

1987

PFDPF/Actuarial Valuations,
PB#2

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, 1988

February 13, 1989

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OHIO RETIREMENT STUDY
COMMISSION

February 13, 1989

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, 1988. 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, 1987.

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

- (1) The 1988 evaluation has been based upon the Fund benefit provisions as in effect on January 1, 1988. 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. Also, the benefit changes during 1988 included in Amended Substitute House Bill No. 389 have not been valued 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 have been changed to reflect the recommendations presented in the quinquennial evaluation report for the period 1982 through 1986 dated March 21, 1988. The changes made are discussed in Section D of the text of this 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, 1988. In total, 37,863 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.
- (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, 1988, has been developed as follows:

	<u>Police</u>	<u>Fire</u>
Current Rate Per Cent for Disability and Pension Benefits	24.69%	26.72%
Current Rate Per Cent for Health Care Plan and Medicare	5.99	5.99
Total Current Rate Per Cent	30.68	32.71

We look forward to discussing this report with the Board of Trustees in the near future.

Sincerely yours,

Leroy B. Parks Jr.
Leroy B. Parks Jr.
Vice President & Actuary

LBP:jjw

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, 1988

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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, 1988

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, 1988.

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, 1988 membership data and upon the Annual Report and audited financial statements for the fiscal year ending December 31, 1987. 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. Henry E. Helling, III, Executive Director of the Board of Trustees. This information represented a complete census of members as of the valuation date and showed a total count of 37,863 members. The data with respect to police members contained 12,853 active members, 5,392 retirants and 2,995 beneficiary-survivors; the corresponding figures for firemen were 9,281 active members, 5,025 retirants and 2,317 beneficiary-survivors. The total membership count of 37,863 compares to a membership of 37,441 individuals as of January 1, 1987, an increase of about 1%.

A compilation of the membership data, as of January 1, 1988, 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. 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 \$27,042 based on the 1988 data, and \$28,443, based on the 1987 data, for an decrease of 4.9%; for firemen, the corresponding amounts are \$27,417, \$28,418 and 3.5%, 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, 1988. 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 same as the corresponding ages one year ago. 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 \$13,530 for police and \$14,095 for firemen. The

corresponding averages last year were, respectively, \$12,994 and \$13,586. The total annual rate of pension for retired police as of January 1, 1988 of \$72,951,931 represents a 8% increase over the rate of payout one year ago; similarly, the total annual rate of pension for retired firemen as of January 1, 1988 of \$70,829,125 represents a 6% 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 157 police beneficiaries and 118 firemen beneficiaries receiving optional benefit payments, compared to 135 police and 98 firemen beneficiaries one year ago. These tables also show that there are 400 dependent children of police and 204 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 1988 included in Amended Substitute House Bill No. 389 have not been valued in this evaluation, but will be fully recognized in the 1989 evaluation. These changes are summarized below:

- (1) Members retiring before July 24, 1986 whose pensions are \$18,000 or less will have such pensions increased by \$30 a month July 1, 1988 and each July 1 thereafter,

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. The \$30 is adjusted to reflect optional annuity forms.

- (2) Effective September 9, 1988, the age 52 retirement condition is reduced to age 48. This applies for service retirements as well as deferred vested status retirements for members who are no longer employees.
- (3) Effective July 1, 1988, members who retired prior to September 10, 1988 under the 25-year service, permanent and total disability, or off-duty disability provisions are to have their pensions increased, if necessary, by the amount needed to achieve an annual pension of \$5,000.
- (4) Effective July 1, 1988, the monthly surviving spouse benefit is increased from \$310 to \$410 and the monthly surviving children's benefit is increased from \$93 to \$118.
- (5) The members' contribution rate was increased from 9.5% to 10%, effective October 1, 1988.

D. VALUATION ASSETS AND ACTUARIAL ASSUMPTIONS

The valuation assets have been based upon the "Summary Annual Report 1987" which was furnished to us by the Fund and upon the auditor's preliminary copy of the Fund's Balance Sheet as of December 31, 1987, which was telecopied to us on December 23, 1988.

The Summary Annual Report indicates that the cost value of assets as of December 31, 1987 was \$2,411,750,037, inclusive of: cash of \$7,708,552, investment in equipment, furniture and office property amounting to \$1,595,281, funds on deposit with OPEDC of \$235,952 and receivables totaling \$40,267,181. The book value of the investment portfolio was \$2,361,943,071 which consisted of \$1,237,721,918 of bonds, \$732,856,083 of stocks (worth \$776,835,012 on a market value basis), \$262,071,028 of short-term investments, \$11,376,654 of venture capital and \$117,917,388 in productive real estate.

