-6370 x431)
Aug. 14, 15
Aug. 28, 29

Paramus Sales Office—Paramus, N.J.
(Contact *Jackie Dente*: (201) 265-5000 x269)
Aug. 1, 2
Sep. 5, 6
Oct. 4, 5

Toronto Sales Office—Toronto, Ontario, Canada
(Contact *Debbie Weech*: (418) 678-9430 x231)
Oct. 30, 31

Lexington Sales Office—Lexington, Mass.
(Contact *Sue Olson*: (617) 861-8960 x266)
Aug. 10, 11
Aug. 24, 25
Sep. 14, 15

Rochester Sales Office—Rochester, N.Y.
(Contact *Judie Rozwat*: (716) 223-9950 x17)
Aug. 28, 29

SEND THOSE RESERVATIONS IN SOON!

New Training Program for HP 1000 Computer Systems

By: Phil Ebersole/DSD

DSD has developed a new Customer Training Program for HP 1000 Computer Systems. The introduction of this program coincides with the introduction of the new RTE-IV operating system and the new HP 1000 F-series computers. The current program is diagramed below. Detailed descriptions of each course can be found in the Active Software Data book (Sales Literature #5953-0861) or in the data sheet for each course (see list at the end of this article).

What's New?

Highlight of the program is the brand new HP 1000 Disc-Based RTE Operating System Course (22991A). This two-week course covers the use and programming of the RTE-IV operating system in an HP 1000 environment, including program preparation (FORTRAN IV Compiler, assembler, editor, and loader), EXEC calls to invoke system functions, system software generation, and use of the Batch-Spool Monitor. All of the new features of RTE-IV, such as EMA (extended memory area), reconfiguration on boot-up, and the new programming and debugging aids, are covered in detail.

Also new is the HP 1000 Memory-Based RTE Operating System Course (22992A). This one-week course covers the use and programming of the RTE-M operating system in an HP 1000 environment, including program preparation, EXEC calls, system software generation, and the file manager.

The third new course is the four-day Introduction to HP Mini-computers Course (22951B). This course provides an entry point into HP computer training for those students who have had no previous experience with minicomputer systems. Students will be exposed to the concepts of HP minicomputer architecture, operating systems, and high-level languages, thereby satisfying the prerequisite of the HP 1000 Disc- and Memory-Based RTE courses described above.

What Else is New?

In addition to the new courses listed above, two other courses have been modified and improved. The material in the *HP-IB in a Minicomputer Environment Course (22980C)* has been expanded to include programming information on the new HP-IB message subroutines and information on how to write device subroutines for specific HP-IB devices. Device subroutines can simplify the use of HP-IB devices by providing an easy-to-use software interface tailored to each device.

Also revised is the user microprogramming Course, now named the *HP 1000 E/F Series Microprogramming Course (22983B)*. This course has been updated to include microprogramming information related to the recently introduced HP 1000 F-series computers.

NOTE: COURSES MUST BE TAKEN IN LEFT TO RIGHT SEQUENCE (INDICATED BY ARROWS) TO ENSURE ALL NEEDED PRE-REQUISITES ARE MET.
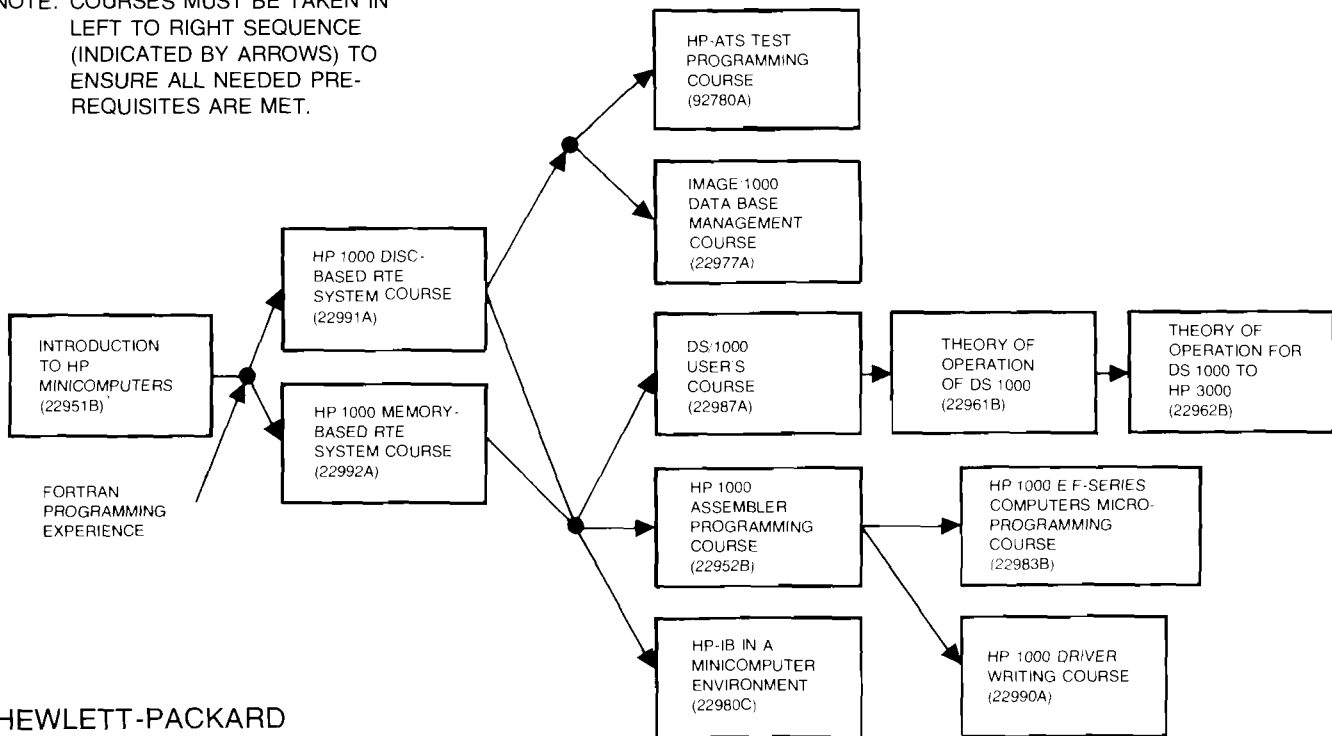
HEWLETT-PACKARD
CUSTOMER TRAINING PROGRAM
FOR HP 1000 COMPUTER SYSTEMS

When Are These Courses Scheduled?

Both the *HP 1000 Disc-Based RTE System Course* and the *Introduction to HP Minicomputers Course* appear on the current CSG Customer Training Schedule (Sales Literature #5953-0841). The new versions of the HP-IB and microprogramming courses have just been finished and will appear on the next schedule. The first *HP 1000 Memory Based RTE System Course* is expected to be taught in October.

Need a Course Description?

Data sheets on HP 1000 customer courses describe in detail the purpose, prerequisites, and content of each course. These are available free from your sales literature librarian. Sales literature numbers for data sheets associated with courses described in this article are listed below.

Data Sheet #	Title	Course #
5953-3051	Introduction to HP Minicomputers	22951B
5953-3049	HP 1000 Disc-based RTE	22991A
5953-3042	HP-ATS Test Programming	92780A
5953-3037	IMAGE/DBMS 1000	22977A
5953-3040	DS/1000 User's Course	22987A
5953-3046	Theory of Operation of DS/1000	22961B
5953-3041	Theory of Operation of DS/1000-3000	22962B
5953-3047	HP 1000 Assembler Programming	22952B
5953-3050	E/F Series Microprogramming	22983B
5953-3043	RTE Driver Writing Course	22990A
5953-3035	HP-IB in a Mini Computer Environment	22980C

Sell Training!

