# competitive update

**NOVEMBER 3, 1980** 

6 18	32¾ 32½ 3	32½ — 3a [	Cin Gas 1.96	8 69 20 1934	1934— 14	Lopend ./6	6 2/2 19 184	BV2-  1				FIBPWT 2.48 / I// 30/2 29/2 X.50/s	
5 88 6 175 227	15 141/s 1 351/2 341/4 3	321/a 3/8 141/2 351/4 27	CinciAil .90 CIT Fin 2.40 Citicorp 1.16	8 252 28 2634 7 129 29% r29 7 2898 2514 23%	27%-136 29%- 16 29%- %	Copwid 1.28 Cordura .30 Core Ind .64	8 2 181/2 181/2 10 320 4 35/6 6 136 15 143/6	18½- ¼ 3%- ⅓ 14¾- ¾	ESystm 1.20 EaglePc .76	6 181 22% 21½ 8 268 20% 20 6 7 1934 (19½	22% % 20% %	FiaPLit 2.08 6 334 26% 2644 261/2— Fia Stel 1.40 6 11 25 2434 25 — Fluor 1.20 8 267 35% 341/4 3434—	- 36 - 14
5 13 282 8 63	48% 48% 4 10% r8% 1 22½ r21% 2	48% + 1/8 10 + 1/4 2114 — 13/8	CitiesSv 3.20 CityInvest 1 City Inv wts	7 318 54 53 3 1056 13% 12½ 326 1½ 1	53¼-1¼ g13%+ ⅓ 1⅓ 22½- ¾	CornG 1.68a CoronBl 1.24 Cousins Mtg Cowles.C .80	9 166 54¼ 51¾ 9 84 22 20½ 121 2¾ 2½ 16 83 17¾ 17½	54¼+1¾ 21¾-1¾ 2¾- ⅓ 17%- ¼	Easco 1,10 Eastern Air EasA pf 2,69	3 3004 934 816 63 2334 r2276	191/2 — 1/2 p91/2 + 5/6 233/4	FMC 1.20 6 269 24 22½ p23%+ FMC pf 2¼ 1 34 34 34 Foote C 1.40 6 56 1936 18½ 18¼—	·i'''
10 392 7 43 8 182 8 121	2434 231/8 2 21 191/8 2	12%— 1/8 23½—15/8 21 — 1/2 26¼—2	Citý Inv pf 2 Cityl pf 1.31 Clark Equi 2 Clark Oil .60	110 22½ r21 3 26½ 26½ 6 106 35¼ 34¼ 7 78 11¾ 11⅓	22½- 34 26½-5½ 34¾-1 11¼- 34	Cox Bid .65 OPCInfl 2.70 OP Natl 1.64	11 151 49¾ 48¾ 8 239 48¾ 47¼ 10 7 16¾ 16½	491/6-27/6 48 - 1/4 163/6+ 3/6	EastGsF .80 EastUtl 1.60 EastmKo 2a Eaton 2.25	103 549 13½ r13 9 51 15½ 15 12 2998 58% 55% 7 173 35¾ 34½	13% 15 - ½ 58%+1½ 3534- ¼	For McK 1.24 5 156 181/2 171/2 18346— Fo McF 1.80 26 29 2734 29 — FiDBrn 1.24 22 131/4 131/4 131/4	· % · %
z40 39 61 7 577	5534 5534 5 5914 5834 5	26.4—2 5534—214 59—134 3434—11/8	CLC Am .24 ClevClff 1.20 ClevElc 1.84	122 934 914 10 45 27 r26	9% — 34 27 + % 018% — 14	Craig Cp .50 Crane 1.40g CreditFn .40	5 67 10% 9 7 76 25% 24% 5 365 7¼ 6% 5 133 26 24½	9½-1½ 25 - ½ 7½- ½	Eatonpf 1.19 EchlinM .72 Eckd Jk .64	1 35 35 23 97 30½ 30¼ 13 252 28¾ 27¾	35 -3 301/4 3/4 281/4 3/4	FotHow .96 12 79 39 3814 39 + FosterWI 1a 7 390 301/2 2734 301/4 + Fotomat .50 10 253 1034 101/2 1034-	- 1/8 - 1∕8
15 569 1 371 8 12	3 234 201/2 20 2	38½+ % 2%- % 20 - %	ClevEpf 7.56 ClevEpf 7.40 Clevpak .60	z100 83% 83% z250 83 81 9 73 8 r7½	g83%-1% 81 -2 8 + 4	Crocker 1.80 CrockrNpf 3 Crk pfB 2.19 CromKnl .96	5 133 26 24½ 25 42¾ 41 22 24½ r23½ 6 40 14½ 14½	25¼-1¼ 41 -1¾ 2356- ¾ 14½- ½	Edson8 1.10 Edwards .60 E G & G .44 Elect Assoc	9 138 28½ 275% 4 240 15% r14 12 277 27 2434 9 586 6% 5½	2814 - 34 1578 - 1/8 27 + 34 678 + 1/2	Four Ph Sys 11 1182 2734 r25 2734 — Foxbro 1.10 9 33 33 32½ 33 + Frank M .30 10 751 7½ r6 734 + FreptM 1.60 15 436 2334 22% 2334 —	1/a 1/4
7 14 9 - 90 10 807	261/4 255/8 2 241/8 223/4 2	9½ 25 <sup>3</sup> 4— ¾ 24 — ⅓ 50¾— ¾	CloroxCo .68 Cluett P .60 CluettP pf 1 CNA Finad	7 955 10% r9% 5 194 10 9% 2 10% r10% 756 44	1036+ 36 10 1036 1/4	CrouseHin 1 Crown Cork Crown7 100	8 43 22% 21½ 7 164 27½ 26% 9 104 32% 31%	21%-1% 27%- % 22%- %	El DataS .84 Elect Memo	11 97 17 15% 4 753 4% 4%	17 + 34 4½- 1/8	Frigtron .22 11 440 14 11 14 Frhauf 2.20 5 448 29½ 27¾ 29¾ Fuguain .40 51130 9 r7½ p8¾	3,4
14 170 12 655 8 334	39 35½ 3 33¼ 31 3 23¼ r20 2	39 +21/4 331/4 1/2 231/4+11/4	CNA pf 1.10 CNAIn 1.08a Coachm .60	394 4			341/2 151/4 1334 r	341/4 15 131/2		93 r334 16 1045 r1336	-2% - 1/8 + 5/6	Fua pf81.25 16 14% 13% 13% 13% G	1/4
160 5 147 5 36 7 43	33½ 31½ 3 20% 19¼ 2	3½ 32%—1% 20%— ½ 6%— ½	CoastSG .30T CstSGpf 1.19 CstSGpf 1.83 CocaCol 1.74	5 1887 15 1276 18 15¼ r14 z7800 18¾ r17¾ 15 1166 41½ 39¾	14% - 36 1834 + 12 41/2 + 16	Curnins 1.80 CurnOrg .32 Currinc 1.10	4 217 31 r29% 7 35 834 81/8 44 111/6 r1034	30% — 36 8½ 10% — ¼	EltraCp 1.24 Erner E 1.20 ErneryA .92	6 452 26 24% 12 616 33¾ 32½ 15 133 20% r19½	26 - 1/2 33% 20% + 1/4	Gable Indst 8 45 434 r436 436— GAF Cp .68 14 460 1036 936 1014— GAF pf 1.20 70 15 r141/8 141/2—	- 1/4 - 3/8
