3.3.3.3

Unit Cost - Non Cumulative

UNIT	PROGRESS FACTOR	DIRECT MFG COSTS	INDIRECT MFG COSTS	EC SCRAP/ REWORK	CAPITAL DEPREC.	TOTAL UNIT COST
0 - 15	6.49	3,443.80	2,427	315.40	219.33	6,405.53
16 - 50	3.8	2,099.87	1,040	196.43	101.43	3,437.73
51 - 110	2.85	1,614.90	606.73	150.40	64.33	2,436.36
111 - 200	2.3	1,335.40	404.49	121.76	42.89	1,904.54
201 - 315	1.9	1,129.94	310.84	101.45	29.67	1,571.90
316 - 445	1.7	1,023,21	274.98	90.83	29.67	1,418.69
446 - 590	1.55	937.96	246.53	79.66	29.67	1,293.82
591 - 750	1.4	875.57	208.11	70.97	22.93	1,177.58
751 - 925	1.3	824.46	190.27	63.18	22.93	1,100.84
926 - 1,115	1.25	798.90	175.25	57.09	22.93	1,054.17
1,116 - 1,320	1.2	773.34	149.88	52.18	18.24	993.64
1,321 - 1,540	1.15	747.79	139.66	47.33	18.24	953.02
1,541 - 1,775	1.08	712.01	130.74	41.28	18.24	902.27
1,776 - 2,030	1.0	671.12	120.49	35.89	15.05	842.55
2,031 - 2,295	1.0	671.12	115.94	33.32	15.05	835.43
2,296 - 2,575	1.0	671.12	109.73	30.10	15.05	826.00
2,576 - 6,955	1.0	684.24	76.32	17.01	11.00	788.57
6,956 - 11,755	1.0	694.50	70.03	5.27	10.04	779.84
11,756 - 16,555	1.0	704.97	58.49	58.40	9.63	773.09

3.3.4 DIRECT COSTS

3.3.4.1

Total Direct Manufacturing Costs

Average = 719.44
Ultimate = 653.65

		SHIP	CUM. SHIP	LABOR	MATERIAL	OEM MATERIAL	TOTAL	TOTAL CUMULATIVE
73	4	0	0	0	0	0		
	5	0	0	0	0	0		
	6	0	0	0	0	0		
	7	0	0	0	0	0		
	8	0	0	0	0	0		
	9	0	0	0	0	0		
	10	0	0	0	0	0		
	11	0	0	0	0	0		
	12	0	0	0	0	0		
74	1	0	0	0	0	0		
	2	0	0	0	0	0		
	3	0	0	0	0	0		
	4	0	0	0	0	0	0	
	5	0	0	0	0	0	0	
	6	0	0	810	38,617	3,600	43,027	43,027
	7	0	0	5,508	52,758	7,840	66,106	109,133
	8	0	0	9,963	67,832	12,480	90,275	199,408
	9	15	15	14,013	82,113	18,000	114,126	313,534
	10	35	50	17,496	86,675	22,080	126,251	439,785
	11	60	110	19,683	87,666	23,920	131,269	571,054
	12	90	200	21,141	88,856	25,056	135,053	706,107
75	1	115	315	22,964	90,583	25,600	139,147	845,254
	2	130	445	22,964	92,201	28,000	143,165	988,419
	3	145	590	22,964	96,245	30,400	149,609	1,138,028
	4	160	750	23,474	99,480	32,800	155,754	1,293,782
	5	175	925	24,665	102,311	35,200	162,176	1,455,958
	6	190	1,115	24,920	102,715	37,600	165,235	1,621,193
	7	205	1,320	25,770	103,119	40,800	169,689	1,790,882
	8	220	1,540	26,621	107,163	42,400	176,184	1,967,066
	9	235	1,775	27,216	113,229	44,800	185,245	2,152,311
	10	255	2,030	27,641	119,295	47,200	194,136	2,346,447
	11	265	2,295	28,747	125,361	49,600	203,708	2,550,155
	12	280	2,575	30,023	131,427	52,000	213,450	2,763,605
76		4,380	6,955	482,236	1,925,798	744,000	3,152,034	5,915,639
77		4,800	11,755	528,852	2,036,736	768,000	3,333,588	9,249,227
78		4,800	16,555	519,848	1,565,244	576,000	2,661,092	11,910,319
TOTAL:		16,555		1,927,519	7,315,424	2,667,376	11,910,319	

3.3.4.2

Direct Material Expenditure

		BUILD SCHEDULE	PROGRESS FACTOR	EQUIVALENT BUILD SCHEDULE	MATERIAL COST	CUMULATIVE MATERIAL COST
73	4	0	0	0	0	0
	5	0	0	0	0	0
	6	0	0	0	0	0
	7	0	0	0	0	0
	8	0	0	0	0	0
	9	0	0	0	0	0
	10	0	0	0	0	0
	11	0	0	0	0	0
	12	0	0	0	0	0
74	1	0	0	0	0	0
	2	0	0	0	0	0
	3	0	0	0	0	0
	4	0	0	0	0	0
	5	0	0	0	0	0
	6	15	6.49	97.35	38,617	38,617
	7	35	3.8	133	52,758	91,375
	8	60	2.85	171	67,832	159,207
	9	90	2.3	207	82,113	241,320
	10	115	1.9	218.5	86,675	327,995
	11	130	1.7	221	87,666	415,661
	12	145	1.55	224	88,856	504,517
75	1	160	1.4	224	90,583	595,100
	2	175	1.3	228	92,201	687,301
	3	190	1.25	238	96,245	783,546
	4	205	1.2	246	99,480	883,026
	5	220	1.15	253	102,311	985,337
	6	235	1.08	254	102,715	1,088,052
	7	255	1.0	255	103,119	1,191,171
	8	265	1.0	265	107,163	1,298,334
	9	280	1.0	280	113,229	1,411,563
	10	295	1.0	295	119,295	1,530,858
	11	310	1.0	310	125,361	1,656,219
	12	325	1.0	325	131,427	1,787,646
76		4,650	1.0	4,650	1,925,798	3,713,444
77		4,800	1.0	4,800	2,036,736	5,750,180
78		3,600	1.0	3,600	1,565,244	7,315,424

TOTAL: 7,315,424

3.3.4.3

OEM Material Expenditures - Base Case

		Build Schedule	OEM Mat'l Progress Factor	Total OEM Mat'l Cost	Cumulative OEM Mat'l Cost
	4	0	0	0	0
	5	0	0	0	0
	6	0	0	0	0
	7	0	0	0	0
73	8	0	0	0	0
	9	0	0	0	0
	10	0	0	0	0
	11	0	0	0	0
	12	0	0	0	0
	1	0	0	0	0
	2	0	0	0	0
	3	0	0	0	0
	4	0	0	0	0
	5	0	0	0	0
74	6	15	1.5	3,600	3,600
	7	35	1.4	7,840	11,440
	8	60	1.3	12,480	23,920
	9	90	1.25	18,000	41,920
	10	115	1.2	22,080	64,000
	11	130	1.15	23,920	87,920
	12	145	1.08	25,056	112,976
	1	160	1.0	25,600	138,576
	2	175	1.0	28,000	166,576
	3	190	1.0	30,400	196,976
	4	205	1.0	32,800	229,776
	5	220	1.0	35,200	264,976
75	6	235	1.0	37,600	302,576
	7	255	1.0	40,800	343,376
	8	265	1.0	42,400	385,776
	9	280	1.0	44,800	430,576
	10	295	1.0	47,200	477,776
	11	310	1.0	49,600	527,376
	12	325	1.0	52,000	579,376
76		4,650	1.0	744,000	1,323,376
77		4,800	1.0	768,000	2,091,376
78		3,600	1.0	576,000	2,667,376
TOTAL		16,555		2,667,376	

3.3.4.4

Direct Manpower Expenditures

		MANPOWER				EXPENDITURE		
		ASSEMBLY/ SHIP	TEST	QC & RL	TOTAL	RATE/MN	TOTAL	CUMULATIVE
73	4	0	0	0	0		0	0
	5	0	0	0	0		0	0
	6	0	0	0	0		0	0
	7	0	0	0	0		0	0
	8	0	0	0	0		0	0
	9	0	0	0	0		0	0
	10	0	0	0	0		0	0
	11	0	0	0	0		0	0
	12	0	0	0	0		0	0
74	1	0	0	0	0		0	0
	2	0	0	0	0		0	0
	3	0	0	0	0		0	0
	4	0	0	0	0		0	0
	5	0	0	0	0		0	0
	6	0	.5	.5	1.0	810	810	810
	7	4.8	1.0	1.0	6.8	810	5,508	6,318
	8	6.8	3.5	2.0	12.3	810	9,963	16,281
	9	9.5	5.3	2.5	17.3	810	14,013	30,294
	10	11.8	6.8	3	21.6	810	17,496	47,790
	11	12.8	8	3.5	24.3	810	19,683	67,473
	12	13.3	8.8	4	26.1	810	21,141	88,614
75	1	14.0	9	4	27	850.50	22,964	111,578
	2	14.0	9	4	27	850.50	22,964	134,542
	3	14.0	9	4	27	850.50	22,964	157,506
	4	14.3	9.3	4	27.6	850.50	23,474	180,980
	5	15.0	10	4	29	850.50	24,665	205,645
	6	15.0	10	4.3	29.3	850.50	24,920	230,565
	7	15.3	10	5	30.3	850.50	25,770	256,335
	8	16.0	10.3	5	31.3	850.50	26,621	282,956
	9	16.0	11	5	32	850.50	27,216	310,172
	10	16.5	11	5	32.5	850.50	27,641	337,813
	11	17.5	11.3	5	33.8	850.50	28,747	366,560
	12	18.3	12	5	35.3	850.50	30,023	396,583
76		23	15	7	45	893.03	482,236	878,819
77		24	16	7	47	937.68	528,852	1,407,671
78		23	15	6	44	984.56	519,848	1,927,519

TOTAL: 1,927,519

3.3.4.5

Direct Labor Hours by Group

		ASSEMBLY/ SHIP	TEST	QC & RL
73	4			
	5			
	6			
	7			
	8			
	9			
	10			
	11			
	12			
74	1			
	2			
	3			
	4	0	0	0
	5	0	0	0
	6	0	49	49
	7	701	67	67
	8	1,007	524	281
	9	1,425	800	370
	10	1,749	1,012	451
	11	1,900	1,214	525
	12	1,970	1,302	549
75	1	2,008	1,326	554
	2	2,013	1,343	562
	3	2,045	1,351	567
	4	2,119	1,373	579
	5	2,186	1,426	603
	6	2,254	1,472	619
	7	2,276	1,513	634
	8	2,292	1,529	641
	9	2,366	1,542	650
	10	2,481	1,596	678
	11	2,609	1,680	715
	12	2,744	1,771	753
76		40,880	26,890	11,296
77		43,200	28,800	12,000
78		40,120	26,400	10,600
TOTAL:		160,345	104,980	43,743

.4.6

Direct Labor Hours by Function

		SHIP SCHED.	EQUIV. SHIP SCHED.	RI	COMP. TEST	ELECT. SUBASS.	MECH. SUBASS.	PCB TEST	FINAL ASS.	FINAL TEST	QC	SHIP	TOTAL
74	6	0	0	49	49	0	0	0	0	0	0	0	98
	7	0	0	67	67	701	0	0	0	0	0	0	835
	8	0	0	86	86	958	49	438	0	0	195	0	1,812
	9	15	97.35	104	104	1,231	67	599	78	97	266	49	2,595
	10	36	133	109	109	1,490	86	770	106	133	342	67	3,212
	11	60	171	111	111	1,573	104	932	137	171	414	86	3,639
	12	90	207	112	112	1,591	109	983	166	207	437	104	3,821
75	1	115	218.5	112	112	1,613	111	995	175	219	442	109	3,888
	2	130	221	114	114	1,613	112	1,008	177	221	448	111	3,918
	3	145	224	119	119	1,642	112	1,008	179	224	448	112	3,963
	4	160	224	123	123	1,714	114	1,026	179	224	456	112	4,071
	5	175	228	127	127	1,771	119	1,071	182	228	476	114	4,215
	6	190	238	127	127	1,822	123	1,107	190	238	492	119	4,345
	7	205	246	128	128	1,829	127	1,139	197	246	506	123	4,423
	8	220	253	133	133	1,836	127	1,143	202	253	508	127	4,452
	9	235	254	140	140	1,908	128	1,148	203	254	510	127	4,558
	10	255	255	148	148	2,016	133	1,193	204	255	530	128	4,755
	11	265	265	155	155	2,124	140	1,260	212	265	560	133	5,004
	12	280	280	163	163	2,232	148	1,328	224	280	590	140	5,268
76	1	295	295	170	170	2,340	155	1,395	236	295	620	148	5,529
	2	310	310	178	178	2,448	163	1,463	248	310	650	155	5,793
	3	325	325	185	185	2,556	170	1,530	260	325	680	163	6,054
	4	340	340	193	193	2,664	178	1,598	272	340	710	170	6,318
	5	355	355	200	200	2,772	185	1,665	284	355	740	178	6,579
	6	370	370	200	200	2,880	193	1,733	296	370	770	185	6,827
	7,8,9	1,185	1,185	600	600	8,640	600	5,400	948	1,185	2,400	593	20,966
	10,11,12	1,200	1,200	600	600	8,640	600	5,400	960	1,200	2,400	600	21,000
77		4,800	4,800	2,400	2,400	34,560	2,400	21,600	3,840	4,800	9,600	2,400	81,120
78		4,800	4,800	1,800	1,800	31,680	2,200	19,800	3,840	4,800	8,800	2,400	74,240