Remember that proper training can be a big factor in insuring customer satisfaction. Some training should be quoted on all new HP 1000 system orders. And why not pass on one of the data sheets on the new courses to some of your existing customers? (Refer also to the RTE-II/III to RTE-IV Upgrade Course described elsewhere in this issue.) Let's keep those customer training centers busy!

Oops! 1+1+1+1=4 NOT 3!
By: Phil Ebersole/DSD

In the latest issue of the CSG Training Schedule, the new HP 1000 Introduction to Minicomputers Course (22951B) was mistakenly listed as a three-day $300.00 course. The correct length is four days, with a resulting cost of $400.00. This will be corrected in the next issue of the Training Schedule. The corrected figure will also appear on the September 1st Corporate Product Price list.

Order Processing

Notice of Returns
By: Emily MacWilliamson/DSD

When a sales order is received at Data Systems it is our objective to see that the order is handled efficiently from the time it is received in the Order Processing department until it is shipped from the factory. The shipping department is very careful to always include the correct products as ordered and see that the order is shipped complete. The number one goal of the Division is to support the selling efforts of our

sales force and to that end achieve a high level of customer satisfaction. If there is a problem with a sales order and a return is necessary, the following procedures should be taken to efficiently return the equipment to Data Systems.

1. The Return Coordinator, *Emily MacWilliamson* X2542, should be contacted for approval of return of the product within 30 days of shipment from our factory. She will determine if a product may be returned and the appropriate amount of restocking charges, if any, that will be be incurred by the customer.

2. Please do not return any products without prior approval. If a product is returned without prior approval it may be returned to the customer or the sales office, causing a further delay in a credit to the customer and additional expenses to HP.

3. Once your request of return has been approved, the product must be returned to the factory within 30 days. If the product is not returned in 30 days the sales office will be notified and the return time period will be extended another 30 days. If after this time period the products are still not returned to DSD your approved notice of return will expire, causing the entire process to be initiated again.

I hope the above information will be helpful on any returns to DSD

DATA TERMINALS NEWS

Division News

New Faces in Sales Development
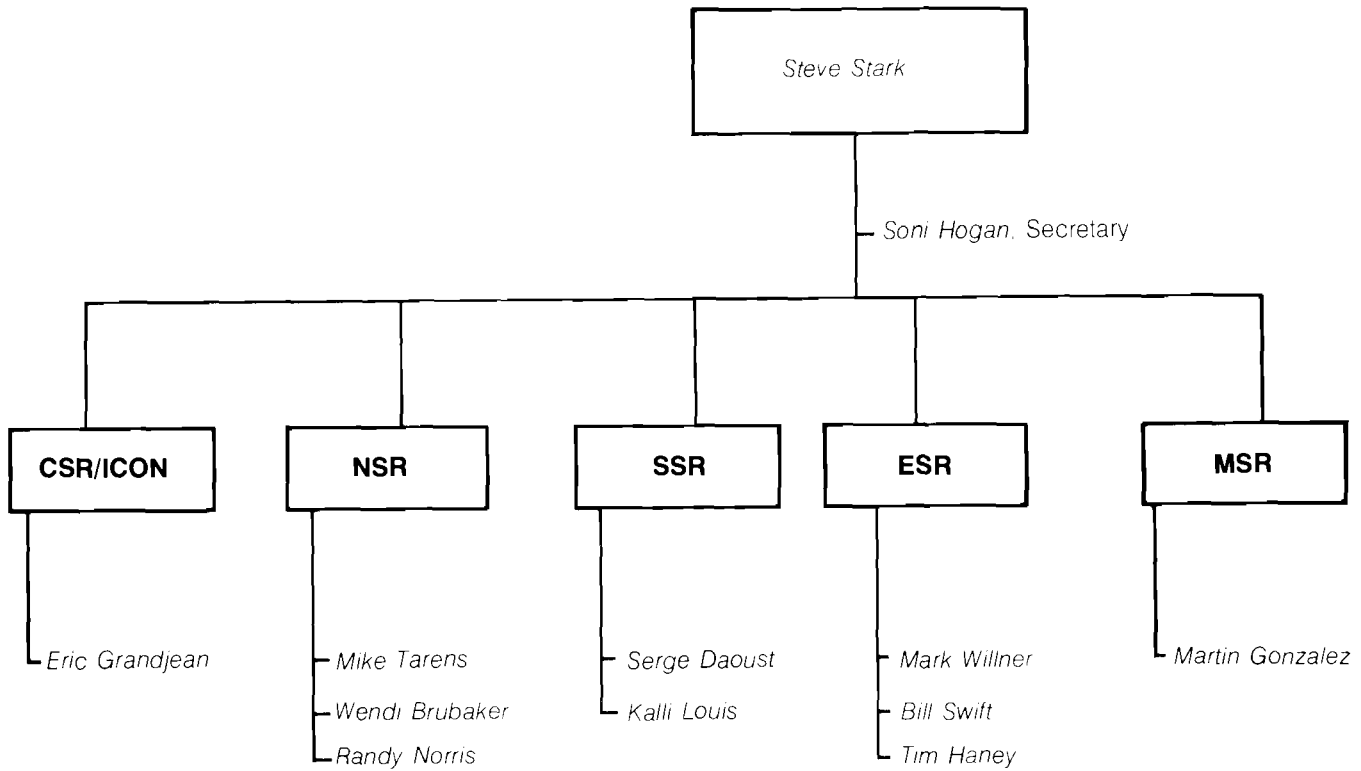*By: Steve Stark/DTD*

In an effort to meet the challenges of the growing terminals business and an expanding field sales organization, the Sales Development team at DTD has been supplemented by two new members.
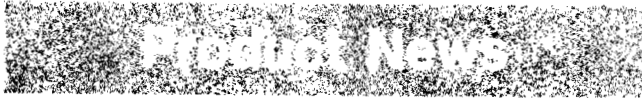
Kalli Louis, who came to DTD by way of the Neely EPG sales organization, arrived on July 5. Prior to joining HP, *Kalli* was with Singer-Link where she developed programs for digital logic test systems. She has a B.S.E.E. degree from the University of California at Davis and is currently working on an M.S.E.E. at the University of Santa Clara. After some initial training, *Kalli* will assume the support responsibilities for the eastern area of SSR.

Mark Willner came on board on July 18. *Mark* has a B.S.E.E., M.S.E.E. and an M.B.A. from the University of California at Berkeley. *Mark* has worked at HP for the last four summers so he is no stranger to our midst. When *Mark* completes his internship, he will provide support for the northern area of ESR.

DTD SALES DEVELOPMENT

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                        ┌─────────────────┐
                        │   Steve Stark   │
                        └─────────────────┘
                                │
                          ─ Soni Hogan, Secretary

   ┌──────────┐  ┌──────────┐  ┌──────────┐  ┌──────────┐  ┌──────────┐
   │ CSR/ICON │  │   NSR    │  │   SSR    │  │   ESR    │  │   MSR    │
   └──────────┘  └──────────┘  └──────────┘  └──────────┘  └──────────┘

   └ Eric         ─ Mike         ─ Serge       ─ Mark        └ Martin
     Grandjean      Tarens         Daoust        Willner       Gonzalez

                  ─ Wendi        └ Kalli        ─ Bill
                    Brubaker       Louis          Swift

                  └ Randy                       └ Tim
                    Norris                        Haney
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Medical News

Watching your P's and Q's or . . . Compatibility Mode Revisited

By: Mike Tarens/DTD

How many of you are using the 2648A Users' Manual that was published in **1/78?** If you are and have tried to utilize Compatibility Mode from the strap setting table on 7-4, you probably have not met with much success in turning off Compatibility Mode. This is because the settings for the P and Q straps must be *cleared*. Make the necessary change in your manual—the next edition will be corrected.

