

*City of Wichita Police and Fire  
Retirement System*

*Actuarial Valuation Report  
as of December 31, 2002*

EXHIBIT     E

**City of Wichita Police and Fire Retirement System  
Actuarial Valuation Report  
as of December 31, 2002**

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March 27, 2003

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, 2002. 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. However, the Board elected to use a new asset valuation method, which is first reflected in this actuarial valuation.

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.



March 27, 2003

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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 Barbara Ketteiman, Pension Manager, and to members of her 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.  
Consulting Actuary

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, 2002 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.

There were no changes in the benefit provisions or actuarial assumptions from the last valuation. However, during 2002, the Board approved a change to the asset smoothing method which is first reflected in this valuation. The new smoothing method is discussed in detail later in this Board Summary.

The valuation results provide a “snapshot” view of the System’s financial condition on December 31, 2002. The surplus of the actuarial value of assets over actuarial liability decreased by \$20 million, due to unfavorable experience during the year. A detailed analysis of the change in the unfunded actuarial liability from December 31, 2001 to December 31, 2002 is shown on page 3.

#### ASSETS

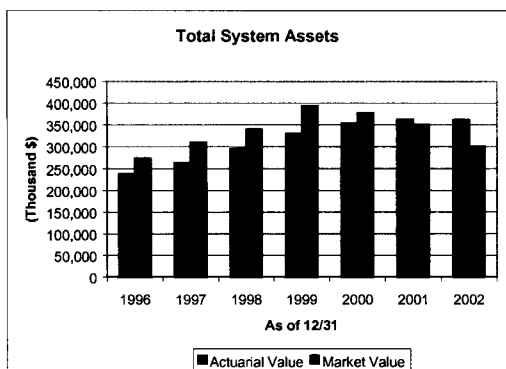
As of December 31, 2002, the System had total funds, when measured on a market value basis, of \$300.8 million. This was a decrease of \$50.3 million from the December 31, 2001 figure of \$351.1 million. The components of the change in the market value of assets for the Retirement System (in millions) are set forth below:

	<b>Market Value (\$M)</b>
Assets, December 31, 2001	\$351.1
• City and Member Contributions	7.9
• Benefit Payments and Refunds	(16.1)
• Investment Income (net of expenses)	(42.1)
Assets, December 31, 2002	\$300.8

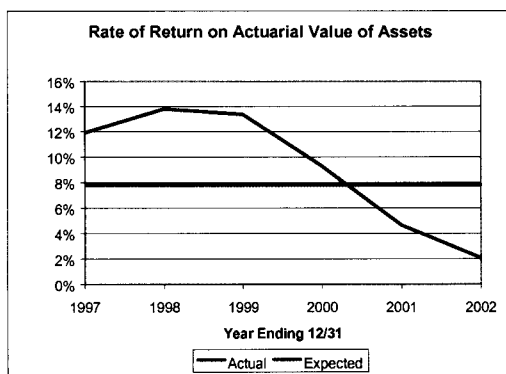
The market value of assets is not used directly in the calculation of the City's contribution rate. An asset valuation method which smooths the effect of market fluctuations is used to determine the value of assets used in the valuation. The actuarial value of assets is equal to the expected value (calculated using the actuarial assumed rate of 7.75%) plus 25% of the difference between the market and expected values. This is the first year the current smoothing method has been used. See Table 3 on page 11 for a detailed development of the actuarial value of assets. The change in the actuarial value of assets from December 31, 2001 to December 31, 2002 is shown below:

	<b>Actuarial Value (\$M)</b>
Assets, December 31, 2001	\$362.5
<ul style="list-style-type: none"> <li>• City and Member Contributions</li> <li>• Benefit Payments and Refunds</li> <li>• Investment Income (net of expenses)</li> </ul>	7.9 (16.1) 7.4
Assets, December 31, 2002	\$361.7

The annualized dollar-weighted rate of return, measured on the actuarial value of assets, was 2% and, measured on the market value of assets, was approximately a negative 12%. The actuarial value of assets as of December 31, 2002 was \$361.7 million, which represents an actuarial loss of \$20 million.



*Due to rates of return in excess of the actuarial assumption, the market value has generally exceeded the actuarial value of assets. Recent market experience eliminated the excess of market value over the actuarial value of assets. For the last two years, the actuarial value of assets has exceeded the market value.*



*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. The impact of recent market performance is beginning to be recognized in the rate of return on the actuarial value of assets.*

Due to the asset smoothing method, there is nearly \$61 million of deferred investment loss that has not been recognized. Absent investment returns significantly above the 7.75% assumed rate of return in the next few years to offset this unrecognized investment loss, it will gradually be reflected in the actuarial value of assets. To illustrate the magnitude of the difference between the actuarial and market value of assets, it would require a return of 30% in 2003 or 17% in both 2003 and 2004 to eliminate the unrecognized losses. As the deferred loss flows through the asset smoothing method, the valuation will show an actuarial loss. This will result in elimination of the "surplus" assets and the creation of an unfunded actuarial liability. Contribution rates will also rise, reflecting the decline in the System's funded status.

## 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 the asset value 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.