3.3.5 INDIRECT COSTS

3.3.5.1

Total Indirect Costs

		LABOR	EXPENSE	TOTAL
73	4	0	0	0
	5	0	0	0
	6	6,400	850	7,250
	7	9,000	1,300	10,300
	8	12,400	2,100	14,500
	9	19,000	3,700	22,700
	10	20,200	4,100	24,300
	11	21,300	4,500	25,800
	12	21,300	4,500	25,800
74	1	22,684	4,500	27,184
	2	20,758	4,100	24,858
	3	16,906	3,300	20,206
	4	19,795	3,350	23,145
	5	24,610	3,850	28,460
	6	33,224	4,450	37,674
	7	34,829	4,500	39,329
	8	36,006	4,600	40,606
	9	32,924	3,480	36,404
	10	32,924	3,480	36,404
	11	32,924	3,480	36,404
	12	32,924	3,480	36,404
75	1	32,687	3,060	35,747
	2	32,687	3,060	35,747
	3	32,687	3,060	35,747
	4	30,718	2,580	33,298
	5	30,718	2,580	33,298
	6	30,718	2,580	33,298
	7	28,485	2,240	30,725
	8	28,485	2,240	30,725
	9	28,485	2,240	30,725
	10	28,485	2,240	30,725
	11	28,485	2,240	30,725
	12	28,485	2,240	30,725
76		315,804	18,480	334,284
77		318,024	18,120	336,144
78		266,788	13,980	280,768
TOTAL:		1,711,849	148,560	1,860,409

3.3.5.2

Indirect Labor Expenditures

		ADMIN.	ENG'G.	PRODUCT SUPPORT	TOTAL
73	4	0	0	0	0
	5	0	0	0	0
	6	2,800	3,600	0	6,400
	7	3,600	5,400	0	9,000
	8	3,600	8,800	0	12,400
	9	3,600	15,400	0	19,000
	10	3,600	16,600	0	20,200
	11	3,600	17,700	0	21,300
	12	3,600	17,700	0	21,300
74	1	3,852	18,832	0	22,684
	2	3,852	16,906	0	20,758
	3	3,852	13,054	0	16,906
	4	6,741	13,054	0	19,795
	5	6,741	14,766	3,103	24,610
	6	6,741	16,746	9,737	33,224
	7	6,741	16,746	11,342	34,829
	8	6,741	14,820	14,445	36,006
	9	6,741	11,738	14,445	32,924
	10	6,741	11,738	14,445	32,924
	11	6,741	11,738	14,445	32,924
	12	6,741	11,738	14,445	32,924
75	1	6,389	10,843	15,455	32,687
	2	6,389	10,843	15,455	32,687
	3	6,389	10,843	15,455	32,687
	4	6,389	8,874	15,455	30,718
	5	6,389	8,874	15,455	30,718
	6	6,389	8,874	15,455	30,718
	7	5,564	7,466	15,455	28,485
	8	5,564	7,466	15,455	28,485
	9	5,564	7,466	15,455	28,485
	10	5,564	7,466	15,455	28,485
	11	5,564	7,466	15,455	28,485
	12	5,564	7,466	15,455	28,485
76		60,864	56,460	198,480	315,804
77		45,300	60,396	212,328	318,024
78		34,840	50,160	181,788	266,788
TOTAL:		309,347	528,039	874,463	1,711,849

3.3.5.3

Indirect Expense Expenditures

		ADMIN.	ENG'G.	PRODUCT SUPPORT	TOTAL
73	4	0	0	0	0
	5	0	0	0	0
	6	50	800	0	850
	7	100	1,200	0	1,300
	8	100	2,000	0	2,100
	9	100	3,600	0	3,700
	10	100	4,000	0	4,100
	11	100	4,400	0	4,500
	12	100	4,400	0	4,500
74	1	100	4,400	0	4,500
	2	100	4,000	0	4,100
	3	100	3,200	0	3,300
	4	150	3,200	0	3,350
	5	150	3,600	100	3,850
	6	150	4,000	300	4,450
	7	150	4,000	350	4,500
	8	150	4,000	450	4,600
	9	150	2,880	450	3,480
	10	150	2,880	450	3,480
	11	150	2,880	450	3,480
	12	150	2,880	450	3,480
75	1	130	2,480	450	3,060
	2	130	2,480	450	3,060
	3	130	2,480	450	3,060
	4	130	2,000	450	2,580
	5	130	2,000	450	2,580
	6	130	2,000	450	2,580
	7	110	1,680	450	2,240
	8	110	1,680	450	2,240
	9	110	1,680	450	2,240
	10	110	1,680	450	2,240
	11	110	1,680	450	2,240
	12	110	1,680	450	2,240
76		1,080	12,000	5,400	18,480
77		720	12,000	5,400	18,120
78		540	9,120	4,320	13,980
TOTAL:		6,080	118,960	23,520	148,560

3.3.5.4

Indirect Cost Breakdown

Definitions:

Development Costs	Defined as all labor and expense costs for Engineering plus Engineering Management and Secretary for period 6/1/73 to 9/1/74 (FCS).
Start-Up Costs	Defined as all Indirect Costs for period 6/1/73 to 9/1/74 (FCS) less Development Costs.
Production Support Costs	Defined as all Indirect Costs for period 9/1/74 (FCS) to end of program.

Cost Summary:

Development Costs	336.3K
Start-Up Costs	75.6K
Production Support Costs	1,448.5K
	1,860.4K

3.3.5.5

	73							74												76	77	78
	6	7	8	9	10	11	12	1	2	3	4	5	6	3	4	1	2	3	4			
ADMINISTRATION																						
Engineering Mgr.	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	.8	.8	.6	.6	.4	.2	.2
Manufacturing Mgr.	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	.8	.5
Secretary	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	.8	.8	.6	.6	.4	.2	.2
ENGINEERING																						
Electrical Eng.	1	2	3	4	4	4	4	4	4	2	2	2	2	1.7	1	.5	.5	.4	.4	.1	.1	.1
Microprogrammers	1	1	1	3	3	3	3	3	2	2	2	2	2	1.3	1	1	.5	.1	.1	0	0	0
Programmer	0	0	1	1	1	1	1	1	1	1	1	1	.5	.4	.1	.1	0	0	0	0	0	0
Mechanical Des.	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	.5	.5	.5	.5	.2	.2	.2
Electrical Tech.	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	.5	.2	.2	.2	.2	0
Microprogram Tech.	0	0	0	0	0	1	1	1	1	1	1	1	.5	.4	.1	.1	0	0	0	0	0	0
Manufacturing Eng.	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	.8
Test Engineer	0	0	0	0	0	0	0	0	0	0	0	1	2	2	2	2	2	2	2	1	1	.8
Total Eng.	2	3	5	9	10	11	11	11	10	8	8	9	10	9.1	7.2	6.2	5	4.2	4.2	2.5	2.5	1.9
PRODUCT SUPPORT																						
Asm/Test Mgr.	0	0	0	0	0	0	0	0	0	0	0	0	2	2	2	2	2	2	2	2	2	1.6
Q.E.	0	0	0	0	0	0	0	0	0	0	0	0	1	2	2	2	2	2	2	2	2	1.6
Purchasing & R.I.	0	0	0	0	0	0	0	0	0	0	0	1	1	1.7	2	2	2	2	2	2	2	1.6
Production Control	0	0	0	0	0	0	0	0	0	0	0	1	1	1.7	2	2	2	2	2	2	2	1.6
Mfg. Control	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	.8
TOTAL	3	5	7	11	12	13	13	13	12	10	11	14	19	20.5	19.2	17.8	16.6	15.4	15.4	13.3	12.7	10.0

3.3.5.6

INDIRECT SALARY LEVELS

	73	74	75	76	77	78
ADMINISTRATION						
Engineering Manager	2800	2996	3206	3430	3671	3927
Manufacturing Manager	2700	2889	3091	3308	3539	3787
Secretary	800	856	916	980	1049	1122
ENGINEERING						
Electrical Engineer	1800	1926	2061	2205	2360	2525
Microprogrammer	1800	1926	2061	2205	2360	2525
Mechanical Designer	1200	1284	1374	1470	1573	1683
Electrical Technician	1100	1177	1259	1348	1442	1543
Microprogram Technician	1100	1177	1259	1348	1442	1543
Manufacturing Engineer	1600	1712	1832	1960	2097	2244
Test Engineer	1600	1712	1832	1960	2097	2244
Programmer	1600	1712	1832	1960	2097	2244
PRODUCT SUPPORT						
Assembly/Test Manager	1600	1712	1832	1960	2097	2244
QE	1500	1605	1717	1838	1966	2104
Purchasing & R.I.	1500	1605	1717	1838	1966	2104
Production Control	1400	1498	1603	1715	1835	1964
Manufacturing Control	1500	1605	1717	1838	1966	2104

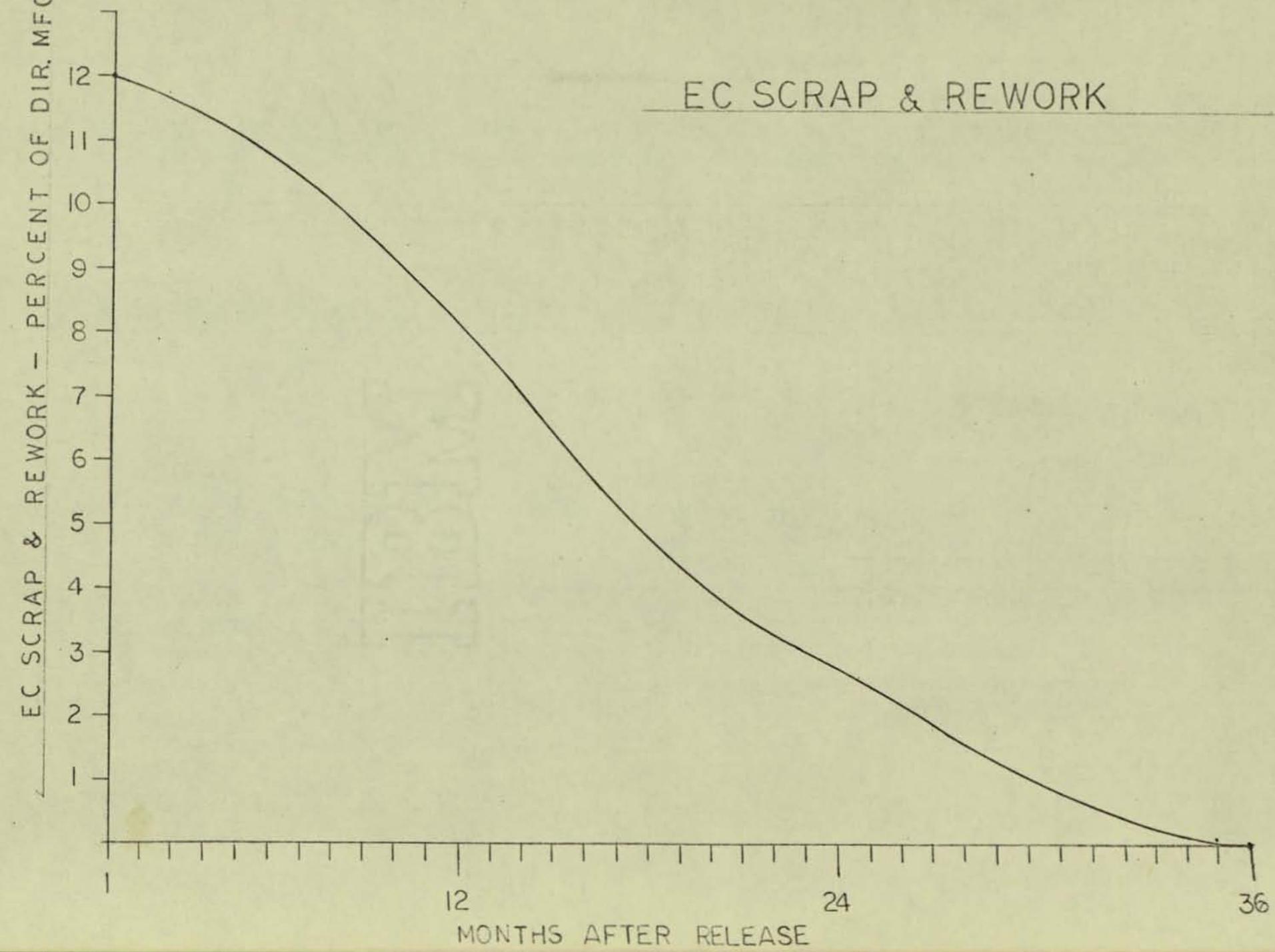
3.3.6 EC SCRAP/REWORK

3.3.6.1

EC Scrap and Rework Costs Average = 2.7%

		SHIP SCHED.	TOTAL DIRECT MFG. COSTS	%EC * SCRAP/REWORK	TOTAL SCRAP AND REWORK COSTS
73	4	0	0	0	0
	5	0	0	0	0
	6	0	0	0	0
	7	0	0	0	0
	8	0	0	0	0
	9	0	0	0	0
	10	0	0	0	0
	11	0	0	0	0
	12	0	0	0	0
74	1	0	0	0	0
	2	0	0	0	0
	3	0	0	0	0
	4	0	0	0	0
	5	0	0	0	0
	6	0	39,427	12	4,731
	7	0	58,266	11.8	6,875
	8	0	77,795	11.6	9,024
	9	15	96,126	11.4	10,958
	10	35	104,171	11.2	11,667
	11	60	107,349	11	11,808
	12	90	109,997	10.5	11,550
75	1	115	113,547	10	11,355
	2	130	115,165	9.6	11,056
	3	145	119,209	9.1	10,848
	4	160	122,954	8.7	10,697
	5	175	126,976	8.2	10,412
	6	190	127,635	7.6	9,700
	7	205	128,889	7.1	9,151
	8	220	133,784	6.6	8,830
	9	235	140,445	6	8,427
	10	255	146,936	5.5	8,081
	11	265	154,108	5.0	7,705
	12	280	161,450	4.2	6,781
76		4,380	2,408,034	2.5	60,201
77		4,800	2,565,588	.4	10,262
78		4,800	2,085,092	0	0
TOTAL:		16,555	9,242,943		250,119