8 42 7 152 6 461	52 51½ 5 16½ 15% 1	52 + 36 16½ ½ 6½+	CocaBott .40 ColdwB 1.12 ColeN	9 898 6½ r5 6 78 28 26%	p6% - 1/s 28 - 1/s	CurtissW .80 CurtissWA 2 Cudop 1.20a Tus .60d	8 282 13% r11% 4 24 r23½ 3 55 24% 23¼ 5 16¾	13% - 34 23½ - 1 2434 - 34	EmhartCp 2	6 274 32% 30% 31 375 3% 3% 8 39 4%	b32%+ % 3%	Gam Šk 1.40 7 35 2634 251/2 261/2— Gannett 1.40 14 340 421/4 41 41/8+ Gap Strs 30 4 329 71/2 r634 71/4— 37 31 1734 161/4 1734-	34 - 5/8
6 41 6 252 6 344	21 20 2 36 35¼ 3 22¾ 21½ 2	20¼- 35¾- 22½+	Color	3 637 275 81/2		20	171		Em m	7 7 78	14 251 /2	Gar 7 36 2034 2014 2036— Gas SVC 65 141/2 14 141/6— at 2 71/4 r61/2 634—	- 5/8 - 1/8 - 3/4
290 26 9 553 167 552	461/2 46 4 43/8 37/8	26½ 46½+ ½ 4½+ ½	Coll Pen 1.20 Colt Ind 2.10 Colt pfA 1.60	5 510 1078 976 7 236 2734 26 4 261 33 r301/2	27½ ⅓ 33 +1 26	DanaCp 1.36 Daniel .22g Dartind 1.60	6 383 11	10-34 - 34 27 - 34 15-36-1 381/2+11/2	Ensrch 1.36 Entex In .80 Envirotch 1	8 481 17/4 r1634 6 335 15/4 r14/8 10 144 2036 r17/2	1714- 14 15 - 46 2014+ 1/2	GATX 1.80 20 279 27¼ 27 27¼— GATX pf2½ z200 34% 34 34 34 GC A .15 10 481 14½ 12½ 14½ 14½ 67½ f63% 7½—	15/6
9 859 16 1597 12 385	23% r20½ 2 20% r19% 2 32 30% 3	23%+1% 20%+ ½ 32 + ¼	Coltin pf 41/4 Col Gas 2.34 ColGs pf 55/8	7 67 65½ 6 111 26¼ 25½ 2 57 57	65½-9½ 25¾ 57 - ½	Dartind pf 2 Data Genral Datapoint C	29 39 38 14 239 56½ 52½ 13 878 53¼ 48	38%+ 1/2 56%+296 52%+134	Equifax 2.20 Equirm k .96 Eqm pf 2.31 EquGas 3.04	8 21 22% r21% 7 32 11% r10% 17 24% r23% 5 13 33% 33%	22 - ¼ 10%- ¾ 23¾- ¾ 33½- ⅓	GDV Incorp 4 442 736 636 71/4— Gearh Owen 15 597 2734 r2336 2734+ Gelca Cp .70 9 200 2636 2536 2636 Gemini Cap 147 2038 2014 2036—	36
8 49 4 91 11 658 5 337	18 r17/s 1 16% 151/2 1	19 —114 1734—1 1638+ ½ 2134+1½	ColG pf 5.46 Col SOh 2.32 CISOpf 10.52 ColSOpf 2.42	1 55½ 55½ 12 190 24% r22% 250 106 106 7 24¾ 24½	55½— ¾ 23¼— ¾ 106 — ½ 24¾	DaycoC .50g	14 1257 30 r25¾ 3 41 13¾ r13¾ 7 147 36% 36 10 209 16¾ r16¼	29% + % 13% — % 36% — % 16%	Equit Life 2 Esmark 1.84 Esquire 40	9 86 18½ r17¾ 7 314 25 r24½ 4 69 9¾ 8½	181/2 1/8 p24% 1/8 85/6 11/8	Gemin 1.20a 5 14% r14% 14%— GnAmin .92 54 10 9% 9%+ GnAmol .60 19 379 32% 29% 31%—1	36 1/8 1/4
7 69 9 41 5 589	13% r1314 1 20% 20 2 19% r18% 1	13½— ½ 20¾+ ½ 18¾— ¾	ColPict .50d CombinC .20 CmbEn 1.80	86 7 71 3		Dayful 1.60 DayPLt 1.66 DP 7.4 DW 80	. z 75 r75 1 11/2 r10 32/4 30	75 1) V 3	Essence 60 Site 46 Fin 120 Va 140	71 20 1155 2 16		GenBncs .80 5 19 15½ 1536 1536— G Cable 1.10 8 522 1434 12¼ 1434— GCab pf1.94 102 21½ 20½ 21½— Gen Cin 1.12 8 275 34½ 32% 34½—	34
6 353 4 267 12 3579 6 482	5 4¼ 60¾ 56¼ p6	5% 4½- ½ 60¾+4% 27 -1½	CrnbEq .14g CrnwEd 2.40 CwEdpf 2.87 CwEdof 2.38	110 100 2	25% 29% - 1/2 261/4 - 1/6	De!79011 1.70 Delta Air 1	6 545 40% 39¼ 25 88 7½ 7½	13 391/4-76 p401/2-1/4 71/2-1/4	ExCelO 1.60 Excise 1.31d	7 186 25¼ 23½ 3 17¼ 17%	2514-114 1746- 14	Gen Dynam 7 454 6834 63 6834+4 Gn Elec 2.60 9 2015 481/2 46 p481/2+ GnFood 1.64 8 444 3134 311/8 311/2-	41/2 3/4 1/2
6 502 5 366 7 197	26% [26 p2 27½ 26 u2 6½ 4¾	26%- 18 27%+ 16 6 - %	CWEdpf 8.38 CWEdpf 1.42 Cwe pr 1.90	13 94 931/8 11 18% r18% 102 20½ r19%	93%-2% 18%- ½ 20½+ ¼	Dettona Cp Dennisn 1.52 Dennys I	17 643 8% 7¼ 537 25% 3236 284 11 11	8½+ % 33	Exxon 3.40	9 2318 49¼ 47½ F 6 336 8¾ г7¾	49¼+¼ 8¼-¾	GnGro 1.50d 15 693 221/2 22 221/4— GenHost 60 78 91/2 91/8 93/6— GnInstr .60g 7 984 241/2 231/2 241/2— GenInst pf 3 6 363/6 36 36 —	V4 34
8 114 21320 47 57	3892784 8 1192 1194 1	23% 84 —2½ 11¼— % 1334— ¼	CommSat 2 Com Psy .50	6 10 1914 19 10 256 38 3636 10 279 1334 r1236 13 x708 33 r2856	19¼+¼ 37%+¼ 13¾-¼ 33 +2%	Dentsply DeSotoln DetEdis DetE pf 9.32	146 54 8 71 2440 93 92	15 4 12 15 921/2- 1/2	berge .40 bCn A .20 scet Entrp FairCam .90	5 39 5% 5% 88 4¼ r4 7 875 29½ 26%	5%- % 4¼- ¼ 29½+ %	Gen Med. 44 12 254 13¼ r11½ 13¼+ GnMills 1.16 10 254 29¾ 28½ 29½+ Genl Mot 4a 53441 61 60 p61 —	1∕a 1∕2
