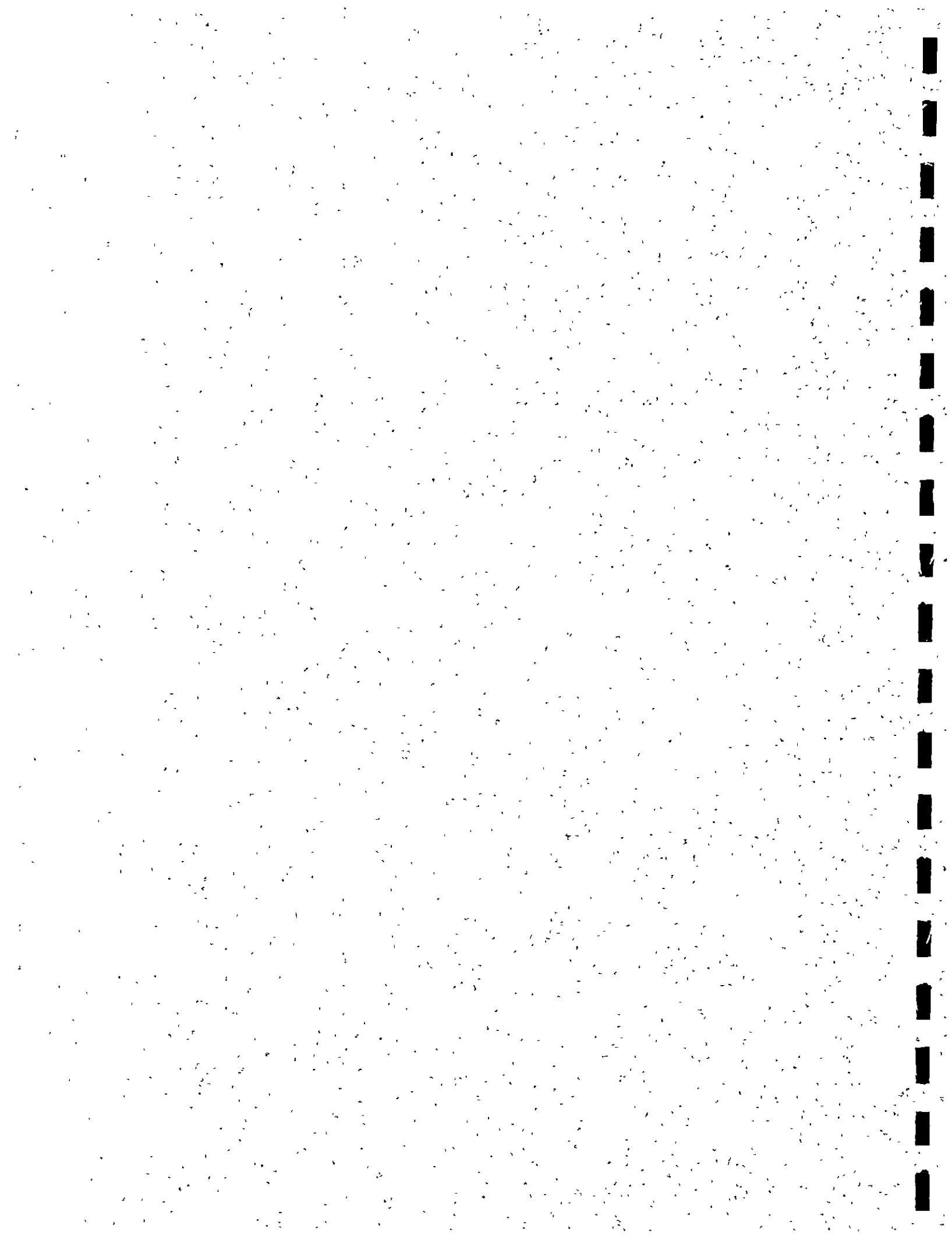

CITY OF DETROIT
GENERAL RETIREMENT SYSTEM
65TH ANNUAL ACTUARIAL VALUATION
June 30, 2003

GABRIEL, ROEDER, SMITH & COMPANY



ACTUARIES AND CONSULTANTS



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GABRIEL, ROEDER, SMITH & COMPANY

Consultants & Actuaries

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April 23, 2004

The Board of Trustees
City of Detroit General Retirement System

Dear Board Members:

The results of the **65th Annual Actuarial Valuations** of the annuity and pension liabilities of the City of Detroit General Retirement System are presented in this report. The purpose of the valuations was to measure the system's funding progress and to determine contribution rates for the ensuing fiscal year in accordance with the established funding policy. Six divisions are evaluated separately.

The date of the valuations was **June 30, 2003**.

The valuations were based upon records maintained and furnished by the retirement system staff concerning active members, retirees and beneficiaries, and financial accounts. The assumptions used in the valuations concerning future financial experience are summarized in the Appendix of this report.

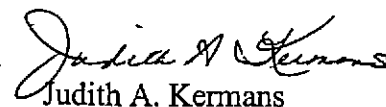
Your attention is directed particularly to the comments on page A-4 and the contribution rates on page A-1.

The valuation was completed using generally accepted actuarial principles and in accordance with standards of practice prescribed by the Actuarial Standards Board. To the best of our knowledge this report is complete and accurate and the actuarial methods and assumptions produce results which are reasonable.

Respectfully submitted,

GABRIEL, ROEDER, SMITH & COMPANY

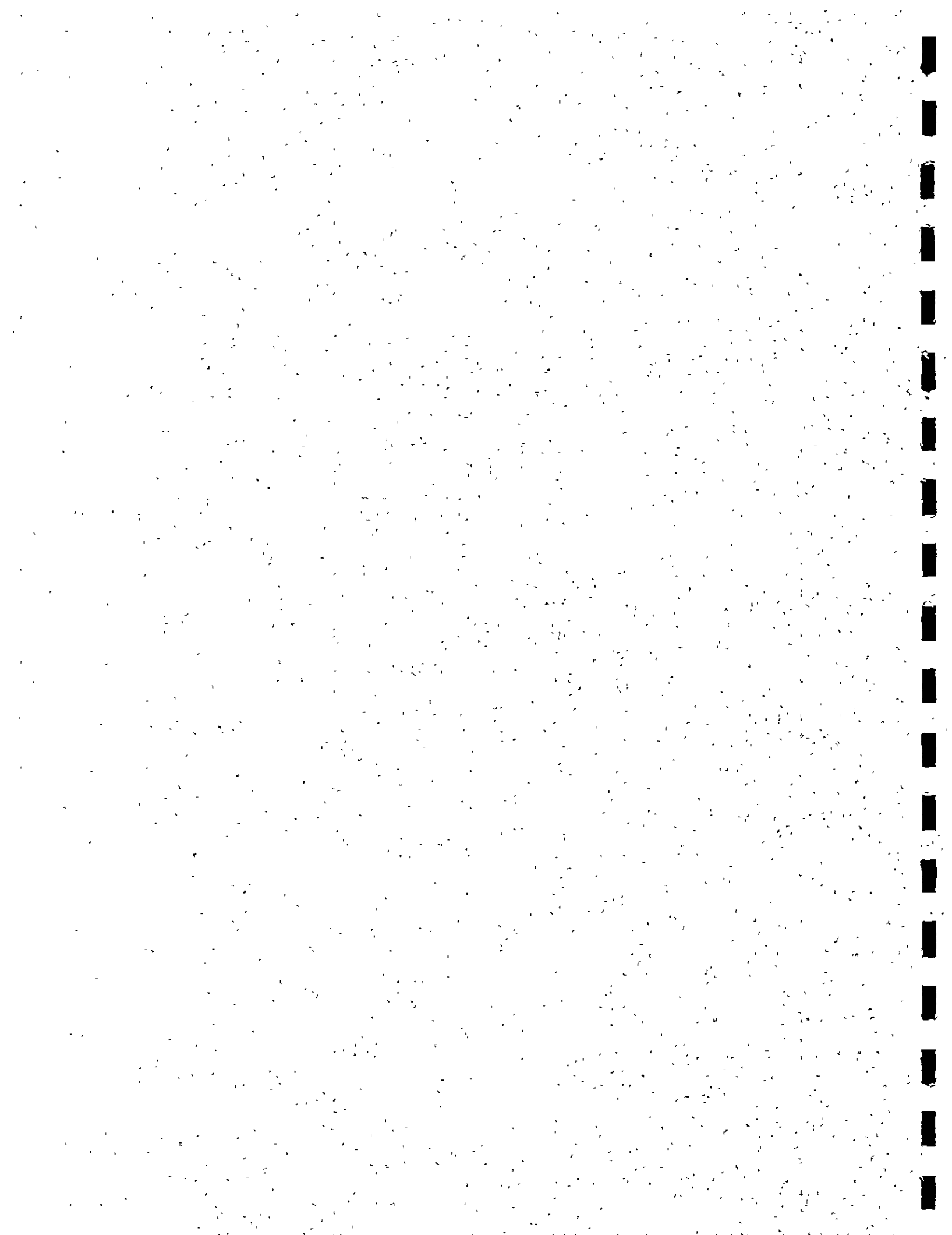

Norman L. Jones


Judith A. Kermans

NLJ/rgs

SECTION A

Retirement System Totals



**SUMMARY OF COMPUTED EMPLOYER CONTRIBUTION RATES
2004-2005 FISCAL YEAR**

Contributions for	Contributions Expressed as a Percent of Payroll					
	General City	D.O.T.	Water	Sewage	Housing	Library
Normal Cost:						
Age & Service Pensions	7.25 %	6.54 %	6.86 %	6.75 %	7.32 %	7.25 %
Disability Pensions	1.49 %	1.07 %	1.55 %	1.49 %	1.37 %	1.53 %
Death-in-Service Pensions	0.31 %	0.31 %	0.35 %	0.37 %	0.32 %	0.24 %
Employer Normal Cost	9.05 %	7.92 %	8.76 %	8.61 %	9.01 %	9.02 %
Unfunded Actuarial Accrued Liabilities#	14.40 %	15.67 %	21.06 %	1.48 %	4.10 %	12.70 %
Computed Employer Contribution Rates	23.45 %	23.59 %	29.82 %	10.09 %	13.11 %	21.72 %
(Change from last yr.)	3.02 %	3.09 %	2.48 %	9.35 %	0.97 %	5.06 %

Unfunded actuarial accrued liabilities (UAAL) were amortized over 15 years.

COMMENT

The valuation results shown above do not include a provision for the potential financial effect of retroactive transfers to the 1998 Defined Contribution Plan, which will occur after that plan has been approved and implemented.

ACTUARIAL ACCRUED LIABILITIES AS OF JUNE 30, 2003
RETIREMENT SYSTEM TOTALS

Present Value, June 30	
Accrued Pension Liabilities	
Retirees and beneficiaries	
Future pensions	\$1,414,206,524
Mortality reserve	0
Total	1,414,206,524
Inactive members future deferred pensions	90,266,244
Active members	1,045,018,114
Total accrued pensions	2,549,490,882
Pension fund balances	1,818,004,227
Unfunded accrued pension liabilities	\$ 731,486,655
Accrued Annuity Liabilities	
Retirees and beneficiaries	
Future annuities	\$ 32,562,799
Mortality reserve	0
Total	32,562,799
Member annuities & future refunds	688,573,496
Total accrued annuity liabilities	721,136,295
Annuity fund balances	719,664,149
Unfunded accrued annuity liabilities	\$ 1,472,146
Totals	
Actuarial Accrued Liabilities	\$3,270,627,177
Accrued Assets	2,537,668,376
Unfunded Actuarial Accrued Liabilities	\$ 732,958,801

VALUATION RESULTS - COMPARATIVE STATEMENT
----- \$ IN MILLIONS -----
RETIREMENT SYSTEM TOTALS

June 30	Active Payroll		% of Payroll Contributions For			Actuarial Accrued Liabilities		Unfunded/ Active Pay	
	Total	Average	Normal Cost	UAAL	Total	Computed Total	Accrued Assets		Unfunded
1985	\$281.4	\$22,123	8.85%	8.37%	17.22%	\$1,545.3	\$1,227.9	\$317.4	1.13
1986	299.9	22,339	8.61%	7.21%	15.82%	1,625.9	1,342.4	283.5	0.95
1987	321.4	23,563	9.05%	5.82%	14.87%	1,718.1	1,471.7	246.4	0.77
1988(a)	326.2	24,403	9.33%	5.57%	14.90%	1,816.9	1,585.9	231.0	0.71
1989	331.6	24,462	9.26%	4.76%	14.02%	1,869.8	1,678.3	191.5	0.58
1990	352.6	26,700	9.22%	5.24%	14.46%	1,983.0	1,768.9	214.1	0.61
1991	362.5	27,997	8.80%	5.09%	13.89%	2,034.7	1,832.4	202.3	0.56
1992(a)#	344.3	28,369	8.48%	1.13%	9.61%	1,998.8	1,930.3	68.5	0.20
1993(a)	331.0	28,763	8.02%	2.08%	10.10%	2,114.2	1,983.8	130.4	0.39
1994	325.4	28,591	8.06%	2.73%	10.79%	2,192.8	2,041.9	150.9	0.46
1995	327.6	28,451	8.11%	4.80%	12.91%	2,275.2	2,043.4	231.8	0.71
1996	360.1	29,729	8.14%	3.44%	11.58%	2,382.8	2,193.2	189.6	0.53
1997(a)	382.8	30,951	7.91%	3.93%	11.84%	2,528.5	2,333.4	195.1	0.51
1998(a)#	387.0	31,565	9.30%	4.45%	13.75%	2,814.9	2,582.1	232.8	0.60
1999#	383.4	31,989	9.29%	3.97%	13.26%	2,900.4	2,756.6	143.8	0.38
2000	417.2	34,345	9.22%	4.15%	13.37%	3,077.0	2,902.4	174.6	0.42
2001	439.6	34,497	9.22%	5.05%	14.27%	3,179.6	2,912.1	267.5	0.61
2002	440.7	34,867	9.23%	9.83%	19.06%	3,276.6	2,761.2	515.4	1.17
2002(a)	440.7	34,867	8.74%	9.31%	18.05%	3,250.5	2,761.2	489.3	1.11
2003	448.6	34,955	8.82%	13.90%	22.72%	3,270.6	2,537.7	732.9	1.63

After plan amendments.
(a) After changes in actuarial assumptions.