3.3.6.2


EC SCRAP & REWORK
EC SCRAP & REWORK – PERCENT OF DIR. MFG. COST
12
11
10
9
8
7
6
5
4
3
2
1
1
12
24
36
MONTHS AFTER RELEASE

3.3.7 CAPITAL EQUIPMENT

3.3.7.1

Capital Equipment Expenditure Schedule

		RECEIVING INSPECTION	ENG'G	ASSEMBLY AND TEST					TOOL'G	TOTAL
				OSC.	FTR	PCB TEST	BENCHES & CABS.	MISC		
73	8	0	0	0	0	0				0
	9	0	29K	0	0	0				29K
	10	0	15K	0	0	0	0	0	0	15K
	11	0	0	0	0	0	0	0	0	0
	12	0	6K	0	0	0	0	0	0	6K
74	1	0	0	0	0	0	0	0	0	0
	2	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	0
	4	0	0	0	0	0	0	0	0	0
	5	30K	0	0	0	0	0	0	0	30K
	6	15K	0	0	0	10K	4K	10K	12K	51K
	7	10K	0	8K	5K	2.5K	2K	5K	11K	43.5K
	8	0	0	8K	0	5.0K	2K	3K	5K	23K
	9	0	0	2K	5K	2.5K	2K	2K	2K	15.5K
	10	0	0	2K	0	2.5K	2K	0	2K	8.5K
	11	0	0	2K	0	2.5K	0	0	1K	5.5K
	12	0	0	2K	0	2.5K	0	0	0	4.5K
75	1	0	0	2K	0	2.5K	0	0	0	4.5K
	2	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	0
	4	0	0	0	0	0	0	0	0	0
	5	0	0	0	0	0	0	0	0	0
	6	0	0	0	0	0	0	0	0	0
	7	0	0	0	0	0	0	0	0	0
	8	0	0	0	0	0	0	0	0	0
	9	0	0	0	5K	0	0	0	0	5K
TOTAL		55K	50K	26K	15K	30K	12K	20K	33K	241K

3.3.7.2

Capital Equipment Depreciation Schedule

		73				74										75	76	TOTAL DEPR. K$	DEPR/ UNIT $
		9	10	11	12	1	2	3	4	5	6	7	8	9	10-12				
73	9	(29K)																0	0
	10	.48	(15K)															.48	0
	11	.48	.25	0														.73	0
	12	.48	.25	0	(6K)													.73	0
74	1	.48	.25	0	.1	0												.83	0
	2	.48	.25	0	.1	0	0											.83	0
	3	.48	.25	0	.1	0	0	0										.83	0
	4	.48	.25	0	.1	0	0	0	0									.83	0
	5	.48	.25	0	.1	0	0	0	0	(30K)								.83	0
	6	.48	.25	0	.1	0	0	0	0	.50	(51K)							1.33	0
	7	.48	.25	0	.1	0	0	0	0	.50	.85	(43.5K)						2.18	0
	8	.48	.25	0	.1	0	0	0	0	.50	.85	.725	(23K)					2.91	0
	9	.48	.25	0	.1	0	0	0	0	.50	.85	.725	.38	(15.5K)				3.29	219.33
	10	.48	.25	0	.1	0	0	0	0	.50	.85	.725	.38	.26	(18.5K)			3.55	101.43
	11	.48	.25	0	.1	0	0	0	0	.50	.85	.725	.38	.26	.31			3.86	64.33
	12	.48	.25	0	.1	0	0	0	0	.50	.85	.725	.38	.26	.31			3.86	42.89
75	1	1.44	.75	0	.3	0	0	0	0	1.50	2.55	2.175	1.15	.775	.925	(9.5K)	0	11.57	29.67
	2	1.44	.75	0	.3	0	0	0	0	1.50	2.55	2.175	1.15	.775	.925	.475	0	12.04	22.93
	3	1.44	.75	0	.3	0	0	0	0	1.50	2.55	2.175	1.15	.775	.925	.475	0	12.04	18.24
	4	1.44	.75	0	.3	0	0	0	0	1.50	2.55	2.175	1.15	.775	.925	.475	0	12.04	15.05
76		5.8	3.0	0	1.2	0	0	0	0	6.0	10.2	8.7	4.6	3.1	3.7	1.9	0	48.2	11.00
77		5.8	3.0	0	1.2	0	0	0	0	6.0	10.2	8.7	4.6	3.1	3.7	1.9	0	48.2	10.04
78		4.35	2.5	0	1.2	0	0	0	0	6.0	10.2	8.7	4.6	3.1	3.7	1.9	0	46.2	9.63
TOTAL																		217.36	13.13

3.3.7.3

CAPITAL EQUIPMENT REQUIREMENTS

3.3.7.3.1 Engineering

Power Supplies	6X	3,000
Pulse Generator	1X	1,000
Counter	1X	750
Digital Multimeter	1X	500
Camera	1X	500
Probes	15X	1,000
Scopes	4X	20,000
Work Benches	4X	500
Hand Tools	-	1,000
Computer for Microprogram Doc.	1X	15,000
BSCA simulator	1X	6,000
Misc.	-	5,750
		50,000

3.3.7.3.2 Receiving Inspection

Surface Plates	3,000
Inspection Microscope	1,000
Optical Comparator	3,000
IC Tester	30,000
CRT Tester	4,000
Keyboard Tester	4,000
Misc. Tools & Fixtures	9,500
Work Benches	500
	55,000

3.3.7.3

3.3.7.3.3 Assembly & Test

Scopes	13X	26,000
Final Test Robots (FTR)	3X	15,000
PCB Tester	12X	30,000
Benches & Chairs	40X	12,000
Misc. Tools & Equipment	-	20,000
		103,000

3.3.7.3.4 Manufacturing Engineering Tooling

Frame	2,000
Card File	3,000
Transformer & Cap. Mtg.	500
Power Supply PCB Mtg.	500
FE Panel	2,000
Covers	15,000
Misc.	10,000
	33,000

TOTAL $ 241,000

3.3.8 WARRANTY COSTS

3.3.8

Warranty Costs - Base Case

		SHIP SCHED.	UI RATE	NO. OF INCIDENTS	DIRECT MATERIAL & LABOR/ INCIDENT	TOTAL DIRECT MATERIAL & LABOR	BURDEN	SHIPPING	TOTAL
74	7	0	0	0	0	0	0	0	0
	8	0	0	0	0	0	0	0	0
	9	15	.875	40	61.66	2,466	543	80	3,089
	10	35	.735	78	36.10	2,816	620	156	3,592
	11	60	.595	108	27.08	2,925	644	216	3,785
	12	90	.56	152	21.85	3,321	731	304	4,356
75	1	115	.49	169	18.05	3,050	671	338	4,059
	2	130	.455	178	16.15	2,875	633	356	3,864
	3	145	.455	198	14.73	2,917	642	396	3,955
	4	160	.42	202	13.30	2,687	591	404	3,682
	5	175	.42	221	12.35	2,729	600	442	3,771
	6	190	.385	220	11.88	2,614	575	440	3,629
	7	205	.385	237	11.40	2,702	594	474	3,770
	8	220	.35	231	10.93	2,525	556	462	3,543
	9	235	.35	247	10.26	2,534	557	494	3,585
	10	255	.35	268	9.50	2,546	560	536	3,642
	11	265	.35	279	9.50	2,651	583	558	3,792
	12	280	.35	294	9.50	2,793	614	588	3,995
76		4,380	.35	4,599	9.50	43,691	9,612	9,198	62,501
77		4,800	.35	5,040	9.50	47,880	10,534	10,080	68,494
78		4,800	.35	5,040	9.50	47,880	10,534	10,080	68,494
TOTAL		16,555		18,641		191,582	42,150	37,282	271,014*
AVERAGE				1.13		11.57	2.55	2.25	16.37
PER INCIDENT						10.28	2.26	2.00	14.54

*Total includes 11,416 for 1979.

3.3.8.2

Warranty Costs

Assumptions:

1. UI Breakdown: 90% PCB, 10% Miscellaneous

2. Direct Material and Labor Cost/UI = $9.50 x Progress Factor

3. Burden = 22% of Direct Material and Labor

4. Shipping = $2.00/Incident

3.3.9 QUANTITY SENSITIVITY ANALYSIS

3.3.9.1

	LOW PROGRAM QUANTITY 6775 Units			BASE CASE 16,555 Units			HIGH PROGRAM QUANTITY 29,988 Units		
	PROGRAM	UNIT	%	PROGRAM	UNIT	%	PROGRAM	UNIT	%
Direct Material Cost	6,539.1K	965.18	65.1	9,982.8K	603.01	70	16,370.9K	545.92	72.6
Direct Labor Cost	1,185.1K	174.92	11.8	1,927.5K	116.43	13.5	3,545.3K	118.22	15.7
Total Direct Mfg. Cost	7,724.2K	1,140.10	76.9	11,910.3K	719.44	83.5	19,916.2K	664.14	88.3
Indirect Labor Cost	1,711.8K	249.51	16.8	1,711.8K	103.40	12.0	1,886.9K	62.92	8.4
Indirect Expense	148.6K	25.09	1.7	148.6K	8.98	1.0	163.8K	5.46	.7
Total Indirect Cost	1,860.4K	274.60	18.5	1,860.4K	112.38	13.0	2,050.7K	68.38	9.1
EC Scrap/Rework Cost	217.7K	32.13	2.2	250.1K	15.11	1.8	313K	10.44	1.4
Total Mfg. Cost	9,802.4K	1,446.85	97.6	14,020.8K	846.93	98.3	22,279.9K	742.96	98.8
Capital Equipment	241K	35.57	2.4	241K	14.56	1.7	257.5K	8.59	1.2
Total Product Cost	10,043.4	1,482.42	100%	14,261.8K	861.49	100	22,537.4	751.55	100

Capital Equipment Increment for High Program Quantity = 150% of Manufacturing Engineering Tooling for Base Case

3.3.9.2

Total Manufacturing Cost - High Program Quantity

Expenditure Schedule

	SHIP	CUM. SHIP	DIRECT MATERIAL	DIRECT LABOR	TOTAL DIRECT MFG. COST	INDIRECT COST	SCRAP/ REWORK	TOTAL MFG. COST	CUMULATIVE MFG. COST	AVERAGE UNIT COST
73	0	0	0	0	0	130.7K	0	130.7K	130.7K	
74	200	200	617.5K	88.6K	706.1K	387.1K	66.6	1,159.8K	1,290.5K	6,453
75	2,375	2,575	1,749.5K	308.0K	2,057.5K	391.5K	113.0K	2,562.0K	3,852.5K	1,622
76	8,213	10,788	4,705.5K	946.4K	5,651.9K	401.1K	112.9K	6,165.9K	10,018.4K	929
77	9,600	20,388	5,272.9K	1,110.6K	6,383.5K	403.4K	20.5K	6,807.4K	16,825.8K	825
78	9,600	29,988	4,025.5K	1,091.7K	5,117.2K	336.9K	0	5,454.1K	22,279.9K	743
TOTAL	29,988		16,370.9K	3,545.3K	19,916.2K	2,050.7K	313K	22,279.9K		

Assumptions:
1. 6% material cost decrease of base case.
2. 20% indirect cost increase in 1976, 1977, 1978.
3. 10% second shift premium for direct labor.

