

PERS/Actuarial 1986  
Valuations, 1872

POLICE AND FIREMEN'S DISABILITY  
AND PENSION FUND OF OHIO

Actuarial Evaluation to Determine  
the Actuarial Rate Per Cent of  
Contribution as of January 1, 1987

October 23, 1987



THE *Wyatt* COMPANY

ACTUARIES AND CONSULTANTS  
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EMPLOYEE BENEFITS  
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October 23, 1987

Board of Trustees  
The Police and Firemen's Disability  
and Pension Fund of Ohio  
230 East Town Street  
Columbus, Ohio 43215

Gentlemen:

We are pleased to submit to you herewith our report presenting the results of the actuarial evaluation to determine the actuarial rate per cent of contribution as of January 1, 1987. This report has been based upon the employee data which were supplied to us by the Executive Secretary and upon statements showing the assets and liabilities of the Fund as of December 31, 1986.

We would like to call your attention to the following items from the report:

- (1) The 1987 evaluation has been based upon the Fund benefit provisions as in effect on January 1, 1987. Excluded from the results, however, are the 1971 Amended Substitute House Bill No. 284 and the cost of the Death Benefit Fund established by 1976 Amended House Bill No. 1010, since we understand that these benefits are being funded by the State of Ohio. The benefit changes during 1986 included in Amended Substitute Senate Bill No. 112 and Amended Substitute House Bill No. 721 have been valued for the first time in this evaluation. A brief summary of the main benefit specifications of the Fund considered in this evaluation is contained in Table 3.
- (2) The actuarial assumptions and actuarial cost method used in the instant evaluation are essentially the same as those used in the last evaluation. A summary of this information is set forth in Table 4.
- (3) The basic data used in the evaluation represent all active members, retirants and beneficiary-survivors covered by the Fund as of January 1, 1987. In total, 37,441 members were considered in the evaluation. A distribution of the coverage, by category, membership status and age, is set forth in various Table 2's.

October 23, 1987

- (4) The highlights of the evaluation results may be found in Table 1. In summary, the total actuarial rate per cent, applicable for the calendar year beginning January 1, 1987, has been developed as follows:

	<u>Police</u>	<u>Fire</u>
Current Rate Per Cent for Disability and Pension Benefits	24.92%	27.91%
Current Rate Per Cent for Health Care Plan and Medicare	6.20%	6.20%
Total Current Rate Per Cent	31.12%	34.11%

We look forward to discussing this report with the Board of Trustees during its October meeting.

Sincerely yours,

*Leroy B. Parks Jr.*

Leroy B. Parks Jr.  
Vice President & Actuary

LBP:jjm

POLICE AND FIREMEN'S DISABILITY AND PENSION FUND OF OHIO  
Actuarial Evaluation to Determine the Actuarial Rate Per Cent  
of Contribution as of January 1, 1987

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POLICE AND FIREMEN'S DISABILITY AND PENSION FUND OF OHIO  
Actuarial Evaluation to Determine the Actuarial Rate Per Cent  
of Contribution as of January 1, 1987

A. PURPOSE

The Board of Trustees of the Police and Firemen's Disability and Pension Fund of Ohio has retained The Wyatt Company, as Actuary to the Fund, to perform the necessary actuarial evaluations required pursuant to the terms of the 1965 Amended House Bill No. 642. This report sets forth the results of our evaluation to determine the actuarial rate per cent for the year beginning January 1, 1987.

Section 742.14 of House Bill No. 642 provided for the initial determination of the appropriate current rate per cent, to be used as of January 1, 1967. The aforementioned section, as amended in 1986 by Amended Substitute House Bill No. 721, furthermore, provides as follows:

"The Board shall annually thereafter have prepared by a competent Actuary familiar with retirement systems, a report showing the adequacy of the rate of the Policemen Employers' Contribution provided for by Section 742.33 of the Revised Code, and the adequacy of the rate of the Firemen Employers' Contribution provided for by Section 742.34 of the Revised Code."

In addition, House Bill No. 721 added Section 742.311 which reads as follows:

"The Ohio Retirement Study Commission shall annually review the adequacy of the contribution rates provided under Sections 742.31, 742.33, and 742.34 of the Revised Code and the contribution rates recommended by the Actuary of the Police and Firemen's Disability and Pension Fund for the forthcoming year. The Ohio Retirement Study Commission shall make recommendations to the General Assembly which it finds necessary for the proper financing of the Police and Firemen's Disability and Pension Fund."

Pursuant to these two Sections, we have performed an actuarial evaluation based upon the January 1, 1987 membership data and upon the Annual Report for the fiscal year ending December 31, 1986. The highlights of the evaluation are set forth in Table 1 at the end of this report, and are discussed in a subsequent section of this report.

## B. BASIC DATA

The evaluation is based upon the data that were prepared and submitted to us under the direction of Mr. L. Paul Ross, Executive Secretary of the Board of Trustees. This information represented a complete census of members as of the valuation date and showed a total count of 37,441 members. The data with respect to police members contained 12,652 active members, 5,203 retirants and 3,071 beneficiary-survivors; the corresponding figures for firemen were 9,231 active members, 4,915 retirants and 2,369 beneficiary-survivors. The total membership count of 37,441 compares to a membership of 37,011 individuals as of January 1, 1986, an increase of about 1%.