COMMENTS

Experience during the Past Year

During the year ended June 30, 2003, overall Retirement System experience was less favorable than assumed. The recognized rate of investment return was less than assumed, including the recognition of gains and losses phased-in from prior years (see page A-7). This year's market value loss of \$130 million is scheduled to be phased in over a 3 year period. Consequently, additional contribution rate increases will occur over the next two years in the absence of offsetting market gains.

Pension Funding Policy

The policy for financing unfunded actuarial accrued liabilities (UAAL) was assumed to be as follows:

1. The June 30, 2003 unfunded actuarial accrued liabilities are financed over a closed 15-year amortization period (the weighted average of the various periods in effect prior to the experience study completed in 2003).
2. Actuarial experience gains and losses incurred after June 30, 2003 will be amortized over a 15-year open (perpetual) amortization period.
3. Future changes in unfunded actuarial accrued liabilities due to increased benefits to present retired lives will be amortized over a 15-year closed amortization period beginning with the effective date of the increase.
4. Future changes in unfunded actuarial accrued liabilities due to increased benefits for active members will be financed over 25-year closed amortization periods beginning with the effective dates of the increases.

Overall Financial Condition

The Retirement System is in good actuarial condition in accordance with the principles of level percent-of-payroll financing.

SOLVENCY TESTS

The DGRS funding objective is to meet long-term benefit promises through contributions that remain approximately level from year to year as a percent of member payroll. If the contributions to the System are level in concept and soundly executed, the System will pay all promised benefits when due -- the ultimate test of financial soundness. Testing for level contribution rates is *the long-term solvency test*.

A *short-term solvency test* is one means of checking a system's progress under its funding program. In a short-term solvency test, the plan's present assets (cash and investments) are compared with:

- 1) Active member contributions on deposit;
- 2) The liabilities for future benefits to present retired lives;
- 3) The liabilities for service already rendered by active members.

In a system that has been following the discipline of level percent-of-payroll financing, the liabilities for active member contributions on deposit (liability 1) and the liabilities for future benefits to present retired lives (liability 2) will be fully covered by present assets (except in rare circumstances). In addition, the liabilities for service already rendered by active members (liability 3) will be partially covered by the remainder of present assets. The larger the funded portion of liability 3, the stronger the condition of the System.

SHORT-TERM SOLVENCY TEST 5 YEAR COMPARATIVE STATEMENT

June 30	Actuarial Accrued Liabilities			Valuation Assets	Portion of Accrued Liabilities Covered by Assets			
	(1) Active Member Contr.	(2) Retirees and Benef.	(3) Present Members (Employer-Financed Portion)		(1)	(2)	(3)	Total
	1999#	\$ 706	\$ 1,214		\$ 981	\$ 2,757	100%	100%
2000	726	1,265	1,086	2,902	100%	100%	84%	94%
2001	721	1,292	1,167	2,912	100%	100%	77%	92%
2002	706	1,407	1,164	2,761	100%	100%	56%	84%
2002(a)	706	1,371	1,174	2,761	100%	100%	58%	85%
2003	689	1,447	1,135	2,538	100%	100%	35%	78%

(a) After changes in actuarial assumptions.

After plan amendments.

DERIVATION OF EXPERIENCE GAIN (LOSS)
YEAR ENDED JUNE 30, 2003
(\$ IN MILLIONS)

Actual experience will never (except by coincidence) coincide exactly with assumed experience. Gains and losses may cancel each other over a period of years, but sizable year-to-year fluctuations are common. Detail on the derivation of the experience gain (loss) is shown below.

(1) UAAL* at start of year	\$ 489.3
(2) Normal cost from last valuation	39.2
(3) Employer contributions	72.9
(4) Interest accrual: $[(1) + 1/2 [(2) - (3)]] \times .079$	37.3
(5) Expected UAAL before changes: (1) + (2) - (3) + (4)	493.0
(6) Increase due to active member plan amendments	0.0
(7) Increase due to ad hoc increase for retirees	0.0
(8) Expected UAAL after changes: (5) + (6) + (7)	493.0
(9) Actual UAAL at end of year	733.0
(10) Experience gain (loss): (8) - (9)	\$(240.0)
(11) Gain (loss) as % of beginning of year (\$2,545 million) accrued pension liability	(9.4)%

* *Unfunded actuarial accrued liability.*

A large component of the actuarial experience gain (loss) in any given year is typically the Retirement System's investment gain (loss) on valuation assets. Detail on the investment gain (loss) is shown on Page A-8.

**ASSET INFORMATION
FURNISHED FOR VALUATION
RETIREMENT SYSTEM TOTALS**

Reserve Accounts

Funds	Fund Balances	
	June 30, 2003	June 30, 2002
Annuity Savings	\$ 688,573,496	\$ 705,617,754
Annuity Reserve	31,090,653	26,351,773
Pension Accumulation	355,463,047	688,208,293
Pension Reserve	1,462,541,180	1,341,025,860
Total Fund Balances	\$2,537,668,376	\$2,761,203,680

Revenues and Expenditures

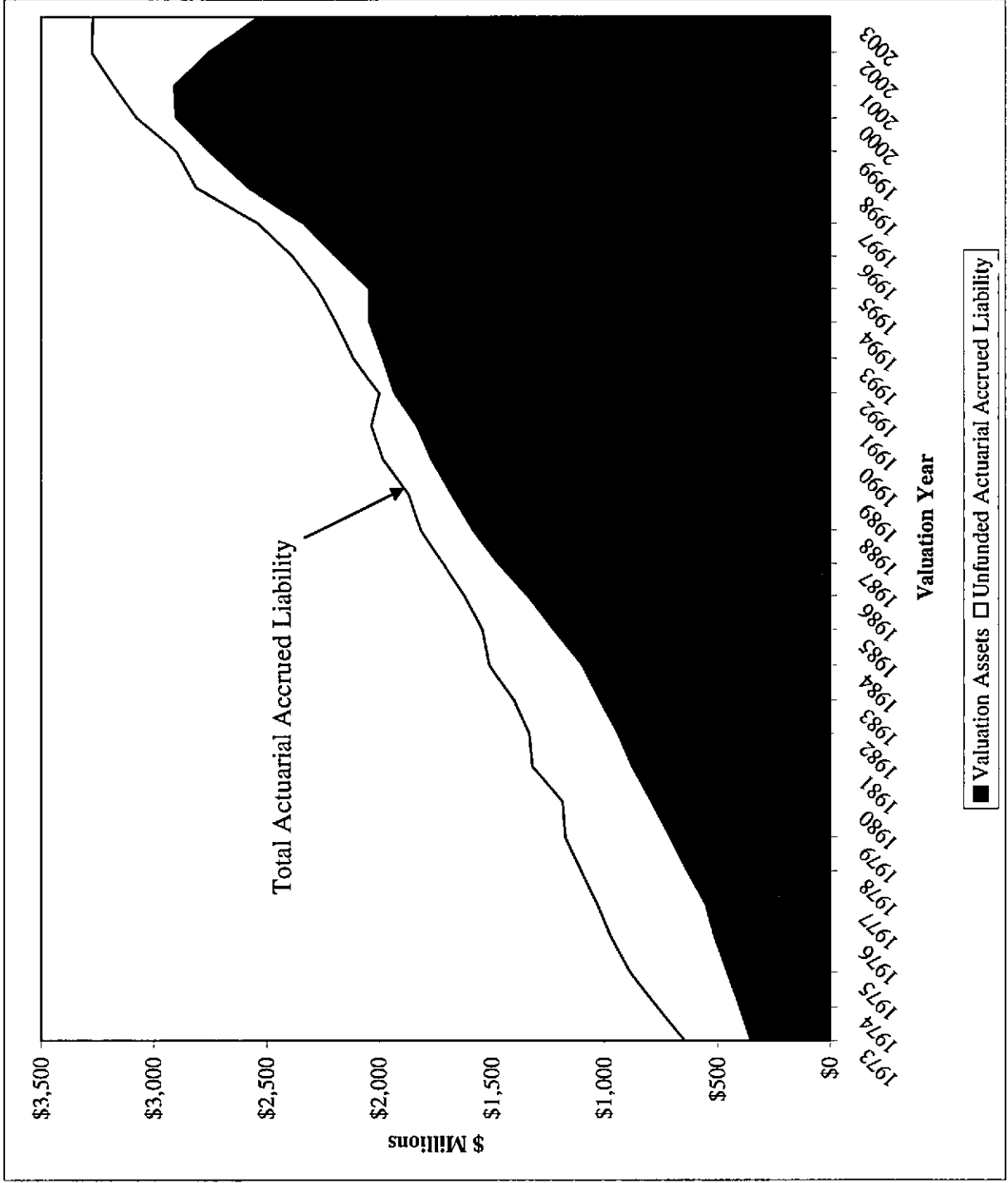
	Pension Funds	Annuity Funds	Total Funds
Balance, July 1, 2002	\$2,029,234,153	\$731,969,527	\$2,761,203,680
Revenues			
Member contributions	86,024	24,960,429	25,046,453
Employer contributions	72,859,246	0	72,859,246
Recognized investment income	(127,756,106)	52,126,660	(75,629,446)
Transfers	(4,295,601)	4,295,601	0
Total	\$ (59,106,437)	\$ 81,382,690	\$ 22,276,253
Expenditures			
Benefit payments	147,548,658	3,610,157	151,158,815
Refund of member contributions	805,190	90,077,910	90,883,100
Administrative expenses	3,769,642	0	3,769,642
Total	\$ 152,123,490	\$ 93,688,067	\$ 245,811,557
Balance, June 30, 2003	\$1,818,004,226	\$719,664,150	\$2,537,668,376
Funding Value Rate of Return	(6.6)%	7.4%	(3.0)%

FUNDING VALUE OF ASSETS

Year Ended June 30:	2001	2002	2003	2004	2005
A. Funding Value Beginning of Year	\$2,902,433,063	\$2,912,146,389	\$2,761,203,680		
B. Market Value End of Year	2,691,006,082	2,389,996,692	2,323,824,214		
C. Market Value Beginning of Year	2,947,791,076	2,691,006,082	2,389,996,692		
D. Non-Investment Net Cash Flow(Contribution-Benefits)	(125,556,767)	(141,898,344)	(144,136,216)		
E. Investment Income					
E1. Market Total: B - C - D	(131,228,227)	(159,111,046)	77,963,738		
E2. Amount for Immediate Recogn: (A+D/2) x .079	220,981,501	221,594,573	208,377,173		
E3. Amount for Phased-In Recognition: E1-E2	(352,209,728)	(380,705,619)	(130,413,435)		
F. Phased-In Recognition of Investment Income					
F1. Current Year: E3/3	(117,403,243)	(126,901,873)	(43,471,145)		
F2. First Prior Year	13,666,179	(117,403,243)	(126,901,873)	\$(43,471,145)	
F3. Second Prior Year	18,025,656	13,666,178	(117,403,243)	(126,901,873)	\$(43,471,144)
F4. Total Recognized Investment Gain	(85,711,408)	(230,638,938)	(287,776,261)	(170,373,018)	(43,471,144)
G. Total Recognized Investment Income: (E2+F4)	135,270,093	(9,044,365)	(79,399,088)		
H. Funding Value End of Year: A + D + G	2,912,146,389	2,761,203,680	2,537,668,376		
I. Difference between Market & Funding Value: B - H	(221,140,307)	(371,206,988)	(213,844,162)	(43,471,144)	0
J. Recognized Rate of Return: G / [I/2(A+H-G)]	4.8%	(0.3)%	(3.0)%		
K. Market Value Rate of Return (net)	(4.5)%	(6.1)%	3.4%		

The Funding Value of Assets recognizes assumed investment income (line E2) fully each year. Differences between actual and assumed investment income (line E3) are phased in over a closed 3 year period. During periods when investment performance exceeds the assumed rate, the Funding Value of Assets will tend to be less than Market Value. During periods when investment performance is less than the assumed rate, Funding Value of Assets will tend to be greater than market value. The Funding Value of Assets is unbiased with respect to Market Value. At any time it may be either greater or less than Market Value. If assumed rates are exactly realized for 2 consecutive years, it will become equal to Market Value.