3.3.9.3

Total Manufacturing Cost - Low Program Quantity

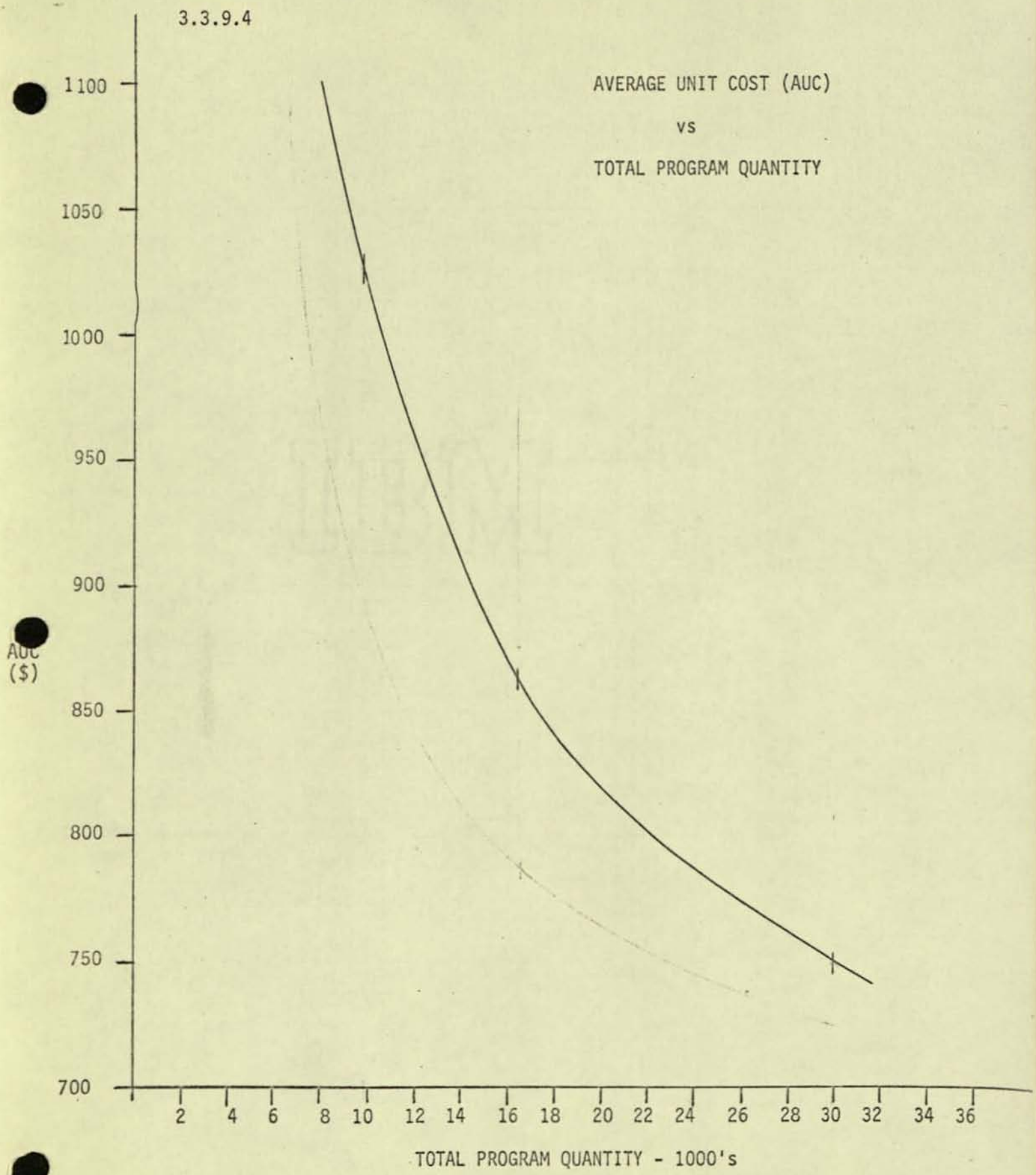
Expenditure Schedule

	SHIP	CUM. SHIP	DIRECT MATERIAL	DIRECT LABOR	TOTAL DIRECT MFG. COST	INDIRECT COST	SCRAP/ REWORK	TOTAL MFG. COST	CUMULATIVE MFG. COST	AVERAGE UNIT COST
73	0	0	0	0	0	130.7K	0	130.7K	130.7K	
74	200	200	617.5K	88.6K	706.1K	387.1K	66.6K	1,159.8K	1,290.5K	6,453
75	2,375	2,575	1,749.5K	308.0K	2,057.5K	391.5K	113.0K	2,562.0K	3,852.5K	1,622
76	2,400	4,975	1,550.7K	264.2K	1,814.9K	334.3K	33.0K	2,182.2K	6,034.7K	1,213
77	2,400	7,375	1,486.5K	264.4K	1,750.9K	336.1K	5.1K	2,092.1K	8,126.8K	1,102
78	2,400	6,775	1,1349.K	259.9K	1,394.8K	280.8K	0	1,675.6K	9,802.4K	1,447
TOTAL	6,775		6,539.1K	1,185.1K	7,724.2K	1,860.5K	217.7K	9,802.4K		

Assumptions: 1. 6% cost increase over base case.

2. No decrease in indirect expenditures.

3.3.9.4


AVERAGE UNIT COST (AUC)
vs
TOTAL PROGRAM QUANTITY
AUC ($)
1100
1050
1000
950
900
850
800
750
700
2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36
TOTAL PROGRAM QUANTITY - 1000's

3.3.10 APPENDIX

3.3.10.1

DIRECT LABOR ESTIMATE

	Hours	Cost/Hour	Cost/Unit
Receiving Inspection	.5	$4.90	$ 2.450
Component Test	.5	5.65	2.825
Electrical Subassembly	7.2	4.00	28.800
Mechanical Subassembly	.5	4.30	2.150
PCB Test	4.5	5.00	22.500
Final Assembly	.8	4.75	3.800
Final Test	1.0	5.65	5.650
Quality Control	2.0	4.90	9.800
Shipping	.5	4.30	.860
	17.5		$78.835

3.3.10.2

	SEMICONDUCTORS	PCB	MISC.	TOTAL
LOGIC				
Control Storage & Peripherals (1024 x 20 + 10% for peripherals)	56.32	7.00	1.00	64.32
ALU & Multiplexing & Working Regs.	14.00	7.00	1.00	22.00
Timing Circuits	7.00	7.00	1.00	15.00
Disk Interface	7.00	7.00	1.00	15.00
KB Interface	7.00	7.00	1.00	15.00
CRT Interface	7.00	7.00	1.00	15.00
Total Logic	98.32	42.00	6.00	146.32
Memory & Peripherals (2048 x 9 + 20% for peripherals)	66.36	7.00	2.00	75.36
FE Panel & FE Interface Circuitry				
Cabling (Power, FD, CRT, KB, FE)			25.00	25.00
Backpanel Assembly (10 PCB Connectors @ 2.00)			25.00	25.00
Power Supply (50 W. Proc. + 100 W 2FO's)	10.00	7.00	58.00	75.00
Covers & Frame			50.00	50.00
	174.68	56.00	166.00	396.68

3.4 PRODUCT COST ANALYSIS

MAS PROGRAM

S/A 6000 - SINGLE STATION

S/A 6000 - DUAL STATION

S/A 6200

S/A 6400

INDEX

Section 3.4

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3.4.7 Capital Equipment

3.4.7.1 Total Capital Equipment Expenditure Schedule
3.4.7.2 Capital Equipment Expenditure Schedule - 6200
3.4.7.3 Capital Equipment Expenditure Schedule - 6400
3.4.7.4 Total Capital Equipment Depreciation Schedule
3.4.7.5 Capital Equipment Depreciation Schedule - 6200
3.4.7.6 Capital Equipment Depreciation Schedule - 6400
3.4.7.7 Capital Equipment Requirements

3.4.8 Warranty Costs

3.4.8.1 Summary
3.4.8.2 Warranty Costs - 6000 Single Station
3.4.8.3 Warranty Costs - 6000 Dual Station
3.4.8.4 Warranty Costs - 6200
3.4.8.5 Warranty Costs - 6400

3.4.9 Appendix

3.4.9.1 Direct Labor Estimate
3.4.9.2 Direct Material Estimate
3.4.9.3 Peripheral Requirements

3.4.1 ASSUMPTIONS/DEFINITIONS

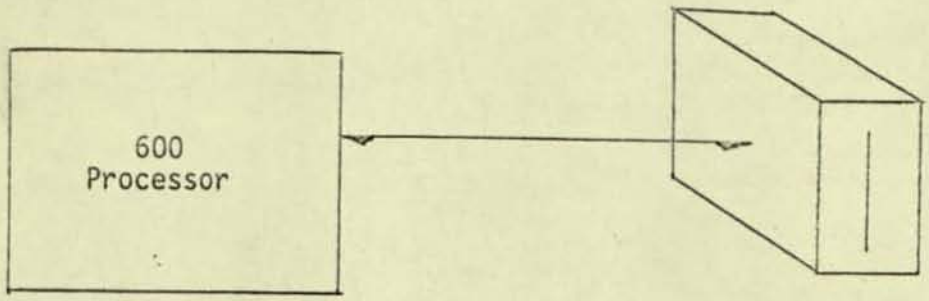
ASSUMPTIONS/DEFINITIONS - MAS PROGRAM (6000S, 6000D, 6200, 6400)

The cost estimates for the our MAS systems 6000 Single Station, 6000 Dual Station, 6200 and 6400 are incremental cost estimates with the base being the 6XX Processor. The 6XX Processor is the heart of each of the four systems and consists of:

--Microprocessor and Control Storage
--2K of Memory
--Keyboard and Keyboard Adapter
--240 Character CRT and CRT Adapter
--Frames and Covers for the Processor
--Adapter for one 900 Disk Drive

The cost of each system was determined by adding the appropriate costs for the incremental equipment required for each system. The following four diagrams illustrate the relationship between the 6XX Processor and each of the four systems.