The next question of the day—What is the procedure for getting back to normal terminal operation when in Compatibility Mode? Is sending the escape sequence to turn off this mode going to work? The answer is NO—not by itself. When in Compatibility Mode, the 2648A will NOT recognize this escape sequence sent from the CPU. In order to make the terminal "see" the escape sequence, Compatibility Mode must be interrupted. A "stop" command sent from the CPU will allow the 2648A to accept subsequent escape sequences. Thus, the method for turning off Compatibil ty Mode is to send the following escape sequences:

E_c*aBE_c*dT — Stop

$E_c\&s0p0Q$ — Turn off Compatibility Mode

For a more detailed description of the most efficient way to use Compability Mode, refer to *Bill Swift's* article on page 20 of the February 15th issue of the *CS Newsletter*.

REMEMBER—SELL GRAPHICS!

GSD INTRODUCES MULTIPOINT

GENERAL SYSTEMS NEWS

Product News

Growth Paths in the 3000 Line

By: Greg Norton/GSD

With the announcement of the Series III, the HP 3000 product family has grown by 50%, but the number of possible growth paths has increased from one (Series I to Series II then up through the Series II line) to at least twelve! With so many possibilities, how should your customer plan his growth?

- Should he start with a Series II or a Series III?
- If the customer already has a Series II, should he add memory or upgrade immediately to a Series III?
- What is the best way to grow from a Series I?

The accompanying graph shows the four most likely growth paths. One fact clearly stands out: **the quicker you get a Series III, the lower the eventual cost.**

One path which you may consider is not shown — from Series I to Series II to Series III. Do your customers a favor: recommend against this. For almost the same price, your customer can upgrade his Series I directly to a Series III and save considerable expense in the long run.

HP 3000 GROWTH PATHS
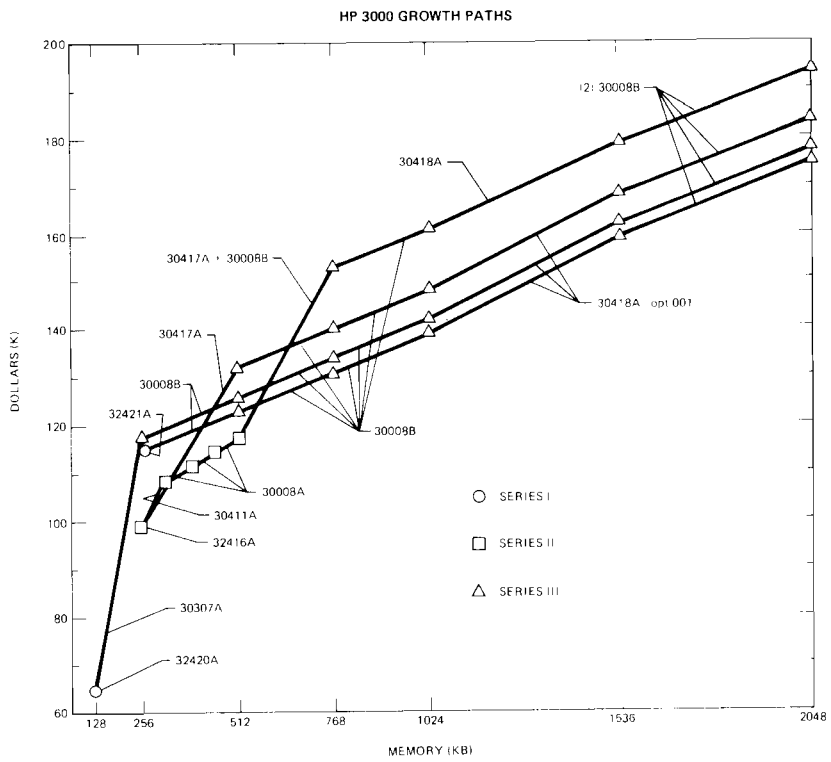
Series I — Your Success

By: Jon Jacobson/GSD
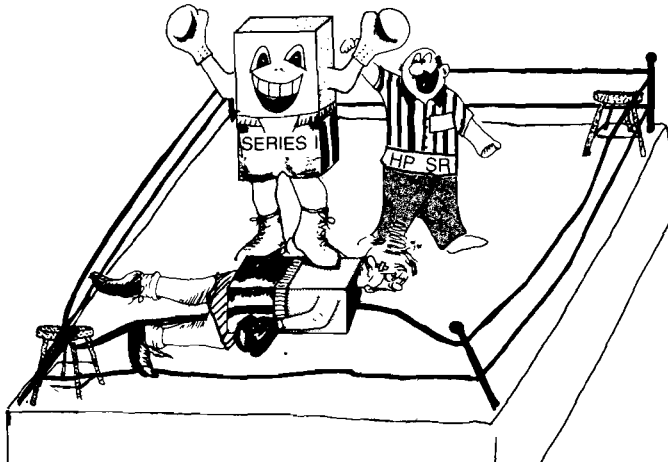
THE WINNING TEAM

Who would have ever thought that when we introduced the Series I a year ago in April that it would be the success you have made it? Thanks to you we have now sold over four times the number of Series I's we thought we would need to sell in order to have a successful program.

However, there always seem to be drawbacks to success, and with the Series I the drawback is in the availability of parts on upgrade returns. We are rapidly reaching a point where our ability to ship Series I's is becoming totally dependent on the current upgrade business. There are still a substantial number of pre-Series II systems that have not been upgraded as yet, so we are definitely not going out of the business of selling Series I's. We are just reducing the number that we will be able to ship each month.

Between now and the end of October our backlog is such that we only have a few open shipping slots each month. Starting in November we will then set the maximum number of shipments per month to four units. This corresponds to the rate of returned parts we have been experiencing. I realize that this does not make your job any easier, but it does mean we will be able to ship your orders when we have acknowledged them. It will be difficult at best for you to determine when we would be able to ship your order from the Series I availability schedule. So, I would suggest that you keep in close contact with me on each possible sale. Also, when you reach that point in the sales process that you know you have got the business, you should submit a 30-day APO to guarantee your shipping slot. We will not be over-booking APO's to units that cannot be shipped, so I will be in close contact on each APO submitted.

Again, I want to thank you for your sales efforts in supporting the Series I program. I would also like to encourage you to keep selling Series I as the entry level answer to those customers interested in the capabilities of the HP 3000. Then, by keeping in contact with me and using APO's we can continue the success story of the Series I until HP has a product that will provide an even better solution for our customers.

Datapro's New Management Survey Gives IMAGE Good Marks

By: Sam Boot/GSD

"The IMAGE/3000 users exhibited an unusually high degree of satisfaction with all aspects of the HP database management system, and Hewlett-Packard deserves congratulations for a job well done."

The above quote from the 1978 *Datapro* report on IMAGE is indicative of the good things *Datapro* (and our users who were surveyed) have to say about IMAGE on the HP 3000 computer.

Are you looking for a good reference to show that IMAGE is a great product? Why not order some reprints from *Datapro* for your next customer seminar, or to take with you on a customer call? Each reprint comes with an attractive cover page and tells the story for you!!! Nothing sells a product like a good recommendation from a neutral party.

Need more information? Contact *Datapro* at 1805 Underwood Boulevard, Delran, New Jersey 08075. Telephone (609) 764-0100.

A good, neutral opinion about IMAGE adds credibility to your sales presentations!

## New Literature for New Products

By: Rudann Ramsey, GSD

The Marketing Communications department here at GSD has been very busy lately producing sales literature to support all the new products which were recently announced. Some of the brochures are completely new; others contain extensive revisions and updates.