The Actuarial Liability and Unfunded Actuarial Liability for the System as of December 31, 2002 is:

Actuarial Liability	\$340,524,115
Actuarial Value of Assets	361,687,109
Unfunded Actuarial Liability	(21,162,994)

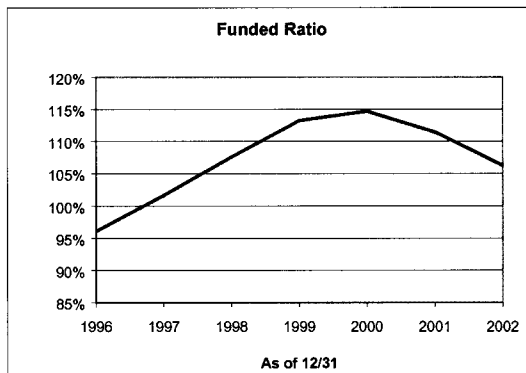
Between December 31, 2001 and December 31, 2002 the change in the unfunded actuarial liability for the System was as follows (in millions):

	\$(M)
UAL, December 31, 2001	(37.2)
+ Normal cost for year	9.6
+ Expected investment return for year	(2.1)
- Actual contributions (member + city)	7.9
- Interest on contribution	0.3
= Expected Unfunded Actuarial Liability, December 31, 2002	(37.9)
+ Change from amendments	0
+ Change from assumption changes	0
= Expected UAL after changes	(37.9)
Actual UAL, December 31, 2002	(21.2)
Experience gain/(loss) (Expected UAL – Actual UAL)	(16.7)

The experience loss for the 2002 plan year of \$16.7 million was the net result to an actuarial loss of \$20.3 million on System assets (actuarial value) and an actuarial gain of \$3.6 million on System liabilities. Retirement and withdrawal experience during the year created the favorable actuarial experience.

Analysis of the unfunded actuarial liability strictly as a dollar amount 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.

	12/31/99	12/31/00	12/31/01	12/31/02
Actuarial Liability (\$M)	\$291.6	\$308.9	\$325.3	\$340.5
Actuarial Value of Assets (\$M)	330.1	354.0	362.5	361.7
Funded Ratio (Assets/Liability)	113.2%	114.6%	111.4%	106.2%



*The funded status of the Retirement System had continually improved until last year. Poor investment experience lowered the funded ratio for 2001 and 2002.*

As mentioned earlier in this report, there is currently almost \$61 million of deferred investment loss which will likely be reflected, in part or in total, in the actuarial value of assets over the next few years. As prior deferred investment losses are recognized, the surplus will decline by that amount. The surplus also declines by the amount of surplus amortized in the current plan year (used to reduce the contribution). Given the current funded status of the System, the amount of unrecognized investment loss, and the expectations for market returns in the short term, it is very likely the current surplus funding will be gone and the System will have an unfunded actuarial liability in a few years.

## CONTRIBUTION RATES

Generally, contributions to the System consist of:

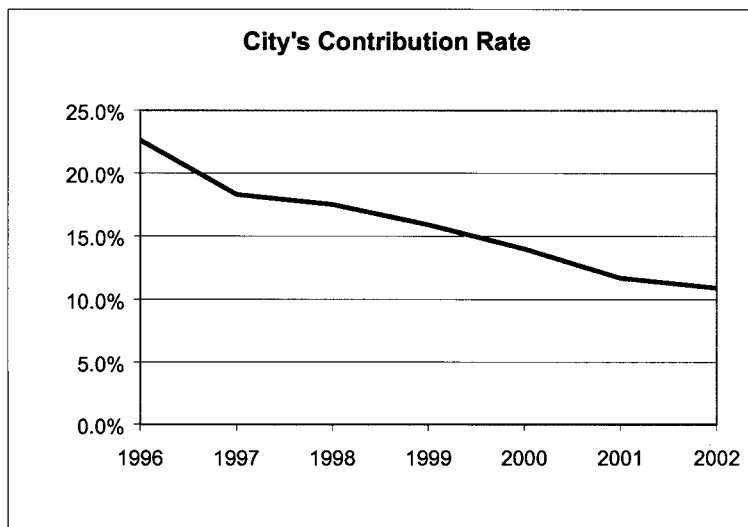
- a “normal cost” for the portion of projected liabilities allocated to service of members during the year following the valuation date, by the actuarial cost method,
- an “unfunded actuarial liability or (surplus) contribution” for the excess of the portion of projected liabilities allocated to service 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 2004 is computed based on the December 31, 2002 actuarial valuation. As of December 31, 2002, the actuarial value of assets exceeds the actuarial liability, and a portion of the surplus is used to reduce the required employer contribution. In accordance with state statutes the surplus may be amortized over a rolling 20-year period. The Board has elected to use this amortization period. 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 (a) contributing the full normal cost rate or (b) applying the amortization credit. This valuation indicates the range of City contributions to be 14.0% to 17.0%.

The current surplus is based on the actuarial value of assets, not market value. Even if the 7.75% assumed rate of return is met in 2003 and later years, the surplus will be eliminated as the deferred investment losses are recognized. Contribution rates in future years are expected to increase as surplus assets are eliminated (through the smoothing process) and an unfunded actuarial liability appears.

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



## COMMENTS

The System continues to be well funded although another year of negative investment performance has weakened the funded status. Due to the asset smoothing method there is currently about \$61 million difference between the market and actuarial value of assets. Because of this difference the funded status of the System appears more favorable than it really is. Without investment returns significantly above the assumed rate of 7.75% in the next few years, there will be a dramatic impact on the System's funding as the deferred investment loss of \$61 million is recognized. As this deferred loss flows into the calculation of the actuarial value of assets and the surplus is eliminated, the City can expect their actuarial required contribution (ARC) to increase to rates above the employer normal cost rate of 17.0%.