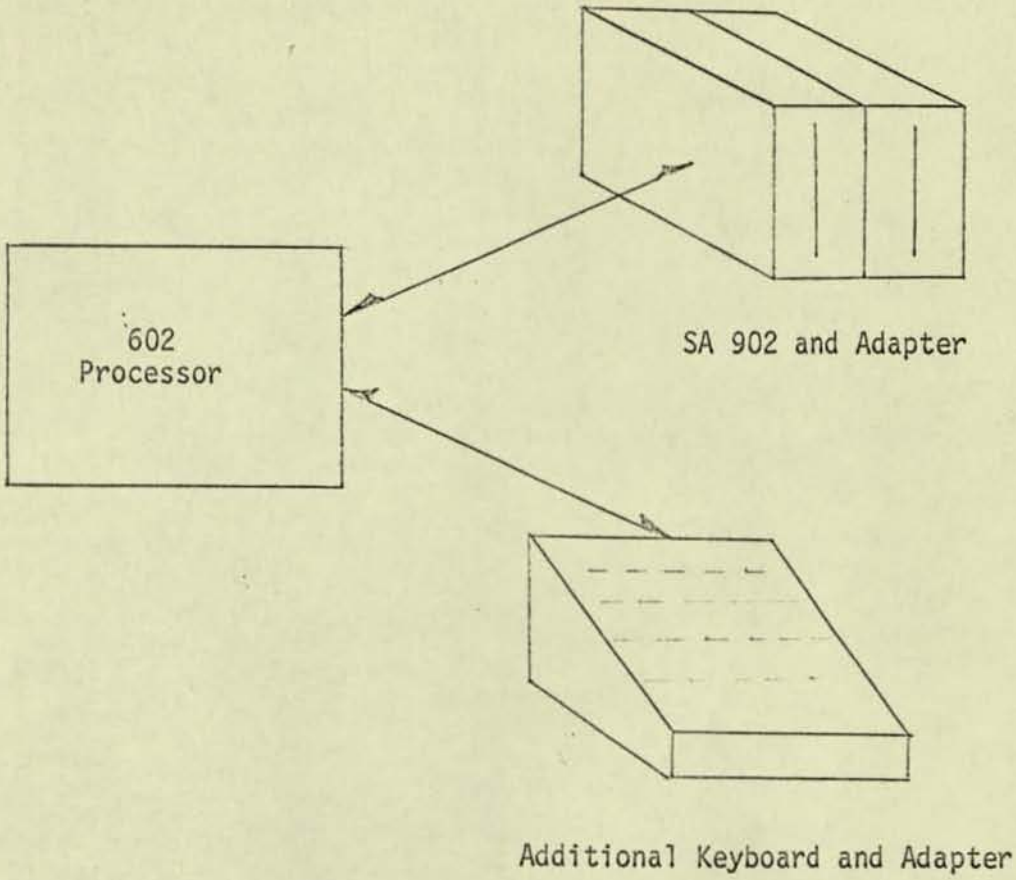
6000 Single Station



SA 900 Drive

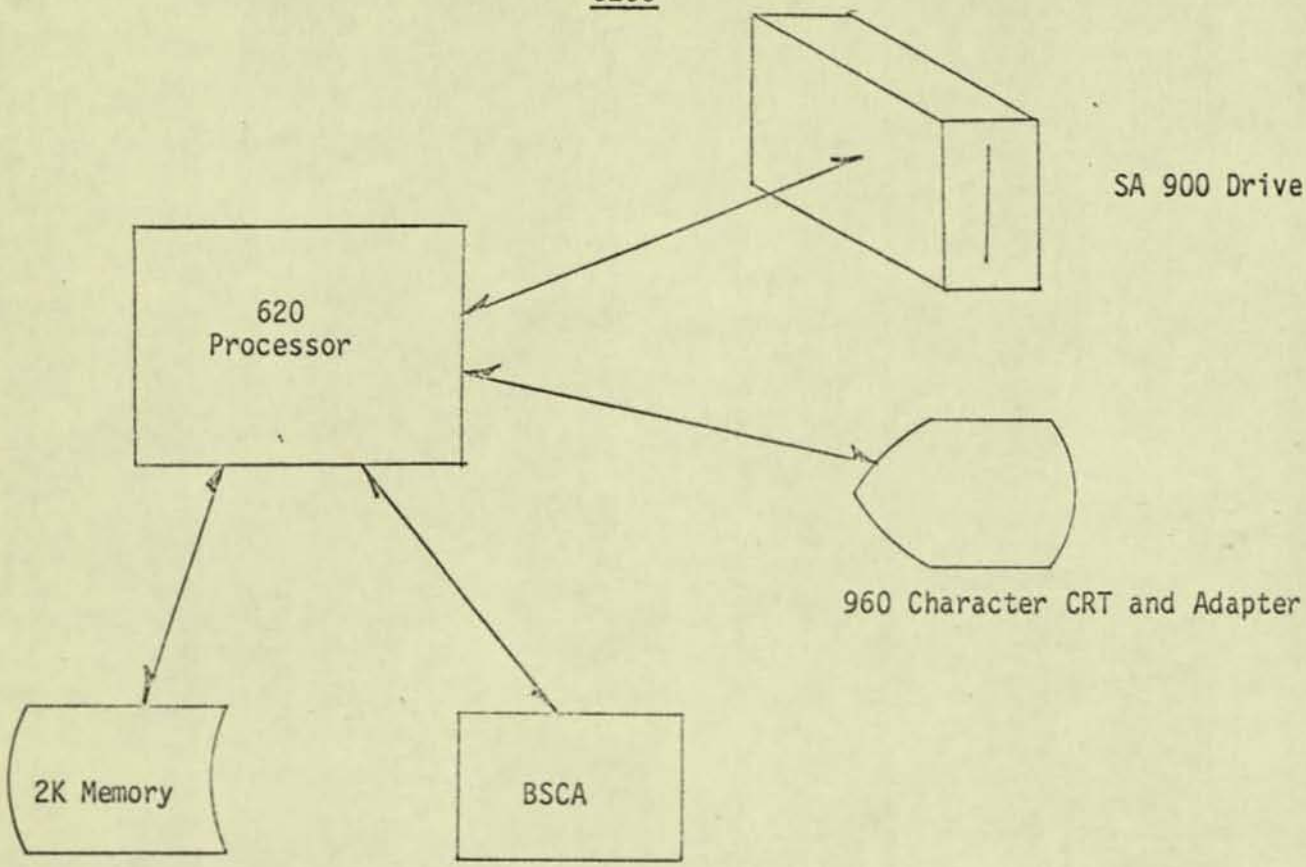
6000 S Cost = 600 Cost + SA 900 Cost

6000 Dual Station



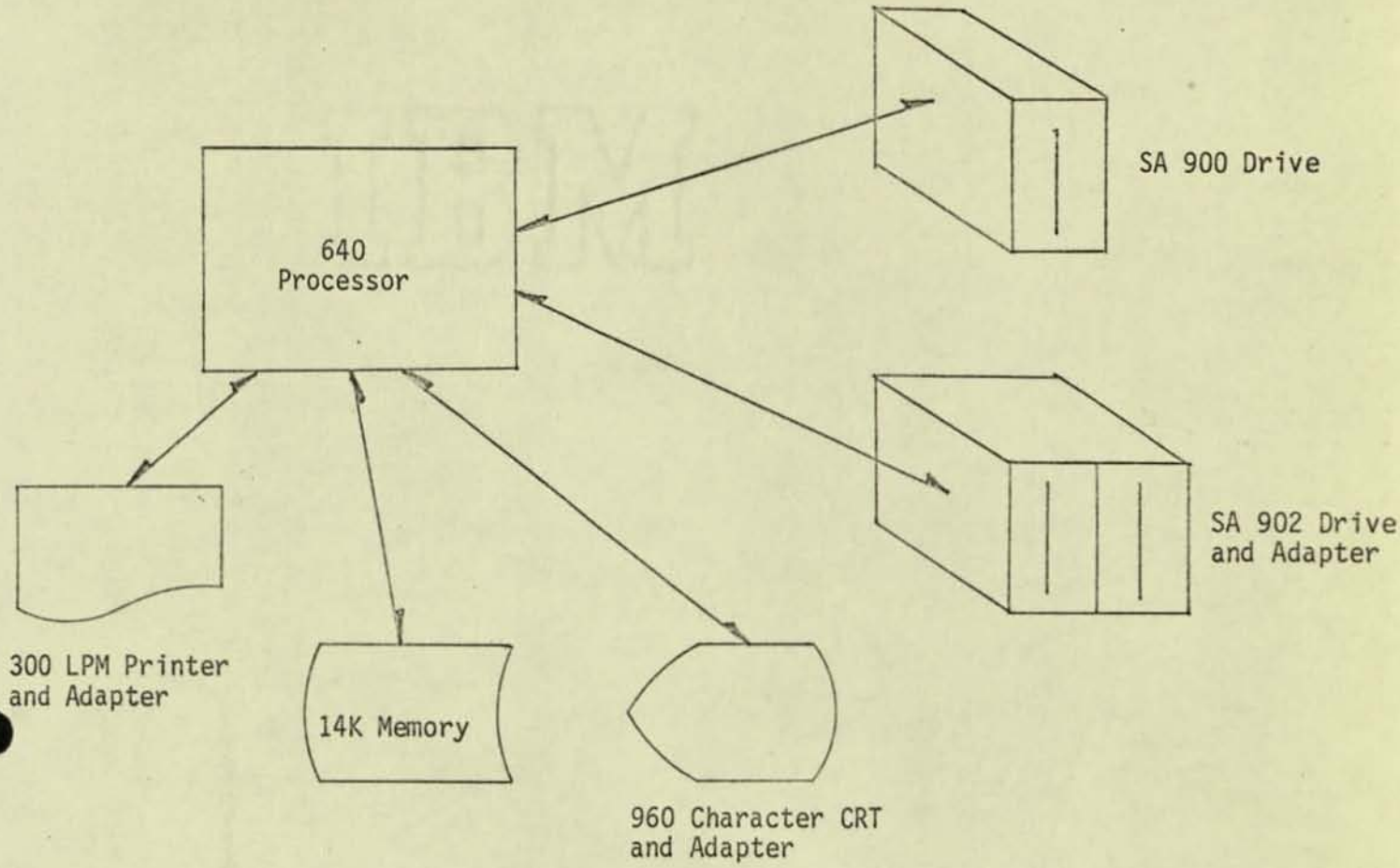
6000 D Cost = 620 Cost - SA 900 Disk Adapter Cost + Keyboard 2 Cost + Keyboard 2 Adapter Cost + SA 902 Cost + SA 902 Adapter Cost.

6200



6200 Cost = 620 Cost + SA 900 Disk Cost - 240 Character CRT Cost - 240 Character CRT Adapter Cost + 960 Character CRT Cost + 960 Character CRT Adapter Cost + BSCA Cost + 2K Memory Increment Cost.

6400



6400 Cost = 640 Processor Cost + SA 900 Disk Drive Cost +
SA 902 Disk Drive Cost + SA 902 Disk Drive Adapter Cost -
240 Char CRT Cost - 240 Char CRT Adapter Cost +
960 Char CRT Cost + 960 Char CRT Adapter Cost +
14K Memory Increment Cost + 300 LPM Printer Cost +
300 LPM Printer Adapter Cost.

Production Schedule

The production schedules for the four MAS systems are based on Marketing projections with the total systems produced at all times equal to the number of 6XX Processors produced.

Program Quantities

6XX	16,555
6000S	1,235
6000D	5,500
6200	7,320
6400	2,500

Direct Material and Labor Expenditures

Direct Material and Labor Expenditure Assumptions for the four MAS systems are the same as for the 6XX Processor with the following additions:

- Cost of the 960 Character CRT was assumed not to increase during the program.
- Cost of the 902 Dual Disk Drive was estimated at 1.85 times the cost of the 900 Disk Drive.
- No increase in the cost of materials was assumed for the 6400 system due to the fact the memory cost was 91% of the total incremental cost for the 6400 System and is expected to decrease with time.

Peripheral Costs

The costs for the drives and printers were obtained from their non-cumulative cost charts (3.1.3.3 and 3.2.3.2) and were included in the Direct Material and Labor Costs for the System. The implication here is that all indirect costs and capital equipment are recreated to support the peripherals required for the systems. This indeed will not be the case and the actual cost of the peripheral units will be significantly less than the costs used in this analysis.

Indirect Costs

Incremental indirect costs for the 6000D, 6200 and 6400 are for Engineering; no additional Production Support and Administration over the 6XX program is required. Indirect costs for the drives and printer are included in the cost of the devices as obtained from their non-cumulative cost charts.

Capital Equipment

Depreciation Schedule - 5 year straight line depreciation is assumed, except for in the Cost Summary where capital equipment is fully depreciated.

3.4.2 PRODUCTION SCHEDULE

3.4.2

Production Schedule

		6XX SHIP SCHEDULE	6000-S SHIP SCHEDULE	6000-D SHIP SCHEDULE	6200 SHIP SCHEDULE	6400 SHIP SCHEDULE
73	4 5 6					
	7 8 9					
	10 11 12					
74	1 2 3					
	4 5 6		0			
	7 8 9	15	15	0		
	10 11 12	185	25	160	0	
75	1 2 3	390	30	160	200	0
	4 5 6	525	45	200	230	50
	7 8 9	660	45	210	230	175
	10 11 12	800	75	290	260	175
76		4,380	320	1,360	2,000	700
77		4,800	340	1,560	2,200	700
78		4,800	340	1,560	2,200	700
TOTAL		16,555	1,235	5,500	7,320	2,500

3.4.3 SUMMARY

3.4.3.1

Product Cost Summary

	6000-SINGLE STATION		6000-DUAL STATION		6200		6400		TOTAL
	PROGRAM	UNIT	PROGRAM	UNIT	PROGRAM	UNIT	PROGRAM	UNIT	
Quantity	1,235		5,500		7,320		2,500		16,555
Direct Mfg. Cost	297.0K	240.48	3,058.8K	556.14	3,477.2K	475.03	7,586.3K	3,034.52	14,419.3K
Indirect Cost	0	0	134.0K	24.36	153.0K	20.90	438.4K	175.36	725.4K
EC Scrap/Rework	0	0	4.7K	0.85	36.9K	5.04	44.7K	17.88	86.3K
Total Mfg. Cost	297.0K	240.48	3,197.5K	581.36	3,667.1K	500.97	8,069.4K	3,227.76	15,231.0K
Capital Equipment	0	0	0	0	15.0K	2.05	20.0K	8.00	35.0K
Total Product Cost	297.0K	240.48	3,197.5K	581.36	3,685.3K	503.02	8,432.9K	3,235.76	15,266.0K
Processor Cost		861.49		861.49		861.49		861.49	14,261.8K
System Cost		1,101.98		1,442.85		1,364.51		4,097.25	29,527.8K
Warranty Cost									
System	5.8K	4.69	37.6K	6.84	66.8K	9.12	118.3K	47.32	228.5K
Processor		15.68		15.68		15.68		15.68	259.6K
Total		20.37		22.52		24.80		63.00	488.1K

3.4.3.2

Total Manufacturing Cost
Expenditure Schedule

		DIRECT MFG. COST	INDIRECT COST	EC SCRAP & REWORK	TOTAL
73	4 5 6		7,250		7,250
	7 8 9		47,500		47,500
	10 11 12		75,900		75,900
74	1 2 3		111,848		111,848
	4 5 6	47,210	168,479	4,731	220,420
	7 8 9	379,074	195,539	27,692	602,305
	10 11 12	604,079	188,412	42,275	834,766
75	1 2 3	873,645	183,999	43,624	1,101,268
	4 5 6	1,307,518	148,740	46,943	1,503,201
	7 8 9	1,353,627	134,043	38,612	1,526,282
	10 11 12	1,560,414	134,043	33,837	1,728,294
76		7,041,991	466,504	84,374	7,592,869
77		7,412,531	409,605	14,328	7,836,464
78		5,749,427	313,876	0	6,063,303
TOTAL		26,329,516	2,585,738	336,416	29,251,670

