

***City of Wichita Police and Fire  
Retirement System***

***Actuarial Valuation Report  
as of December 31, 2001***

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February 28, 2002

The Board of Trustees  
City of Wichita Police and Fire Retirement System  
City Hall, 12<sup>th</sup> Floor  
Wichita, KS 67202

Dear Members of the Board:

At your request, we have conducted an annual actuarial valuation of the City of Wichita Police and Fire Retirement System as of December 31, 2001. The results of the valuation are contained in the following report. There was no change in plan provisions or actuarial assumptions from the prior valuation. This is the first valuation report issued by Milliman USA. There were minor differences in the takeover work completed by Milliman. These differences do not materially impact the comparability of the results from this report and the prior report.

In preparing our report, we relied, without audit, on information (some oral and some written) supplied by the System's staff. This information includes, but is not limited to, statutory provisions, member data and financial information.

On the basis of the foregoing, we hereby certify that, to the best of our knowledge and belief, this report is complete and accurate and has been prepared in accordance with generally recognized and accepted principles and practices which are consistent with the principles prescribed by the Actuarial Standards Board (ASB) and the Code of Professional Conduct and Qualification Standards for Public Statements of Actuarial Opinion of the American Academy of Actuaries.

We hereby further certify that all costs, liabilities, rates of interest and other factors for the System have been determined on the basis of actuarial assumptions and methods which are internally consistent, individually reasonable (taking into account the experience of the Plan and reasonable expectations of future experience) and which, in combination, offer our best estimate of anticipated experience under the Plan. Nevertheless, the emerging costs will vary from those presented in this report to the extent actual experience differs from that projected by the actuarial assumptions.



Actuarial computations presented in this report are for purposes of determining the actuarial contribution rates for funding the System. Determinations for purposes other than this may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

We would like to express our appreciation to Robert Lancaster, Pension Manager, and to members of his staff, who gave substantial assistance in supplying the data on which this report is based.

We herewith submit the following report and look forward to discussing it with you.

Respectfully Submitted,

MILLIMAN USA, Inc.

I, Patrice A. Beckham, F.S.A. am a member of the American Academy of Actuaries and a Fellow of the Society of Actuaries, and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained herein.

Patrice A. Beckham, F.S.A.  
Principal

I, Gregg Rueschhoff, A.S.A. am a member of the American Academy of Actuaries and an Associate of the Society of Actuaries, and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained herein.

Gregg Rueschhoff, A.S.A.  
Consulting Actuary

**SECTION 1**  
**BOARD SUMMARY**

**OVERVIEW**

This report presents the results of the December 31, 2001 actuarial valuation of the Wichita Police and Fire Retirement System (WPF). The primary purposes of performing a valuation are to:

- determine the employer contribution rates required to fund the System on an actuarial basis,
- disclose asset and liability measures as of the valuation date,
- determine the experience of the System since the last valuation date, and
- analyze and report on trends in System contributions, assets, and liabilities over the past several years.

The valuation results provide a “snapshot” view of the System’s financial condition on December 31, 2001. The surplus of the actuarial value of assets over actuarial liability decreased by \$8 million, due to experience during the year. A detailed analysis of the change in the unfunded actuarial liability from December 31, 2000 to December 31, 2001 is shown on page 3.

**ASSETS**

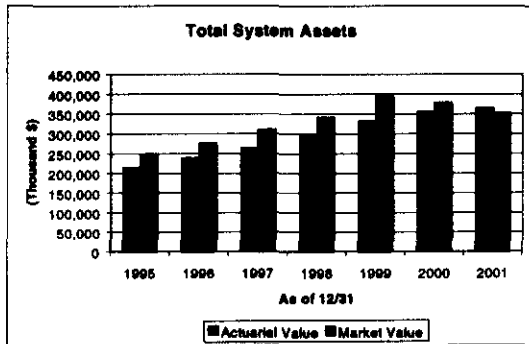
As of December 31, 2001, the System had total funds, when measured on a market value basis, of \$351.1 million. This was a decrease of \$26.3 million from the December 31, 2000 figure of \$377.4 million. The components of the change in the market value of assets for the Retirement System (in millions) are set forth below:

	(Dollars in \$M)
Assets, December 31, 2000	\$377.4
• City and Member Contributions	7.8
• Benefit Payments and Refunds	(15.5)
• Investment Income (net of expenses)	(18.6)
Assets, December 31, 2001	\$351.1

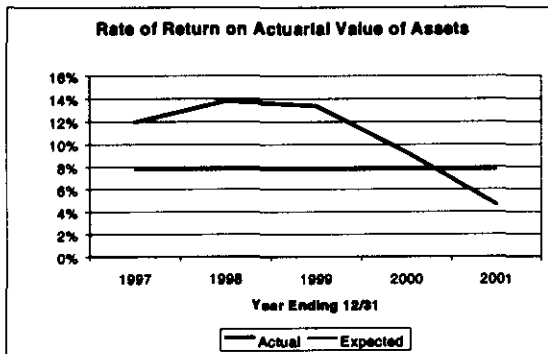
The market value of assets is not used directly in the calculation of the City's contribution rates. An asset valuation method is used to smooth the effect of market fluctuations. The change in the actuarial value of assets from December 31, 2000 to December 31, 2001 is shown below:

	Actuarial Value (\$M)
Assets, December 31, 2000	\$354.0
• City and Member Contributions	7.8
• Benefit Payments and Refunds	(15.5)
• Investment Income (net of expenses)	16.2
Assets, December 31, 2001	\$362.5

The annualized dollar-weighted rate of return, measured on the actuarial value of assets, was 4.6% and, measured on the market value of assets, was a negative 5.0%. The actuarial value of assets as of December 31, 2001 was \$362.5 million, which represents an actuarial loss of \$11 million.



*Due to rates of return in excess of the actuarial assumption, the market value has generally exceeded the actuarial value of assets. The market experience in 2001 eliminated the excess of market value over the actuarial value of assets.*



*In general, the rate of return on the actuarial value of assets has exceeded the assumed rate of 7.75%, resulting in experience gains for the Retirement System.*

## LIABILITIES

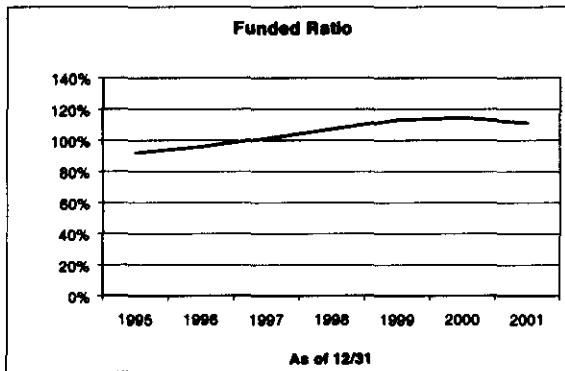
The actuarial liability is that portion of the present value of future benefits that will not be paid by future employer normal costs or member contributions. The difference between this liability and asset values at the same date is referred to as the unfunded actuarial liability (UAL), or (surplus) if the asset value exceeds the actuarial liability. The unfunded actuarial liability will be reduced if the employer's contributions exceed the employer's normal cost for the year, after allowing for interest earned on the previous balance of the unfunded actuarial liability. Benefit improvements, experience gains and losses, and changes in actuarial assumptions and procedures will also impact the total actuarial liability and the unfunded portion thereof. Between December 31, 2000 and December 31, 2001 the change in the unfunded actuarial liability for the System was as follows (in millions):

	\$(M)
UAL per GRS Report, December 31, 2000	(45.2)
Adjustment For Change in Actuary	(3.3)
UAL per Milliman, December 31, 2000	(48.5)
+ Normal cost for year	8.9
+ Expected investment return for year	(3.1)
- Actual contributions (member + city)	7.7
- Interest on contribution	0.3
= Expected Unfunded Actuarial Liability at end of year	(50.7)
+ Change from amendments	0
+ Change from assumption changes	0
= Expected UAL after changes	(50.7)
Actual UAL at year end	(37.2)
Experience gain/(loss) (Expected UAL – Actual UAL)	(13.5)

The experience gain or loss for the 2001 plan year of \$13.5 million reflects the combined impact of an actuarial loss of \$11 million on System assets (actuarial value) and an actuarial loss on System liabilities. Despite favorable experience due to a lower number of retirements than expected, there was an overall liability loss, largely due to salary increases in excess of those anticipated. The average salary increased 8.5% from the 2000 to the 2001 valuation.

Analysis of the dollar amounts of actuarial value of assets, actuarial liability, or unfunded actuarial liability can be misleading. Another way to evaluate the unfunded actuarial liability and the progress made in its funding is to track the funded status, the ratio of the actuarial value of assets to the actuarial liability. This information for recent years is shown below (in millions). Historical information is shown in the graph following the chart.

	12/31/98	12/31/99	12/31/00	12/31/01
Actuarial Liability (\$M)	274.9	291.6	308.9	325.3
Actuarial Value of Assets (\$M)	295.6	330.1	354.0	362.5
Funded Ratio (Assets/Liability)	107.5%	113.2%	114.6%	111.4%



*The funded status of the Retirement System has continually improved until this year. Poor investment experience impacted the funded ratio for 2001.*

## CONTRIBUTION RATES

Generally, contributions to the System consist of:

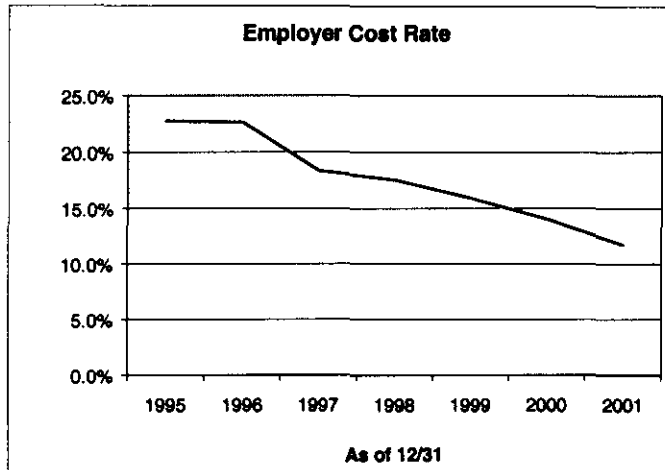
- a “normal cost” for the portion of projected liabilities allocated to service of members during the year following the valuation date, by the actuarial cost method,
- an “unfunded actuarial liability or (surplus) contribution” for the excess of the portion of projected liabilities allocated to service to date over the actuarial value of assets.

