

The Report of the  
Annual Actuarial Valuation  
of the  
Civilian Employees' Retirement System of  
the Police Department of Kansas City, Missouri  
April 30, 2005

Submitted to  
The Retirement Board  
The Police Retirement System of  
Kansas City, Missouri

Gabriel, Roeder, Smith & Company  
Actuaries ■ Consultants



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October 4, 2005

The Retirement Board  
Police Retirement System of  
Kansas City, Missouri

Dear Board Members:

Submitted in this report are the results of the Annual Actuarial Valuation of the assets, actuarial values, and contribution requirements associated with benefits provided by the Civilian Employees' Retirement System of the Police Department of Kansas City, Missouri.

The date of the valuation was April 30, 2005.

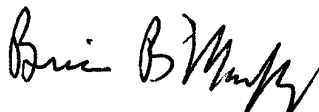
Valuation results, comments and conclusions are contained in Section A.

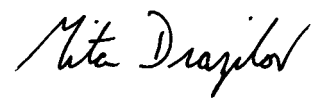
The valuation was based upon information concerning Retirement System benefits, financial transactions, and individual members, terminated members, retirants and beneficiaries. Data was checked for year-to-year consistency but was not otherwise audited by us. This information is summarized in Section B.

Descriptions of the actuarial cost methods and actuarial assumptions are contained in Section C, along with a glossary of technical terms.

This report has been prepared by actuaries who have substantial experience valuing public employee retirement systems. To the best of our knowledge this report is complete and accurate and was made in accordance with standards of practice promulgated by the Actuarial Standards Board of the American Academy of Actuaries. The actuarial assumptions used for the valuation produce results which we believe are reasonable.

Respectfully submitted,

  
Brian B. Murphy, F.S.A.

  
Mita D. Drazilov, A.S.A.

MDD:bd

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**Valuation Results, Comments,  
Recommendations and Conclusion**

## **FINANCIAL OBJECTIVE**

The financial objective of the Retirement System is to establish and receive contributions, expressed as percents of active member payroll, which will remain approximately level from year-to-year and will not have to be increased for future generations of citizens.

## **CONTRIBUTION RATES**

The Retirement System is supported by member contributions, City contributions and investment income from Retirement System assets.

Contributions which satisfy the financial objective are determined by an annual actuarial valuation and are sufficient to:

- (1) cover the actuarial present value of benefits assigned to the current year by the actuarial cost methods described in Section C (the normal cost); and
- (2) amortize over a period of future years the actuarial present value of benefits not covered by valuation assets and anticipated future normal costs (unfunded actuarial accrued liability).

Contribution requirements for the fiscal year beginning May 1, 2006 are shown on page A-2.

## CONTRIBUTIONS COMPUTED TO MEET THE FINANCIAL OBJECTIVE OF THE RETIREMENT SYSTEM

<u>Contributions for Fiscal Year Beginning May 1</u>	<u>Contributions Expressed as Percents of Payroll</u>	
	<u>2006</u>	<u>2005</u>
<b>Normal Cost</b>		
Age & service benefits	9.95 %	9.94 %
Death and disability benefits	0.68	0.67
Termination benefits		
Deferred age & service benefits	0.79	0.78
Refunds of member contributions	1.52	1.65
Supplemental retirement benefit	0.49	0.51
Assumed rate for administrative expenses	<u>0.40</u>	<u>0.40</u>
Total Normal Cost	13.83	13.95
<b>Amortization Payment</b>		
Scheduled amortization of UAAL*	7.04	5.50
<b>Total Required Contribution</b>		
Member portion	5.00	5.00
City portion	15.87	14.45
<b>Total Reported Contribution</b>		
Member portion	5.00	5.00
City portion	9.14	9.14

\* *Unfunded Actuarial Accrued Liabilities.*

Unfunded actuarial accrued liabilities were amortized as a level percent of active member payroll. A description of the method may be found on page C-1.

Procedures for determining dollar contribution amounts are described on page A-3.

Comparative contribution amounts for prior fiscal years are shown on page A-5.

## **DETERMINING DOLLAR CONTRIBUTIONS**

For any period of time, the percent-of-payroll contribution rate needs to be converted to dollar amounts. We recommend one of the following procedures.

- (1) Contribute dollar amounts at the end of each payroll period which are equal to the City's required percent-of-payroll contribution rate of 15.87% shown on page A-2, multiplied by the covered active member payroll for the period. Adjustments should be made as necessary to exclude items of pay that are not covered compensation for Retirement System benefits and to include special payments that are covered compensation.
  
- (2) Contribute \$3,854,132 on October 31, 2006, based upon the required City contribution rate of 15.87% of payroll. This dollar amount was derived by multiplying the percent-of-payroll contribution requirement by the April 30, 2005 valuation payroll, projected to the fiscal year beginning May 1, 2006, using a 1.092 projection factor. If contributions are made on a later schedule, interest should be added at the rate of 0.65% per month.

These two methods are essentially equivalent, and will produce the same result in the long term.

## AMORTIZATION SCHEDULE FOR THE UNFUNDED ACCRUED LIABILITY

Balances						
	Date Created	Last Payment	Initial	Outstanding	2005/2006 Amortization	2006/2007 Amortization
05/01/1998 Base	05/01/1998	FY 2022	\$ 1,365,456	\$ 1,448,917	\$ 111,746	\$ 116,775
05/01/1999 Base	05/01/1999	FY 2023	(352,183)	(373,409)	(27,581)	(28,822)
05/01/2000 Base	05/01/2000	FY 2024	(1,913,466)	(2,021,035)	(143,398)	(149,851)
05/01/2001 Base	05/01/2001	FY 2025	1,087,122	1,140,774	77,962	81,470
05/01/2002 Base	05/01/2002	FY 2026	1,210,843	1,259,283	83,095	86,834
05/01/2003 Base	05/01/2003	FY 2027	13,432,011	13,814,566	882,095	921,789
05/01/2004 Base	05/01/2004	FY 2029	4,195,266	4,520,399	252,291	285,333
05/01/2005 Base	05/01/2005	FY 2030	4,931,763	<u>4,931,763</u>	<u>88,508</u>	<u>314,040</u>
<b>Total Unfunded Actuarial Accrued Liability</b>				<b>\$ 24,721,258</b>	<b>\$ 1,324,718</b>	<b>\$ 1,627,568</b>
Expected Contribution						
Shortfall in FY 2006	05/01/2005	FY 2030	1,279,074	1,279,074	<u>-</u>	<u>82,881</u>
<b>Total Amortization Payment Including Shortfall</b>					<b>\$ 1,324,718</b>	<b>\$ 1,710,449</b>
<b>Equivalent Single Amortization Period</b>						<b>21.83 years</b>



## COMPUTED AND ACTUAL CITY CONTRIBUTIONS COMPARATIVE STATEMENT

Fiscal Year Beg. May 1	Valuation Date April 30	Projected Annual Payroll	Fiscal Year Contributions				
			as a % of Projected Pay		\$ Contributions		
			Annual Required Contrib.	Reported FY City Contrib.	Annual Required Contrib.	Projected FY City Contrib.	Actual Dollar Contrib.
1997	1997	\$14,417,285	7.18 %	3.00 %	\$ 1,035,180	\$ 432,519	\$ 453,217
1998	1998	15,295,680	6.80	4.38	1,040,673	669,951	674,228
1999	1999	15,430,846	7.47	5.76	1,152,018	888,817	944,475
2000	2000	17,786,369	7.08	7.14	1,259,454	1,269,947	1,286,166
2001	2001	18,831,325	7.49	7.14	1,410,461	1,344,557	1,420,668
2002	2002	21,688,988	8.12	7.14	1,761,146	1,548,594	1,567,833
2003	2003	22,931,521	9.32	7.14	2,137,218	1,637,311	-
2003@	2003	22,931,521	12.84	7.14	2,944,407	1,637,311	1,601,243
2004	2003	23,963,439	12.84	7.14	3,076,906	1,710,990	1,612,080
2005	2004	24,088,026	14.40	9.14	3,468,676	2,201,646	
2005#	2004	24,088,026	14.45	9.14	3,480,720	2,201,646	
2006	2005	24,285,644	15.87		3,854,132		

@ After changes in actuarial assumptions or methods in conjunction with an experience study.