These amounts were compared to corresponding amounts in the auditor's Balance Sheet, and it was founded that the Balance Sheet Items exceeded the Summary Report Items by the following:

<u>Item</u>	<u>Excess of Balance Sheet over Summary Annual Report</u>
Receivables	\$ 5,819,576
Furniture, Equipment & Property	(225,609)
OPEDC Funds	(235,952)
Other Assets (no breakdown furnished)	551,135
Cash	8,091,683
Combined Portfolio Book Value	<u>2,266,276</u>
TOTAL	\$16,267,109

In addition, the Balance Sheet contained the following adjustments due to a shift from cash basis to accrual accounting:

Accrued Income	\$ 26,761,590
Sale Proceeds	354,917
Liabilities and Amounts Payable	<u>(17,885,591)</u>
	\$ 9,230,916

Thus, the Balance Sheet cost value of assets is the following sum:

Summary Report	\$2,411,750,037
Item Changes	16,267,109
Accrual Adjustments	<u>9,230,916</u>
	\$2,437,248,062

Assets for valuation purposes were taken to be the Balance Sheet cost value, less \$1,142,382 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 \$1,341,700,000 for police and \$1,094,400,000 for firemen. The total for both groups was \$2,436,100,000.

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 following changes based upon the results of the fourth quinquennial evaluation covering the period 1982 through 1986:

- (1) A decrease in the termination rates to the graduated 1982-86 experience rates.
- (2) An increase in the disability rates to the graduated 1982-86 experience rates.
- (3) A change in the service retirement assumption from a fixed age of 55 or, if later, after satisfying the conditions for retirement, to rates based upon the 1982-86 experience. The rates are applicable for ages 48 through 65.

- (4) A change in the post retirement mortality probabilities for retired members to separate sets of probabilities for nondisabled retirees and disabled retirees.
- (5) A decrease in the probabilities of remarriage among surviving spouses to the graduated 1982-86 experience rates.

A summary of the assumptions and a description of the actuarial cost method are presented in Table 4.

During 1987, based upon the Fund's Summary Annual Report, the book value return on the assets of the Fund was approximately 7.9%. 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, 1987 was 7.20%.

On the other hand, the average annual current salary of active members of the Fund has decreased during the past year. As noted above, for police the average salary is 4.9% less than last year's average salary and for firemen, 3.5%. These decrease percentages compare to the assumed annual increase in salary of 5.5%.

E. EVALUATION RESULTS

Table 1 summarizes the January 1, 1988 evaluation results and sets forth the actuarially determined current rate per cent of contribution applicable to the calendar year commencing January 1, 1988. 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 \$2,462,100,000 for police and \$2,099,400,000 for firemen (Item B.4.). Thus, the

combined actuarial present value of future benefits (for both police and firemen) approximates \$4.6 billion.

In Section C, we show the development of the current rate per cent for disability and pension benefits, based upon this January 1, 1988 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.

The employer accrued liability used in this valuation is \$415,053,300 and represents the outstanding principal as of December 31, 1987 of the original accrued liability under the funding scheme prescribed by the Ohio Revised Code. This amount was developed by Fund office personnel and compares to the Summary Report accrued liability amount of \$406,851,300. The difference between the two amounts is primarily due to unpaid but accrued interest in the original liability amount. Use of the higher value represents a modest departure from the practice of the last four years under which the outstanding principal value was not to be used until 1993. We have incorporated the outstanding principal value in this valuation in order to be consistent with the information presented in the audited financial statements.

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 24.69% for police and 26.72% 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 Controller that the projected total premium payment is \$41,919,000 with respect to 1988; this figure was increased by \$65,300, which represents the excess of the 1987 actual cost of the health care plan and Medicare benefits (\$39,465,300) over the estimated cost (\$39,400,000). The resulting figure of \$41,984,300 compares to an estimated aggregate annual payroll of \$700 million. Thus, the appropriate rate per cent to provide for the expected 1988 health care plan and Medicare benefits is 5.99%.

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 1988 is 30.68% for police and 32.71% for firemen.

