



CITY OF DETROIT

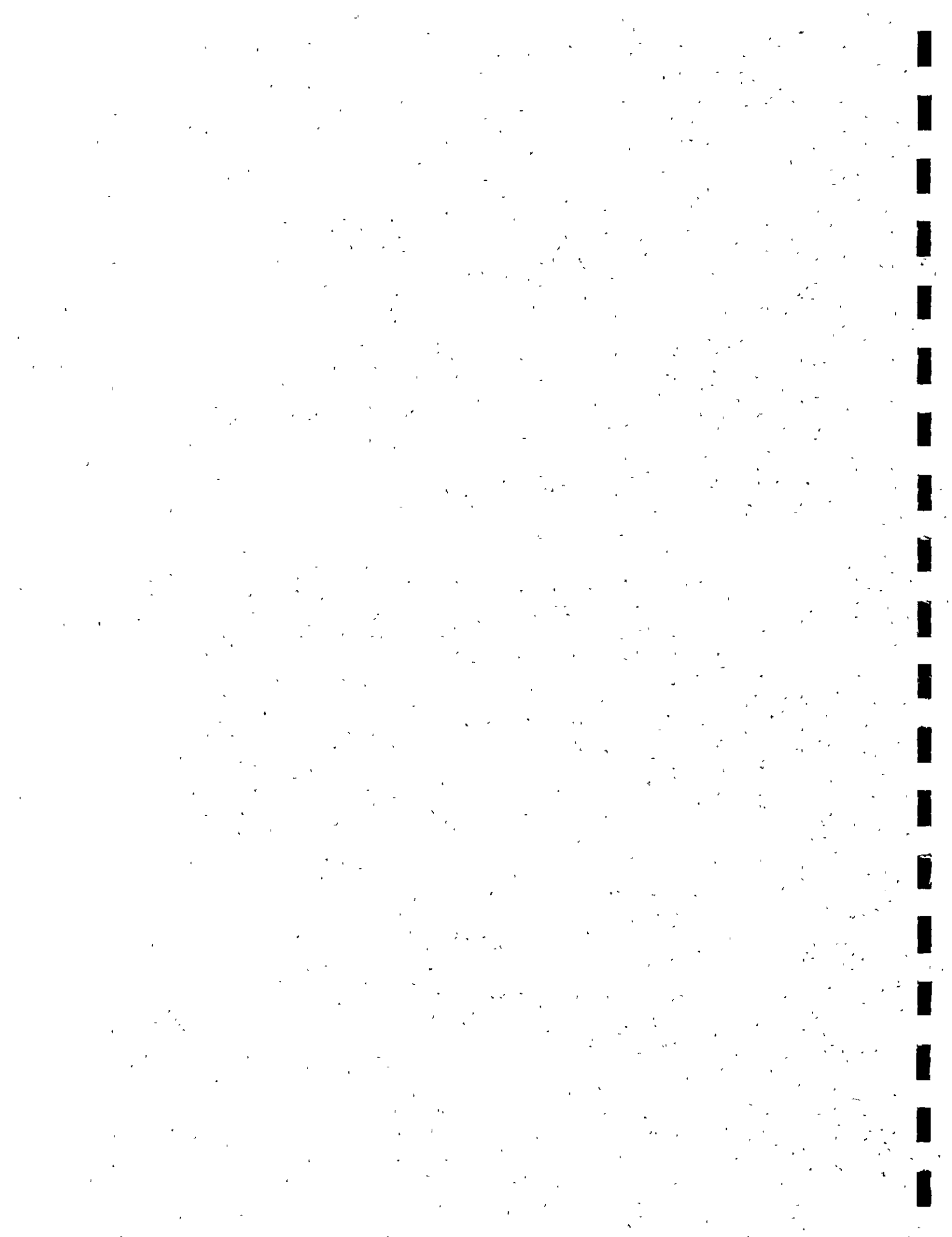
GENERAL RETIREMENT SYSTEM

67TH ANNUAL ACTUARIAL VALUATION

June 30, 2005

GRS

Gabriel Roeder Smith & Company



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March 16, 2006

The Board of Trustees
City of Detroit General Retirement System

Dear Board Members:

The results of the **67th 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, 2005**.

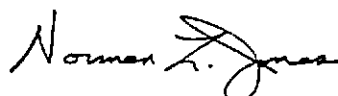
The valuations were based upon records maintained and furnished by the retirement system staff concerning active members, retirees and beneficiaries, and financial accounts as of the valuation date. The assumptions used in the valuations concerning future financial experience are summarized in the Appendix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

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

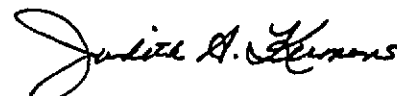
The valuation was completed using generally accepted actuarial principles and in accordance with standards of practice prescribed by the Actuarial Standards Board. To the best of our knowledge this report is complete and accurate and the actuarial methods and assumptions produce results which are reasonable.