# After changes in benefits.

## ACTUARIAL ACCRUED LIABILITIES & VALUATION ASSETS COMPARATIVE STATEMENT

Valuation Date April 30	Actuarial Accrued Liability (AAL)	Valuation Assets	Unfunded Actuarial Accrued Liability (UAAL)	Ratio of Present Assets to AAL	Ratio of UAAL to Annual Payroll
1997	\$ 39,525,068	\$ 37,079,924	\$ 2,445,144	93.8 %	17.0 %
1998	43,200,513	41,835,057	1,365,456	96.8	8.9
1999	48,627,168	47,593,329	1,033,839	97.9	6.7
2000	56,038,915	56,905,524	(866,609)	101.5	(5.0)
2001	62,097,908	61,895,208	202,700	99.7	1.1
2002	67,814,254	66,401,308	1,412,946	97.9	6.8
2003	74,223,626	68,182,691	6,040,935	91.9	27.5
2003@	83,044,509	68,182,691	14,861,818	82.1	67.7
2004	89,054,028	69,868,024	19,186,004	78.5	87.0
2004#	89,141,414	69,868,024	19,273,390	78.4	87.4
2005	97,103,806	72,382,548	24,721,258	74.5	111.2

@ After changes in actuarial assumptions or methods.

# After changes in benefits.

*The Ratio of Valuation Assets to AAL* is a traditional measure of a system's funding progress. Except in years when the system is amended or actuarial assumptions are revised, this ratio can be expected to move gradually toward 100%.

*The Ratio of UAAL to Valuation Payroll* is another relative index of condition. Actuarial unfunded liabilities represent debt, while active member payroll represents the system's capacity to collect contributions to pay toward debt. The lower the ratio, the greater the financial strength - and vice-versa.

## SHORT CONDITION TEST COMPARATIVE STATEMENT

Valuation Date April 30	Entry Age Accrued Liabilities			Valuation Assets	Portion of Accrued Liabilities Covered by Assets		
	(1) Active Member Contributions	(2) Retirants and Beneficiaries	(3) Active Members (Employer Portion)		(1)	(2)	(3)
2002	\$7,114,473	\$19,950,246	\$40,749,535	\$66,401,308	100 %	100 %	97 %
2003	7,669,823	23,340,857	43,212,946	68,182,691	100	100	86
2003@	7,669,823	23,457,419	51,917,267	68,182,691	100	100	71
2004	8,218,260	26,363,592	54,472,176	69,868,024	100	100	65
2004#	8,218,260	26,402,483	54,520,671	69,868,024	100	100	65
2005	8,641,718	32,330,097	56,131,991	72,382,548	100	100	56

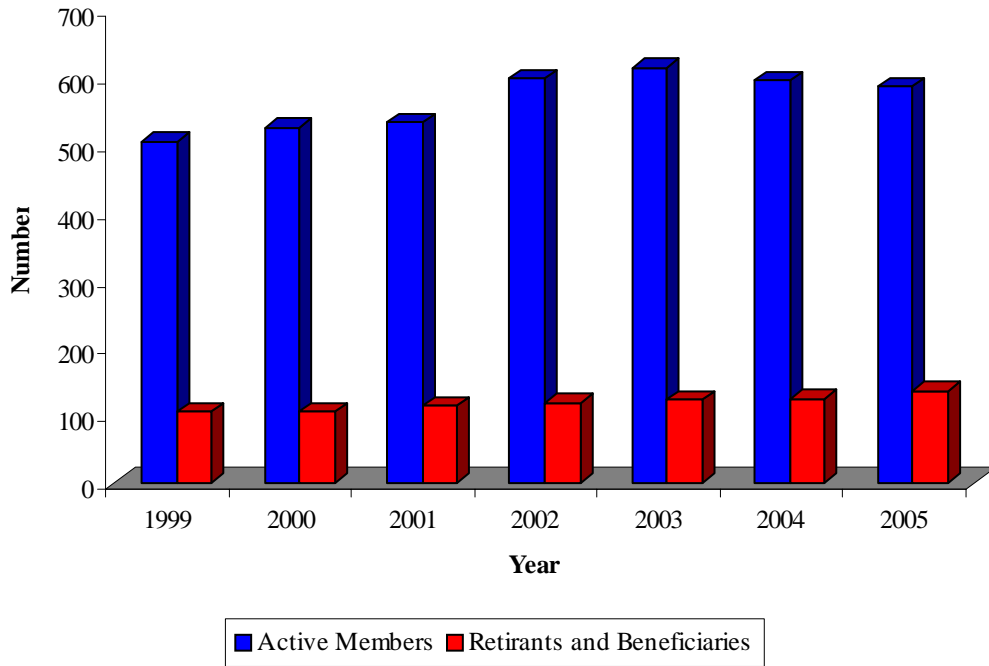
@ After changes in actuarial assumptions or methods.

# After changes in benefits

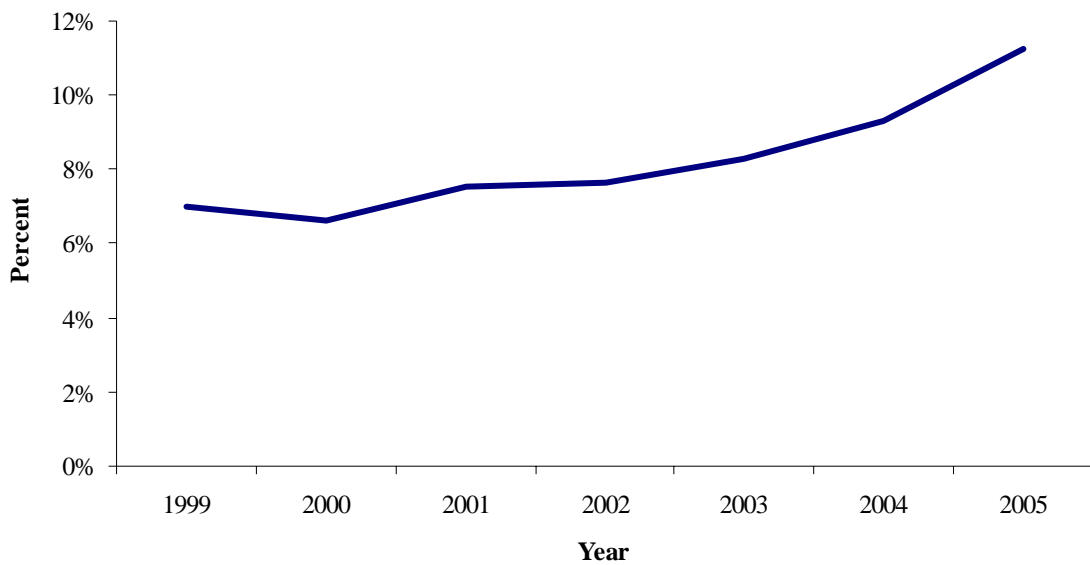
# MEMBERSHIP INFORMATION

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## Active and Retired Members



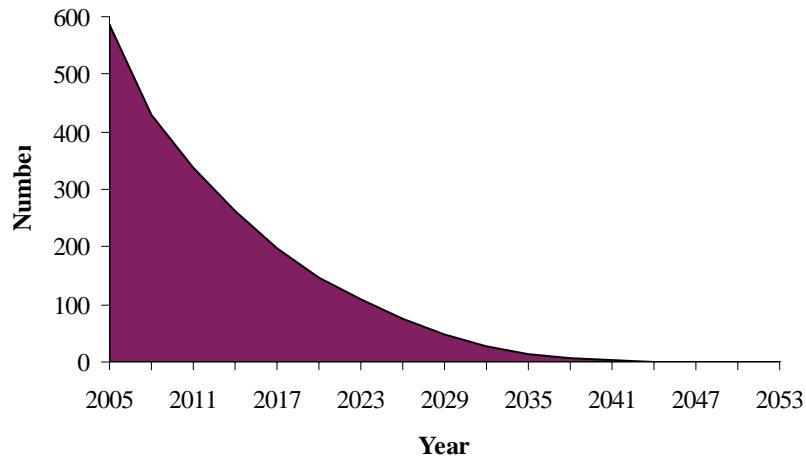
## Benefits as a Percent-of-Payroll



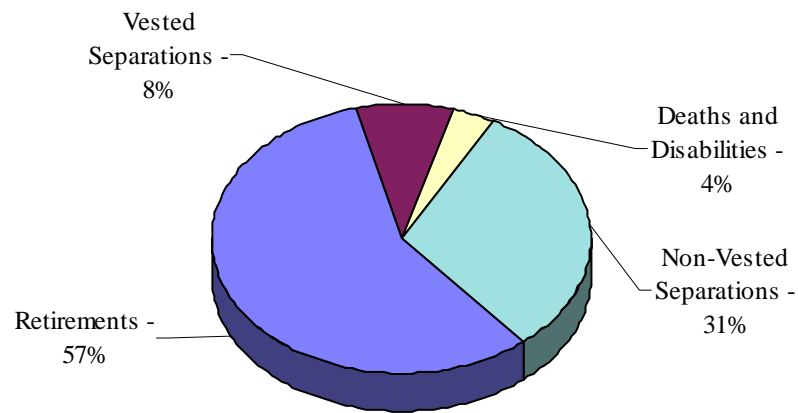
# EXPECTED DEVELOPMENT OF PRESENT POPULATION