3.4.3.3

Unit Cost - Non Cumulative 6000 Single Station

		SHIP SCHEDULE	DIRECT MFG. COST	INDIRECT MFG. COST	EC SCRAP & REWORK	CAPITAL DEPREC.	TOTAL UNIT COST
73	4 5 6						
	7 8 9						
	10 11 12						
74	1 2 3						
	4 5 6						
	7 8 9	15	278.86	0	0	0	278.86
	10 11 12	25	244.04	0	0	0	244.04
75	1 2 3	30	238.80	0	0	0	238.80
	4 5 6	45	238.80	0	0	0	238.80
	7 8 9	45	238.80	0	0	0	238.80
	10 11 12	75	238.80	0	0	0	238.80
76		320	241.40	0	0	0	241.40
77		340	240.00	0	0	0	240.00
78		340	240.00	0	0	0	240.00

3.4.3.4

Unit Cost - Non Cumulative 6000 - Dual Station

		SHIP SCHEDULE	DIRECT MFG. COST	INDIRECT MFG. COST	EC SCRAP & REWORK	CAPITAL DEPREC.	TOTAL UNIT COST
73	4 5 6						
	7 8 9						
	10 11 12						
74	1 2 3						
	4 5 6						
	7 8 9	0	0	0	0	0	
	10 11 12	160	658.80	123.75	5.22		787.77
75	1 2 3	160	571.67	87.23	4.78		663.68
	4 5 6	200	554.92	34.89	3.06		592.87
	7 8 9	210	550.88	33.23	2.47		586.58
	10 11 12	290	548.57	24.06	1.56		574.19
76		1,360	550.06	12.32	.84		563.22
77		1,560	552.89	2.00	.27		555.16
78		1,560	553.91	0	0		553.91
TOTAL		5,500					

3.4.3.5

Unit Cost - Non Cumulative 6200

		SHIP SCHEDULE	DIRECT MFG. COST	INDIRECT MFG. COST	EC SCRAP & REWORK	CAPITAL DEPREC.	TOTAL UNIT COST
73	4 5 6						
	7 8 9						
	10 11 12						
74	1 2 3						
	4 5 6						
	7 8 9						
	10 11 12	0					
75	1 2 3	200	585.85	104.67	32.42	3.75	726.69
	4 5 6	230	515.56	60.67	24.22	3.26	603.71
	7 8 9	230	488.88	30.34	18.76	3.26	541.24
	10 11 12	260	466.30	26.84	13.16	2.88	509.18
76		2,000	465.62	18.45	6.27	1.50	491.84
77		2,000	470.65	3.55	2.04	1.36	477.60
78		2,000	475.11	0	0	1.36	476.47

3.4.3.6

Unit Cost - Non Cumulative 6400

		SHIP SCHEDULE	DIRECT MFG. COST	INDIRECT MFG. COST	EC SCRAP & REWORK	CAPITAL DEPREC.	TOTAL UNIT COST
73	4 5 6						
	7 8 9						
	10 11 12						
74	1 2 3						
	4 5 6						
	7 8 9						
	10 11 12	0					
75	1 2 3	0					
	4 5 6	50	4,106.81	558.24	83.62	20.00	4,768.67
	7 8 9	175	3,378.63	159.50	64.56	5.71	3,608.40
	10 11 12	175	3,005.13	159.50	47.59	5.71	3,217.93
76		700	2,969.57	112.23	22.40	5.71	3,109.91
77		700	2,993.06	89.31	7.43	5.71	3,095.51
78		700	2,985.63	47.30		5.71	3,038.64
TOTAL		2,500					

3.4.4 DIRECT COSTS

3.4.4.1

Total Direct Manufacturing Cost

		6XX PROCESSOR	6000-S	6000-D	6200	6400	TOTAL
73	4 5 6						
	7 8 9						
	10 11 12						
74	1 2 3	0	0				
	4 5 6	43,027	4,183	0			47,210
	7 8 9	270,507	6,101	102,466	0		379,074
	10 11 12	392,573	7,164	92,042	112,300	0	604,079
75	1 2 3	431,921	10,746	110,731	117,847	202,400	873,645
	4 5 6	483,165	10,746	115,912	112,442	585,253	1,307,518
	7 8 9	531,118	17,910	158,177	120,523	525,899	1,353,627
	10 11 12	611,294	19,312	186,702	225,257	517,849	1,560,414
76		3,152,034	78,000	777,472	953,951	2,080,534	7,041,991
77		3,333,588	81,600	862,514	1,035,441	2,099,388	7,412,531
78		2,661,092	61,200	652,737	799,437	1,574,961	5,749,427
TOTAL		11,910,319	296,962	3,058,753	3,477,198	7,586,284	26,329,516

3.4.4.2

Direct Manufacturing Cost - 6000 Single Station

		SHIP SCHEDULE	PROGRESS FACTOR	DIRECT MATERIAL	DIRECT LABOR	OEM MAT'L	PERIPHERALS	TOTAL
73	4 5 6							
	7 8 9							
	10 11 12							
74	1 2 3							
	4 5 6						4,183	4,183
	7 8 9	15	3.0	0	0	0	6,101	6,101
	10 11 12	25	1.7	0	0	0	7,164	7,164
75	1 2 3	30	1.3	0	0	0	10,746	10,746
	4 5 6	45	1.15	0	0	0	10,746	10,746
	7 8 9	45	1.0	0	0	0	17,910	17,910
	10 11 12	75	1.0	0	0	0	19,312	19,312
76		320	1.0	0	0	0	78,000	78,000
77		340	1.0	0	0	0	81,600	81,600
78		340	1.0	0	0	0	61,200	61,200
TOTAL		1,235		0	0	0	296,962	296,962

3.4.4.3

Direct Manufacturing Costs - 6000 Dual Station

		SHIP SCHED.	PROG. FACTOR	DIRECT MAT'L	DIRECT LABOR	OEM MAT'L	PERIPHERALS	TOTAL
73	4 5 6							
	7 8 9							
	10 11 12							
74	1 2 3							
	4 5 6							
	7 8 9	0	3.0	7,200		12,800	82,466	102,466
	10 11 12	160	1.7	4,080	2,938	12,800	72,224	92,042
75	1 2 3	160	1.3	4,017	2,359	16,000	88,355	110,731
	4 5 6	200	1.15	3,731	2,608	16,800	92,773	115,912
	7 8 9	210	1	4,481	2,381	23,200	128,115	158,177
	10 11 12	290	1	5,253	3,289	27,200	150,960	186,702
76		1,360	1	22,438	16,194	112,800	626,040	777,472
77		1,560	1	25,570	19,504	124,800	692,640	862,514
78		1,560	1	19,178	20,479	93,600	519,480	652,737
TOTAL		5,500		95,948	69,752	440,000	2,453,053	3,058,753

3.4.4.4

Direct Manufacturing Cost - 6200

		SHIP SCHED.	PROG. FACTOR	DIRECT MATERIAL	DIRECT LABOR	OEM MATERIAL	PERIPHERALS	TOTAL
73	4 5 6							
	7 8 9							
	10 11 12							
74	1 2 3							
	4 5 6							
	7 8 9							
	10 11 12		1.7	59,500		4,000	48,800	112,300
75	1 2 3	200	1.3	53,177	4,870	4,600	55,200	117,847
	4 5 6	230	1.15	47,041	5,601	4,600	55,200	112,442
	7 8 9	230	1.0	46,242	5,601	5,200	63,480	120,523
	10 11 12	260	1	88,925	6,332	10,000	120,000	225,257
76		2,000	1	370,610	51,141	40,100	492,100	953,951
77		2,200	1	404,380	59,061	44,000	528,000	1,035,441
78		2,200	1	308,423	62,014	33,000	396,000	799,437
TOTAL		7,320	1	1,378,298	194,620	145,500	1,758,780	3,477,198

3.4.4.5

Direct Manufacturing Costs - 6400

		SHIP SCHED.	PROG. FACTOR	DIRECT MATERIAL	DIRECT LABOR	OEM MAT'L	PERIPHERALS	TOTAL
73	4 5 6							
	7 8 9							
	10 11 12							
74	1 2 3							
	4 5 6							
	7 8 9							
	10 11 12							
75	1 2 3	0	1.3	43,550	0	1,000	157,850	202,400
	4 5 6	50	1.15	134,838	2,940	3,500	443,975	585,253
	7 8 9	175	1	117,250	8,949	3,500	396,200	525,899
	10 11 12	175	1	117,250	8,949	3,500	388,150	517,849
76		700	1	469,000	37,584	14,000	1,559,950	2,080,534
77		700	1	469,000	39,463	14,000	1,576,925	2,099,388
78		700	1	351,750	41,436	10,500	1,171,275	1,574,961
TOTAL		2,500		1,702,638	139,321	50,000	5,694,325	7,586,284

3.4.4.6

Direct Manpower Summary

		6XX PROCESSOR	6000-D	6200	6400	900/902	300	TOTAL
73	4 5 6							
	7 8 9							
	10 11 12							
74	1 2 3							
	4 5 6					0		0
	7 8 9	12.0	0			.2		12.2
	10 11 12	24.0	1.2	0		3.5		28.7
75	1 2 3	27.0	1.0	2.0	0	5.5	0	35.5
	4 5 6	29.0	1.0	2.1	1.2	8.3	5.8	47.4
	7 8 9	31.0	1.0	2.1	3.5	12.3	16.8	66.7
	10 11 12	34.0	1.3	2.4	3.5	14.5	14.4	70.1
76		45.0	1.5	4.8	3.5	18.0	14.4	87.2
77		47.0	1.8	5.3	3.5	19.5	14.4	91.5
78		44.0	1.8	5.3	3.5	19.5	14.4	88.5

3.4.5 INDIRECT COSTS

3.4.5.1

Total Indirect Costs

		6XX (PROCESSOR)	6000-S	6000-D	6200	6400	TOTAL
73	4 5 6	7,250					7,250
	7 8 9	47,500	0				47,500
	10 11 12	75,900	0	0	0	0	75,900
74	1 2 3	72,248	0	19,800	0	19,800	111,848
	4 5 6	89,279	0	19,800	19,800	39,600	168,479
	7 8 9	116,339	0	19,800	19,800	39,600	195,539
	10 11 12	109,212	0	19,800	19,800	39,600	188,412
75	1 2 3	107,241	0	13,956	20,934	41,868	183,999
	4 5 6	99,894	0	6,978	13,956	27,912	148,740
	7 8 9	92,175	0	6,978	6,978	27,912	134,043
	10 11 12	92,175	0	6,978	6,978	27,912	134,043
76		334,284	0	16,760	36,900	78,560	466,504
77		336,144	0	3,126	7,815	62,520	409,605
78		280,768	0	0	0	33,108	313,876
TOTAL		1,860,409	0	133,976	152,961	438,392	2,585,738

3.4.5.2

Indirect Costs - 6000 Dual Station

		MANPOWER	SALARY	EXPENSE	TOTAL
73	4 5 6				
	7 8 9				
	10 11 12	0	0	0	0
74	1 2 3	3	16,200	3,600	19,800
	4 5 6	3	16,200	3,600	19,800
	7 8 9	3	16,200	3,600	19,800
	10 11 12	3	16,200	3,600	19,800
75	1 2 3	2	11,556	2,400	13,956
	4 5 6	1	5,778	1,200	6,978
	7 8 9	1	5,778	1,200	6,978
	10 11 12	1	5,778	1,200	6,978
76		.5	12,360	2,400	16,760
77		.1	2,646	480	3,126
78		0	0	0	0
TOTAL					133,976

3.4.5.3

Indirect Costs - 6200

		MANPOWER	SALARY	EXPENSE	TOTAL
73	4 5 6				
	7 8 9				
	10 11 12				
74	1 2 3	0	0	0	0
	4 5 6	3	16,200	3,600	19,800
	7 8 9	3	16,200	3,600	19,800
	10 11 12	3	16,200	3,600	19,800
75	1 2 3	3	17,334	3,600	20,934
	4 5 6	2	11,556	2,400	13,956
	7 8 9	1	5,778	1,200	6,978
	10 11 12	1	5,778	1,200	6,978
76		1.25	30,900	6,000	36,900
77		.25	6,615	1,200	7,815
78				0	0
TOTAL			126,561	26,400	152,951

3.4.5.4

Indirect Costs - 6400

		MANPOWER	SALARY	EXPENSE	TOTAL
73	4 5 6				
	7 8 9				
	10 11 12	0	0	0	0
74	1 2 3	3	16,200	3,600	19,800
	4 5 6	6	32,400	7,200	39,600
	7 8 9	6	32,400	7,200	39,600
	10 11 12	6	32,400	7,200	39,600
75	1 2 3	6	34,668	7,200	41,868
	4 5 6	4	23,112	4,800	27,912
	7 8 9	4	23,112	4,800	27,912
	10 11 12	4	23,112	4,800	27,912
76		3	74,160	14,400	78,560
77		2	52,920	9,600	62,520
78		1	28,308	4,800	33,108
TOTAL					438,392