ASSETS AND ACCRUED LIABILITIES



PERSONS IN VALUATIONS - COMPARATIVE STATEMENTS
RETIREMENT SYSTEM TOTALS

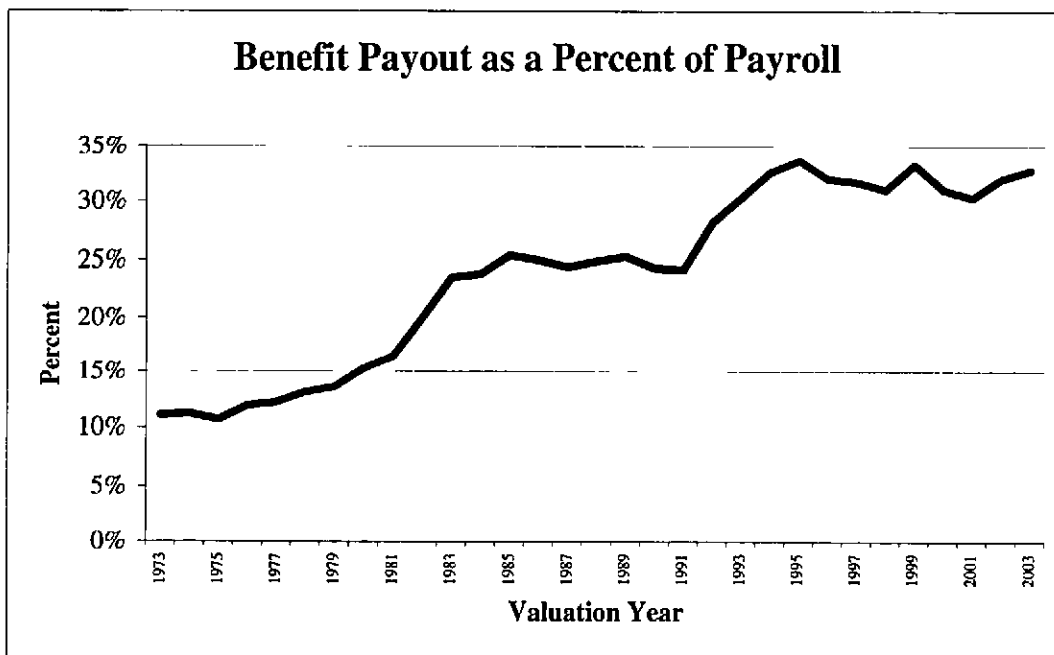
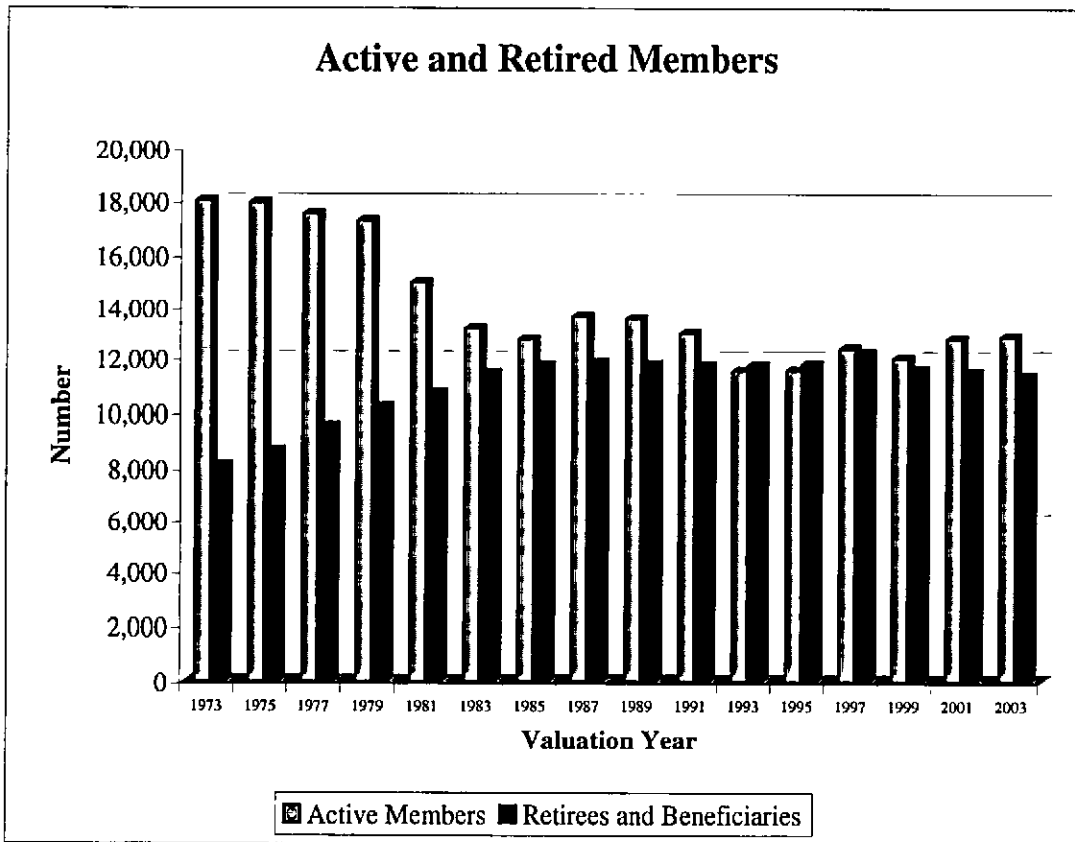
Active Members

June 30	Active Members		Annual Payroll	Group Averages			
	No.	Change		Average Pay		Age Years	Service Years
				\$	Change		
1973	18,004	(7.1)%	\$198,377,179	\$11,019	7.8 %	43.1	14.2
1974	17,930	(0.4)%	213,255,078	11,894	7.9 %	42.6	13.9
1975	17,935	0.0 %	243,372,127	13,570	14.1 %	42.7	13.7
1976	16,102	(10.2)%	247,803,284	15,390	13.4 %	43.2	14.7
1977	17,508	8.7 %	274,950,896	15,704	2.0 %	41.8	13.2
1978	17,475	(0.2)%	297,680,389	17,035	8.5 %	41.3	12.3
1979	17,258	(1.2)%	310,683,375	18,002	5.7 %	41.5	12.3
1980	15,881	(8.0)%	293,624,360	18,489	2.7 %	41.7	12.6
1981	14,993	(5.6)%	301,243,225	20,092	8.7 %	42.0	13.0
1982	13,730	(8.4)%	283,677,869	20,661	2.8 %	42.0	13.1
1983	13,156	(4.2)%	272,369,708	20,703	0.2 %	41.6	12.6
1984	13,172	0.1 %	288,048,279	21,868	5.6 %	41.5	12.0
1985	12,719	(3.4)%	281,378,439	22,123	1.2 %	41.5	11.9
1986	13,423	5.5 %	299,859,070	22,339	1.0 %	41.1	11.3
1987	13,640	1.6 %	321,402,755	23,563	5.5 %	40.9	11.0
1988	13,368	(2.0)%	326,216,082	24,403	3.6 %	41.0	11.1
1989	13,554	1.4 %	331,555,458	24,462	0.2 %	41.1	11.0
1990	13,207	(2.6)%	352,622,639	26,700	9.1 %	41.5	11.4
1991	12,949	(2.0)%	362,532,918	27,997	4.9 %	41.8	11.7
1992	12,137	(6.3)%	344,320,379	28,369	1.3 %	42.2	12.1
1993	11,508	(5.2)%	331,009,921	28,763	1.4 %	43.0	12.9
1994	11,382	(1.1)%	325,427,813	28,591	(0.6)%	43.1	12.8
1995	11,515	1.2 %	327,615,936	28,451	(0.5)%	42.2	12.6
1996	12,086	5.0 %	360,068,578	29,792	4.7 %	42.8	11.9
1997	12,369	2.3 %	382,835,917	30,951	3.9 %	42.8	11.7
1998	12,261	(0.9)%	387,022,423	31,565	2.0 %	43.3	11.8
1999	11,987	(2.2)%	383,449,421	31,989	1.3 %	43.7	12.1
2000	12,147	1.3 %	417,187,666	34,345	7.4 %	43.5	12.0
2001	12,744	4.9 %	439,636,072	34,497	0.4 %	43.3	11.7
2002	12,639	(0.8)%	440,680,045	34,867	1.1 %	43.7	11.8
2003	12,833	1.5 %	448,579,064	34,955	0.3 %	43.5	11.7