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### Closed Group Population Projection



### Expected Terminations from Active Employment for Current Active Members



## COMMENTS, RECOMMENDATIONS, AND CONCLUSION

**Comment A:** Based on the results of this valuation and the current procedure of amortizing the unfunded actuarial accrued liability, the computed employer contribution rate is 15.87% of pay for the fiscal year beginning May 1, 2006, an increase from 14.45% last year. This increase is related to the emerging effects of prior investment losses, as mentioned in the 2004 actuarial report. It is also related to the fact that the City is not scheduled to contribute at the recommended level for the fiscal year beginning May 1, 2005. Although we are pleased to see an increase in the scheduled City contribution rate to 9.14% for the fiscal year beginning May 1, 2005, it is important that contributions at the required level be received. In addition, it is our understanding that the System and the City are currently negotiating an increase to the scheduled employer contribution rate, to 11.14%, for the fiscal year beginning May 1, 2006.

**Comment B:** As of April 30, 2005, actuarial accrued liabilities were \$97,103,806 while valuation assets were \$72,382,548, resulting in a funded ratio of 74.5%. The funded ratio is likely to drop again next year as prior investment losses become fully recognized, and more so, if City contributions continue to fall short of the required rate. A declining funded ratio indicates a weakening of the System's financial position, which could among other things result in an inability to pay future cost of living adjustments (COLAs) *possibly even in 2006*, and in the long term an inability to pay basic benefits.

**Comment C:** On a market value basis, the System earned 7.8% return on investments this year. The asset smoothing method smoothes gains and losses over 4 year periods. There will continue to be upward pressure on contribution rates as prior losses are recognized, unless those losses are offset by gains from other sources. Market rates of return in excess of the actuarial assumed rate are required to offset that pressure.

**Comment D:** At its September, 2003 meeting, the Board accepted our recommendation that the funding value of assets be constrained to fall in between 80% and 120% of market value. Although it did not affect the results this year, this method change was incorporated into this valuation. The ratio of funding value of assets to market value of assets is currently 100.1%, well within the corridor. This is an improvement over last year, when the ratio was 103.9%.

## **COMMENTS, RECOMMENDATIONS, AND CONCLUSION (CONTINUED)**

**Recommendation:** In a letter dated April 7, 2005, we provided the System with a possible definition of “actuarial soundness” for the purpose of whether or not an annual COLA may be granted to the retired members who were eligible for such COLA. While there is no universal definition of “actuarial soundness”, we recommend that the Board adopt a definition of “actuarial soundness” for the purpose of the annual COLA process. The specifics of the definition that the Board adopts may affect the ability of the Board to grant a COLA in 2006 and in future years.

**Conclusion:** This system, like virtually every other retirement system in the country was battered by the weak investment market that began in March of 2000. The echoes of that period will continue to affect the system as the full effects of the unrealized losses flow through to the value of assets that is recognized in the valuation. The system is currently being affected by City contributions that are well below the computed rate. Two things are important for the continued well being of this system. First, investment return needs to be at least in accordance with assumptions. While the system cannot control investment return, the importance of a sound, well executed investment program cannot be overemphasized. Second, a plan should be instituted for receiving contributions at the levels recommended in the actuarial valuation. Absent such a plan, the day will come when COLAs cannot be paid or when benefit levels will need to be reconsidered.

**DEVELOPMENT OF UNFUNDED ACTUARIAL ACCRUED LIABILITIES**  
**APRIL 30, 2005**

Actuarial Present Value	(1) Total Actuarial Present Value	Allocation by Entry Age	
		(2) Portion Covered By Future Normal Cost Contributions	(3) Actuarial Accrued Liabilities (1)-(2)
Allowances currently being paid to current retirees and beneficiaries:			
Pension	\$ 29,893,081	\$ -	\$ 29,893,081
Supplemental Retirement Benefit	2,437,016	-	2,437,016
Allowances likely to be paid to members with deferred benefits:			
Pension	903,155	-	903,155
Supplemental Retirement Benefit	109,708	-	109,708
Age and service allowances due to retirement or vested withdrawals based on service rendered before and likely to be rendered after the valuation date	80,135,785	20,610,707	59,525,078
Disability allowances likely to be paid present active members who become permanently disabled	2,483,420	968,771	1,514,649
Survivor benefits likely to be paid to spouses of present active members who die before retiring	793,438	271,793	521,645
Return of member contributions	2,157,038	3,018,510	(861,472)
Supplemental retirement benefit likely to be paid to present active members	3,779,401	718,455	3,060,946
<b>Total</b>	<b>\$122,692,042</b>	<b>\$25,588,236</b>	<b>\$97,103,806</b>
Actuarial Value of Assets			72,382,548
Unfunded Actuarial Accrued Liability			<b>\$ 24,721,258</b>

## ACTUARIAL BALANCE SHEET

<b>Present Resources and Expected Future Resources</b>	<b>Measured on April 30</b>	
	<b>2005</b>	<b>2004</b>
A. Valuation assets:		
1. Net assets from system financial statements (market value)	\$ 72,320,741	\$ 67,252,371
2. Valuation adjustment	61,807	2,615,653
3. Valuation assets	72,382,548	69,868,024
B. Actuarial present value of expected future employer contributions:		
1. For normal costs	16,582,352	16,451,315
2. For unfunded actuarial accrued liabilities	24,721,258	19,273,390
3. Total	41,303,610	35,724,705
C. Actuarial present value of expected future member contributions	9,789,004	9,582,266
D. Total actuarial present value of present and expected future resources	\$ 123,475,162	\$ 115,174,995
<b>Actuarial Present Value of Expected Future Benefit Payments and Reserves</b>		
A. To retirants and beneficiaries	\$ 32,330,097	\$ 26,402,483
B. To vested terminated members	1,012,863	1,027,183
C. To present active members:		
1. Allocated to service rendered prior to valuation date	63,760,846	61,711,748
2. Allocated to service likely to be rendered after valuation date	25,588,236	25,267,000
3. Total	89,349,082	86,978,748
D. Total actuarial present value of expected future benefit payments	122,692,042	114,408,414
E. Present value of assumed future administrative expenses	783,120	766,581
F. Total actuarial present value of expected future benefit payments and reserves	\$ 123,475,162	\$ 115,174,995



## DERIVATION OF ACTUARIAL GAIN (LOSS)

The actuarial gains or losses realized in the operation of the Retirement System provide an experience test. Actual experience will never (except by coincidence) coincide exactly with assumed experience. It is expected that gains and losses will cancel each other over a period of years, but sizable year-to-year fluctuations are common. Detail on the derivation of the actuarial gain (loss) is shown below, along with a year-by-year comparative schedule.

<b>Measurements for Fiscal Year Ended April 30</b>	<b><u>2005</u></b>	<b><u>2004</u></b>
(1) UAAL* at start of year	\$ 19,273,390	\$ 14,861,818
(2) Employer normal cost from last valuation	1,885,970	1,867,438
(3) Actual employer contributions	1,612,080	1,601,243
(4) Interest accrual: $(1) \times 0.0775 + [(2) - (3)] / 2 \times 0.0775$	1,504,301	1,162,106
(5) Expected UAAL before changes: $(1) + (2) - (3) + (4)$	21,051,581	16,290,119
(6) Change from benefit changes	none	87,386
(7) Change from revised actuarial assumptions and miscellaneous	none	none
(8) Expected UAAL after changes: $(5) + (6) + (7)$	21,051,581	16,377,505
(9) Actual UAAL at end of year	24,721,258	19,273,390
(10) Gain (loss) $(8) - (9)$	(3,669,677)	(2,895,885)
(11) Gain (loss) as percent of actuarial accrued liabilities at start of year (\$89,141,414)	(4.1%)	(3.5%)

\* *Unfunded actuarial accrued liability (UAAL).*

<b>Year Ended April 30</b>	<b>Actuarial Gain (Loss) As % of Beginning Accrued Liabilities</b>
2002	(1.9) %
2003	(6.7)
2004	(3.5)
2005	(4.1)

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Summary of Benefit Provisions and  
Valuation Data Submitted by the  
Retirement System

**BRIEF SUMMARY OF BENEFIT CONDITIONS EVALUATED  
(APRIL 30, 2005)**

**Eligibility**

**Amount**

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**SERVICE RETIREMENT**

The later of age 65 or member's tenth anniversary of employment.

