

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, 1991

November 20, 1991



THE *Wyatt* COMPANY

ACTUARIAL SERVICES
COMPENSATION PROGRAMS
ADMINISTRATIVE SYSTEMS
INTERNATIONAL SERVICES
ORGANIZATION SURVEYS

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EMPLOYEE COMMUNICATIONS
RISK MANAGEMENT
INSURANCE CONSULTING
HEALTH CARE CONSULTING

November 20, 1991

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, 1991. This report has been based upon the employee data which were supplied to us by the Executive Director and upon statements showing the assets and liabilities of the Fund as of December 31, 1990.

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

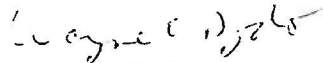
- (1) The 1991 evaluation has been based upon the Fund benefit provisions as in effect on January 1, 1991. Excluded from the results, however, are the 1971 Amended Substitute House Bill No. 284 and the cost of the Death Benefit Fund established by 1976 Amended House Bill No. 1010, since we understand that these benefits are being funded by the State of Ohio. 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 are the same as those used in the prior year's evaluation. A summary of the actuarial assumptions and actuarial cost method 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, 1991. In total, 40,376 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, 1991, has been developed as follows:

	<u>Police</u>	<u>Fire</u>
Current Rate Per Cent for Disability and Pension Benefits	28.75%	29.11%
Current Rate Per Cent for Health Care Plan and Medicare	7.30	7.30
Total Current Rate Per Cent	36.05	36.41

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

Sincerely yours,


Wayne E. Dydo
Fellow-Society of Actuaries

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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, 1991

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, 1991.

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, 1991 membership data and upon the Annual Report and audited financial statements for the fiscal year ending December 31, 1990. 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 Fund. This information represented a complete census of members as of the valuation date and showed a total count of 40,376 members.

A summary of the data is as follows:

	<u>Police</u>	<u>Firemen</u>	<u>Total</u>
Actives	13,273	9,801	23,074
Retirants	6,246	5,595	11,841
Beneficiary-Survivors	<u>3,082</u>	<u>2,379</u>	<u>5,461</u>
Total	<u>22,601</u>	<u>17,775</u>	<u>40,376</u>

The total membership count of 40,376 compares to a membership of 39,627 individuals as of January 1, 1990, an increase of about 2%.

A compilation of the membership data, as of January 1, 1991, 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 \$33,910 based on the 1991 data, and \$32,351, based on the 1990 data, for an increase of 4.8%; for firemen, the corresponding amounts are \$33,467, \$31,863 and 5.0%, respectively. The present value of future compensation, shown in Table 1, Item C.4, is based on the Table 2 salaries increased by the salary scale for one year.

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, 1991. 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 \$16,562 for police and \$16,747 for firemen. The corresponding averages last year were, respectively, \$15,548 and \$15,974. The total annual rate of pension for retired police as of January 1, 1991 of \$103,449,359 represents a 12% increase over the rate of payout one year ago; similarly, the total annual rate of pension for retired firemen as of January 1, 1991 of \$93,698,379 represents a 7% 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 235 police beneficiaries and 171 firemen beneficiaries receiving optional benefit payments, compared to 210 police and 152 firemen beneficiaries one year ago. These tables also show that there are 358 dependent children of police and 184 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 used to determine 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).

D. VALUATION ASSETS AND ACTUARIAL ASSUMPTIONS

The valuation assets have been based upon the "Comprehensive Annual Financial Report for the Year Ended December 31, 1990" which was furnished to us by the Fund.

The Comprehensive Annual Financial Report indicates that the cost value of assets as of December 31, 1990 was \$3,205,071,375, inclusive of:

1. Cash	\$ 8,404,283
2. Office Property	4,169,228
3. Receivables	91,415,162
4. Other Assets	3,847,743

The book value of the investment portfolio was \$3,097,234,959 which consisted of:

1. Bonds	\$1,812,123,431
2. Stocks - Book Value *	846,462,816
3. Short-Term	208,243,525
4. Venture Capital	11,713,986
5. Real Estate	<u>218,691,201</u>
	\$3,097,234,959

* Market Value of Stocks \$978,013,968

The cost value was offset by payables totaling \$30,714,626 and other liabilities of \$2,340,221. Hence, the net assets available for benefits as of December 31, 1990 was \$3,172,016,528.

Assets for valuation purposes were taken to be this net cost value, less \$1,852,100 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 \$1,769,000,000 for police and \$1,401,200,000 for firemen. The method of allocating the valuation assets between police and firemen was changed this year to more accurately reflect the year's transactions with respect to each group. Table 6 develops the allocation, which is based upon an allocation of the actual change in valuation assets due to investment results in proportion to expected growth based upon the valuation interest rate. The total for both groups was \$3,170,200,000.

