COMPUTER SYSTEMS NEWSLETTER

For HP Field Sales Personnel

HEWLETT **hp** PACKARD

ANNOUNCING the
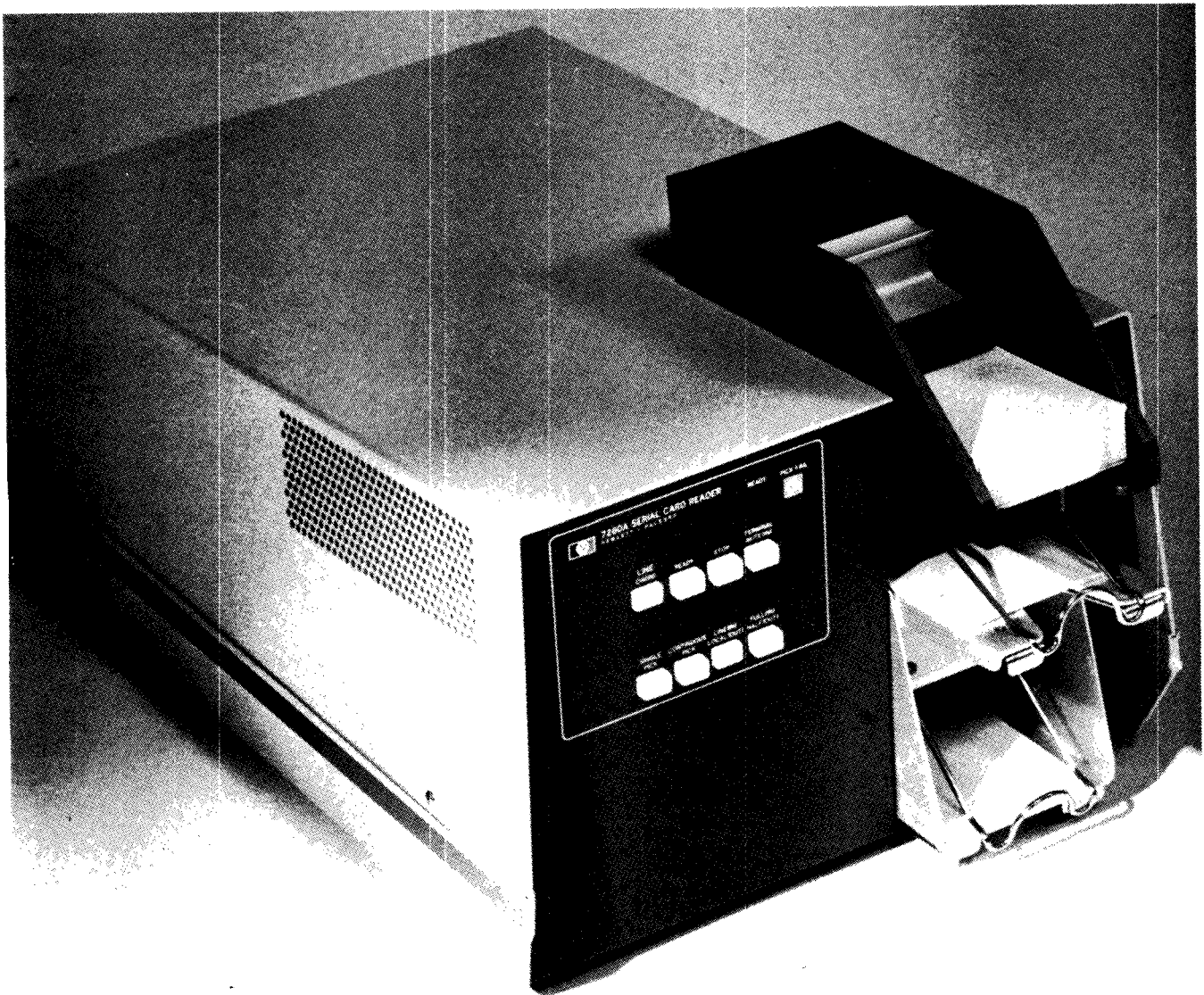
7260A
SUPPORTED ON THE 3000 II

Boise Ships the 10,000th 7970 Mag Tape Drive .... Page 4

HP 1000 vs. IBM's Series/1 .... Page 8

HP 3000 Series II vs. DG's AOS .... Page 33

In This Issue...

AMD DIVISION NEWS

Product News

DTS-70 in Multi-Station Environment
By: Bill Mohr/AMD

In a recent note we attempted to "clarify the DTS-70 multi-station capability."

The note referred to the DTS-70 only and was intended to establish a conservative posture in selling that product in multi-station configurations where BASIC was of importance.

We indicated that with *our* product running under RTE II, there were *potential* problems in such an environment. We did not mean to say that the problem existed in all applications nor did we say anything about what happens in RTE III. We anticipate that as we switch the DTS-70 onto the System 1000 and have the opportunity to benchmark our performance using RTE III we will be able to be more aggressive in pushing the multi-terminal environment for the DTS-70.

There's been a lot of talk about computer networks. Hewlett-Packard's speaks for itself.

BOISE DIVISION NEWS

Division News

HP Builds 10,000th Mag Tape Drive!
By: John Hill/Boise

Since June of 1970, when the first 7970A Mag Tape drive was shipped from the Mountain View facility, we have shipped a total of 10,000 drives including all models (A, B, C, and E).

The picture above is the 10,000th drive built by the production team of the Boise Division, and will be presented to one of our large OEM customers in a special ceremony later in the month.

ICON and HPSA Invade Boise!
By: Steve Richardson/Boise

On November 17th and 18th, Boise Division had the pleasure of hosting a group of Senior Salespeople from ICON and HPSA. This seminar was the first held in the newly-completed facility at Boise. The festivities started with a welcome cocktail party where *Tony Gunn* and *Fritz Czaufal* demonstrated a traditional Greek dance. A good time was had by all. The morning came too soon, yet our visitors made a real effort to smile at breakfast.

The days passed all too quickly. There was an excellent exchange of ideas and information during the seminar. I know Boise Division learned much from these Senior Salespeople. I hope that our visitors felt they learned a lot also. We were sorry to see the seminar end, but look forward to seeing everyone again soon.

Left to right Bill Murray, Fritz Czaufal, and Tony Gunn.

Ohio Gozaiimas! Good Morning!

Left to right Roy Cooper, Rene Swinner, and Roger Cooper.

Left to right Francoise Mons, and Gilles Bastien
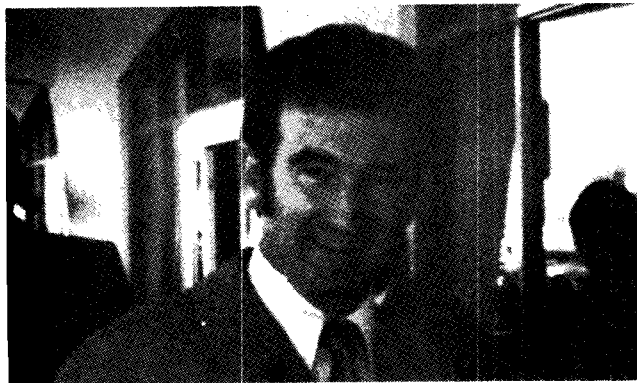
Malcom Kerr

Another Boise Division First
By: Steve Bolen/Boise

The first of a long line of HP 3000 coordinated shipments went out the Boise Division door on December 3rd. A 7970E tape drive, rack mounted, for use with an HP 3000 Series II, was shipped directly to the customer's site without a hitch. Standing beside the finished product is *Riley Lovvorn* and *Bruce Cook* whose efforts helped to ensure a successful shipment. Everyone at General Systems Division and Boise Division will continue to pull together to ensure timely and efficient coordinated shipments.
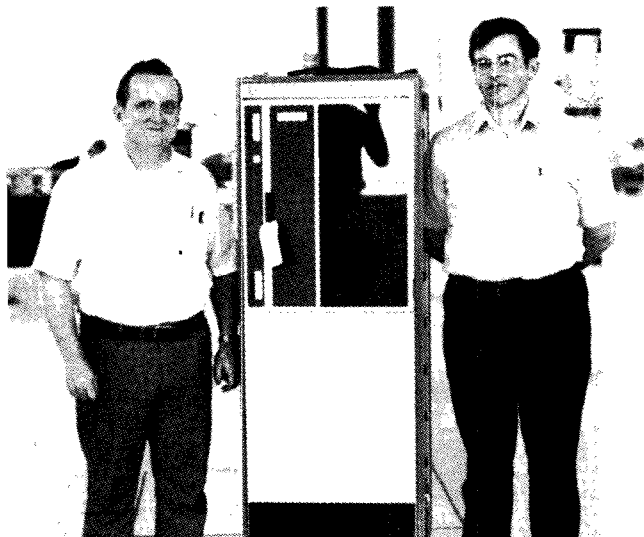
Product News

HP-Boise Line Printer Enhancements Provide Improved Reliability
By: John Freeman/Boise

The line printers offered by HP are not stripped down models. These printers have all the required features for improved data processing. Where our major competition provides the standard Dataproducts printers with only static eliminators, HP drum printers come standard with *static eliminators, ribbon deskew mechanism* for longer ribbon life, *12 channel VFU,* and a *long line interface* which allows HP printers to be on cables as far as 1000 feet from the computer (standard Dataproducts printers are limited to 25 foot cable lengths from the computer).

HP is also working with Dataproducts to improve paper handling. The 2613 and 2617 will have a universal paper exit assembly available before June '77. This paper puller and guide system will reduce paper jamming significantly. Retrofit kits will be made available at a nominal charge to encourage users to add them.

The 2618 now has a power paper exit system as standard. Retrofit kits will also be available for a small fee. This will greatly improve the 2618's paper handling as two test sites will attest (Long's Drugs, Calif.; Rocky Mountain Bank Note; Denver).

Also, the 2618 is the only printer with two sets of tractors. This provides greater forms alignment, easier forms-splicing from box to box, and increased control of odd form weights. With the addition of the power paper exit system, we encourage the use of the 2618 on systems sold in the commercial EDP environment, especially where HP systems are replacing IBM systems with 1403 printers. All 2618's ordered after November 1 will have power exit assemblies as standard equipment. Be sure to point out these feature enhancements to your customer when discussing price. As I'm sure you know, printing successfully is very important!
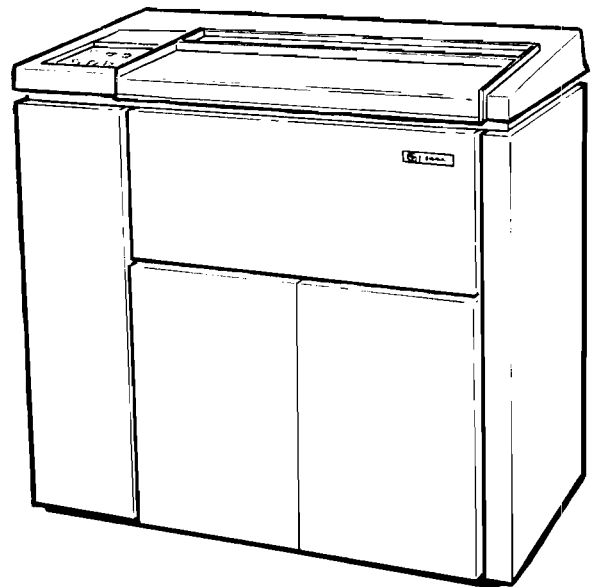
DISC MEMORY NEWS

Product News

Introduction
By: Bob Hoke/DMD

Reliability is in some ways like the weather, everyone talks about it but very few do anything about it. At DMD we're different. The following articles show the activities and progress we've made on the 7905A.

7905A Reliability
By: Dick Monnier/DMD

The 7905A disc drive has been in production a little over a year now. It is an appropriate time to review the reliability record of the product to see how it measures up to our expectations. Our expectations are high because the 7900A disc drive, first shipped in late 1971, has achieved the reputation of being the most reliable disc of its type in the industry.

During the first few months of production we found that the airflow within the 7905 was being affected by the rack cabinet airflow, and conditions affecting the drive were highly variable depending on the equipment mounted around it. The worst result was dirt contamination in the drive leading to head crashes. The cure involved changing the air vent location in the disc drive covers and providing a separate cool air supply to the air intakes. At the same time changes were made to the rack cabinet airflow, and specific combinations of equipment mounted in the rack were extensively tested to insure cooler and more reliable operation of the system.

Having solved the problem of dirt contamination, improvements were made to the drive airflow system itself to extend the maintenance interval on the absolute filter. European drives operating on 50 Hz power were retrofitted with a larger blower wheel. An improved blower system is now installed in all units produced. Prefiltering large dust particles from the air before they enter the drive by using a plenum and an inexpensive prefilter significantly extends filter life further.

These initial problems were solved early in 1976. Since then, our attention has been mainly on the drive electronics. Field failures as well as difficulties in production testing have been carefully evaluated. Troublesome components have been eliminated, testing methods improved, and assembly techniques revised to increase reliability.

Results are significantly lower production costs as well as improved field reliability. Feedback from service people during factory visits has been very positive with some inputs indicating that the reliability is starting to exceed that of the 7900 disc. The lab is continuing its review of failures to identify weak components and marginal design areas. Manufacturing has made significant improvements in the reliability with temperature testing and other improved methods. Out goal is to exceed the record of the 7900 and to establish a new standard of reliability for disc memory products.

Disc/Controller Reliability
By: Don Curtis/DMD

Over the past few months, the factory has received (with pleasure) a significant number of favorable comments from the field concerning noted improvement in 7905A Disc Drive and 13037A controller reliability. It might be interesting to summarize some of the actions that have helped to establish this favorable trend — and outline what is planned in the near future to keep this trend continuing.

- Oven burn-in at elevated temperature (55°C) of all 7905/13037 printed circuit boards for 24 hours (7905) and 48 hours (13037) has increased the effective ship point of drives and controllers to greater than 70 hours of factory run time.

- All 7905 drives and 13037 controllers are 100% mechanically and electrically inspected by Quality Assurance with a minimum of 2 hours electrical test.

- 100% of 13037 controllers are oven tested under diagnostic to eliminate any temperature sensitive components.