A compilation of the membership data, as of January 1, 1987, is contained in Tables 2(a) and 2(b) for police and firemen, respectively. The first page of each table shows a distribution of active members by attained age group and length of service as of the evaluation date. Also shown are the average attained age and average hire age, which are 39 and 26, respectively, for both police and firemen; these measurements are unchanged from last year except for a one year increase in the average attained age of police. Also shown are the average annual salaries for each age group, and in total, as of the two valuation dates. For police, the total averages are \$28,443 based on the 1987 data, and \$26,987, based on the 1986 data, for an increase of 5.4%; for firemen, the corresponding amounts are \$28,418, \$26,973 and 5.4%, respectively.

The second pages of Tables 2(a) and 2(b) set forth the distribution of retirants by attained age group and sex as of January 1, 1987. Also shown are the annual rate of pension, average attained age, and average annual pension payable to retirants. The prior year's corresponding information is also shown. The average attained age of retirants is 62 years for police and 64 years for firemen; the corresponding ages one year ago were, respectively, 62 and 63. This year we find that the average annual benefit to retirants, without considering the benefit increase (up to \$50 a month) effective January 1, 1972

provided by the 1971 House Bill No. 284, is \$12,994 for police and \$13,568 for firemen. The corresponding averages last year were, respectively, \$11,990 and \$12,648. The total annual rate of pension for retired police as of January 1, 1987 of \$67,609,662 represents an 11% increase over the rate of payout one year ago; similarly, the total annual rate of pension for retired firemen as of January 1, 1987 of \$66,774,469 represents a 10% increase over the rate of payout one year earlier.

The third pages of Tables 2(a) and 2(b) show the distribution of beneficiary-survivors by attained age group, as of the evaluation date. The average attained ages for surviving spouses were 71 for police and 73 for firemen, the same as of one year ago. In addition, there were 135 police beneficiaries and 98 firemen beneficiaries receiving optional benefit payments, compared to 94 police and 78 firemen beneficiaries one year ago. These tables also show that there are 483 dependent children of police and 268 dependent children of firemen receiving benefits as of the evaluation date.

#### C. PLAN PROVISIONS

The basic provisions of the Police and Firemen's Disability and Pension Fund of Ohio with respect to disability and pension benefits that are funded through the current rate per cent are summarized in Table 3. That table and the evaluation presented in this report are based upon the provisions of the Statewide Plan, as set forth in Section 742 of the Revised Code, including all amendments in effect as of the valuation date, except for changes that are funded entirely by contributions from the State of Ohio (the 1972 pension increases of 1971 House Bill No. 284, and the Death Benefit Fund established by 1976 House Bill No. 1010). The benefit changes during 1986 included in Amended Substitute Senate Bill No. 112 and Amended Substitute House Bill No. 721 have been valued for the first time in this evaluation.

Bills No. 112 and 721, enacted during 1986, effected the following changes to the benefit provisions of the Fund:

- (1) Members retiring after July 24, 1986 will have their pensions calculated using average salary excluding any terminal pay adjustments; pensions will be paid as "3% additive COLA annuities"; under this type of annuity, on each retirement anniversary date after June 30, 1988, the pension will be increased by 3% of the initial amount, providing the Consumer Price Index (CPI) has increased by at least 3% during the prior calendar year or prior "unused" CPI increases total 3% or more.
- (2) Members with 15 or more years of service as of January 1, 1987 may elect, in lieu of the 3% additive COLA annuity, to have a nonincreasing pension paid, but the calculation thereof would be based on average salary including terminal pay adjustments.
- (3) Effective August 1, 1986, members who retired prior to February 28, 1984 and whose annual pensions are less than \$13,000 are to have their pension increased by \$600 per year or, if larger, the amount needed to achieve an annual pension of \$4,200.
- (4) Effective August 1, 1986, the monthly surviving spouse benefit is increased from \$256 to \$310 and the monthly surviving children's benefit is increased from \$68 to \$93.
- (5) The members' contribution rate was increased from 8.5% to 9.5%, effective August 1, 1986.

#### D. VALUATION ASSETS AND ACTUARIAL ASSUMPTIONS

The valuation assets have been based upon the "Annual Report: Financial Statement, Fund Balances and Investment Portfolio, for Fiscal Year Ending December 31, 1986", which was furnished to us by the Fund. That Report indicates that the cost value of assets as of December 31, 1986 was \$2,192,590,243, inclusive of: cash of \$9,876,449, investment in equipment and furniture amounting to \$423,143, funds on deposit with OPEDC of \$206,117 and receivables totaling \$4,092,267. The book value of the investment portfolio was \$2,177,984,751 which consisted of \$1,250,933,218 of bonds, \$540,202,814 of stocks (worth \$672,547,784 on a market value basis), \$257,035,727 of short-term investments, \$9,684,987 of venture capital and \$120,128,005 in productive real



estate. Assets for valuation purposes were taken to be the cost value, less \$1,139,324 reserved to the Death Benefit Fund, plus \$40,721,839 of employer and member contributions with respect to 1986 that were not deposited until 1987, less \$988,470 of contributions that have yet to be refunded to employees who terminated with less than 15 years of service. The resulting valuation assets, rounded to the nearest \$100,000, were \$1,246,100,000 for police and \$985,100,000 for firemen. The total for both groups was \$2,231,200,000.

The actuarial assumptions and actuarial cost method used in the instant evaluation are the same as those employed in the prior evaluation except for the elimination of the one-year delay in retirement for those members whose attained age exceeded the assumed retirement age. This change was required due to the implementation of a new valuation system. A summary of the assumptions and a description of the actuarial cost method are presented in Table 4.

During 1986, based upon the Fund's Annual Report, the book value return on the assets of the Fund was approximately 15.8%. This return compares to the interest rate assumptions of 7.75%. The Report also indicated that the anticipated average yield on the investment portfolio as of December 31, 1986 was 7.17%.