Contribution rates are computed with the objective of developing costs that are level as a percentage of covered payroll. The contribution rate for fiscal year 2003 is computed based on the December 31, 2001 actuarial valuation.

As of December 31, 2001, the actuarial liability is fully covered by valuation assets. State statutes provide that any unfunded actuarial liability for active members in municipal police and fire retirement systems is to be amortized over a period of 40 years, beginning January 1, 1978 (16 years remaining as of December 31, 2001). Amortization of the surplus of actuarial assets over the actuarial liability results in a temporary amortization credit. A range of contributions is developed based on (1) contributing the full normal cost rate or (2) applying the amortization credit. This valuation indicates the range of City contributions to be 10.0% to 16.8%.



A summary of the City's historical contribution rate for the system is shown below:



### COMMENTS

The System remains in a very well funded position as of December 31, 2001 despite negative investment performance on the market value of assets. Due to the use of an asset smoothing methodology, the rate of return on the actuarial value of assets was +4.6%. For the first time in many years the actuarial value of assets exceeds the market value. However, the funded ratio remains well above 100% indicating a strong funded status. In addition to the actuarial loss on assets, there was a liability loss. Actual salary increases during 2001 were higher than anticipated, which generated an actuarial loss. This was somewhat offset by favorable retirement experience, but in aggregate there was still an actuarial loss.

Investment experience in the next few years will have a significant impact on the Plan's funded status since the market value of assets is already below the actuarial value of assets (there is no "reserve" to help absorb unfavorable experience). If there is interest or concern about how long the surplus of assets over actuarial liability might last, given different investment scenarios, we would recommend a Simulation Model be developed to study the potential funding issues over the next five to ten years.

We conclude this Board Summary with the following exhibit which compares the principal results of the current and prior actuarial valuations.

## SUMMARY OF PRINCIPAL RESULTS

1. PARTICIPANT DATA	12/31/01 Valuation	12/31/00 Valuation	% Change
Number of:			
Active Members			
Police	605	598	1.2 %
Fire	396	395	0.3 %
Total	<u>1,001</u>	<u>993</u>	0.8 %
Retired Members and Beneficiaries	831	824	0.8 %
Inactive Members	15	13	15.4 %
Total Members	1,847	1,830	0.9 %
Projected Annual Salaries of Active Members			
Police	\$ 25,342,871	\$ 22,926,085	10.5 %
Fire	<u>16,943,629</u>	<u>15,686,738</u>	8.0 %
Total	42,286,500	38,612,823	9.5 %
Annual Retirement Payments for Retired Members and Beneficiaries	\$ 15,366,507	\$ 14,885,796	3.2 %
2. ASSETS AND LIABILITIES			
Total Actuarial Liability	\$ 325,335,021	\$ 308,893,891	5.3 %
Assets for Valuation Purposes	362,493,060	354,044,311	2.4 %
Unfunded Actuarial Liability/(Surplus)	(37,158,039)	(45,150,420)	(17.7) %
3. EMPLOYER CONTRIBUTION RATES AS A PERCENT OF PAYROLL			
Normal Cost	23.9 %	23.9 %	0.0 %
Member Financed	7.1 %	7.1 %	0.0 %
Employer Normal Cost	16.8 %	16.8 %	0.0 %
Amortization of Unfunded Actuarial	(6.8) %	(8.7) %	(21.8) %
Range of Employer Contribution Rates			
Full Normal Cost Rate	16.8 %	16.8 %	0.0 %
With Amortization Credit	10.0 %	8.1 %	23.5 %

## SECTION 2

### SCOPE OF THE REPORT

This report presents the actuarial valuation of the City of Wichita Police and Fire Retirement System (WPF) as of December 31, 2001. This valuation represents Milliman USA's first valuation report for the System. In assuming the responsibility for the actuarial work of a new client, there are normally differences that require reconciliation between our work and that of our predecessor. We were unable to obtain the necessary information from the prior actuary to fully reconcile our differences in the December 31, 2000 valuation results. In the aggregate (all plans), our replication valuation was within reasonable limits of the prior actuary's December 31, 2000 valuation and therefore results from the 2001 valuation are directly comparable to those in the 2000 report. This valuation was prepared at the request of the System's Board of Trustees.

Please pay particular attention to our cover letter, where the guidelines employed in the preparation of this report are outlined. We also comment on the sources and reliability of both the data and the actuarial assumptions upon which our findings are based. Those comments are the basis for our certification that this report is complete and accurate to the best of our knowledge and belief.

A summary of the findings resulting from this valuation is presented in the previous section. Section 3 describes the assets and investment experience of the System. Sections 4 and 5 describe how the obligations of the System are to be met under the actuarial cost method in use. Section 6 includes the information required for the financial reporting standards established by the Governmental Accounting Standards Board (GASB).

This report includes several appendices:

- Appendix A Schedules of valuation data classified by various categories of members.
- Appendix B A summary of the current benefit structure, as determined by the provisions of governing law on December 31, 2001.
- Appendix C A summary of the actuarial methods and assumptions used to estimate liabilities and determine contribution rates.
- Appendix D A glossary of actuarial terms.

## SECTION 3

### ASSETS

In many respects, an actuarial valuation can be thought of as an inventory process. The inventory is taken as of the actuarial valuation date, which for this valuation is December 31, 2001. On that date, the assets available for the payment of benefits are appraised. The assets are compared with the liabilities of the System, which are generally in excess of assets. The actuarial process then leads to a method of determining the contributions needed by members and the employer in the future to balance the System assets and liabilities.

#### **Market Value of Assets**

The current market value represents the "snapshot" or "cash-out" value of System assets as of the valuation date. In addition, market values of assets provide a basis for measuring investment performance from time to time. At December 31, 2001 the market value of assets for the System was \$351 million. Table 1 is a comparison, at market values, of System assets as of December 31, 2001, and December 31, 2000, in total and by investment category. Table 2 summarizes the change in the market value of assets from December 31, 2000 to December 31, 2001.

#### **Actuarial Value of Assets**

Neither the market value of assets, representing a "cash-out" value of System assets, nor the book values of assets, representing the cost of investments, may be the best measure of the System's ongoing ability to meet its obligations.

To arrive at a suitable value for the actuarial valuation, a technique for determining the actuarial value of assets is used which dampens swings in the market value while still indirectly recognizing market values. This methodology smooths market experience over four years. Table 3 shows the development of the actuarial value of assets (AVA) as of December 31, 2001, which was \$362 million.

In prior valuations, the AVA has been significantly lower than the market value. Due to the negative rate of return on the market value of assets from December 31, 2000 to December 31, 2001, the actuarial value of assets as of the valuation date is now greater than the market value.

**TABLE 1**  
**WICHITA POLICE AND FIRE RETIREMENT SYSTEM**  
**ANALYSIS OF NET ASSETS AT MARKET VALUE**

	As of December 31, 2001		As of December 31, 2000	
	<u>Amount</u> <u>(\$ Millions)</u>	<u>% of</u> <u>Total</u>	<u>Amount</u> <u>(\$ Millions)</u>	<u>% of</u> <u>Total</u>
Cash & Equivalents	\$ 9.9	2.8 %	\$ 11.3	3.0 %
Government Securities	16.1	4.6	20.4	5.4
Corporate debt	33.3	9.5	38.4	10.2
Mortgage Backed Securities	15.0	4.3	20.3	5.4
Pooled Funds	123.5	35.2	134.2	35.5
Domestic Equity	150.2	42.8	144.5	38.3
International Equity	38.4	10.9	33.8	9.0
Receivables	3.6	1.0	6.0	1.6
Liabilities	<u>(38.9)</u>	<u>(11.1)</u>	<u>(31.5)</u>	<u>(8.4)</u>
<b>Total</b>	<b>\$ 351.1</b>	<b>100.0 %</b>	<b>\$ 377.4</b>	<b>100.0 %</b>

**TABLE 2****WICHITA POLICE AND FIRE RETIREMENT SYSTEM****SUMMARY OF CHANGES IN NET ASSETS  
DURING YEAR ENDED DECEMBER 31, 2001**

(Market Value)

1. Market Value of Assets as of December 31, 2000	\$	377,390,027
2. Contributions:		
a. Members	\$	2,926,844
b. City		4,796,863
c. Other		52,018
d. Total	\$	<u>7,775,725</u>
[2(a) + 2(b) + 2(c)]		
3. Investment Income		
a. Ordinary	\$	7,749,761
b. Realized Gain (Loss)		(6,498,430)
c. Unrealized Appreciation (Depreciation)		(16,888,252)
d. Total	\$	<u>(15,636,921)</u>
[3(a) + 3(b) + 3(c)]		
4. Expenditures		
a. Refunds of Member Contributions	\$	419,984
b. Benefits Paid		15,108,346
c. Administrative Expenses		2,900,352
d. Total	\$	<u>18,428,682</u>
[4(a) + 4(b) + 4(c)]		
5. Net Change		
[2(d) + 3(d) - 4(d)]	\$	(26,289,878)
6. Market Value of Assets as of December 31, 2001	\$	351,100,149
(1) + (5)		