A General Information Manual for the MFG/3000 applications software (5953-0548) has been distributed to all offices in the United States and Canada. It contains a detailed description of the product, as well as management considerations in selecting and implementing a manufacturing applications system and the customer support we offer with it.
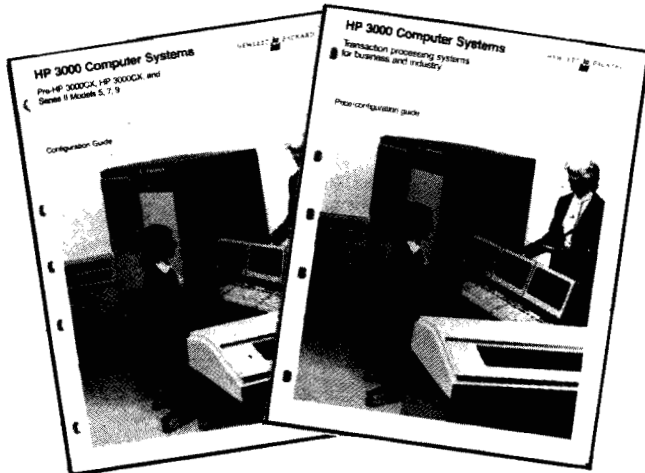

Two new Price/Configuration Guides separate the products currently on the HP Corporate Price List (5953-0549) from the products which we continue to support but no longer sell (5953-0551). The new Guides provide strictly configuration, ordering, and pricing information. Product data sheets are now included as part of the HP 3000 General Information Manual.
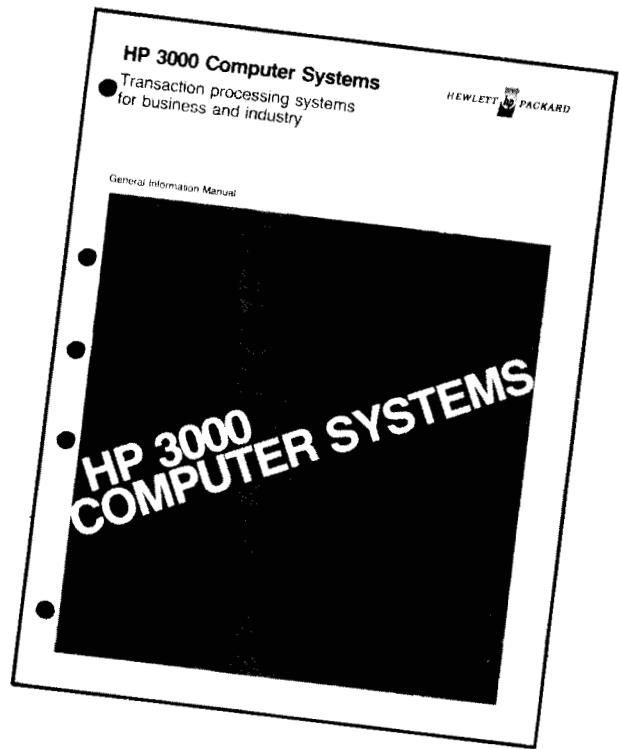

The HP 3000 GIM (5953-0550) has been greatly expanded and enhanced. Designed to introduce the major concepts of the HP 3000 systems based on MPE III (system architecture, operating system, processing environments, and data communications capabilities), the new GIM also presents detailed specifications of the individual hardware and software products offered with the system.
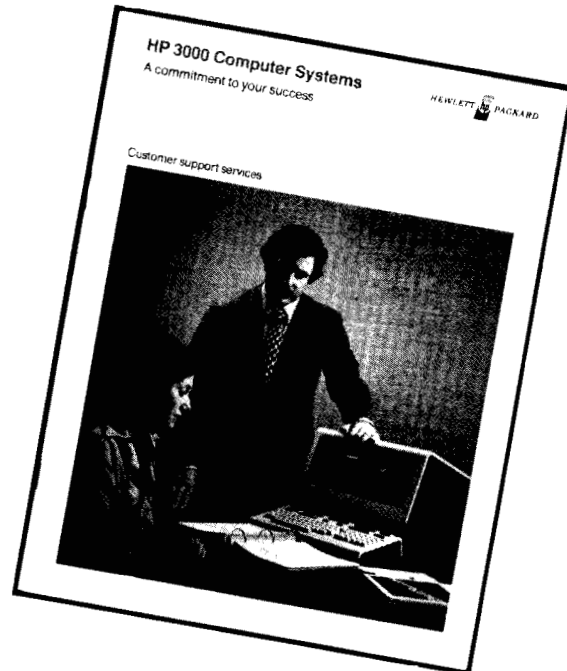
The Support Services brochure (5953-0552) presents up-to-date information on the planning and consulting services offered before the system is delivered, hardware and software support, software consulting services, software documentation, and customer training.
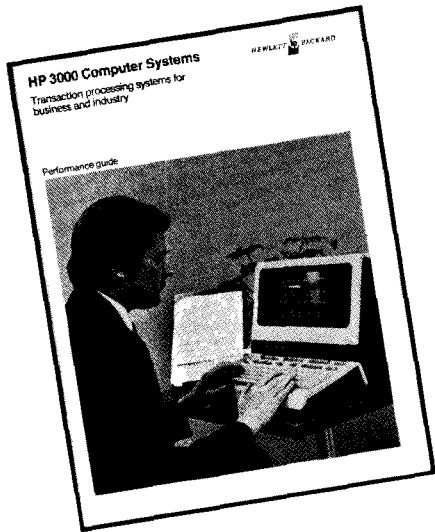
The HP 3000 Performance Guide (5953-0553) details test results of a series of realistic application environments — a small business with data entry, a general purpose EDP environment, and a dedicated on-line transaction processing environment. Results measured are transaction response time, on-line transaction throughput, and batch throughput. Also detailed are response times for major communications subsystems—MTS/3000, MRJE/3000, and DS/3000—running on various system configurations.
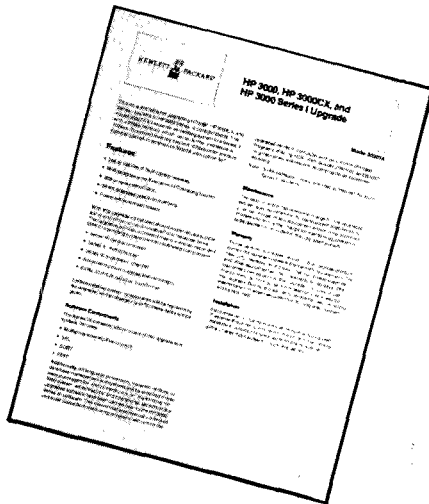
A new data sheet was also created which documents the HP 3000, HP 3000CX, and HP 3000 Series I Upgrade Kit, (which expands these existing systems to a Series III with 256Kb memory) (5953-0555).

Copies of all these new brochures, the data sheet, Price/Configuration Guides, and General Information Manuals should have reached your offices by this time. Additional copies can be ordered from *Edna Rodriguez* in the Corporate Literature Depot, Building 9B, Palo Alto.

Order Processing

Configuring HP 3000 Systems — Watch Out for "Gotchas"
By: Ed North/GSD

BEWARE OF "GOTCHA"
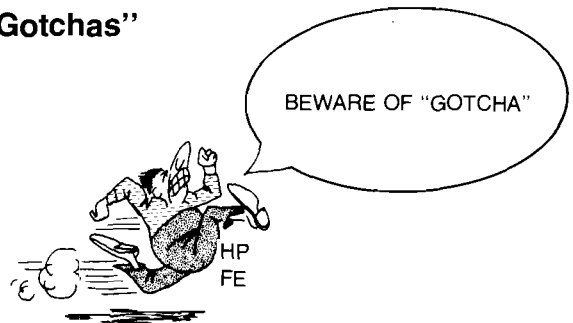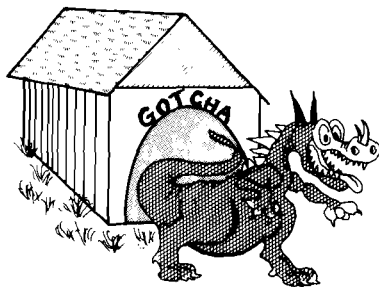
Have you ever ordered an HP 3000 system, had it delivered and installed, but found there were no cables for the terminals, or the communications software arrived but the hardware board for it was not with the system? I've configured a system that covers some of the more common "gotchas".