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	<u>12/31/02</u> <u>Valuation</u>	<u>12/31/01</u> <u>Valuation</u>	<u>%</u> <u>Change</u>
Number of:			
Active Members			
Police	631	605	4.3 %
Fire	397	396	0.3 %
Total	<u>1,028</u>	<u>1,001</u>	2.7 %
Retired Members and Beneficiaries	833	831	0.2 %
Inactive Members	20	15	33.3 %
Total Members	1,881	1,847	1.8 %
Annual Valuation Salaries of Active Members			
Police	\$ 27,805,476	\$ 25,342,871	9.7 %
Fire	17,890,796	16,943,629	5.6 %
Total	<u>45,696,272</u>	<u>42,286,500</u>	8.1 %
Annual Retirement Payments for Retired Members and Beneficiaries	\$ 15,936,609	\$ 15,366,507	3.7 %
2. ASSETS AND LIABILITIES			
Total Actuarial Liability	\$ 340,524,115	\$ 325,335,021	4.7 %
Actuarial Value of Assets	361,687,109	362,493,060	(0.2) %
Unfunded Actuarial Liability/(Surplus)	(21,162,994)	(37,158,039)	(43.0) %
3. EMPLOYER CONTRIBUTION RATES AS A PERCENT OF PAYROLL			
Normal Cost	24.1 %	23.9 %	0.8 %
Member Financed	7.1 %	7.1 %	0.0 %
Employer Normal Cost	17.0 %	16.8 %	1.2 %
Amortization of Unfunded Actuarial	(3.0) %	(6.8) %	(55.9) %
Range of Employer Contribution Rates			
Full Normal Cost Rate	17.0 %	16.8 %	1.2 %
With Amortization Credit	14.0 %	10.0 %	40.0 %

## 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, 2002. This valuation was prepared at the request of the System's Board of Trustees. The report is based on plan provisions and actuarial assumptions that are unchanged from last year. The asset valuation method was changed to a new method, which is first reflected in this report.

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 which result 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, 2002.
- 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, 2002. 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, the market value of assets provides a basis for measuring investment performance from time to time. At December 31, 2002 the market value of assets for the System was \$301 million. Table 1 is a comparison, at market values, of System assets as of December 31, 2002, and December 31, 2001, in total and by investment category. Table 2 summarizes the change in the market value of assets from December 31, 2001 to December 31, 2002.

#### **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, first adopted in the 12/31/02 valuation, smooths market returns by recognizing 25% of the difference between the expected value (based on the actuarial assumption) and market value. Table 3 shows the development of the actuarial value of assets (AVA) as of December 31, 2002, which was \$362 million.

For most of the recent past, the AVA has been significantly lower than the market value. However, due to negative rate of returns on the market value of assets in the last few years, the actuarial value of assets as of the valuation date is now approximately 20% greater than the market value. Absent rates of return well above the assumed rate of 7.75% in the short term, the unrecognized losses (difference between the market value and actuarial value) will flow into the actuarial value of assets and create an actuarial loss.

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

	As of December 31, 2002		As of December 31, 2001	
	<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	\$ 5.9	2.0 %	\$ 9.9	2.8 %
Government Securities	15.1	5.0	16.1	4.6
Corporate debt	29.0	9.7	33.3	9.5
Mortgage Backed Securities	20.5	6.8	15.0	4.3
Pooled Funds	115.9	38.5	123.5	35.2
Domestic Equity	112.6	37.4	150.2	42.8
International Equity	32.5	10.8	38.4	10.9
Receivables	1.2	0.4	3.6	1.0
Liabilities	<u>(31.9)</u>	<u>(10.6)</u>	<u>(38.9)</u>	<u>(11.1)</u>
<b>Total</b>	<b>\$ 300.8</b>	<b>100.0 %</b>	<b>\$ 351.1</b>	<b>100.0 %</b>

**TABLE 2**  
**WICHITA POLICE AND FIRE RETIREMENT SYSTEM**  
**SUMMARY OF CHANGES IN NET ASSETS**  
**DURING YEAR ENDED DECEMBER 31, 2002**

(Market Value)

1. Market Value of Assets as of December 31, 2001	\$ 351,100,148
2. Contributions:	
a. Members	\$ 3,104,036
b. City	4,746,504
c. Other	0
d. Total	<u>\$ 7,850,540</u>
[2(a) + 2(b) + 2(c)]	
3. Investment Income	
a. Ordinary	\$ 5,347,200
b. Realized and Unrealized Gains (Losses)	(45,657,043)
c. Other	0
d. Total	<u>\$ (40,309,843)</u>
[3(a) + 3(b) + 3(c)]	
4. Expenditures	
a. Refunds of Member Contributions	\$ 415,274
b. Benefits Paid	15,710,172
c. Administrative Expenses	261,074
d. Investment Expenses	1,495,978
e. Total	<u>\$ 17,882,498</u>
[4(a) + 4(b) + 4(c) + 4(d)]	
5. Net Change	
[2(d) + 3(d) - 4(e)]	\$ (50,341,801)
6. Market Value of Assets as of December 31, 2002	\$ 300,758,347
(1) + (5)	

**TABLE 3**  
**WICHITA POLICE AND FIRE RETIREMENT SYSTEM**  
**DEVELOPMENT OF ACTUARIAL VALUE**  
**OF ASSETS**

1. Actuarial Value of Assets as of December 31, 2001	\$ 362,493,060
2. Actual Contribution/Disbursements	
a. Contributions	7,850,540
b. Benefit Payments and Refunds	<u>(16,125,446)</u>
c. Net	(8,274,906)
3. Expected Value of Assets as of December 31, 2002 [(1) x 1.0775] + [(2c) x (1.0775) <sup>-5</sup> ]	381,996,697
4. Market Value of Assets as of December 31, 2002	300,758,347
5. Difference Between Market and Expected Values (4) - (3)	(81,238,350)
6. Actuarial Value of Assets as of December 31, 2002 (3) + [(5) x 25%]	361,687,109
Actuarial Value of Assets divided by Market Value of Assets	120.3%
Market Value of Assets less Actuarial Value of Assets	\$ (60,928,762)

## 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, 2002. 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, 2002.