TABLE 3

WICHITA POLICE AND FIRE RETIREMENT SYSTEM

DERIVATION OF FUNDING VALUE  
OF RETIREMENT SYSTEM ASSETS

	Valuation as of		
	<u>12/31/1999</u>	<u>12/31/2000</u>	<u>12/31/2001</u>
(1) Book Value (Beginning of Year)	\$257,468,978	\$330,394,986	\$356,274,101
(2) Market Value (Beginning of Year)	329,692,493	386,648,379	366,771,688
(3) Funding (Actuarial) Value (Beginning of Year)	285,282,853	323,315,040	343,425,972
(4) Unrealized Apprec. (Deprec.)=(2) - (1)	72,223,515	56,253,393	10,497,587
(5) Net Realized Gains (Losses)	69,683,245	31,193,030	(6,498,430)
(6) Change in Unrealized Apprec. (Deprec.) = (13) - (4)	(15,970,122)	(45,755,806)	(16,887,978)
(7) Capital Value Change for Year = (5) + (6)	53,713,123	(14,562,776)	(23,386,408)
(8a) From Current Year = .25 x (7)	13,428,281	(3,640,694)	(5,846,602)
(8b) From One Year Prior	7,411,236	13,428,281	(3,640,694)
(8c) From Two Years Prior	8,226,025	7,411,236	13,428,281
(8d) From Three Years Prior	5,723,882	8,226,024	7,411,235
(9) Total Cap. Val. Change Recogn. = (8a) + (8b) + (8c) + (8d)	34,789,422	25,424,847	11,352,220
(9a) Cap. Val. Changes Remaining.	63,333,339	23,345,716	(11,392,913)
(10) Book Value (End of Year)	\$330,394,986	\$356,274,101	\$348,321,196
(11) Market Value (End of Year)	386,648,379	366,771,688	341,930,805
(12) Funding (Actuarial) Value = (3) + (11) - (2) - (7) + (9)	323,315,037	343,425,972	353,323,716
(13) Unrealized Apprec. (Deprec) = (11) - (10)	56,253,393	10,497,587	(6,390,391)
(14) Cash	8,475,788	10,943,585	9,883,943
(15) Accounts Recv. & Accr. Interest	1,003,969	5,999,061	3,571,254
(16) Accounts Payable	2,722,928	6,324,307	4,285,853
<b>Total Funding (Actuarial) Value of Assets</b> (17) = (12) + (14) + (15) - (16)	<b>330,071,866</b>	<b>354,044,311</b>	<b>362,493,060</b>

## SECTION 4

### SYSTEM LIABILITIES

In the previous section, an actuarial valuation was compared with an inventory process, and an analysis was given of the inventory of assets of the System as of the valuation date, December 31, 2001. In this section, the discussion will focus on the commitments of the System, which are referred to as its liabilities.

Table 4 contains an analysis of the actuarial present value of all future benefits (PVFB) for contributing members, inactive members, retirees and their beneficiaries.

The liabilities summarized in Table 4 include the actuarial present value of all future benefits expected to be paid with respect to each member. For an active member, this value includes the measurement of both benefits already earned and future benefits to be earned. For all members, active and retired, the value extends over benefits earnable and payable for the rest of their lives and for the lives of the surviving beneficiaries.

All liabilities reflect the benefit provisions in place as of December 31, 2001.

#### **Actuarial Liability**

A fundamental principle in financing the liabilities of a retirement program is that the cost of its benefits should be related to the period in which benefits are earned, rather than to the period of benefit distribution. An actuarial cost method is a mathematical technique that allocates the present value of future benefits into annual costs. In order to do this allocation, it is necessary for the funding method to "breakdown" the present value of future benefits into two components:

- (1) that which is attributable to the past and
- (2) that which is attributable to the future.

Actuarial terminology calls the part attributable to the past the "past service liability" or the "actuarial liability". The portion allocated to the future is known as the present value of future normal costs, with the specific piece of it allocated to the current year being called the "normal cost". Table 5 contains the calculation of actuarial liability for the System. The Entry Age Normal actuarial cost method is used to develop the actuarial liability.



**TABLE 4****WICHITA POLICE AND FIRE RETIREMENT SYSTEM****PRESENT VALUE OF FUTURE BENEFITS (PVFB)  
AS OF DECEMBER 31, 2001**

	<b>Plans</b>		
	<b><u>A and B</u></b>	<b><u>Plan C</u></b>	<b><u>Total</u></b>
<b>1. Active employees</b>			
a. Retirement Benefit	\$ 45,219,075	\$ 171,471,404	\$ 216,690,479
b. Pre-Retirement Death Benefit	301,912	6,985,200	7,287,112
c. Withdrawal Benefit	-	6,333,007	6,333,007
d. Disability Benefit	-	24,077,280	24,077,280
e. Total	\$ 45,520,987	\$ 208,866,891	\$ 254,387,878
<b>2. Inactive Vested Members</b>	\$ 61,775	\$ 1,867,576	\$ 1,929,351
<b>3. Inactive Nonvested Members</b>	\$ 0	\$ 0	\$ 0
<b>4. In Pay Members</b>			
a. Retirees	\$ 134,223,279	\$ 3,082,085	\$ 137,305,365
b. Disabled Members	15,069,386	9,863,530	24,932,916
c. Beneficiaries	16,850,333	2,016,659	18,866,992
d. Total	\$ 166,142,998	\$ 14,962,274	\$ 181,105,272
<b>5. Total PVFB</b>			
(1e) + (2) + (3) + (4d)	\$ 211,725,760	\$ 225,696,741	\$ 437,422,501

**TABLE 5**

**WICHITA POLICE AND FIRE RETIREMENT SYSTEM**

**ACTUARIAL LIABILITY  
AS OF DECEMBER 31, 2001**

	<b>Plans</b>		
	<b><u>A and B</u></b>	<b><u>Plan C</u></b>	<b><u>Total</u></b>
<b>1. Active employees</b>			
a. Present Value of Future Benefits	\$ 45,520,987	\$ 208,866,891	\$ 254,387,878
b. Present Value of Future Normal Costs	5,611,431	106,476,049	112,087,480
c. Actuarial Liability (1a) - (1b)	39,909,556	102,390,842	142,300,398
<b>2. Inactive Vested Members</b>	\$ 61,775	\$ 1,867,576	\$ 1,929,351
<b>3. Inactive Nonvested Members</b>	\$ 0	\$ 0	\$ 0
<b>4. In Pay Members</b>			
a. Retirees	\$ 134,223,279	\$ 3,082,085	\$ 137,305,365
b. Disabled Members	15,069,386	9,863,530	24,932,916
c. Beneficiaries	16,850,333	2,016,659	18,866,992
d. Total	<u>\$ 166,142,998</u>	<u>\$ 14,962,274</u>	<u>\$ 181,105,272</u>
<b>5. Total Actuarial Liability     (1c) + (2) + (3) + (4d)</b>	<b>\$ 206,114,328</b>	<b>\$ 119,220,692</b>	<b>\$ 325,335,021</b>

## SECTION 5

### EMPLOYER CONTRIBUTIONS

The previous two sections were devoted to a discussion of the assets and liabilities of the System. A comparison of Tables 3 and 4 indicates that current assets fall short of meeting the present value of future benefits (total liability). This is expected in all but a completely closed fund, where no further contributions are anticipated. In an active system, there will almost always be a difference between the actuarial value of assets and total liabilities. This deficiency has to be made up by future contributions and investment returns. An actuarial valuation sets out a schedule of future contributions that will deal with this deficiency in an orderly fashion.

The method used to determine the incidence of the contributions in various years is called the actuarial cost method. Under an actuarial cost method the contributions required to meet the difference between current assets and current liabilities are allocated each year between two elements: (1) the normal cost rate and (2) the unfunded actuarial liability contribution rate.

The term "fully funded" is often applied to a system in which contributions at the normal cost rate are sufficient to pay for the benefits of existing employees as well as for those of new employees. More often than not, systems are not fully funded, either because of past benefit improvements that have not been completely funded or because of actuarial deficiencies that have occurred because experience has not been as favorable as anticipated. Under these circumstances, an unfunded actuarial liability (UAL) exists. Likewise, when the actuarial value of assets is greater than the actuarial liability, a surplus exists.

#### Description of Contribution Rate Components

The individual Entry Age Normal (EAN) actuarial cost method is used for the valuation. Under that method, the normal cost for each year from entry age to assumed exit age is a constant percentage of the member's year by year projected compensation. The portion of the present value of future benefits not provided by the present value of future normal costs is the actuarial liability. The unfunded actuarial liability/(surplus) represents the difference between the actuarial liability and the actuarial value of assets as of the valuation date. The unfunded actuarial liability is calculated each year and reflects experience gains/losses.

In general, contributions are computed in accordance with a level percent-of-payroll funding objective. The contribution rates based on this December 31, 2001 actuarial valuation will be used to determine employer contribution rates to the City of Wichita Police and Fire Retirement System for fiscal year 2003. In this context, the term "contribution rate" means the percentage, which is applied to a particular active member payroll to determine the actual employer contribution amount (i.e., in dollars) for the group.

As of December 31, 2001, the actuarial liability was fully covered by the valuation assets (in fact, a surplus of \$37 million exists). State statutes require that any unfunded actuarial liability for active members in municipal police and fire retirement systems be amortized over a 40 year period commencing January 1, 1978. The amortization of the existing surplus would result in a temporary amortization credit, thereby reducing the employer contribution.

### **Contribution Rate Summary**

In Table 6 the amortization credit related to the surplus assets, as of December 31, 2001, is developed. Table 7 develops the normal cost rate for the System. The derivation of the range of contribution rates for the City is shown in Table 8. Table 9 shows the historical summary of the City's contribution rates. Table 10 develops the experience gains/(loss) for the year ended December 31, 2001.

The rates shown in this report, which are based on the actuarial assumptions and cost methods described in Appendix C.