- Complete relayout of all 7905 and 13037 printed circuit boards has been completed to incorporate significant design improvements.

- Emphasis on manufacturing cleanliness including special subassembly cleaning and drive protection during assembly and test.

- Enhancement of line testing capabilities in electronic tooling; test programs; and special test diagnostics.

Over the past year, the disc production engineering group has significantly "beefed up" manpower-wise in order to adequately support our reliability efforts on all disc products. Reliability will continue to receive increased emphasis with our current efforts being directed toward:

- Power cycling and temperature testing of drives.

- Identification/elimination of low reliability components.

DATA SYSTEMS NEWS

HP 1000 PERSPECTIVE
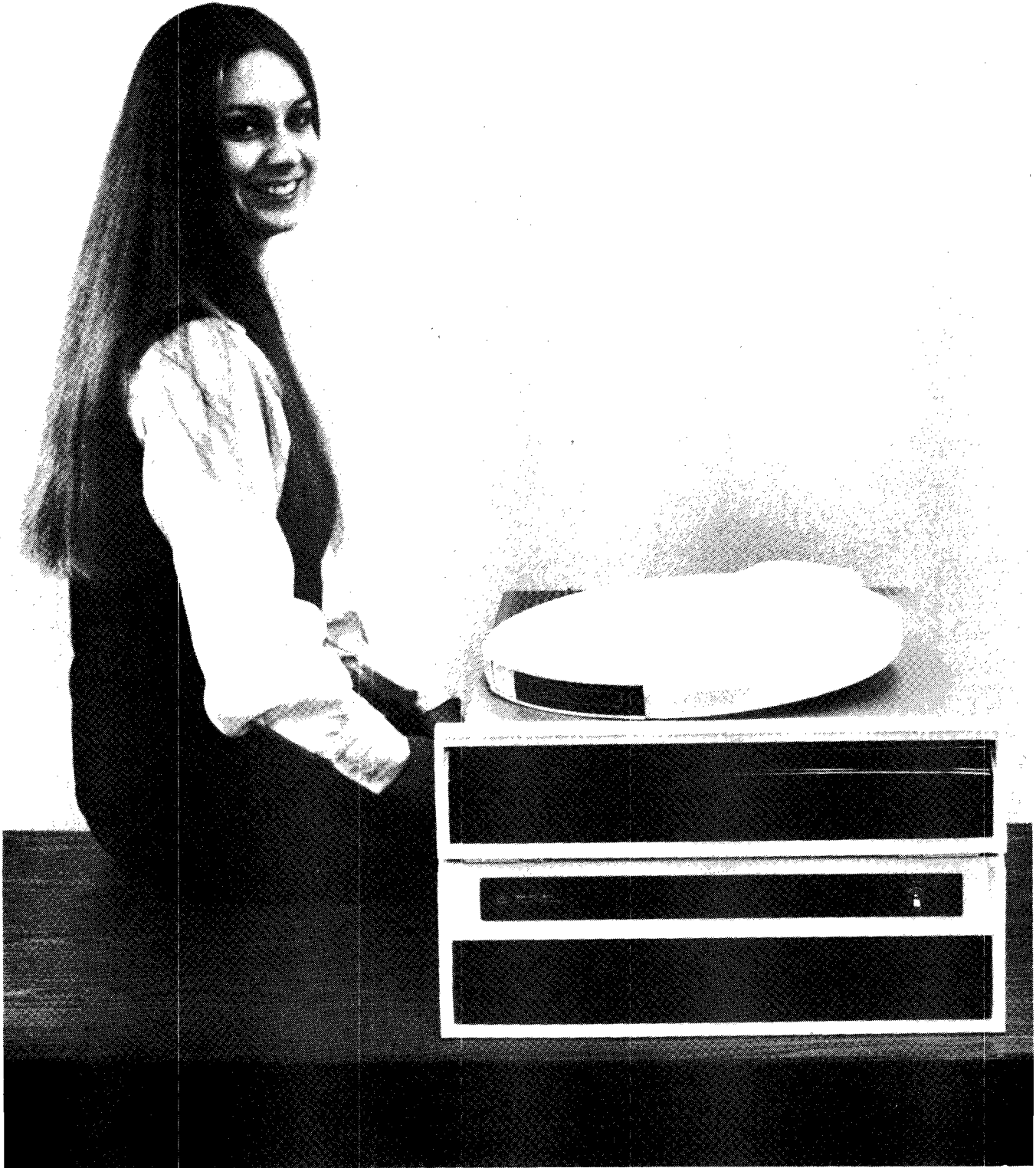
The HP 1000 In Computation

The HP 1000 is targeted in three primary markets: computation, instrumentation, and operations management. This article highlights the features which make the HP 1000 an excellent price performer in computation.

Computation applications are characterized by extensive use of floating point calculations, complex arithmetic, and trigonometric functions — calculations which put a heavy load on the processor. Some examples of computation applications are scientific problem solving, laboratory automation, computer-aided design, and data reduction.

The 9640A computation system has been successfully sold in computation applications. In some cases, the 9640A was sold to provide computation capability for a new application; in some cases as a replacement or upgrade to a competitive machine, such as the IBM 1130; and even as a replacement to outside timesharing services, which can become quite costly as the usage increases. A good example is John J. Harte Associates, a civil engineering firm in Atlanta. The firm began looking around for an in-house computer system for engineering applications when its monthly outside timesharing bill hit $3000. The 9640A at $1800 per month on lease, provided just the answer.

The HP 1000 represents a major advance in computation power over the 9640A and at the same time providing better price/performance. In Fortran processing the MX-E processor used in the HP 1000 with its more powerful control processor, better microcode, and variable microcycle timing, outperforms the 21MX of the 9640 by about 72% on the average.

And yet the HP 1000 is less expensive than a comparable 9640A. As an example let's look at what we were selling prior to the introduction of the HP 1000 with paper-tapeless RTE III and diagnostics on minicartridges. A typical building block of a 64K RTE III 9640A computation system would have been the following:

1	9640	21MX, PTR, 16K words	15,800
1	A09	RTE III, 7905	21,000
3	P12	3x16K words	6,300
1	P24	Replace 2108A with 2112A	1,025
1	P26	Fast Fortran Processor	750
1	12880-001	Terminal Interface	350
1	2645A		3,500
			$48,725

The comparable HP 1000 would be the Model 30 (or 31) configured as follows:

1	2172A 21MX, 32K, RTE II, 2645	37,500
1	–001 RTE III, 32K	4,500
1	13306A Fast Fortran Processor	950
		$42,950

Not only does this HP 1000 configuration provide greater throughput (72%) than the 9640A but it's also about 11% cheaper, or about an 80% improvement in price performance for straight computation applications.

$$Y = A\dot{x} + Bx + Cx + D$$

$$Z(\theta) = A \cdot SIN(2 \cdot \phi + \theta)$$

$$X = W \cdot SIN(A)/34.2 - Y \, COS(B - C)$$
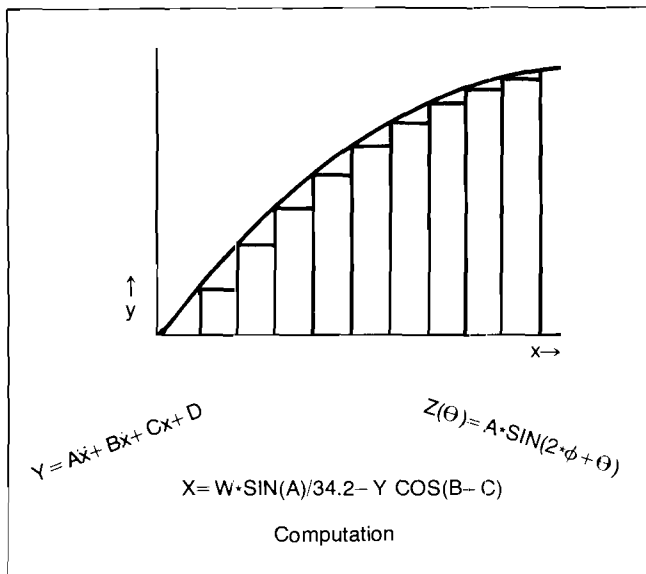
Computation

Microprogramming in Computation

For sophisticated users who need to increase the speed of specialized computation algorithms, the RTE Microprogramming package provides the tools to develop and operate custom firmware.

Microprogramming has significantly enhanced execution speeds of applications which require table searching, sorting and merging of data, trigonometric and logarithmic calculations, and fast Fourier transforms.

The RTE Microprogramming package provides the tools to easily write, debug, and execute such algorithms in microcode. It's a feature that shouldn't be overlooked in proposing an HP 1000 in a computation environment in many cases, it will be another lockout to the competition.

Image In Computation

IMAGE/1000 certainly has its place in computation applications, and in many sales situations it should be a lockout to the competition. IMAGE is a natural in research and development applications where historical data, such as test results, must be maintained and correlated with other data. IMAGE/1000 with QUERY is an extremely powerful tool to the researcher who needs to selectively retrieve and analyze test data, and then generate lab reports.

A good example of this type of application is the Research Department of R. J. Reynolds Tobacco Co. which recently ordered an HP 1000 with IMAGE. R. J. Reynolds will use IMAGE to maintain a data base of test results on various batches of cigarettes and tobaccos such as nicotine content, tars, gasses. IMAGE with QUERY will allow the researchers at R. J. Reynolds to easily analyze test data which will help them develop methods to reduce tar and nicotine content of cigarettes. A typical QUERY session is shown in Figure 1.

```
FIND TAR ILT "2" AND NICOT% ILT ".03" END;
2 ENTRIES QUALIFY
NEXT?
?REPORT ALL;
BATCH    = 39
SAMPLE  = 43
TAR      = 1.3
NICOTN  = .023

BATCH    = 62
SAMPLE  = 11
TAR      = 1.9
NICOTN  = .021

NEXT?
?
```

———————————— Figure 1 ————————————

Researcher uses QUERY to find which cigarette test results show a tar content less than 2 milligrams and nicotine content less than .03 milligrams.

A similar application at the National Residue Laboratory in Illinois helped *Gary Polcyn* (Skokie) win a 9603A order with IMAGE/1000 to analyze and index laboratory test data on tissue samples to determine foreign residue content. IMAGE/1000 locked out the DEC 11/34 for this application.

The new reduction in price to $2500 (effective Jan 1) makes IMAGE/1000 even more attractive to new prospects, as well as existing customers. DEC, DG, Varian, and Modcomp just can't compete against the capabilities of IMAGE/1000 in the price range of the HP 1000. Even DEC's latest database introduction, RMS-II, requires, at minimum, an 11/45 configuration considerably more expensive than the HP 1000 Model 80.

HP 1000, The Friendly System

The "softkeys" of the 2645, the new online system generator capability of RTE II/III, and the new RTE supported microprogramming package all go together to make the HP 1000 an even friendlier system — and it's paper tapeless, to boot! (Pun intended.)

Product News

4K Memory Bargain
By: Wendi Brubaker/DSD

In addition to the 2100 8K core memory board sale, refurbished 4K board prices have been reduced. Not only is the 12884A (4K core) available at $600 but option 002 makes it possible to upgrade from 8K to 12K. As if this weren't enough, a 90-day warranty is also included.

To take advantage of this offer, give *Judy Coleman,* at DSD X3367, a call to find out the availability and to give her a chance to schedule any needed rework. As with all used (888 items) the actual order must be transmitted as a HEART override to receive the discounted price.

Order your 12884A's today! *Judy* is waiting to hear from you.

HP Computer Museum
www.hpmuseum.net

For research and education purposes only.

Some Prices are Changing
By: Bill Burger/DSD

IMAGE Now Only $2500

Effective January 1, 1977 there will be some price changes on the CPL for DSD products. Of special interest are price decreases on most 21XX Interface Cards and IMAGE/1000 software (from $6000 to only $2500), and price increases on 2100A, 2100S, 2155A, 2895B and 12944A.

As with all price increases, customers have a one month grace period to get their orders entered at the old, lower price.

Product price decreases:

Product #	Description	Old Price	New Price
12539C	Time Base Gen.	550	350
12554A	G.P. Interface	450	350
12566B	Microcircuit	500	350
12597A	8 Bit Gen. Purp. Re.	415	350
12898A	DCPC Extender	500	350
12903C	12 Inch Slide Kit	155	150
12920B	Asynch. Mplx.	2500	2000
12930A	Univ. Interface Cd	905	850
12966A	Buffered Asyn. Com.	950	750
12976A	Sync. I/F	650	500
12977A	F.F.P.	1250	950
13306A	F.F.P.	950	650
59310B	HP-IB	1000	600
91200B	Video Mon. Card	2600	1700
92063A	IMAGE/1000 Software	6000	2500
92825A	IMAGE/1000 Source	6000	2500

Product price increases:

Product #	Description	Old Price	New Price
11163A	System Desk	830	1200
12575C	Tape Winder	100	150
12589A	Automatic Calling	400	450
12679B	Rail	10	20
12680B	Blank Panel	10	15
12681B	Blank Panel	10	15
12682B	Blank Panel	10	15
12683B	Blank Panel	10	15
12684B	Blank Panel	10	15
12685B	Blank Panel	10	15
12686C	Door	520	600
12687C	Door	550	600
12688C	Door	550	600
23689C	Door	550	600
12692B	Inst. Slide	70	90
12894A	MPX I/O	250	350
12900A	2100 Maint. Kit	310	600

Product #	Description	Old Price	New Price
12903B	8 Inch Slide Kit	140	150
12926A	P.T. Punch Subsys	3750	5000
12944A	Power-Fail Battery	475	600
12968A	Comm. I/F	600	750
13047A	2K UCS	450	550
13189A	Rack Slide Kit	140	150
2100B	Computer	10,000	11,000
2100S	Computer	15,300	16,300
2155A	I/O Extender-2100A	6500	7250
91200B-001	Video Monitor Cable	100	150
2895B	Paper Tape Punch	3350	4750
9640-Q05	Paper Tape Punch	3750	5000

21MX Memory Prices Reduced by 30%
By: Bob Frankenberg/DSD

Effective immediately, 8K memory module (12998A) prices are reduced from $1100 to $750. This change brings the effective price for 16K words from $2100 to $1500, a 30% overall reduction. Brought on by continued 4K RAM chip cost reductions and increased manufacturing efficiency, this price change reflects HP's successful efforts in bringing low cost memory to the computer market. As 13187A (16K) module prices remain unchanged at $2100, 8K modules now provide the most cost effective alternative for 21MX Computer Series Memory.