On the other hand, the average annual current salary of active members of the Fund has again increased during the past year. As noted above, for police the average salary is 5.4% higher than last year's average salary for both police and firemen. This increase percentage is similar to the assumed annual increase in salary of 5.5%.

#### E. EVALUATION RESULTS

Table 1 summarizes the January 1, 1987 evaluation results and sets forth the actuarially determined current rate per cent of contribution applicable to the calendar year commencing January 1, 1987. In Section A of Table 1, we indicate the extent of the membership, by police and firemen, for

various categories. This section represents a summary compilation of the data breakdown shown in the various Table 2's.

Section B of Table 1 sets forth a summary of the actuarial present values of future benefits, by police and firemen, with respect to active members, retirants, and beneficiary survivors. The total present values are \$2,400,100,000 for police and \$2,008,400,000 for firemen (Item B.4.). Thus, the combined actuarial present value of future benefits (for both police and firemen) exceeds \$4.4 billion.

In Section C, we show the development of the current rate per cent for disability and pension benefits, based upon this January 1, 1987 evaluation. This rate includes a loading for administrative expenses, as indicated in the assumptions set forth in Table 4. The rate is determined by subtracting the valuation assets and the employer accrued liability from the actuarial present value of future benefits, and dividing the resultant amount by the actuarial present value of active member future compensation.

Item C.6. of Table 1 shows the current rate per cent for the disability and pension benefits (i.e., excluding consideration of health care plan benefits). As indicated in the table, these figures are 24.92% for police and 27.91% for firemen. The current rate per cents include: (1) the 9-1/2% contribution for active members; (2) the original State of Ohio appropriation of \$1.2 million per annum; (3) a State of Ohio appropriation of \$1.5 million per annum for Senate Bill No. 48; (4) a State of Ohio appropriation of an additional \$1.2 million per annum to fund for part of the additional cost arising from the "purchase": of military service credit; (5) an appropriation to fund House Bill No 204; and (6) an appropriation to partially fund House Bill No. 694 and House Bill No. 215. As indicated earlier, these figures do not include the cost of the 1972 pension increases precipitated by House Bill No. 284 or the Death Benefit Fund established by Amended House Bill No. 1010, since these additional costs will be met entirely by additional appropriations from the State of Ohio.

In Section D of Table 1, we show a development of the current rate per cent for health care plan and Medicare benefits. We have been advised by the Executive Secretary that the projected total premium payment is \$39,400,000 with respect to 1987, inclusive of \$1,400,000 for Medicare B premiums; this figure was decreased by \$661,000 representing the excess of the 1986 estimated cost of the health care plan and Medicare benefits (\$33,400,000) over the actual cost (\$32,738,962). The resulting figure of \$38,739,000 compares to an estimated aggregate annual payroll of \$625 million. Thus, the appropriate rate per cent to provide for the expected 1987 health care plan and Medicare benefits is 6.20%.

Section E of Table 1 shows the total current rate per cent, and represents a combination of the figures for disability and pension benefits and for health care plan and Medicare benefits. As can be seen in Item E.3., the total current rate per cent with respect to 1987 is 31.12% for police and 34.11% for firemen.

#### F. COMPARISON OF EVALUATION RESULTS WITH PREVIOUS YEAR

Table 5 sets forth a comparison of evaluation results for 1986 and 1987. Section A indicates that the number of active members has increased by 38 for police and by 5 for firemen. Also, the number of participants currently receiving benefits has increased by 238 for police and 149 for firemen. As a percentage of total membership, 39.5% of police members are currently receiving benefits, compared to 38.9% last year; the corresponding percentages for firemen are, respectively, 44.1% and 43.6%.

The actuarial present values of future benefits have increased by \$326.6 million for police and \$245.1 million for firemen as is indicated in Section B. We have determined that the benefit changes during 1986 effected the following increases in the actuarial present values of future benefits:

<u>Benefit Change</u>	<u>Increase in Present Value</u> (Millions)	
	<u>Police</u>	<u>Firemen</u>
1. Replace Terminal pay adjustments with 3% additive COLA annuity	\$132.7	\$112.8
2. Increase Spouse Benefit		
a. Current Actives	5.0	3.7
b. Current Retirees	6.7	6.6
c. Current Spouses	<u>11.2</u>	<u>8.8</u>
d. Total	22.9	19.1
3. Increase Children's benefit	.9	.5
4. Retiree benefit increase	11.5	9.9
5. Total all changes	168.0	142.3

Valuation assets, in turn, increased by \$184.7 million for police and \$146.5 million for firemen. The Annual Report indicates that approximately \$167.4 million of the police fund increase and \$131.5 million of the firemen fund increase was due to fund earnings. These amounts represent excess earnings of about \$85.1 million for police and \$67.2 million for firemen over and above the expected amounts based on the 7-3/4% interest assumption for 1986.

In Section C we set forth a comparison of contribution rate per cents. Item C.1. indicates that the current rate per cent for disability and pension benefits has increased from 22.17% to 24.92%, or by 2.75%, for police, while for firemen the corresponding rate has increased from 25.62% to 27.91%, for an increase of 2.29%.