5 1902 6 86 10 119	12% 11% g1 21% 20% 2	124+ 36 21 -1 264- 4	Computer Sci ConAge 1,30 ConeAN 1,60	10 1275 11% 9% 4 x85 20½ 19¼ 4 149 23¾	10% — % 20 — % 23: a	DetE pf 7.68 DetE pf 7.45	z200 78 78 z150 76 75½ z190 22 74	978 - 34 75% - 76	Faircind .80 Fairmit .76	5 551 22% 1834 9 47 10 934	221/4 9% — 1/8 27 — 3/4 1236 — 3/4	GnMotpf 334 3 48 48 48 — GenMotpf 5 6 64 r63 63 —1 GenPort 40 5 334 11 934 11 GPubU 1.80 7 435 17% 17 17%+	11/2
11 694 x1 12 630 6 15	36¼ 36¼ 3 r18% 18 1	324+216. 364- 4 184+ 4 2834-1	ConnAt 1.80 ConnAt 1.80 ConNtG 1.60	6 329 18 15 58 187 2 11 2 17 7 64 169715	18 24	Δ	6 67 23 % r25½ 18 725½	25 ½. 21 ½.	- A		3%- ¼ 4½- % 31%- ¾	Gen Refrac 161 6 r51/8 51/4 GenSignal 1 10 z33000 264/4 24/9 261/2+1 GnSteel .40a 6 115 75/6 67/6 73/6	34 11/4 36
6 15 6 59 8 8 59	191/2 r 18% 1 25% 25% 2	19%— % 25%— % 7%— %	Conrac .80g Con Ed 2.20 ConsEd pf 6 ConsEd pf 5	5 734 23¼ 2256 6 74½ 73% 14 49 r48¼	18/4 - 76 123 - 36 7346-246 48/4 - 34	Dexter 80 DialCpn 1.20 Diamiti 2.20	8 220 18 r16 6 74 1614 151/2 8 93 30% r30	18 + 34 1616 36 30%+ 16	FMogul 1.80 FdNtMt 1.16 FedPaB .90	5 70 27½ 26¾ 4 1103 15¾ 15½ 7 228 19¾ 19	2714-114 1534+ 1/8 191/2-114	GTE 2.48 7 1052 28% 28 28½— GTE pf 2½ 1 31½ 31½ 31½ GTE pf 2.48 111 26½ 25% 26%— GTFlapt 1¼ 2300 13¼ 13¼ 13¼—	36 · 1/4
6 57 5 36 9 409	15% 14% 1 11½ 11% 1	24½— ¼ 15%+ % 11½— %	ConsFd 1.60 ConFdpf 41/2	z6100 50¼ 49½ 7 180 23¼ r22¾ 7 63 62¼	950¼ + ¼ 23¼ + ¾ 62¼ — ¾	DiaShm 1.48 DickAB .20a Dictaohn .84	6 722 22% r20% 6 142 7% r6% 5 430 13% 11%	21%— % 7 — ½ 13½ 19 + ½	FdPpf3 1.20 FedSign1 .80 FedDSt 1.60 Ferro C 1.08	3 24½ 24½ 5 79 12¼ r11½ 8 223 33½ r32¼ 6 417 21¼ r20%	24½- ½ 11¾- % 33¼- ⅓ 20¾- ¾	Gn Tir 1.30g 5 365 241/6 23 24 + Genesco Nrc 10 480 43/6 41/6 43/6—Genstar 1.48 6 26 283/6 28 283/6—	1/8 1/8
6 982 14 6 49 33	31% r30% 3 22½ 21% 2	14½+1 30% % 21%1%	ConFrg 1.10 ConsNG 2.76 CNG pf10.96 ConsuP 2.24	6 126 25¾ 25¼ 6 78 34¾ 34 z10 11 1½ 11 ½ 7 540 21¾ r20¾	25%+ ¼ 34%+ % 111½-1½ 21%- %	DiGiorgo .48 Digital Egpt	12 333 19% 1734 7 466 10½ 934 14 2335 47¼ 44% 242 313 736 r7	10¼ - ¾ 47¼ + 1¾	Fid#Fnct .40 FidUBc 2.60 Fdcrst 1.40a	3 215 734 7 6 18 3214 311/2 4 138 25 r221/6	p734 3134— 34 24 —114 11 — 56	Ga Pacf 1g 10 1308 271/2 263/4 27 — GaPw pf 23/4 31 263/4 261/4 263/4+	3∕8
7 337 3 4 36	1634 r 1614 1 6 6 2514 r 241/2 2	16% — 1/6 6 24% — 76	ConP pf 4½ ConP pf 7.45 ConP pf 7.72	z610 46¾ 46 z100 79½ 79½ z100 82 80½	46 - 34 7912 12 8012 112	Dillon 1.20g Disney .32g Diversifd in	10 14 30¼ 30 13 994 37½ 35½ 214 236 1%	7¼- ¼ 30 - 36 3736+ % 2¼- ¼	Filmwy .20g FnclCpA .75 Fincl SB .60 Fncl Fd 1.20	6 533 11 r9 6 44 18¼ 1756 4 170 12 r1136 4 253 24 r21¼	11 % 18¼ 12 - ¼ 22%-1%	Gesrce .51d 7 210 22½ 21¼ 22½— Gerber 1.50 8 235 27½ 26 27¾— GettyOl 1.20 10 456 38¼ 35¼ 37½—	11/8
62 5 x36 12 5 786	19 r18% 1	7 11 - ¼ 18% %	ConP pf 7.76 ConP pf 7.68 ConP pf 4.52 ConP pf 2.43	z10 82 82 z520 80 79 z160 53 52 4 24/2 24	82 -11/2 80 - 1/2 53 24 - 36	DomeMn .80	506 3¼ 2¾ 13 950 15¾ 14½ 11 288 76 71¼ 13 303 3¾ 3¼	3 - 1/2 153/6+ 1/8 741/4-13/6 33/4	Firstne 1.10 FstChart 80 Fst Chi 1.10	9 1140 12½ 12¼ 5 310 16 15¼ 6 121 20% 20	12%— 1/6 16 + 1/6 20%— 3/6	Gettypf 1.20 96 18¼ 18 18 GFBus Eap 58 5 r4¾ 4¾- GiantPC .60 31 62 8 7½ 756- Gbratter .90 4 542 1454 14 14¼-	1/4 1/2 5/8
16 7 x615 4 384	1934 18 1 17/2 r 17 1 3734 r 35 3	19 - ½ 17½+ ½ 37¾+ ¼	ConP pf 2.23 Con P pf2½ ContAL 20d	25 20% r26% 11 24% r24½ 3 1655 9% 8%	20%— % 24½— ¼ 9%— %	Donnelly .88 Dorr Olv .60 Dorsey .60	10 628 29 28¼ 8 83 18¾ 17 5 145 13¾ r12½	28¼ - 34 17½ - 34 13% - %	FCBTx 1.32 FstBcs 1.30 Fst Miss .40 FstNatBos 2	8 z4200 35½ 35 9 67 34¼ r33¾ 125 397 8% r8 5 84 27 26¼	35¼- ¾ 33¾- ¾ 8¾- ¼ 26%- ¾	GiddLew .70 4 412 1536 1336 1536— GiffordHII 1 4 86 18 1736 g171/2— Gillette 1.60 9 760 2656 241/2 2656+1	% 34
44 59	3834 r37 3	7 - 16 3834- 36 1834+ 14	Contl Coppr ContlCp 1.70 CntlCp pf21/2	5 54 4% 4 4 299 23% r23% 2 52 r51	4 - ½ 23%- ⅓ 52 -4	DoverC 1.40 Dow Ch 1.40	9 168 42 40 9 2810 27½ 25% 12 7 33 33	42 +1 p2736+11/2 33	FSTNatibos 2 FSTNS Bnc 2 FSPaCp 1.32	5 84 27 2614 6 40 231/2 23 7 181 141/6 r133/4	26%— 36 23 — 36 14%— 14	Gino's Incip 5 446 71/4 r61/4 7 —	1/4"

