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Notes on Equipment List in GE Counterproposal of August 22, 1969

1. An additional active unit port (OPT802) is required for both memory controllers on the B system to allow configuration with the augmentation equipment.
2. One High Performance Channel (HPC600) is provided free with the GIOC and is sufficient to run one channel of the Dual Tape Controller (MTC404). The additional HPC would be required to run DSU270's but then we would also release the Direct Disc Adapter (DDA600).
3. Provision is made for only 3 ARDS terminals instead of 6. To support 6 ARDS, another Character Asynchronous Adapter (CAA600) and 3 additional Character Asynchronous Channels (CAC600) are needed.
4. The present service machine has 8 (instead of 6) Typewriter Channel Groups (TTC600) and 8 (instead of 6) Typewriter Group Extensions (TTL600). This arrangement allows for 64 typewriter lines and is compatible with our current data phone configuration.
5. The Direct Disc Adapter (DDA600), the Disc Controller (DSC11F) and the 2 Disc Files (DSU10F) should be replaced with the following DSU270 Disk equipment already on order.
 - 1 DSC270 Disk Controller
 - 3 DFE270 Disk File Electronics
 - 15 DSU270 Disk Storage Units

6. It is not stated whether the processor and GIOC provided in the augmentation equipment is Phase A or Phase B equipment (Phase B is clearly preferable).
7. An additional 128K of memory is needed if it is desired to provide a full duplex system. If this is desired, GE can make use of the 64K of memory and controller which is currently on site but not currently on rent.
8. If the DS10 Disk equipment is replaced by DSU270 Disk equipment on the B system, then the DSU10F listed in the augmentation equipment list should also be replaced by five additional DSU270 Disk Storage Units and an additional DFE270 Disk File Electronics unit. In addition, the Direct Disk Adapter (DDA600) may be removed from the augmentation GIOC.
9. A total of 6 active unit ports (OPT802) (2 are provided at no charge) are required on the augmentation memory controller to allow configuration of the full system.
10. The GIOC in the augmentation list is not configured either as a backup unit for Multics service or as a development GIOC for use in a partitioned machine used for checkout of new systems. (Note that the additional GIOC has no effect on system performance.) If the GIOC is intended for use in a partitioned development machine the following changes should be made:
 - a. The additional HPC should be removed.

- b. Two Typewriter Channel Groups (TTC600) and Group Extensions (TTL600) are sufficient (4 are listed).
 - c. The Character Synchronous Adapter (CSA600) and its associated channels (CSC600) should be removed.
 - d. A Character Asynchronous Adapter (CAA600) and one channel (CAC600) is needed on a temporary basis for ARDS checkout.
11. The additional magnetic tape controller (MTC404) is unnecessary since it is possible for each system to use only one channel of the dual tape controller on system B (i.e., the tape controller may be "shared" when the two machines are partitioned).
12. The additional Motor Generator (MG8031) and Power Sequencer (OPT825) are unnecessary. (This equipment might be viewed as backup, but if backup is the goal, the augmentation equipment should be a "carbon copy" of the B equipment.)