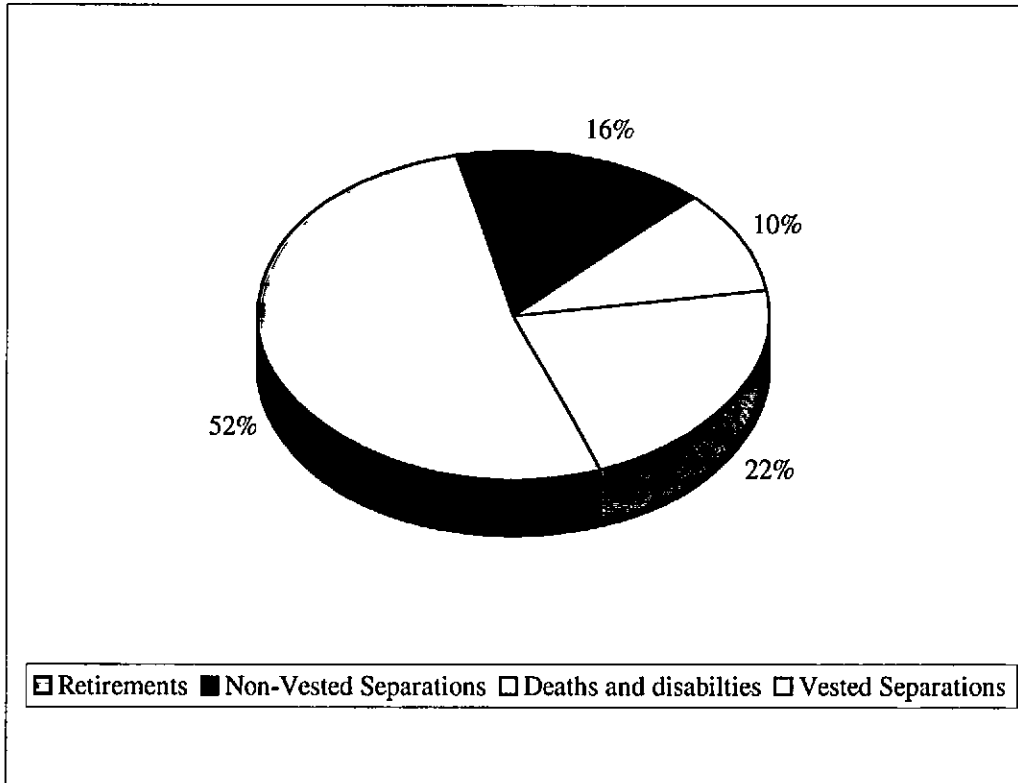
PERSONS IN VALUATIONS - COMPARATIVE STATEMENTS
RETIREMENT SYSTEM TOTALS

Retirees and Beneficiaries

June 30	No.	% of Current Allowances				Annual Allowances		
		Annuities	Initial Pensions	Escalators & Other Increases	Allow.	Total	Average	% of Payroll
1973	8,132	13.1%	72.8%	14.1%	100.0%	\$ 21,950,395	\$ 2,699	11.1%
1974	8,377	12.1%	74.1%	13.8%	100.0%	23,798,971	2,841	11.2%
1975	8,646	11.1%	74.2%	14.7%	100.0%	26,105,277	3,019	10.7%
1976	8,991	9.7%	76.2%	14.1%	100.0%	29,498,975	3,281	11.9%
1977	9,511	8.5%	78.3%	13.2%	100.0%	33,691,814	3,542	12.3%
1978	9,934	7.4%	79.6%	13.0%	100.0%	39,090,328	3,935	13.1%
1979	10,207	6.8%	82.4%	10.8%	100.0%	42,147,291	4,129	13.6%
1980	10,373	6.3%	81.0%	12.7%	100.0%	45,054,237	4,343	15.3%
1981	10,693	5.6%	81.7%	12.7%	100.0%	49,416,852	4,621	16.4%
1982	10,924	4.8%	77.7%	17.5%	100.0%	56,741,667	5,194	20.0%
1983	11,418	4.1%	79.6%	16.3%	100.0%	64,048,464	5,609	23.5%
1984	11,643	3.8%	80.4%	15.8%	100.0%	68,564,556	5,889	23.8%
1985	11,710	3.4%	80.6%	16.0%	100.0%	71,433,168	6,100	25.4%
1986	11,776	3.2%	80.7%	16.1%	100.0%	74,834,820	6,355	25.0%
1987	11,800	2.9%	80.2%	16.9%	100.0%	78,342,384	6,639	24.4%
1988	11,728	3.0%	80.0%	17.0%	100.0%	81,346,500	6,936	24.9%
1989	11,734	3.0%	79.8%	17.2%	100.0%	83,790,744	7,141	25.3%
1990	11,684	2.9%	79.1%	18.0%	100.0%	85,720,620	7,337	24.3%
1991	11,691	2.9%	78.7%	18.4%	100.0%	87,625,800	7,495	24.2%
1992	11,674	2.6%	76.5%	20.9%	100.0%	97,218,012	8,328	28.2%
1993	11,719	2.8%	77.7%	19.5%	100.0%	100,203,596	8,551	30.3%
1994	11,649	2.8%	76.9%	20.3%	100.0%	106,193,220	9,116	32.6%
1995	11,756	2.7%	76.7%	20.6%	100.0%	110,262,876	9,379	33.7%
1996	11,889	2.6%	75.5%	21.9%	100.0%	115,232,400	9,692	32.0%
1997	12,199	2.4%	74.4%	23.2%	100.0%	121,255,488	9,940	31.7%
1998	11,593	2.3%	73.7%	24.0%	100.0%	119,852,820	10,338	31.0%
1999	11,537	2.4%	76.6%	21.0%	100.0%	127,535,748	11,054	33.3%
2000	11,480	2.2%	77.7%	20.1%	100.0%	129,354,696	11,268	31.0%
2001	11,450	2.3%	77.7%	20.0%	100.0%	133,170,804	11,631	30.3%
2002	11,363	2.2%	78.2%	19.6%	100.0%	140,805,120	12,392	32.0%
2003	11,322	2.4%	78.3%	19.3%	100.0%	147,024,720	12,986	32.8%



EXPECTED TERMINATIONS FROM ACTIVE EMPLOYMENT FOR CURRENT ACTIVE MEMBERS



The chart shows the expected future development of the present population in simplified terms. The retirement system presently covers 12,833 active members. Eventually, 2,055 people are expected to terminate covered employment prior to retirement and forfeit eligibility for an employer provided benefit. 9,529 people are expected to receive monthly retirement benefits either by retiring directly from active service, or by retiring from vested deferred status. 1,249 people are expected to become eligible for death-in-service or disability benefits.

RETIREES AND BENEFICIARIES JUNE 30, 2003
TABULATED BY ATTAINED AGES
RETIREMENT SYSTEM TOTALS

Attained Ages	Age & Service#		Disability		Death-in-Service		Totals	
	No.	Monthly Allowances	No.	Monthly Allowances	No.	Monthly Allowances	No.	Monthly Allowances
Under 20*	29	\$ 45,111			5	\$ 2,252	34	\$ 47,363
20-24	1	414					1	414
25-29								
30-34	4	3,723	5	\$ 2,916			9	6,639
35-39	7	3,779	18	9,744	1	677	26	14,200
40-44	6	3,296	64	29,322	7	5,060	77	37,678
45-49	63	86,633	147	65,290	19	17,598	229	169,521
50-54	362	661,626	184	86,665	22	24,208	568	772,499
55-59	763	1,498,845	211	111,830	34	40,151	1,008	1,650,826
60-64	1,087	1,786,062	148	155,121	41	43,491	1,276	1,984,674
65-69	1,137	1,306,520	100	72,927	53	53,352	1,290	1,432,799
70-74	1,407	1,547,162	102	65,496	92	69,682	1,601	1,682,340
75-79	1,757	1,735,863	140	96,035	99	70,696	1,996	1,902,594
80-84	1,569	1,427,312	111	74,634	107	72,404	1,787	1,574,350
85-89	891	673,572	55	31,675	65	35,597	1,011	740,844
90-94	289	173,706	20	8,966	18	7,479	327	190,151
95-99	75	42,014	2	704	5	2,450	82	45,168
Totals	9,447	\$10,995,638	1,307	\$811,325	568	\$445,097	11,322	\$12,252,060

* May include records with defective birth dates.

Includes survivor beneficiaries of deceased retirees.

INACTIVE VESTED MEMBERS JUNE 30, 2003
BY ATTAINED AGES
RETIREMENT SYSTEM TOTALS

Attained Ages	No.	Estimated Annual Pensions
Under 25		
25-29	1	\$ 5,052
30-34	7	22,368
35-39	60	347,784
40-44	164	1,119,360
45-49	257	2,062,176
50-54	323	2,429,568
55-59	346	2,504,640
60-64	179	1,047,348
65-69	72	426,372
70-74	15	78,828
75-79		
80 and Over		
Totals	1,424	\$10,043,496

**ACTIVE MEMBERS AS OF JUNE 30, 2003
BY ATTAINED AGE AND YEARS OF SERVICE
RETIREMENT SYSTEM TOTALS**

Attained Age	Years of Service to Valuation Date							Totals	
	0-4	5-9	10-14	15-19	20-24	25-29	30 Plus	No.	Valuation Payroll
Under 20	308							308	\$ 4,916,226
20-24	538	15						553	11,169,841
25-29	522	171	2					695	18,657,466
30-34	672	441	75	10				1,198	37,845,752
35-39	571	540	258	196	9			1,574	52,539,336
40-44	551	514	324	487	143	28		2,047	71,385,036
45-49	453	437	284	518	400	330	12	2,434	89,285,164
50-54	277	278	224	341	290	448	104	1,962	77,086,164
55-59	136	195	128	242	210	260	175	1,346	55,725,582
60-64	73	92	50	71	63	88	80	517	21,764,130
65-69	15	33	13	19	11	17	29	137	6,016,842
70-74	8	10	6	6	1		14	45	1,534,518
75-79		2	2	2	2	1	8	17	653,007
Totals	4,124	2,728	1,366	1,892	1,129	1,172	422	12,833	\$448,579,064

Group Averages:

Age: 43.5 years
Service: 11.7 years
Annual Pay: \$34,955

RETIREES AND BENEFICIARIES JUNE 30, 2003
TABULATED BY YEAR OF RETIREMENT

Year of Retirement	No.	Monthly Allowances	
		Total	Average
1950 & before	6	\$ 2,106	\$351
1951-1955	25	9,338	374
1956-1960	16	5,934	371
1961-1965	76	29,888	393
1966-1970	259	114,073	440
1971-1975	767	434,752	567
1976-1980	1,701	1,252,042	736
1981-1985	2,124	2,070,626	975
1986-1990	1,595	1,623,539	1,018
1991-1995	1,942	2,265,729	1,167
1996-2000	1,932	2,846,335	1,473
2001	345	561,518	1,628
2002	410	776,541	1,894
2003	124	259,639	2,094
Totals	11,322	\$12,252,060	\$1,082

SUMMARY OF BENEFIT PROVISIONS EVALUATED

Age and Service Pension

Eligibility - Any age (minimum age 55 for members hired after 1995) with 30 years of service (25 for EMS members), or age 60 with 10 years of service, or age 65 with 8 years of service.

Annual Amount - Sum of a) a basic pension of \$12 for each of the first 10 years of service, plus b) a pension equal to the first 10 years of service multiplied by 1.6% of AFC, plus 1.8% of AFC for each year of service greater than 10 years up to 20 years, plus 2.0% of AFC for each year of service greater than 20 years up to 25 years, plus 2.2% of AFC for each year of service greater than 25 years.

Type of Average Final Compensation (AFC) - Highest 3 consecutive years out of the last 10. Pension benefits will not be diminished if compensation is reduced because of a fiscal emergency. Effective July 1, 1999, in computing the AFC, a member shall have the option of adding the value of 25% of unused accrued sick leave to the earnings used in computing the AFC. Longevity is added to AFC in accordance with the following schedule: \$150 after 5 years, \$300 after 10 years, \$450 after 15 years, \$600 after 20 years, and \$750 after 25 years.

Early Retirement

Eligibility - Any age with 25 or more years of service (minimum age 55 for members hired after 1995).

Annual Amount - Same as regular retirement but actuarially reduced.

Deferred Retirement (Vested Benefit)

Eligibility - Hired prior to 7-1-80: Age 40 with 8 years of service. Hired on or after 7-1-80: Any age with 10 years of service.

Benefit Commencement - *SAAA and APTE hired prior to October 1, 1988 and all Non-Union and lawyers:* Benefit begins at the age the member would have become eligible for regular retirement if service had continued. *Others:* Benefits based on service rendered by June 30, 1986 begin at the age the member would have become eligible for regular retirement. Benefits based on service rendered after July 1, 1986 begin at age 62.

Annual Amount - Same as regular retirement but based on average final compensation and service at the time of termination.

Duty Disability Retirement

Eligibility - Service related disability before age 60. No service requirement.

Annual Amount - An annuity which is the actuarial equivalent of the accumulated contributions at date of disability plus a pension of two-thirds of average final compensation at time of disability. The maximum annual pension is \$9,000. At the earliest of when the member would have accrued 30 years service credit (25 for EMS) or age 60, the annuity is recomputed assuming contributions would have continued at a salary level equal to final compensation. The pension is recomputed with additional service credit granted from the date of disability to age 60 (or 30 years service credit) with no maximum.

SUMMARY OF BENEFIT PROVISIONS EVALUATED (CONTINUED)

Non-Duty Disability Retirement

Eligibility - Disability from any cause before age 60 with 10 or more years of service.

Annual Amount - Computed in the same manner as a regular retirement benefit. Maximum annual pension to age 60 is \$6,000. Benefit is recomputed at age 60 with no maximum.

Duty Death Before Retirement

Eligibility - Death from service related causes. No age or service requirements.

Annual Amount - One-third of final compensation to the surviving spouse for life or until remarriage, plus an equal share of 1/4 of final compensation to each unmarried child under age 18. If there is no eligible spouse, eligible children each receive 1/4 of final compensation; if there are more than 2 such children, each child shares an equal part of 1/2 of final compensation. Maximum total amount for spouse and children is \$9,000 annually. If there is no eligible spouse or children, dependent parents each receive 1/6 of deceased's final compensation, to a total maximum of \$600 annually.

Non-Duty Death Before Retirement

Eligibility - Death in service at any age with 15 years of service; or after age 60 with 10 years of service; or after age 65 with 8 years of service.

Annual Amount - To Surviving Spouse: Computed as a regular retirement benefit but reduced in accordance with a 100% joint and survivor election for members with 20 or more years of service. For members with 15 years of service but less than 20, benefit is reduced in accordance with a 50% joint and survivor election. To Dependent Children if no Surviving Spouse: \$9,000 payable to age 19 of the youngest child or for life if child is physically or mentally impaired for members with 20 or more years of service (\$6,000 if less than 20 years of service).