Competitively, this change puts us in a strong leadership position among the major minicomputer manufacturers and, in fact, puts us very close to add-on memory supplier prices. For 16K words the competition stacks up as follows:

	List	Max Discount	Speed
HP	$1500	$ 975	650 nS (M) or 560 nS (E)
DEC	2600	1690	700 nS
Data General	3700	2294	700 nS
National	—	950	650 nS

These prices, combined with proven reliability and excellent performance put us well in the lead!

GOOD SELLING!

91200B Compatible With E-Series
By: Bob Frankenberg/DSD

The video interface card (91200B) has completed compatibility tests with the E-Series. With the Jan. 1 price reduction to $1700 we now have a very competitive video interface card available to both M and E Series customers.
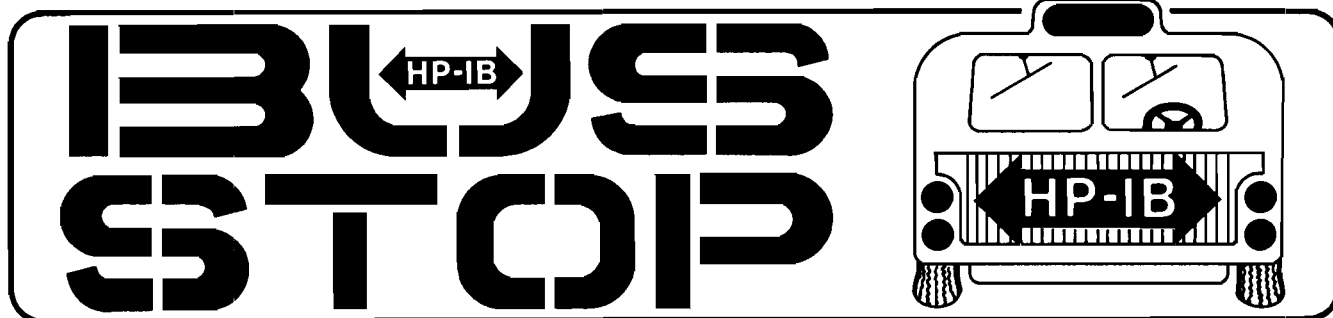
BUS STOP

By: Neal Kuhn/DSD

Welcome to the Bus Stop. We have decided that there is enough traffic to make scheduled stops at this location. This regular feature will include HP-IB news, HP-IB competitive comparisons, some short HP-IB sales aids, and general information about interfacing with HP-IB. Your HP-IB ideas are also welcome. Let's hear from you.

Also,

BUS FARE REDUCED

In conjunction with the new Bus Stop, we have reduced the bus fare. Effective January 1st, the 59310B HP-IB I/O Card will be $600.

HP-IB Contest Under Way
By: Neal Kuhn/DSD

The HP-IB device programming contest is under way. The contest objective is to receive programming information on HP-IB devices. This information will be compiled in an HP-IB library and redistributed as a tool for pre and post sales.

Specifically we are looking for:

1. Quick reference programming charts for HP-IB compatible devices.

2. HP-IB device subroutines.

3. HP-IB drivers (RTE-B, C, etc.,) and miscellaneous HP-IB utility programs.

The prizes for the contest include an HP-67 calculator, a case of California wine, and a dinner for two (not to exceed $30 per person). The contest is primarily for SE's but any FE or DM is welcome to enter. All DM's have also been sent entry information.

As a benefit of the contest, the first device chart is for the 9871A printer. The chart on the following pages gives a quick reference to HP-IB programming of the printer. As more devices come in, they will also appear in the Bus Stop.

HP-IB A Success at Local Show
By: Neal Kuhn/DSD

Seventy-two members of the Santa Clara Valley Chapter of the Instrument Society of America, sacrificed their Monday night football game to become active listeners at a presentation on interfacing instruments to computers with the Hewlett-Packard Interface Bus. The meeting took place November 15, 1976. *Jane Evans* from Computer Systems Group and I gave the presentation.

Some of the main points covered were the history of the Bus, the IEEE spec, Bus operation, and some straightforward applications. A demonstration of the Bus followed the talk. Test stations were set up, and multiple test station execution was demonstrated.

The combination of active talking and the avid interest of the listeners demonstrate that hosting a presentation of HP-IB would be a successful and rewarding endeavor for all offices with similar organizations or chapters. Now it's even easier with the new HP-IB Seminar Kit that provides you with the slides and script (see article).

Jane Evans, the active talker, commands the attention of 72 active listeners. Avid interest in interfacing makes HP-IB a successful topic for a local professional society meeting.

COMPANY PRIVATE

HP-IB DEVICE PROGRAMMING CHART

SUPPORTED HP-IB MESSAGES FOR 9871 PRINTER

CATEGORY and MESSAGE	PRINTER RESPONSE	BASIC EXAMPLES
Device Communication DATA	As a listener, the printer accepts character and function codes, from the controller.	Print string "Data" PRINT# lu;"Data" Print string with reverse line feed: CHRS (27,T$(1)) CHRS (10,T$(2)) PRINT# lu;T$,"Data"
Device Control TRIGGER CLEAR REMOTE LOCAL LOCAL LOCKOUT CLEAR LOCAL LOCKOUT	None None None None None None	
Interrupt/Service REQUIRE SERVICE	A request service signal is sent to the controller when the printer's cover is off.	Program SRQ with command SRQ (Dlu, 16,IPROG) where Dlu is device lu, and IPROG is name of alarm program
Device Status STATUS BYTE STATUS BIT	As a talker, the printer outputs a status byte to the controller (during a serial poll). During a parallel poll, a status bit is sent to the controller on a selected data line.	Obtain status by executing HPIB(Dlu,6,0) I= IBSTS(Dlu) where Dlu is device lu Conduct parallel poll by executing HPIB(Blu,24,0) where Blu is Bus lu See below for status byte layout
System Control PASS CONTROL ABORT	None An abort message will clear the printer's buffer. All the printer's programmable feature settings remain.	HPIB(Blu,0,0)

STATUS BYTE MESSAGE

During a Status Byte Message, the printer is addressed to talk, and sends one data byte to the controller. This data byte contains the status information shown below.

BIT:	7	6	5	4	3	2	1	0
	Ø	Service Request	Cover Off	Data Latch Ready	Printer Not Ready	Only 16 Chars. Left Buffer Space	Ø	Ø

HP 9871 SUPPORTED FORMATS AND CODES

Decimal Code	Spoke Number	Standard Characters	Decimal Code	Spoke Number	Standard Characters
33	48	!	80	56	P
34	61	"	81	65	Q
35	23	#	82	43	R
36	24	$	83	44	S
37	5	%	84	46	T
38	9	&	85	60	U
39	2	'	86	62	V
39 (SO)	89	,	87	32	W
40	38	(	88	28	X
41	36	)	89	35	Y
42	26	*	90	63	Z
43	25	+	91	42	[
44	6	'	92	3	\
45	27	-	93	40	]
46	33	.	94	1	^
47	31	/	94 (SO)	8	↑
48	18	0	95	11	—
49	17	1	96	95	`
50	19	2	97	85	a
51	16	3	98	93	b
52	20	4	99	75	c
53	15	5	100	86	d
54	21	6	101	82	e
55	14	7	102	74	f
56	22	8	103	73	g
57	13	9	104	81	h
58	52	:	105	79	i
59	59	;	106	91	j
60	10	<	107	72	k
61	29	=	108	87	l
62	12	>	109	90	m
63	54	?	110	78	n
64	7	@	111	77	o
65	47	A	112	92	p
66	58	B	113	69	q
67	39	C	114	83	r
68	53	D	115	84	s
69	45	E	116	80	t
70	57	F	117	76	u
71	34	G	118	71	v
72	41	H	119	88	w
73	50	I	120	70	x
74	66	J	121	67	y
75	30	K	122	68	z
76	55	L	123	4	π
77	37	M	124	64	|
78	49	N	125	94	→
79	51	O	126	96	~

	ASCII CHARACTER	DECIMAL CODE
GENERAL		
• Bell	BELL	7
• Backspace	BS	8
• Linefeed	LF	10
• Carrier Return	CR	13
• Shift Out	SO	14
• Shift In	SI	15
• View Delay	ESC, D	27, 68
• Reverse Line Feed	ESC, LF	27, 10
• Character Replacement	ESC,C	27, 67
• Reset	ESC, E	27, 69
• Self Test	ESC, R	27, 122
HORIZONTAL TABULATION		
• Set Horizontal Tab	ESC 1	27, 49
• Clear Horizontal Tab	ESC, 2	27, 50
• Clear All Horizontal Tabs	ESC, 3	27, 51
• Horizontal Tab Right	HTAB	9
• Horizontal Tab Left	ESC, 4	27, 52
VERTICAL TABULATION		
• Set Vertical Tab	ESC, 5	27, 53
• Clear Vertical Tab	ESC, 6	27, 54
• Clear All Vertical Tabs	ESC, 7	27, 55
• Vertical Tab Up	ESC, 8	27, 56
• Vertical Tab Down	VTAB	11
FORM AND MARGIN CONTROL		
• Set Top of Form	ESC, T	27, 84
• Form Length	ESC, F	27, 70
• Text Length	ESC, L	27, 76
• Form Feed	FF	12
• Set Left Margin	ESC, M	27, 77
• Text Width	ESC, W	27, 87
SPACING CONTROL		
• Horizontal Spacing	ESC, H	27, 72
• Vertical Spacing	ESC, V	27, 86
• Variable Spacing	ESC, S	27, 83
PLOTTING CONTROL		
• Absolute Plot	ESC, A	27, 65
• Relative Plot	ESC, R	27, 82
• Character Fill Setup	ESC, .	27, 46
• Absolute Plot With Fill	ESC, a	27, 97
• Relative Plot With Fill	ESC, r	27, 114
• Plot Origin	ESC, O	27, 79

Here are the unique characters found on the European character disk.

Here are the unique characters found on the ASCII character disk.

Decimal Code	Spoke Number	European Character	Decimal Code	Spoke Number	ASCII Character
35	23	£	92	3	\
39 (SO)	89	ŝ	123	4	{
92	3	¿	125	94	}
94 (SO)	8	°			
123	4	" (U.C.)			
125	94	" (L.C.)			

Device Unique Rules and Sequencing

In BASIC, special characters can be sent in decimal with the CHRS command.

For example,
CHRS (27,T$(1))
CHRS (10,T$(2))
PRINT#lu;T$ will cause a reverse line feed

In FORTRAN, special characters can be sent in octal.
For example,
I= 15412B
WRITE (lu,fmt)I will cause a reverse line feed since
15412B= 00011011 00001010
27   10

HP-IB Seminar Kit Test Marketed

By: Peter Palm/DSD

A new HP-IB Customer Seminar has been test marketed on the East Coast. Customer and Field response had been very positive. *Jerry Mason* (New Haven), said his customers at United Technology came away "impressed". "Even though they had already been exposed to HP-IB, they came away thinking about more ways they could use it."

Revisions, updates, and a complete seminar kit are being prepared for your use by the first of the year. As the diagram shows, the kit contains all of the major components to host a seminar, including an invitation, a handout, a follow-up qual-ification piece, 128 35mm color slides and script, and two color video tapes. One tape is on 21MX HP-IB Programming, and the other is on transceiver testing. Both are interesting and well done.

A seminar training session will be held in January. Let your District Manager know if you want involvement in instructor training for your area. We will be contacting them soon.

One sample of the follow-up forms indicated almost 50% of the attendees needed "multiple test stands"; just where the HP 1000/HP-IB fits. Start making up your "guest lists' now, so you'll be ready to go.

This complete package of tools will help make an HP-IB seminar successful and productive.
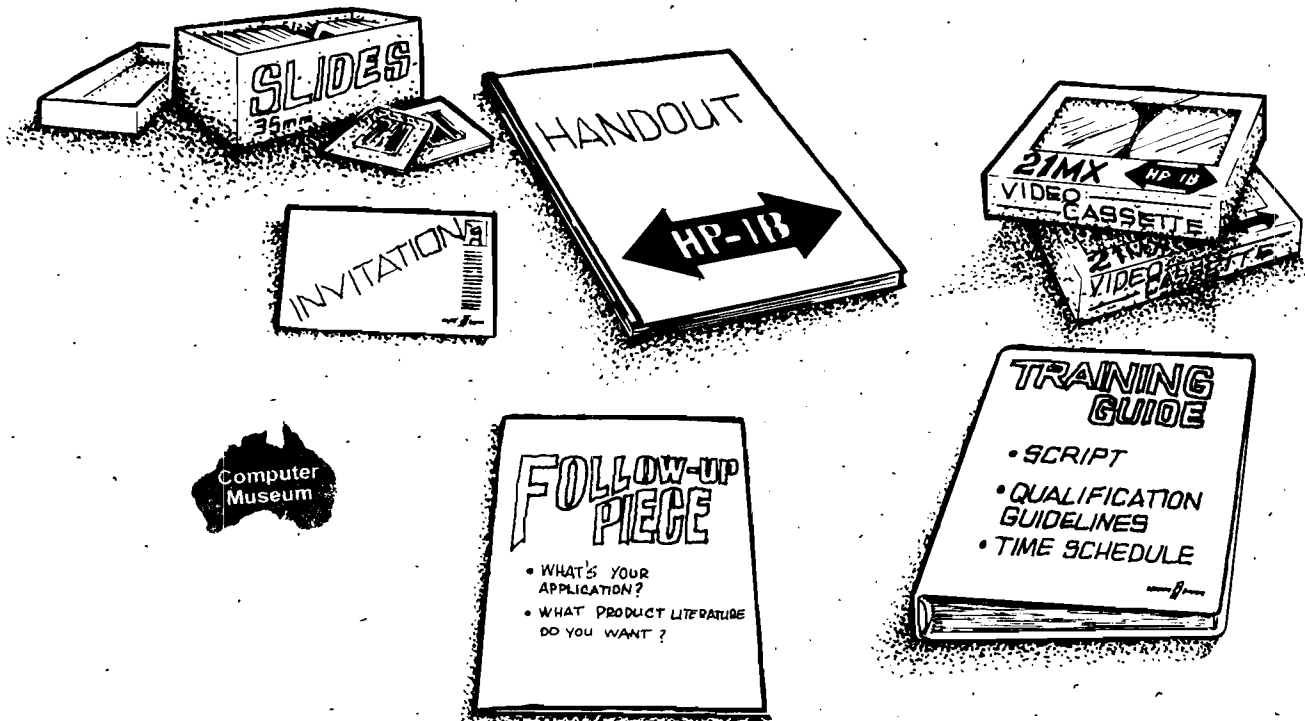
Competition

IBM Series I Comparison

By: Bob Frankenberg and
Fred Gibbons/DSD

IBM's recent announcement of Series I signals their long-awaited official entrance into the minicomputer market. Series I models include the Model 3 and Model 5. The two models differ in both performance and expansion capabilities, much like the 21MX family. The Model 3 com-pares most directly to a 2105A, while the Model 5 is compar-able to a 2108A in both price and performance. Since IBM is pushing the Model 5 as its high performance machine, how-ever, we felt it would be more useful to compare it to a 2109A. As you can see from the following comparison we enjoy an excellent position versus the Series I. IBM is not without its advantages — most notably in peripheral pricing, very small processor configurations, and the size of their captive market base.