#### **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, 2002**

	<b>Plans</b>		
	<b><u>A and B</u></b>	<b><u>Plan C</u></b>	<b><u>Total</u></b>
1. Active employees			
a. Retirement Benefit	\$ 46,901,830	\$ 190,163,214	\$ 237,065,044
b. Pre-Retirement Death Benefit	259,390	7,569,819	7,829,209
c. Withdrawal Benefit	-	6,758,703	6,758,703
d. Disability Benefit	-	25,585,619	25,585,619
e. Total	<u>\$ 47,161,220</u>	<u>\$ 230,077,355</u>	<u>\$ 277,238,575</u>
2. Inactive Vested Members	\$ 67,718	\$ 3,632,741	\$ 3,700,459
3. Inactive Nonvested Members	\$ 0	\$ 0	\$ 0
4. In Pay Members			
a. Retirees	\$ 130,240,189	\$ 3,202,200	\$ 133,442,389
b. Disabled Members	14,919,038	12,163,167	27,082,205
c. Beneficiaries	15,959,083	1,879,362	17,838,445
d. Total	<u>\$ 161,118,310</u>	<u>\$ 17,244,729</u>	<u>\$ 178,363,039</u>
5. Total Present Value of Future Benefits (1e) + (2) + (3) + (4d)	\$ 208,347,248	\$ 250,954,825	\$ 459,302,073

TABLE 5

WICHITA POLICE AND FIRE RETIREMENT SYSTEM

ACTUARIAL LIABILITY  
AS OF DECEMBER 31, 2002

	<u>Plans</u>		
	<u>A and B</u>	<u>Plan C</u>	<u>Total</u>
1. Active employees			
a. Present Value of Future Benefits	\$ 47,161,220	\$ 230,077,355	\$ 277,238,575
b. Present Value of Future Normal Costs	5,234,961	113,542,997	118,777,958
c. Actuarial Liability (1a) - (1b)	41,926,259	116,534,357	158,460,617
2. Inactive Vested Members	\$ 67,718	\$ 3,632,741	\$ 3,700,459
3. Inactive Nonvested Members	\$ 0	\$ 0	\$ 0
4. In Pay Members			
a. Retirees	\$ 130,240,189	\$ 3,202,200	\$ 133,442,389
b. Disabled Members	14,919,038	12,163,167	27,082,205
c. Beneficiaries	15,959,083	1,879,362	17,838,445
d. Total	\$ 161,118,310	\$ 17,244,729	\$ 178,363,039
5. Total Actuarial Liability (1c) + (2) + (3) + (4d)	\$ 203,112,287	\$ 137,411,827	\$ 340,524,115

## 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, 2002 actuarial valuation will be used to determine employer contribution rates to the City of Wichita Police and Fire Retirement System for fiscal year 2004. 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, 2002, the actuarial liability was fully covered by the valuation assets (in fact, a surplus exists). State statutes permit any surplus assets in municipal police and fire retirement systems to be amortized over a rolling 20-year period. The Board has elected to use the rolling 20-year amortization period as part of their funding policy. The amortization of the existing surplus results 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, 2002, 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 gain/(loss) for the year ended December 30, 2002.

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

**TABLE 6**

**WICHITA POLICE AND FIRE RETIREMENT SYSTEM**

**DECEMBER 31, 2002 VALUATION**

**DERIVATION OF UNFUNDED ACTUARIAL LIABILITY CONTRIBUTION RATE**

1. Actuarial Accrued Liability	\$ 340,524,115
2. Actuarial Value of Assets	\$ 361,687,109
3. Unfunded Actuarial Liability/(Surplus Assets)	\$ (21,162,994)
4. Payment (Adjusted to Mid-Year) to Amortize Unfunded Actuarial Liability/(Surplus) Over 20 Years *	\$ (1,417,474)
5. Total Projected Payroll for the Year	\$ 46,768,968
6. Amortization Payment as a Percent of Payroll	(3.0) %

\* In accordance with State statutes, surplus assets may be amortized over a rolling 20-year period. The Board has elected to use this period.

**TABLE 7**  
**WICHITA POLICE AND FIRE RETIREMENT SYSTEM**  
**DERIVATION OF NORMAL COST RATE**

Normal Cost at December 31, 2002	
Service pensions	\$7,625,042
Disability pensions	1,905,230
Survivor pensions	446,096
Termination benefits	
- Deferred service pensions	190,145
- Return of member contributions	276,126
Total Normal Cost	<u>\$10,442,639</u>
Normal Cost Adjusted to Mid-Year	\$10,839,741
Projected Payroll for Members Under Certain Retirement Age	\$44,988,808
Total Normal Cost Rate for Year	24.1%

**TABLE 8**  
**WICHITA POLICE AND FIRE RETIREMENT SYSTEM**  
**EMPLOYER CONTRIBUTION RATES**  
**FOR FISCAL YEAR**  
**COMMENCING IN 2004**

<b>Contributions for</b>	<b>Range of Contribution Requirements as % of Payroll</b>	
Normal Cost		
Service pensions	17.7 %	17.7 %
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	24.1 %	24.1 %
Unfunded Actuarial Accrued Liability		
Retired members and beneficiaries (1)	0.0 %	0.0 %
Active and former members (2)	0.0 %	(3.0) %
Total UAAL Contribution	0.0 %	(3.0) %
Total Contribution Requirement		
Member Financed Portion (3)	7.1 %	7.1 %
City Financed Portion	17.0 %	14.0 %
Total	24.1 %	21.1 %