Ohmygawsh Manufacturing Company in West Woonsocket, Rhode Island has requested a quotation from the local HP sales office for an HP 3000 Series III System. They have asked for the following equipment:

- HP 3000 Series III with 1Mb memory
- 240Mb disc
- one 1600 and one 800 bpi mag tape
- one 600 lpm and one 1250 lpm line printer
- one 600 cpm card reader
- six 2640B's, six 2645A's, six 2648A's
- Software: COBOL, RPG, KSAM, IMAGE/QUERY, MRJE — 48-month plan
- Appropriate training

Our HP FE, *Jerry Fleetfoot,* proposed the following system:

Section I HP 3000 Hardware

	Product	Option	Description	Price	BMMC
Series III with 1Mb memory, 1600 bpi tape, 120Mb disc, system console	32421A		HP 3000 Series III 256Kb	155,000	$629
		507	1Mb memory	24,000	114
		125	120Mb disc	4,000	8
2nd 120Mb drive	7925A		120Mb disc	17,000	62
2nd Mag Tape 800 bpi	79070B		800 bpi Tape Drive	6,870	61
		310	Cabinet, Cable, Installation (required for HP 3000 Systems)	3,160	
600 + 1250 lpm line printers	30209A		Line Printer Controller	2,550 (Qty 2)	14
	2617A		600 lpm Line Printer	15,700	147
		300	Cable Installation	450	
	2618A		1250 lpm Line Printer	35,400	150
		300	Cable Installation	450	
	30106A		600 cpm Card Reader	7,700	57
Req'd. for more than 15 terminals	30032A		Assynch. Term. Controller 16 additional ports	3,000	15
Req'd. for MRJE (or RJE or MTS)	30055A		Synch. Single Line Controller	2,000	18

Section II Terminals — 10% Quantity Discount

Product No.	Option	Description	List Price	Discounted Price	BMMC
2640B (6)		Display Terminals	15,600	14,040	$108
13234A (6)		4K memory for 2640B	1,800	1,620	
2645A (6)		Display Station	21,000	18,900	120
2648A (6)		Graphics Terminal	33,000	29,700	132
13232 (18)		Cable for terminals 15 feet	900	810	

FOR INTERNAL USE ONLY

Section III Software

Product No.	Option	Description	Initial Fee	Monthly Fee
32212C		COBOL	$1,500	
32104A		RPG	1,500	
32208A		KSAM	1,500	
32235B		IMAGE/QUERY	3,000	
32192A		MRJE	2,000	
22823A		Monthly fees for:		
	003	FOS		$125
	011	COBOL		100
	010	KSAM		25
	008	IMAGE/QUERY		125
	015	MRJE		75

NOTE: The 48-month plan requires that 48 months of monthly software fee (22823A) be ordered for MPE, etc., COBOL, KSAM, IMAGE/QUERY, and MRJE.

Section IV Training

Product No.	Description	List Price
22801A (2)	HP 3000 Comprehensive Introduction — HP Technical Center	$1,000
22802B (2)	HP 3000 System Management and Operation — HP Technical Center	1,000
22956A (2)	IMAGE/QUERY — HP Technical Center	1,000
22828A	KSAM — on site	1,150
22825A (5)	5 days on-site Software Consulting	2,500

Our HP FE, *Jerry Fleetfoot*, has recommended to the customer that at least two people attend the Comprehensive Intro, System Manager and IMAGE classes. He also recommended that the customer purchase the on-site KSAM class and 5 days of on-site Software consulting. ·

Section V Quotation Summary

	Purchase Price	Monthly Fee
1. HP 3000 Hardware	$237,280	$1,175
2. Terminals	65,070	360
3. Software	9,500	550
4. Training and Consulting	6,650	—
TOTAL	$318,500	$2,085

Jerry Fleetfoot won the system sale and is about to spend his commission check. He knows the Ohmygawsh system has all the pieces needed for a successful system installation. *Jerry* summarized the "gotchas" for us:

1. Add-on mag tapes and line printers require an option 3XX, i.e., 300, 310, etc.
2. Line Printers always require a controller 30209A.
3. A second Terminal Controller is required for the 16th–32nd terminals.

4. MRJE, RJE, and MTS require a Synchronous Single Line Controller (SSLC) 30055A.

5. 2640B terminals require additional memory, at least one 4K board (13234A).

6. All DTD terminals require cables (13232A — 15-feet for asynchronous communication; 2635's have a 12.5-foot cable).

7. A successful installation requires training, at least Comprehensive Introduction and System Manager.

GSD has been successful in making a sophisticated system such as the HP 3000 to configure, but there are a few "gotchas". *Jerry* and I hope that we have been able to show you a few.

GOOD SELLING!

General News

NEW!! HP General Systems Users' Group Executive Director
By: Brenda Mapp/GSD

All further inquiries concerning the HP General Systems Users' Group will be handled by the Executive Director, *Rella M. Hines.* Please direct all inquiries to:

HP General Systems Users' Group
Executive Offices
P.O. Box 18313
Baltimore – Washington International Branch
Baltimore, Maryland 21240

c/o *Rella M. Hines* – Executive Director
(301) 789-7933

Sales Development at GSD
By: Bill Krause/GSD

The purpose of this article is to describe GSD's sales/market development objectives, organization, and how our field sales organization can gain maximum benefit from utilizing these resources. The result will be to produce a field interface guide to GSD which will be updated periodically to insure you are kept well informed of who your key sales support contacts are. The primary objective of our sales support organization is to:

Help you get orders for GSD product lines and assist you in solving customer and administrative problems with enthusiastic, professional, and responsive support of your selling efforts.

To provide you with the highest level of sales support and achieve the above objective, GSD sales/market development has added additional resources to include the following organizations and respective responsibilities.

1. 3000 Product Line Sales Development
   This team represents most of our current sales development activity and is organized to provide you with direct, on-line sales support and product training for all of our 3000 systems (Series I, II, III and Toothpick).

   A. On-Line Sales Support

   - Technical 3000 system features, advantages, and benefits
   - Configuration, ordering, and delivery information
   - 3000 systems performance capability
   - Field/Factory sales calls and customer visits
   - Competitive comparisons and analysis
   - Organized by regional geography