A reconciliation of last year's contribution rates for disability and pension benefits to this year's is as follows:

	<u>Police</u>	<u>Firemen</u>
1. Rate per cent as of January 1, 1986	22.17%	25.62%
2. Additional per cent due to 1986 changes:		
a. COLA in lieu of terminal pay	3.51	3.80
b. Retiree increase	.30	.33
c. Spouse & children's benefit increase	<u>.63</u>	<u>.66</u>
d. Total	4.44	4.79
3. Effect of asset gains	(2.25)	(2.26)
4. Other (gains) or losses	.56	(.24)
5. Net effect	2.75	2.29
6. Rate per cent as of January 1, 1987	24.92	27.91

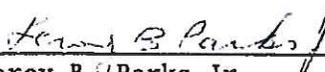
In addition, the health care plan and Medicare component of the rate per cent increased from 5.63% to 6.20%, for a net increase of .57%. This increase reflects a \$6,000,000 increase in estimated costs for 1987 over the estimated 1986 costs along with a \$5,000,000 decrease in estimated annual payroll (from \$630 million to \$625 million).

\* \* \* \* \*

In conclusion, we recommend that the Board of Trustees and the Ohio Retirement Study Commission consider the current rate percents as developed in this evaluation in determinations concerning the appropriateness of the actual employer contribution rates.

Respectfully submitted,

THE WYATT COMPANY

  
 \_\_\_\_\_  
 Leroy B. Parks Jr.  
 Fellow - Society of Actuaries

  
 \_\_\_\_\_  
 Wayne E. Dydo  
 Fellow - Society of Actuaries

Table 1

POLICE AND FIREMEN'S DISABILITY AND PENSION FUND OF OHIO

Summary of Evaluation Results as of January 1, 1987 1/

	<u>Police</u>	<u>Firemen</u>
<b>A. MEMBERSHIP</b>		
1. Number of Active Members	12,652	9,231
2. Number of Retirants	5,203	4,915
3. Number of Beneficiary-Survivors		
a. Surviving Spouses and Beneficiaries	2,588	2,101
b. Children	483	268
c. Total Beneficiary-Survivors	3,071	2,369
4. Total Membership <u>2/</u>	20,926	16,515
<b>B. <u>SUMMARY OF ACTUARIAL PRESENT VALUES OF FUTURE BENEFITS</u></b>		
1. Active Members <u>3/</u>	\$1,697,900,000	\$1,347,700,000
2. Retirants	622,700,000	601,000,000
3. Beneficiary-Survivors	79,500,000	59,700,000
4. Actuarial Present Value for All Members	2,400,100,000	2,008,400,000
<b>C. <u>DEVELOPMENT OF CURRENT RATE PER CENT FOR DISABILITY AND PENSION BENEFITS</u></b>		
1. Actuarial Present Value of Future Benefits	\$2,400,100,000	\$2,008,400,000
2. Valuation Assets	1,246,100,000	985,100,000
3. Actuarial Present Value of Employer Accrued Liability	212,000,000	195,000,000
4. Actuarial Present Value of Active Member Future Compensation	3,809,700,000	2,989,900,000
5. Net Rate Per Cent, Prior to Expense Loading ((Item C1 - C2 - C3) ÷ C4)	24.73%	27.70%
6. Current Rate Per Cent for Disability and Pension Benefits	24.92%	27.91%

*# 4,408,500,000*

*less # 2,231,200,000*

*less 407,000,000*

*# 6,799,600,000*

Table 1  
(continued)

		<u>Police and Firemen Combined</u>	
D. <u>DEVELOPMENT OF CURRENT RATE PER CENT FOR HEALTH CARE PLAN AND MEDICARE BENEFITS</u>			
1.	Estimated Annual Claims and Expenses <u>4/</u>	\$ 38,739,000	
2.	Estimated Aggregate Annual Payroll	625,000,000	
3.	Current Rate Per Cent for Health Care Plan and Medicare (Item D1 ÷ D2)		6.20%
E. <u>TOTAL CURRENT RATE PER CENT</u>		<u>Police</u>	<u>Firemen</u>
1.	Current Rate Per Cent for Disability and Pension Benefits (Item C6)	24.92%	27.91%
2.	Current Rate Per Cent for Health Care Plan and Medicare (Item D3)	6.20	6.20
3.	Total Current Rate Per Cent (Item E1 + E2)	31.12	34.11

1/ Excludes assets and liabilities arising from the increases due to the 1971 House Bill No. 284 and from the Death Benefit Fund established by House Bill No. 1010.

2/ Excluding 60 inactive policemen and 23 inactive firemen.

3/ Includes present values of \$2,300,000 for 60 policemen and \$1,000,000 for 23 firemen who have terminated with more than 15 years of service.

4/ Includes an estimated \$1,400,000 for Medicare B premiums and excludes \$661,000 representing the excess of 1986 estimated cost over actual cost.

Table 2(a)

POLICE AND FIREMEN'S DISABILITY AND PENSION FUND OF OHIO

Police

Distribution of Members by Attained Age Group and Length of Service as of January 1, 1987  
 (Females are indicated in parentheses and are included in adjacent totals)

Attained Age Group	Length of Service						30-Over	Totals	Average Annual Salary	
	0-4 1/2	5-9	10-14	15-19	20-24	25-29			As of January 1, 1986	As of January 1, 1987
Under 25	286( 31)	2	-	-	-	-	-	288( 31)	\$19,243	\$20,449
25 - 29	1,088(119)	368( 41)	-	-	-	-	-	1,456(160)	23,344	24,623
30 - 34	788( 94)	1,516(120)	276(13)	6	-	-	-	2,586(227)	25,792	27,162
35 - 39	302( 48)	881( 85)	1,165(26)	510( 4)	2	-	-	2,860(163)	27,364	28,693
40 - 44	101( 11)	222( 20)	520(17)	1,338( 9)	330( 2)	4	1	2,516( 59)	28,304	29,834
45 - 49	40( 2)	49( 3)	73( 1)	538( 4)	854( 9)	172	4	1,730( 19)	29,097	30,632
50 - 54	22( 2)	14( 1)	16	59( 1)	273( 2)	367(1)	106(3)	857( 10)	29,874	31,250
55 - 59	7	6	12( 1)	16( 1)	14( 2)	80(3)	111(1)	246( 8)	29,556	30,245
60 - 64	-	5	5	10( 1)	4	7	62(1)	93( 2)	27,903	30,395
65 & Over	-	-	1( 1)	-	1	3	15	20( 1)	32,862	35,592
<b>Total</b>	<b>2,634(307)</b>	<b>3,063(270)</b>	<b>2,068(59)</b>	<b>2,477(20)</b>	<b>1,478(15)</b>	<b>633(4)</b>	<b>299(5)</b>	<b>12,652(680)</b>	<b>\$26,987</b>	<b>\$28,443</b>