- (1) Actuarial accrued liability for retired members and beneficiaries was fully funded as of December 31, 2002.
- (2) The excess of the actuarial value of assets over actuarial liabilities financed as a level percent of active member payroll over a rolling 20-year period, produces a temporary amortization credit of 3.0% 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)
12/31/02	2004	14.0 – 17.0	(3.0)

\*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)**

	(\$M) Year Ended <u>12/31/02</u>
(1) UAL* at start of year	(37.2)
(2) + Normal cost for year	9.6
(3) + Assumed investment return on (1) & (2)	(2.1)
(4) - Actual contributions (member + City)	7.9
(5) - Assumed investment return on (4)	0.3
(6) = Expected UAL at end of year	(37.9)
(7) + Increase (decr.) from amendments	0
(8) + Increase (decr.) from assumption changes	0
(9) = Expected UAL after changes	(37.9)
(10) = Actual UAL at year end	(21.2)
(11) = Experience gain (loss) (9) – (10)	(16.7)**
(12) = Percent of beginning of year AL	6.3%

\* *Unfunded Actuarial Liability*

\*\* *Of this amount, \$20.3 million resulted from the loss on the actuarial value of assets.*

## 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, 2002. 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, non-compounded commencing 36 months after retirement.

#### Actuarial Liability:

Active Members	\$158,460,617
Retired members and beneficiaries currently receiving benefits	178,363,039
Vested terminated members not yet receiving benefits	<u>3,700,459</u>
Total Actuarial Liability	340,524,115
Actuarial Value of Assets (market value was \$300,758,347)	361,687,109
Assets in Excess of Actuarial Liability	(21,162,994)

During the year ended December 31, 2002, the Plan experienced a net change of \$15.2 million in the actuarial liability.

TABLE 11

WICHITA POLICE AND FIRE RETIREMENT SYSTEM

REQUIRED SUPPLEMENTARY INFORMATION  
SCHEDULE OF FUNDING PROGRESS

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded AAL (b)-(a)	Funded Ratio (a)/(b)	Active Member Covered Payroll (c)	Unfunded AAL as a Percentage of Active Member Covered Payroll ((b-a)/c)
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)
12/31/02	361,687	340,524	(21,163)	106.2	45,696	(46.3)

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>
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	4,746,504	100.0
2003	12/31/01	7,616,265*	
2004	12/31/02	8,445,142*	

*\*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 2003 and 2004 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, 2002
Actuarial Cost Method	Individual Entry Age Normal
Amortization Method	Level percent of payroll, open
Remaining Amortization Period	20 years
Asset Valuation Method	Expected Value + 25%
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

Valuation Date	Aggregate Actuarial Liability For			Reported Valuation Assets	Portion of Actuarial Liabilities Covered by Reported Assets		
	(1) Active Member Contributions	(2) Retirees and Beneficiaries*	(3) Active Members (Employer Financed Portion)		(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
12/31/02	34,440,696	182,063,498	124,019,921	361,687,109	100.0	100.0	117.1

During the twelve months ended December 31, 2002, the City of Wichita Police and Fire Retirement System generated a net experience loss of \$16.7 million dollars. The amount is 4.9% of the actuarial accrued liability at the beginning of the year.

\*Includes vested terminated members

**APPENDIX A**

**SUMMARY OF MEMBERSHIP DATA**

**MEMBER DATA RECONCILIATION**

December 31, 2001 to December 31, 2002

*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.*

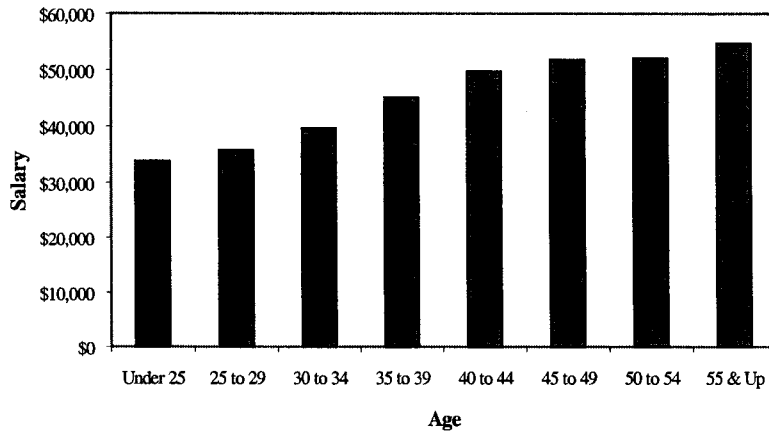
	Active Participants		Retirees & Beneficiaries		Terminated Vested		Total
	Police	Fire	Police	Fire	Police	Fire	
Members as of 12/31/01	605	396	414	417	7	8	1,847
New Members	+59	+10	+1	+2	0	0	+72
Terminations Refunded	-20	-6	0	0	0	-1	-27
Deferred Vested	-5	-2	0	0	+5	+2	0
Retirements Service Disability	-3 -4	0 -2	+4 +4	+1 +2	-1 0	-1 0	0 0
Deaths Cashed Out With Beneficiary Without Beneficiary	0 0 0	0 0 0	-1 -1 -3	0 -2 -6	0 0 0	0 0 0	-1 -3 -9
Data Adjustments	-1	+1	0	+1	+1	0	+2
<b>Members as of 12/31/02</b>	<b>631</b>	<b>397</b>	<b>418</b>	<b>415</b>	<b>12</b>	<b>8</b>	<b>1,881</b>