In a system configuration the Series I can be viewed essen-tially as a disc based BCS system with primitive operating system support and no high level languages. Minimum sys-tem configurations start at approximately $28,000, monthly maintenance at $225, and a software license charge of $90/mo for 24 months.

A more detailed comparison will be written and added to your competitive analysis manual as more information be-comes available.

GOOD SELLING!

WHAT'S BEHIND THE
IBM SERIES/1

RACK ENCLOSURE.
EIA standard
19-inch rack.

MODEL 5 PROCESSOR.
Up to 128K bytes
of memory storage in 16K
byte increments.

INPUT/OUTPUT EXPANSION UNIT.
For additional I/O attachments.

BATTERY BACKUP UNIT.
Powers
processor in
the event of
an AC power
failure.

DISKETTE STORAGE UNIT.
Single or dual-sided
diskettes. Up to .5 megabytes
capacity.

**SE
INPUT/OUTP   IT.**
With dig
and analog cap

COMBINATION STORAGE UNIT.
9.3 megabyte
fixed storage and
.5 megabyte
diskette storage
unit.

FIXED DISK STORAGE UNIT.
Contains 9.3 megabytes
of storage.

MATRIX PRINTER.
Bidirectional
with printing speed of 120
characters per second.

MODEL 3 PROCESSOR.
Up to 64K bytes of memory
storage in 16K byte increments.

DISPLAY STATION.
1920 character visual display and
alphanumeric keyboard.
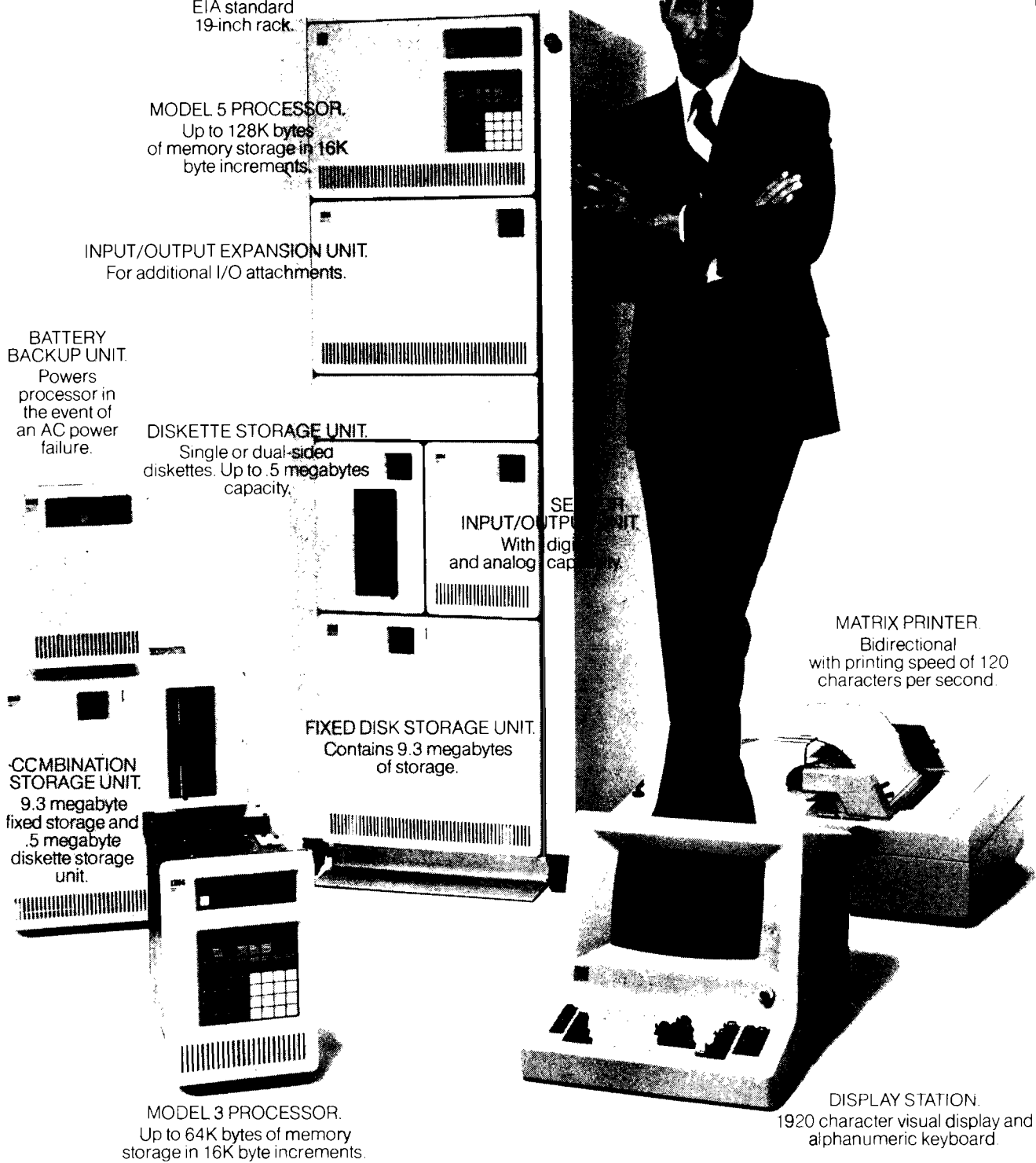
PRICE COMPARISONS

CPU, Memory and Options

	Model 3	2105A	Model 5	2109A
8K	5000	5850	6805	7550
16K	6860	6750	8845	8450
32K	10,400	8950	12,925	10,450
64K	N/A	N/A	21,890	16,800
Floating Point	N/A	Std	1190	Std
Battery Backup	1895	600	1895	600
Mem. Protect	N/A	N/A	Std	500
DMS	N/A	N/A	805	1950
DCPC	Std	750	Std	750
Additional Mem (8K)	1800	750	2040	750

I/O

	HP	IBM
I/O Extender	4500	2515
Serial I/F	350	652
16 Bit I/O	350	660
Timer	350	570
Async Single Line	750	1137
Synch Single Line	500	1190
Async Mux (16 line)	2000	4380
(8 line)	N/A	2190
I/O Bread Board	130	660
UNIVERSAL I/F	850	N/A
VIDEO I/F	1700	N/A
HP-IB	600	N/A

Peripherals

Disc Storage

	IBM 4962	HP 7905
Capacity	9.3 MB	⁻5 MB
Cartridge Type	Non-removable	1 Non-removable — 1 Removable
Avg. Access Time	40 Msec	25 Msec
Data Transfer Technique	Cycle Steal	Cycle Steal
Rotational Latency (Msec)	20.2	8.3
Transfer Rate	889K bytes/sec	937K bytes/sec
Price with Controller	$7,710	$15,000

Printer

	IBM 4974	HP 9866
Characters/Line	132	80
Characters/Sec	120	240
Special Features	Forms Control	Graphics
Data Transfer Technique	Cycle Steal	Asynchronous Serial
Print Technique	Wire Matrix	Thermal
Price with Controller	$3,720	$3,475

	IBM 4979	HP 2645
Display Stations		
Screen Size	80 char. x 24 lines	80 char. x 24 lines
Keyboard features	ALPHA/Numeric	ALPHA/Numeric
	Special Function Keys	Special function keys
	(No mass storage capability)	Mini cartridges
		•
		•
		•
Data Transfer	Cycle Steal	Asynchronous/Synchronous Serial
Speed bits/sec	9600	9600
Price with Controller	2690	4450 (does not include price of minicartridges)

Performance (in Microseconds)

	Model 3	M-Series	Model 5	E-Series
ADD	5.4	1.96	1.98	1.12
LOAD	5.4	1.96	1.98	1.12
JUMP	6.0	1.96	1.32	.74
SHIFT	9.6	2.59	3.08	1.12
SHIFT & TEST	15.0	2.92	5.94	1.68
XOR	1.98	1.96	1.98	1.12
LOAD BYTE	3.6	4.88	.88	3.5
	46.98	18.23	17.16	10.4

Price/Performance Positioning
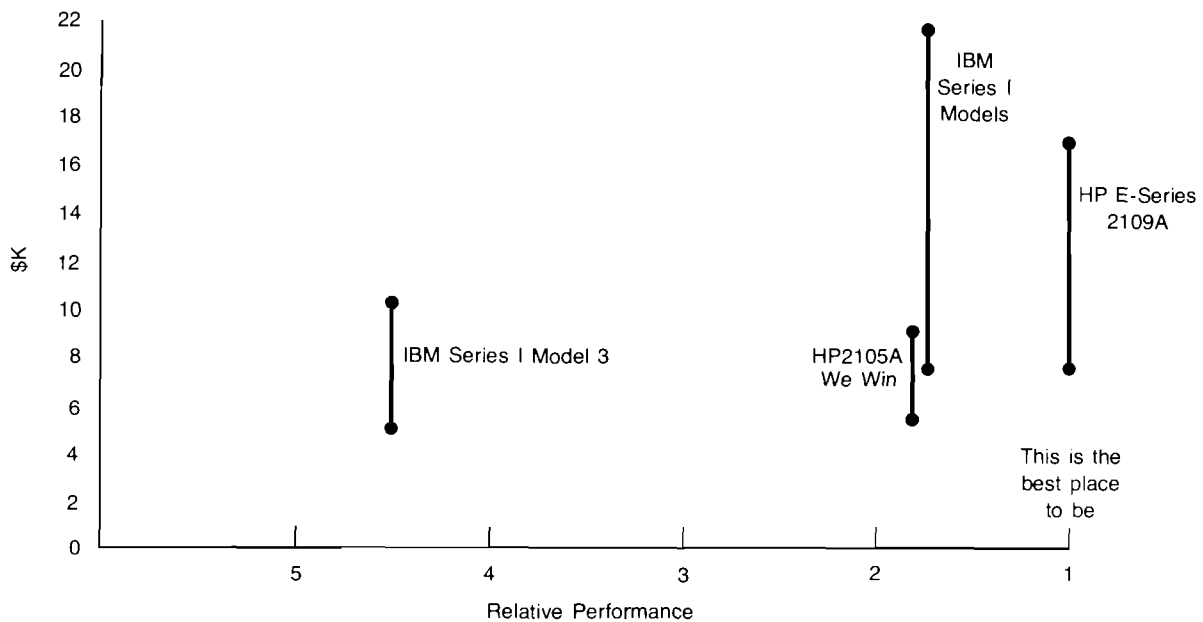
As you can see the HP E-Series is 65% faster than IBM's best, the Series I/Model 5 while E-Series prices range between 30% lower in large (64K) memory configurations and 6% higher in small (8K) configurations. This means that on a price/performance basis the E-Series is roughly 85% better than the Model 5.

The price performance picture on the Model 3 versus the M-Series is even more striking. The M-Series is 2.5 times faster than the Model 3, while M-Series prices range between 10% higher and 16% lower. As such price/performance of the M-Series is roughly 250% better than the Series I Model 3.

SYSTEM COMPARISON

Operating System Support	Series I Control Program	RTE-III
Disc File Management	Read/Write I/O Drivers for the Disc	Full File Management and Data Base Management Software
Multi-Program Support	User Implemented Program Dispatch and Swapping	Automatic Program Dispatch and Swapping Performed by the System
Error Logging	Automatic Log to Disc or Diskette	Not Supported
I/O Support	Limited to Drivers for Asynch/Synch/ SDLC Devices	I/O is Handled by High Level calls (LU's) from Terminal and Programs

PROGRAM LANGUAGES AND PREPARATION FACILITIES

	IBM Series I	HP 1000
Languages Supported	Macro Assembler	BASIC FORTRAN ALGOL ASSEMBLER
Programming Aids	EDITOR Link EDITOR (Note: IBM *does not* support a cross assembler for the Series I on 360/370 Systems)	EDITOR RELOCATABLE LOADER FILE MANAGER

Communications Capabilities	IBM Series I	HP 1000
	Asynchronous Bisynchronous SDLC Remote Forced Cold Boot-up	Asynchronous Bisynchronous

Software Distribution	IBM Series I	HP 1000
	Diskettes	Minicartridges Disc Cartridges

Minimum System Configuration	IBM Series I	HP 1000 Model 30
Processor	4953	21MX-E
Memory	32K bytes	32K bytes
Disc	Fixed and Floppy	Fixed
Printer	4974	9866
Console	Teletype or ASCII Equivalent Device (It appears that IBM's own CRT can *not* be the system console)	2645 with minicartridges
Price/Monthly Maintenance	$28,465/$225	$40,975/$308

Major Competitive Points

IBM Advantages

- In minimum processor configurations IBM has a slight price advantage over the 2105A.
- SDLC Communications.