January 1, 1987

January 1, 1986

	January 1, 1986	January 1, 1987
Average Attained Age	38	39
Average Hire Age	26	26

1/ Includes 613 members hired in 1986.



POLICE AND FIREMEN'S DISABILITY AND PENSION FUND OF OHIO

Police

Distribution of Retirants by Attained Age Group  
and Sex as of January 1, 1987

Attained Age Group (1)	Males (2)	Females (3)	Total (4)	Col. (4) as % of TOTAL (5)	Annual Rate of Pension <sup>1/</sup>	
					As of January 1, 1986 (6)	As of January 1, 1987 (7)
Under 40	86	8	94	2%	\$ 999,812	\$ 1,056,391
40 - 44	162	4	166	3	1,741,026	2,113,599
45 - 49	198	4	202	4	2,478,747	2,851,455
50 - 54	445	6	451	9	7,474,680	7,637,257
55 - 59	1,147	9	1,156	22	18,982,764	19,257,054
60 - 64	1,260	8	1,268	24	14,065,685	17,257,337
65 - 69	708	5	713	14	6,740,861	8,064,152
70 - 74	575	7	582	11	5,001,091	5,480,060
75 - 79	303	1	304	6	1,911,088	2,361,165
80 - 84	160	4	164	3	921,191	1,019,987
85 - 89	68	2	70	1	407,520	349,170
90 & Over	31	2	33	1	134,570	162,035
TOTAL	5,143	60	5,203	100%	\$60,859,035	\$67,609,662

Average Attained Age			
January 1, 1986	62	61	62
January 1, 1987	62	59	62

Average Annual Benefit		January 1, 1986	January 1, 1987
			\$11,990
			12,994

<sup>1/</sup> Excludes increases due to House Bill No. 284.

POLICE AND FIREMEN'S DISABILITY AND PENSION FUND OF OHIO

Police

Distribution of Beneficiary-Survivors by Attained Age Group  
as of January 1, 1987

<u>Attained Age Group</u> (1)	<u>Number Receiving Benefits</u> (2)	<u>Col. (2) as % of TOTAL</u> (3)
<b>A. <u>SURVIVING SPOUSES</u> 1/</b>		
Under 40	68	3%
40 - 44	43	2
45 - 49	63	2
50 - 54	118	5
55 - 59	186	7
60 - 64	261	11
65 - 69	292	12
70 - 74	362	15
75 - 79	374	15
80 - 84	311	13
85 - 89	226	9
90 & Over	149	6
<b>TOTAL</b>	<b>2,453</b>	<b>100%</b>
<b>Average Attained Age</b>	<b>71</b>	
<b>B. <u>BENEFICIARIES RECEIVING OPTIONS</u></b>		
Under 35	6	4%
35 - 39	7	5
40 - 44	7	5
45 - 49	12	9
50 - 54	19	14
55 - 59	33	24
60 - 64	17	13
65 - 69	17	13
70 - 74	13	10
75 - 79	3	2
80 - 84	-	-
85 - 89	1	1
<b>TOTAL</b>	<b>135</b>	<b>100%</b>
<b>C. <u>CHILDREN</u></b>	<b>483</b>	

1/ Includes dependent parents.

Table 2(b)

POLICE AND FIREMEN'S DISABILITY AND PENSION FUND OF OHIO

Firemen

Distribution of Members by Attained Age Group and Length of Service as of January 1, 1987  
 (Females are indicated in parentheses and are included in adjacent totals)

Attained Age Group	Length of Service						30-Over	Totals	Average Annual Salary	
	0-4	5-9	10-14	15-19	20-24	25-29			As of January 1, 1986	As of January 1, 1987
Under 25	232( 5)	2	-	-	-	-	-	234( 5)	\$20,480	\$21,559
25 - 29	778(24)	370(2)	2	-	-	-	-	1,150(26)	23,483	24,914
30 - 34	628(18)	1,009(2)	190	-	-	-	-	1,827(20)	25,481	26,833
35 - 39	203( 9)	653(1)	848(1)	154	1	-	-	1,859(11)	26,821	28,085
40 - 44	42	119	554	787(1)	179	-	-	1,682( 1)	28,398	29,619
45 - 49	7	13	64	467	625(1)	4	4	1,327( 1)	29,292	30,688
50 - 54	6	8	15	49	263	92	92	817	30,356	31,547
55 - 59	3	5	6	10	19	139	139	270	31,232	32,849
60 - 64	-	1	3	3	8	35	35	54	31,223	32,818
65 & Over	-	1	-	5	-	5	5	11	31,428	31,925
<b>Total</b>	<b>1,899(56)</b>	<b>2,181(5)</b>	<b>1,682(1)</b>	<b>1,475(1)</b>	<b>1,095(1)</b>	<b>624</b>	<b>275</b>	<b>9,231(64)</b>	<b>\$26,973</b>	<b>\$28,418</b>

January 1, 1986

Average Attained Age 39  
 Average Hire Age 26

1/ Includes 314 members hired in 1986.