## APPENDIX A

### WICHITA POLICE AND FIRE RETIREMENT SYSTEM SUMMARY OF ACTIVE MEMBERS as of December 31, 2002

Age	Number			Salaries		
	Fire	Police	Total	Fire	Police	Total
Under 25	6	27	33	\$ 191,987	\$ 922,842	\$ 1,114,829
25 to 29	30	113	143	1,030,245	4,075,807	5,106,052
30 to 34	60	179	239	2,293,482	7,180,939	9,474,421
35 to 39	78	136	214	3,308,018	6,330,968	9,638,986
40 to 44	84	99	183	3,928,235	5,166,182	9,094,417
45 to 49	78	51	129	3,932,122	2,743,288	6,675,410
50 to 54	40	22	62	2,053,287	1,172,631	3,225,918
55 & Up	21	4	25	1,153,420	212,819	1,366,239
<b>Total</b>	<b>397</b>	<b>631</b>	<b>1,028</b>	<b>\$ 17,890,796</b>	<b>\$ 27,805,476</b>	<b>\$ 45,696,272</b>

Average Salary by Age



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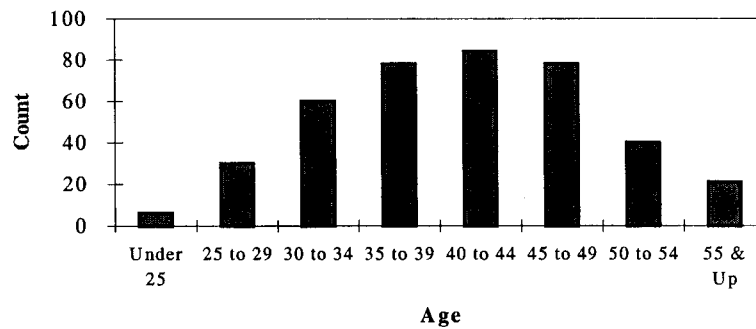
### WICHITA POLICE AND FIRE RETIREMENT SYSTEM DISTRIBUTION OF ACTIVE MEMBERS as of December 31, 2002

#### Fire

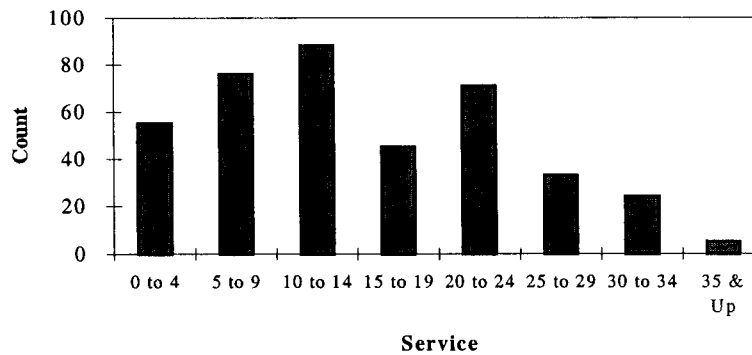
#### Service

Age	0 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 & Up	Total
Under 25	6	0	0	0	0	0	0	0	6
25 to 29	22	8	0	0	0	0	0	0	30
30 to 34	16	33	11	0	0	0	0	0	60
35 to 39	7	26	32	13	0	0	0	0	78
40 to 44	4	8	29	18	25	0	0	0	84
45 to 49	0	1	14	11	38	14	0	0	78
50 to 54	0	0	2	3	7	17	10	1	40
55 & Up	0	0	0	0	1	2	14	4	21
<b>Total</b>	<b>55</b>	<b>76</b>	<b>88</b>	<b>45</b>	<b>71</b>	<b>33</b>	<b>24</b>	<b>5</b>	<b>397</b>

#### Age Distribution



#### Service Distribution





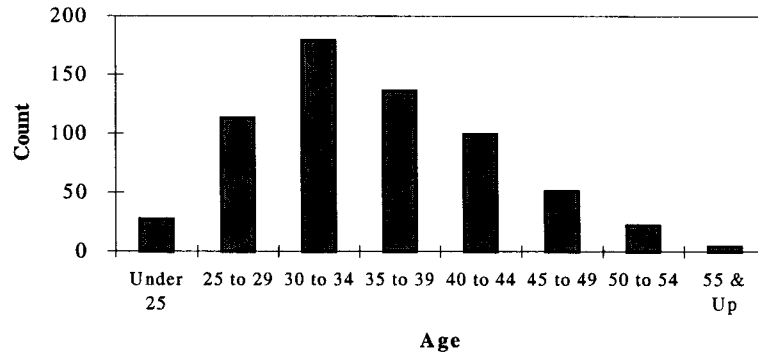
## APPENDIX A

### WICHITA POLICE AND FIRE RETIREMENT SYSTEM DISTRIBUTION OF ACTIVE MEMBERS as of December 31, 2002

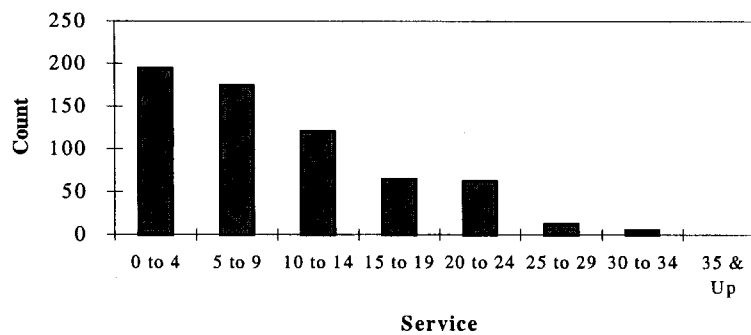
#### Police

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	27	0	0	0	0	0	0	0	27
25 to 29	89	24	0	0	0	0	0	0	113
30 to 34	62	92	25	0	0	0	0	0	179
35 to 39	10	46	62	18	0	0	0	0	136
40 to 44	3	9	26	35	26	0	0	0	99
45 to 49	3	2	5	7	30	4	0	0	51
50 to 54	0	1	2	4	5	8	2	0	22
55 & Up	0	0	0	0	1	0	3	0	4
<b>Total</b>	<b>194</b>	<b>174</b>	<b>120</b>	<b>64</b>	<b>62</b>	<b>12</b>	<b>5</b>	<b>0</b>	<b>631</b>