COMPANY digital CONFIDENTIAL

The Competitive Analysis area is divided into two clusters – Commercial, managed by Don McGinnis and Technical, managed by George Hayes.

Although each cluster is responsible for its respective marketing areas, the groups are well aware of overlap within the Commercial and Technical marketplace and are prepared to work together to service all requests for competitive data.

COMMERCIAL CLUSTER		
COMPETITOR	CONTACT	DTN/LOCATION
IBM GSD HP Commercial Mainframe Competitors	Don McGinnis	264-5375 MK1-2/N38
IBM DPD	Rick Case	264-7307 MK1-2/N38
Wang (Integrated Information Processing) Prime Commercial Datapoint IBM OPD	(OPEN)	MK1-2/N38
TECHNICAL CLUSTER		
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Prime Technical Perkin-Elmer	Martin Harrison	231-7194 MR1-1/A95
HP Technical Honeywell SEL Communications	Nizar Huddani	231-71 <b>94</b> MR1-1/ <b>A9</b> 5

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**Business Communicators** 

# HONEYWELL LEVEL 6 SERIES:

# HIGHLIGHTS & ANALYSIS

Nizar Huddani Toronto 416-977-2844 RCS: TORD

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# 1.0 HONEYWELL CORPORATE

For the purpose of this document Honeywell and HIS refer to Honeywell Information Systems.

#### History

- Wholly owned subsidiary of Honeywell; based in Minneapolis.
- Acquired Computer Control Corporation which was marketing DDP-116. This model was enhanced into 316, 516 and 716 systems, and marketed under the Honeywell name.
- Level 6 Series announced in 1976.
- First delivery Model 43; February 1977.
- Number of Level 6s installed is over 5,000 (June, 1979)
- Current manufacturing capacity is 400 systems per month. Honeywell has reduced the size of its minicomputer salesforce as it cannot meet the demand for the Level 6 product from customers. Level 6 is used internally by Honeywell in products such as front-end processors for large mainframes and page printing systems.

#### • Financial\*

			<u> 1976</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>
_	Total Revenue	\$M	913.8	1,036.9	1,293.6	1,452.6
_	Income Before	Tax\$M	41.4	79.4	105.7	152.4

<sup>\*</sup>Does not include Cll-HB in which HIS maintains 47% ownership.

#### Offices

HIS maintains offices in the United States and most countries worldwide, with almost 400 locations.

# • Field Staffing (Dataquest - June, 1979)

		<u>Sales</u>	Software	Field Service
_	U.S.	800	3,000	3,554
_	International	400	2,270	1,899
_	Total	$1,\overline{200}$	5,270	5,453

#### 2.0 HIS PRODUCTS & MARKETING

# 2.1 HIS - LEVEL 6 SERIES MARKETING

# • Why the Level 6

#### - GENERAL:

After its merger with General Electric in 1970, HIS had virtually abandoned the minicomputer marketplace. Level 6 was the HIS entry back into the market.

- Level 6/53 and 6/57 were positioned to compete with systems such as the PDP-11/70 and PRIME 550.
- Level 6/43 was designed to penetrate the mid-range market against systems like the PDP-11/34, -11/44, PRIME 450, etc.
- Level 6/23 and 6/33 are entry level systems in the same range as LSI-ll and PDP-11/23.

#### Targeted Product Space

- Level 6/53 and 6/57:
  - . Approximately 2.3 times the performance of Model 33.
  - . In a commercial environment, approximately 15 times more powerful than Model 33 and approximately the same as a PDP-11/44 with CIP.
  - . In a scientific environment, the use of a Scientific Instruction Processor (SIP) improves performance by about 15 times over Model 33. This would equal the performance of a PDP-11/60 or -11/44 with a Floating Point Unit.
  - . Upward compatible with Model 23, 33, 43 and 47.
  - Entry level system price is \$220,000.