**TABLE 6**

**WICHITA POLICE AND FIRE RETIREMENT SYSTEM**

**DECEMBER 31, 2001 VALUATION**

**DERIVATION OF UNFUNDED ACTUARIAL LIABILITY CONTRIBUTION RATE**

1. Actuarial Accrued Liability	\$	325,335,021
2. Actuarial Value of Assets	\$	362,493,060
3. Unfunded Actuarial Liability/(Surplus Assets)	\$	(37,158,039)
4. Payment to Amortize Unfunded Actuarial Liability/(Surplus) Over 16 Years *	\$	(2,954,220)
5. Total Projected Payroll for the Year	\$	43,279,153
6. Amortization Payment as a Percent of Payroll		(6.8) %

\* Pursuant to State statutes, the unfunded actuarial liability for active members is to be amortized over a period of 40 years from January 1, 1978 (16 years remaining as of December 31, 2001).

**TABLE 7**

**WICHITA POLICE AND FIRE RETIREMENT SYSTEM**

**DERIVATION OF NORMAL COST RATE**

Normal Cost at December 31, 2001	
· Service pensions	\$7,021,333
Disability pensions	1,762,728
Survivor pensions	409,673
Termination benefits	
- Deferred service pensions	178,447
- Return of member contributions	255,300
Total Normal Cost	<u>\$9,627,481</u>
Normal Cost Adjusted to Mid-Year	\$9,993,585
Projected Payroll for Members Under Certain Retirement Age	\$41,854,059
Total Normal Cost Rate for Year	23.9%

**TABLE 8**

**WICHITA POLICE AND FIRE RETIREMENT SYSTEM  
EMPLOYER CONTRIBUTION RATES  
FOR FISCAL YEAR  
COMMENCING IN 2003**

<b>Contributions for</b>	<b>Range of Contribution Requirements as % of Payroll</b>	
Normal Cost		
Service pensions	17.5 %	17.5 %
Disability pensions	4.4 %	4.4 %
Survivor pensions	1.0 %	1.0 %
Termination benefits		
- Deferred service pensions	0.4 %	0.4 %
- Return of member contributions	0.6 %	0.6 %
Total Normal Cost	23.9 %	23.9 %
 Unfunded Actuarial Accrued Liability		
Retired members and beneficiaries <sup>(1)</sup>	0.0 %	0.0 %
Active and former members <sup>(2)</sup>	0.0 %	(6.8) %
Total UAAL Contribution	0.0 %	(6.8) %
 Total Contribution Requirement		
Member Financed Portion <sup>(3)</sup>	7.1 %	7.1 %
City Financed Portion	16.8 %	10.0 %
Total	23.9 %	17.1 %

(1) Actuarial accrued liability for retired members and beneficiaries was fully funded as of December 31, 2001.

(2) The excess of the actuarial value of assets over actuarial liabilities financed as a level percent of active member payroll over a period of 16 years from January 1, 2002 (per State statutes), produces a temporary amortization credit of 6.8% of payroll.

(3) The weighted average of member contribution rates: 8.0% for Plan A, 6.0% for Plan B, and 7.0% for Plan C.

**TABLE 9**

**WICHITA POLICE AND FIRE RETIREMENT SYSTEM  
HISTORICAL SUMMARY OF CITY CONTRIBUTION RATES**

<b>Valuation Date</b>	<b>Fiscal Year</b>	<b>City Contributions as Percents of Active Member Pensionable Payroll</b>	
		<b>Funding Objective</b>	<b>Amortization Credit</b>
11/30/90	1992	23.4%	-%
11/30/91	1993	22.9	-
11/30/92	1994	23.3	-
11/30/93	1995	22.7	-
11/30/94	1996	22.6	-
12/31/95	1997	18.3*	-
12/31/96	1998	17.5	-
12/31/97	1999	15.2 – 15.9	(0.7)
12/31/98	2000	12.3 – 15.9	(3.6)
12/31/99#	2001	9.6 – 16.8	(7.2)
12/31/00	2002	8.2 – 16.8	(8.7)
12/31/01	2003	10.0 – 16.8	(6.8)

\*Reflects allocation of assets to fully fund retired life liabilities.

# Includes benefit provision and assumption changes and 1% decrease in member contribution rate.



**TABLE 10**

**WICHITA POLICE AND FIRE RETIREMENT SYSTEM  
DERIVATION OF SYSTEM EXPERIENCE GAIN/(LOSS)**

	Thousands of Dollars
	<u>Year Ended</u>
	<u>12/31/01</u>
(1) UAL* at start of year (per GRS)	(45.2)
(2) + Adjustment for change in Actuary	(3.3)
(3) = UAL at start of year (Milliman)	(48.5)
(4) + Normal cost for year	8.9
(5) + Assumed investment return on (3) & (4)	(3.1)
(6) - Actual contributions (member + City)	7.7
(7) - Assumed investment return on (6)	0.3
(8) = Expected UAL at end of year	(50.7)
(9) + Increase (decr.) from amendments	0
(10) + Increase (decr.) from assumption changes	0
(11) = Expected UAL after changes	(50.7)
(12) = Actual UAL at year end	(37.2)
(13) = Experience gain (loss) (11) – (12)	(13.5)
(14) = Percent of beginning of year AL	4.4%

\* *Unfunded Actuarial Liability*

## SECTION 6

### ACCOUNTING INFORMATION

The actuarial accrued liability is a measure intended to help the reader assess (i) a retirement system's funded status on a going concern basis, and (ii) progress being made toward accumulating the assets needed to pay benefits as due. Allocation of the actuarial present value of projected benefits between past and future service was based on service using the individual entry-age actuarial cost method. Assumptions, including projected pay increases, were the same as used to determine the System's level percent of payroll annual required contribution between entry-age and assumed exit age. Entry-age was established by subtracting credited service from current age on the valuation date.

The preceding methods comply with the financial reporting standards established by the Governmental Accounting Standards Board.

The entry-age actuarial liability was determined as part of an actuarial valuation of the plan as of December 31, 2001. Significant actuarial assumptions used in determining the entry-age actuarial liability include:

- (a) a rate of return on the investment of present and future assets of 7.75% per year compounded annually,
- (b) projected salary increases of 4.75% per year compounded annually, (4.5% attributable to inflation, and 0.25% attributable to productivity),
- (c) additional projected salary increases of 0.0% to 3.0% per year attributable to seniority/merit, and
- (d) the assumption that benefits will increase 2.0% per year of retirement.

**Actuarial Liability:**

Active Members	\$142,300,398
Retired members and beneficiaries currently receiving benefits	181,105,272
Vested terminated members not yet receiving benefits	<u>1,929,351</u>
Total Actuarial Liability	325,335,021
Actuarial Value of Assets (market value was \$351,100,149)	362,493,060
Assets in Excess of Actuarial Liability	37,158,039

During the year ended December 31, 2001, the Plan experienced a net change of \$16,411,130 in the actuarial liability.

**TABLE 11**

**WICHITA POLICE AND FIRE RETIREMENT SYSTEM**

**REQUIRED SUPPLEMENTARY INFORMATION  
SCHEDULE OF FUNDING PROGRESS**

<b>Actuarial Valuation Date</b>	<b>Actuarial Value of Assets (a)</b>	<b>Actuarial Accrued Liability (AAL) (b)</b>	<b>Unfunded AAL (b)-(a)</b>	<b>Funded Ratio (a)/(b)</b>	<b>Active Member Covered Payroll (c)</b>	<b>Unfunded AAL as a Percentage of Active Member Covered Payroll ((b-a)/c)</b>
11/30/90*	\$136,766	\$173,071	\$ 36,305	79.0%	\$ 22,408	162.0%
11/30/91	152,162	183,423	31,261	83.0	23,675	132.0
11/30/92	165,132	198,656	33,524	83.1	25,000	134.1
11/30/93	180,457	208,966	28,509	86.4	26,008	109.6
11/30/94	192,668	220,596	27,928	87.3	27,819	100.4
12/31/95*	213,431	231,372	17,941	92.2	29,749	60.3
12/31/96	237,554	247,408	9,854	96.0	33,366	29.5
12/31/97	262,815	258,706	(4,109)	101.6	35,502	(11.6)
12/31/98	295,625	274,900	(20,725)	107.5	36,566	(56.7)
12/31/99*	330,072	291,633	(38,439)	113.2	37,969	(101.2)
12/31/00	354,044	308,894	(45,150)	114.6	38,613	(116.9)
12/31/01	362,493	325,335	(37,158)	111.4	42,286	(87.9)

*Dollar amounts are in thousands.*

*\*After changes in benefits and/or actuarial assumptions and/or actuarial cost methods.*

Analysis of the dollar amounts of actuarial value of assets, actuarial accrued liability, or actuarial accrued liability in isolation can be misleading. Expressing the actuarial value of assets as a percentage of the actuarial accrued liability provides one indication of the System's funded status on a going-concern basis. Analysis of this percentage over time indicates whether the System is becoming financially stronger or weaker. Generally, the greater this percentage, the stronger the plan's funding. The unfunded actuarial accrued liability and annual covered payroll are both affected by inflation. Expressing the unfunded actuarial accrued liability as a percentage of covered payroll approximately adjusts for the effects of inflation and aids analysis of the progress being made in accumulating sufficient assets to pay benefits when due. Generally, the smaller this percentage, the stronger the plan's funding.