Straight life pension equals 2.0% of Final Compensation times years of service. Final Compensation is the average annual compensation for the two years of service with the highest salary whether consecutive or otherwise. Pensions are payable monthly at one-twelfth of the annual rate.

**EARLY RETIREMENT**

Age 55 with 10 or more years of service, or age 60 with 5 or more years of service, or date at which attained age plus years of service equal or exceed 80.

Computed as service retirement but reduced by ½% for each month that actual retirement precedes age 60 if the member has completed at least 10 years of service. Reduced by ½% for each month that actual retirement precedes age 65 if the member has completed at least 5 years of service, but less than 10 years of service. No reduction if member's attained age plus years of service total at least 80.

**DEFERRED RETIREMENT**

5 or more years of creditable service.

Computed as service retirement but based upon service, Final Compensation and benefit in effect at termination. Benefit begins at early retirement age adjusted by applicable reductions.

**DEATH AFTER RETIREMENT SURVIVOR'S PENSION**

Payable to a surviving spouse, if any, upon the death of a retired member who was receiving a straight life pension. Benefit is payable for life.

Spouse's pension equals 50% of member's base benefit at time of retirement plus cost of living adjustments.

In lieu of the 50% surviving spouse death benefit, the retiring employee may elect a reduced actuarially equivalent 100% surviving spouse annuity at time of retirement.

Should the total amount paid to a member and surviving spouse be less than the member's accumulated contributions with interest to the date of retirement, the beneficiary shall receive an amount equal to the difference.

Payable at death.

A funeral benefit of \$1,000.

**BRIEF SUMMARY OF BENEFIT CONDITIONS EVALUATED  
(CONTINUED)  
(APRIL 30, 2005)**

**Eligibility**

**Amount**

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**DEATH IN SERVICE SURVIVOR'S PENSION**

Payable to a surviving spouse, if any, upon death of a member with at least 5 but less than 20 years of service. Benefit is payable until death.

50% of member's accrued pension. The effective date shall be the later of the first day of the month after the member's death or attainment of what would have been the member's early retirement date.

Payable to a surviving spouse, if any, upon death of a member with 20 or more years of service. Benefit is payable until death.

May elect a pension determined on a joint-and-survivor basis from the actuarial value of the member's accrued benefit, if larger than 50% of member's accrued pension.

Payable at death.

A funeral benefit of \$1,000.

**NON-DUTY DISABILITY**

Payable upon the total and permanent disability of a member with 10 or more years of service.

30% of Final Compensation, but in no event less than the amount the member would have been entitled to as a pension, if the member had retired on the same date with equivalent age and creditable service.

**DUTY DISABILITY**

Payable upon the total and permanent disability of a member as a result of performance duties with the Police Department.

50% of Final Compensation payable for the remainder of the member's life, or as long as the permanent disability continues. The pension may be subject to offset or reduction by amounts paid or payable under any Workers' Compensation law.

**POST-RETIREMENT BENEFIT INCREASES**

Any member may receive during each year, in addition to the member's base pension, a cost of living adjustment in an amount not to exceed 3% of the member's base pension. Base pension is the pension computed under the provisions of the law at the date of retirement, without regard to the cost of living adjustment. The cost of living adjustment also applies to benefits being paid to a surviving spouse. The adjustment is normally effective with the June 1 benefit payment.

**MEMBER CONTRIBUTIONS**

5% of compensation. Effective 8/31/03, member contributions are deducted on a pre-tax basis.

**BRIEF SUMMARY OF BENEFIT CONDITIONS EVALUATED  
(CONCLUDED)  
(APRIL 30, 2005)**

**SUPPLEMENTAL RETIREMENT BENEFIT**

Current and future retired and disabled members and their surviving spouses are eligible to receive \$160 per month in addition to pension benefits.

**OPTIONAL FORM OF BENEFIT PAYMENT**

Members retiring with at least one or more years of service beyond their eligible retirement date may elect to take a portion of their benefit as a lump-sum distribution (PLOP). Members electing PLOP will receive an actuarially reduced monthly benefit for their lifetime.

## DERIVATION OF FUNDING VALUE OF ASSETS

Valuation Date April 30,	2002	2003	2004	2005	2006	2007	2008
A. Funding Value Beginning of Year	\$61,895,208	\$66,401,308	\$68,182,691	\$69,868,024			
B. Market Value End of Year	60,493,794	57,063,133	67,252,371	72,320,741			
C. Market Value Beginning of Year	61,644,758	60,493,794	57,063,133	67,252,371			
D. Non-Investment Net Cash Flow	369,100	519,869	197,039	(162,929)			
E. Investment Return:							
E1. Market Total: B-C-D	(1,520,064)	(3,950,530)	9,992,199	5,231,299			
E2. Assumed Rate	7.75%	7.75%	7.75%	7.75%			
E3. Amount for Immediate Recognition	4,811,003	5,165,996	5,291,699	5,408,537			
E4. Amount for Phased In Recognition	(6,331,067)	(9,116,526)	4,700,500	(177,238)			
F. Phased-In Recognition of Investment Return:							
F1. Current Year: 0.25 x E4	(\$1,582,767)	(\$2,279,132)	\$1,175,125	(\$44,310)			
F2. First Prior Year	(1,116,631)	(1,582,767)	(2,279,132)	1,175,125	(\$44,310)		
F3. Second Prior Year	1,074,049	(1,116,631)	(1,582,767)	(2,279,132)	1,175,125	(\$44,310)	
F4. Third Prior Year	<u>951,346</u>	<u>1,074,048</u>	<u>(1,116,631)</u>	<u>(1,582,767)</u>	<u>(2,279,129)</u>	<u>1,175,125</u>	<u>(\$44,308)</u>
F5. Total Recognized Phase-in	(674,003)	(3,904,482)	(3,803,405)	(2,731,084)	(1,148,314)	1,130,815	(44,308)
G. Funding Value End of Year: A+D+E3+F5	66,401,308	68,182,691	69,868,024	72,382,548			
H. Difference Between Funding & Market Values	5,907,514	11,119,558	2,615,653	61,807			
I. Recognized Rate of Return	6.7%	1.9%	2.2%	3.8%			
J. Market Rate of Return	(2.5)%	(6.5)%	17.5%	7.8%			
K. Ratio of Funding Value to Market Value	109.8%	119.5%	103.9%	100.1%			

*Effective with the 2004 valuation, the funding value of assets is constrained to fall within a corridor of 80% to 120% of market value. The Funding Value of Assets recognizes assumed investment return (line E3) fully each year. Differences between actual and assumed investment return (line E4) are phased in over a closed 4-year period. During periods when investment performance exceeds the assumed rate, Funding Value of Assets will tend to be less than market value. During periods when investment performance is less than the assumed rate, Funding Value of Assets will tend to be greater than market value. If assumed rates are exactly realized for 3 consecutive years, funding value will become equal to market value.*

**SUMMARY OF CURRENT ASSET INFORMATION  
REPORTED FOR VALUATION**

	<b>Market Value</b>	
	<b>April 30, 2005</b>	<b>April 30, 2004</b>
Cash & Equivalents	\$ 2,959,823	\$5,092,409
Receivables	540,782	489,743
Stocks: Common Corporate	33,310,444	31,015,775
Foreign	10,020,064	9,784,557
Bonds: U.S Government	11,408,614	10,501,886
Corporate	11,098,351	9,404,900
Municipal / Provincial	100,000	0
Asset Backed Securities	801,923	0
Real Estate	191,622	0
Mortgages	2,016,474	1,026,017
Other	0	0
<b>Total Assets</b>	<b>\$72,448,097</b>	<b>\$67,315,287</b>
Accounts Payable	(127,356)	(62,916)
<b>Net Assets Available for Benefits</b>	<b>\$72,320,741</b>	<b>\$67,252,371</b>