F. COMPARISON OF EVALUATION RESULTS WITH PREVIOUS YEAR

Table 5 sets forth a comparison of evaluation results for 1987 and 1988. Section A indicates that the number of active members has increased by 201 for police and by 50 for firemen. Also, the number of participants currently receiving benefits has increased by 113 for police and 58 for firemen. As a percentage of total membership, 39.5% of police members are currently receiving benefits, compared to 39.5% last year; the corresponding percentages for firemen are, respectively, 44.2% and 44.1%.

The actuarial present values of future benefits have increased by \$62 million for police and \$91 million for firemen as is indicated in Section B.

Valuation assets, in turn, increased by \$95.6 million for police and \$109.3 million for firemen. Approximately \$25.5 million of asset increase is due to the use of the audited accrual basis asset statement values as discussed above.

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 decreased from 24.92% to 24.69%, or by .23%, for police, while for firemen the corresponding rate has decreased from 27.91% to 26.72%, for a decrease of 1.19%.

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, 1987	24.92%	27.91%
2. Change due to use of quinquennial decrement rates along with programming refinements	1.04	1.32
3. Change due to use of accrual basis assets and outstanding principal value of accrued liability	(.41)	(.42)
4. Actuarial gains or losses plus change in membership	(.86)	(2.09)
5. Rate percent as of January 1, 1988	24.69	26.72

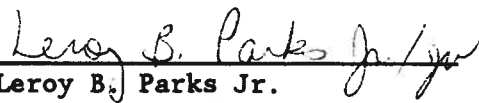
In addition, the health care plan and Medicare component of the rate per cent decreased from 6.20% to 5.99%, for a net decrease of .21%. This decrease reflects a \$3,155,000 increase in estimated costs for 1988 over the estimated 1987 costs along with a \$75,000,000 increase in estimated annual payroll (from \$625 million to \$700 million). The large payroll increase reflects a change from a cash to an accrual basis accounting system.

* * * * *

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, 1988 1/

	<u>Police</u>	<u>Firemen</u>
A. <u>MEMBERSHIP</u>		
1. Number of Active Members	12,853	9,281
2. <u>Number of</u> Retirants	5,392	5,025
3. Number of Beneficiary-Survivors		
a. Surviving Spouses and Beneficiaries	2,595	2,113
b. Children	400	204
c. Total Beneficiary-Survivors	2,995	2,317
4. Total Membership <u>2/</u>	21,240	16,623
B. <u>SUMMARY OF ACTUARIAL PRESENT VALUES OF FUTURE BENEFITS</u>		
1. Active Members <u>3/</u>	\$1,688,200,000	\$1,382,200,000
2. Retirants	689,100,000	654,600,000
3. Beneficiary-Survivors	84,800,000	62,600,000
4. Actuarial Present Value for All Members	2,462,100,000	2,099,400,000
C. <u>DEVELOPMENT OF CURRENT RATE PER CENT FOR DISABILITY AND PENSION BENEFITS</u>		
1. Actuarial Present Value of Future Benefits	\$2,462,100,000	\$2,099,400,000
2. Valuation Assets	1,341,700,000	1,094,400,000
3. Actuarial Present Value of Employer Accrued Liability	216,300,000	198,800,000
4. Actuarial Present Value of Active Member Future Compensation	3,688,900,000	3,040,000,000
5. Net Rate Per Cent, Prior to Expense Loading ((Item C1 - C2 - C3) ÷ C4)	24.51%	26.52%
6. Current Rate Per Cent for Disability and Pension Benefits	24.69%	26.72%

		<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>	\$ 41,984,300	
2.	Estimated Aggregate Annual Payroll	700,000,000	
3.	Current Rate Per Cent for Health Care Plan and Medicare (Item D1 ÷ D2)		5.99%
		<u>Police</u>	<u>Firemen</u>
E. <u>TOTAL CURRENT RATE PER CENT</u>			
1.	Current Rate Per Cent for Disability and Pension Benefits (Item C6)	24.69%	26.72%
2.	Current Rate Per Cent for Health Care Plan and Medicare (Item D3)	5.99	5.99
3.	Total Current Rate Per Cent (Item E1 + E2)	30.68	32.71

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 71 inactive policemen and 34 inactive firemen.

3/ Includes present values of \$4,000,000 for 71 policemen and \$1,800,000 for 34 firemen who have terminated with more than 15 years of service.

4/ Includes \$65,300 representing the excess of 1987 estimated cost (\$39,400,000) over actual cost (\$39,465,300).