Post-Retirement Cost-of-Living Adjustments

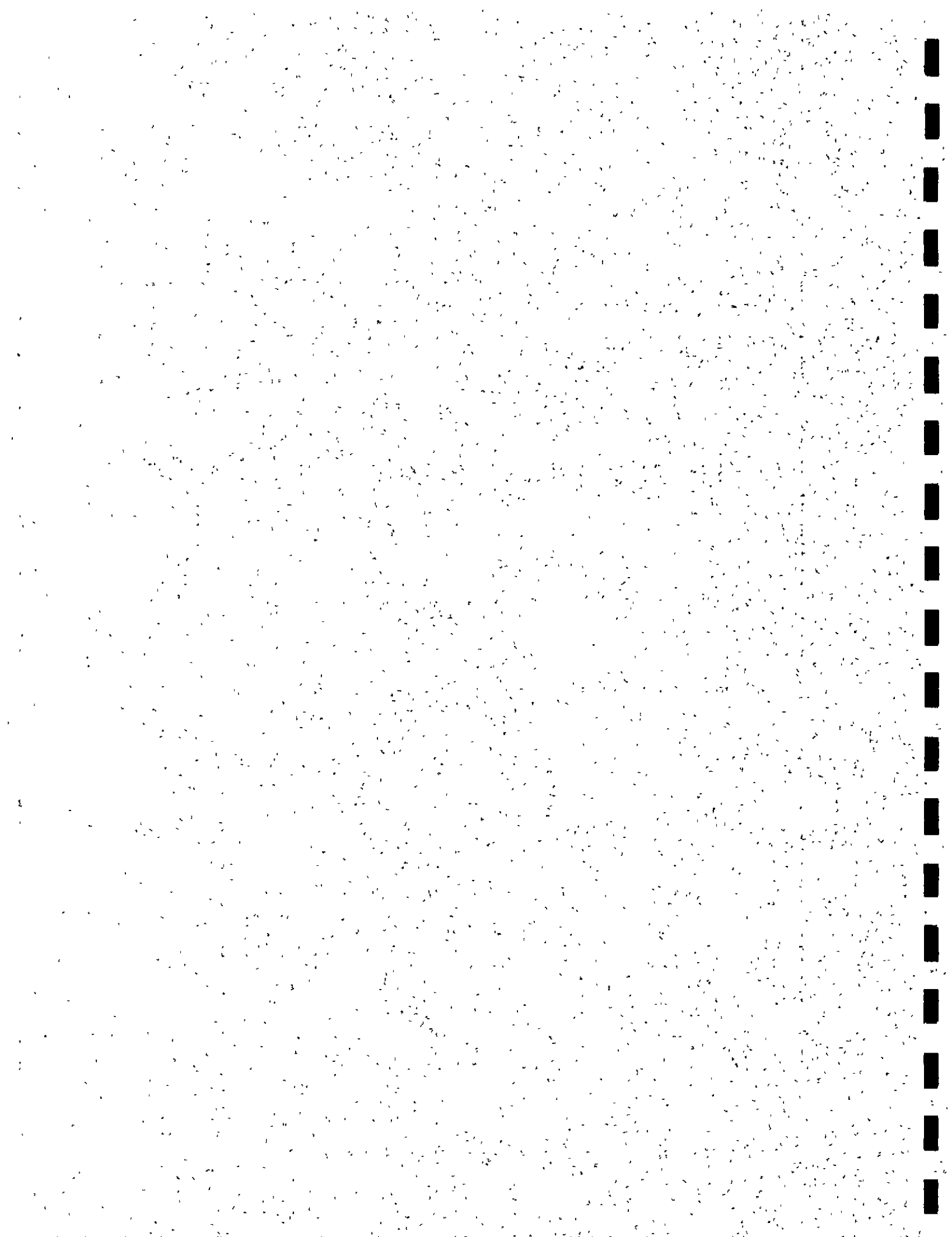
Benefit is increased annually by 2.25% of the **original** pension amount at retirement.

Member Contributions

Members have the option of choosing one of four contribution amounts: (1) 0%; (2) 3.0% of compensation up to the Social Security wage base, plus 5.0% of compensation in excess of the Social Security wage base; (3) 5.0% of total compensation; or (4) 7.0% of total compensation.

SECTION B

Divisions Separately Experience Rated



SUMMARY OF MEMBER DATA
JUNE 30, 2003

Active Members

	General	D.O.T.	Water	Sewage	Housing	Library	Totals
Number	7,575	1,734	1,744	1,090	227	463	12,833
% Change in active members	3.5 %	1.7 %	(2.9)%	(1.4)%	(13.4)%	3.1 %	1.5 %
Annual payroll (\$ millions)	\$ 265.1	\$ 53.4	\$ 61.0	\$ 45.0	\$ 9.0	\$ 15.0	\$ 448.5
Average pay	\$35,002	\$30,813	\$34,993	\$41,271	\$39,706	\$32,363	\$34,955
% Change in average pay	0.0 %	0.4 %	1.8 %	1.4 %	(2.3)%	(1.0)%	0.3 %

Retired Members and Survivor Beneficiaries

	General	D.O.T.	Water	Sewage	Housing	Library	Totals
Number	7,329	1,659	1,481	227	319	307	11,322
Annual payroll (\$ millions) #	\$ 95.8	\$ 20.1	\$ 22.1	\$ 3.0	\$ 4.2	\$ 5.3	\$ 150.6
Average benefits	\$13,077	\$12,116	\$14,955	\$13,318	\$13,037	\$17,241	\$13,298
% Change in average benefit	5.1 %	3.0 %	6.5 %	6.3 %	1.6 %	4.5 %	5.0 %

Includes Annuities

**ALLOCATION OF ASSETS USED FOR VALUATION
RESERVE ACCOUNTS**

	June 30, 2003	June 30, 2002
Annuity Savings Fund		
General	\$ 350,094,165	\$ 360,219,841
D.O.T.	106,075,263	102,872,467
Water	139,818,723	149,797,386
Sewage	59,306,111	56,294,072
Housing	13,362,175	15,111,602
Library	19,917,059	21,322,386
Totals	688,573,496	705,617,754
Annuity Reserve Fund		
General	17,167,752	14,680,920
D.O.T.	3,567,499	3,584,507
Water	4,763,827	3,476,256
Sewage	1,584,420	1,584,574
Housing	1,631,116	1,316,302
Library	2,376,039	1,709,214
Totals	31,090,653	26,351,773
Pension Accumulation Fund		
General	158,738,738	333,143,338
D.O.T.	37,628,667	68,368,394
Water	4,254,822	46,697,856
Sewage	123,749,533	187,185,171
Housing	15,135,014	21,445,482
Library	15,956,273	31,368,052
Totals	355,463,047	688,208,293
Pension Reserve Fund		
General	925,950,911	854,410,673
D.O.T.	182,566,565	172,771,674
Water	233,947,529	201,634,182
Sewage	30,398,066	27,309,997
Housing	40,057,859	39,376,352
Library	49,620,250	45,522,982
Totals	1,462,541,180	1,341,025,860
Retirement System Totals	\$2,537,668,376	\$2,761,203,680

ACTUARIAL ACCRUED LIABILITIES AS OF JUNE 30, 2003
BY DIVISION
(\$ IN THOUSANDS)

Present Value, June 30 of	General	D.O.T.	Water	Sewage	Housing	Library	Totals
Accrued Pension Liabilities							
Retirees and beneficiaries	\$894,364	\$176,080	\$227,603	\$28,783	\$38,666	\$48,711	\$1,414,207
Inactive members future deferred pensions	56,169	12,314	12,175	4,707	2,599	2,302	90,266
Active members	580,534	130,392	149,106	129,037	18,637	37,312	1,045,018
Total accrued pension liabilities	1,531,067	318,786	388,884	162,527	59,902	88,325	2,549,491
Pension fund balances	1,084,690	220,195	238,202	154,148	55,193	65,577	1,818,005
Unfunded accrued pension liabilities	446,377	98,591	150,682	8,379	4,709	22,748	731,486
Accrued Annuity Liabilities							
Retirees and beneficiaries	19,656	3,436	5,157	1,037	1,271	2,007	32,564
Members annuities & future refunds	350,094	106,075	139,819	59,306	13,362	19,917	688,573
Total accrued annuity liabilities	369,750	109,511	144,976	60,343	14,633	21,924	721,137
Annuity fund balances	367,262	109,643	144,583	60,891	14,993	22,293	719,665
Unfunded accrued annuity liabilities	2,488	(132)	393	(548)	(360)	(369)	1,472
Totals							
Actuarial Accrued Liabilities	1,900,817	428,297	533,860	222,870	74,535	110,249	3,270,628
Accrued Assets	1,451,952	329,838	382,785	215,039	70,186	87,870	2,537,670
Unfunded Actuarial Accrued Liabilities	\$448,865	\$98,459	\$151,075	\$7,831	\$4,349	\$22,379	\$732,958

Note: Totals may be off slightly due to rounding.

**ACTIVE AND RETIRED MEMBERS
INCLUDED IN VALUATION
HISTORIC COMPARISONS**

*Active Members
by Valuation Division*

June 30	General	D.O.T.	Water	Sewage	Housing	Library	Totals
1987	7,936	1,994	1,687	1,163	317	543	13,640
1988	7,855	1,928	1,631	1,127	296	531	13,368
1989	7,899	2,022	1,646	1,156	305	526	13,554
1990	7,658	1,974	1,648	1,153	296	478	13,207
1991	7,301	1,935	1,737	1,193	281	502	12,949
1992	6,739	1,736	1,657	1,181	299	525	12,137
1993	6,274	1,694	1,586	1,132	298	524	11,508
1994	6,289	1,596	1,592	1,108	308	489	11,382
1995	6,377	1,585	1,604	1,091	369	489	11,515
1996	6,620	1,724	1,681	1,134	461	466	12,086
1997	6,717	1,845	1,727	1,185	436	459	12,369
1998	6,659	1,764	1,785	1,184	430	439	12,261
1999	6,527	1,669	1,768	1,173	414	436	11,987
2000	6,941	1,606	1,770	1,064	334	432	12,147
2001	7,325	1,677	1,836	1,094	325	487	12,744
2002	7,320	1,705	1,797	1,106	262	449	12,639
2003	7,575	1,734	1,744	1,090	227	463	12,833

*Retired Members & Beneficiaries
by Valuation Division*

June 30	General	D.O.T.	Water	Sewage	Housing	Library	Totals
1987	7,829	2,208	1,063	167	272	261	11,800
1988	7,793	2,123	1,083	176	284	269	11,728
1989	7,820	2,076	1,102	180	292	264	11,734
1990	7,803	2,020	1,114	195	297	255	11,684
1991	7,834	1,960	1,135	210	297	255	11,691
1992	7,842	1,887	1,152	234	299	260	11,674
1993	7,866	1,837	1,189	256	309	262	11,719
1994	7,827	1,789	1,203	268	304	258	11,649
1995	7,883	1,788	1,256	254	310	265	11,756
1996	7,910	1,823	1,312	257	323	264	11,889
1997	8,086	1,858	1,377	254	347	277	12,199
1998	7,665	1,738	1,334	247	337	272	11,593
1999	7,599	1,719	1,360	243	338	278	11,537
2000	7,522	1,706	1,387	242	330	293	11,480
2001	7,483	1,684	1,418	235	327	303	11,450
2002	7,392	1,667	1,446	227	327	304	11,363
2003	7,329	1,659	1,481	227	319	307	11,322