**Additions and Deductions**

	<b>2005</b>	<b>2004</b>
Market Value - Balance - Beginning of Year	\$67,252,371	\$57,063,133
<b>Additions:</b>		
Employees' Contributions	1,188,564	1,247,257
Employer Contributions	1,612,080	1,601,243
Investment Return	5,585,687	10,309,316
Miscellaneous	0	0
<b>Deductions:</b>		
Retirement Benefit Payments	2,684,395	2,313,851
Death Benefit Payments	4,000	0
Refunds of Member Contributions	166,110	240,121
Investment Expenses	354,388	317,117
Administrative Expenses	109,068	97,489
<b>Market Value - Balance - End of Year</b>	<b>\$72,320,741</b>	<b>\$67,252,371</b>

## ASSET INFORMATION REPORTED FOR VALUATION COMPARATIVE STATEMENT

Year Ended April 30	Assets BOY	Additions				Deductions					Assets Year-End
		Employee Contrib.	Employer Contrib.	Invest. Return	Misc. Income	Ret. Benefits	Death Benefits	Contrib. Refunds	Inv. Exp.	Admin. Exp.	
2001	\$ 64,241,220	\$ 911,676	\$ 1,286,166	\$ (2,794,084)	\$ 0	\$ 1,452,061	\$ 0	\$ 169,707	\$ 237,384	\$ 141,068	\$ 61,644,758
2002	61,644,758	1,002,689	1,420,668	(1,216,871)	0	1,694,955	0	272,962	303,193	86,340	60,493,794
2003	60,493,794	1,099,248	1,567,833	(3,709,900)	0	1,914,018	0	108,033	240,630	125,161	57,063,133
2004	57,063,133	1,247,257	1,601,243	10,309,316	0	2,313,851	0	240,121	317,117	97,489	67,252,371
2005	67,252,371	1,188,564	1,612,080	5,585,687	0	2,684,395	4,000	166,110	354,388	109,068	72,320,741



## RETIRANTS AND BENEFICIARIES ADDED TO AND REMOVED FROM ROLLS COMPARATIVE STATEMENT

Year Ended April 30	Added to Rolls		Removed from Rolls		Rolls End of Year		% Incr. Annual Benefits	Average Annual Benefit	Annual Benefits as a % of Active Payroll	Number of Active Members per Retired Members	
	No.	Annual Benefits	Post-Ret. Increases	No.	Annual Benefits	No.					Annual Benefits #
2001					113	\$ 1,419,983		\$ 12,566	8.4 %	4.7	
2002	6	\$140,014	\$37,042	2	\$8,560	117	1,588,479	12	13,577	7.7	5.1
2003	13	271,738	39,014	8	74,826	122	1,824,405	15	14,954	8.3	5.0
2004	9	224,388	45,963	8	45,900	123	2,048,856	12	16,657	9.3	4.8
2005	19	422,375	51,758	7	25,805	135	2,497,184	22	18,498	11.2	4.3

*# Does not include supplemental retirement benefits.*

**RETIRANTS AND BENEFICIARIES - APRIL 30, 2005**  
**TABULATED BY ATTAINED AGES\***

Attained Ages	Age & Service Retirants		Disability Retirants		Survivor Beneficiaries	
	No.	Annual Benefits	No.	Annual Benefits	No.	Annual Benefits
30-34						
35-39			1	\$5,726		
40-44						
45-49			1	22,297	1	\$22,588
50-54	5	\$140,240	1	21,595		
55-59	29	842,246	1	29,913	1	10,871
60-64	22	506,213	2	38,811		
65-69	20	348,868	1	8,320	2	12,595
70-74	12	130,055				
75-79	16	244,262			3	8,971
80-84	6	30,253			3	12,080
85-89	4	38,015			2	2,110
90 & Over	2	21,155				
<b>Totals</b>	<b>116</b>	<b>\$2,301,307</b>	<b>7</b>	<b>\$126,662</b>	<b>12</b>	<b>\$69,215</b>

\* Benefit amounts do not include supplemental retirement benefits.

**VESTED TERMINATED MEMBERS - APRIL 30, 2005**  
**TABULATED BY ATTAINED AGES**

<b>Attained Ages</b>	<b>No.</b>	<b>Annual Benefits*</b>
30-34	1	\$10,264
35-39	1	13,707
40-44	3	19,745
45-49	4	38,305
50-54	2	28,733
55-59	2	29,975
<b>Totals</b>	<b>13</b>	<b>\$140,729</b>

*\* Benefit amounts do not include supplemental retirement benefits.*

**ACTIVE MEMBERS INCLUDED IN APRIL 30, 2005 VALUATION  
COMPARATIVE SCHEDULE**

Valuation Date April 30	Active Members	Annual Payroll	Average			% Inc. Avg. Pay
			Age	Service	Pay	
1999	506	\$15,430,846	39.3 yrs.	9.6 yrs.	\$30,496	
2000	526	17,786,369	39.9	9.7	33,814	10.9 %
2001	533	18,831,325	40.2	9.9	35,331	4.5
2001 *	533	16,974,738	40.2	9.9	31,848	
2002	599	20,755,012	39.8	9.1	34,649	8.8
2003	615	21,944,040	40.0	9.2	35,681	3.0
2004	595	22,058,127	40.9	9.9	37,072	3.9
2005	586	22,239,092	41.3	10.2	37,951	2.4

\* Payroll reported in data. For valuation years 2001 and prior, valuation payroll includes projected salary increases for year following valuation. For valuation years 2002 and greater, valuation payroll is payroll reported in data after annualization of pays for new hires.

**ADDITIONS TO AND REMOVALS FROM ACTIVE MEMBERSHIP  
ACTUAL AND EXPECTED NUMBERS**

Year Ended April 30	Number Added During Year		Terminations During Year								Active Members End of Year
			Normal Retirement		Disability Retirement		Died-In Service		Other Terminations		
	A	E	A	E	A	E	A	E	A	E	
2001											533
2002	118	52	6	11.1	0	0.5	1	0.5	45	28.2	599
2003	75	59	9	11.2	1	0.5	2	0.6	47	20.0	615
2004	41	61	7	14.9	1	0.6	0	0.4	53	60.0	595
2005	42	51	18	15.7	0	0.7	2	0.4	31	52.2	586
5-Year Totals	276	223	40	52.9	2	2.3	5	1.9	176	160.4	

*A represents actual number.*

*E represents number based on assumptions outlined in Section C.*

**ACTIVE MEMBERS – APRIL 30, 2005**  
**ATTAINED AGE AND YEARS OF SERVICE**

Attained Age	Years of Service to Valuation Date							Totals	
	0-4	5-9	10-14	15-19	20-24	25-29	30 Plus	No.	Annual Payroll
Under 20									
20-24	37							37	\$ 990,924
25-29	52	24	1					77	2,364,805
30-34	41	31	14					86	2,958,573
35-39	21	15	13	9	1			59	2,111,166
40-44	27	15	9	16	12	1		80	3,271,085
45-49	22	11	12	13	20	19	1	98	4,308,194
50-54	14	7	19	6	9	13	5	73	3,163,746
55-59	7	9	7	6	10	2	2	43	1,805,693
60-64	4	5	7	3	2		1	22	898,196
65-69	1		3	1				5	172,916
70-74		1	1	2				4	125,528
75-79	1		1					2	68,266
<b>Totals</b>	<b>227</b>	<b>118</b>	<b>87</b>	<b>56</b>	<b>54</b>	<b>35</b>	<b>9</b>	<b>586</b>	<b>\$ 22,239,092</b>

While not used in the financial computations, the following group averages are computed and shown because of their general interest.

Age: 41.3 years

Service: 10.2 years

Annual Pay: \$37,951

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Financial Principles,  
Actuarial Valuation Process,  
Actuarial Cost Methods,  
Actuarial Assumptions and  
Definitions of Technical Terms

## **BASIC FINANCIAL PRINCIPLES AND OPERATION OF THE RETIREMENT SYSTEM**

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

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

A Retirement System meets this requirement by having as its ***financial objective the establishment and receipt of contributions, expressed as percents of active member payroll, which will remain approximately level*** from year-to-year and will not have to be increased for future generations of taxpayers.

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

***Normal Cost*** (the present value of future benefits assigned to members' service being rendered in the current year)

... plus ...

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



The accumulation of invested assets *is a by-product of level percent-of-payroll contributions, not the objective*. Investment income becomes the 3rd major contributor to the retirement program, and the amount is directly related to the amount of contributions and investment performance.

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

$$B = C + I - E$$

The aggregate amount of **B**enefit payments to any group of members and their beneficiaries cannot exceed the sum of:

The aggregate amount of **C**ontributions received on behalf of the group

. . . plus . . .