- Large captive market base.
- Low cost Disc.

HP Advantages

- In any configuration over 8K words IBM's high memory prices make the Series I uncompetitive with the 21MX.

- IBM offers *no OEM or Volume End User Discounts.*

- IBM interface cards are considerably more expensive than HP.

- IBM offers no HP-IB with the Series I.

- M & K Series are 2 to 3 times faster than the Model 3.

- E-Series is 50 to 75% faster than the Model 5.

- Series I is limited to 64K word memory expansion.

- High performance peripherals.

- Sophisticated operating system.

- High-level languages.

The Series I is clearly a preliminary offering by IBM. The system probably represents a forced competitive response by IBM to insure that it has a product for its customers who want to move toward distributed processing. IBM's existing customer base will probably be their target market over the next 12 to 18 months. This is because IBM's Series I product is not yet strong enough in terms of hardware performance and software sophistication to compete with the major minicomputer manufacturers. There is however every reason to believe that this will change over the next 12 to 18 months with IBM offering sophisticated communications capability (hardware and software) and high level language support.

New Prices Put HP in the Lead

By: Bob Frankenberg/DSD

In January you will see many new and lower prices on the HP 21MX family's plug-in cards and optional accessories. (See *Bill Burger's* article) Compare these new prices against our major competition IBM, DEC and Data General and we win almost every time. The check (√) marks show the "best buy."

COMPETITIVE COMPARISON

I/O CARDS	HP 21MX/2100A	DEC PDP 11	DG NOVA	IBM SERIES I
Single Line Synchronous (12967A)	√ $ 500	$1045	$1200	$1190
Single Line Buffered Asynch (12966A)	√ 750	N/A	N/A	1137
HP-IB (59310B)	√ 600	N/A	N/A	N/A
16 Bit Microcircuit (12566B)	√ 350	490[1]	500[1]	660
16 Bit Duplex (12554A)	√ 350	N/A	N/A	N/A
Video Interface (91200B)	√ 1700	N/A	N/A	N/A
Time Base Generator (12559C)	√ 350	700[2]	600[2]	570
Teletype (12531C/D 12880A)	√ 350	605	350	652
TTY + TBG[3]	√ 700	√ 700	750	1222
TTY + TBG + Paper Tape[3]	√ 1125	1190	1450	N/A
I/O Bread Board (12620A)	√ 130	195[4]	450	660
16 Line Mux (12920B)	√ 2000	3750	6000[5]	4380[5]
Universal I/F (12930A)	√ 850	N/A	N/A	N/A

Notes:
1. Price is $1470/DMA for DEC, $850/DMA for DG.
2. DEC has only 3 frequencies, DG only 4.
3. DEC and DG have combination cards.
4. Does not include interface circuitry — only a base wirewrap board.
5. Capable of 9600 BAUD.

CPU OPTIONS AND MEMORY	HP 21MX	DEC PDP 11/34	DG NOVA	IBM SERIES I
8K Memory Module	√ $ 750	N/A	$1500	$2040
16K Memory	√ 2100	$3100	2700	4080
MPY/DIV	√ Std.	1650	1400	Std.
Floating Point	√ Std.	4400	4000	1190
Battery Back-up	600	√ 500	900	1895
Bootstrap Loaders	√ Std.	√ Std.	400	Std.
Fast FORTRAN Processor	√ 950	N/A	N/A	N/A

For configured computers, in other words a usable "system computer," HP's 21MX family wins again!

CPU/16K, EAU, PARITY, PFAR, DCPC, TBG, Microcircuit/DMA, TTY I/O, ROM Loader

	DG NOVA 3D	HP 2108A	HP 2109A	DEC 11/34	IBM SYS/1 MODEL 5
CPU/Mem (16K)	$ 8,400 (3/D/16K,8478, 8496,8533)	$ 7,400 (2108A,2102A, 13187A)	$ 7,950 (2109A,2102B, 13187A)	$10,090 (11/34DM)	$ 8,845
EAU	1,400 (8534)	Std.	Std.	1,650 (KE 11B)	Std.
Battery BU, PFAR	Std.	600 (12944A)	600 (12944A)	N/A	1,895
DCPC	Std.	750 (12897A)	750 (12897B)	Std.	Std.
TBG, Serial I/F	400 (4007,4008)	700 (12539C + 12531D)	700 (12539C, 12531D)	Std.	1,222
Microcircuit/DMA	950 (4190,4042)	350 (12566B)	350 (12566B)	1,470 (DR11-B)	660
Loader	Std.	Std.	Std.	Std.	Std.
16K	$11,150	√$ 9,800	$10,350	$13,210	$12,622
8K	9,550	√ 9,050	9,600	N/A	10,582
32K	14,750	√ 11,300	11,850	15,810	16,702
64K	24,450	√ 18,650	19,200	21,010	25,667
Floating Point	+4000 (8020)	Std.	Std.	+4400 (FP11/AU)	+1190
Additional Loaders	N/A	100	100	800	With/Peripherals
Additional Parity Mem/16K	3,700	1,500	1,500	2,600	4,080

With This Score
SCORE:

	WIN	LOSE	TIE
HP	21	1	3
DEC	1	21	3
IBM	0	23	2
DATA GENERAL	0	25	0

1977 Will be a Great Season!!

Good Selling!

DEC Reduces Memory Prices for 11/34 — We're Still the Leader

By: Bob Frankenberg/DSD

DEC, in a quiet move to reduce 11/34 prices, has dropped the price of their 16K word MOS parity memory module from $3100 to $2600. This move brings the 11/34 closer to M- and E-Series prices but wasn't sufficient to bring it into the 21MX price range. The following table compares 21MX M- and E-Series prices to the 11/34 with DEC's new prices and new prices on HP's 8K memory modules:

	HP 2112A	HP 2113A	DEC 11/34 (10-1/2" box)
16K	8300	8950	9990
32K	9800	10450	12590
64K	14750	15400	17790

With HP's 16K modules the picture is just as attractive:

	HP 2112A	HP 2113A	DEC 11/34 (10-1/2" box)
16K	8900	9550	9990
32K	11000	11650	12590
64K	17150	17800	17790
128K	25550	26200	28190
256K	45850	46500	N/A
304K	52150	52800	N/A

With the M-Series turning in better performance than the 11/34 and the E-Series running 2 — 3 times faster than this machine it is a pleasure to see we also enjoy a significant price advantage. We have the edge!

Sales Aids

Demand High for HP 1000 Literature

By: Ed Smith/DSD

Your appetite for the various pieces of the HP 1000 promotional material has far exceeded our projections. We have already reprinted one brochure. Several others will be revised and/or reprinted shortly.

There was an initial problem in distribution caused by our doing a preliminary printing for the NPT and your ordering the literature before it came into stock at the distribution depot. However, the pipelines are now full and you should have no trouble getting the literature you need.

Sell HP 1000 Computer Systems!

Houston OEM Open House a Big Success!

By: John Trudeau/DSD

Picture a showroom full of HP computer equipment, including a 2116B with a sign saying: "You've come a long way, Baby Hewey!" No, this wasn't an antique show, it was *Don*

McKay's very successful OEM "open house," held in the Houston Sales Office on November 18th. Add to the picture over 130 very impressed potential customers, hard-working *Frank Letts* and *Anne Klenke*, and a smiling DM, *Ralph Godfrey*. Ralph said that it was the most successful show he's seen in Houston and that they got quite a number of solid leads as a result.

The show featured HP's OEM products and newly released products. Besides the 2116B, *Don* also had a system 1000, a 2125A DISComputer, a 21MX-E Series computer, discs, and terminals. The color TV monitor tied into the DISComputer via the 91200B TV interface was, as usual, a strong attraction. Another very impressive "demo" was the use of IMAGE/1000 to register attendees. As each invited guest entered, his name was checked through an IMAGE data base by a program which returned his company's name, address, etc., and then printed a nametag for him. The operator used the 2645 terminal's "soft keys" to communicate with the data base and add to the demo's impact. The registration procedure left a lasting impression on many guests — and that was just the beginning!

Congratulations to *Don McKay* and the Houston office for a great show!

Keep selling OEM!

Order Processing

A Note From Order Processing

By: Nancy Justice/DSD

Over the past few months, confusion over "No Charge" options and Change Orders has led to field engineer frustration and customer dissatisfaction.

The frustration over "no charge" options stems from the fact that these options are only valid when placed on the original order. If you should forget to include a "no charge" option with your original order, it loses its "no charge" status. In the future, if an order is transmitted without the needed option and it is later required by the customer, we will either have to ask that the original equipment be returned with a restocking charge and ordered correctly, or have you order the option from CPC.

So, don't forget the "no charge" options when you transmit your orders.

Another source of frustration for both the factory and the field has been the late submission of change orders. If change orders are submitted too close to the scheduled ship date, shipment is likely to be delayed, especially in the case of a system order. If we have sufficient notice, we can alert the production groups that a change order is being made. The physical change cannot be made until we receive the HEART transmission but the engineers can implement the change more efficiently if they are notified in advance.

Don't let change orders endanger your ship dates. Keep your customer happy by keeping him informed.

Order Formats — How Not To Do It!
By: Chuck Wain/DSD

The fellows in system integration here at DSD pointed out one of those easy-to-correct, but potentially serious problems. It seems that we have received several orders recently in a format similar to this:

Product	Qty
2125	3
13187A	3
12554A	10
29402B	3
93723A	3

Imagine the poor fellow who has to actually do the configuring — how does he spread the ten 12554A's across the three systems?

The solution here is simple; group all those products that the customer would like racked, cabled, and diagnosed together in one section of the order. This will make for happier customers, and will allow our systems integration people to breathe a little easier.

Sell HP 1000!

OEM CORNER

October Rained New Agreements
By: Bill Burger/DSD

By the time the dust cleared on October, we had signed 21 new agreements, 11 of these with first-time HP customers. It was a great month and all the Field Engineers that signed new agreements should be congratulated.

The agreements signed in October are as follows:

	Field Engineer:
North Electric	Wayne Rardon
Standard Press Steel	Lou Castagnola
DEC (Mat tapes)	Russ Lukes
Logic Associates	John Lands
Drysdale-Heutter Systems	Sandy Effron
Teledyne Systems	Joe Pifko
Alpha-Matics	Bob Ulery
E.I. Dupont	Roy Innella
H.L. Markman Assoc.	Bill Moore
Govt of Northwest Territories	(Canada)
Martin-Marietta	Keith Howey
Antekna, Inc.	Bob Payne
Spectral Dynamics	Jerry Allen
Allied Chemical	Jerry Tartaglia
Gerber	Jerry Mason
Computer Solutions	Tom Papson
Unimast-Caldwell	Ron Marquart
SAI Comsystems Corp	Greg Michaels
Efficient Computing Co.	Roy Toth
Eastern Systems Management	Tom Kroupa
Yondata	Bill Doan

Thanks for all your efforts. Keep it up!

Computer Museum

NOVEMBER 1976

. . . S. Henry Sacks
William A. Gennon
. . . Stanley Klein
Barbara A. Reynolds
. . . Dan M. Bowers

NTRIBUTING
S
Walter A. Levy
Efrem Mallach
Terry Miller
John A. Murphy
Carol A. Ogdin
Malcolm L. Stiefel

DIRECTOR
r, Jr.

ISTANT
s

)UCTION
mard Greenside

IHER
th

RTMENT
r.
ng circulation,
should be
offices at:

EMS
Drive
19

art J. Bandini
rin L. Hayden

ustriel Drive,
305

ad, Fairfield.

hester Ave.,
045 (213)

ted 1976
5 Kane
749. The
excess of
in whole
on.

The Mini's Impact On Data Base Management Systems

Getting The Most Out Of A

mini·micro systems

product focus

BARBARA A. REYNOLDS / Associate Editor

HEWLETT-PACKARD'S NEW IMAGE

The system 1000, recently introduced by H-P, ties into the company's new Image/1000 data base management system. The 1000 mini system also doubles as H-P's entry in the hotly competitive, dedicated control market.

The name, Image/1000, seemed inappropriate when Hewlett-Packard announced a data base management system at the NCC in June. Inappropriate because the "1000" designation did not tie into what was supposedly the host computer for the mini data base, the 21MX. But now, the mystery is cleared up. Hewlett-Packard introduced last month a disk-based 1000 system that handles Image 1000. The system high point: A dramatically new, high-speed processor that facilitates microprogramming.

The new 1000 system is aimed at two markets. Models 80, a desk-mounted unit, and $1 an upright style, that come with the Image/1000 DBMS are geared to data processing applications. Models 30 and 31 that employ the standard interfaces bus co-developed by HP and HP apply to dedicated, control type applications. All of the units are priced up to 14 percent less than the disk-based 9600 minicomputer line that the 1000 system now replaces, though HP will continue to market the memory-based 9600s as satellites in 1000 system installations.

HIGH POINT

HP plans to market the new 21MX processor in OEM basis as well. It contains a comprehensive feature. The HP-bit processor executes instructions at a rate 43 to 100 percent faster than does the 21MX M processor. An add instruction on the M series, for example, takes 1.9 microseconds to execute, compared to 1.12 microseconds on the F series. And the F processor whips through floating point operations 250 percent faster.

Within HP's fast processor is an intelligent MSI-SSI control processor that manages the primary registers, arithmetic logic unit, MOS main memory, and the I/O structure. The control unit can also vary the machine cycle timing. Instead of setting the timing for the slowest instruction time, as other processors do, the 21MX F control processor sets the timing for the best case, 175 nsec., and then, when necessary, lengthens the window setting to 280 nsec. This technique has another advantage. The processor can be interfaced to higher speed memories other than the 550-nsec. 4K RAM that HP now incorporates into the machine.

EASY MICROPROGRAMMING

The machine speeds up processing in other ways too. The control processor, having a 24-bit word length, is easier to microprogram than any other data base oriented, so a DP user
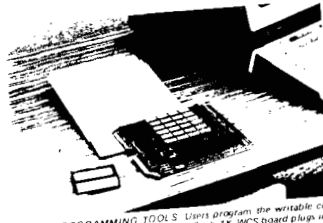
MICROPROGRAMMING TOOLS. Users program the writable control store on HP's 2645A terminal. Each 1K WCS board plugs into one slot on the system backplane.

can quickly microprogram a software sort routine or a control user can handle on-the-fly reprogram any number of math routines. Only two other minicomputers, the Varian V 70 series and the Data General Eclipse, have a microprogrammable control store. But both use a longer word length.