EMPLOYER COMPUTED CONTRIBUTIONS - HISTORIC COMPARISON

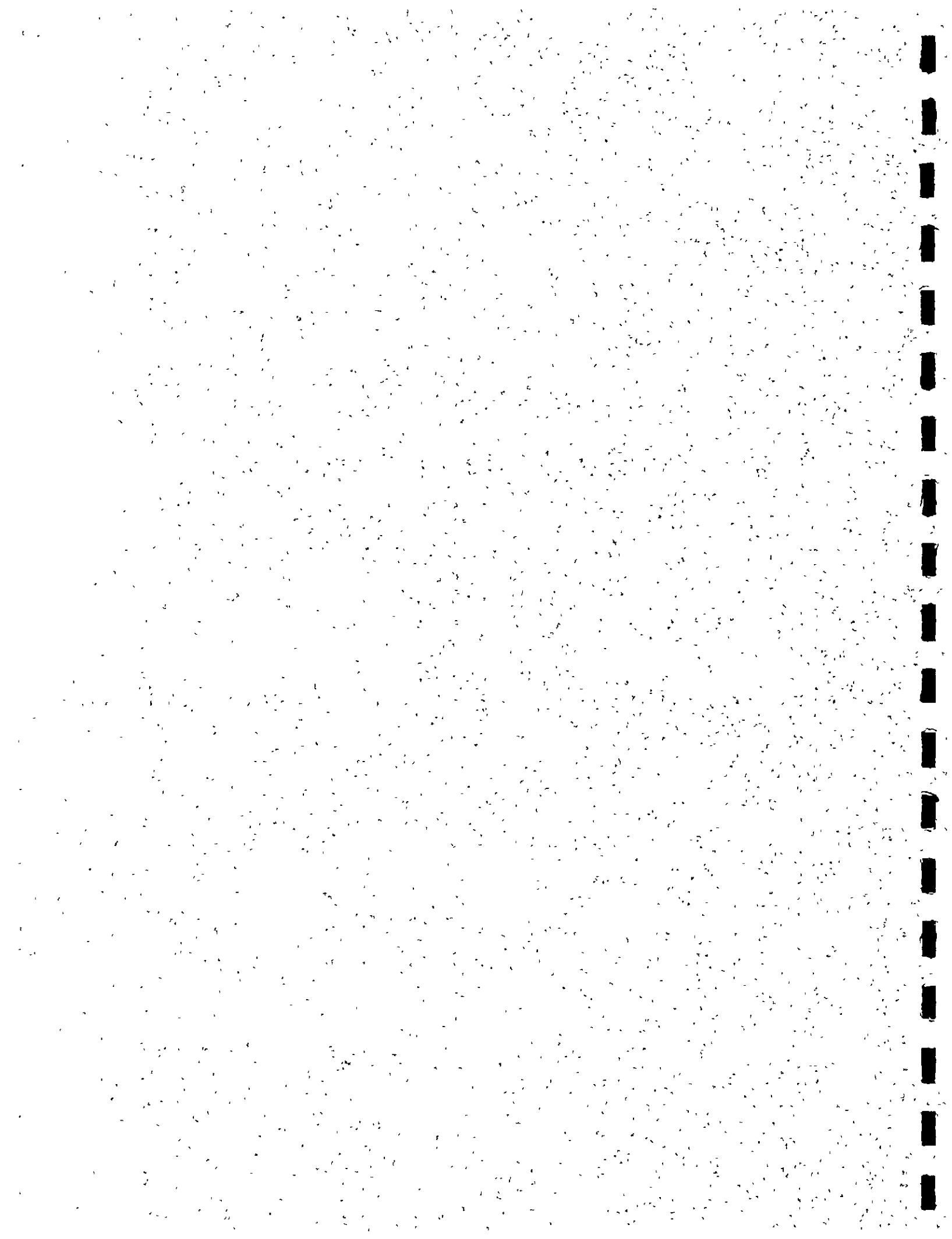
Valuation Date	As Percents of Valuation Payroll							Totals
	General	D.O.T.	Water	Sewage	Housing	Library	Totals	
June 30								
1973	23.52%	50.41%	23.25%	14.88%	20.77%	22.88%	26.30%	
1974(a)	17.46%	33.07%	17.13%	14.19%	16.87%	16.79%	19.37%	
1975*	18.43%	35.34%	18.41%	14.33%	17.76%	18.59%	20.29%	
1976	19.09%	34.77%	18.36%	13.80%	17.84%	19.03%	20.77%	
1977	18.77%	33.88%	18.26%	12.99%	17.97%	19.04%	20.29%	
1978	18.85%	31.62%	18.23%	12.18%	17.57%	19.26%	19.99%	
1979	18.81%	30.35%	18.27%	11.44%	17.09%	19.19%	19.71%	
1980	18.58%	25.56%	18.02%	10.85%	16.81%	18.24%	18.92%	
1981*	20.67%	30.27%	19.41%	12.52%	17.81%	20.24%	20.89%	
1982(a)	19.39%	27.36%	18.12%	10.97%	16.94%	19.07%	19.08%	
1983	19.19%	28.30%	17.57%	9.86%	16.10%	17.33%	19.01%	
1984(a)	20.27%	27.45%	18.36%	9.48%	17.22%	18.15%	19.78%	
1985	17.81%	24.64%	16.35%	6.52%	14.45%	13.75%	17.22%	
1986*	16.39%	23.17%	15.28%	5.04%	12.29%	11.46%	15.82%	
1987	15.62%	21.67%	14.74%	3.26%	11.24%	10.10%	14.87%	
1988(a)*	15.96%	19.82%	15.03%	2.98%	11.54%	10.47%	14.90%	
1989	15.18%	18.54%	14.49%	1.58%	11.33%	8.80%	14.02%	
1990	15.72%	18.62%	15.10%	2.02%	11.08%	9.04%	14.46%	
1991	15.31%	17.73%	14.45%	1.80%	10.51%	8.42%	13.89%	
1992(a)*	11.21%	10.08%	10.49%	0.76%	6.94%	6.15%	9.61%	
1993(a)	11.57%	10.80%	12.31%	0.59%	8.14%	5.51%	10.10%	
1994	12.31%	11.35%	13.42%	0.25%	8.55%	7.65%	10.79%	
1995	14.71%	12.65%	15.68%	0.98%	10.74%	10.28%	12.91%	
1996	13.23%	12.52%	15.83%	0.00%	9.74%	7.64%	11.58%	
1997(a)	13.47%	12.94%	15.32%	0.00%	9.34%	7.09%	11.84%	
1998(a)*	15.80%	14.23%	17.16%	0.00%	11.38%	9.73%	13.75%	
1999*	15.31%	13.70%	16.95%	0.00%	10.48%	8.04%	13.26%	
2000	15.19%	14.37%	17.12%	0.00%	9.01%	6.97%	13.37%	
2001	15.92%	15.36%	19.12%	0.00%	9.25%	9.20%	14.27%	
2002	20.43%	20.50%	27.34%	0.74%	12.14%	16.66%	19.06%	
2002(a)	19.32%	19.51%	26.33%	0.33%	10.90%	15.82%	18.05%	
2003	23.45%	23.59%	29.82%	10.09%	13.11%	21.72%	22.72%	

(a) After changes in actuarial assumptions.

* After plan amendments.

SECTION C

Actuarial Disclosures Required by Statement No. 25 of the Governmental Accounting Standards Board



GASB STATEMENT NO. 25 REQUIRED SUPPLEMENTARY INFORMATION

Schedule of Funding Progress

Actuarial Valuation Date June 30	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) – Entry Age (b)	Unfunded AAL (UAAL) (b - a)	Funded Ratio (a / b)	Covered Payroll (c)	UAAL as a % of Covered Payroll ((b - a) / c)
1992*#	\$1,930,339,963	\$1,998,966,965	\$ 68,527,002	96.6%	\$344,320,379	19.9%
1993#	1,983,829,832	2,114,227,938	130,398,106	93.8%	331,009,921	39.4%
1994	2,041,914,572	2,192,846,039	150,931,467	93.1%	325,427,813	46.4%
1995	2,043,397,183	2,275,210,040	231,812,857	89.8%	327,615,936	70.8%
1996	2,193,234,516	2,382,866,954	189,632,438	92.0%	360,068,578	52.7%
1997#	2,333,412,893	2,528,504,057	195,091,164	92.3%	382,835,917	51.0%
1998#*	2,582,099,884	2,814,878,226	232,778,342	91.7%	387,022,423	60.1%
1999*	2,756,614,458	2,900,404,223	143,789,765	95.0%	383,449,421	37.5%
2000	2,902,433,063	3,077,001,129	174,568,066	94.3%	417,187,666	41.8%
2001	2,912,146,389	3,179,601,214	267,454,825	91.6%	439,636,072	60.8%
2002	2,761,203,680	3,276,591,209	515,387,529	84.3%	440,680,045	117.0%
2002#	2,761,203,680	3,250,514,916	489,311,236	84.9%	440,680,045	111.0%
2003	2,537,668,376	3,270,627,177	732,958,801	77.6%	448,579,064	163.4%

* After all plan amendments.

After changes in actuarial assumptions.

Schedule of Employer Contributions

Valuation Year Ended June 30	Contribution Rates as Percents of Valuation Payroll
1992	9.74%
1993	10.10%
1994	10.79%
1995	12.91%
1996	11.58%
1997	12.30%
1998	13.75%
1999	13.26%
2000	13.37%
2001	14.27%
2002	19.06%
2003	22.72%

GASB STATEMENT NO. 25 REQUIRED SUPPLEMENTARY INFORMATION

The information presented in the required supplementary schedules was determined as part of the actuarial valuations at the dates indicated. Additional information as of the latest actuarial valuation follows:

Valuation date:	June 30, 2003
Actuarial cost method	Entry Age
Amortization method	Level percent
Remaining amortization period for unfunded accrued liabilities	15 years (see page A-4)
Perpetual amortization period for gain/loss	15 years
Asset valuation method	3-year smoothed market
Actuarial assumptions:	
Investment rate of return	7.9%
Projected salary increases*	4.0% - 9.5%
*Includes inflation at	4.0%
Cost-of-living adjustments	2.25% of original pension amount at retirement.

Membership of the plan consisted of the following at June 30, 2003, the date of the latest actuarial valuation:

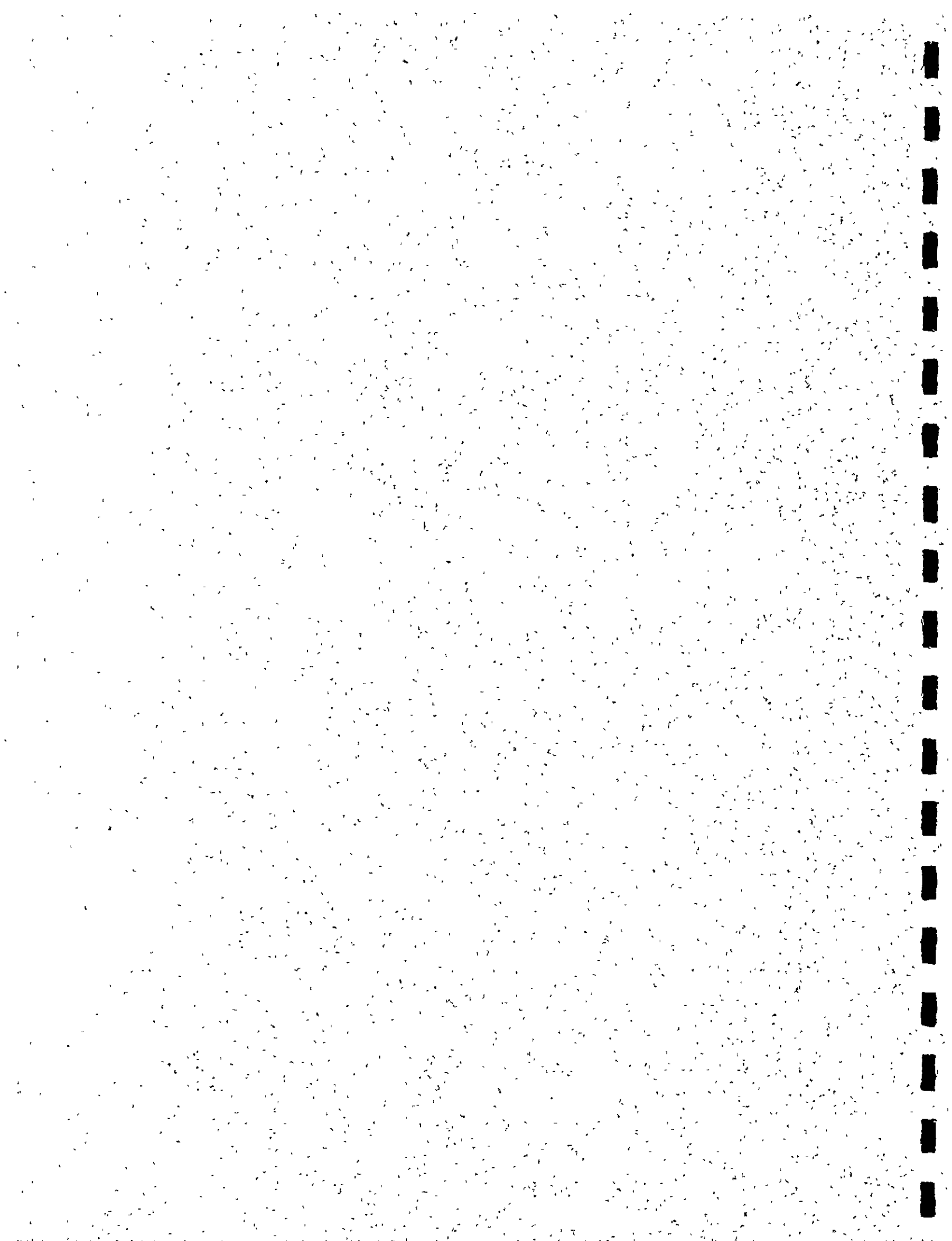
Retirees and beneficiaries receiving benefits	11,322
Terminated plan members entitled to but not yet receiving benefits	1,424
Active plan members	12,833
Total	25,579