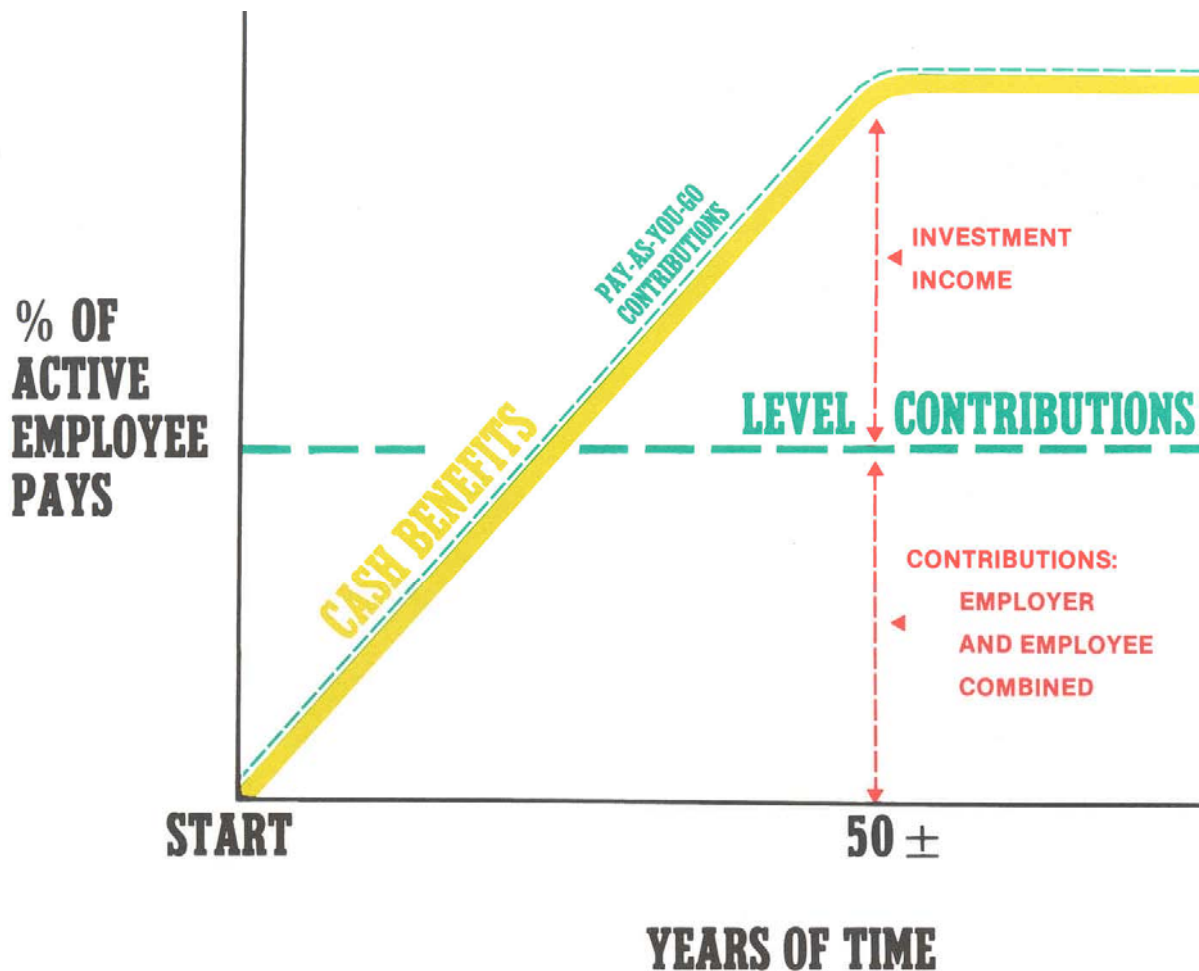
**I**nvestment earnings on contributions received and not required for immediate cash payments of benefits

. . . minus . . .

The **E**xpenses of operating the program.

There are retirement programs designed to defer the bulk of contributions far into the future. The present contribution rate for such systems is *artificially low*. The fact that the contribution rate is destined to increase relentlessly to a much higher level, is often ignored.

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



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

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

**Economic Risk Areas**

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

**Non-Economic Risk Areas**

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

## THE ACTUARIAL VALUATION PROCESS

*The financing diagram* on the previous page shows the relationship between the two fundamentally different philosophies of paying for retirement benefits: the method where contributions match cash benefit payments (or barely exceed cash benefit payments, as in the Federal Social Security program) which is an *increasing contribution method*; and the *level contribution method* which equalizes contributions between the generations.

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*The actuarial valuation* is the mathematical process by which the level contribution rate is determined, and the flow of activity constituting the valuation may be summarized as follows:

- A. ***Covered Person Data***, furnished by plan administrator.
  - Retired lives now receiving benefits
  - Former employees with vested benefits not yet payable
  - Active employees
  
- B. + ***Asset data*** (cash & investments), furnished by plan administrator
  
- C. + ***Assumptions concerning future financial experience in various risk areas***, which assumptions are established by the Retirement Board after consulting with the actuary
  
- D. + ***The funding method*** for employer contributions (the long-term, planned pattern for employer contributions)
  
- E. + ***Mathematically combining the assumptions, the funding method, and the data***
  
- F. = Determination of:
  - Plan financial position
  
  - and/or New Employer Contribution Rate

## ACTUARIAL COST METHODS USED FOR THE VALUATION

*Age and Service Benefits, Death and Disability Benefits.* Normal cost and the allocation of actuarial present values between service rendered before and after the valuation date were determined using an individual entry-age actuarial cost method having the following characteristics:

- (i) the annual normal costs for each individual active member, payable from the member's date of employment to the member's projected date of retirement, are sufficient to accumulate the actuarial present value of the member's future service benefit at time of retirement;
- (ii) each annual normal cost is a constant percentage of the member's year-by-year projected covered pay.

*Amortization of Unfunded Actuarial Accrued Liabilities.* Unfunded actuarial accrued liabilities were amortized by level percent-of-payroll contributions (principal and interest combined) over a closed initial period of 24 years. Beginning in 1998, a new basis is created as of each valuation date. The single equivalent amortization period is 21.83 years.

Active member payroll was assumed to increase 4.5% a year for the purpose of determining the level percent contributions.

## ACTUARIAL ASSUMPTIONS IN THE VALUATION PROCESS

The actuary calculates contribution requirements and actuarial present values for a retirement system by applying actuarial assumptions to the benefit provisions and people information of the system, using the actuarial cost methods described on page C-5.

The principal areas of risk which require assumptions about future experience are:

- (i) long-term rates of investment return to be generated by the assets of the system
- (ii) patterns of pay increases to members
- (iii) rates of mortality among members, retirants and beneficiaries
- (iv) rates of withdrawal of active members
- (v) rates of disability among active members
- (vi) the age patterns of actual retirements

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

---

The employer contribution rate has been computed to remain level from year-to-year so long as benefits and the basic experience and make-up of members do not change. Examples of favorable experience, which would tend to reduce the employer contribution rate are:

- (1) Investment returns in excess of 7.75 percent per year.
- (2) Member non-vested terminations at a higher rate than outlined on page C-11.
- (3) Mortality among retirants and beneficiaries at a higher rate than indicated by the 1983 Group Annuity Mortality Table.

Examples of unfavorable experience, which would tend to increase the employer contribution rate are:

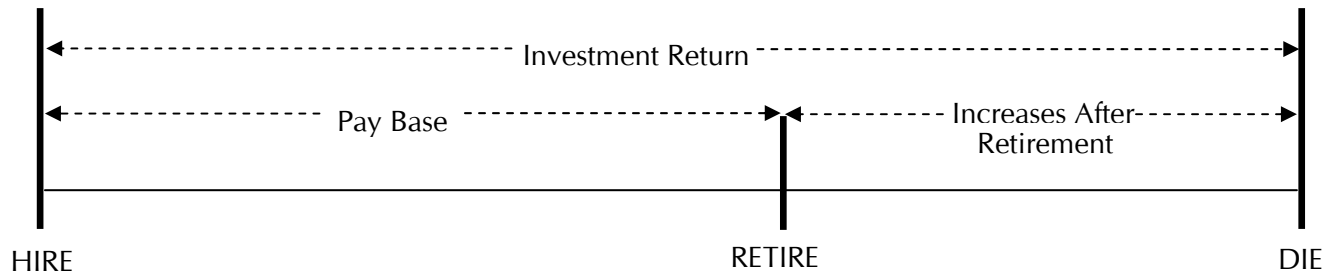
- (1) Pay increases in excess of the rates outlined on page C-9.
- (2) An acceleration in the rate of retirement from the rates outlined on page C-12.
- (3) A pattern of hiring employees at older ages than in the past.