So bits for the Eclipse, 64 bits for the V 70.

HP's control store is also larger than competitive systems. The HP machine has 8K words, compared to 256 for the Eclipse and 1536 for the V 70 and of that, the user can
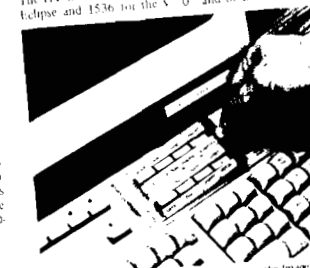
Users defined management information keys on the Image/1000 data base systems enable users to load or compile a program, query the data base, or monitor the status of multiple tasks.

the mini's impact on data base management systems

FRED M. GIBBONS / Hewlett-Packard Co.

S, once applicable only to $1 million mainframes, can now be employed on a minicomputer to reduce the cost of developing computer programs, manipulate a data file, mplify the computer's use by non-data processing experts. Here is what DBMS is all about.

ta base management systems have been used ame computers since the late 1960s, most rs do not yet fully recognize its inherent the cost of developing computer programs, a file, and simplify the use of a computer other non-data processing experts. Despite ss than five percent of all systems installed BMS

essionals have traditionally shunned the even they did not understand it. And to take the time to do so, since they high overhead software that would over-isy computer system. They were also igh cost of DBMS whose price started ch was suitable for use only on big $1 inframes

Aever, no longer hold, and DBMS buzz word that is as rich with mean-pressions "distributed processing" ainming." The advent of cheap, high be married to cheap powerful mini-ally cut the cost of a DBMS that, in l, compiler-like language used to ntent, relationship, and security of t of files, thus allowing for the ran-rds. A computer applier can now ctive system that includes both r $100,000. Moreover, discounts nities can cut the cost another

in afford to dedicate a DBMS to my online data base search need for other jobs run on a main-nned DBMS can also produce r une a DBMS-oriented system

GIBBONS, who holds an M.B.A. rd University and an M.S. degree r science from the University of product manager for data base and distributed systems in ard's Minicomputer Division

takes less time and effort to program than does a conventional file management system. Data conversion to a DBMS format is relatively straightforward. In addition it takes comparatively little ongoing programming effort to maintain application software on an operational system. Finally, when a data base is altered, the query language can serve as a fine testing tool to verify quickly that the changes are correct.

CURRENT USES

Current users of a dedicated, minicomputer-based DBMS include manufacturing companies, research facilities, and service companies — typically, organizations employing between 20 and 200 employees, having several hundred customers and with annual sales ranging between $5 million and $35 million. The motivation for wanting rapid random access to masses of data may result from a compelling need to improve customer service, reduce inventories, or make quick management decisions in a volatile marketplace. Typical applications follow.

Manufacturing	Financial and Administrative
Production Control	Accounts Receivable and Payable
Order Processing	Budgeting
Inventory Control	Sales Status
Shop Loading	Personnel (Employees)
Tooling and Routing	Customer Information Files
Vehicle Scheduling	Credit Verification

Medical	Automatic Testing
Medical Histories	Quality Control
Pharmacy Prescription Files	Test Measurements

As a result of the emerging interest, minicomputer man-ufacturers are beginning to make available DBMS software packages, either by developing their own or by acquiring packages supplied by an independent software house. The following chart lists such offerings.

DBMS Software	Manufacturer	Typical Host Computer
Total*	Digital Equipment Corp.	PDP-11/45
Total*	Harris	Model 100
Total*	Modcomp	Modcomp IV
Total*	Varian	V71
Reality	Microdata	Model 160
Image/1000	Hewlett-Packard	HP1000
Image/3000	Hewlett-Packard	HP3000

(*TOTAL is a DBMS package developed by Cincom Corp.)

70

DATA TERMINALS NEWS

Division News

"Will Your Terminal Work on My Computer?"
By: Rich Ferguson/DTD

Data Terminal Division will be conducting an in-depth sales/technical training class starting January 17, 1977 for five days in Cupertino.

The class is intended for those salespersons who carry a substantial quota in terminals and in one way or another "specialize" in our product line. It will be of particular benefit to those who are out getting "new business."

The main objective is to provide an in-depth look at DTD's product line so that the salesperson can handle the question from a customer, "Will your terminal work on my computer?" Along with this, attention will be given to ways in which the product can be more effectively presented and demonstrated to prospects.

To this end, extensive use of "hands on" lab sessions will be used along with factory specialists giving lectures and guidance. It will be an intensive week of hard work including nightly homework assignments and quizes for those in attendance.

If you feel that you or a member of your sales team will benefit by attending, please fill in the coupon below and send it to myself or *Carl Flock* for a seat reservation. The class size must be limited to 16, so your prompt response will be greatly appreciated. In addition, preference for seat reservations will be given to those with large terminal quotas.

Also, if you have any other questions, please feel free to give us a call.

NAME _____ DATE _____
(Print)

OFFICE _____

TERMINAL QUOTA _____

SIGNATURE _____

**DTD SPECIALIST TRAINING
SCHEDULE**

DAY 1

MORNING: - Introduction, class objectives, quiz
            - 2645A Hardware Familiarization/Architecture

AFTERNOON: - 2645A Demo/Presentation Techniques
            - LAB 1 Implementing features, strapping keyboard I/F

DAY 2

MORNING: - Data Entry environment
            - Lab 2 Data Entry

AFTERNOON: - LAB 3 Tape Control
            - Basic Data Communications
            - LAB 4 Intro to Data Comm.

DAY 3

MORNING: - LAB 5 Handshaking protocols
            - LAB 6 Half Duplex Operation

AFTERNOON: - Polling concepts
            - LAB 7 Polling

DAY 4

MORNING: - 2640B vs. 2645A vs. 2641A and rest of product line
            - OEM program objectives
            - Basic Firmware Description

AFTERNOON: - Lab 8 Firmware Modification
            - OEM process

EVENING: - Dinner

DAY 5

MORNING: - Printer interfacing
            - Production testing and techniques

AFTERNOON: - Final Exam

DTD SPECIALIST TRAINING

PREREQUISITES: Student should have read the following documents:

1. 2640/44 Field Training Manual
2. 2645A Field Training Supplement
3. 2641A Field Training Manual
4. 2645A Reference Manual

Combo Agreement Clarified

By: Carl Flock/DTD

The Computer Systems Purchase Agreement (R10-76) should be clarified under TYPE 6 HP TERMINAL DEVICE, Item C, Line 2, to read:

"OEM Discount Schedule F when purchased for OEM 2649A terminals",

and, line 4 to read:

"End-user Discount Schedule E when purchased for Type 6B terminals or end-user 2649A terminals".

This is not a change in policy but only a clarification of our standard policy.

Product News

Easy to Use — The Latching Keys

By: Carl Flock/DTD

FEATURE

Three of the mechanically latching keys, [AUTO LF], [BLOCK MODE] and [CAPS LOCK] can have their electronic state changed programmatically. The escape code sequence is as follows:

ESC & k <state> <key> . . .

where:

| <state> is | 0 (up) or 1 (down) |

| <key> is | a (AUTO LF) or b (BLOCK MODE) or c (CAPS LOCK) |

The Esc & k is followed by one or more groups of state and key parameters. The state is a 0 or 1 to indicate that the key is to be up or down respectively. The key is a single letter a, b or c. The groups can be in any order ([CAPS LOCK] can come before [BLOCK MODE]). The last key letter in the sequence must be capitalized to indicate the end of the sequence.

Example: Set [AUTO LF] up and [CAPS LOCK] down.

ESC & k 0 a 1 C

An invalid character (any character other than 0, 1, a, b or c will cause the entire sequence to be ignored. An improper setting, (0 b when the terminal is operating in a multipoint configuration) will cause only the invalid setting to be ignored. The rest of the sequence will be accepted.

If the terminal is initialized while configured for multipoint operation, the [BLOCK MODE] key will be read as down regardless of the switch's physical setting.

ADVANTAGE:

This feature eliminates the problem of requiring the terminal operator to make key setting before continuing with the application program.

BENEFIT:

This advantage saves time and money with training and operation of terminal systems.

Need Additional Main Channel Flexibility?
Soft Key Application Note #8
By: Tom Anderson/DTD

Some of you know that the 2645A Display Station can operate half-duplex over modems that are not equipped with secondary channel. This main channel protocol uses ASCII control characters to regulate the direction of data transmission. The S, T jumpers on the 2645A keyboard interface offer three choices:

STX <TEXT> ETX
<TEXT> ETX
<TEXT> EOT

Paul Miller (SR, Paramus) found an application that required:

<TEXT> DC1

This kind of capability can be offered through a special, but *Paul* needed an interim solution for a small number of terminals. When power is applied to the terminal or soft or hard reset is executed, the 2645A examines the S and T jumpers and loads the selected turnaround character (ETX or EOT) into random-access-memory. This memory location may be modified by the following escape sequence:

ESC &c 110655aXYD

where XY is the octal value of the ASCII code for the desired turnaround character. For example, to implement *Paul*'s <TEXT> DC1, use ESC &x110655a21D.
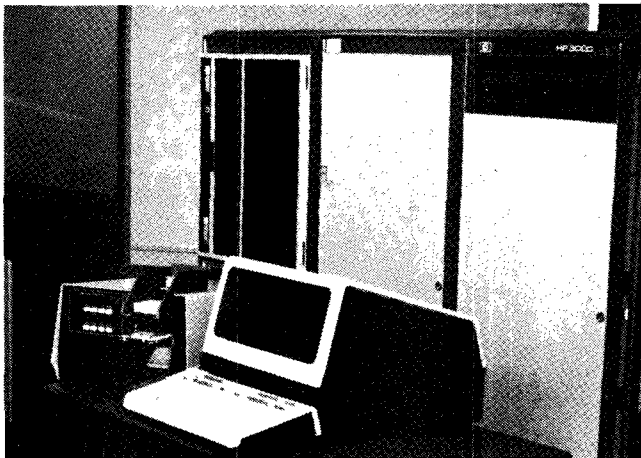
(Remember, this sequence has to be repeated after a soft or hard reset.) Straps R, S, T, U, V should be open.

This sequence can be transmitted by the CPU or generated locally via a soft key.

Keep in mind that this is an unsupported feature of the 2645A and the escape sequence might change in future versions of the terminal.

HP GRENOBLE NEWS

Division News

Now *Supported* on 3000 Series II!!
The 7260A Optical Mark Reader
A New Terminal to Help You Sell
More Systems
By: Bernard Guidon/Boise

- Hardware and software fully supported.

- Increases 3000 II capability by adding document reading on any terminals.

- Offers an attractive data collection system with a distributed network of 7260A's.

- Provides data entry right at the source.

- Permits OFF LINE DATA/PROGRAM preparation.

- Switchable OFF LINE operation with terminals.

- FORTRAN, BASIC, COBOL and SPL callable.

- Does not require any hardware or software modification.

We just never stop helping you sell more systems! After publishing the 2000 System Application Brief (HP P/N 5953-0101) for 7260A's, we are now introducing a fully supported software for 3000 Series II. This software, included in release 05 (date code 1646) of the 3000 Series II Operating System, is now delivered with any new 3000 system and has been sent to all your 3000 customers who have maintenance contracts.

This 7260A software for 3000 II consists of 2 softwares:

- FCARD — actual driver

- HP 7260A — Application Package and ON LINE Verifier.

Both packages are described below.

FCARD: A 3000 Intrinsic for 7260A

A new intrinsic FCARD has been developed in cooperation with GSD to drive the 7260A as a terminal. It provides easy and full control over the 7260A. FCARD has been designed for remote applications, and full duplex operations are supported, as well as hardwired connection.

FCARD provides the capability to a user to write his program in the language of his choice, such as FORTRAN, BASIC, COBOL or SPL. The following key features of the 7260A are supported:

- Demand mode — reading of cards.

- Retransmission on either Image or ASCII formats.

- Selection of any particular card in the optional select hopper.

- Awaiting the operator "READY" signal to provide improved man/machine relation.

- Motor control and unmuting the terminal.

- Image and ASCII output format.

- Programmatic control over the display on the terminal.

HP 7260A — Application Package for 7260A on 3000 II

In addition to the intrinsic FCARD, actual driver of the 7260A, an application package dedicated to the 7260A is also provided (and supported). This application package consists of two parts:

- Package to allow a user to transfer the contents of his cards from the 7260A to a disc file or to the system line printer.

- ON LINE Verifier — To verify ON LINE the 7260A operations without disturbing other users or bringing the system down.

The user can, interactively through the use of instructions displayed on the terminal, enter data and/or programs directly to a disc file. The application package checks for proper transmission and performs the opening and closing of the files. Data and/or programs can also be listed on the system line printer through the use of the interactive instructions.

Verification of the 7260A operations may also be interactively performed, easing the 7260A installation or its eventual diagnostic. Again, easy steps and messages are displayed on the terminal to guide the user through the operation.

7260A on 3000 II: Literature Available
By: Georges Ouin/HPG

A dedicated Application Note for 7260A on 3000 has been distributed to worldwide sales offices. It is entitled "Optical Mark Readers Provide Low Cost Data Entry Into An HP 3000 Computer System" (HP P/N 5952-9410). It describes the use of a statewide network of 7260A's in a low cost RJE station configuration. Although this note describes an application in the Education market, the benefits afforded by the network of 7260A's in terms of cost effectiveness, ease of use and potential are applicable to your customers who have a data collection problem. (Nowadays, who doesn't have a data collection problem!?!)

"7260A Optical Mark Reader Terminal For HP 3000 Series II System" Data Sheet (HP P/N 5953-0106) is also available to help you sell more 7260A's. Bulk distribution is being made to worldwide sales offices, and a personal copy has been mailed to your attention.