#### Level 6/43 and 6/47:

- . Approximately 1.6 times the performance of Model 33.
- . In a commercial environment, about seven times that of Model 33 and about the same as a PDP-11/44 without CIP.
- . In a scientific environment, the performance is about the same as Model 53.
- . Entry level system price is \$100,000.

# - Level 6/33:

- . Low-end system
- Uses the same instruction set and architecture as larger Level 6
- . Maximum memory of 128K bytes
- . Compares approximately to a PDP-11/34

# - Level 6/23:

- . LSI version of 6/33
- . Uses a synchronous bus rather than a megabus
- . Uses the same instruction set as Model 33; performance is about 60% of same
- . Compares to a PDP-11/03
- . Entry level system price is \$22,000

# 2.1.1 Overview of the Honeywell Level 6 systems

	Model 23	Model 33	Model 43	Model 47	Model 53	Model 57
Memory/bytes minimum maximum	32K 128K	32K 128K	32K 2,048K	32K 2,048K	32K 2,048K	32K 2,048K
Disk capacity/by maximum	tes- 4M (Diskette	4,000M es only)	4,000M	4,000M	4,000M	4,000M
Typical register register add tim (microsecond)		3.1	2.0	2.0	1.4	1.4
Floating Point Processor	N/A	N/A	Optional	Optional	Optional	Optional
Commercial Instr Processor (CIP)	ruction N/A	N/A	N/A	Standard	N/A	Standard
Memory management	N/A	N/A	Optional	Optional	Standard	Standard
Cache memory	N/A	N/A	N/A	N/A	Standard	Standard
Writable Control Store	N/A	N/A	Standard	Standard	Standard	Standard

N/A = Not Applicable

The Level 6 series is based on three different CPU models – the 23, 33 and 43. Model 43 with cache yields a Model 53, Model 43 or 53 with CIP is equivalent to a Model 47 or 57.

#### Promotional Themes

- Full range manufacturer with full range support.
- Compatibility not only within Level 6 but across Series 60, now known as various DPS systems.
- Large program capability by minicomputer standards (over 64K bytes)
- Price/performance

NOTE: Level 6 is a word addressing machine and therefore, can address 128 Kbytes (64K words). This does not mean that HIS can write larger programs. A program on PDP-11/RSX occupying 20 Kbytes will occupy 40-50 Kbytes on Level 6/MOD 400 and 600.

#### Targeted Markets

- Technical and Commercial OEMs
- Distributed Data Processing (host-mainframe and Level 6 nodes)
- Specialized commercial (small business systems Distributed Processing System [DPS 4] type)
- Sophisticated end users (Fortune 1000, Government, etc.)
- Packaged into front ends and page printing systems

# Marketing Strategies

- Targeted selective markets and accounts
- Very good salesforce

# 2.2 HIS - LEVEL 6 HARDWARE

#### Processors/Memory

- Level 6/53 and 6/57:
  - Segmented memory management
  - 16-bit word length; 20-bit addressing yields address space of 2,048K
  - Addressing unit is in words (2 bytes)

  - Scientific Instruction Processor (SIP) is optional Commercial Instruction Processor (CIP) standard on Model 57
  - 8K byte memory cache (95% hit rate)
  - Supports up to 63 users
  - Error Detection And Correction (EDAC) double-fetch memory is available. This is a 22-bit memory that employs 6-bit Hamming code to detect and correct all internally caused single-bit errors and detect all double-bit errors.
  - All modules plug into the megabus, a high-speed asynchronous bus capable of providing a throughput of up to 6M bytes per second.
  - (6/57; 384K bytes memory, 512M bytes disk, tape drive, line printer, card reader, console, 16-line communications interface, GCOS MOD 600 and FORTRAN) \$220,000.

- Levels 6/43 and 6/47:
  - . Optional memory management
  - 16-bit word length; 20-bit addressing yields address space of 2,048K bytes
  - . Optional SIP
  - . CIP standard on 6/47
  - . Supports up to 63 users
  - . Can use double-fetch EDAC or parity memory
  - Price: (6/43; memory management, 384K bytes memory, 66 Mbytes disk, 300 lpm printer, eight asynchronous lines, eight VIP 7200 CRTs, MOD 400 software) \$100,000.
- Level 6/33:
  - Same general architecture and instruction set as larger Level 6 models.
  - . Maximum 128K byte memory
  - . Supports four to eight users
  - No memory management
  - . Sold only in technical OEM areas (single user environment)
  - Price: (CPU, 128K bytes memory, 10MB disk, console, MOD 400 software) \$45,000.
- Level 6/23:
  - . Uses a synchronous bus rather than a megabus
  - . Same instruction set as other Level 6 models
  - . Supports diskettes and smaller disks only
  - Primarily used for data entry related functions (forms driven)
  - Price: (CPU, 64K bytes memory, dual diskette drive, two workstations, 160 cps printer, MOD 200 software)\$21,500.
- All lower Level 6 models can be upgraded to higher models (6/23 excepted) by exchanging CPU boards. They all use the same backplane (megabus) and common peripherals.

# Mass Storage

NOTE: Prices are given as \$purchase/\$monthly maintenance

- Floppy Disks
  - . Packaged in either single or dual configurations
  - . Single or double sided
  - One drive subsystem, single sided: \$3,680/32
  - . Two drive subsystem, single sided: \$4,780/43
  - . One drive subsystem, double sided: \$4,205/25
  - . One drive subsystem, double sided: \$5,630/45

# - Cartridge Disk (5-26MB)

	Model #	CDU9114	CDU9115	CDU9116	CDS9336
	Capacity/drive	5 Fixed/REM	5 Removable	10 Fixed/REM	26 Fixed/REM
	Maximum drives/ controller	4	4	4	4
	One drive and controller	\$12,100/88	\$11,700/88	\$12,700/108	\$13,600/95
	Additional drives	\$ 7,400	\$ 7,000	\$ 8,000	\$10,100/85
-	Large Disks (40-3	00MB)			
	Model #	MSU9101	MSU9102	MSU9103	MSU9104
	Removable pack	Yes	Yes	Yes	Yes
	Formatted capacity	33	67	128	256
	Maximum drives/ controller	4	4	4	4
	Maximum transfer rate	1.2MB/Sec.	1.2MB/Sec.	1.2MB/Sec.	1.2MB/Sec.
	Prices				
	Single drive and controller	\$21,000/160	\$23,500/160	\$30,000/230	\$34,500/230
	Dual drive and controller	\$35,500/270	\$40,500/270	\$54,500/410	\$63,500/410

# - Tapes, Printers, Card Readers

# . Tapes:

800 bpi, 45 ips, seven or nine track:	\$ 11,000/100
800/1600 bpi, 45 ips, nine track:	17,200/120
800 bpi, 75 ips, seven or nine tracks:	13,000/120
800/1600 bpi, 75 ips, nine track:	22,200/180
1600 bpi, 45 ips, nine track:	14,800/120
1600 bpi, 75 ips, nine track:	19,100/180