#### Age Distribution



#### Service Distribution



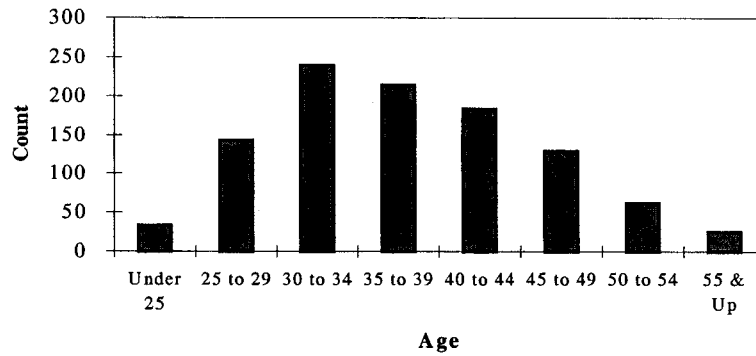
## APPENDIX A

### WICHITA POLICE AND FIRE RETIREMENT SYSTEM DISTRIBUTION OF ACTIVE MEMBERS as of December 31, 2002

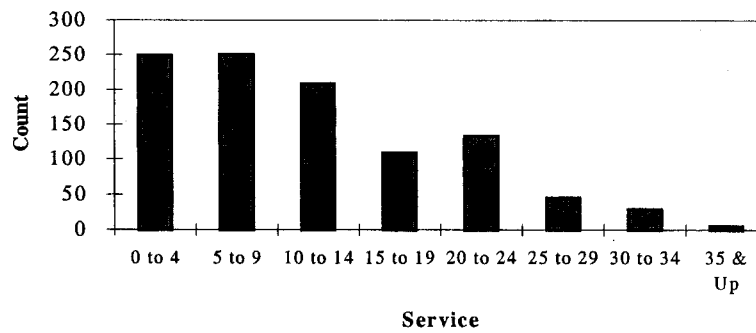
#### Fire & Police

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	33	0	0	0	0	0	0	0	33
25 to 29	111	32	0	0	0	0	0	0	143
30 to 34	78	125	36	0	0	0	0	0	239
35 to 39	17	72	94	31	0	0	0	0	214
40 to 44	7	17	55	53	51	0	0	0	183
45 to 49	3	3	19	18	68	18	0	0	129
50 to 54	0	1	4	7	12	25	12	1	62
55 & Up	0	0	0	0	2	2	17	4	25
<b>Total</b>	<b>249</b>	<b>250</b>	<b>208</b>	<b>109</b>	<b>133</b>	<b>45</b>	<b>29</b>	<b>5</b>	<b>1,028</b>

#### Age Distribution



#### Service Distribution



**APPENDIX A**

**WICHITA POLICE AND FIRE RETIREMENT SYSTEM  
SUMMARY OF DEFERRED VESTED MEMBERS  
as of December 31, 2002**

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	2	3	1,854	1,837	3,691
40 to 44	1	2	3	1,902	3,281	5,183
45 to 49	6	7	13	10,075	12,948	23,023
50 to 54	0	1	1	-	713	713
55 & Up	0	0	0	-	-	-
<b>Total</b>	<b>8</b>	<b>12</b>	<b>20</b>	<b>\$ 13,832</b>	<b>\$ 18,779</b>	<b>\$ 32,610</b>

**Age Distribution**

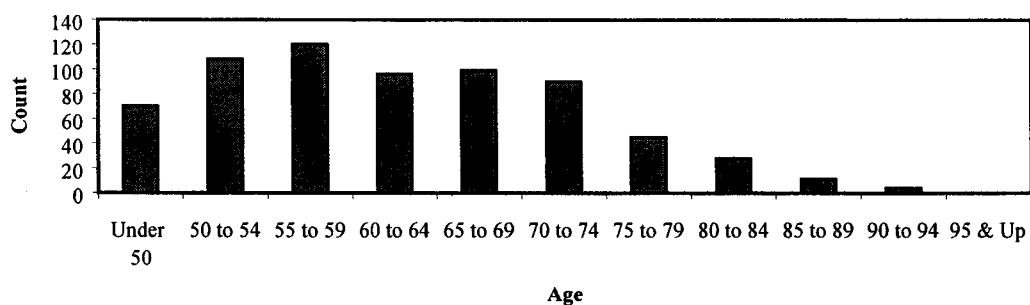


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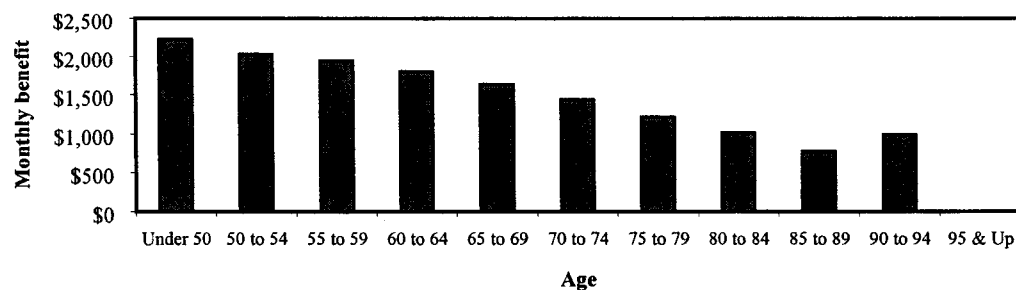
### WICHITA POLICE AND FIRE RETIREMENT SYSTEM SUMMARY OF RETIRED MEMBERS as of December 31, 2002