Respectfully submitted,

GABRIEL ROEDER SMITH & COMPANY



Norman L. Jones

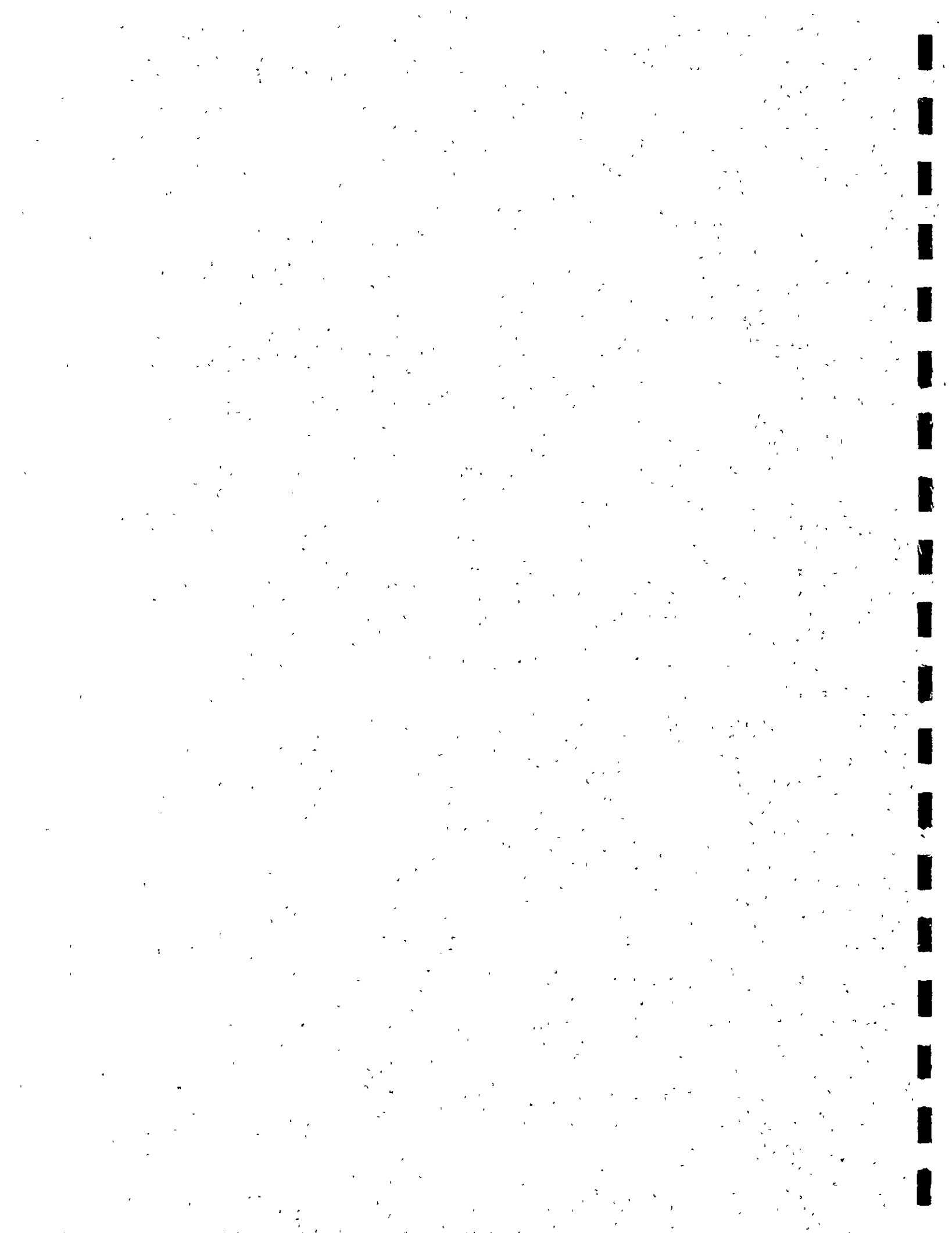


Judith A. Kermans

NLJ/bd

SECTION A

Retirement System Totals



**SUMMARY OF COMPUTED EMPLOYER CONTRIBUTION RATES
2006-2007 FISCAL YEAR**

Contributions for	Contributions Expressed as a Percent of Payroll					
	General City	D.O.T.	Water	Sewage	Library	Total
Normal Cost:						
Age & Service Pensions	7.62 %	6.79 %	7.16 %	6.98 %	7.63 %	7.37 %
Disability Pensions	1.57 %	1.18 %	1.60 %	1.55 %	1.54 %	1.52 %
Death-in-Service Pensions	0.35 %	0.36 %	0.40 %	0.43 %	0.28 %	0.37 %
Employer Normal Cost	9.54 %	8.33 %	9.16 %	8.96 %	9.45 %	9.26 %
Unfunded Actuarial Accrued Liabilities#	0.81 %	2.55 %	11.68 %	(6.92)%	1.88 %	1.80 %
Computed Employer Contribution Rates	10.35 %	10.88 %	20.84 %	2.04 %	11.33 %	11.06 %
(Change from last year)	(12.38)%	(12.44)%	(17.32)%	(4.21)%	(12.23)%	(12.17)%

Unfunded actuarial accrued liabilities (UAAL) were amortized over a 30 year period.

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 implemented. These transfers may have a material impact on the computed employer contribution rates.

DEVELOPMENT OF LIABILITIES AS OF JUNE 30, 2005
RETIREMENT SYSTEM TOTALS

Present Value of Future Benefits	\$ 3,606,749,193
Present Value of Future Normal Costs	259,361,541
Actuarial Accrued Liability	3,347,387,652
Accrued Assets	3,222,393,861
Unfunded Actuarial Accrued Liability	\$ 124,993,791

ACTUARIAL ACCRUED LIABILITIES AS OF JUNE 30, 2005
RETIREMENT SYSTEM TOTALS

Present Value, June 30	
Accrued Pension Liabilities (Employer Financed)	
Retirees and beneficiaries	
Future pensions	\$1,637,983,034
Mortality reserve	0
Total	1,637,983,034
Inactive members future deferred pensions	69,047,471
Active members	966,118,675
Total accrued pensions	2,673,149,180
Pension fund balances	2,551,639,278
Unfunded accrued pension liabilities	\$ 121,509,902
Accrued Annuity Liabilities (Member Financed)	
Retirees and beneficiaries	
Future annuities	\$ 42,136,506
Mortality reserve	0
Total	42,136,506
Member annuities & future refunds	632,101,966
Total accrued annuity liabilities	674,238,472
Annuity fund balances	670,754,583
Unfunded accrued annuity liabilities	\$ 3,483,889
Totals	
Actuarial Accrued Liabilities	\$3,347,387,652
Accrued Assets	3,222,393,861
Unfunded Actuarial Accrued Liabilities	\$ 124,993,791

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	
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(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
2004	444.6	37,706	8.99%	11.10%	20.09%	3,383.9	2,470.2	913.7	2.06
2005*	390.6	39,775	9.26%	1.80%	11.06%	3,347.4	3,222.4	125.0	0.32

After plan amendments.

(a) After changes in actuarial assumptions.

* After POC transfer.

COMMENTS

Computed Contribution Rate

The average total computed contribution rate decreased from 23.23% to 11.06% of payroll this year, primarily due to the receipt of proceeds from the Pension Obligation Certificates (POCs). Overall experience during the year was favorable, as shown on page A-7. The most significant source of gain was favorable investment experience (please see page A-9).

Water and Sewage Divisions

Valuation results for these groups are distorted due to the periodic transfer of members and their accrued liabilities from Sewage to Water without a corresponding transfer of assets. We recommend that consideration again be given to combining the divisions for the purpose of setting contribution rates.

Pension Funding Policy

The computed employer contribution rates shown on page A-1 are based on the Board of Trustees policy of financing unfunded actuarial accrued liabilities over a period of 30 years (see Board resolution dated February 8, 2006). We have also revised the historical schedules in this report to show the computed employer contribution rate determined in the 2004 valuation amortized over 30 years.

Pension Obligation Certificate (POCs)

During the 2005 fiscal year, POC proceeds were paid into the System. We have treated the proceeds as a contribution made during the year that acted to reduce the unfunded accrued liability. The treatment of the POC for accounting purposes is a matter for the auditor to determine.

Conclusion and Recommendation

The Retirement System is 96% funded as a result of the POC proceeds. Based upon the funding policy established by the Board, the data furnished by the Retirement System and the actuarial assumptions shown in the Appendix, the weighted average recommended employer contribution rate for the 2005-2006 fiscal year is 11.06% of covered payroll with the rate for each division as shown on page A-1.

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 (\$ IN MILLIONS)

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
	2001	\$ 721	\$1,292		\$1,167	\$2,912	100%	100%
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%
2004	658	1,546	1,180	2,470	100%	100%	23%	73%
2005*	632	1,680	1,035	3,222	100%	100%	88%	96%

* After POC transfer.

(a) After changes in actuarial assumptions.

DERIVATION OF EXPERIENCE GAIN (LOSS)
YEAR ENDED JUNE 30, 2005
(\$ 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	\$ 913.7
(2) Normal cost from last valuation	35.1
(3) Employer contributions	786.6
(4) Interest accrual: $[(1) + 1/2 [(2) - (3)]] \times .079$	42.5
(5) Expected UAAL before changes: (1) + (2) - (3) + (4)	204.6
(6) Increase due to plan amendments	0.0
(7) Increase due to changes in methods or assumptions	0.0
(8) Expected UAAL after changes: (5) + (6) + (7)	204.6
(9) Actual UAAL at end of year	125.0
(10) Experience gain (loss): (8) - (9)	\$79.6
(11) Gain (loss) as % of beginning of year (\$2,726 million) accrued pension liability	2.9 %

** 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-9.

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

***Reserve Accounts
(Funding Value)***

Funds	Fund Balances	
	June 30, 2005*	June 30, 2004
Annuity Savings	\$ 632,101,966	\$ 658,348,545
Annuity Reserve	38,652,617	34,868,163
Pension Accumulation	304,087,677	338,853,368
Pension Reserve	1,567,447,879	1,438,173,394
Accrued Liability Fund Reserve	680,103,722	0
Total Fund Balances	\$3,222,393,861	\$2,470,243,470

***Revenues and Expenditures
(Funding Value)***

	Pension Funds	Annuity Funds	Total Funds
Balance, July 1, 2004	\$1,777,026,759	\$ 693,216,711	\$2,470,243,470
Revenues			
Member contributions	76,315	22,572,347	22,648,662
Employer contributions #	41,689,528	0	41,689,528
04/05 POC Contributions	64,807,084	0	64,807,084
Balance of POC proceeds	674,986,814	0	674,986,814
Recognized investment income	165,761,684	61,390,107	227,151,791
Transfers	(3,550,078)	3,550,078	0
Total	\$ 943,771,347	\$ 87,512,532	\$1,031,283,879
Expenditures			
Benefit payments	167,789,179	4,462,200	172,251,379
Refund of member contributions	1,369,652	105,512,457	106,882,109
Administrative expenses	0	0	0
Total	\$ 169,158,831	\$ 109,974,657	\$ 279,133,488
Balance, June 30, 2005 *	\$2,551,639,275	\$ 670,754,586	\$3,222,393,861
Funding Value Rate of Return	8.0%	9.4%	8.3%

Includes contributions receivable of \$8,342,026.

* Reserve of \$6,949,751 for bonuses not included in the above totals.