**TABLE 12**

**WICHITA POLICE AND FIRE RETIREMENT  
REQUIRED SUPPLEMENTARY INFORMATION  
SCHEDULE OF EMPLOYER CONTRIBUTIONS**

<b>Fiscal Year</b>	<b>Actuarial Valuation Date</b>	<b>Annual Required Contribution</b>	<b>Percent Contribution</b>
1992	11/30/90	\$ 5,871,323	100.0%
1993	11/30/91	6,114,744	100.0
1994	11/30/92	6,443,032	100.0
1995	11/30/93	7,391,786	100.0
1996	11/30/94	7,186,932	100.0
1997	12/31/95	6,343,027	100.0
1998	12/31/96	6,427,744	100.0
1999	12/31/97	6,043,455	100.0
2000	12/31/98	5,540,575	100.0
2001	12/31/99	4,796,863	100.0
2002	12/31/00	6,967,014*	
2003	12/31/01	7,616,265*	

*\*Projected amounts: Actual required contribution dollar amount will be based on the recommended contribution rate and the actual pensionable payroll for the period. The projected amounts shown for 2002 and 2003 are based on the full normal cost contribution not including any credits for amortization of the UAAL.*

**Notes to Required Supplementary Information  
Summary of Actuarial Methods and Assumptions**

Valuation Date	December 31, 2001
Actuarial Cost Method	Individual Entry Age Normal
Amortization Method	Level percent of payroll, closed
Remaining Amortization Period	16 years
Asset Valuation Method	4-year smoothed market
Actuarial Assumptions:	
Investment Rate of Return*	7.75%
Projected Salary Increases*	4.75% - 7.75%
* Includes Inflation of	4.50%
Cost-of-Living Adjustments	2.00% commencing 36 months after retirement

**TABLE 13**  
**WICHITA POLICE AND FIRE RETIREMENT SYSTEM**  
**SOLVENCY TEST**

<u>Aggregate Actuarial Liability For</u>							
<u>Valuation</u> <u>Date</u>	(1)	(2)	(3)	<u>Reported</u> <u>Valuation</u> <u>Assets</u>	<u>Portion of Actuarial</u> <u>Liabilities</u> <u>Covered by Reported Assets</u>		
	<u>Active</u> <u>Member</u> <u>Contributions</u>	<u>Retirants</u> <u>and</u> <u>Beneficiaries*</u>	<u>Active Members</u> <u>(Employer</u> <u>Financed Portion)</u>		(1)	(2)	(3)
11/30/93	\$17,293,762	\$120,075,516	\$71,956,393	\$180,457,134	100.0%	100.0%	59.9%
11/30/94	18,003,627	127,670,273	74,921,662	192,667,974	100.0	100.0	62.7
12/31/95	19,597,012	132,215,980	79,559,050	213,431,416	100.0	100.0	77.4
12/31/96	20,807,624	141,902,560	84,497,686	237,553,602	100.0	100.0	88.6
12/31/97	22,518,199	146,068,362	90,119,236	262,814,796	100.0	100.0	104.6
12/31/98	23,845,658	157,021,415	94,033,095	295,624,986	100.0	100.0	122.0
12/31/99	24,759,118	170,478,501	96,395,412	330,071,866	100.0	100.0	139.9
12/31/00	27,152,206	183,463,718	98,277,967	354,044,311	100.0	100.0	145.9
12/31/01	27,694,761	183,034,623	114,605,637	362,493,060	100.0	100.0	132.4

During the twelve months ended December 31, 2001, the City of Wichita Police and Fire Retirement System generated a net experience loss of \$13.5 million dollars. The amount is 4.4% of the actuarial accrued liability at the beginning of the year. Investment experience and salary increase experience were the primary sources of the loss.

*\*Includes vested terminated members*

**APPENDIX A**

**SUMMARY OF MEMBERSHIP DATA**

**MEMBER DATA RECONCILIATION**

December 31, 2000 to December 31, 2001

*The number of members included in the valuation, as summarized in the table below, is in accordance with the data submitted by the System for members as of the valuation date.*

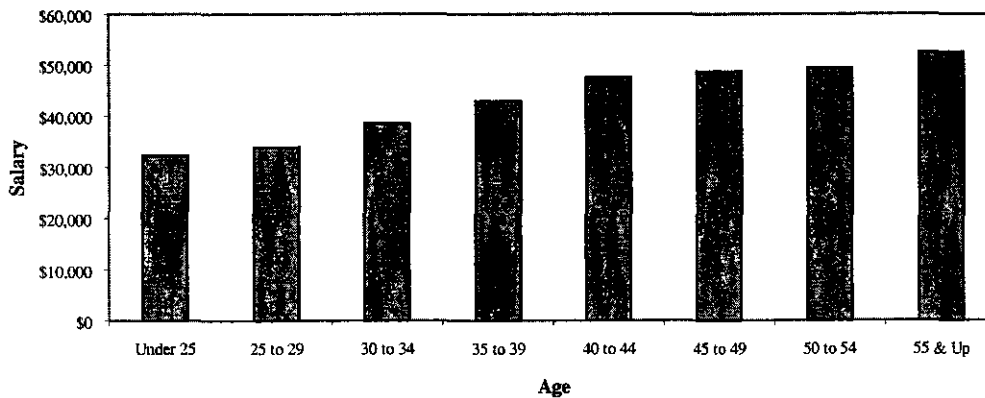
	Active Participants		Retirees & Beneficiaries		Terminated Vested		Total
	Police	Fire	Police	Fire	Police	Fire	
Members as of 12/31/00	598	395	406	418	7	6	1,830
New Members	+48	+5	+11	+7	0	0	+71
Terminations							
Refunded	-24	-3	0	0	0	0	-27
Deferred Vested	-1	-3	0	0	+1	+3	0
Retirements							
Service	-7	-2	+8	+3	-1	-1	0
Disability	-3	0	+3	0	0	0	0
Deaths							
Cashed Out	0	0	0	0	0	0	0
With Beneficiary	-2	0	-8	-7	0	0	-17
Without Beneficiary	0	0	-6	-4	0	0	-10
Data Adjustments	-4	+4	0	0	0	0	0
<b>Members as of 12/31/01</b>	<b>605</b>	<b>396</b>	<b>414</b>	<b>417</b>	<b>7</b>	<b>8</b>	<b>1,847</b>

## APPENDIX A

### WICHITA POLICE AND FIRE RETIREMENT SYSTEM SUMMARY OF ACTIVE MEMBERS as of December 31, 2001

Age	Number			Salaries		
	Fire	Police	Total	Fire	Police	Total
Under 25	4	21	25	\$ 121,904	\$ 684,156	\$ 806,060
25 to 29	32	121	153	1,067,423	4,120,164	5,187,587
30 to 34	68	178	246	2,490,005	6,993,357	9,483,362
35 to 39	83	120	203	3,413,121	5,294,025	8,707,146
40 to 44	86	101	187	3,875,964	5,023,848	8,899,812
45 to 49	69	46	115	3,262,768	2,336,185	5,598,953
50 to 54	42	14	56	2,069,885	693,818	2,763,703
55 & Up	12	4	16	642,559	197,318	839,877
<b>Total</b>	<b>396</b>	<b>605</b>	<b>1,001</b>	<b>\$ 16,943,629</b>	<b>\$ 25,342,871</b>	<b>\$ 42,286,500</b>

**Average Salary by Age**



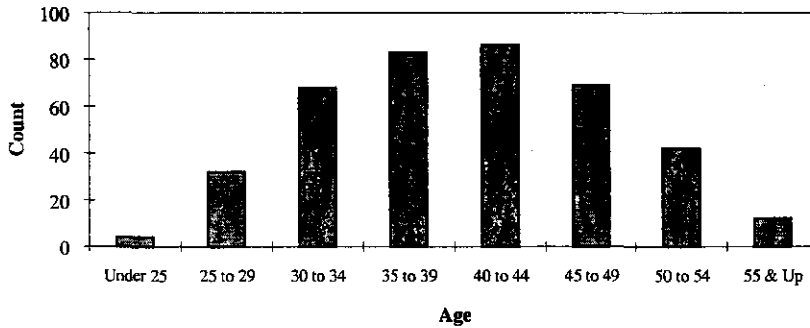
## APPENDIX A

### WICHITA POLICE AND FIRE RETIREMENT SYSTEM DISTRIBUTION OF ACTIVE MEMBERS as of December 31, 2001

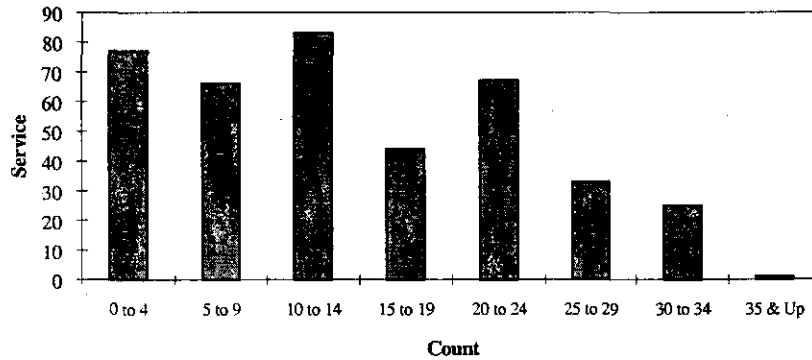
#### Fire

Age	Service								Total
	0 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 & Up	
Under 25	4	0	0	0	0	0	0	0	4
25 to 29	24	8	0	0	0	0	0	0	32
30 to 34	29	26	13	0	0	0	0	0	68
35 to 39	12	24	35	12	0	0	0	0	83
40 to 44	7	6	23	20	30	0	0	0	86
45 to 49	1	2	10	10	29	17	0	0	69
50 to 54	0	0	2	2	8	14	16	0	42
55 & Up	0	0	0	0	0	2	9	1	12
<b>Total</b>	<b>77</b>	<b>66</b>	<b>83</b>	<b>44</b>	<b>67</b>	<b>33</b>	<b>25</b>	<b>1</b>	<b>396</b>