# . Printers:

120 cps		\$ 4,615/61
160 cps		4,890/66
240 lpm	96 characters	14,690/81
300 lpm	64 characters	11,690/ 76
440 lpm	96 characters	23,690/166
600 lpm	64 characters	22,190/156
drum 660 lpm	96 characters	26,390/216
drum 900 lpm	64 characters	24,690/201

#### . Card Readers/Punch:

80	column/300 lpm		\$ 6,010/85
80	column/500 lpm		6 <b>,</b> 710/110
80	column/100 lpm	punch	14,710/147
80	column/400/100	lpm reader/punch	16,710/167

#### 2.3 HIS LEVEL 6 SOFTWARE

- There are three different operating systems (MOD 200, MOD 400 and MOD 600) supported on Level 6 hardware. The common features are:
  - Same file system among the three executives
  - Same command language
  - All languages support the same file system
  - File system compatible with other GCOS systems: DPS/8, DPS/66, DPS/7
- MOD 200 Operating System
  - Supported on Model 23 and up
  - Event based or time slice scheduling
  - Sixteen priority levels with user assigned queuing at each level
  - Automatic volume recognition
  - Limited task swapping mechanism
  - Available in both 'execute only' and 'program development' versions
  - Supports entry-level COBOL only
- MOD 400 Operating System
  - Real-time operating system (RSX-11M type)
  - Supported on Model 33 and up
  - Available in two versions (SAF = Short Addressing Form for memory up to 64 Kbytes) and (LAF = Long Addressing Form for memories over 128 Kbytes).
  - Supports only one batch stream which can be 'rolled out' (swapped) to accomodate interactive tasks.
  - Priority scheduling (1-63) is available; round-robin at the same priority level.

# MOD 600 Operating System

- General-purpose operating system (IAS type)
- Designed after Honeywell's MULTICS
- Supported on Model 43 and above
- Timesharing operating system, uses a predefined time slicing algorithm
   Supports a segmented address space into which one or more 256K word to 64K word segments can be loaded
- Supports full spooling
- Upward compatible with GCOS-66 and MULTICS

#### Languages

- Entry level COBOL (MOD 200 and 400 only)
- Intermediate COBOL (MOD 400 and 600 only)
- Advanced level FORTRAN (Level 1, ANSI 77)
- BASIC and ADVANCED COBOL (full ANSI 1974 with multi-key ISAM) have been announced - available in Q4-1980.

# Data Management

- Single key ISAM is standard
- INFO 6 (Query and reporting system)
- TOTAL 6 (CINCOM supplied on MOD 400 only)
- IDS II (Compatible with GCOS-66 on MOD 600 only)
- DEF (Data Entry Facility)

# Utilities

- Sort/Merge
- Other utilities such as edit, print, link, etc. are available

#### Software Pricing

		License Fee	One-Year Support
Ğ	GCOS-6 MOD 200 GCOS-6 MOD 400 GCOS-6 MOD 600	\$1,900 1,500 5,100	\$575 550 700
- L	anguages		
E I <i>p</i> F	Cntry level COBOL Cntry level FORTRAN Intermediate COBOL Advanced FORTRAN RPG II Assembler	\$3,780 735 4,700 2,750 2,900 300	\$800 365 950 400 630 40

# - Data Management

	License Fee	One-Year Support
GCOS-6 Data Entry Facility	\$ 1,400	\$ 200
<pre>INFO-6 Data Inquiry/Update</pre>	3,800	200
GCOS-6 Sort/Merge	265	40
IDS-II	13,000	1,192
IDS-II runtime services	7,000	642
TOTAL-6	10,500	1,260

# 2.4 COMMUNICATIONS

#### • Controllers

NOTE: Prices are given as \$purchase/\$monthly maintenance

- Multiline communications processor with:

Eight asynchronous lines: \$3570/26Eight synchronous lines: \$7900/43

- Synchronous Lines
  - . Up to eight DMA lines on one controller
  - . Speeds up to 72,000 bps
  - . Supports Autocall
  - . Compatible with HDLC Bell 301/303, CCITT V24 and HDLC V35, CCIT V35

# Honeywell to IBM

- Uses 2780/3780 facilities
- HASP multileaving facility

# • Honeywell to Honeywell

- Uses polled VIP emulation (Honeywell's block mode terminal) to communicate with other Level 6s, Level 62, 64, 66 and MULTICS.

# • Other Packages

- Remote batch facility is used for connections to Level 66 and acts as an RJE station.
- Terminal concentrator facility provides a multiplexed terminal concentration capability to a variety of host systems over single or multiple host links.

# • Communications Pricing

	License Fee	One-Year Support
GCOS-6	\$1,640	\$260
GCOS-6	2,200	290
HIS-to-HIS	400	80
GCOS-6 Remote Batch GCOS-6 Terminal	900	160
Concentrator	750	130

# 2.5 TRANSACTION PROCESSING

- Uses a subset of TDS under GCOS-66/64
- Provides features such as journaling
- Only supported on MOD 600 Executive
- A Transaction Processor (TPS) for the MOD 400 operating system has been announced.
- Pricing:
  - GCOS-6 TDS \$8,000/900
  - GCOS-6 TDS Runtime Services \$5,000/600

# 2.6 HIS SERVICE/SUPPORT

#### Hardware Service

- 90 day on-site warranty
- Standard maintenance contract provides:
  - . installation assistance
  - . preventive and remedial maintenance
  - . normal contract hours: 8:30 a.m. 5:00 p.m., Monday through Friday
- Over 400 service locations worldwide
- Local offices are almost always well staffed/stocked

# • Software Service

- 90 day warranty
- Software error/correction through software technical assistance request service (same as Digital's Software Performance Report service)
- Software update service (as available)
- Software consulting fees:
  - . Average is \$200.00 per day
  - . HIS also works on fixed cost projects

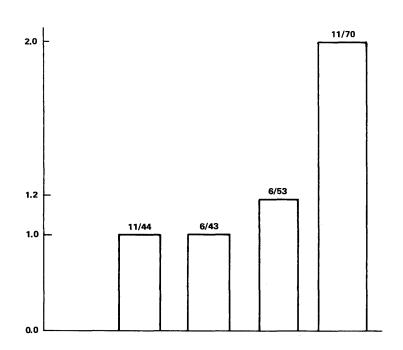
Overall, HIS has good hardware and software field support.

# 2.7 SYSTEM PERFORMANCE

NOTE: Multiuser benchmark results showing interactive response times and/or number of users supported at a given response time are not currently available on the Honeywell Level 6. However, the following comparisons have been compiled based on publicly available information. (See Figure 1a and 1b.)