MISCELLANEOUS AND TECHNICAL ASSUMPTIONS
JUNE 30, 2003

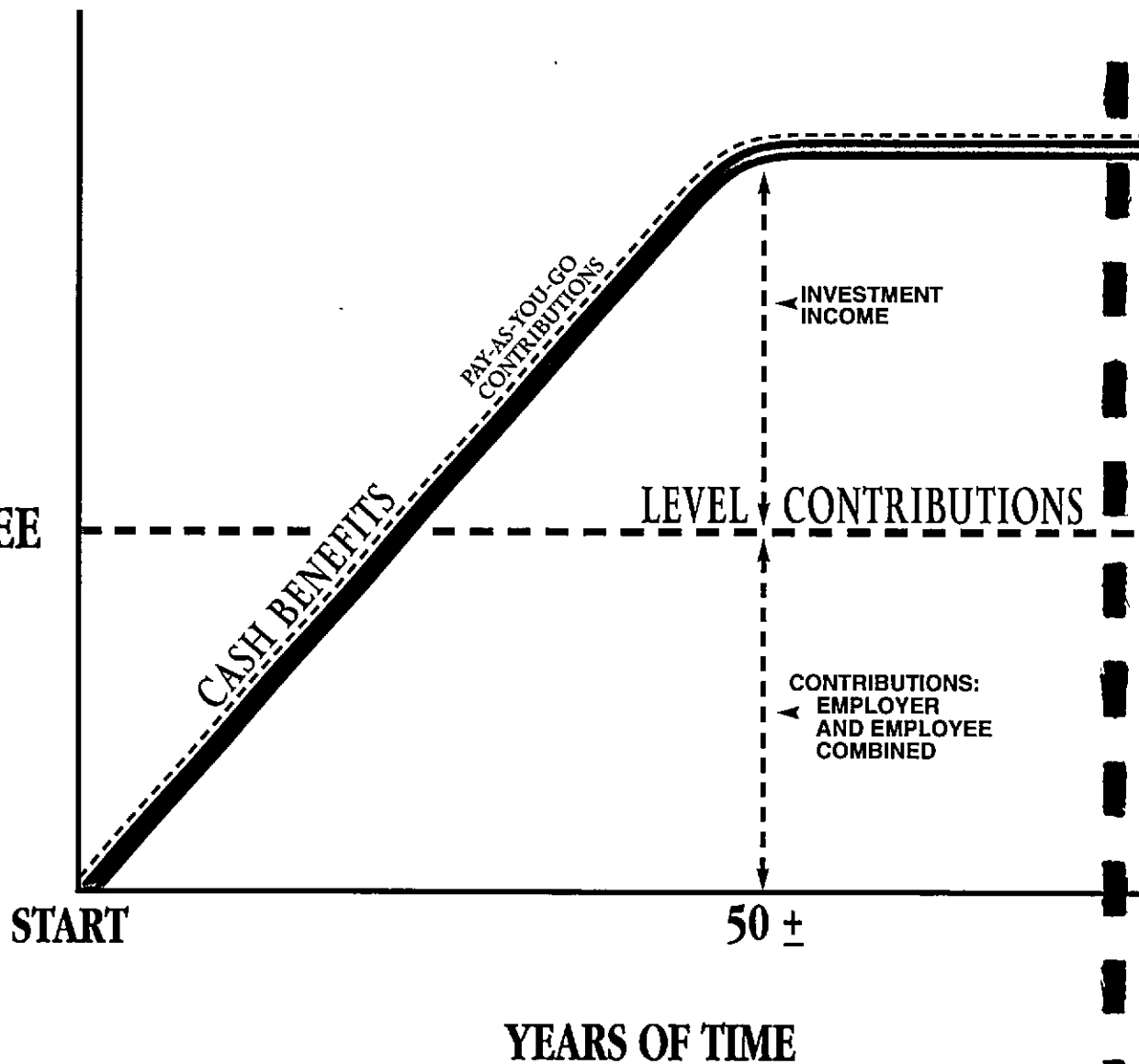
Marriage Assumption:	100% of members are assumed to be married for purposes of death-in-service benefits. Male spouses are assumed to be three years older than female spouses.
Pay Increase Timing:	Pay increases are assumed to occur at the beginning of the valuation.
Decrement Timing:	Decrements of all types are assumed to occur at the middle of the year
Eligibility Testing:	Eligibility for benefits is determined based upon the age nearest birthday and exact fractional service.
Decrement Relativity:	Decrement rates are used directly from the experience study, without adjustment for multiple decrement table effects.
Decrement Operation:	Mortality and disability decrements do not operate during the first 5 years of service. Disability also does not operate after normal retirement eligibility.
Incidence of Contributions:	Contributions are assumed to be received continuously throughout the year based upon the computed percent of payroll shown in this report, and the actual payroll payable at the time contributions are made.
Normal Form of Benefit:	Straight Life.

SECTION D

Financial Principles



**% OF
ACTIVE
EMPLOYEE
PAYS**



CASH BENEFITS LINE. This relentlessly increasing line is the fundamental reality of retirement plan financing. It happens each time a new benefit is added for future retirements (and happens regardless of the design for contributing for benefits).

LEVEL CONTRIBUTION LINE. Determining the level contribution line requires detailed assumptions concerning a variety of experiences in future decades, including:

Economic Risk Areas

- Rates of investment return
- Rates of pay increase
- Changes in active member group size

Non-Economic Risk Areas

- Ages at actual retirement
- Rates of mortality
- Rates of withdrawal of active members (turnover)
- Rates of disability

THE ACTUARIAL VALUATION PROCESS

The financing diagram on the opposite page shows the relationship between two different philosophies of paying for retirement benefits: the method where contributions match cash benefit payments (as in the Federal Social Security program) and is an *increasing contribution method*; and the *level contribution method* which seeks to balance contribution rates between generations.

The actuarial valuation is the mathematical process in which the level contribution rate is determined. The flow of activity constituting the valuation may be summarized as follows:

A. *Member Census Data:*

Retired lives now receiving benefits

Former employees with vested benefits not yet payable

Active employees

B. *Benefit provisions* governing future payments from the plan

C. *Asset data* (cash & investments)

D. *Assumptions concerning future experience in various risk areas*, which are established by the Board of Trustees and the City Council after consulting with the actuary

E. *The funding method* for employer contributions (the long-term, planned pattern for employer contributions)

F. *Mathematically combining the assumptions, the funding method, and the data*

G. *Determination of:*

Plan financial position, and

New Employer Contribution Rate

BASIC FINANCIAL OBJECTIVE AND OPERATION OF THE RETIREMENT SYSTEM

Benefit Promises Made Which Must Be Paid For. A retirement program is an orderly means of handing out, keeping track of, and financing contingent pension promises to a group of employees. As each member of the retirement program acquires a unit of service credit they are, in effect, handed an "IOU" which reads: **"The Retirement System promises to pay you one unit of retirement benefits, payments in cash commencing when you retire."**

The principal related financial question is: When shall the money required to cover the "IOU" be contributed? This year, when the benefit of the member's service is received? Or, some future year when the "IOU" becomes a cash demand?

The **Constitution of the State of Michigan** is directed to the question:

"Financial benefits arising on account of service rendered in each fiscal year shall be funded during that year and such funding shall not be used for financing unfunded accrued liabilities."

This retirement system meets this constitutional requirement by having the following *Financial Objective: To establish and receive contributions, expressed as percents of active member payroll, which will remain approximately level* from year to year and will not have to be increased for future generations of taxpayers.

Translated into actuarial terminology, a level percent-of-payroll contribution objective means that the contribution rate must be at least:

Normal Cost (the value of benefits likely to be paid which is assigned to service being rendered in the current year)

. . . plus . . .

Interest on the Unfunded Actuarial Accrued Liability (the difference between the actuarial accrued liability and current system assets).

If contributions to the retirement program are less than the preceding amount, the difference, plus investment earnings not realized thereon, will have to be contributed at some later time, or, benefits will have to be reduced, to satisfy the fundamental fiscal equation under which all retirement programs must operate; that is:

$$B = C + I - E$$

Benefit payments to any group of members and their beneficiaries cannot exceed the sum of:

Contributions received over time on behalf of the group

... plus ...

Interest earnings on contributions received and not required for immediate payment of benefits

... minus ...

Expenses incurred in operating the program.

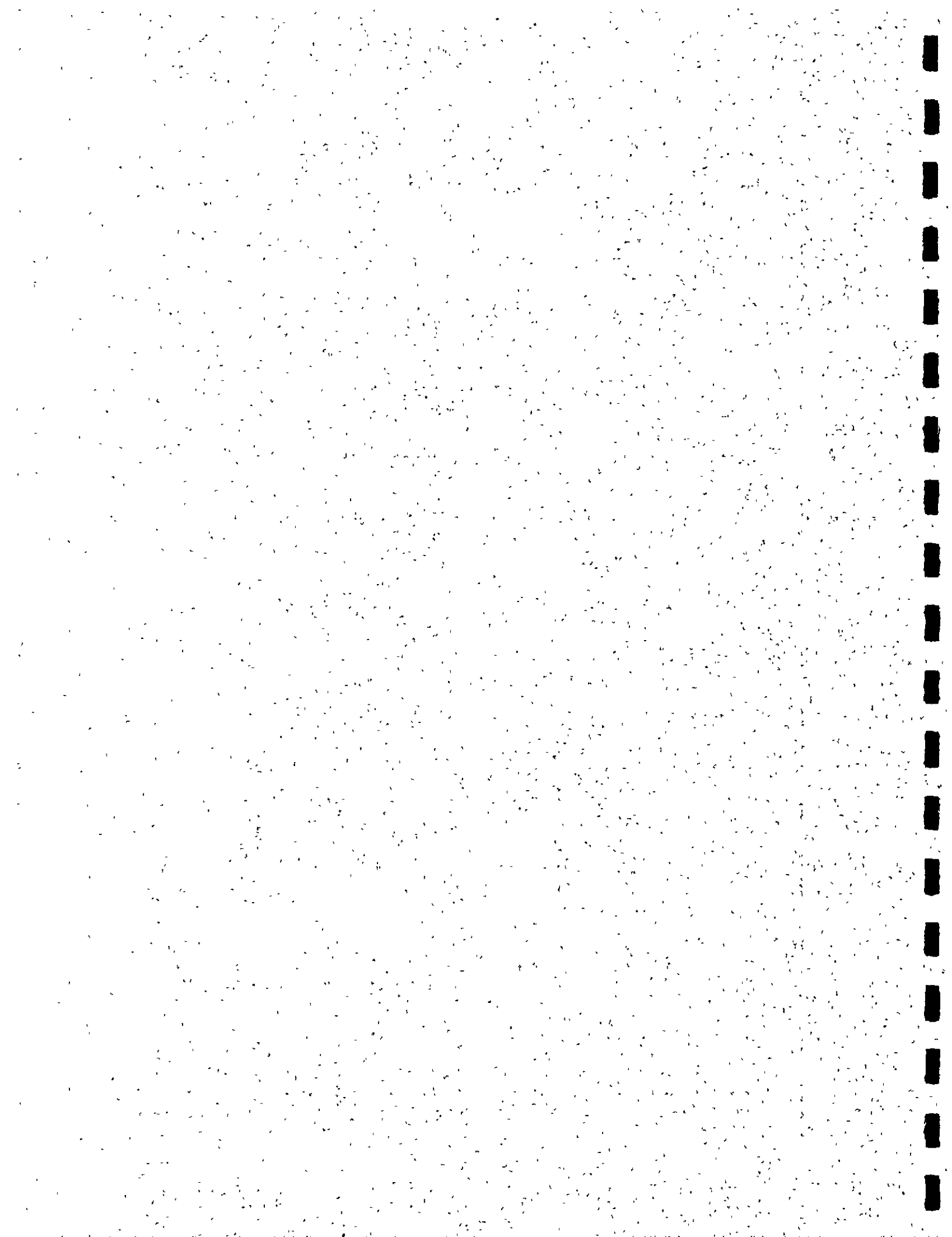
There are retirement programs designed to defer the bulk of contributions far into the future. Contributions in early years are low, but the inevitable consequence is a relentlessly increasing contribution rate – to a level greatly in excess of the level percent of payroll rate. *This method of financing is prohibited in Michigan by the state constitution.*

A by-product of the level percent-of-payroll contribution objective is the accumulation of invested assets for varying periods of time. Investment income becomes the major contributor to the retirement program, and the amount is directly related to the amount of past contributions and investment performance.