---

Actual experience of the system will not coincide exactly with assumed experience, regardless of the choice of the assumptions, or the skill of the actuary or the precision of the calculations. Each valuation provides a complete recalculation of assumed future experience and takes into account all past differences between assumed and actual experience. 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 is modified to reflect experience trends (but not random or temporary year-to-year fluctuations).

## Relationship of Economic Assumptions In Computing Contributions to a Retirement System



### Investment Return

An increase in this assumption reduces computed contributions. The assumption operates over all parts of an employee's lifetime.

### Pay Base

An increase in this assumption increases computed contributions. However, a 1% increase in this assumption, coupled with a 1% increase in Investment Return reduces computed contributions. This is because the Pay Base assumption operates only over an employee's working lifetime, while the Investment Return assumption operates over the employee's entire lifetime, and therefore has a greater effect.

### Increases After Retirement

An increase in this element increases computed contributions.

---

If Investment Return, Pay Base, and Increases After Retirement are each increased by equal amounts, computed contributions remain the same (except in plans using Final Average Pay as a factor in computing benefits; the multi-year average used for Final Average Pay causes computed contributions to decrease slightly).

If Investment Return and Pay Base are increased by equal amounts, with no change in Increases After Retirement, computed contributions decrease - sometimes significantly. The decreases represent the projected devaluation of an employee's benefits following retirement.

## ACTUARIAL ASSUMPTIONS USED FOR THE VALUATION

The assumptions and the methods comply with the requirements of Statement No. 25 of the Governmental Accounting Standards Board. The April 30, 2005 actuarial valuation includes assumptions and methods resulting from the experience study covering the 5-year period from May 1, 1997 to April 30, 2002.

### Economic Assumptions

*The investment return rate* used in making the valuations was 7.75% per year, compounded annually. The real rate of return is defined to be the portion of total investment return which is more than the wage inflation rate. Considering other financial assumptions, the 7.75% investment return rate translates to an assumed real rate of return of 3.25%. In order to assume a 3.25% real return over wage growth, it would be necessary to realize about a 4.25% real return over price inflation, after accounting for difference between wage increases and price increases.

*Pay increase assumptions* for individual active members are shown below. Part of the assumed increase at each age is for merit and/or seniority, and the other 4.5% recognizes changes in wage levels due to broad economic effects, including inflation and real wage growth.

Sample Ages	Annual Rate of Pay Increase for Sample Ages		
	Base (Economic)	Merit and Longevity	Total
20	4.5%	3.0%	7.5%
25	4.5%	3.0%	7.5%
30	4.5%	2.9%	7.4%
35	4.5%	2.2%	6.7%
40	4.5%	1.7%	6.2%
45	4.5%	1.3%	5.8%
50	4.5%	0.8%	5.3%
55	4.5%	0.6%	5.1%
60	4.5%	0.3%	4.8%

*Price inflation* of 3.5% per year would be consistent with the above assumptions. (This assumption is not utilized in the valuation process.)

*The active member payroll* is assumed to increase 4.5% annually, which is the portion of the individual pay increase assumptions attributable to broad economic effects.

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



## Non-Economic Assumptions

**Mortality Tables.** For healthy lives, the 1983 Group Annuity Mortality Table, set back 0 years for men and 0 years for women. Male and female members still in employment are assumed to be subject to 75% of the previously described mortality tables. Sample values follow:

Sample Ages	Actuarial Present Value of \$1 Monthly for Life		Future Life Expectancy (years)	
	Male	Female	Male	Female
50	\$135.06	\$143.84	29.18	34.92
55	127.14	137.81	24.82	30.24
60	117.18	129.90	20.64	25.67
65	104.97	119.83	16.69	21.29
70	91.48	107.29	13.18	17.13
75	77.33	92.89	10.15	13.37
80	63.28	78.10	7.64	10.20

For disabled lives, the 1983 Group Annuity Mortality Table, set forward 10 years for men and 10 years for women was used. Sample values follow:

Sample Ages	Actuarial Present Value of \$1 Monthly for Life		Future Life Expectancy (years)	
	Male	Female	Male	Female
50	\$117.18	\$129.90	20.64	25.67
55	104.97	119.83	16.69	21.29
60	91.48	107.29	13.18	17.13
65	77.33	92.89	10.15	13.37
70	63.28	78.10	7.64	10.20
75	51.01	63.62	5.73	7.58
80	40.59	49.36	4.28	5.40

These assumptions are used to measure the probabilities of members dying before retirement and the probabilities of each benefit payment being made after retirement.

It was assumed that 80% of deaths-in-service would be non-duty related.

**Rates of separation from active membership.** The rates do not apply to members eligible to retire and do not include separation on account of death or disability. This assumption measures the probabilities of members remaining in employment.

Sample Ages	Years of Service	% of Active Members Separating within Next Year	
		Male	Female
	0	20.0%	20.0%
	1	15.0%	20.0%
	2	13.0%	20.0%
	3	12.0%	16.0%
	4	11.0%	16.0%
25	5 & Over	8.0%	9.4%
30		7.0%	8.4%
35		6.0%	7.7%
40		4.0%	5.1%
45		3.5%	2.9%
50		2.5%	2.5%
55		0.0%	1.7%

**Rates of Disability.** These assumptions represent the probabilities of active members becoming disabled.

Sample Ages	Percent Becoming Disabled within Next Year
25	0.023%
30	0.030%
35	0.038%
40	0.053%
45	0.075%
50	0.135%
55	0.270%
60	0.675%
65	3.200%

It was assumed that one-third of disabilities would be duty related.

**Rates of Retirement.** These rates are used to measure the probabilities of an eligible member retiring during the next year.

Age	Male		Female	
	Reduced	Unreduced	Reduced	Unreduced
50		25.00%		25.00%
51		20.00		20.00
52		20.00		20.00
53		15.00		15.00
54		15.00		15.00
55	4.00%	15.00	4.00%	15.00
56	4.00	15.00	4.00	15.00
57	4.00	15.00	4.00	15.00
58	4.00	20.00	4.00	20.00
59	4.00	20.00	4.00	20.00
60	5.00	20.00	5.00	20.00
61	20.00	20.00	20.00	20.00
62	45.00	45.00	45.00	45.00
63	5.00	20.00	5.00	20.00
64	5.00	20.00	5.00	20.00
65		50.00		50.00
66		20.00		20.00
67		20.00		20.00
68		20.00		20.00
69		20.00		20.00
70 & Over		100.00		100.00

**Present assets (cash & investments)** were used with a market value adjustment that spreads differences between actual and assumed return over a closed four-year period. Details of the method may be found in the body of the report on page B-4. Assets may be used in the valuation prior to the final audit.

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

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The actuarial valuation computations were made by or under the supervision of a Member of the American Academy of Actuaries (M.A.A.A.) who has experience performing public plan valuations.

**SUMMARY OF ASSUMPTIONS USED  
APRIL 30, 2005**

*Pensions in an Inflationary Environment*

**Value of \$1,000/month Retirement Benefit  
To an Individual Who Retires at Age 55  
In an Environment of 3.5% Inflation with a 3% Simple COLA**

<b>Age</b>	<b>Value</b>
55	\$1,000
56	995
57	990
58	983
59	976
60	968
65	922
70	865
75	804
80	741
85	677
90	615

The life expectancy of a 55 year old male retiree is age 80. The life expectancy for a 55 year old female retiree is age 85. Half of the people will outlive their life expectancy. The effects of even moderate amounts of inflation can be significant for those who live to an advanced age. The plan's 3% simple Cola offsets some of the inflation loss.