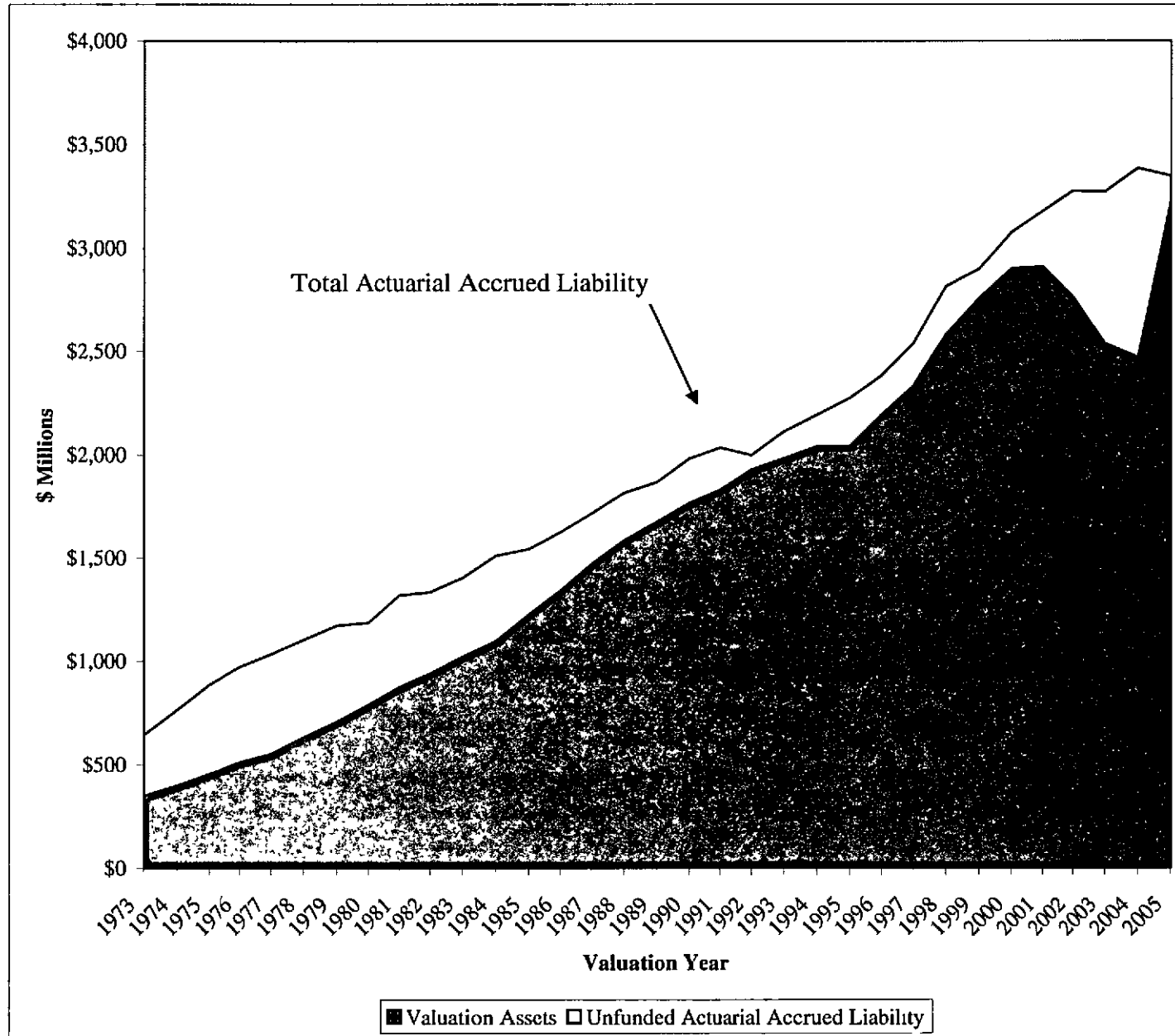
REPORTED FUNDING VALUE OF ASSETS

Year Ended June 30:	2004	2005	2006	2007
A. Funding Value Beginning of Year	\$2,537,668,376	\$2,470,243,470		
B. Market Value End of Year	2,521,497,015	3,325,836,079		
C. Market Value Beginning of Year	2,323,824,214	2,521,497,015		
D. Non-Investment Net Cash Flow(Contribution-Benefits)	(135,047,807)	531,948,351		
E. Investment Income				
E1. Market Total: B - C - D	332,720,608	272,390,713		
E2. Amount for Immediate Recogn: Reg. Int. on Reserves	190,633,574	198,695,531		
E3. Amount for Phased-In Recognition: E1-E2	142,087,034	73,695,182		
F. Phased-In Recognition of Investment Income				
F1. Current Year: E3/3	47,362,345	24,565,061		
F2. First Prior Year	(43,471,145)	47,362,344	\$24,565,061	
F3. Second Prior Year	(126,901,873)	(43,471,145)	47,362,344	\$24,565,060
F4. Total Recognized Investment Gain	(123,010,673)	28,456,260	71,927,405	24,565,060
G. Total Recognized Investment Income: (E2+F4)	67,622,901	227,151,791		
H. Funding Value End of Year: A + D + G	2,470,243,470	3,229,343,612		
I. Difference between Market & Funding Value: B - H	51,253,545	96,492,467	24,565,062	
J. Recognized Rate of Return: G / [1/2(A+H-G)]	2.7%	8.3%		
K. Market Value Rate of Return (net)	14.8%	9.8%		

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.

Note: Above balances in 2005 include a reserve of \$6,949,751 for bonuses.

ASSETS AND ACCRUED LIABILITIES



PERSONS IN VALUATIONS - COMPARATIVE STATEMENTS
RETIREMENT SYSTEM TOTALS

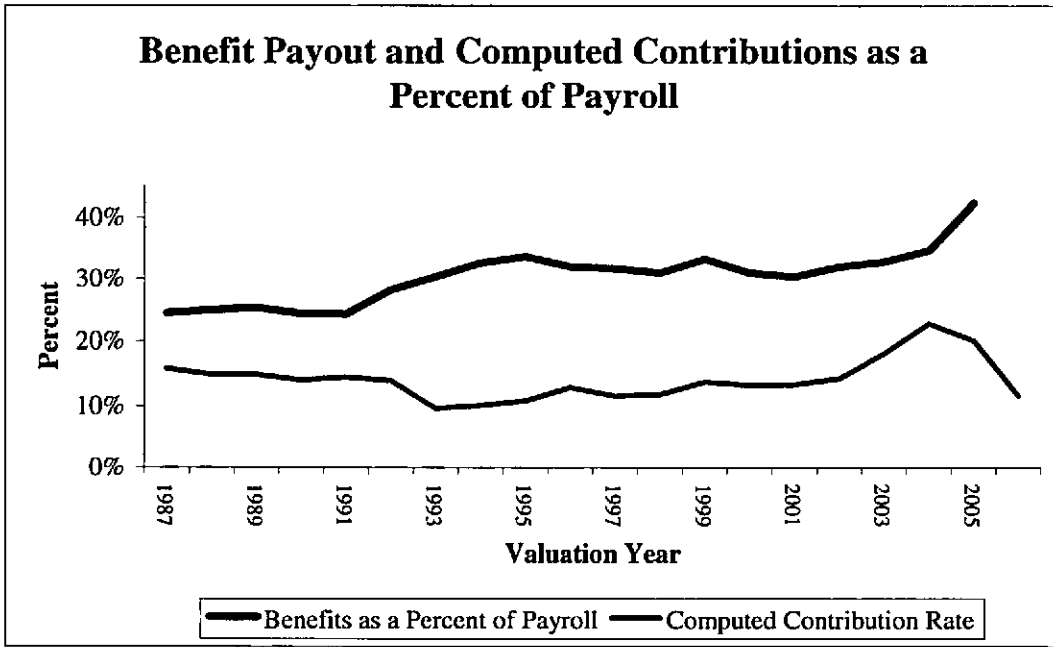
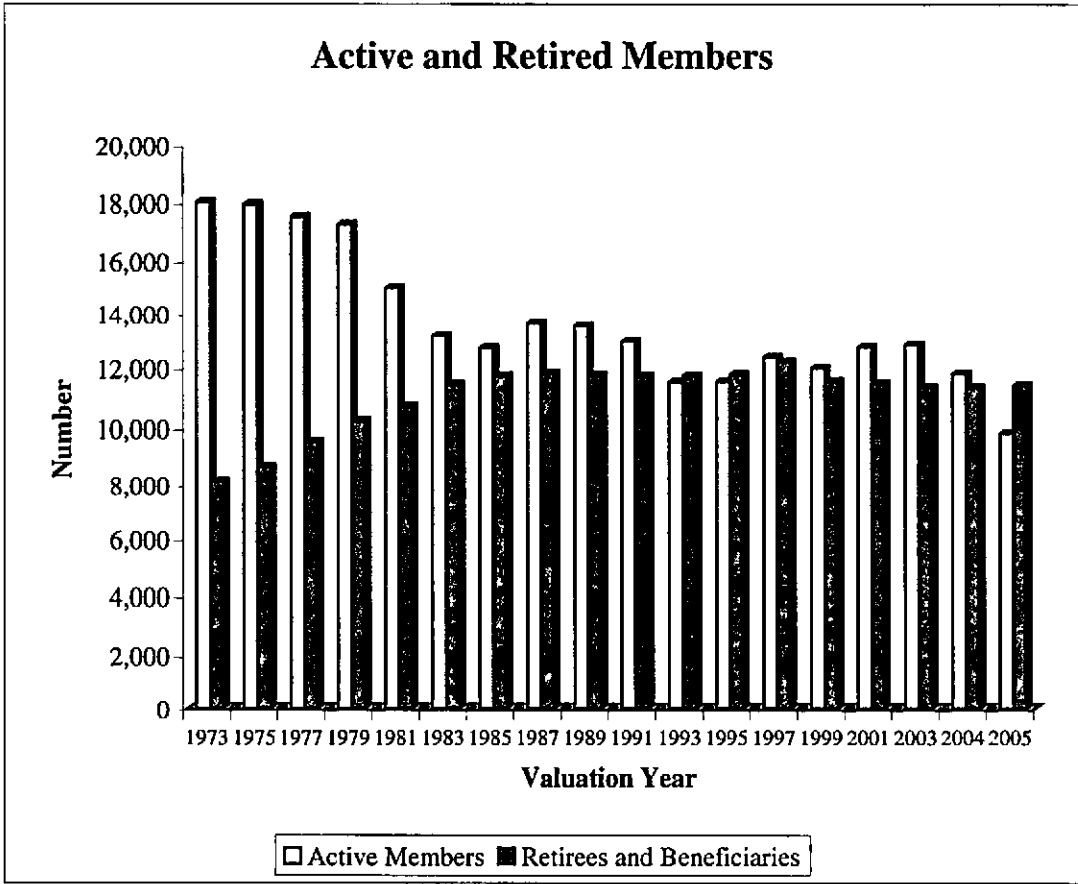
Active Members