# FORTRAN/SCIENTIFIC ENVIRONMENT

# Stand Alone



\*ALL INCLUDE FPU/SIP

FIGURE 1A

# COBOL/COMMERCIAL ENVIRONMENT

# Stand Alone

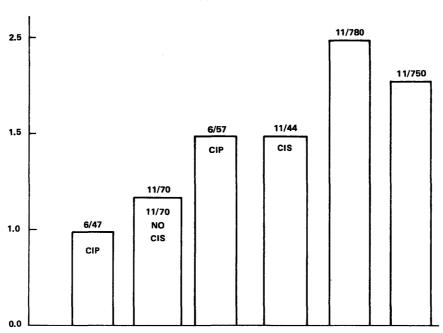


FIGURE 1B

# 2.8 HIS LEVEL 6 SYSTEM PRICING

#### • Pricing Summary

System Size	Small	Medium	Large
Purchase	\$53,610	\$99,230	\$278,470
Maintenance	31,200	44,640	137,400
Five-Year Cost	84,810	143,870	415,870

NOTE: Prices below are given as \$purchase/\$monthly maintenance.

# • VERY SMALL SYSTEM

# Model 23 CPU 128K bytes \$23,250/259

Dual Diskette Drive
VIP 7205 Console
Eight Asynchronous Lines
MOD 200 includes Screen Manager,
Sort and entry level COBOL

5-Year	Mainte	enance	15,000
Total	5-Year	Costs	\$38,250

#### SMALL SYSTEM

HIS Model 33 CPU 10-slot Chassis	\$ 6,350/ 49
128 Kbytes EDAC Memory	11,400/108
52 Mbytes Cartridge Disks (2x26)	23,500/195
Multiple Device Controller	1,250/ 10
VIP 7205 Console	2,400/ 30
160 cps Printer Eight Asynchronous Lines	3,640/ 56 3,570/ 26
GCOS-6 - MOD 400	1,500/ 46
Total Total 5-Year Costs	53,610/520 \$84,810

#### MEDIUM SYSTEM

HIS Model 43 CPU	
10-slot Chassis	\$16,000/ 86
256 Kbytes EDAC Memory	19,000/184
134 Mbytes	
Disks (2 x 67)	41,500/270
Multiple Device	
Controller	1,250/ 10
VIP 7205 Console	2,400/ 30
300 lpm Printer-	
64 characters	10,440/ 66
16 Asynchronous Lines	7,140/ 52
GCOS-6 - MOD 400	1,500/ 46
Total	99,230/744
5-Year Maintenance	44,640
Total 5-Year Costs	\$143,870

# • OPTIONS

Model 47 CPU (includes	
Commercial Processor)	\$20,000/200
Scientific Instruction	
Processor	5,050/ 11
Memory Management	500/ 5

# • LARGE SYSTEMS

HIS Model 57 CPU		
10-slot Chassis	\$44,000/	300
4-slot Expansion	2,100/	
Scientific Processor		
1024 Kbytes Memory	76,000/	
512 Mbytes		
Disk (2 x 256)	60,500/	410
VIP 7205 Console	2,400/	30
Multiple Device		
Controller	1,250/	10
1600 bpi, 75 ips,		
9-track Tape	19,100/	180
600 lpm Printer	20,940/	146
32 Asynchronous Lines	14,280/	104
GCOS-6 - MOD 600	5,100/	58
COBOL	4,700/	
FORTRAN	2,750/	34
TDS	8,000/	75
IDS - II	13,000/	100
DEF	1,400/	
Totals	280,570/	2298
5-Year Maintenance	137,880	
Total 5-Year Costs	\$418,450	
Model 53 CPU	\$ 19,200/	193

- All the above systems do not include terminals.
- Execute-only CPUs are approxmiately \$700 less expensive.
- OEM discounts of up to 35% are given depending on quantity.

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#### 2.9 CONFIGURATION RULES

Honeywell Level 6 megabus can have from five to 23 slots. Each CPU occupies two slots (Model 33 occupies one). Each memory board comes with 128K words (256K bytes). The Model 57 configuration in Section 2.8 will occupy the following number of slots:

-	CPU	2
_	Memory	4
_	Disk Controller	1
_	Multiple Device Controller	1
-	Tape Controller	1
	Communications Multiplexers	4
To	tal	13

• The 6/57 can be expanded to 23 slots, allowing for plenty of growth.

# 3.0 DIGITAL VS HIS

#### 3.1 HIS DEFICIENCIES

#### • Hardware Deficiencies

- Lacks high performance, real-time interface hardware (e.g., LPA-11K, DR-11B) for laboratory data acquisition, industrial (process) control, flight simultation and other time-critical applications
- No CSS capability to provide users with customized solutions
- No remote diagnosis capability
- High memory costs \$76,000 for 1MB (vs \$34,200 on PDP-11/70)
- Cache (8 Kbytes) available on Models 53/57 only
- Limited address space of 20 bits
- Limited RAMP features; failure in certain controllers (MLCP) can 'lock up' the entire system
- No 32-bit architecture

#### • Software Deficiencies

- MOD 200
  - . Supports COBOL only
  - . Most often used for data entry types of applications (PDT-11 equivalent)
- MOD 400
  - Does not support swapping of interactive tasks; only batch can be 'rolled out'
  - Programs can only be relocated at load time, leaving 'holes' in memory. Insufficient contiguous memory can 'lock out' users
  - . Round-robin scheduling is not time driven. A compute bound program can dominate the entire system
  - . Operating system can only address memories up to 512 K words.
  - . There is no login procedure for users
  - Any user can access any file on the system simply by changing directories.

# COMPANY CONFIDENTIAL

#### - MOD 600

- . No true real-time support
- . Not a virtual memory operating system
- . Has a very high systems overhead (256 Kbytes)
- Not widely used among Level 6 users; there are only a few sites worldwide.

#### General Deficiencies

- X.25 has been committed (functionality not known)
- No password/login procedures
- No PASCAL, APL, PL/1
- FORTRAN and COBOL are low level implementations of ANSI standards
- Program sizes are restricted to 64K words
- No job accounting
- Networking restricted to file transfers only
- No multi-key ISAM (RMS-11K)
- No 'HELP' command
- No symbolic debuggers as on VAX or PDP-11 COBOL
- No software for data acquisition, laboratory automation, etc.

#### Inter-System Link (ISL)

This is a hardware/software combination that allows multiprocessor configurations. ISL was announced in 1977 and was targeted for telephone industry types of markets. It is based on MOD 400 software. As of Rev. 200 of MOD 400 (August 1980) there is no software support for ISL.