POLICE AND FIREMEN'S DISABILITY AND PENSION FUND OF OHIO

Firemen

Distribution of Retirants by Attained Age Group  
and Sex as of January 1, 1987

<u>Attained Age Group</u> (1)	<u>Males</u> (2)	<u>Females</u> (3)	<u>Total</u> (4)	<u>Col. (4) as % of TOTAL</u> (5)	<u>Annual Rate of Pension 1/</u>	
					<u>As of January 1, 1986</u> (6)	<u>As of January 1, 1987</u> (7)
Under 40	36	3	39	1%	\$ 423,841	\$ 428,511
40 - 44	59	-	59	1	682,815	753,449
45 - 49	125	-	125	2	1,464,865	1,846,781
50 - 54	342	-	342	7	6,083,377	6,050,702
55 - 59	1,097	4	1,101	22	20,275,841	19,224,217
60 - 64	1,347	-	1,347	27	16,209,874	20,231,070
65 - 69	664	3	667	14	6,534,754	7,766,380
70 - 74	640	-	640	13	5,552,580	6,128,766
75 - 79	328	-	328	7	2,185,081	2,699,311
80 - 84	141	-	141	3	784,251	919,995
85 - 89	96	-	96	2	579,037	599,711
90 & Over	30	-	30	1	110,976	125,576
TOTAL	4,905	10	4,915	100%	\$60,887,292	\$66,774,469

Average

Attained Age

January 1, 1986 63 52 63

January 1, 1987 64 53 64

Average Annual

Benefit

January 1, 1986

\$12,648

January 1, 1987

13,586

1/ Excludes increases due to House Bill No. 284.

POLICE AND FIREMEN'S DISABILITY AND PENSION FUND OF OHIO

Firemen

Distribution of Beneficiary-Survivors by Attained Age Group  
as of January 1, 1987

<u>Attained Age Group</u> (1)	<u>Number Receiving Benefits</u> (2)	<u>Col. (2) as % of TOTAL</u> (3)
<b>A. <u>SURVIVING SPOUSES</u> 1/</b>		
Under 40	20	1%
40 - 44	29	2
45 - 49	36	2
50 - 54	64	3
55 - 59	140	7
60 - 64	204	10
65 - 69	228	11
70 - 74	317	16
75 - 79	275	14
80 - 84	319	16
85 - 89	227	11
90 & Over	144	7
<b>TOTAL</b>	<b>2,003</b>	<b>100%</b>
<b>Average Attained Age</b>	<b>73</b>	
<b>B. <u>BENEFICIARIES RECEIVING OPTIONS</u></b>		
Under 35	2	2%
35 - 39	1	1
40 - 44	2	2
45 - 49	6	6
50 - 54	14	14
55 - 59	27	28
60 - 64	25	26
65 - 69	6	6
70 - 74	12	12
75 - 79	1	1
80 - 84	1	1
85 - 89	1	1
<b>TOTAL</b>	<b>98</b>	<b>100%</b>
<b>C. <u>CHILDREN</u></b>	<b>268</b>	

1/ Includes dependent parents.

Table 3

POLICE AND FIREMEN'S DISABILITY AND PENSION FUND OF OHIO

Description of Benefits Under Statewide Plan  
(Per Ohio Revised Code Chapter 742, Excluding  
Consideration of 1971 House Bill No. 284  
and 1976 House Bill No. 1010)

1. Service Retirement

- (a) Eligibility: Age 52 and 25 years of service (age 48 and 25 years of service on an actuarially reduced basis).
- (b) Benefit: An annual pension equal to a percentage of the average annual salary, where the percentage equals 2.5% for each of the first 20 years of service, 2% for each of the next five years of service, and 1.5% for service in excess of 25 years, to a maximum of 72% of the average annual salary. Average annual salary means one-third of the total salary during the three years during which the total earnings were greatest.

2. Special Service Retirement  
for Late Hires

- (a) Eligibility: Age 62 and 15 years of service.
- (b) Benefit: The same as the Service Retirement Benefit.

3. Permanent and Total  
Disability (On duty)

- (a) Eligibility: No age or service requirement.
- (b) Benefit: An annual pension equal to 72% of the annual salary during the last year of active service.

4. Partial Disability  
(On duty)

- (a) Eligibility: No age or service requirement.
- (b) Benefit: An annual pension to be fixed by the Board of Trustees, but not to exceed 60% of the average annual salary; provided that if the member has 25 or more years of service the annual disability pension is equal to the accrued Service Retirement Benefit.

5. Heart Disease Disability

- (a) Eligibility: No age or service requirement.
- (b) Benefit: An annual pension in an amount determined in accordance with the benefit provisions of Item 3. or Item 4. above, as the case may be.

6. Ordinary Disability  
(Off duty)

- (a) Eligibility: Any age and five years of service.
- (b) Benefit: An annual pension to be fixed by the Board, but not to exceed the accrued Service Retirement Benefit, or 60% of the average annual salary, whichever is smaller.

7. Termination of Service  
Prior to Retirement

One of the following benefits depending upon the particular circumstances:

Refund

- (a) Eligibility: No age or service requirement.
- (b) Benefit: A lump-sum amount equal to the sum of the contributions made by the member to the Fund.

Vesting After 15 Years

- (a) Eligibility: 15 years of service.
- (b) Benefit: Commencing at age 52 or hire age plus 25 years, whichever is later; an annual pension equal to 1-1/2% of the average annual salary multiplied by the number of years of service.