Actual software calls and messages for FCARD and HP 7260A are described in a new manual, "HP 7260A Operating Manual for 3000 Series II" (HP P/N 07260-90013). This manual is supplied with the 7260A Optical Mark Reader when option 300 is ordered.

Intrinsic calls to FCARD are also found in the 3000 Intrinsic manual available from GSD.

7260A on 3000 II: Direct Mailing
By: Peter Stuart/HPG

A direct mail campaign has been instituted to inform all existing 3000 Series II users that the 7260A is now fully supported and available on their systems. Together with the cover memo. we included the 7260A/3000 II Data Sheet for the EDP manager and the Application Note dedicated to the 7260 on 3000. A total of 150 existing users have been reached throughout North America, so don't be surprised to receive calls from your customers. Don't hesitate to talk to them about the 7260A — they will love it!

We are generating leads for you!!

Data Collection System with a Distributed Network of 7260A's
By: Georges Ouin/HPG

Now, more than ever before, you can offer an effective data collection solution on the 3000!

By adding the 7260A on an existing 3000 terminal, you simply increase the system capability and therefore increase your chances of selling the entire system! In fact, the 7260A associated with a terminal offers a powerful combination in a low cost RJE configuration.

For example: 7260A-2640 and 9866 can be combined
to give you CRT-printer and document
reading capabilities for about $10K!

Advantages of this powerful 7260A and terminal association include:

- Saves data/program preparation time and prevents errors by using one functional card for both source document and data entry.

- Data can be marked with nothing more costly than a pencil.

- Data/program input transmission can be performed at maximum OMR speed much faster than manual keying.

- At the touch of a button, the 7260A can operate OFF LINE with the associated terminal(s) so that local editing, formatting and packing of data can be performed OFF LINE before transmission to the system.

The friendliness of optical forms and the supported software open new capabilities for the 3000 and make the 3000 even more attractive.

The 7260A helps you sell more 3000's.

7260A/3000 II Ordering Information
By: Serge Boivineau/HPG

Because all software for the 7260A on 3000 II is being supplied with the system, it is not necessary to supply software with the Reader. However, we created the 7260A option 300 to supply your customers with the 7260/3000 II Operating Manual (07260-90013) and with the deck of test cards necessary to run the ON LINE Verifier. We are sure that you and your customers will appreciate the fact that no hardware modifications are necessary and that the standard 7260A is ready to operate on their systems.

Option 300 will appear on the February 1, 1977 Corporate Price List, but override of the system can be entered as of December 15, 1976.

7260A/3000 II Customer Reference
By: Bernard Guidon/Boise

Although the 7260A was not supported on 3000 II until recently, many of our sharp customers have already been using the reader on their 3000's for quite some time. Following is a preliminary list of existing users and the name of the field engineer to contact.

CUSTOMER NAME	FIELD ENGINEER
• Maryland State Board of Education (see app. note 5952-9410)	Jim Banisch (Rockville)
• Adams County School	Ron Johnson
• Beverly Hills Unified	Bob Ulery
• Helen Hancock Community	Bob Ulery
• Many SIS/CIS Customers	Contact: GSD
• HP Division such as DSD, Waltham, Boise and Manufacturing Division	Contact: B. Guidon, Boise

If you know of anyone else who is currently using 7260A's on 3000, please give me a call so that everyone can benefit from their application experience.

Two Important Days in Grenoble
By: Serge Boivineau/HPG

Two important events occurred in Grenoble at the beginning of October.

Firstly, a press conference was held for the French press introducing the System 1000 and the 3070 terminals.

Secondly, we had the heads of ten of the most important French Software Houses come for an introduction to the 1000 and 3070 and discussions on optimizing our relationships.

The press conference proved very useful in increasing the French awareness of HP, and we received many questions on the establishment of HP Grenoble, and overall impact on the French minicomputer market. Following the visit, we were pleased that more than a dozen articles were published, all making positive comments on HP minicomputers.

The day with the Software Houses enabled us to discuss all aspects of the change many of them were making, from DOS systems to RTE systems. Subjects covered New Product Training and easy access to the available resources HP has to help them be successful. It was also interesting that it was the first time many of the software houses had got together, and they found they could probably help each other by exchanging ideas and software routines. In summary, the day enabled all of us to have a better mutual understanding, which we intend to develop further during FY 1977.

Remote Control of HP-IB Devices is a Reality
By: Georges Ouin/HPG

To ensure we could properly demonstrate the power of the 3070A to recent visitors to Grenoble, we set up a demonstration with the terminals being used simultaneously for different applications. These 3070A's, distributed all around the Grenoble factory were connected to one central RTE system.

Among the different applications, one demonstrated the HP-IB capabilities of the terminal. A complete HP-IB based instrument set-up was automatically measuring the transfer characteristic (frequency out as a function of voltage in) of a Voltage Controlled Oscillator (VCO). The complete test station was located more than 100 meters (it could have been 2000 meters) away from the RTE system. Results were printed on the strip printer HP 5150A which generated a "ticket" for attachment to the tested unit.

The photo shows the set up where you may recognize the programmable DAC (HP 59303A), the DVM (HP 5300 + 5306 + 5312) to measure the VCO output frequency and the printer HP 5150 for printing the results. The unit under test was the HP 3312A.
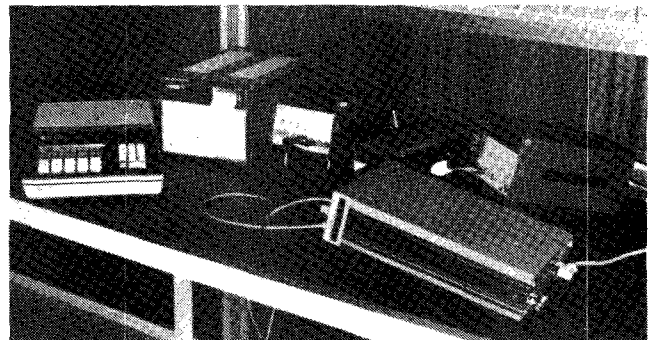
WHEN YOU HEAR THE WORD HP-IB,
THINK 3070A

This simple application program is available to anyone who needs it. Please, contact Boise or Grenoble Sales Development. They will be happy to send you a copy of it.

An Application Note describing the set up is being published.

Product News

Fantastic Performance for HP 1000/HP 3070
By: Peter Stuart/HPG

During product testing of the HP 3070, we connected 56 terminals to an HP 1000 system and it all worked superbly. Here are some of the results of those tests which may be useful during discussions with your prospects.

1. As expected, handshaking and polling ensure no data is ever lost even when 56 people are simultaneously keying in the reply to a question at maximum speed.

2. If 56 users simultaneously press the enter key (or any other enabled terminator) to terminate a read, it would take up to 8 seconds before even a simple applications program could issue the next request.

3. However, in a more realistic situation, with say only 15 terminals actually completing reads during any two second period, the response time would improve to an acceptable 2.2 seconds *even* with 30 milliseconds of applications data processing per terminal.

In summary, there is no problem in selling a 56 terminal system providing the customer recognizes the variation in response time he could see as a function of heavy use. Remember the actual data transfer rate with 56 terminals is 13 per second per terminal. Faster than anyone can type!

All these tests, were done with a 21MX system. A 21XE would give even better performance (we estimate 30%) but who needs it!!!?
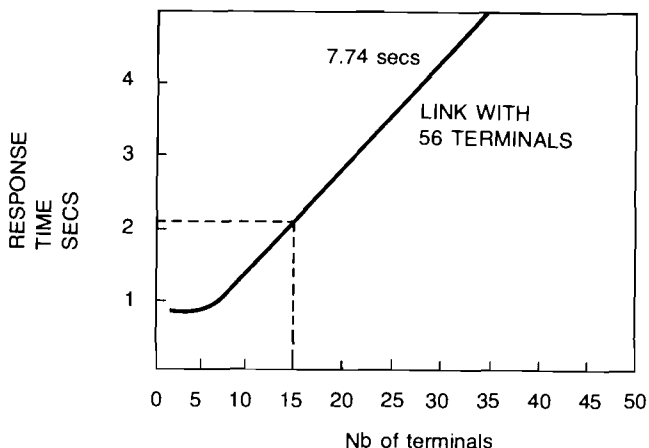
Sell OMR's Now
By: Serge Boivineau/HPG

Here is yet another reason for you to rush out and close a few quick deals before Christmas.

Regrettably, prices of the OPTICAL MARK READERS will be increased on the January 1st Price List.

Unfortunately, there is quite a high labour content in the manufacture of the OMR's and with worldwide inflation it is difficult to avoid such increases.

	OLD PRICE	NEW PRICE	(US PRICE)
7260A	3500	3850	(4180)
7261A	3000	3500	(3800)
12986A	3775	4175	(4530)

There are no changes for the price of options.

As usual, orders will be accepted at the old price until the end of January, 1977.

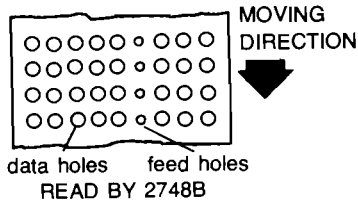## Head Options on 2748B Tape Readers
By: Georges Ouin/HPG

The 2748B can read 5, 6 or 8 level tapes. It requires a specific head per type of tape. Following is the list of the various options or updates which can be ordered from Boise or Grenoble.
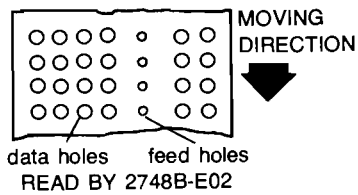
INSTRUMENT N°	OPTION N°	DESCRIPTION	FOB GRENOBLE PRICE $	US PRICE $
2748B	D02	5 level head assembly in place of the std. 8 level head assembly (to be ordered with a reader).	550	600
2748B	E02	6 level head assembly in place of the std. 8 level head assembly (to be ordered with a reader). Feed holes are between the fourth and fifth row of data holes.	550	600
2748B	E04	Adjustable 6/8 level head assembly in place of the std. 8 level head assembly (to be ordered with a reader). Feed holes are between the third and fourth row of data holes.	600	650
40200A	F20	5 level head assembly field add-on to a std. 2748B.	1100	1200
40200A	F21	6 level head assembly field add-on to a std. 2748B. This head is equivalent to the 2748B-E02 head.	1100	1200
40200A	F23	6 level head assembly field add-on to a std. 2748B. This head is equivalent to the 2748B-E04 head.	1150	1250
40200A	F22	8 level head assembly field add-on to a 2748B-E02, or D02.	500	550

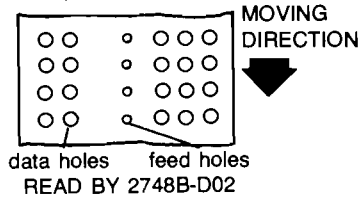Following are the different types of tapes which can be read by the 2748B.

A — 8 level tape

MOVING DIRECTION

data holes   feed holes
READ BY 2748B

6 level tape

MOVING DIRECTION

data holes   feed holes
READ BY 2748B-E02

B — 5 level tape
(Western Union Type)

MOVING DIRECTION

data holes   feed holes
READ BY 2748B-D02

6 level tape
(Fairchild TTS)

MOVING DIRECTION

data holes   feed holes
READ BY 2748B-E04
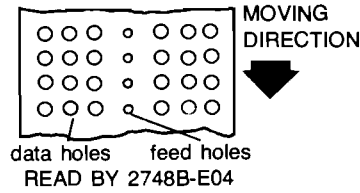
This note supersedes everything which has been written about Head(aches) options of the Paper Tape Reader.

OPTICAL FORMS ARE IDEAL FOR TURN AROUND DOCUMENTS

LINE PRINTER

COMPUTER DATA BASE

CONTINUOUS STOCK CARD FORMS

SOURCE DATA COLLECTION AND TRANSMISSION

DISTRIBUTION

SIMPLE AND INEXPENSIVE DATA ENTRY

GENERAL SYSTEMS NEWS

Product News

Pre-Series II HP 3000 Upgrades
By: Bob Lewin/GSD

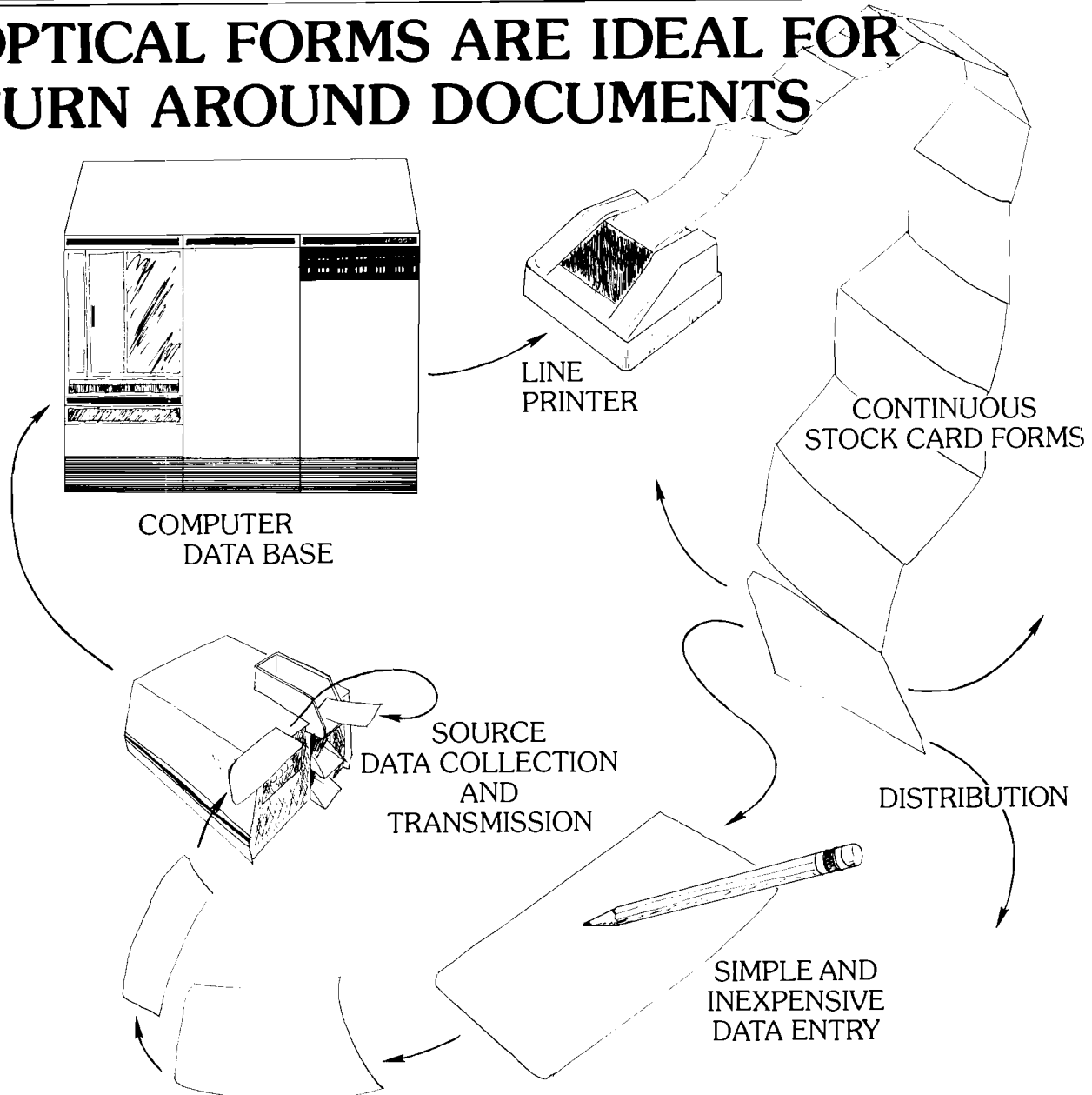Orders for the 30409A Pre-Series II to Series II Upgrade have reached 49 since its introduction! This kind of response is great, but did you know that there is still over $13 million in sales possible!!