#### 3.2 HIS CONSIDERATIONS

# • Hardware Considerations

- Modular hardware design
- Range of compatibility
- Easy field upgrade capability from small to larger systems
- Overall lower priced peripherals
- Very reliable hardware

# • Software Considerations

- CODASYL DBMS (IDS II)
- Transaction processing capabilities
- Shareable, reentrant code
- Comprehensive accounting, financial and manufacturing packages
- Operating systems require no SYSGEN as such, offers no tuning capabilities. However, this can look attractive to unsophisticated users.

# 4.0 COMPETITIVE STRATEGIES

HIS is primarily known in the industry as a mainframe rather than a minicomputer vendor. Digital, however, known as the largest supplier of minicomputers, is also very much respected for its mainframes.

• "Networks and Distributed Solutions"

#### Market Segment:

Large or growing companies with multiple facilities and integrated information requirements.

- Many Fortune 1000 customers have present requirements for distributed systems or will require the ability to configure such systems in the future. Digital has the best networking offerings in the industry. Level 6 only provides file transfer capabilities.

Stress the comprehensive and highly functional capabilities of DECnet. Do not forget that Digital also offers a 3271 PE and SNA for IBM Interconnect.

• Demos and References - "Try It, You'll Like It"

#### Market Segment:

All markets will have special appeal to prospects who are unfamiliar with Digital products.

- Digital, with over 20 years experience building interactive systems, has substantial ease-of-use (DCL, English language commands, prompts, etc.) advantages over GCOS-6. Demos in particular should be very effective.
- Digital has an installed base of over 235,000 systems. There are excellent references in virtually any corner of the world. Honeywell will have problems quoting reference sites, particularly for MOD 600.

#### Stress Multiuser Performance

#### Market Segment:

All markets.

- Honeywell claims the performance of Model 6/57 as equal or better than a PDP-11/70. This may be true in a single user benchmark. However, a Model 6/53 or 6/57 should start degrading in multiuser, multilanguage environments with 16 or more users.

Stress the proven multiuser performance of VAX/VMS and RSTS/E and the ability of PDP-11/70s, VAX-11/750 and -11/780 to support large numbers of users (32 and over).

"The Power of Virtual Memory" - Addressability and Program Size

#### Market Segment:

Any user requiring large program capability.

- Virtual memory systems have become widely accepted in both mainframe and minicomputer marketplaces. It is important to stress the advantages of VMS over GCOS-6, which is a non-virtual operating system (VMS provides the ability to run large programs without having to resort to time-consuming overlay techniques or attaching vast amounts of costly physical memory).
- Stress COBOL performance

PDP-11 COBOL on the -11/44 will provide equal or better performance of a Model 6/57 at a much lower cost. VAX-11/750 will outperform the Level 6 line in any environment and provide all the benefits of a virtual machine (refer to the  $\underline{VAX}$  Marketing Guide), at about the same price range as a 6/47.

- Stress FORTRAN and its performance

Honeywell's FORTRAN is a low level implementation and at best will match the performance of a PDP-11/70 without the Floating Point Unit.

- Stress Symbolic Debugger on PDP-11 COBOL

Digital is the only minicomputer manufacturer that provides the Symbolic Debugger capability feature on 16-bit minicomputers. Honeywell has always been a good COBOL company, however, with GCOS-6, its COBOL is only Level 1 implementation of ANSI 74.

- Stress Digital's corporate customer support capabilities:
  - . Educational facilities
  - . CSS capabilities
  - . Remote diagnostic capabilities
  - . Software support through the Telephone Support Center. So f t war e support for GCOS-6 is only available at district and not branch levels.

#### 4.1 OVERCOMING HONEYWELL OBJECTIONS

When Honeywell Promotes Timesharing Capability...

MOD 400's scheduling favors batch-type jobs over highly interactive jobs. MOD 600 has not gained a very wide user acceptance (less than 100 systems in 3 1/2 years), whereas Digital has over 1,000 mainframes (DECsystem 10s and 20s), over 5,000 RSTS/E based systems (more than Honeywell's installed base of Level 6s), over 1,000 VMS systems and thousands of RSX based systems that are used in commercial timesharing environment.

• When Honeywell Promotes Large Program Sizes...

GCOS-6 allows programs to be as large as 128 Kbytes. However, since the software uses two words (4 bytes) for every address, programs on Level 6 almost always tend to be about 30%-35% larger than a comparable PDP-11 program.

If a customer needs programs larger than 64 Kbytes, you can propose a VAX-11/750 using VMS.

When Honeywell promotes DPS (Distributed Processing Systems)...

Honeywell has only file transfer functionality. DECnet Phase III is one of the most advanced networking products in the industry. Digital offers a wide variety of interconnect products as well. Honeywell does not have support for CDC, UNIVAC or SNA, and has just announced (August, 1980) support for 3271. Exact details of implementation are not known at this time.

When Honeywell Promotes Compatibility...

The PDP-11 family contains highly compatible computers, including VAX-11/750 and 11/780. Many PDP-11 applications will run on VAX. Level 6/57 is Honeywell's largest minicomputer and provides no growth. Moving to DPS/8 or other systems requires a massive conversion. However, data files are compatible with GCOS-6, GCOS-66, GCOS-8 and MULTICS.

- Benchmarking Against Honeywell...
  - Avoid compile and link types; Honeywell's compilers and linkers are extremely fast, particularly when compared to TKB on PDP-lls.
  - You should include at least one batch stream. This tends to substantially degrade Honeywell's interactive performance.
  - Multiuser benchmarks should be for 16 or more users requiring large memories (over 512K bytes). HIS MOD 400 can address memories up to 512K words and does not support swapping (it may also lock out users).

#### 5.0 SPECIAL CONSIDERATIONS

 Honeywell's most significant application package is "Data Entry Facility" (DEF). This package has contributed to the sales success of Level 6 systems within Honeywell's computer base.

DEF runs on MOD 400 and 600. DEF I supports up to 14 devices on a Level 6 CPU. More than eight data entry devices tend to overload the CPU. This package is very similar to FMS-11 in functionality. It allows a user to define a form and link editing subroutines written in any language. The greatest advantage of DEF is that it allows a Level 6 user to interactively inquire into any file (provided the user has the necessary privileges) on a host Level 66 or Level 68 running GCOS-66, or MULTICS. This has enabled HIS to penetrate its large customer base very successfully.

The DEF II package provides all the above facilities and contains support for up to 24 devices. DEF I interrupts the CPU on every character input like a DZ-ll on PDP-lls, while DEF II is designed to take advantage of microprocessor based MLCP in that it interrupts the CPU only at the end of each transaction. Hence, the support of more (32) devices. The only other major difference is that the screen generated by DEF II can be called from any program and written out to the VIP 7200 CRT.