**Age Distribution**



**Service Distribution**





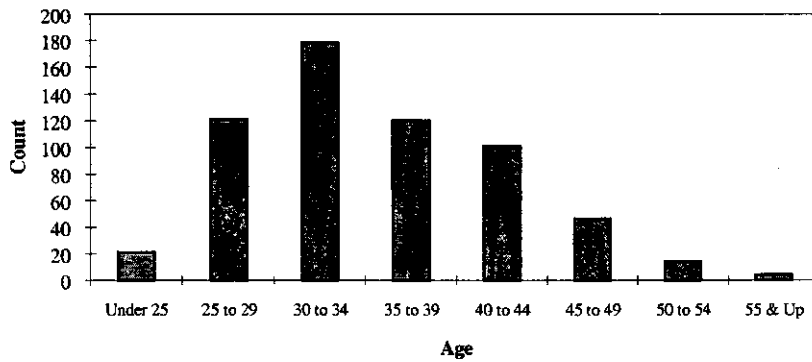
## APPENDIX A

### WICHITA POLICE AND FIRE RETIREMENT SYSTEM DISTRIBUTION OF ACTIVE MEMBERS as of December 31, 2001

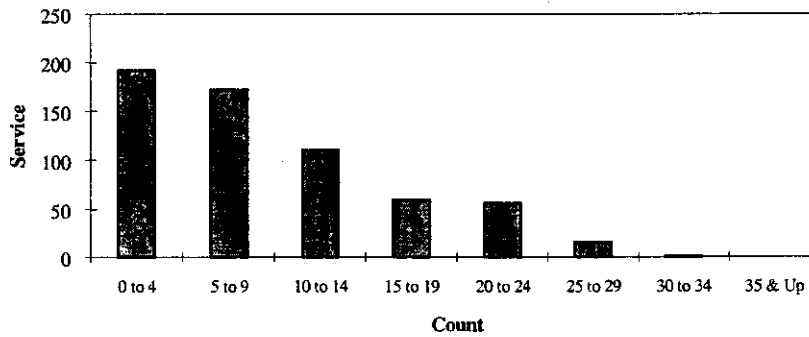
#### Police

Age	Service								Total
	0 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 & Up	
Under 25	21	0	0	0	0	0	0	0	21
25 to 29	99	22	0	0	0	0	0	0	121
30 to 34	54	100	24	0	0	0	0	0	178
35 to 39	14	38	52	16	0	0	0	0	120
40 to 44	2	8	27	36	28	0	0	0	101
45 to 49	2	3	5	5	24	7	0	0	46
50 to 54	0	1	2	2	3	6	0	0	14
55 & Up	0	0	0	0	1	2	1	0	4
<b>Total</b>	<b>192</b>	<b>172</b>	<b>110</b>	<b>59</b>	<b>56</b>	<b>15</b>	<b>1</b>	<b>0</b>	<b>605</b>

#### Age Distribution



#### Service Distribution



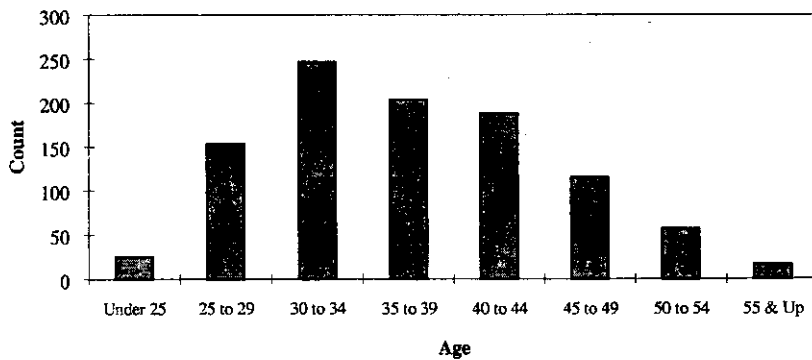
## APPENDIX A

### WICHITA POLICE AND FIRE RETIREMENT SYSTEM DISTRIBUTION OF ACTIVE MEMBERS as of December 31, 2001

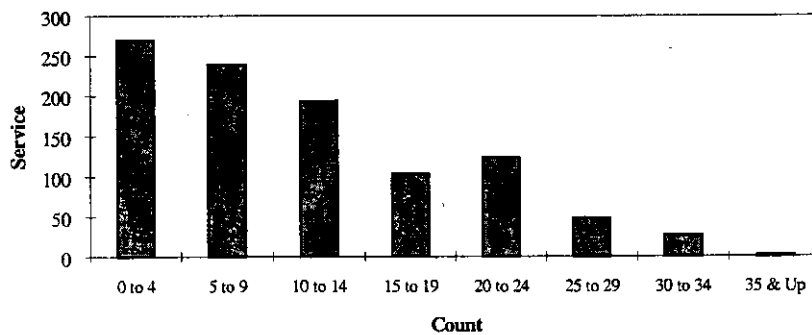
#### Fire & Police

Age	Service								Total
	0 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 & Up	
Under 25	25	0	0	0	0	0	0	0	25
25 to 29	123	30	0	0	0	0	0	0	153
30 to 34	83	126	37	0	0	0	0	0	246
35 to 39	26	62	87	28	0	0	0	0	203
40 to 44	9	14	50	56	58	0	0	0	187
45 to 49	3	5	15	15	53	24	0	0	115
50 to 54	0	1	4	4	11	20	16	0	56
55 & Up	0	0	0	0	1	4	10	1	16
<b>Total</b>	<b>269</b>	<b>238</b>	<b>193</b>	<b>103</b>	<b>123</b>	<b>48</b>	<b>26</b>	<b>1</b>	<b>1,001</b>

#### Age Distribution



#### Service Distribution

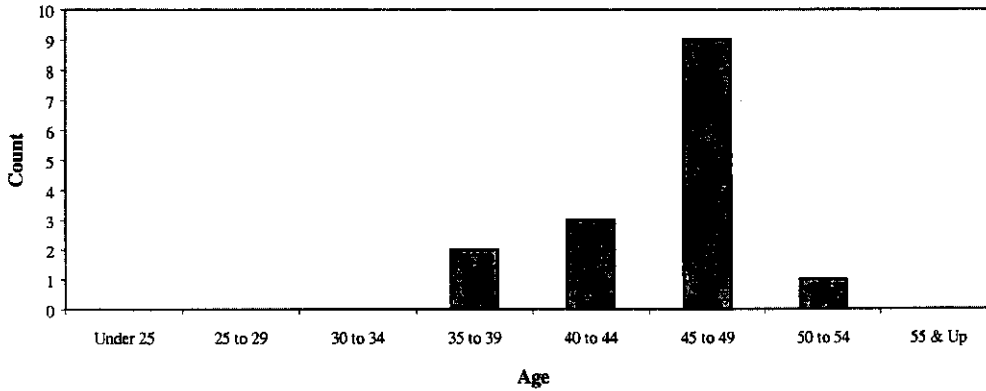


**APPENDIX A**

**WICHITA POLICE AND FIRE RETIREMENT SYSTEM  
SUMMARY OF DEFERRED VESTED MEMBERS  
as of December 31, 2001**

Age	Number			Current Monthly Benefit at Retirement		
	Fire	Police	Total	Fire	Police	Total
Under 25	0	0	0	\$ -	\$ -	\$ -
25 to 29	0	0	0	-	-	-
30 to 34	0	0	0	-	-	-
35 to 39	1	1	2	1,837	1,026	2,863
40 to 44	1	2	3	2,141	2,095	4,236
45 to 49	6	3	9	7,136	3,936	11,073
50 to 54	0	1	1	-	1,948	1,948
55 & Up	0	0	0	-	-	-
<b>Total</b>	<b>8</b>	<b>7</b>	<b>15</b>	<b>\$ 11,114</b>	<b>\$ 9,005</b>	<b>\$ 20,120</b>

**Age Distribution**

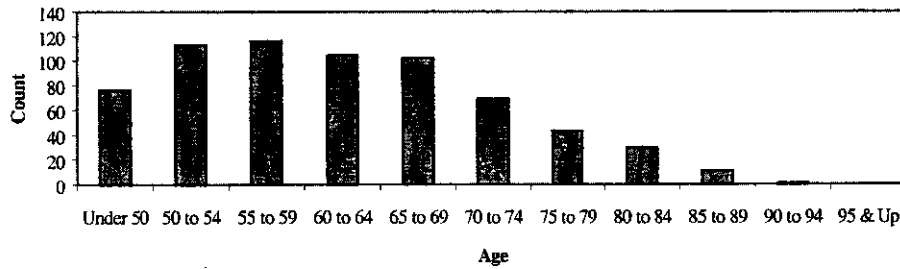


## APPENDIX A

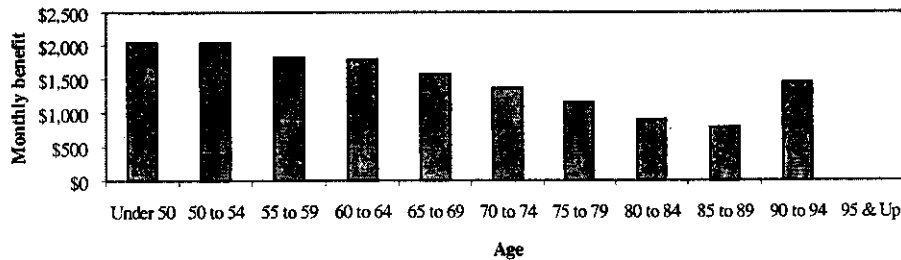
### WICHITA POLICE AND FIRE RETIREMENT SYSTEM SUMMARY OF RETIRED MEMBERS as of December 31, 2001

Age	Number			Monthly Benefit		
	Fire	Police	Total	Fire	Police	Total
Under 50	22	54	76	\$ 42,906	\$ 112,173	\$ 155,079
50 to 54	66	47	113	131,337	98,530	229,867
55 to 59	46	70	116	89,374	121,248	210,623
60 to 64	53	51	104	95,401	89,942	185,343
65 to 69	58	44	102	92,689	66,446	159,134
70 to 74	38	31	69	53,539	40,239	93,778
75 to 79	24	19	43	27,568	21,737	49,305
80 to 84	15	15	30	12,464	14,388	26,852
85 to 89	6	5	11	4,298	4,267	8,565
90 to 94	1	0	1	1,444	-	1,444
95 & Up	0	0	0	-	-	-
<b>Total</b>	<b>329</b>	<b>336</b>	<b>665</b>	<b>\$ 551,020</b>	<b>\$ 568,970</b>	<b>\$ 1,119,989</b>