ATTACHMENT I

BASIC "B" SYSTEM CONFIGURATION

<u>MODEL</u>	<u>QTY.</u>	<u>BASIC MO. RENTAL</u>	<u>2nd SHIFT MAINT.</u>
CP8031 Central Processor	1	14 560	952
CPF600 Processor Port Pair	1 (plus 1 N.C.)	260	17
MME030 Memory Controller	1	6 760	442
OPT802 Active Unit Ports	3 (plus 2 N.C.)	252	15
OPT815 Interrupt Cell Grps.	1 (plus 1 N.C.)	105	7
AMM600 Added Memory	1	4 475	292
CAB601 Addit. Mem. Cabinet	1	260	17
AUM600 Auxiliary Memory	1	4 475	292
MM8040 Memory Controller	1	6 760	442
OPT802 Active Unit Ports	3 (plus 2 N.C.)	252	15
OPT815 Interrupt Cell Grps.	1 (plus 1 N.C.)	105	7
AMM600 Added Memory	1	4 475	292
CAB601 Addit. Mem. Cabinet	1	260	17
AUM600 Auxiliary Memory	1	4 475	292
AMM600 Added Memory	1	4 475	292
CLK600 System Clock	1	760	50
MSW600 Memory Switch	1	50	3
EMU302 Extended Memory Unit	1	12 430	1 328
DCS031 GIOC (Phase A)	1	5 620	368
MIP600 GIOC Port Pairs	1 (plus 1 N.C.)	260	17
PLP600 Priority Level Grps.	2 (plus 2 N.C.)	130	6
CAB600 Adapter Cabinet	1	990	65
HPC600 High Perf. Channel	1 (plus 1 N.C.)	680	46
CAA600 Char. Asynch. Adapter	1	195	10
CAC600 " " Channels	3	255	15
TTA600 Typewriter Adapter	3	1 260	87

ATTACHMENT 1 (continued)

<u>MODEL</u>	<u>QTY.</u>	<u>BASIC MO.</u>	<u>RENTAL</u>	
TT0600 Typewriter Chan. Grps.	6		750	
YTL600 TTA Extensions	6		390	
CSA600 Char. Synch. Adapter	1		195	
CSC600 " " Channels	3		255	
DDA600 Direct Disc Adapter	1		680	
DSC11F Disc Controller	1	3	360	
DSU10F Disc Storage Unit	2	8	200	
*AMM600 Added Memory	1	4	475	
CO8030 Master Console	1		420	
MTC404 Mag. Tape Controller	1	1	545	
MTH373 Mag. Tape Handlers	6 (120KC)	5	370	
CRZ201 Card Reader	1		680	
CPZ201 Card Punch	1		860	
PRT202 Printer, Ext. Char. Set	1	1	665	
PSC200 Peripheral Switch	1		175	
OPT510 Switch Units	15		630	
MG8031 Motor Generator	1		320	
OPT825 Power Sequencer	1		17	
			<u>104 566</u>	

*Insert after Item 8 on preceding page.

AUGMENTATION EQUIPMENT

<u>MODEL</u>	<u>QTY.</u>	<u>BASIC MO.</u>	<u>RENTAL</u>	<u>2nd</u> <u>MAINT.</u>
DSU10F Disc Storage Unit	1	4	100	535
CP8031 Central Processor	1	14	560	952
MM8040 Memory Controller	1	6	760	442
OPT802 Active Unit Ports	1 (plus 2 N.C.)		64	6
OPT815 Interrupt Cell Grps.	1 (plus 1 N.C.)		105	7
AMM600 Added Memory	1	4	475	292

ATTACHMENT I (continued)

<u>MODEL</u>	<u>QTY.</u>	<u>BASIC MO. RENTAL</u>	<u>2nd MAINT.</u>
CAB601 Addit. Mem. Cabinet	1	260	17
CLK600 System Clock	1	760	50
ANM600 Added Memory	1	4 475	292
AUM600 Auxiliary Memory	1	4 475	292
MSW600 Memory Switch	1	50	3
EMU302 Ext. Memory Unit	1	12 430	1320
DCS031 GIOC (Phase A)	1	5 620	360
HPC600 High Perf. Channel	1 (plus 1 N.C.)	680	40
TTA600 Typewriter Adapter	2	840	50
TTC600 Typewriter Chan. Grps.	4	500	30
TTL600 TTA Extensions	4	260	8
CSA600 Char. Synch. Adapter	1	195	10
CSC600 " " Channels	3	255	15
CO803D Master Console	1	420	20
MTC404 Mag. Tape Controller	1	1 545	110
MTH301 Mag. Tape Handlers	4 (60KC)	2 460	350
PRT202 Printer, Ext. Char. Set	1	1 665	30
CPZ201 Card Punch	1	860	150
CRZ201 Card Reader	1	680	120
MG8031 Motor Generator	1	320	30
OPT825 Power Sequencer	1	17	
		<u>68 831</u>	<u>5 860</u>