   B. 3000 Sales Training
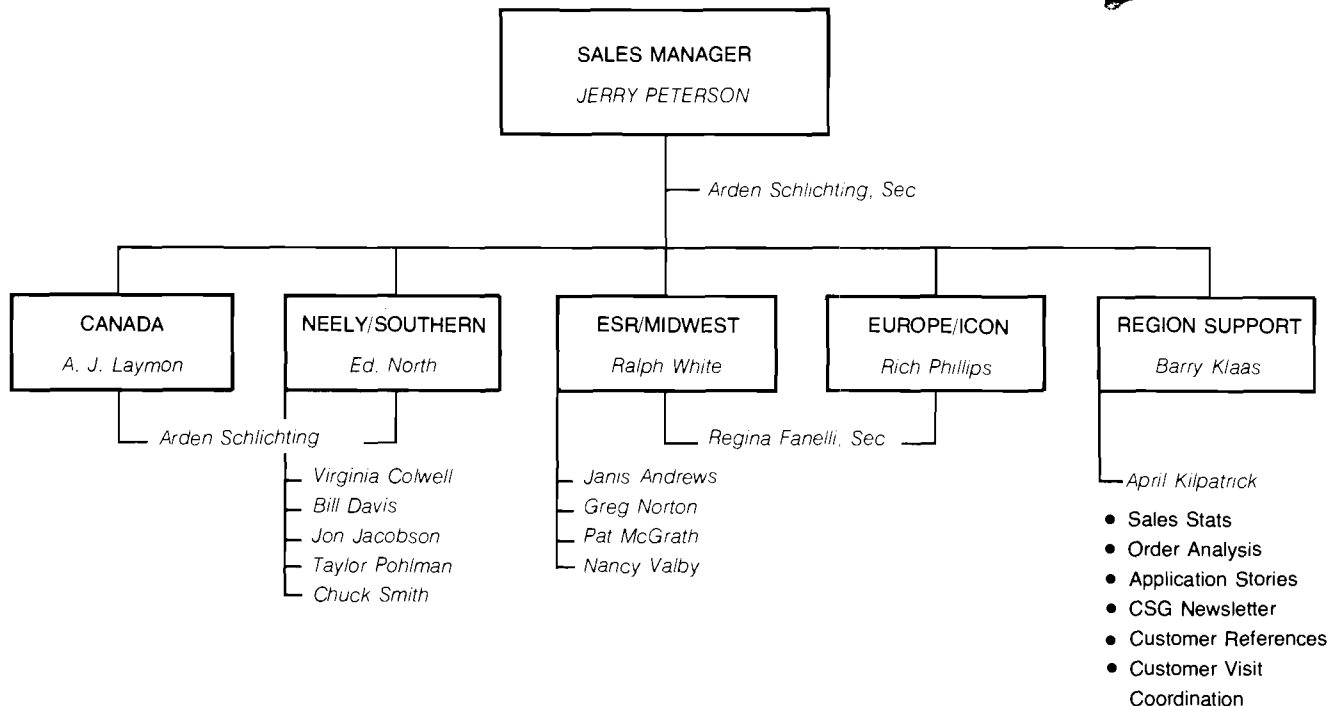
   - Hardware, system architecture
   - MPE operating system
   - Distributed System Network
   - New Product Training

   C. Other Sales Support

   - Customer reference database
   - "Big Deals"
   - Sales Statistics
   - Other

Organization changes provided an opportunity for new assignments for some of our sales development people. In particular, *Carolyn Morris* has a new assignment as Product Manager for Data Management and Transaction Processing reporting to *Rich Zalisk; Jerry Peterson* has accepted the position of 3000 Sales Development Manager reporting to *Bob Bond; Andy Danver* has an assignment with responsibility for GSD National Accounts in a new Market Development organization.

GSD 3000 Product Line Sales Development

SALES MANAGER
JERRY PETERSON

— *Arden Schlichting, Sec*

CANADA	NEELY/SOUTHERN	ESR/MIDWEST	EUROPE/ICON	REGION SUPPORT
A. J. Laymon	*Ed. North*	*Ralph White*	*Rich Phillips*	*Barry Klaas*

— *Arden Schlichting*

— *Regina Fanelli, Sec*

— *April Kilpatrick*

NEELY/SOUTHERN:
- *Virginia Colwell*
- *Bill Davis*
- *Jon Jacobson*
- *Taylor Pohlman*
- *Chuck Smith*

ESR/MIDWEST:
- *Janis Andrews*
- *Greg Norton*
- *Pat McGrath*
- *Nancy Valby*

REGION SUPPORT:
- Sales Stats
- Order Analysis
- Application Stories
- CSG Newsletter
- Customer References
- Customer Visit Coordination

2. Business Systems Sales Development

This is a new sales development activity in GSD which has been organized to provide direct, on-line sales support for 3000 subsystem software (Data Entry, Data Management, Languages) products, MFG/3000 application software, and sales training for these products, plus the manufacturing industry training.

A. On-Line Sales Support

- Technical software product features,
  - 3000 subsystems. applications software performance trade-offs and capabilities
  - Configuration. ordering, and delivery information
  - Field/Factory sales calls and customer visits
  - Competitive comparisons and analysis
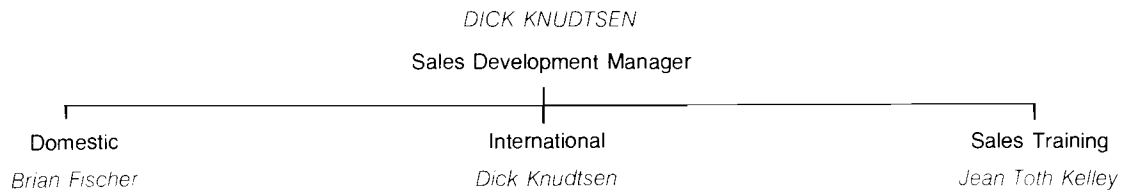 - Organized by regional geography

B. Sales Training

- Data Entry. Data Management. Transaction Processing. and Languages
- Manufacturing Industry concepts
- MFG/3000
- New Product Training

C. Other Sales Support

- Product Seminars

To help you in deciding when to call Business Systems Sales Development vs. 3000 Sales Development, you should view Business Systems Sales Development in a similar fashion as you do Sales Development from a peripheral division. For example. if your question is why the customer should buy a 3000 system vs. a DEC. DG system, you would contact 3000 Sales Development. If your question is why the customer should buy 264X terminals vs. Hazeltine terminals on the 3000. you would contact Data Terminals Division Sales Development. In a similar fashion. if your question is why the customer should buy IMAGE/3000 vs. DEC. DG database management or MFG/3000 vs. a competitive manufacturing application software package, you would contact Business Systems Sales Development. For those of you who haven't met *Dick Knudtsen*, he comes to GSD from Corporate Accounting Systems where he worked for *Jerry Carlson*, Corporate Controller. We are fortunate to have someone with *Dick's* application background and previous field selling experience with IBM. He will report to *Rich Zalisk* in this new sales development role.

Business Systems Sales Development

DICK KNUDTSEN

Sales Development Manager

Domestic	International	Sales Training
Brian Fischer	*Dick Knudtsen*	*Jean Toth Kelley*

3. GSD Market Development

This organization also represents a new activity in GSD and is responsible for implementing a series of task-oriented division-wide marketing programs that will have impact across all GSD product lines. As such, GSD Market Development reports to me to support division marketing efforts that cross product lines. This team will work closely with CSG Marketing and you in the field to provide the necessary "tools" to assist you in implementing GSD's marketing programs with National Accounts, Third Parties and Customer Seminars. The primary goal of this new organization is to:

Assist the field in building a loyal base of "partnerships" who will buy from HP year after year; and who will widely promote GSD product lines with professional sales training, customer seminars, and user group relationships.

The following represent the initial activities being worked on to achieve this goal:

A. National Accounts Program

- Develop assigned account presentation kit
- Updated Large Company Brochure to include major new products
- Implement CSG Executive Seminar program
- Publish monthly application stories
- Develop and implement a trial program for marketing to ten Assigned Accounts on an Industry basis

B. Third-Party Program

- Worldwide definitions for Systems House, Software House, Cooperative Third Parties, Business OEM's, etc.
- Implement CSG area list concept for business systems product lines
- Purpose and gain approval for longer term business systems third-party strategy
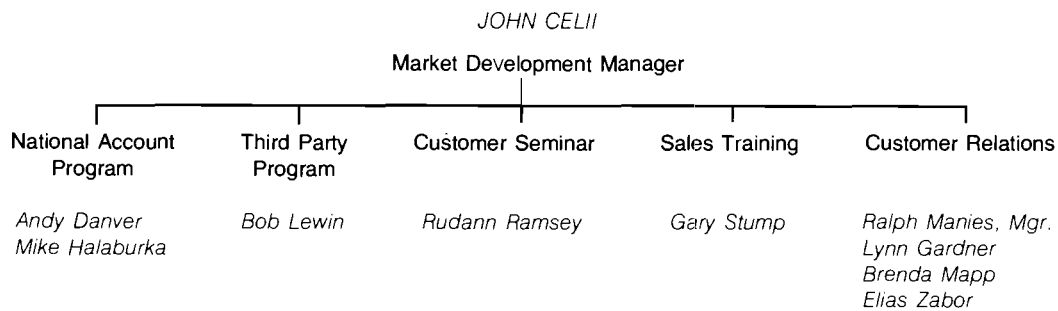
C. Customer Seminar Program

- Develop a FY 1979 field seminar program to include 12 month schedule, direct mail with seminar material for manufacturing, transaction processing, DSN, third-parties, and small business computers (250, 300, 3000)
- Work with the field to minimize logistics problems.