**Age Distribution**



**Average Benefit**

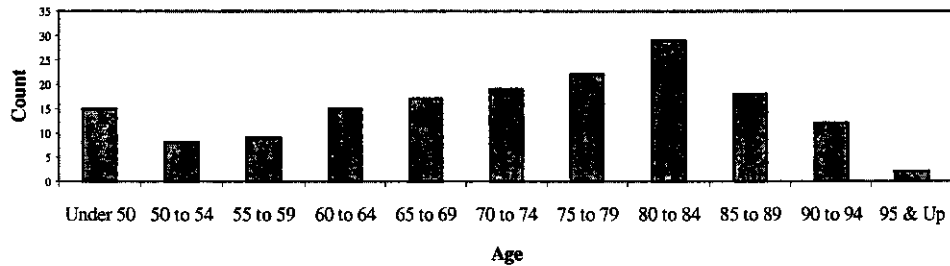


## APPENDIX A

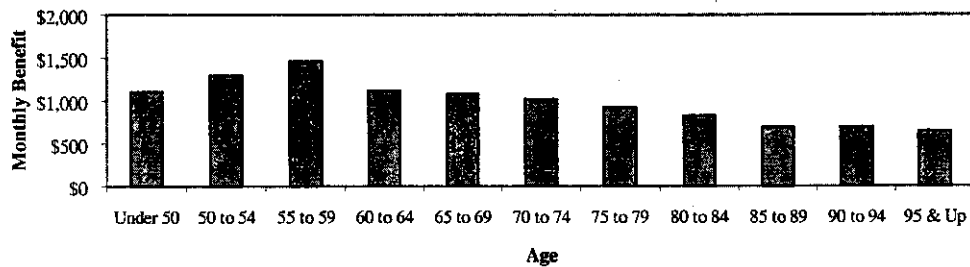
### WICHITA POLICE AND FIRE RETIREMENT SYSTEM SUMMARY OF BENEFICIARIES as of December 31, 2001

Age	Number			Monthly Benefit		
	Fire	Police	Total	Fire	Police	Total
Under 50	7	8	15	\$ 7,238	\$ 9,275	\$ 16,513
50 to 54	3	5	8	4,129	6,215	10,344
55 to 59	3	6	9	2,973	10,165	13,137
60 to 64	6	9	15	6,072	10,682	16,754
65 to 69	9	8	17	10,045	8,286	18,331
70 to 74	8	11	19	7,779	11,525	19,304
75 to 79	19	3	22	17,133	3,055	20,189
80 to 84	20	9	29	16,543	7,333	23,876
85 to 89	6	12	18	4,152	8,336	12,488
90 to 94	5	7	12	3,356	4,980	8,336
95 & Up	2	0	2	1,281	-	1,281
<b>Total</b>	<b>88</b>	<b>78</b>	<b>166</b>	<b>\$ 80,701</b>	<b>\$ 79,852</b>	<b>\$ 160,553</b>

**Age Distribution**



**Average Benefit**



## APPENDIX B

### SUMMARY OF BENEFIT PROVISIONS (DECEMBER 31, 2001)

**Plan A** is applicable to members who enter the System between January 1, 1965 and December 31, 1978 and members who entered prior to January 1, 1965 and elected Plan A coverage.

**Plan B** is applicable to members who entered the System prior to January 1, 1965 and elected Plan B coverage.

**Plan C** is applicable to members entering the System after December 31, 1978.

#### **Service Retirement**

**Eligibility – Plan A and Plan B:** 20 years of service, without regard to age.

**Eligibility – Plan C:** 30 years of service, without regard to age; or, 20 years of service and attainment of age 50 years or older.

**Amount of Pension – all plans:** 2.5% of final average salary times years of service to a maximum of 75% of final average salary. 2.5% (rather than 2.0%) applies to credit for unused sick leave hours effective in 2000.

**Final Average Salary – all plans:** average for the 3 consecutive years of service which produce the highest average and which are within the last 10 years of service.

#### **Vesting (Deferred Retirement)**

**Eligibility – all plans:** 10 years of service (does not include survivor benefits if service is less than 20 years).

**Amount of Pension – all plans:** 2.5% of final average salary times years of service with payment deferred until age 55 (age 50 for Plan C members with 20 or more years of service). Vested deferred pensions for Plan C are adjusted during the deferral period based on changes in National Average Earnings, up to 5.5% annual adjustments (effective for post-1999 terminations).

#### **Service Connected Disability**

**Eligibility – all plans:** permanent inability to perform the duties of position: no service retirement.

**Amount of Pension – all plans:** 75% of final salary rate if accident, 50% if disease.

**Miscellaneous Conditions – all plans:** reduced by any salary or other payments by City; pension plus earnings from gainful employment cannot exceed current salary for rank held at time of disability. Pension recomputed at age 55 using service retirement formula, updated final average salary and service credit for period of disability.

## APPENDIX B (continued)

### Non-Service Disability

**Eligibility – all plans:** permanent inability to perform duties of position; requires 7 years of service if under age 55 years.

**Amount of Pension – all plans:** 30% of final average salary plus 1% of final average salary times service over 7 years; maximum is 50% of final average salary.

**Miscellaneous Conditions – all plans:** pension plus earnings from gainful employment cannot exceed current salary for rank held at time of disability.

### Service-Connected Death

**Eligibility – all plans:** death resulting from performance of duty as a Fireman or Policeman; no service requirement.

**Amount of Pension – all plans:** surviving spouse - 50% of final salary plus 10% of final salary for each child under age 18 years to a maximum of 75% of final salary; terminates upon remarriage prior to age 40 years for those retiring prior to January 1, 2000.

Children (no surviving spouse's pension payable) – 20% of final salary on account of first child plus 15% of final salary on account of each additional child to a maximum of 60% of final salary; terminates upon reaching age 18.

### Non-Service Death

**Eligibility – Plan A and Plan C:** death after 3 years of service.

**Eligibility – Plan B:** death after 20 years of service.

**Amount of Pension – Plan A and Plan C:** surviving spouse - 35% of final average salary plus 1% of final average salary times service over 3 years to a maximum of 50% of final average salary; not payable immediately; terminates upon remarriage prior to age 40 years for those retiring prior to January 1, 2000.

Children – 10% of final average salary on account of each child under age 18 years to a maximum of 66 2/3% of final average salary.

**Amount of Pension – Plan B:** 50% of final salary.

## APPENDIX B (continued)

### Death After Retirement

*Eligibility – all plans:* surviving spouse – must have been married to retired employee for one year of more at time of death, if retired after January 1, 2000. Member must have retired with at least 20 years of service.

*Amount of Pension – Plan A and Plan C:* surviving spouse - 50% of final average salary; payable immediately; terminates upon remarriage prior to age 40 years for those retiring prior to January 1, 2000.

Children – 10% of final average salary on account of each child under age 18 years to a maximum of 16 2/3% of final average salary.

*Amount of Pension – Plan B:* 50% of final salary to surviving spouse or children under age 18; surviving spouse's pension terminates upon remarriage prior to age 40 years for those retiring prior to January 1, 2000.

### Non-Vested Termination

*Eligibility – all plans:* termination of employment and no pension is or will become payable.

*Amount of Benefit – all plans:* refund of member's contributions made after December 31, 1964 plus ½ of contributions made prior to January 1, 1965. Member contributions include 5% annual interest from December 31, 1999.

### Funeral Benefit

*Eligibility – Plan A and Plan C:* death of member who retired after November 30, 1973.

*Amount of Benefit – Plan A and Plan C:* \$750.

*Eligibility – Plan B:* death of retired member.

*Amount of Benefit – Plan B:* \$100 if member retired prior to November 21, 1973; \$750 if member retired after November 20, 1973.

### Post-Retirement Adjustments of Pensions

*Eligibility – all Plans:* Completion of 36 months of retirement.

*Amount of Adjustment – all Plans:* 2% of original pension per year.



## APPENDIX B (continued)

### **Back DROP (Deferred Retirement Option Plan)**

**Eligibility:** Member must be eligible to retire under normal age and/or service requirements at the time they elect the Back DROP.

**Amount:** Under the Back DROP, the member may elect a benefit based on a retirement date up to 60 months prior to the current date. The monthly benefit is computed based on service, final average salary and benefit formula at the selected prior date. In addition to the monthly benefit, the DROP account available to the retiring member is the computed benefit multiplied by the number of months of Back DROP plus 5% annual compounded interest. Members are eligible January 1, 2001 for one-year Back DROP; January 1, 2002 for three-year Back DROP; January 1, 2003 for five-year Back DROP.

### **Contributions**

**Members – Plan A:** 8% of salary.

**Members – Plan B:** 6% of salary.

**Members – Plan C:** 7% of salary.

These member contribution rates include the 1% decrease effective in 1998 in recognition of the full funding of actuarial liabilities.

**City:** Actuarially determined amounts sufficient to satisfy K.S.A. 1977 Suppl. 12-5002.

## APPENDIX C

### ACTUARIAL COST METHOD AND ASSUMPTIONS

#### Actuarial Cost Method

The actuarial cost method is a procedure for allocating the actuarial present value of pension benefits and expenses to time periods. The method used for the valuation is known as the individual entry-age actuarial cost method, and has the following characteristics.

- (i) The annual normal costs for each individual active member are sufficient to accumulate the value of the member's pension at time of retirement
- (ii) Each annual normal cost is a constant percentage of the member's year-by-year projected covered compensation.
- (iii) Normal costs for Plans A and B (closed plans) were based on Plan C (open plan) assumptions and benefit conditions.