There are still over 200 Pre-Series II installations in the world. At an average selling price of $65K per upgrade, that represents potential sales of $13 million. Like any other sales opportunity, it must be sold. To accomplish this;

1. Call on Pre-Series II customers you feel are upgrade candidates.
2. Refer them to customers who have upgraded (Sales Development can provide you with references).
3. Refer to the data sheet to resolve any customer questions.

If there are any questions needing assistance, contact your sales development engineer.

CPL Changes
By: Ed North GSD

We've made a few changes to the January Corporate Price List; some good news and some not-so-good news.

1. Good News — An option has been added to APL 3000 which allows OEM's to purchase the APL ROM chips only. The new option, which deletes the software and manuals, will enable OEM's who have purchased APL once to purchase the chips alone for subsequent machines. The new option, 32105A-001 is priced at $– 13,500. APL/3000 is $15,000, yielding a net price of $1500 for the chips.

2. Not-So-Good-News — As shown in Table I below, the price of the 30381A Series II Manual Set has been increased from $100 to $175.

The 23MB ISS disc drive, 2883A and 2884A, is being removed from the price list. The good news is the super deal that can be found in your availability schedule on this drive. The 12965A (2000 disc subsystem) is on a first come, first served basis at $15,000.

Table I below summarizes the January 1977 CPL changes.

Product No.	Opt. No.	Description	New Price	Old Price	BMMC
30381A		Series II Manual Set	$175	$100	—
	–600	Basic Manuals	$ 25	$ 20	—
	–601	Scientific Manuals	$ 15	$ 10	—
	–602	Commercial Manuals	$ 55	$ 30	—
32105A	–001	Deletes APL Software and Manuals. Provides APL chips only.	$– 13,500	New	$5
2883A		23MB Disc Drive w/cont		Deleted from CPL	
2884A		23MB Disc Drive Slave		Deleted from CPL	
2885A		Power Sequencer for above		Deleted from CPL	
12565A		Interface for 2883A		Deleted from CPL	
12868A		Disc Pack for 2883A and 2884A		Deleted from CPL	
12965A		23MB Disc Drive Subsystem		Deleted from CPL	

Optical Mark Reader Released On Series II
By: Ed North/GSD

Through the diligent efforts of *Bernard Guidon* (Boise) and *Bob Lane* (GSD Lab) the 7260A Optical Mark Reader (OMR) has been released on the HP 3000 Series II. (See Grenoble News, this issue.) Software supporting the OMR will be included on the MIT scheduled for mid-December distribution.

The OMR which is used in conjunction with a 2640 Series or 2762A/B Terminal can be used in Education for grading exams or running student programs or in commercial data processing for inventory control, production control or warehousing. See *Bernard Guidon's* article in the October 1, 1976 Computer Systems Newsletter, "TURN AROUND DOCUMENT PATH" for additional information.

Detailed specifications for use of the 7260A OMR on the 3000 Series II can be found in the recently published (Nov. 1976) Series II data book. We have an Educational customer who has this configuration in an operational environment. If you would like to discuss it, call *Jim Banisch*, HP Rockville.

New! 192 K-byte Upgrade

A new item has been accomplished to further aid your sales effort. An option has been added to the 30409A product that provides the customer with a 192 K-byte Series II rather than the standard 256 K-bytes:

Product	Option	Price
30409A	508	– $5400

This option, combined with the trade in credit, makes the upgrade an excellent value! This option will be on the January 1, 1977 price list.

Sell an upgrade; there's $13 million in sales opportunity for you!

Competition

Data General's AOS — A New Multiprogramming Eclipse Operating System For S/230 and C/330 Models
By: John Page/GSD

Five years after the introduction of MPE, Data General has announced an operating system that copies MPE's concepts but only seems to have a subset of its capabilities. According to recent US press announcements, the AOS (Advanced Operating System) seems to have the following features:

AOS	HP 3000 Series II
Dynamic Memory Management	Yes
Hierarchical file directories	Yes
Synchronous and Asynchronous communications	Yes
Prioritized Multitasking	Yes
Supports Assembler, FORTRAN, BASIC	Yes, plus COBOL, RPG, APL, Compiled BASIC, SPL
Timesharing, Batch and Real-time	Yes. Depends on what they mean by 'real time'. This is not clear.
DG claims that Infos, their database management system, and COBOL are "logical developments" and declined to provide further details	1. Infos is not a DMBS 2. We already have COBOL and IMAGE.
ISA Real-Time FORTRAN extensions	No
Optimized FORTRAN 5	No
Minimum Memory 120KB	128KB
Maximum Memory 512KB	512KB
Spooling	Yes
They say AOS is 'process oriented' where a process is defined as a group of program tasks that share up to 64KB of memory space and compete for CPU resources as a unit. Up to 64 processes can be running. Processes are in a "family tree" and son processes can be created programmatically.	This is not our definition of a process but the "family tree" is similar. Since Eclipse does not separate code and data the 64KB must be a little confining (our stack alone is 64KB – the code almost infinite). They claim to get over this by being able to overlay 64KB blocks to execute large programs, but it is not known if the programmer has to get involved in this segmentation and overlay function.
Memory mapping through use of 2K pages	Virtual memory with variable – length segmentation is much better technically. This because you can arrange for logically-related pieces of your program to be within one continuous memory space. This means the memory

	manager only need do a single disc read to make it present in memory. Also, fixed page sizes cause wasted memory because each segment has to be rounded up to the next multiple of 2K — wasting an average of 1K per segment.
Sharable programs	Yes
Device-independent I/O	Yes
File security matrices	Yes
Dispatcher uses a "heuristic" algorithm. Tasks are assigned resources on the basis of their past behavior. This looks like DG's "trade-mark" for AOS.	This sounds a bit "gee-whiz". We don't really know what it buys you because tasks often behave in different ways depending on the data. For example, a COBOL compile of 10 lines is a lot different to a 10,000 line compile. It is not clear how they take this into account, particularly for user-written programs. If you get any info let us know. Our own dispatcher is very smart indeed as any Series II user will tell you. It balances the batch and interactive work beautifully to optimize both response time and throughput and keeps a dynamic profile of each running process for use in its decision-making process. Don't ask how it works. it's such a good algorithm that
Same command language for timeshare and batch	we want to keep it to ourselves.
Hardware error logging	Yes
They say a "typical" system has 256KB, at least one 100MB disc, 9 track tape, 8-12 terminals.	Yes
	About the same. but with more terminals. I suspect. They demonstrated a 12-terminal system to the press with two simple batch jobs running and a simulated real-time Building Security process control operation. They did not say what the terminals were doing.
Cost $2500	Bundled in
First deliveries — Spring 1977	November 1972

In all, AOS looks like MPE's little brother, but it has no commercial capability. With deliveries quoted for Spring 1977 with a stripped-down version. it will be interesting to see how long it takes to catch up with the massive developments that have gone into MPE. If you hear anything more about AOS. let us know and we'll keep you all up-to-date through the Newsletter.

Division News

New Systems of '76
By: Rich Edwards/GSD

That's the title of the cover article in the November 1976 issue of SYSTEM/3 WORLD. The monthly magazine reported on 15 new systems competing for the current System/3 user's attention. Hewlett-Packard was present with two entries: the HP 1000 Systems and the 3000 Series II.

An interesting addition to the factual review of each model was a competitive analysis chart showing the systems' direct competitors, ability to replace a System/3 [yes for both HP systems!], and conversion assistance. DEC shows good conversion assistance, but the HP 3000 Series II listed the best out of 15 systems' programs.

> "S/3 to 3000 conversion course and guide. conversion programs for applications data and programs; on-site consulting services."

GSD is working to improve our conversion aids so that the System/3 conversion is as easy as possible. Any field-developed programs or procedures should be sent to Rich Edwards/GSD, to help make it easier for our future conversions. Comments or feedback on present or past conversions would be appreciated too.

Note: SYSTEM/3 WORLD is available at $12/year from Informatics Inc.. 21050 Vanowen St., Canoga Park. California 91303 [213-884-4736].

Training Course News
By: Paul Myhre GSD

The HP 3000 SPL class (22804A) will be offered the week of January 3. 1977 at the GSD Western Technical Center. Please send your reservations ASAP. since the class start-up date is drawing near.

CS GROUP NEWS

Policy for Handling Quotes & Special Orders for AMD Systems

By: Ben Holmes/CSG

With the 9571 and the announcement of the 9580 in December, AMD will have two products designed to be wholly separate from the computer core. This separation, and the restructuring of the field sales force to AMD specialist Field Engineers and Data Products Field Engineers, should usually enable a customer to purchase the computer core system from Data Systems and the measurement portion from AMD. There will, occasionally, be special situations where this will be incompatible with customer requirements and, consequently, AMD may propose and supply the entire requirement. Guidelines to be used in determining how to proceed in various situations are outlined below.

1. RFP is received for standard ATS 80 which can be quoted completely by the two Field Engineers involved, with standard terms and conditions. The order is received and processed in the Sales Office with HEART transmittals to AMD for the 9580 and Data Systems for the computer core. These will be treated like separate orders by the factories. This is the preferred method. It gives a customer who has a Computer Systems Purchase Agreement the applicable discount and number of functional units on each portion, independently. This means that an OEM discount may be available on a computer core system shipped directly to the customer.

2. Same as 1, except the customer wants to witness testing of the combined hardware before shipment from HP. AMD offers an integration option which will allow the customer to purchase a computer core directly from Data Systems and have it drop-shipped to AMD. AMD will assemble the two parts and demonstrate the SFT on the combined system. This option may frequently be used by Government-type customers. If the Data Systems and AMD items are purchased separately and a Computer Systems Purchase Agreement applies, the customer will get the appropriate end-user or OEM discount on the computer core, even though it is drop-shipped to AMD.

3. An RFP for a system of the 92XX or 9500 type will be quoted by AMD as in the past and the entire order will be transmitted to AMD and manufactured at AMD. The normal 92XX/9500 discount and functional point count will apply.

4. The customer issues an RFP with a system specification which includes a computer core system with special hardware modifications, and an AMD 9580. The two Field Engineers request Data Systems and AMD to quote their respective parts. The Data Systems part includes the disc, terminals, and line printer. If both factories quote and the order is received, each part is treated as in 1 above. If Data Systems does not quote their complete package, it should be offered to AMD. If AMD is interested, AMD will quote the complete system. If the customer places an order based on the AMD proposal, the entire order will be transmitted to AMD and AMD will handle as in 3.

5. An RFP is received which contains standard hardware but also includes data items, documentation, configuration management, special Government pricing or delivery requirements, options, special terms and conditions, or other special requirements that cause Data Systems to decline to quote their portion in a manner that is acceptable to the customer; or, in a competitive situation, if Data Systems is unable to respond in the allowed time for quoting and the total HP proposal will therefore be disqualified; then the entire package may be quoted by AMD if they are willing. Any subsequent order received which is based on the AMD proposal will be transmitted to AMD in its entirety and manufactured at AMD. The normal 92XX/9500 discount and functional unit count will apply.

Summary

a. It is highly desirable and preferred that the Field divide a customer requirement between Data Systems and AMD and treat the parts like two separate orders.

b. If specials are involved, Data Systems will have first right of refusal for their portion. However, Data Systems does not have the option of eliminating portions that would make the total proposal unacceptable.

c. If Data Systems declines to quote their portion, AMD has the option of quoting the full package. If the customer places an order, AMD will receive it and manufacture the entire package.

d. All 92XX and 9500 order go to AMD.

Commission and Quota Credit

If Data Systems declines to quote the computer core portion of a system requirement and AMD subsequently quotes that portion and gets the order, the Data Systems Field Engineer will, nevertheless, get the quota credit and commission on the standard catalog portion of the computer core. This will eliminate any incentive for the AMD Field Engineer to include

requirements he knows Data Systems will not bid. It will be better for him to try to split the order. However, if he believes that this is not saleable and HP will lose the business, he will try to get AMD to quote the whole package to save his commission on the AMD portion. If AMD does the quoting and takes the risk, AMD will get the whole order and receive quota credit for the full amount. The AMD Field Engineer will continue to get full credit and commission for 92XX and 9500 type systems.

Merry Christmas

HEWLETT-PACKARD COMPUTER SYSTEMS GROUP
11000 Wolfe Road; Cupertino, California 95014 USA

COMPUTER SYSTEMS NEWSLETTER