D. Sales Training

- Develop goals, objectives, and schedule for GSD Sales Training to maximize learning experience for field personnel.
  - Corporate and CSG introduction and overview
  - GSD product line training
  - Manufacturing industry training
  - Applications training
- Work with CSG and GSD product programs to insure "quality instruction"

GSD Market Development

JOHN CELII

Market Development Manager

National Account Program	Third Party Program	Customer Seminar	Sales Training	Customer Relations
Andy Danver *Mike Halaburka*	*Bob Lewin*	*Rudann Ramsey*	*Gary Stump*	*Ralph Manies, Mgr.* *Lynn Gardner* *Brenda Mapp* *Elias Zabor*

E. Customer Relations

- Work with GSD Users' Group to conduct professional and successful National and European users' meetings in FY 1978 and 1979
- Support field efforts with "Regional" users' groups
- Be the "keeper" of the GSD Customer Satisfaction Matrix
- Be available to martial GSD resources to solve an "emergency" customer satisfaction problem

Many of the functions of GSD Market Development are similar to the activities of *Chuck Sieloff's* (previously *Bob Lewin's*) successful HP-SA 3000 Market Development team located in Geneva, and we will continue to look to you in the field to provide inputs on how to improve these marketing programs. *John Celli* has been the Controller of GSD since the division was formed and has made major contributions to our division and HP. I am pleased to have such an experienced manager as *John* assume this new responsibility in marketing, and he will report to me for this key activity.

A major activity in GSD that has not been mentioned is our Amigo product program. When the Amigo product becomes available for sale, we will be adding additional sales development resources to support your selling efforts and this activity will report directly to *Bob Kadarauch*, Amigo Marketing Manager.

I hope this description of GSD's sales/market development activities and organizations will allow you to gain the maximum benefit in utilizing these field support resources. Please do not hesitate to contact me or the appropriate marketing manager if you feel GSD is not living up to its primary sales support goal:

> *Help you get orders for GSD product lines and assist you in solving customer and administrative problems with enthusiastic, professional, and responsive support of your selling efforts.*

HP GRENOBLE NEWS

Product News

### They Look After European Needs From the Start!
By: Francis Marc/HPG

Visiting Boise last June, I was impressed to see this Radio Frequency Interference test station running at the back of the Cafeteria (those delicate measurements require a quiet place).

The coming new products (here the 2608A line printer) are rigourously pretested to verify their compliance with our strict European regulations.

Chuck Ulfers, John Klonick and *Robert McCaleb* (Sales Development) admiring the test installation.
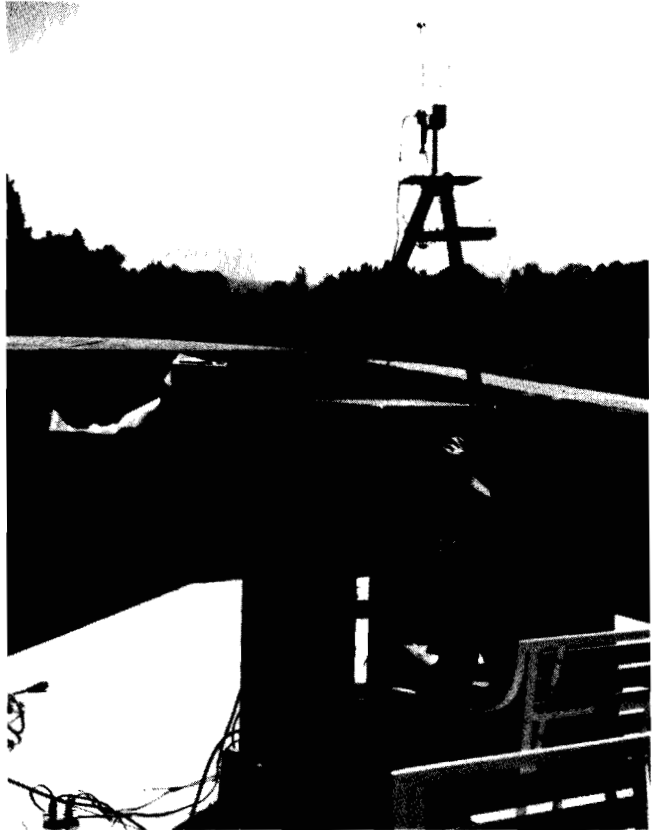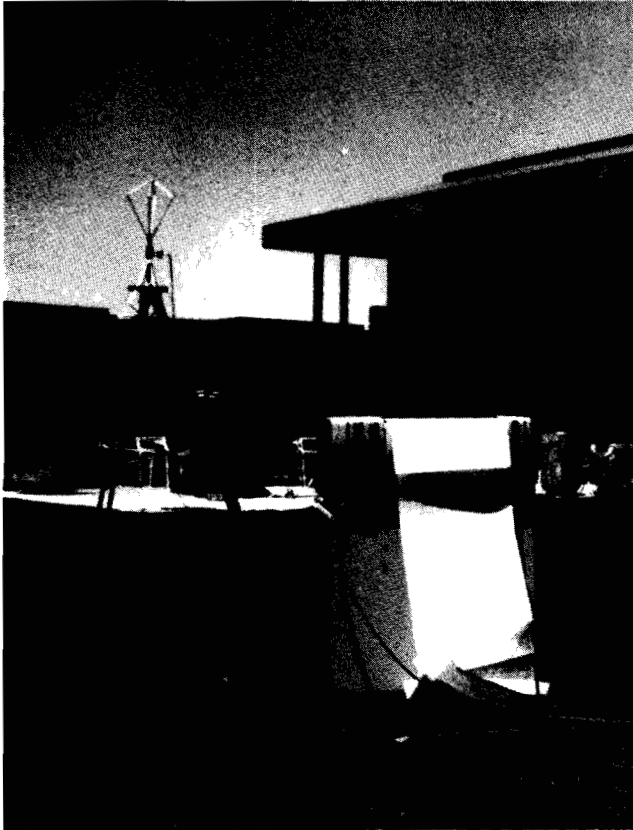
The 2608A under test (you recognize an HP spectrum analyser).

Competition

IBM Extends 5230 Data Collection Capabilities
By: Georges Ouin/HPG

IBM has recently announced two new products for their 5230 System:

- The IBM 5236 Data entry station, desktop version of the well known 5235. Price: $1580, lease: $55 a month. Deliveries expected in December.

- The IBM 5239 Value Read Module and Attachment Feature which permits data coming from external digital devices to be interfaced with the 5230. (Their response to HP-IB?). Price: $1940 or lease $61 a month for two years.

  Deliveries scheduled for September. This 5239 should be attached to either a 5236 or 5235 which brings the price of the Manual Automatic data entry station up to $3520.

These two new additions make IBM a little more competitive against the HP 3070B, but their Data Collection System is still limited to 15 terminals per 5230 and it requires connection to a computer such as System/34 or 32 (or 3 or even 370) for on-line data management.

As you can see, the HP 1000/3070B is still the best cost-effective solution for factory data capture (manual as well as automatic), even IBM does not currently offer the equivalent!