Age	Number			Monthly Benefit		
	Fire	Police	Total	Fire	Police	Total
Under 50	19	51	70	\$ 38,670	\$ 116,911	\$ 155,580
50 to 54	59	49	108	117,806	101,268	219,074
55 to 59	47	73	120	97,896	135,039	232,935
60 to 64	52	44	96	93,647	79,216	172,863
65 to 69	54	45	99	92,068	69,707	161,775
70 to 74	49	41	90	71,648	57,881	129,529
75 to 79	30	15	45	38,216	16,481	54,697
80 to 84	10	18	28	8,912	19,579	28,491
85 to 89	7	4	11	5,203	3,319	8,522
90 to 94	2	2	4	2,237	1,724	3,962
95 & Up	0	0	0	-	-	-
<b>Total</b>	<b>329</b>	<b>342</b>	<b>671</b>	<b>\$ 566,304</b>	<b>\$ 601,124</b>	<b>\$ 1,167,428</b>

**Age Distribution**



**Average Benefit**

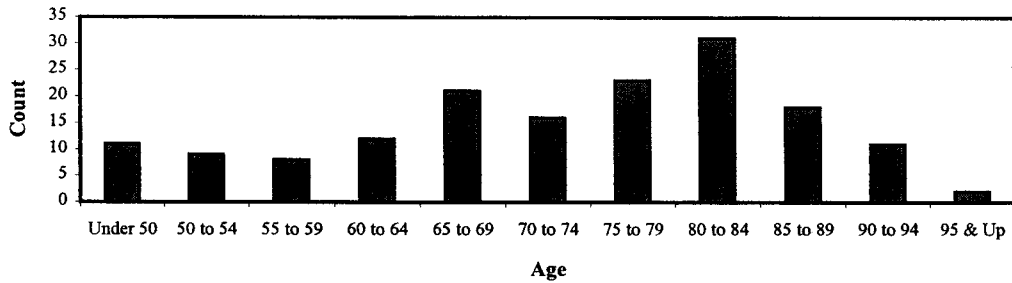


## APPENDIX A

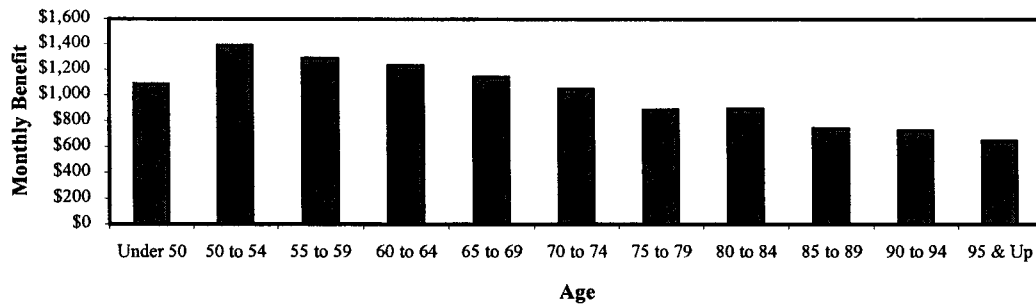
### WICHITA POLICE AND FIRE RETIREMENT SYSTEM SUMMARY OF BENEFICIARIES as of December 31, 2001

Age	Number			Monthly Benefit		
	Fire	Police	Total	Fire	Police	Total
Under 50	5	6	11	\$ 6,007	\$ 5,906	\$ 11,914
50 to 54	5	4	9	5,226	7,264	12,490
55 to 59	2	6	8	1,441	8,854	10,295
60 to 64	5	7	12	6,096	8,648	14,744
65 to 69	9	12	21	10,314	13,605	23,918
70 to 74	6	10	16	5,719	11,008	16,727
75 to 79	19	4	23	16,492	3,829	20,321
80 to 84	23	8	31	20,769	6,856	27,625
85 to 89	6	12	18	4,410	8,940	13,350
90 to 94	4	7	11	2,878	5,068	7,946
95 & Up	2	0	2	1,292	-	1,292
<b>Total</b>	<b>86</b>	<b>76</b>	<b>162</b>	<b>\$ 80,644</b>	<b>\$ 79,979</b>	<b>\$ 160,623</b>

**Age Distribution**



**Average Benefit**



## APPENDIX B

### SUMMARY OF BENEFIT PROVISIONS (DECEMBER 31, 2002)

*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, 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 or 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 66 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.

#### 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:

	Year Ended					5 Year Average
	<u>12-31-02</u>	<u>12-31-01</u>	<u>12-31-00</u>	<u>12-31-99</u>	<u>12-31-98</u>	
Average pay	5.2%	8.6%	3.3%	3.4%	3.7%	4.8%
Total payroll	8.0%	9.5%	1.7%	3.8%	3.0%	5.2%

### 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:

Sample Ages	Present Value of \$1 Monthly for Life		Future Expectancy (Years)	
	<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		0.9	0.7
55		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>	Assumed to occur 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).