Computed Contribution Rate Needed To Finance Benefits. From a given schedule of benefits and from the data furnished, the contribution rate is calculated *by means of an actuarial valuation* - the technique of assigning monetary values to the risks assumed in operating a retirement program.

SECTION E

Appendix



**SUMMARY OF ASSUMPTIONS USED FOR DGRS ACTUARIAL VALUATIONS
ASSUMPTIONS ADOPTED BY BOARD OF TRUSTEES
AFTER CONSULTING WITH ACTUARY**

Economic Assumptions

The investment return rate used in making the valuation was 7.9% per year, compounded annually (net after administrative expenses). The real rate of return is the portion of total investment return which is more than the inflation rate. Considering other economic assumptions, the 7.9% total investment return rate translates to an assumed real rate of return of 3.9%.

Pay increase assumptions for individual active members are shown on page E-3. Part of the assumption for each age is for a merit and/or seniority increase, and the other 4.0% recognizes inflation. This merit and/or seniority increase assumption was first used in the June 30, 2003 valuation.

Total active member payroll is assumed to increase 4.0% annually, which is the portion of the individual pay increase assumptions attributable to inflation.

Non-Economic Assumptions

The number of active members is assumed to continue at the present number.

The mortality table used to measure retired life mortality was 90% the 1983 Group Annuity Mortality Table. Related values are shown on page E-3. This table was first used for the June 30, 2003 valuation.

The probabilities of retirement for members eligible to retire are shown on page E-4 and E-5. These probabilities were revised for the June 30, 2003 valuation.

The probabilities of separation from service (including *death-in-service* and *disability*) are shown for sample ages on page E-6 and E-7. These probabilities were revised for the June 30, 2003 valuation.

Funding Methods

The entry age actuarial cost method was used in determining age & service pension liabilities and normal cost, vesting liabilities and normal cost, and casualty pension liabilities and normal cost.

Differences between assumed experience and actual experience ("actuarial gains and losses") become part of actuarial accrued liabilities and are amortized over a 15-year period.

Unfunded actuarial accrued liabilities are amortized over a 15-year period (see page A-4), to produce contribution amounts (principal & interest) which are level percent of payroll contributions.

Employer contribution dollars were assumed to be paid in equal monthly installments throughout the employer fiscal year.

Present assets were reported to be valued using a three year smoothing of the difference between expected and actual investment income.

The data about persons now covered and about present assets were furnished by the System's administrative staff. Although examined for general reasonableness, the data was not audited by the Actuary.

The actuarial valuation computations were made by or under the supervision of a Member of the American Academy of Actuaries (M.A.A.A.).

SAMPLE SALARY ADJUSTMENT RATES

Sample Ages	Salary Increase Assumptions For an Individual Member		
	Merit & Seniority	Base (Economic)	Increase Next Year
20	5.5%	4.0%	9.5%
25	4.9%	4.0%	8.9%
30	3.1%	4.0%	7.1%
35	1.6%	4.0%	5.6%
40	0.9%	4.0%	4.9%
45	0.6%	4.0%	4.6%
50	0.4%	4.0%	4.4%
55	0.2%	4.0%	4.2%
60	0.1%	4.0%	4.1%
Ref	217		

SINGLE LIFE RETIREMENT VALUES

Sample Attained Ages	Present Value of \$1 Monthly for Life Increasing 2.25% Annually		Future Life Expectancy (years)	
	Men	Women	Men	Women
50	\$162.66	\$174.84	30.19	35.86
55	151.74	166.09	25.79	31.15
60	138.50	155.08	21.55	26.56
65	122.90	141.60	17.54	22.13
70	106.13	125.48	13.96	17.93
75	88.99	107.60	10.84	14.10
80	72.39	89.64	8.23	10.84
Ref:	30 x 0.90	31 x 0.90		

**PROBABILITIES OF AGE/SERVICE RETIREMENT
FOR MEMBERS ELIGIBLE TO RETIRE**

Retirement Ages	Percent of Eligible Active Members Retiring Within Next Year With Unreduced Benefits					
	General		EMS		D.O.T.	
	Male	Female	Male	Female	Male	Female
50	25%	30%	25%	25%	50%	50%
51	25%	30%	25%	25%	50%	50%
52	25%	30%	25%	25%	50%	50%
53	25%	30%	22%	22%	50%	50%
54	25%	30%	20%	20%	50%	50%
55	25%	30%	18%	18%	50%	50%
56	25%	30%	15%	15%	50%	50%
57	25%	30%	15%	15%	50%	50%
58	25%	30%	15%	15%	50%	50%
59	25%	30%	15%	15%	50%	50%
60	25%	30%	15%	15%	50%	50%
61	25%	30%	15%	15%	50%	50%
62	25%	35%	15%	15%	50%	50%
63	25%	20%	15%	15%	40%	40%
64	25%	20%	15%	15%	40%	40%
65	40%	20%	40%	40%	30%	30%
66	35%	20%	30%	30%	30%	30%
67	25%	20%	30%	30%	30%	30%
68	25%	20%	30%	30%	30%	30%
69	25%	20%	30%	30%	30%	30%
70	25%	20%	30%	30%	100%	100%
71	25%	20%	30%	30%	100%	100%
72	25%	20%	30%	30%	100%	100%
73	25%	20%	30%	30%	100%	100%
74	25%	20%	30%	30%	100%	100%
75	25%	20%	100%	100%	100%	100%
76	25%	20%	100%	100%	100%	100%
77	25%	20%	100%	100%	100%	100%
78	25%	20%	100%	100%	100%	100%
79	25%	20%	100%	100%	100%	100%
80	100%	100%	100%	100%	100%	100%
Ref	536	516	537	537	535	535

**PROBABILITIES OF EARLY RETIREMENT
FOR MEMBERS ELIGIBLE FOR EARLY RETIREMENT**

Retirement Ages	Percent of Eligible Active Members Retiring Within Next Year With Reduced Benefits
50	5%
51	5%
52	5%
53	5%
54	5%
55	5%
56	5%
57	5%
58	5%
59	5%
60	5%
Ref	446

**SAMPLE RATES OF SEPARATION FROM ACTIVE
EMPLOYMENT BEFORE RETIREMENT**

Sample Ages	Years of Service	% of Active Members Separating Within Next Year			
		Withdrawal			
		Men	Women	EMS	D.O.T
ALL	0	15.00%	16.00%	0.00%	16.00%
	1	11.00%	12.00%	0.00%	12.00%
	2	9.00%	12.00%	0.00%	12.00%
	3	8.00%	10.00%	0.00%	10.00%
	4	7.00%	6.00%	0.00%	6.00%
25	5 & Over	8.00%	8.00%	6.50%	8.00%
30		7.60%	7.60%	4.00%	7.60%
35		5.56%	5.56%	2.30%	5.56%
40		4.26%	4.26%	0.90%	4.26%
45		3.69%	3.69%	0.50%	3.69%
50		3.50%	3.50%	0.50%	3.50%
55		3.50%	3.50%	0.00%	3.50%
60		3.50%	3.50%	0.00%	3.50%
Ref		205	209	1	209
		212	212	351	212

Sample Ages	% of Active Members Becoming Disabled Within Next Year			
	General		D.O.T.	
	Ordinary	Duty	Ordinary	Duty
25	0.01%	0.28%	0.02%	0.03%
30	0.04%	0.33%	0.05%	0.09%
35	0.09%	0.38%	0.12%	0.23%
40	0.18%	0.44%	0.24%	0.45%
45	0.34%	0.50%	0.45%	0.85%
50	0.44%	0.58%	0.59%	1.10%
55	0.51%	0.67%	0.68%	1.27%
60	0.58%	0.77%	0.77%	1.44%
Ref	23 x 0.30	423 x 1.00	23 x 0.40	23 x 0.75

Sample Ages	% of Active Members Becoming Dying Within Next Year			
	Non-Duty Death		Duty Death	
	Men	Women	Men	Women
25	0.13%	0.08%	0.04%	0.03%
30	0.13%	0.08%	0.04%	0.03%
35	0.13%	0.08%	0.04%	0.03%
40	0.47%	0.29%	0.16%	0.10%
45	0.47%	0.29%	0.16%	0.10%
50	2.06%	1.24%	0.69%	0.41%
55	2.06%	1.24%	0.69%	0.41%
60	0.00%	0.00%	0.00%	0.00%
Ref	30 x 0.75	31 x 0.75	30 x 0.25	31 x 0.25

MEANING OF "UNFUNDED ACTUARIAL ACCRUED LIABILITIES"

Actuarial accrued liabilities are the portion of the present value of plan promises to pay benefits in the future not covered by future normal cost contributions.

--- a liability has been established ("accrued") because the service has been rendered, but the resulting monthly cash benefit may not be payable until years in the future.

If actuarial accrued liabilities at any time exceed the plan's accrued assets (cash & investments), the difference is *unfunded actuarial accrued liabilities*. If the plan's assets equal the plan's actuarial accrued liabilities, the plan would be termed "fully funded".

Each time a plan adds a new benefit which applies to service already rendered, an actuarial accrued liability is created. If assets are insufficient to cover the value of the new benefit promises, an additional unfunded actuarial accrued liability is also created. Payment for such unfunded accrued liabilities is generally spread over a period of years, commonly in the 15-30 year range.

Unfunded actuarial accrued liabilities can occur in another way: if actual financial experience is less favorable than assumed financial experience, the difference is added to unfunded actuarial accrued liabilities. For example, during periods of high inflation, unfunded actuarial accrued liabilities generally increase because unexpected rates of pay increase will create additional liabilities which may not be matched by investment performance. Inflation is a very destructive force on financial stability.

The existence of unfunded actuarial accrued liabilities is not bad, but the changes from year to year in the amount of unfunded actuarial accrued liabilities are important -- "bad" or "good" or somewhere in between.

Unfunded actuarial accrued liabilities do not represent a bill payable immediately, but it is important that policy-makers prevent the amount from becoming unreasonably high and *it is vital that there is a sound method for making payments toward them*, so that they are controlled.

GLOSSARY

Actuarial Accrued Liability. The difference between (i) the actuarial present value of future plan benefits, and (ii) the actuarial present value of future normal cost. Sometimes referred to as “accrued liability” or “past service liability.”

Accrued Service. The service credited under the plan which was rendered before the date of the actuarial valuation.

Actuarial Assumptions. Estimates of future plan experience with respect to rates of mortality, disability, turnover, retirement, rate or rates of investment income and salary increases. Decrement assumptions (rates of mortality, disability, turnover and retirement) are generally based on past experience, often modified for projected changes in conditions. Economic assumptions (salary increases and investment income) consist of an underlying rate in an inflation-free environment plus a provision for a long-term average rate of inflation.

Actuarial Cost Method. A mathematical budgeting procedure for allocating the dollar amount of the “actuarial present value of future plan benefits” between the actuarial present value of future normal cost and the actuarial accrued liability. Sometimes referred to as the “actuarial funding method.”

Actuarial Equivalent. A single amount or series of amounts of equal value to another single amount or series of amounts, computed on the basis of the rate(s) of interest and mortality tables used by the plan.

Actuarial Present Value. The amount of funds presently required to provide a payment or series of payments in the future. It is determined by discounting the future payments at a predetermined rate of interest, taking into account the probability of payment.

Amortization. Paying off an interest-bearing liability by means of periodic payments of interest and principal, as opposed to paying it off with a lump sum payment.

Experience Gain (Loss). A measure of the difference between actual experience and that expected based upon a set of actuarial assumptions during the period between two actuarial valuation dates, in accordance with the actuarial cost method being used.

Normal Cost. The annual cost assigned, under the actuarial funding method, to current and subsequent plan years. Sometimes referred to as “current service cost.” Any payment toward the unfunded actuarial accrued liability is not part of the normal cost.

Reserve Account. An account used to indicate that funds have been set aside for a specific purpose and are not generally available for other uses.

Unfunded Actuarial Accrued Liability. The difference between the actuarial accrued liability and valuation assets. Sometimes referred to as “unfunded accrued liability.”

Valuation Assets. The value of current plan assets recognized for valuation purposes. Generally based on market value plus a portion of unrealized appreciation or depreciation.