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
2004	11,791	(8.1)%	444,596,299	37,706	7.9 %	44.5	12.5
2005	9,820	(16.7)%	390,593,600	39,775	5.5 %	45.9	13.8

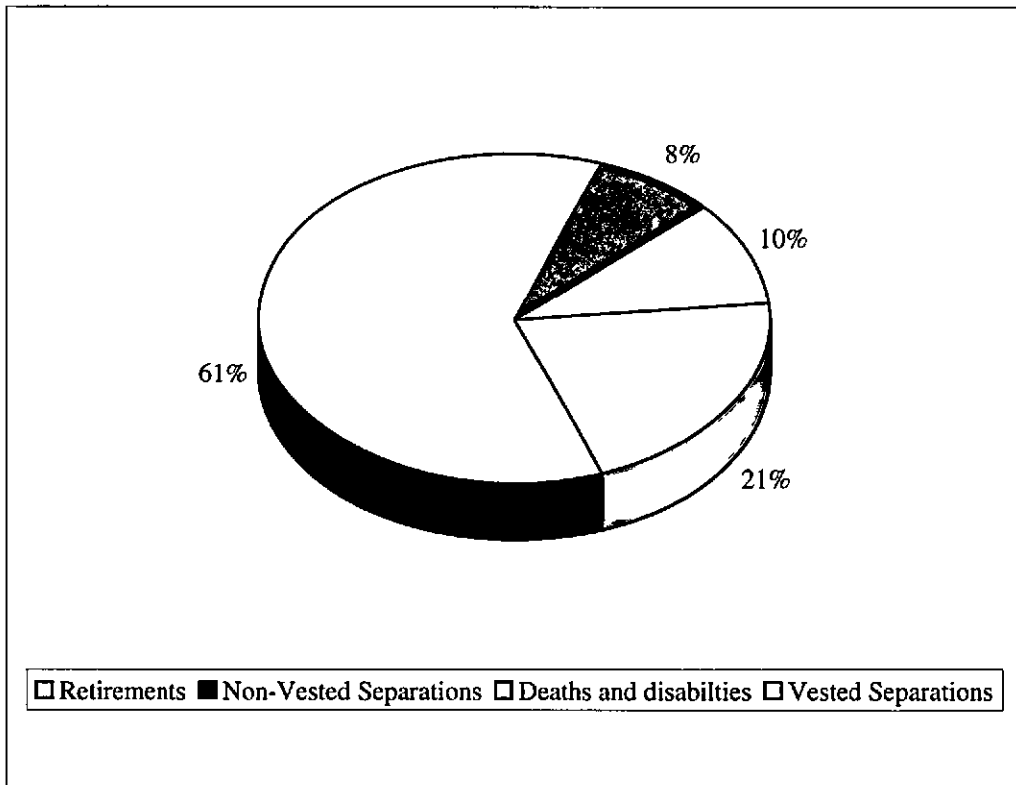
PERSONS IN VALUATIONS - COMPARATIVE STATEMENTS
RETIREMENT SYSTEM TOTALS

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%
2004	11,311	2.6%	78.5%	18.9%	100.0%	154,133,460	13,627	34.7%
2005	11,396	2.7%	79.6%	17.7%	100.0%	165,095,736	14,487	42.3%



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 9,820 active members. Eventually, 827 people are expected to terminate covered employment prior to retirement and forfeit eligibility for an employer provided benefit. 8,000 people are expected to receive monthly retirement benefits either by retiring directly from active service, or by retiring from vested deferred status. 993 people are expected to become eligible for death-in-service or disability benefits.

RETIRES AND BENEFICIARIES JUNE 30, 2005
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*	43	\$ 71,079	1	\$ 781	10	\$ 6,366	54	\$ 78,226
20-24	1	430					1	430
25-29								
30-34	6	6,837	5	3,267			11	10,104
35-39	8	5,943	23	13,267	2	1,458	33	20,668
40-44	12	10,670	56	29,375	6	3,773	74	43,818
45-49	108	178,637	162	85,918	20	16,697	290	281,252
50-54	510	1,056,416	192	119,515	22	26,412	724	1,202,343
55-59	984	2,102,445	220	172,445	44	59,415	1,248	2,334,305
60-64	1,248	2,096,434	156	152,698	41	45,042	1,445	2,294,174
65-69	1,227	1,486,645	103	76,939	47	48,007	1,377	1,611,591
70-74	1,261	1,483,348	84	58,851	88	74,855	1,433	1,617,054
75-79	1,598	1,646,354	107	72,253	91	65,834	1,796	1,784,441
80-84	1,448	1,403,017	110	75,472	94	67,819	1,652	1,546,308
85-89	815	665,281	39	25,238	51	29,672	905	720,191
90-94	278	173,841	12	5,773	13	6,448	303	186,062
95-99	42	22,906	1	409	7	3,696	50	27,011
Totals	9,589	\$12,410,283	1,271	\$892,201	536	\$455,494	11,396	\$13,757,978

* May include records with defective birth dates.

Includes survivor beneficiaries of deceased retirees.