Vesting After 25 Years

- (a) Eligibility: 25 years of service.
- (b) Benefit: Commencing at age 52, the accrued Service Retirement Benefit.

8. Flat Death Benefits

- (a) Eligibility: Upon death to any member of the Fund, active or retired.

- (b) Benefit:
- (i) Surviving Spouse's Benefit - An annual amount equal to \$3,720.
  - (ii) Surviving Children - An annual amount equal to \$1,116, payable until such child attains age 18 or marries, whichever occurs first. (Similar payments made, regardless of age, to disabled children.) An annual amount equal to \$1,116 will continue beyond age 18 up to age 22 while the child is a student.
  - (iii) Dependent Parents - An annual amount of \$1,896 to one dependent parent or \$948 each to two dependent parents, during their lifetime or until dependency ceases or until remarriage, provided that deceased member leaves no surviving spouse or surviving children.

Note: Payment of the above benefits will be suspended during any period payments are being made pursuant to Sec. 742.63 RC (Death Benefit Fund established by Sec. 742.61 RC).

9. Pre-retirement Surviving Spouse Benefit

(a) Eligibility:

Upon death before retirement but after having satisfied the requirements for retirement.

(b) Benefit:

The surviving spouse or contingent dependent beneficiary will receive 50% of the benefit that the deceased member would have been entitled to had he retired on the day of his death under the 50% Joint & Survivor annuity form.

10. Member Contributions:

9-1/2% of salary.

11. Pension Increases for Certain Retirants:

Commencing January 1, 1974, the pensions of persons who retired between July 1, 1968 and June 30, 1971 will be increased by \$2.00 per month times the number of years on retirement as of June 30, 1973.

Effective January 1, 1977, annual pensions (except those arising from volunteer or part-time service, or early vested service) shall be increased as follows:



(i) if the annual pension was less than \$2,700, then the pension shall be increased to \$3,000; (ii) if the annual pension was \$2,700 or more, the increase shall be \$300 per year. These increases do not apply to benefits being paid under pre-1947 plans with an automatic escalating provisions.

Effective July 1, 1979, retirees (excluding those with escalating benefits) who retired prior to January 1, 1974 have pension increases of 5% of the first \$5,000 of annual pension.

Effective January 1, 1982, retirees (excluding those with escalating benefits) who retired prior to February 28, 1980, have pension increases of \$46 per month.

Effective August 1, 1986, members who retired prior to February 28, 1984 and who were receiving an annual benefit of less than \$13,000 have pension increases of \$50 per month, or if larger, the amount needed to increase the current annual pension to \$4,200.

12. Group Health Insurance and Medicare:

Commencing January 1, 1974, the Board may contract for group health insurance on the basis of part or all of the cost of the premium for the coverage to be paid by the Fund.

Effective January 1, 1977, the Fund will pay the premium for supplemental Medicare (Part B).

13. COLA or Terminal Pay:

Members retiring after July 24, 1986 and who have 15 or more years of service as of January 1, 1987, are allowed to select between (1) a pension calculated on the basis of average salary which is increased to reflect terminal pay adjustments, or (2) a pension based on average salary excluding the terminal pay adjustment, but increasing by 3% of the initial pension each retirement anniversary after July 1, 1988. The 3% addition is paid only if the annual increase in the Consumer Price Index, plus unused prior increases, equals or exceeds 3%. This additive 3% COLA annuity without terminal pay adjustment is the automatic form for active member with less than 15 years of service as of January 1, 1987.

14. Optional Forms of Payment:

Effective February 28, 1980, retiring members may elect to have actuarially reduced benefits payable under certain and continuous and joint and survivor annuity forms. The maximum certain period is 20 years, and the continuation percentage under the joint and survivor form is limited to 100%.

Effective September 26, 1984, members who retired before February 28, 1980 may make a one-time election to have their benefits reduced and paid under the joint and survivor annuity form with the surviving spouse as survivor annuitant.

Table 4

POLICE AND FIREMEN'S DISABILITY AND PENSION FUND OF OHIO

Summary of Actuarial Assumptions and Actuarial Cost Method

A. Interest: A rate of 7-3/4% per annum, compounded annually.

B. Probabilities and Other Assumptions Among Active Members:

1. Before Retirement -

(a) Mortality: The Projected Annuity Mortality Table, decreased by 33% for Firemen. The following probabilities at selected ages are illustrative:

Age	<u>Probability of Mortality</u>	
	<u>Police</u>	<u>Firemen</u>
25	.000706	.000473
30	.000923	.000618
35	.001280	.000858
40	.001863	.001248
45	.003336	.002235
50	.006032	.004041
55	.009724	.006515

(b) Termination: The following probabilities at selected ages are illustrative:

Age	<u>Probability of Termination</u>	
	<u>Police</u>	<u>Firemen</u>
25	.066881	.037490
30	.048500	.022900
35	.030859	.011237
40	.017303	.005832
45	.008284	.002333
50	.004133	.000451

Note: The present values of future benefits for active members resulting from the use of these withdrawal rates are actuarially adjusted to include provision for prospective terminated employees eligible for vested termination benefits arising from the vesting provisions of the 1971 Amended Substitute Senate Bill No. 137.