POLICE AND FIREMEN'S DISABILITY AND PENSION FUND OF OHIO

Police

Distribution of Retirants by Attained Age Group
and Sex as of January 1, 1988

<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, 1987</u> (6)	<u>As of January 1, 1988</u> (7)
Under 40	87	16	103	2%	\$ 1,056,391	\$ 1,240,325
40 - 44	173	7	180	3	2,113,599	2,457,260
45 - 49	226	2	228	4	2,851,455	3,441,941
50 - 54	475	4	479	9	7,637,257	8,395,802
55 - 59	1,063	11	1,074	20	19,257,054	18,739,649
60 - 64	1,344	6	1,350	25	17,257,337	19,324,472
65 - 69	766	9	775	14	8,064,152	9,173,005
70 - 74	569	7	576	11	5,480,060	5,565,434
75 - 79	352	2	354	7	2,361,165	2,963,297
80 - 84	164	4	168	3	1,019,987	1,113,520
85 - 89	71	-	71	1	349,170	374,611
90 & Over	32	2	34	1	162,035	162,615
TOTAL	5,322	70	5,392	100%	\$67,609,662	\$72,951,931

<u>Average Attained Age</u>			
January 1, 1987	62	59	62
January 1, 1988	62	56	62

<u>Average Annual Benefit</u>		January 1, 1987	January 1, 1988
			\$12,994
			13,530

1/ 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, 1988

<u>Attained Age Group</u> (1)	<u>Number Receiving Benefits</u> (2)	<u>Col. (2) as % of TOTAL</u> (3)
A. <u>SURVIVING SPOUSES</u> 1/		
Under 40	59	2%
40 - 44	44	2
45 - 49	70	3
50 - 54	124	5
55 - 59	167	7
60 - 64	277	11
65 - 69	288	12
70 - 74	369	15
75 - 79	365	15
80 - 84	313	13
85 - 89	221	9
90 & Over	141	6
TOTAL	2,438	100%
Average Attained Age	71	
B. <u>BENEFICIARIES RECEIVING OPTIONS</u>		
Under 35	6	4%
35 - 39	5	3
40 - 44	11	7
45 - 49	12	7
50 - 54	23	15
55 - 59	32	20
60 - 64	31	20
65 - 69	17	11
70 - 74	16	10
75 - 79	3	2
80 - 84	-	-
85 - 89	1	1
TOTAL	157	100%
C. <u>CHILDREN</u>	400	

1/ Includes dependent parents.

POLICE AND FIREMEN'S DISABILITY AND PENSION FUND OF OHIO

Firemen

Distribution of Retirants by Attained Age Group
and Sex as of January 1, 1988

<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, 1987</u> (6)	<u>As of January 1, 1988</u> (7)
Under 40	42	3	45	1%	\$ 428,511	\$ 525,976
40 - 44	60	-	60	1	753,449	867,093
45 - 49	146	-	146	3	1,846,781	2,315,955
50 - 54	330	-	330	7	6,050,702	5,989,037
55 - 59	1,027	-	1,027	20	19,224,217	18,812,079
60 - 64	1,426	-	1,426	28	20,231,070	22,296,405
65 - 69	709	-	709	14	7,766,380	8,849,725
70 - 74	626	-	626	12	6,128,766	6,218,930
75 - 79	384	-	384	8	2,699,311	3,224,527
80 - 84	148	-	148	3	919,995	1,028,656
85 - 89	88	1	89	2	599,711	539,116
90 & Over	35	-	35	1	125,576	161,626
TOTAL	5,021	4	5,025	100%	\$66,774,469	\$70,829,125

Average
Attained Age
January 1, 1987 64 53 64
January 1, 1988 64 48 64

Average Annual
Benefit
January 1, 1987 \$13,586
January 1, 1988 14,095

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, 1988

<u>Attained Age Group</u> (1)	<u>Number Receiving Benefits</u> (2)	<u>Col. (2) as % of TOTAL</u> (3)
A. <u>SURVIVING SPOUSES</u> 1/		
Under 40	23	1%
40 - 44	24	1
45 - 49	37	2
50 - 54	63	3
55 - 59	121	6
60 - 64	225	11
65 - 69	217	11
70 - 74	322	16
75 - 79	295	15
80 - 84	299	15
85 - 89	222	11
90 & Over	147	8
TOTAL	1,995	100%
Average Attained Age	73	
B. <u>BENEFICIARIES RECEIVING OPTIONS</u>		
Under 35	4	3%
35 - 39	2	2
40 - 44	4	3
45 - 49	9	8
50 - 54	15	13
55 - 59	26	22
60 - 64	33	28
65 - 69	5	4
70 - 74	15	13
75 - 79	3	2
80 - 84	1	1
85 - 89	1	1
TOTAL	118	100%
C. <u>CHILDREN</u>	204	