**SUMMARY OF ASSUMPTIONS USED**  
**APRIL 30, 2005**  
**MISCELLANEOUS AND TECHNICAL ASSUMPTIONS**

<b>Marriage Assumption.</b>	85% of males and 55% of females are assumed to be married for purposes of death-in-service benefits and death-after-retirement benefits. Males are assumed to be 3 years older than their spouses. Actual reported data is utilized for retirees and beneficiaries.
<b>Pay Increase Timing.</b>	Beginning of (Fiscal) year. This is equivalent to assuming that reported pays represent amounts paid to members during the year ended on the valuation date.
<b>Decrement Timing.</b>	Decrements of all types are assumed to occur mid-year.
<b>Eligibility Testing.</b>	Eligibility for benefits is determined based upon the age nearest birthday and service nearest whole year on the date decrement.
<b>Benefit Service.</b>	Exact fractional service is used to determine the amount of benefit payable.
<b>Decrement Relativity.</b>	Decrement rates are used without adjustment for multiple decrement table effects.
<b>Decrement Operation.</b>	Withdrawal does not operate during retirement eligibility.
<b>Normal Form of Benefit.</b>	The assumed normal form of benefit is a 50% joint & survivor benefit.
<b>Cost of Living.</b>	It was assumed that the Retirement Board will grant the full 3.0% cost of living adjustment each year as allowed by the plan.
<b>Loads.</b>	0.4% of payroll each year for administrative expenses. Administrative and investment expenses above and beyond this allocation are assumed to be funded by investment return in excess of the actuarial assumed rate.
<b>Incidence of Contributions.</b>	Contributions are assumed to be received continuously throughout the year based upon the computed percent-of-payroll shown in this report, and the actual payroll payable at the time contributions are made. New entrant normal cost contributions are applied to the funding of new entrant benefits.
<b>Pay Annualization.</b>	Reported pays for members with less than 1 year of service were annualized for valuation purposes.

## DEFINITIONS OF TECHNICAL TERMS

**Accrued Service.** Service credited under the system, which was rendered before the date of the actuarial valuation.

**Actuarial Accrued Liability.** The difference between the actuarial present value of system benefits and the actuarial present value of future normal costs. Also referred to as "past service liability."

**Actuarial Assumptions.** 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.

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

**Actuarial Equivalent.** One series of payments is said to be actuarially equivalent to another series of payments if the two series have the same actuarial present value.

**Actuarial Gain (Loss).** The difference between actual unfunded actuarial accrued liabilities and anticipated unfunded actuarial accrued liabilities -- during the period between two valuation dates. It is a measurement of the difference between actual and expected experience.

**Actuarial Present Value.** 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 payments.

**Amortization.** Paying off an interest-discounted amount with periodic payments of interest and (generally) principal -- as opposed to paying off with a lump sum payment.

**Normal Cost.** The portion of the actuarial present value of future benefits that is assigned to the current year by actuarial cost method. Sometimes referred to as "current service cost."

**Unfunded Actuarial Accrued Liabilities.** The difference between actuarial accrued liabilities and valuation assets. Sometimes referred to as "unfunded past service liability" or "unfunded supplemental present value."

Most retirement systems have unfunded actuarial accrued liabilities. They arise each time new benefits are added and each time an actuarial loss occurs.

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

**Valuation Assets.** Also referred to as actuarial value of assets, funding value of assets, or smoothed market value of assets.

Valuation assets recognize assumed investment return fully each year. Differences between actual and assumed investment return are phased in over a closed 4-year period. During periods when investment performance exceeds the assumed rate, valuation assets will tend to be less than market value. During periods when investment performance is less than the assumed rate, valuation assets will tend to be greater than market value. If assumed rates are exactly realized for 3 consecutive years, valuation assets will become equal to market value.

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*Actuarial Schedules Required by  
Statements No. 25 and No. 27  
of the Governmental Accounting  
Standards Board*



**GASB STATEMENTS NO. 25 AND NO. 27 REQUIRED  
ACTUARIAL INFORMATION  
SCHEDULE OF FUNDING PROGRESS**

<b>Actuarial Valuation Date</b>	<b>(a) Actuarial Value of Assets</b>	<b>(b) Entry Age Actuarial Accrued Liability</b>	<b>(b-a) Unfunded Accrued Liability (UAL)</b>	<b>(a/b) Funded Ratio</b>	<b>(c) Annual Payroll#</b>	<b>[(b-a)/c] UAL as a Percentage of Annual Payroll</b>
4/30/1997	\$37,079,924	\$39,525,068	\$2,445,144	94 %	\$14,417,285	17 %
4/30/1998	41,835,057	43,200,513	1,365,456	97	15,295,680	9
4/30/1999	47,593,329	48,627,168	1,033,839	98	15,430,846	7
4/30/2000	56,905,524	56,038,915	(866,609)	102	17,786,369	(5)
4/30/2001	61,895,208	62,097,908	202,700	100	18,831,325	1
4/30/2002	66,401,308	67,814,254	1,412,946	98	20,755,012	7
4/30/2003	68,182,691	74,223,626	6,040,935	92	21,944,040	28
4/30/2003@	68,182,691	83,044,509	14,861,818	82	21,944,040	68
4/30/2004	69,868,024	89,054,028	19,186,004	78	22,058,127	87
4/30/2004*	69,868,024	89,141,414	19,273,390	78	22,058,127	87
4/30/2005	72,382,548	97,103,806	24,721,258	75	22,239,092	111

@ After changes in actuarial assumptions or methods.

\* After changes in benefit assumptions.

# For valuation years 2001 and prior, valuation payroll includes projected salary increases for year following valuation. For valuation years 2002 and greater, valuation payroll is payroll reported in data after annualization of pays for new hires.

**GASB STATEMENTS NO. 25 AND NO. 27 REQUIRED  
ACTUARIAL INFORMATION  
SCHEDULE OF EMPLOYER CONTRIBUTIONS**

Fiscal Year Ending April 30	Annual Required Contribution	Percent Contributed#
1995	\$ 379,773	99 %
1996	441,682	89
1997	465,004	90
1998	1,035,180	44
1999	1,040,673	65
2000	1,152,018	82
2001	1,259,454	102
2002	1,410,461	101
2003	1,761,146	89
2004@	2,944,407	54
2005	3,076,906	52
2006*	3,480,720	
2007	3,854,132	

@ After changes in actuarial assumptions or methods.

\* After changes in benefit provisions.

# For years 2001 and prior, percents contributed shown are from prior actuary's report.

## DEVELOPMENT OF ANNUAL PENSION COST AND NET PENSION OBLIGATION

Fiscal Year	(a) Annual Required Contribution (ARC)	(b) Interest on Net Pension Obligation (Asset) (NPO (NPA))	(c) ARC Adjustment	(d) = (a) + (b) – (c) Annual Pension Cost	(e) Actual Contribution	(f) = (d) – (e) Change in NPO (NPA)	(g) = sum of (f) Net Pension Obligation (Asset) at End of Year
1998	\$ 1,035,180	\$ (17,285)	\$ (11,193)	\$ 1,029,088	\$ 453,217	\$ 575,871	\$ 352,836
1999	1,040,673	27,345	20,446	1,047,572	674,228	373,344	726,180
2000	1,152,018	56,279	42,080	1,166,217	944,475	221,742	947,922
2001	1,259,454	73,464	54,930	1,277,988	1,286,166	(8,178)	939,744
2002	1,410,461	72,830	54,456	1,428,835	1,420,668	8,167	947,911
2003	1,761,146	73,463	57,005	1,777,604	1,567,833	209,771	1,157,682
2004	2,944,407	89,720	69,620	2,964,507	1,601,243	1,363,264	2,520,946
2005	3,076,906	195,373	151,602	3,120,677	1,612,080	1,508,597	4,029,543
2006	3,480,720	312,290	242,325	3,550,685			
2007	3,854,132						

This information is presented in draft form for review by the City's auditor. Please let us know if there are any items that the auditor changes so that we may maintain consistency with the City's financial statements.

**GASB STATEMENTS NO. 25 AND NO. 27  
REQUIRED SUPPLEMENTARY INFORMATION**

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

Valuation date	April 30, 2005
Actuarial cost method	Individual entry age
Amortization method for unfunded actuarial accrued liabilities	Level percent closed
Equivalent single amortization period	21.83 years
Asset valuation method	4-year smoothed market
Actuarial assumptions:	
Investment rate of return	7.75%
Projected salary increases including wage inflation at 4.5%	4.5% - 7.5%
Cost-of-living adjustments	3.0% simple

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

Retirees and beneficiaries receiving benefits	135
Terminated plan members entitled to but not yet receiving benefits	13
Active plan members	<u>586</u>
Total	734

October 4, 2005

Mr. James J. Pyle  
Pension Systems Manager  
Kansas City Civilian Employees'  
Retirement System  
1328 Agnes  
Kansas City, Missouri 64127

Dear Jim:

Enclosed are twenty report copies of the April 30, 2005 Actuarial Valuation of the Civilian Employees' Retirement System of the Police Department of Kansas City, Missouri. A copy will be forwarded to your auditor.

Please call if you have any questions or comments.

Sincerely,

Mita D. Drazilov

MDD:bd

CC: Ted Hempy, BKD