**INACTIVE VESTED MEMBERS JUNE 30, 2005
BY ATTAINED AGES
RETIREMENT SYSTEM TOTALS**

Attained Ages	No.	Estimated Annual Pensions
Under 25	12	\$ 37,668
25-29	1	5,052
30-34	4	10,116
35-39	33	185,796
40-44	134	867,936
45-49	207	1,629,516
50-54	243	1,788,876
55-59	279	1,870,440
60-64	129	678,312
65-69	48	244,668
70-74	19	98,592
75-79		
80 and Over		
Totals	1,109	\$7,416,972

**ACTIVE MEMBERS AS OF JUNE 30, 2005
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	25							25	\$ 340,920
20-24	117	28						145	3,193,411
25-29	259	165	12					436	13,242,937
30-34	252	376	75	8				711	25,014,823
35-39	260	498	198	151	7			1,114	42,396,668
40-44	257	522	276	443	119	25		1,642	63,436,265
45-49	213	440	243	483	332	271	15	1,997	80,198,353
50-54	165	292	186	348	321	409	91	1,812	76,110,028
55-59	92	194	147	239	225	278	118	1,293	57,018,026
60-64	45	99	54	78	56	75	56	463	21,223,895
65-69	14	27	21	18	8	16	22	126	6,058,394
70-74	10	5	4	8	4		7	42	1,778,822
75-79		1	1	2	2		8	14	581,058
Totals	1,709	2,647	1,217	1,778	1,074	1,078	317	9,820	\$390,593,600

Group Averages:

Age: 45.9 years
Service: 13.8 years
Annual Pay: \$39,775

RETIRES AND BENEFICIARIES JUNE 30, 2005
TABULATED BY YEAR OF RETIREMENT

Year of Retirement	No.	Monthly Allowances	
		Total	Average
1950 & before	6	\$ 1,850	\$ 308
1951-1955	16	6,450	403
1956-1960	10	3,633	363
1961-1965	85	33,495	394
1966-1970	224	104,265	465
1971-1975	812	485,615	598
1976-1980	1,492	1,211,966	812
1981-1985	1,897	1,925,820	1,015
1986-1990	1,452	1,543,153	1,063
1991-1995	1,953	2,405,183	1,232
1996-2000	1,869	2,905,284	1,554
2002	449	806,153	1,795
2003	400	775,816	1,940
2004	468	924,652	1,976
2005	263	624,643	2,375
Totals	11,396	\$13,757,978	\$1,207

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

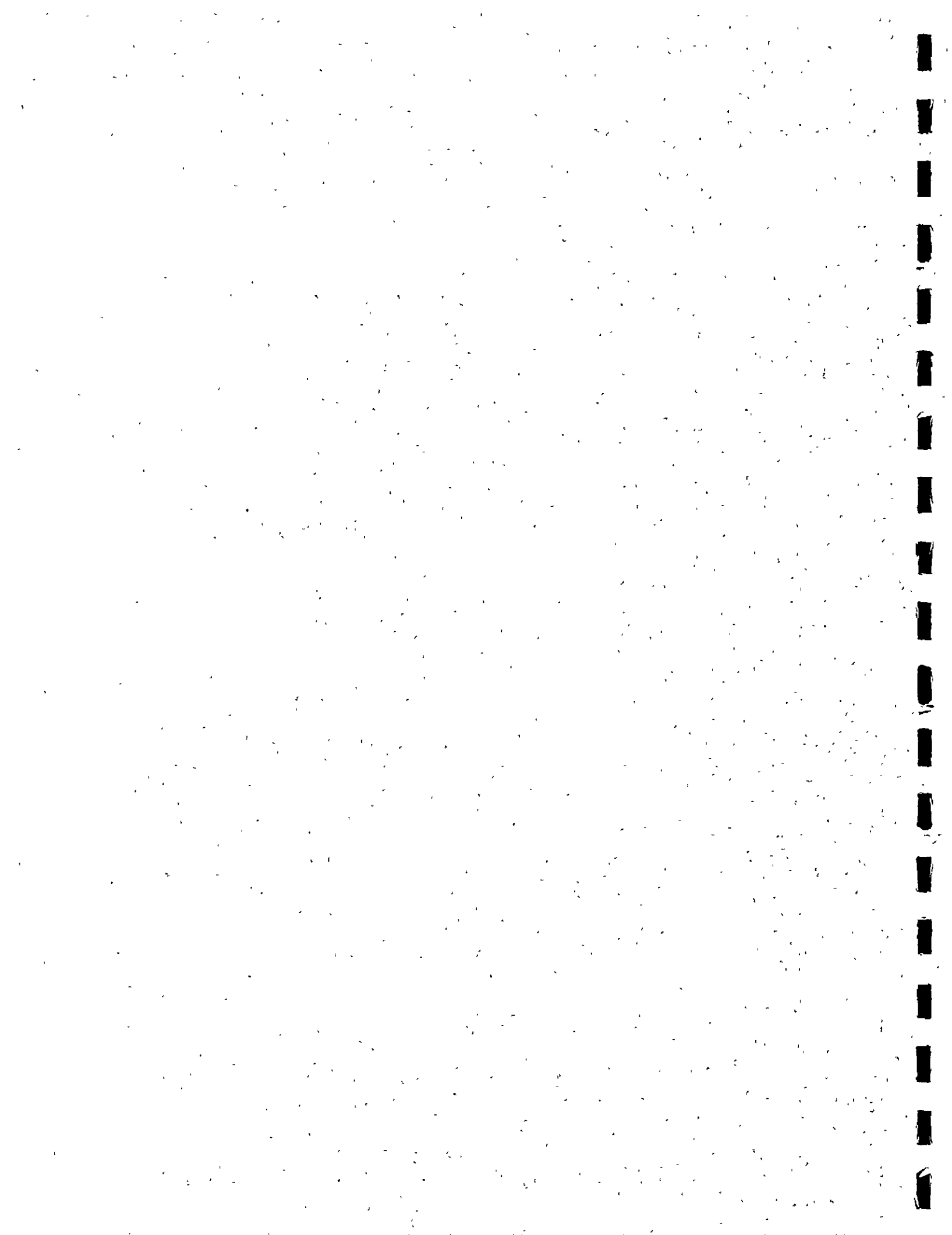
Benefit is increased annually by 2.25% of the **original** pension amount at retirement.

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. Member contributions can be paid as a lump sum or annuitized at retirement to provide an annuity in addition to the pension (which is not affected by the level of member contributions).

SECTION B

Divisions Separately Experience Rated



SUMMARY OF MEMBER DATA
JUNE 30, 2005

Active Members

	General	D.O.T.	Water	Sewage	Library	Totals
Number	5,414	1,529	1,472	973	432	9,820
% Change in active members	(23.4)%	(7.4)%	(7.5)%	(6.0)%	(2.7)%	(16.7)%
Annual payroll (\$ millions)	\$ 223.1	\$ 52.5	\$ 56.6	\$ 43.5	\$ 15.0	\$ 390.7
Average pay	\$41,203	\$34,354	\$38,433	\$44,670	\$34,617	\$39,775
% Change in average pay	8.4 %	2.6 %	1.7 %	1.3 %	4.2 %	5.5 %

Retired Members and Survivor Beneficiaries

	General	D.O.T.	Water	Sewage	Library	Totals
Number	7,592	1,623	1,643	235	303	11,396
Annual benefits (\$ millions) #	\$ 109.8	\$ 21.7	\$ 28.6	\$ 3.6	\$ 5.8	\$ 169.5
Average benefits	\$14,460	\$13,400	\$17,424	\$15,354	\$19,037	\$14,877
% Change in average benefit	6.0 %	5.4 %	8.1 %	10.3 %	3.8 %	6.4 %

Includes Annuities

Inactive Vested Members

	General	D.O.T.	Water	Sewage	Library	Totals
Number	713	173	141	55	27	1,109
Annual benefits (\$ millions) #	\$ 4.7	\$ 1.2	\$ 1.0	\$ 0.3	\$ 0.2	\$ 7.4
Average benefits	\$6,568	\$6,663	\$7,450	\$6,408	\$6,599	\$6,673
% Change in average benefit	(4.7)%	(4.9)%	(4.7)%	(7.1)%	(0.3)%	(4.9)%

Note: 8 active, 1 retired and 3 deferred records were excluded from the valuation due to incomplete data.