3.4.5.5

Indirect Manpower Summary

		6XX	6000-D	6200	6400	900	300	TOTAL
73	4 5 6	1						1
	7 8 9	8						8
	10 11 12	13	0	0	0			13
74	1 2 3	12	3	0	3			18
	4 5 6	15	3	3	6			27
	7 8 9	21	3	3	6	0		33
	10 11 12	19	3	3	6	4		35
75	1 2 3	18	2	3	6	6		35
	4 5 6	17	1	2	4	8	6	38
	7 8 9	15	1	1	4	12	17	50
	10 11 12	15	1	1	4	15	15	51
76		13	1	1	3	18	15	51
77		13	0	0	2	16	15	46
78		10	0	0	1	16	15	42

3.4.6 EC SCRAP AND REWORK

3.4.6.1

Total EC Scrap and Rework Costs

		6XX (PROCESSOR)	6000-S	6000-D	6200	6400	TOTAL
73	4 5 6	0	0	0	0	0	0
	7 8 9	0	0	0	0	0	0
	10 11 12	0	0	0	0	0	0
74	1 2 3	0	0	0	0	0	
	4 5 6	4,731	0	0	0	0	4,731
	7 8 9	26,857	0	835	0	0	27,692
	10 11 12	35,025	0	765	6,485	0	42,275
75	1 2 3	33,259	0	612	5,572	4,181	43,624
	4 5 6	30,809	0	520	4,316	11,298	46,943
	7 8 9	26,408	0	453	3,422	8,329	38,612
	10 11 12	22,567	0	418	4,668	6,184	33,837
76		60,201	0	966	10,543	12,664	84,374
77		10,262	0	180	1,853	2,033	14,328
78		0	0	0	0	0	0
TOTAL		250,119	0	4,749	36,859	44,689	336,416

3.4.6.2

EC Scrap and Rework Costs - 6000 Dual Station

		SHIP SCHEDULE	DIRECT MATERIAL + DIRECT LABOR	% EC SCRAP/REWORK	TOTAL
73	4 5 6				
	7 8 9				
	10 11 12				
74	1 2 3				
	4 5 6				
	7 8 9	0	7,200	11.6	835
	10 11 12	160	7,018	10.9	765
75	1 2 3	160	6,376	9.6	612
	4 5 6	200	6,339	8.2	520
	7 8 9	210	6,862	6.6	453
	10 11 12	290	8,542	4.9	418
76		1,360	38.632	2.5	966
77		1,560	45,074	.4	180
78		1,560	39,657	0	0
TOTAL		5,500	165,700		4,749

3.4.6.3

EC Scrap and Rework - 6200

		SHIP SCHEDULE	DIRECT MATERIAL + DIRECT LABOR	% EC SCRAP/REWORK	TOTAL
73	4 5 6				
	7 8 9				
	10 11 12				
74	1 2 3	0			
	4 5 6	0			
	7 8 9	0	0	0	0
	10 11 12	0	59,500	10.9	6,485
75	1 2 3	200	58,047	9.6	5,572
	4 5 6	230	52,642	8.2	4,316
	7 8 9	230	51,843	6.6	3,422
	10 11 12	260	95,257	4.9	4,668
76		2,000	421,751	2.5	10,543
77		2,200	463,441	.4	1,853
78		2,200	370,437	0	0
TOTAL		7,320	1,572,918		36,859

3.4.6.4

EC Scrap and Rework - 6400

		SHIP SCHEDULE	DIRECT MATERIAL + DIRECT LABOR	% EC SCRAP/REWORK	TOTAL
73	4 5 6				
	7 8 9				
	10 11 12				
74	1 2 3				
	4 5 6	0	0	0	
	7 8 9	0	0	0	
	10 11 12	0			
75	1 2 3	0	43,550	9.6	4,181
	4 5 6	50	137,778	8.2	11,298
	7 8 9	175	126,199	6.6	8,329
	10 11 12	175	126,199	4.9	6,184
76		700	506,584	2.5	12,664
77		700	508,463	.4	2,033
78		700	393,186	0	0
TOTAL		2,500	1,841,959		44,689

3.4.7 CAPITAL EQUIPMENT

3[illegible].1

Total Capital Equipment Expenditure Schedule

		6XX (PROCESSOR)	6000-S	6000-D	6200	6400	TOTAL
73	8 9	29K	0	0	0	0	29K
	10 11 12	21K	0	0	0	0	21K
74	1 2 3	0	0	0	5K	10K	15K
	4 5 6	81K	0	0	6K	0	87K
	7 8 9	82K	0	0	0	0	82K
	10 11 12	18.5K	0	0	4K	10K	32.5K
75	1 2 3	4.5K	0	0	0	0	4.5K
	4 5 6	0	0	0	0	0	0
	7 8 9	5K	0	0	0	0	5K
TOTAL		241K	0	0	15K	20K	276.0K

3.4.7.2

Capital Equipment Expenditure Schedule - 6200

		RECEIVING INSPECTION	ENGINEERING	TOTAL
73	8 9		0	0
	10 11 12		0	0
74	1 2 3		5K	5K
	4 5 6		6K	6K
	7 8 9	0	0	0
	10 11 12	4K	0	4K
75	1 2 3	0	0	0
	4 5 6	0	0	0
	7 8 9	0	0	0
TOTAL		4K	11K	15K

3.4.7.3

Capital Equipment Expenditure Schedule - 6400

		RECEIVING INSPECTION	ENGINEERING	TOTAL
73	8 9			0
	10 11 12			0
74	1 2 3		10K	10K
	4 5 6			0
	7 8 9			0
	10 11 12	10K		10K
75	1 2 3			0
	4 5 6			0
	7 8 9			0
TOTAL		10K	10K	20K

3.4.7.4

Total Capital Equipment Depreciation Schedule

		6XX PROCESSOR	6000	6200	6400	TOTAL
73	4 5 6	0	0			0
	7 8 9	0	0			0
	10 11 12	1,940	0			1,940
74	1 2 3	2,490	0	0	0	2,490
	4 5 6	2,990	0	250	500	3,740
	7 8 9	8,380	0	550	500	9,430
	10 11 12	11,270	0	550	500	12,320
75	1 2 3	11,570	0	750	1,000	13,320
	4 5 6	12,040	0	750	1,000	13,790
	7 8 9	12,040	0	750	1,000	13,790
	10 11 12	12,040	0	750	1,000	13,790
76		48,200	0	3,000	4,000	55,200
77		48,200	0	3,000	4,000	55,200
78		46,200	0	3,000	4,000	53,200
TOTAL		217,360	0	13,350	17,500	248,210

3.4.7.5

△ Capital Equipment Depreciation Schedule - 6200

		1	2	3	4	5	6	7	8	9	10-12	75	76	TOTAL DEPR.	DEPR./ UNIT
73	8 9														
	10 11 12														
74	1 2 3		(5K)												
	4 5 6		250			(6K)								250	0
	7 8 9		250			300			(0)					550	0
	10 11 12		250			300			0		(4K)			550	0
75	1 2 3 4		250 250 250 250			400 400 400 400			0		200 200 200 200	(0)		750 750 750 750	3.75 3.26 3.26 2.88
76			1,000			1,200			0		800	0	(0)	3,000	1.50
77			1,000			1,200			0		800	0	0	3,000	1.36
78			1,000			1,200			0		800	0	0	3,000	1.36
TOTAL														13,350	1.82

3.4.7.6

△ Capital Equipment Depreciation Schedule - 6400

		1	2	3	4	5	6	7	8	9	10-12	75	76	Total Depr.	Depr./ Unit
73	8 9														
	10 11 12														
74	1 2 3		(10K)												0
	4 5 6		500			(0)								500	0
	7 8 9		500			0			(0)					500	0
	10 11 12		500			0			0		(10K)			500	0
75	1 2 3 4		500 500 500 500			0 0 0 0			0 0 0 0		500 500 500 500	(0)		1,000 1,000 1,000 1,000	20.00 5.71 5.71
76			2,000			0					2,000	0	(0)	4,000	5.71
77			2,000			0					2,000	0	0	4,000	5.71
78			2,000			0					2,000	0	0	4,000	5.71

3.4.7.7

△ CAPITAL EQUIPMENT REQUIREMENTS

6200

Engineering

Microprogram Documentation	-5K
BSCA Simulator	-6K
	11K

Recovery Inspection

960 Character CRT Tester	-4K
Total:	15K

6400

Engineering

Microprogram Documentation	-10K

Receiving Inspection

RAM IC Tester	-10K
Total:	20K

3.4.8 WARRANTY COSTS

3.4.8.1

Warranty Cost - Summary

		6XX PROCESSOR	6000-S	6000-D	6200	6400	TOTAL
73	4 5 6						
	7 8 9						
	10 11 12						
74	1 2 3						
	4 5 6		0				
	7 8 9	3,089	70	0			3,159
	10 11 12	11,733	117	1,238	0		13,088
75	1 2 3	11,878	140	1,318	2,758	0	16,094
	4 5 6	11,082	210	1,437	2,883	2,331	17,943
	7 8 9	10,898	210	1,430	2,431	8,102	23,071
	10 11 12	11,429	350	1,885	2,383	8,245	24,292
76		62,501	1,494	9,314	17,834	33,322	124,465
77		68,494	1,588	10,466	19,243	33,136	132,927
78		68,494	1,588	10,466	19,243	33,136	132,927
TOTAL		259,598	5,767	37,554	66,775	118,272	487,966

3.4.8.2

Warranty Costs - 6000 Single Station

		SHIP SCHEDULE	WARRANTY COSTS	WARRANTY COSTS FOR 900
73	4 5			
	7 8 9			
	10 11 12			
74	1 2 3			
	4 5 6	0	0	0
	7 8 9	15	0	70
	10 11 12	25	0	117
75	1 2 3	30	0	140
	4 5 6	45	0	210
	7 8 9	45	0	210
	10 11 12	75	0	350
76		320	0	1,494
77		340	0	1,588
78		340	0	1,588
TOTAL		1,235	0	5,767

3.4.8.3

Warranty Costs - 6000 Dual Station

		SHIP SCHED.	UI	Δ NO. OF INCIDENTS	Δ DIRECT MATERIAL & LABOR	Δ WARRANTY COST	WARRANTY COST FOR 902	TOTAL WARRANTY COSTS
73	4 5 6							
	7 8 9							
	10 11 12							
74	1 2 3							
	4 5 6							
	7 8 9							
	10 11 12	160	.1	32	350	491	747	1,238
75	1 2 3	160	.08	42	399	571	747	1,318
	4 5 6	200	.06	37	352	503	934	1,437
	7 8 9	210	.05	33	314	449	981	1,430
	10 11 12	290	.05	39	371	531	1,354	1,885
76		1,360	.05	218	2,071	2,963	6,351	9,314
77		1,560	.05	234	2,223	3,180	7,286	10,466
78		1,560	.05	234	2,223	3,180	7,286	10,466
TOTAL				877	2,223	11,868	25,686	37,554

(1) Direct Labor and Material/UI = 9.50 x Progress Factor.
(2) Warranty Cost for 902 = 1.3 x Average 900 Warranty Cost.

3.4.8.4

Warranty Costs - 6200

		SHIP SCHED.	UI	NO. OF INCIDENTS	DIRECT MATERIAL & LABOR	WARRANTY COST	WARRANTY COST FOR 900	TOTAL WARRANTY COST
73	4 5 6							
	7 8 9							
	10 11 12							
74	1 2 3							
	4 5 6							
	7 8 9							
	10 11 12							
75	1 2 3	200	.21	84	1,357	1,824	934	2,758
	4 5 6	230	.14	106	1,309	1,809	1,074	2,883
	7 8 9	230	.12	88	968	1,357	1,074	2,431
	10 11 12	260	.11	86	817	1,169	1,214	2,383
76		2,000	.1	625	5,938	8,494	9,340	17,834
77		2,200	.1	660	6,270	8,969	10,274	19,243
78		2,200	.1	660	6,270	8,969	10,274	19,243
TOTAL		7,320		2,308		32,591	34,184	66,775

(1) Direct Labor and Material/UI = 9.50 x Progress Factor.

(2) 900 Warranty Cost is average for Program.

3.4.8.5

Warranty Costs - 6400

		SHIP SCHED.	UI	INCDNT.	DIRECT MATERIAL & LABOR	WARRANTY	WARRANTY COST FOR 900/902	WARRANTY COST FOR 300	TOTAL WARRANTY COST
73	4 5 6								
	7 8 9								
	10 11 12								
74	1 2 3								
	4 5 6								
	7 8 9								
	10 11 12								
75	1 2 3	0			0				
	4 5 6	50	.19	19	235	325	537	1,469	2,331
	7 8 9	175	.17	70	770	1,080	1,880	5,142	8,102
	10 11 12	175	.16	90	855	1,223	1,880	5,142	8,245
76		700	.15	331	3,145	5,237	7,519	20,566	33,322
77		700	.15	315	2,993	5,051	7,519	20,566	33,136
78		700	.15	315	2,993	5,051	7,519	20,566	33,136
TOTAL		2,500		1,554	10,991	17,697	26,854	73,451	118,272

(1) Direct Material and Labor = 9.50/UI x Progress Factor.
(2) Warranty Costs for 900 and 300 are average for Program.
(3) Warranty Cost for 902 = 1.3 x average 900 Warranty Cost.