Table 4  
(continued)

(c) Disability: The probabilities of disability are based upon the results of the 1972-1976 Quinquennial Evaluation. The following probabilities at selected ages are illustrative:

Age	Probability of Disability	
	Police	Firemen
25	.000000	.000000
30	.000608	.000857
35	.002864	.001923
40	.005504	.004041
45	.012391	.009848
50	.018198	.020747
55	.018836	.029039

Note: The present values of future benefits for active members resulting from the use of these withdrawal rates reflect the fact that the occurrence of disability by type approximates the following:

On duty permanent and total	60%
On duty partial	35
Off duty ordinary	5

(d) Salary Increase Rate: A rate of future salary increase of 5-1/2% per annum, compounded annually, has been employed. This rate can be divided into two component parts: (i) promotional increase of 3/4 of 1% per year, and (ii) inflationary increase of 4-3/4% per year.

(e) Retirement Age: The earlier of (a) and (b):  
 (a) age 55 or hire age plus 25, if later;  
 (b) age 62 or hire age plus 15, if later.

2. After Retirement -

(a) On Service Retirement Pension: The mortality, after retirement of active members expected to go on service retirement, is based on the Projected Annuity Mortality Table. The following probabilities at selected ages are illustrative:

Table 4  
(continued)

<u>Age</u>	<u>Probability of Mortality</u>
55	.009724
60	.014492
65	.022750
70	.036619
75	.060259
80	.100853
85	.155717
90	.222882
95	.297806

(b) On Disability Retirement Pension:

The mortality, after retirement of active members expected to go on disability retirement, is based on the 1956 Railroad Retirement Board Disability Annuitants Ultimate Mortality Table. The following probabilities at selected ages are illustrative:

<u>Age</u>	<u>Probability of Mortality</u>
35	.02446
45	.03037
55	.03857
65	.06013
75	.09638
85	.18909
95	.39621

C. Probabilities of Mortality Among Pensioners:

The mortality among all present retirants is based on the Projected Annuity Mortality Table rates, increased by 50% prior to age 65, grading down to a decrease of 20% after age 85. The following probabilities at selected ages are illustrative:

<u>Age</u>	<u>Probability of Mortality</u>
35	.001920
40	.002795
45	.005004
50	.009048
55	.014586
60	.021738
65	.034125
70	.048520
75	.069298
80	.098332
85	.124574
90	.178306
95	.238245

D. Probabilities Among Survivors:

1. Probabilities of Mortality Among Surviving Spouses -

The mortality among all present surviving spouses is based on the Projected Annuity Mortality Table rates, decreased by 15% at all ages. The following probabilities at selected ages are illustrative:

<u>Age</u>	<u>Probability of Mortality</u>
35	.001326
40	.001938
45	.002950
50	.004471
55	.006775
60	.010464
65	.016448
70	.026121
75	.042560
80	.067465
85	.102527
.90	.151530
95	.219657

2. Probability of Remarriage Among Surviving Spouses -

The probabilities of remarriage of surviving spouses are based upon the results of the 1972-1976 Quinquennial Evaluation. The following probabilities at selected ages are illustrative:

<u>Age</u>	<u>Probability of Remarriage</u>
35	.084807
40	.051163
45	.035514
50	.026570
55	.017195
60	.008961
65	.003380
70	.002063
75	.000632

3. Dependent Children -

No specific allowance has been made, in the evaluation of this benefit, for the probability of mortality prior to age 18, or the probability of disability at age 18 and thereafter. In valuing the benefit beyond age 18, it is assumed that 1/3 of the dependent children will be students and eligible for payments to age 22.

- 4. Dependent Parents - Costs based upon allowance for mortality (the Projected Annuity Mortality Table rates), but no specific allowance for change in dependency status.
  
- E. COLA Annuities: It has been assumed that, where an election is possible, all members will elect the COLA annuity. It has also been assumed that the Consumer Price Index will increase each year at a rate equal to or greater than 3%.
  
- F. Expense Loading: The net costs were loaded by 3/4% of 1% to allow for future administrative expenses of the Fund.
  
- G. Actuarial Cost Method: The "frozen initial liability" method has been used in developing the required contributions to the Fund. Under this approach, the present value of future benefits is reduced by valuation assets and the present value of the employer accrued liability. This net amount is then expressed as a percentage of the present value of active member future compensation and that percentage is applied to current payroll to determine the actual contribution.  
  
The employer accrued liability was determined for each separate police and firemen's fund as of April 1, 1966. Each employer with an existing liability is presently making payments at the rate of 5% of the original liability (adjusted for any excess payments) pursuant to the schedule set forth in Section 742.30 of the Ohio Revised Code.

Table 5

## POLICE AND FIREMEN'S DISABILITY AND PENSION FUND OF OHIO

Comparison of Evaluation Results for 1986 and 1987

	<u>1986</u>		<u>1987</u>	
	<u>Police</u>	<u>Firemen</u>	<u>Police</u>	<u>Firemen</u>
<b>A. <u>MEMBERSHIP</u></b>				
1. Number of Active Members	12,614	9,226	12,652	9,231
2. Number of Retirants and Beneficiary-Survivors	8,036	7,135	8,274	7,284
3. Total Membership	20,650	16,361	20,926	16,515
<b>B. <u>ACTUARIAL PRESENT VALUE AND ASSETS (000,000 omitted)</u></b>				
1. Present Value of Future Benefits	\$2,073.5	\$1,763.3	\$2,400.1	\$2,008.4
2. Valuation Assets	1,061.4	838.6	1,246.1	985.1
3. Present Value of Employer Accrued Liability	212.1	195.0	212.0	195.0
<b>C. <u>CURRENT RATE PER CENT</u></b>				
1. Disability and Pension Benefits	22.17%	25.62%	24.92	27.91
2. Health Care Plan and Medicare	5.63	5.63	6.20	6.20
3. Total	27.80	31.25	31.12	34.11