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

	June 30, 2005	June 30, 2004
Annuity Savings Fund		
General	\$ 328,682,157	\$ 337,977,866
D.O.T.	103,366,174	105,142,399
Water	178,833,183	187,860,481
Sewage	129,572	0
Housing	2,357,422	7,829,551
Library	18,733,458	19,538,248
Totals	632,101,966	658,348,545
Annuity Reserve Fund		
General	21,498,201	19,662,156
D.O.T.	3,645,443	3,497,540
Water	7,651,395	5,955,224
Sewage	1,553,980	1,600,846
Housing	2,025,371	1,870,598
Library	2,278,227	2,281,799
Totals	38,652,617	34,868,163
Pension Accumulation Fund		
General	156,886,398	177,492,612
D.O.T.	37,358,099	42,345,593
Water	(91,960,469)	(69,148,211)
Sewage	177,898,649	160,267,838
Housing	11,037,755	15,688,891
Library	12,867,245	12,206,645
Totals	304,087,677	338,853,368
Pension Reserve Fund		
General	960,619,793	893,295,036
D.O.T.	190,931,378	175,008,801
Water	288,102,281	252,321,001
Sewage	33,540,088	29,115,736
Housing	42,547,433	38,277,475
Library	51,706,906	50,155,345
Totals	1,567,447,879	1,438,173,394
Accrued Liability Fund		
General	419,825,883	N/A
D.O.T.	91,515,878	N/A
Water	139,868,707	N/A
Sewage	7,777,703	N/A
Housing	N/A	N/A
Library	21,115,551	N/A
Totals	680,103,722	N/A
Retirement System Totals	\$3,222,393,861	\$2,470,243,470

ACTUARIAL ACCRUED LIABILITIES AS OF JUNE 30, 2005
BY DIVISION
(\$ IN THOUSANDS)

Present Value, June 30 of	General	D.O.T.	Water	Sewage	Library	Totals
Accrued Pension Liabilities						
Retirees and beneficiaries	\$1,048,310	\$199,523	\$301,067	\$35,049	\$54,034	\$1,637,983
Inactive members future deferred pensions	43,971	10,087	9,874	3,286	1,830	69,048
Active members	528,449	133,509	141,684	127,751	34,726	966,119
Total accrued pension liabilities	1,620,730	343,119	452,625	166,086	90,590	2,673,150
Pension fund balances	1,590,917	319,805	336,011	219,216	85,690	2,551,639
Unfunded accrued pension liabilities	29,813	23,314	116,614	(53,130)	4,900	121,511
Accrued Annuity Liabilities						
Retirees and beneficiaries	25,716	4,208	8,753	1,075	2,384	42,136
Members annuities & future refunds	331,040	103,366	178,833	130	18,733	632,102
Total accrued annuity liabilities	356,756	107,574	187,586	1,205	21,117	674,238
Annuity fund balances	354,563	107,012	186,485	1,684	21,012	670,756
Unfunded accrued annuity liabilities	2,193	562	1,101	(479)	105	3,482
Totals						
Actuarial Accrued Liabilities	1,977,486	450,693	640,211	167,291	111,707	3,347,388
Accrued Assets	1,945,480	426,817	522,496	220,900	106,702	3,222,395
Funded Ratio	98.4%	94.7%	81.6%	132.0%	95.5%	96.3%
Unfunded Actuarial Accrued Liabilities	\$32,006	\$23,876	\$117,715	\$(53,609)	\$5,005	\$124,993

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
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
2004	7,068	1,652	1,592	1,035	0	444	11,791
2005	5,414	1,529	1,472	973	0	432	9,820

*Retired Members & Beneficiaries
by Valuation Division*

June 30	General	D.O.T.	Water	Sewage	Housing	Library	Totals
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
2004	7,593	1,614	1,569	226	*	309	11,311
2005	7,592	1,623	1,643	235	*	303	11,396

* Included with General City beginning 6/30/2004.

EMPLOYER COMPUTED CONTRIBUTIONS - HISTORIC COMPARISON

Valuation Date June 30	As Percents of Valuation Payroll						
	General	D.O.T.	Water	Sewage	Housing	Library	Totals
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(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%
2004	19.75%	19.96%	31.71%	6.80%	-	20.40%	20.09%
2005#	10.35%	10.88%	20.84%	2.04%	-	11.33%	11.06%

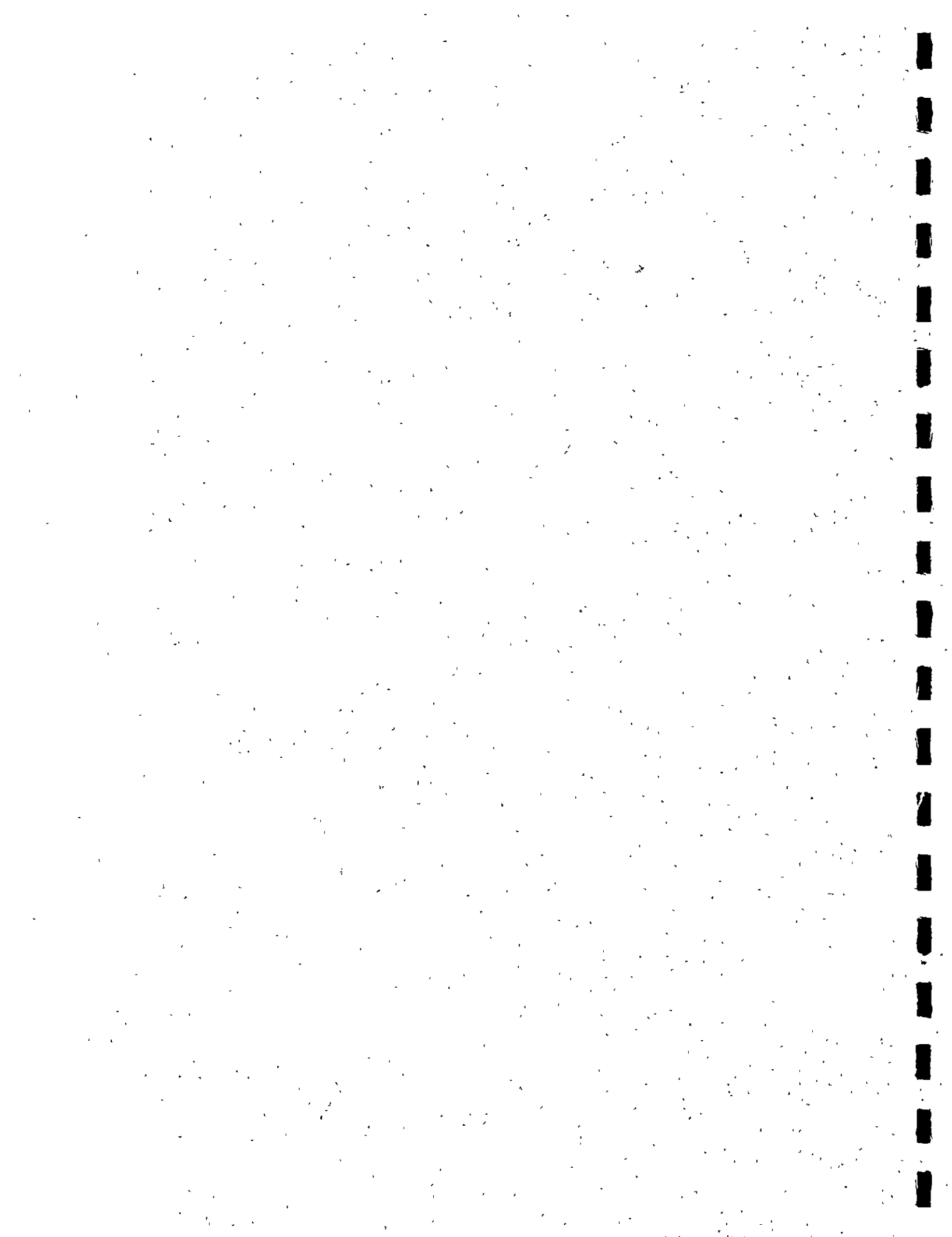
(a) After changes in actuarial assumptions.

* After plan amendments.

After issuance of POCs.

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)
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	3,250,514,916	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%
2004	2,470,243,470	3,383,926,672	913,683,202	73.0%	444,596,299	205.5%
2005@	3,222,393,861	3,347,387,652	124,993,791	96.3%	390,593,600	32.0%

- @ After POC transfer.
 * After plan amendments.
 # After changes in actuarial assumptions.