3.4.9 APPENDIX

3.4.9.1

Labor Estimate* - Ultimate

System	Incremental Labor Estimate	Total Hours	Total Manpower	Total Cost
6000-S	0	0	0	0
6000-D	(1) 1.0 hrs Keyboard Adapter Assembly and Test (2) 0.5 hrs Keyboard Test and Assembly (3) 0.5 hrs Final Test	2.0	.0133 MM	10.80
6200	(1) 2.0 hrs BSCA Assembly and Test (2) 1.0 hrs RAM Assembly and Test (3) 1.5 hrs Final Assembly and Test	4.5	.0300 MM	24.30
6400	(1) 1.0 hrs 902 Adapter Assembly and Test (2) 4.5 hrs. RAM Assembly & Test (3) .5 hrs Subassembly (4) 3.0 hrs Final Assembly and Test	9.0	.0600 MM	48.60

*Incremental Hours Over Basic Processor and Peripherals.

3.4.9.2

Material Estimate* - Ultimate

	Direct Material	OEM Material
6000 - Single Station	0	0
6000 - Dual Station		
2nd Keyboard		80
2nd Keyboard Adapter	15	
Δ902 Adapter	10	
TOTAL	25	80
6200		
BSCA	65	
Δ960 CRT Adapter		15
Δ960 CRT Adapter	15	
2K Memory Addition	80	
TOTAL	160	15
6400		
Δ960 CRT		15
Δ960 CRT Adapter	15	
902 Adapter	25	
Printer Adapter	20	
14K Memory Addition	595	
TOTAL	655	15

*Incremental Cost Over Basic Processor and Peripherals.

3.4.9.3

Peripheral Requirements

		900	300
73	4 5 6	-	
	7 8 9		
	10 11 12		
74	1 2 3		
	4 5 6		
	7 8 9	15	
	10 11 12	345	
75	1 2 3	550	
	4 5 6	825	50
	7 8 9	1,220	175
	10 11 12	1,440	175
76		7,140	700
77		7,760	700
78		7,760	700
TOTAL		27,055	2,500

4.0 OPERATIONS SUMMARY

4.1.1

Total Expenditures - Labor and Materials

		Drive	Printer	MAS	Total
73	1Q	22.1K	0	0	22.1K
	2Q	87.6K	0	7.3K	94.9K
	3Q	313.6K	46.8K	47.5K	407.9K
	4Q	445.0K	74.6K	75.9K	595.5K
74	1Q	551.4K	91.2K	111.8K	754.4K
	2Q	569.7K	131.1K	220.4K	921.2K
	3Q	551.7K	214.4K	602.3K	1,368.4K
	4Q	533.4K	563.3K	834.8K	1,931.5K
75	1Q	523.7K	654.5K	1,101.3K	2,279.5K
	2Q	523.7K	651.8K	1,503.2K	2,678.7K
	3Q	523.7K	631.4K	1,526.3K	2,681.4K
	4Q	523.7K	606.6K	1,728.3K	2,858.6K
76		2,129.0K	2,323.0K	7,592.9K	12,044.9K
77		1,705.0K	2,393.6K	7,836.5K	11,935.1K
78		0	1,851.9K	6,063.3K	7,915.2K
TOTAL:		9,003.3K	10,234.2K	29,251.8K	48,489.3K

4.1.2

Total Expenditures - Capital Equipment

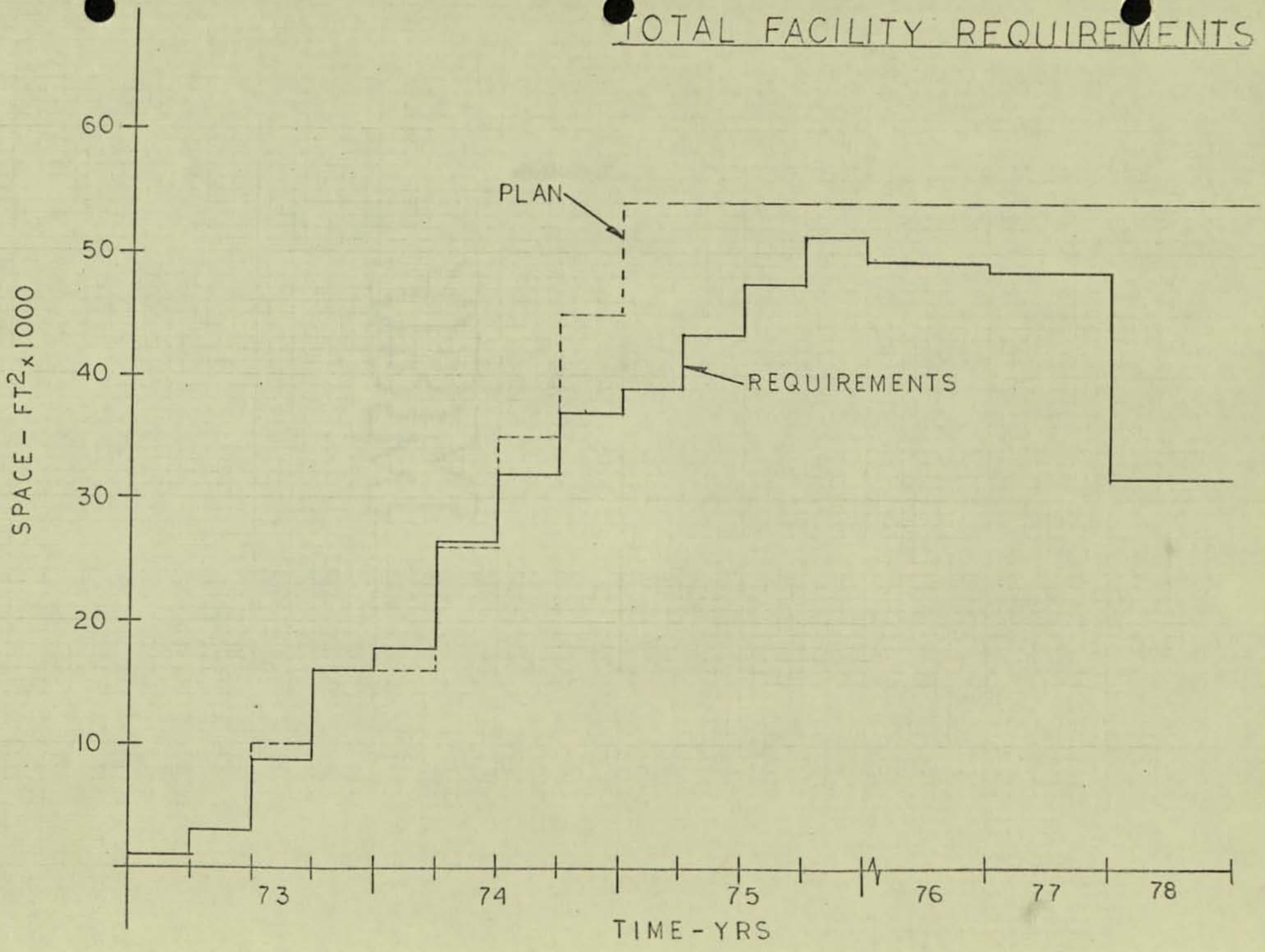
		DRIVE	PRINTER	MAS	TOTAL
73	4 5 6	79.0K		0	79.0K
	7 8 9	118.0K	10.0K	29.0K	157.0K
	10 11 12	17.0K	20.0K	21.0K	58.0K
74	1 2 3	10.0K	40.0K	0	50.0K
	4 5 6	0	0	81.0K	81.0K
	7 8 9	3.0K	228.0K	82.0K	313.0K
	10 11 12	0	222.0K	18.5K	240.5K
75	1 2 3	0	60.0K	4.5K	64.5K
	4 5 6	0	60.0K	0	60.0K
	7 8 9	0	20.0K	5K	25.0K
	10 11 12	0	15.0K	0	15.0K
76		0	25.0K	0	25.0K
77		0	25.0K	0	25.0K
78		0	25.0K	0	25.0K
TOTAL		227.0K	750.0K	241.0K	1,218.0K

4.2

Total Manpower

		Direct				Indirect				TOTAL
		Drive	Print	MAS	Total	Drive	Print	MAS	Total	
73	1Q	0	0	0	0	5	0	0	5	5
	2Q	0	0	0	0	13	0	1	14	14
	3Q	4	0	0	4	20	4	8	32	36
	4Q	12	0	0	12	19	9	13	41	53
74	1Q	19	0	0	19	19	10	18	47	66
	2Q	23	0	0	23	19	18	27	64	87
	3Q	23	0	12	35	17	23	33	73	108
	4Q	23	6	29	58	15	23	35	73	131
75	1Q	23	30	36	89	12	22	35	69	158
	2Q	23	30	47	100	12	22	38	72	172
	3Q	23	29	67	119	12	22	50	84	203
	4Q	23	23	70	116	12	21	51	84	200
76		23	20	87	130	11	15	51	77	207
77		20	20	92	132	9	15	46	70	202
78		0	20	89	109	0	11	42	53	162

TOTAL FACILITY REQUIREMENTS



ADM/FIN PLAN

FACILITIES PLAN

For the foreseeable future, Shugart Associates plans to be located in the Santa Clara Valley in leased facilities. A relationship has been established with the Peery Company, a large land developer and lessor of industrial facilities, whose property and facilities base is large enough to provide for the needed flexibility during our growth.

Facilities cost assumptions:

$ .24/sq ft/mo-----Rent

$ .04/sq ft/mo-----Taxes and Insurance

$ .04/sq ft/mo-----Maintenance

$ .05/sq ft/mo-----Utilities

$ .37/sq ft/mo-----Total

Facilities expense projections, based upon the foregoing cost assumptions and the space requirements shown on the following page:

	1973				1974				1975
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	
Operations		3.0	11.0	17.7	17.7	28.8	38.7	48.9	240.0
Administration, Marketing, Finance	1.6	2.1	2.1	4.5	4.5	4.5	5.7	6.6	26.4
Total: (x $1,000)	1.6	5.1	13.1	22.2	22.2	33.3	44.4	55.5	266.4

SPACE REQUIREMENTS

(Square feet x 1000)

AMF = Administration, Marketing, Finance

	1973				1974				1975
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	
Building #1	1.5								
Building #2									
AMF		2	2						
Operations									
Office		2	2						
Lab		1	1						
Mfg.			2						
Building #3									
AMF				4	4	4	5	6	6
Operations									
Office				3	3	3	3	3	3
Lab				3	3	5	5	5	5
Mfg.			5	10	10	8	7	6	6
Building #4									
Operations									
Office						2	2	2	2
Lab						1	1	1	1
Mfg.						7	17	17	17
Building #5									
Operations									
Office								2	2
Lab								1	1
Mfg.								7	17
TOTAL:	1.5	5	12	20	20	30	40	50	60

ADMINISTRATION EXPENSE PROJECTIONS
($ X1000)

	1973					1974							
	1Q	2Q	3Q	4Q	1973	1Q	2Q	3Q	4Q	1974	1975	1976	1977
Diskette Drive Program													
Salary and Benefits	4.7	31.5	42.7	42.7	121.6	42.7	42.7	42.7	51.2	179.3	191.8	205.1	219.5
Expenses	4.3	16.6	11.1	14.5	46.5	15.5	15.5	16.7	18.6	65.3	70.4	70.4	70.4
TOTAL	9.0	48.1	53.8	57.2	168.1	58.2	58.2	59.4	69.8	244.6	262.2	275.5	289.9
Printer Increment								12.0	13.6	25.6	52.4	55.5	57.9
MAS Increment							6.0	18.0	20.1	44.1	78.6	83.3	86.8
TOTAL	9.0	48.1	53.8	57.2	168.1	58.2	64.2	89.4	103.5	314.3	393.2	414.3	434.6

FINANCE EXPENSE PROJECTIONS
($ X1000)

	1973					1974							
	1Q	2Q	3Q	4Q	1973	1Q	2Q	3Q	4Q	1974	1975	1976	1977
Diskette Drive Program													
Salary and Benefits	1.1	8.6	12.5	12.5	34.7	16.5	16.5	16.5	16.5	66.0	73.3	78.2	83.2
Expenses		5.2	2.7	3.3	11.2	6.1	6.6	6.6	6.6	25.9	27.3	27.3	27.3
TOTAL	1.1	13.8	15.2	15.8	45.9	22.6	23.1	23.1	23.1	91.9	100.6	105.5	110.5
Printer Increment								.6	.7	1.3	101.5	129.6	121.6
MAS Increment							1.6	5.0	5.0	11.6	197.5	360.6	386.0
TOTAL	1.1	13.8	15.2	15.8	45.9	22.6	24.7	28.7	28.8	104.8	399.6	595.7	618.1