The entry-age actuarial cost method allocates the actuarial present value of each member's projected benefits on a level basis over the member's pensionable compensation between the entry-age of the member and the assumed exit ages. By applying the entry-age cost method in the fashion described in (iii), the ultimate normal cost will remain level as a percent of active member payroll (if actuarial assumptions are realized) as Plan A and Plan B members leave active status and are replaced by members entering Plan C.

The portion of the actual present value allocated to the valuation year is called the normal cost. The portion of the actuarial present value not provided for by the actuarial present value of future normal costs is called actuarial liability. Deducting actuarial assets from the actuarial liability determines the unfunded actuarial liability. There was no unfunded actuarial liability as of December 31, 2001.

#### Actuarial Assumptions

Retirement System contribution requirements and actuarial present values are calculated by applying experience assumptions to the benefit provisions and membership information of the Retirement System, using the actuarial cost method.

The principal areas of risk which require experience assumptions about future activities of the Retirement System are:

- (i) long-term rate of investment to be generated by the assets of the System
- (ii) patterns of pay increases to members
- (ii) rates of mortality among members, retirants and beneficiaries

## APPENDIX C (continued)

- (iii) rates of withdrawal of active members
- (iv) rates of disability among active members
- (vi) the age patterns of actual retirement.

In making a valuation, the monetary effect of each assumption is calculated for as long as a present covered person survives -- a period of time which can be as long as a century.

Actual experience of the Retirement System will not coincide exactly with assumed experience. Each valuation provides a complete recalculation of assumed future experience and takes into account all past differences between assumed and actual experiences. The result is a continual series of adjustments (usually small) to the computed contribution rate.

From time-to-time one or more of the assumptions are modified to reflect experience trends (but not random or temporary year-to-year fluctuations). A complete review of the experience assumptions was completed in 1999 and resulted in the use of updated assumptions for subsequent actuarial valuations.

### Actuarial Assumptions

*The investment return rate* (net of administrative expenses) used for actuarial valuation calculations was 7.75 percent a year, compounded annually. This rate consists of 4.50% in recognition of long term price inflation and a 3.25 percent a year real rate of return over price inflation. This assumption, used to equate the value of payments due at different points in time, was adopted by the Board and was first used for the December 31, 1999 valuation.

*Salary increase rates* used to project current pays to those upon which a benefit will be based are represented by the following table and were first used for the December 31, 1999 valuation.

Sample Ages	Annual Rate of Salary Increase for Sample Age			
	Inflation	Productivity	Merit & Longevity	Total
20	4.5%	0.25%	3.0%	7.75%
25	4.5	0.25	3.0	7.75
30	4.5	0.25	2.6	7.35
35	4.5	0.25	1.1	5.85
40	4.5	0.25	0.2	4.95
45	4.5	0.25	0.2	4.95
50	4.5	0.25	0.2	4.95
55	4.5	0.25	0.1	4.85
60	4.5	0.25	-	4.75
65	4.5	0.25	-	4.75

## APPENDIX C (continued)

The salary increase assumptions will produce 4.75 percent annual increases in active member payroll (the inflation rate plus the productivity rate) given a constant active member group size. This is the same payroll growth assumptions used to amortize unfunded actuarial liability.

The real rate of return over assumed wage growth is 3% per year.

Changes actually experienced in average pay and total payroll have been as follows:

	<u>Year Ended</u>					5 Year
	<u>12-31-01</u>	<u>12-31-00</u>	<u>12-31-99</u>	<u>12-31-98</u>	<u>12-31-97</u>	<u>Average</u>
Average pay	8.6%	3.3%	3.4%	3.7%	1.1%	4.0%
Total payroll	9.5%	1.7%	3.8%	3.0%	6.4%	4.8%

### Mortality Rates:

The mortality table was the 1971 Group Annuity Mortality Table projected to 2000, set back 0 years for men and 6 years for women. This table was first used for the December 31, 1999 valuation. Sample values follow:

<u>Sample Ages</u>	<u>Present Value of \$1 Monthly for Life</u>		<u>Future Expectancy (Years)</u>	
	<u>Men<sup>(1)</sup></u>	<u>Women<sup>(1)</sup></u>	<u>Men</u>	<u>Women</u>
40	145.57	150.34	37.5	43.3
45	140.10	146.47	32.8	38.5
50	133.28	141.31	28.3	33.7
55	124.97	134.75	24.0	29.2
60	114.79	126.77	19.9	24.8
65	102.61	116.99	16.1	20.7
70	89.12	105.20	12.7	16.8
75	75.49	91.86	9.8	13.3

(1) Single life values.

The mortality assumption is used to measure the probabilities of members dying before retirement and the probabilities of each pension payment being made after retirement.

*The proportion of active members assumed to be married was 80%.* In each case the male was assumed to be 3 years older than the female.

**APPENDIX C (continued)**

*The rates of retirement used to measure the probability of eligible members retiring were as follows:*

<b>Percent Retiring within Year</b>					
<b>Plans A &amp; B</b>			<b>Plan C</b>		
<u>Service of Member</u>	<u>Police</u>	<u>Fire</u>	<u>Age of Member</u>	<u>Police</u>	<u>Fire</u>
20	28%	20%	50	35%	20%
21	28	15	51	25	15
22	26	10	52	20	10
23	15	10	53	15	10
24	12	10	54	15	10
25	15	15	55	15	10
26	15	10	56	15	10
27	15	10	57	15	15
28	15	10	58	25	25
29	15	30	59	30	30
30	100	10	60	100	100
31	100	100	Over 60	100	100

The current rates were first used for the December 31, 1999 valuation.

*Rates of separation form active membership* were as follows: (rates do not apply to members eligible to retire and do not include separation on account of death or disability).

<b>Sample Ages</b>	<b>Years of Service</b>	<b>Percent Separating Within Year</b>		
		<b>Police</b>	<b>Fire</b>	
ALL	0	10.0%	8.0%	
	1	8.0	6.0	
	2	6.0	4.5	
	3	4.0	3.0	
	4	3.0	2.0	
25	Over 4	3.0	1.0	
		30	2.4	1.0
		35	1.7	1.0
		40	1.2	0.9
		45	1.0	0.8
50	55	0.9	0.7	
		0.8	0.6	

These rates were first used for the December 31, 1999 valuation.

## APPENDIX C (continued)

**Forfeiture of Vested Benefits.** The assumption is that a percentage of the actuarial present value of vested termination benefits will be forfeited by a withdrawal of accumulated contributions. This percentage is applied individually based on a graded scale beginning at 100% for the earliest vesting age to 0% at the individual's minimum retirement age.

**Rates of disability** were as follows:

Sample Ages	Percent Becoming Disabled Within Year	
	Police	Fire
20	0.10%	0.09%
25	0.16	0.14
30	0.33	0.30
35	0.55	0.49
40	0.77	0.68
45	0.98	0.87
50	1.20	1.06
55	1.42	1.14

These rates were first used for the December 31, 1999 valuation.

**Rates of recovery from disability** were assumed to be zero.

**Administrative expenses** were assumed to be paid from investment earnings.

**Active member group size** was assumed to remain constant.

## APPENDIX C (continued)

### Miscellaneous and Technical Assumptions

<i>Marriage Assumption:</i>	80% of participants are assumed to be married for purposes of death benefits.
<i>Pay Increase Timing:</i>	Mid-year.
<i>Decrement Timing:</i>	Decrements of all types are assumed to occur mid-year.
<i>Eligibility Testing:</i>	Eligibility for benefits is determined based upon the age nearest birthday and service nearest whole year on the date the decrement is assumed to occur.
<i>Benefit Service:</i>	Service, calculated to one-half year, is used to determine the amount of benefit payable.
<i>Other:</i>	Disability and turnover decrements do not operate during retirement eligibility.
<i>Miscellaneous Loading Factors:</i>	The calculated normal retirement benefits were increased by 5% to account for the inclusion of unused sick leave in the calculation of Average Compensation.

**APPENDIX D**  
**GLOSSARY OF TERMS**

<b>Actuarial Liability</b>	The difference between the actuarial present value of system benefits and the actuarial value of future normal costs. Also referred to as "accrued liability" or "actuarial liability."
<b>Actuarial Assumptions</b>	Estimates of future 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.
<b>Accrued Service</b>	Service credited under the system which was rendered before the date of the actuarial valuation.
<b>Actuarial Equivalent</b>	A single amount or series of amounts of equal actuarial value to another single amount or series of amounts, computed on the basis of appropriate assumptions.
<b>Actuarial Cost Method</b>	A mathematical budgeting procedure for allocating the dollar amount of the actuarial present value of retirement system benefit between future normal cost and actuarial accrued liability. Sometimes referred to as the "actuarial funding method."
<b>Experience Gain (Loss)</b>	The difference between actual experience and actuarial assumptions anticipated experience during the period between two actuarial valuation dates.
<b>Actuarial Present Value</b>	The amount of funds currently required to provide a payment or series of payments in the future. It is determined by discounting future payments at predetermined rates of interest and by probabilities of payment.
<b>Amortization</b>	Paying off an interest-discounted amount with periodic payments of interest and principal, as opposed to paying off with lump sum payment.
<b>Normal Cost</b>	The actuarial present value of retirement system benefits allocated to the current year by the actuarial cost method.



## APPENDIX D (continued)

### **Unfunded Actuarial Liability**

The difference between actuarial liability and the valuation assets.

Most retirement systems have unfunded actuarial accrued liability. They arise each time new benefits are added and each time an actuarial loss is realized.

The existence of unfunded actuarial accrued liability is not in itself bad, any more than a mortgage on a house is bad. Unfunded actuarial accrued liability does not represent a debt that is payable today. What is important is the ability to amortize the unfunded actuarial accrued liability and the trend in its amount (after due allowance for devaluation of the dollar).