Schedule of Employer Contributions

Valuation Year Ended June 30	Fiscal Year Ended June 30	Contribution Rates as Percents of Valuation Payroll
1994	1996	10.79%
1995	1997	12.91%
1996	1998	11.58%
1997	1999	12.30%
1998	2000	13.75%
1999	2001	13.26%
2000	2002	13.37%
2001	2003	14.27%
2002	2004	19.06%
2003	2005	22.72%
2004	2006	20.09%
2005	2007	11.06%

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:

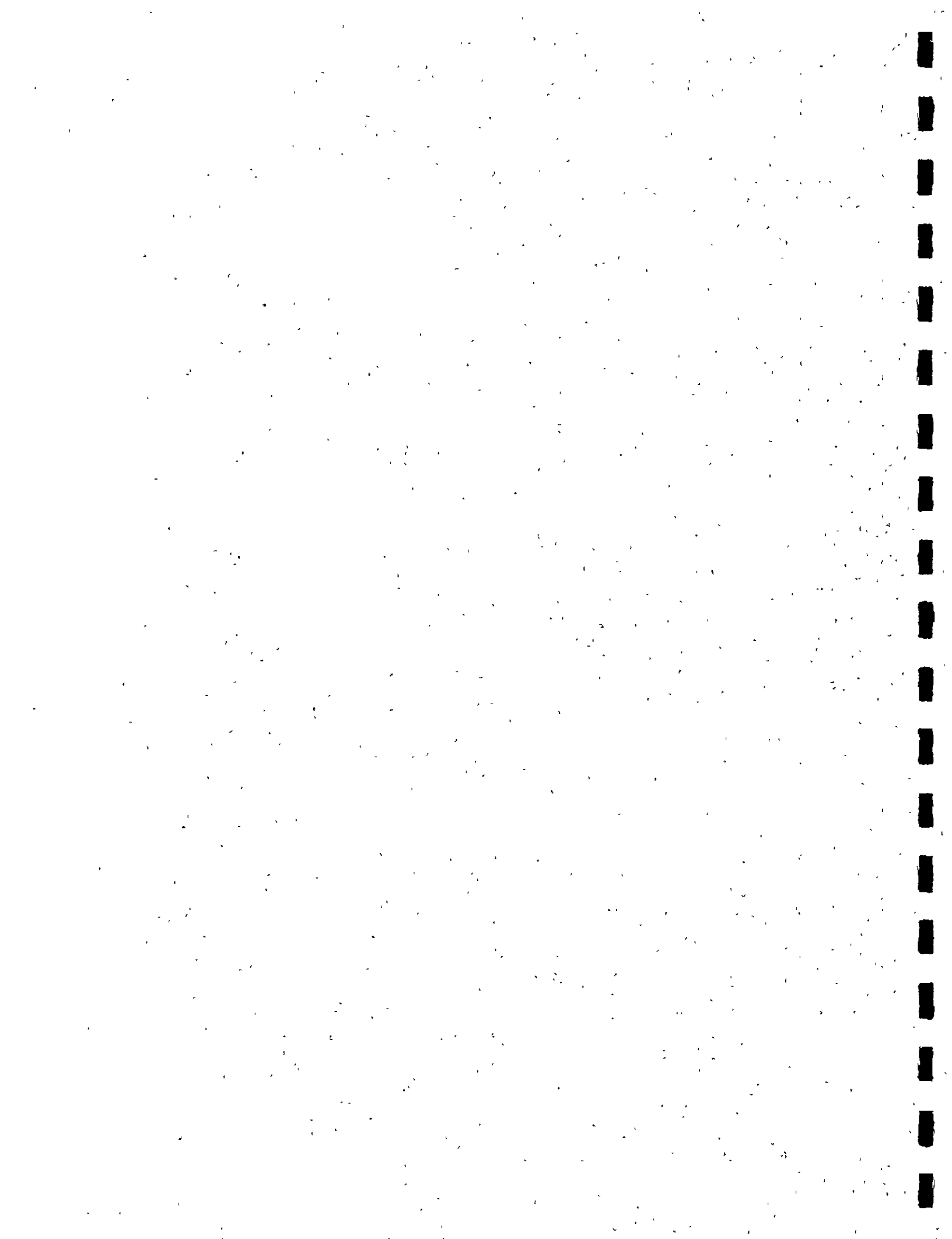
Valuation date:	June 30, 2005
Actuarial cost method	Entry Age
Amortization method	Level percent
Remaining amortization period for unfunded accrued liabilities	30 years (see page A-4)
Asset valuation method	3-year smoothed market
Actuarial assumptions:	
Investment rate of return	7.9%
Projected salary increases*	4.0% - 9.5%
*Includes inflation at	4.0%
Cost-of-living adjustments	2.25% of original pension amount at retirement.

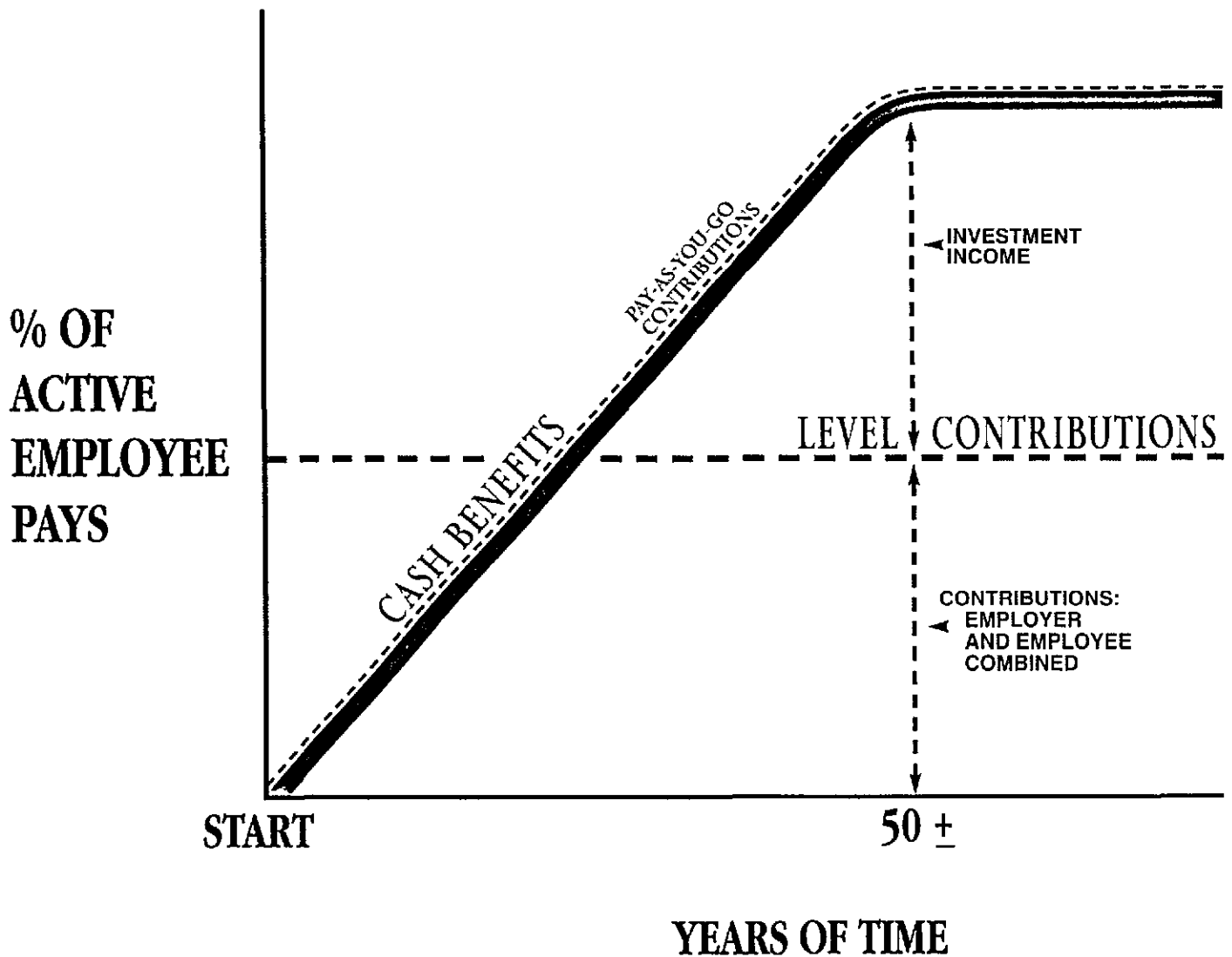
Membership of the plan consisted of the following at June 30, 2005, the date of the latest actuarial valuation:

Retirees and beneficiaries receiving benefits	11,396
Terminated plan members entitled to but not yet receiving benefits	1,109
Active plan members	9,820
Total	22,325

SECTION D

Financial Principles





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 ...

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

... minus ...

Expenses incurred in operating the program.