3070B Brochure in French
By: John Willett HPG
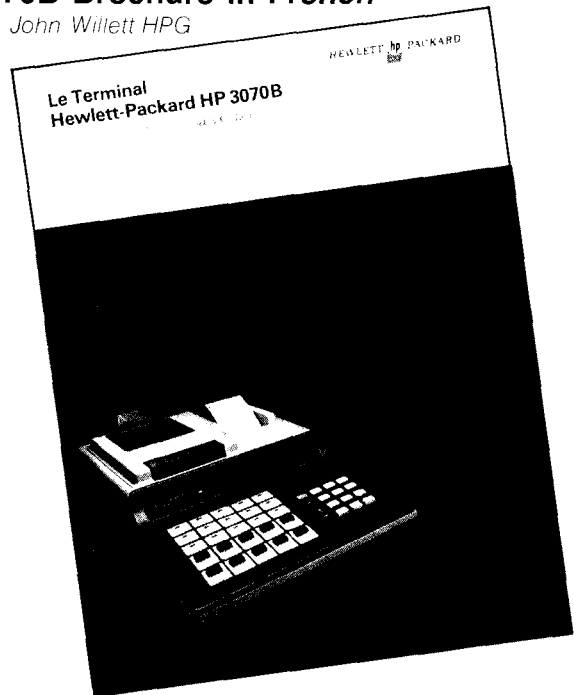
As promised, a French language brochure is now available for the 3070B Data Capture Terminal. Copies have already been sent out to offices in all French-speaking areas. When you run out, further supplies are available from Grenoble (Part number 5953-0119 (F)). If you have any other PL 69 literature requirements, just get in touch.
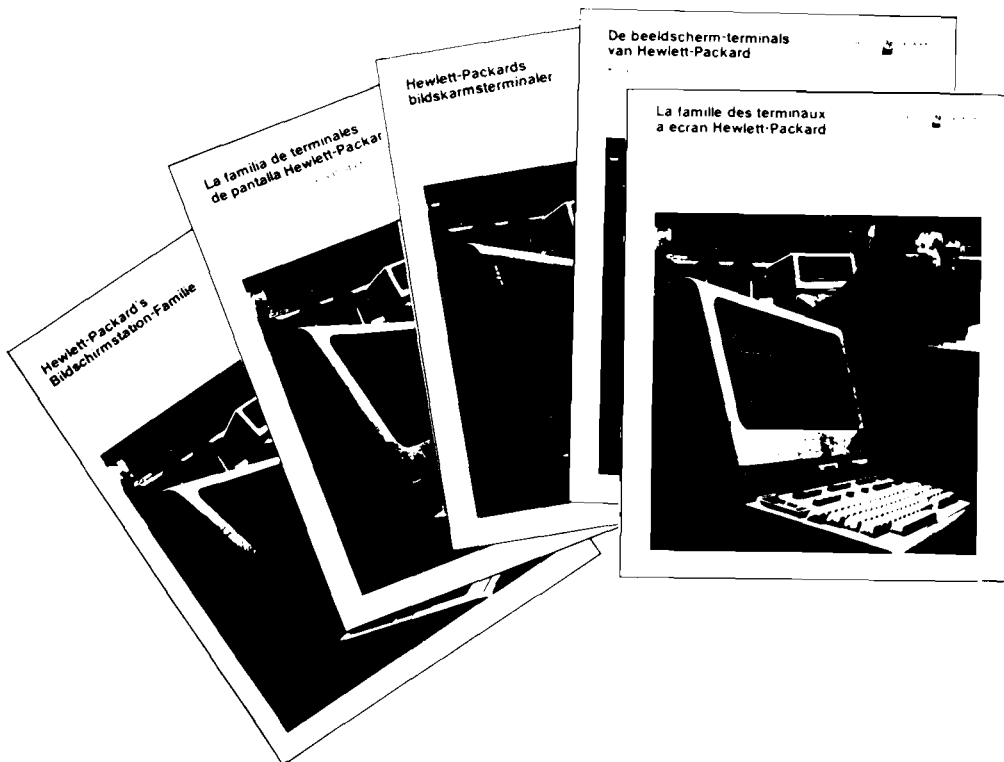
CS GROUP NEWS

Corporate Training & Management Development

NEW VIDEOTAPE INFORMATION

New Videotapes from Corporate Training
By: Chuck Ernst/Corp.

Title:	FIBER OPTICS THEORY, TERMS AND SYSTEM DESIGN TRADE-OFFS (COLOR)
Audience:	HP Field Sales Engineers (08) and customers
Purpose:	To introduce Fiber Optics technology to HP Field Sales Engineers and to HP customers.
Content:	Fiber Optics are here to stay! This videotape will expose you to this new field of technology by explaining some of the most important Fiber Optics terms, by describing a typical Fiber Optic link, and by discussing the various trade-off choices when designing a system. It also shows some of the components offered by Hewlett-Packard for use in this new medium of communication. Watch this program and you will see the light!
Time:	23 minutes
Part Number:	90417Z
Date Released:	June 1978

Title:	HEALTH, FITNESS, AND LONGEV·TY (COLOR)
Audience:	HP employees
Purpose:	To encourage HP employees to maintain good health.
Content:	This is a condensed version of "To Shine in Use." The complete videotape is a two-part program: 90472Z (Part I), and 90473Z (Part II). *Dr. Walter M. Bortz II* speaks to a group of HP employees on health, fitness, and longevity; encouraging people to take the responsibility for their own well-being. Prevention is .highlighted as the most important method to use in achieving and maintaining good health. *Dr. Bortz* also affirms that "expectancy" is an effective do-it-yourself technique for a better life and increased lifespan.
Time:	47 minutes
Part Number:	90516Z
Date Released:	April 1978

Title:	LOT SIZING PART I ECONOMIC ORDER QUANTITY— THEORY AND PRACTICE (COLOR)
Audience:	People in Materials Management and Accounting
Purpose:	To help HP divisions reduce their costs of carrying inventory and of procuring material.
Content:	Several years ago Stanford Park Division began using part-period balancing instead of the classic EOQ formula to calculate the most economical order quantities to send to its shop. The division continued, however, to use EOQ in the Accounting Department to provide lot sizes needed in cost setting.

In a series of two programs, *Dick Stone*, a veteran HP employee who has made lot sizing his specialty, discusses the theory and practice, the uses and abuses, and the advantages and disadvantages of the two techniques.

This first program is devoted to EOQ, with emphasis on the underlying principle and detailed consideration of various elements that go into using the EOQ formula.

Part Number: 90684Z

Date Released: May 1978

Title: SAN DIEGO DIVISION APRIL NPT HIGHLIGHTS (MONOCHROME)

Audience: ICON Instrument Sales Force

Purpose: To introduce new products.

Content: Three new products from the San Diego Division are introduced to the Instrument Sales Force in ICON. They are the HP 9872A four-color plotter; the HP 7221A four-color plotter; and the HP 7245A four-color plotter/printer.

                  What's new and what's better about these products are described in the tape.

Time: 25 minutes .

Part Number: 90786Z

Date Released: June 1978

Title: DSD NPT DEMOS—PRESENTED BY *JOHN TRUDEAU*—PART I (MONOCHROME)

Audience: HP Field Sales Engineers (02)

Purpose: To acquaint field sales personnel with DSD's Customer Demo Center and new products.

Content: This videotape contains a "tour" of the Data Systems Division's new customer Demo Center, and demonstrations of the following new products that were released by DSD during their April 1978 New Product Tour: F-Series Processor, RTE-IV, Graphics 1000, and Multipoint.

Time: 53 minutes

Part Number: 90795Z

Date Released: June 1978

Title: DSD NPT DEMOS—PRESENTED BY *JOHN TRUDEAU*—PART II (MONOCHROME)

Audience: HP Field Sales Engineers (02) (HP INTERNAL USE ONLY)

Purpose: To acquaint field sales personnel with DSD's new products.

Content: This second and concluding part of the DSD April '78 new product tour demos contains a demonstration of "MACS."

Time: 10 minutes

Part Number: 90796Z

Date Released: June 1978

How To Order: Transmit a HEART (COCHISE) I2 order to Video Products, Product Line 95, Division 0700, Palo Alto.
                  (**Please Note**: Programs 90516Z, 90684Z, 90795Z and 90796Z are not for sale to customers.)