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, 1987, 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. Rates and Other Assumptions Among Active Members:

1. Before Retirement -

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

Age	Rate of Mortality	
	Police	Firemen
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 rates at selected ages are illustrative:

Age	Rate of Termination	
	Police	Firemen
25	.062525	.023466
30	.044587	.016902
35	.030568	.011926
40	.020499	.007473
45	.015876	.005010
50	.018613	.004047

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.

(c) Disability:

The rates of disability are based upon the results of the 1982-1986 Quinquennial Evaluation. The following rates at selected ages are illustrative:

<u>Age</u>	<u>Rate of Disability</u>	
	<u>Police</u>	<u>Firemen</u>
25	.000904	.000000
30	.001823	.001090
35	.004097	.002551
40	.008880	.006205
45	.016900	.013147
50	.026091	.024800
55	.039748	.040236

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:

The rates of retirement are based upon the experience during the periods 1982 through 1986. These rates are applicable after the member has satisfied the conditions for retirement. The rates are as follows:

<u>Age(s)</u>	<u>Police</u>	<u>Firemen</u>
48 - 51	.05	.05
52	.45	.45
53 - 59	.25	.30
60 - 64	.30	.40
65	1.00	1.00

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:

<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 70% of the 1956 Railroad Retirement Board Disability Annuitants Ultimate Mortality Table for ages 20 through 69, 80% for ages 70 through 85, 90% for ages 86 through 89 and 100% for ages 90 and above. The following probabilities at selected ages are illustrative:

<u>Age</u>	<u>Probability of Mortality</u>
35	.01712
45	.02126
55	.02700
65	.04209
75	.07710
85	.17018
95	.39621

C. Probabilities of Mortality Among Pensioners

1. Nondisabled Pensioners:

The mortality among all nondisabled retirants is equal to the Projected Annuity Mortality Table probabilities. The following probabilities at selected ages are illustrative:

<u>Age</u>	<u>Probability of Mortality</u>
35	.001280
40	.001863
45	.003336
50	.006032
55	.009724
60	.014492
65	.022750
70	.036619
75	.060259
80	.100853
85	.155717
90	.222882
95	.297806

2. Disabled Pensioners:

The mortality among all disabled retirants is based on 70% of the 1956 Railroad Retirement Board Disability Annuitants Ultimate Mortality Table for ages 20 through 69, 80% for ages 70 through 85, 90% for ages 86 through 89 and 100% for ages 90 and above. The following probabilities at selected ages are illustrative:

<u>Age</u>	<u>Probability of Mortality</u>
35	.017122
40	.019040
45	.021259
50	.023912
55	.026999
60	.032704
65	.042091
70	.061088
75	.077104
80	.101904
85	.170181
90	.280990
95	.396210

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:

Table 4
(continued)

<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 1982-1986 Quinquennial Evaluation. The following probabilities at selected ages are illustrative:

<u>Age</u>	<u>Probability of Remarriage</u>
35	.066173
40	.033604
45	.018466
50	.014738
55	.009249
60	.005891
65	.005065
70	.002751
75	.001206

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 1987 and 1988

	<u>1987</u>		<u>1988</u>	
	<u>Police</u>	<u>Firemen</u>	<u>Police</u>	<u>Firemen</u>
A. <u>MEMBERSHIP</u>				
1. Number of Active Members	12,652	9,231	12,853	9,281
2. Number of Retirants and Beneficiary-Survivors	8,274	7,284	8,387	7,342
3. Total Membership	20,926	16,515	21,240	16,623
B. <u>ACTUARIAL PRESENT VALUE AND ASSETS (000,000 omitted)</u>				
1. Present Value of Future Benefits	\$2,400.1	\$2,008.4	\$2,462.1	\$2,099.4
2. Valuation Assets	1,246.1	985.1	1,341.7	1,094.4
3. Present Value of Employer Accrued Liability	212.0	195.0	216.3	198.8
C. <u>CURRENT RATE PER CENT</u>				
1. Disability and Pension Benefits	24.92%	27.91%	24.69%	26.72%
2. Health Care Plan and Medicare	6.20	6.20	5.99	5.99
3. Total	31.12	34.11	30.68	32.71