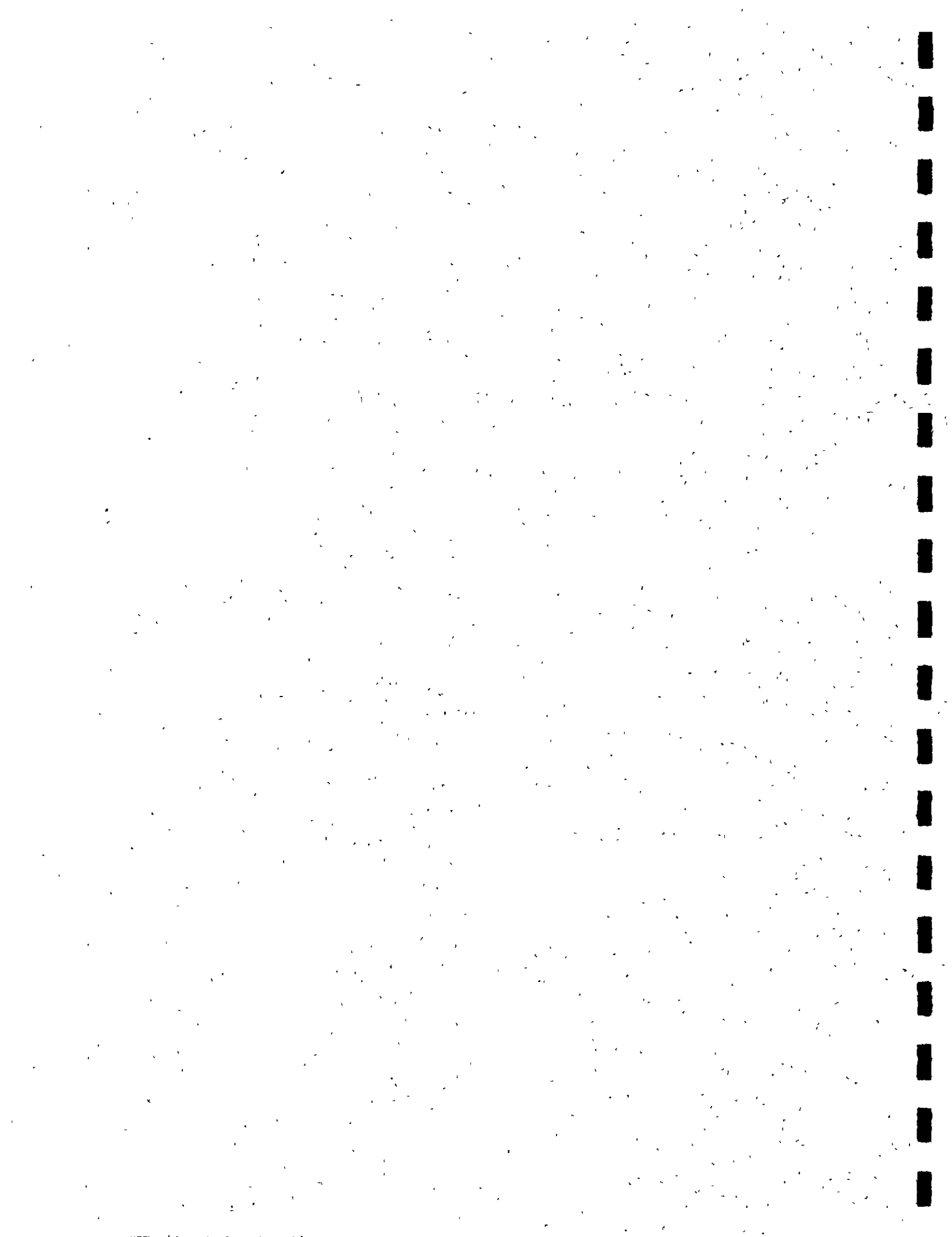
There are retirement programs designed to defer the bulk of contributions far into the future. Contributions in early years are low, but the inevitable consequence is a relentlessly increasing contribution rate – to a level greatly in excess of the level percent-of-payroll rate. *This method of financing 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 and investment expenses). The real rate of return is the portion of total investment return which is more than the inflation rate. The 7.9% total investment return rate translates to a spread of 3.9% over wage inflation and 4.4% to 4.9% over price inflation.

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 wage inflation. Wage inflation has historically exceeded price inflation by 0.5% to 1.0% a year, on average. Wage inflation of 4% suggests an underlying rate of price inflation of 3.0% to 3.5%. The 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% (150% for disabled members) of 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.

Unfunded actuarial accrued liabilities are amortized over a 30-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					
	EMS		D.O.T.		Others	
	Male	Female	Male	Female	Male	Female
50	25%	25%	50%	50%	25%	30%
51	25%	25%	50%	50%	25%	30%
52	25%	25%	50%	50%	25%	30%
53	22%	22%	50%	50%	25%	30%
54	20%	20%	50%	50%	25%	30%
55	18%	18%	50%	50%	25%	30%
56	15%	15%	50%	50%	25%	30%
57	15%	15%	50%	50%	25%	30%
58	15%	15%	50%	50%	25%	30%
59	15%	15%	50%	50%	25%	30%
60	15%	15%	50%	50%	25%	30%
61	15%	15%	50%	50%	25%	30%
62	15%	15%	50%	50%	25%	35%
63	15%	15%	40%	40%	25%	20%
64	15%	15%	40%	40%	25%	20%
65	40%	40%	30%	30%	40%	20%
66	30%	30%	30%	30%	35%	20%
67	30%	30%	30%	30%	25%	20%
68	30%	30%	30%	30%	25%	20%
69	30%	30%	30%	30%	25%	20%
70	30%	30%	100%	100%	25%	20%
71	30%	30%	100%	100%	25%	20%
72	30%	30%	100%	100%	25%	20%
73	30%	30%	100%	100%	25%	20%
74	30%	30%	100%	100%	25%	20%
75	100%	100%	100%	100%	25%	20%
76	100%	100%	100%	100%	25%	20%
77	100%	100%	100%	100%	25%	20%
78	100%	100%	100%	100%	25%	20%
79	100%	100%	100%	100%	25%	20%
80	100%	100%	100%	100%	100%	100%
Ref	537	537	535	535	536	516

**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			
		EMS	D.O.T	Others	
Men	Women				
ALL	0	0.00%	16.00%	15.00%	16.00%
	1	0.00%	12.00%	11.00%	12.00%
	2	0.00%	12.00%	9.00%	12.00%
	3	0.00%	10.00%	8.00%	10.00%
	4	0.00%	6.00%	7.00%	6.00%
25	5 & Over	6.50%	8.00%	8.00%	8.00%
30		4.00%	7.60%	7.60%	7.60%
35		2.30%	5.56%	5.56%	5.56%
40		0.90%	4.26%	4.26%	4.26%
45		0.50%	3.69%	3.69%	3.69%
50		0.50%	3.50%	3.50%	3.50%
55		0.00%	3.50%	3.50%	3.50%
60		0.00%	3.50%	3.50%	3.50%
Ref		1	209	205	209
		351	212	212	212

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

Sample Ages	% of Active Members Becoming Dying Within Next Year			
	Non-Duty Death		Duty Death	
	Men	Women	Men	Women
25	0.03%	0.02%	0.01%	0.01%
30	0.05%	0.03%	0.02%	0.01%
35	0.06%	0.04%	0.02%	0.01%
40	0.09%	0.05%	0.03%	0.02%
45	0.16%	0.08%	0.05%	0.03%
50	0.29%	0.12%	0.10%	0.04%
55	0.46%	0.19%	0.15%	0.06%
60	0.69%	0.32%	0.23%	0.11%
Ref	30 x 0.75	31 x 0.75	30 x 0.25	31 x 0.25

MISCELLANEOUS AND TECHNICAL ASSUMPTIONS

Benefit Service	Exact Fractional service is used to determine the amount of benefit payable.
Decrement Operation	Disability and mortality decrements do not operate during the first 5 years of service. Disability and withdrawal also do not operate during retirement eligibility.
Decrement Timing	Decrements of all types are assumed to occur mid-year.
Eligibility Testing	Eligibility for benefits is determined based upon the age nearest birthday and exact fractional service on the date the decrement is assumed to occur.
Forfeitures	For vested separations from service, it is assumed that 0% of members separating will withdraw their contributions and forfeit an employer financed benefit.
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.
Liability Adjustments	Retired life liabilities were increased by 4.5% to adjust for incomplete and missing data.
Marriage Assumption	100% of males and 100% of females are assumed to be married for purposes of death-in-service benefits. Male spouses are assumed to be three years older than female spouses for active member valuation purposes.
Normal Form of Benefit	Straight life is the normal form of benefit.
Pay Increase Timing	Beginning of (Fiscal) year. This is equivalent to assuming that reported pays represent amounts paid to members during the year ended on the valuation date.
Service Credit Accruals	It is assumed that members accrue one year of service credit per year.

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.