The actuarial assumptions and the actuarial cost method used in the instant evaluation are unchanged from those used in the last valuation. A summary of the assumptions and a description of the actuarial cost method are presented in Table 4.

During 1990, based upon the Fund's Comprehensive Annual Financial Report Schedule 2 (i.e. using cash basis contributions, payments, and expenses) the book value return on the assets of the Fund was approximately 8.15%. This return compares to the interest rate assumption of 8.25%. Also, as is indicated in Table 6, the expected growth in valuation assets due to investment performance based on accrual basis contributions, benefit payments, and expenses is \$244,013,400 compared to actual growth of \$216,173,000.

The increase during the past year in the average annual current salary of active members was, as noted above, 4.8% for police and 5.0% for firemen. These increase percentages compare to the assumed annual increase in salary of 5.75%.

E. EVALUATION RESULTS

Table 1 summarizes the January 1, 1991 evaluation results and sets forth the actuarially determined current rate per cent of contribution applicable to the calendar year commencing January 1, 1991. 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 \$3,264,700,000 for police and \$2,678,600,000 for firemen (Item B.4.). Thus, the combined actuarial present value of future benefits (for both police and firemen) approximates \$5.9 billion.

In Section C, we show the development of the current rate per cent for disability and pension benefits, based upon this January 1, 1991 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 resulting amount by the actuarial present value of active member future compensation.

The employer accrued liability used in this valuation is \$407,027,867 and represents the outstanding principal as of December 31, 1990 of the original accrued liability under the funding scheme prescribed by the Ohio Revised Code. This amount is set forth in the Comprehensive Annual Financial Report. The allocation of this accrued liability between police and firemen, as developed by Fund office personnel, is \$211,900,000 for police and \$195,100,000 for firemen, rounded to the nearest \$100,000.

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 28.75% for police and 29.11% for firemen. The current rate per cents include: (1) the 10% 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 \$60,493,000 with respect to 1991; this figure was increased by \$206,500, which represents the excess of the 1990 actual cost of the health care plan and Medicare benefits (\$52,979,700) over the estimated cost (\$52,773,200). The resulting figure of \$60,699,500 compares to an estimated aggregate annual payroll as provided by Fund officials of \$831.2 million. Thus, the appropriate rate per cent to provide for the expected 1991 health care plan and Medicare benefits is 7.30%.

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 1991 is 36.05% for police and 36.41% for firemen.

F. COMPARISON OF EVALUATION RESULTS WITH PREVIOUS YEAR

Table 5 sets forth a comparison of evaluation results for 1990 and 1991. Section A indicates that the number of active members has increased by 185 for police and by 103 for firemen. Also, the number of participants currently receiving benefits has increased by 293 for police and 168 for firemen. As a percentage of total membership, 41.3% of police members are currently receiving benefits, compared to 40.8% last year; the corresponding percentages for firemen are, respectively, 44.9% and 44.6%.

The actuarial present values of future benefits have increased by \$226.1 million for police and \$143.6 million for firemen as is indicated in Section B. Valuation assets, in turn, increased by \$120.5 million for police and \$88.2 million for firemen.

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 28.02% to 28.75%, or by .73%, for police, while for firemen the corresponding rate has decreased from 29.34% to 29.11%, for a decrease of .23%.

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, 1990	28.02%	29.34%
2. Change due to asset allocation method:	.20	(.24)
3. Actuarial gains or losses and changes in membership	.53	.01
4. Rate per cent as of January 1, 1991	28.75%	29.11%

In addition, the health care plan and Medicare component of the rate per cent increased from 6.26% to 7.30%, for a net increase of 1.04%. This increase reflects a \$7,719,800 increase in estimated costs for 1991 over the estimated 1990 costs (from \$52,773,200 to \$60,493,000) along with a \$27,500,000 increase in estimated annual payroll (from \$803.7 million to \$831.2 million).

G. ADEQUACY OF STATUTORY RATES

The rate per cents developed in this report are to be used by the Ohio Retirement Study Commission to assess the adequacy of the current statutory employer contribution rates. In this section we present observations to assist the Commission in this regard.

The statutory rates are 19.5% for Police and 24.0% for Firemen. After adding in the member contribution rate of 10%, the total statutory rates are 29.5% for Police and 34.0% for Firemen, and include the cost of providing for postretirement health care benefits. In addition, state subsidies in the neighborhood of \$5.7 million help finance pension benefits.

The statutory rates were determined, we believe, by using the 1985 actuarial contribution rates less about .5%. The 1985 actuarial rates, in turn, included a health care component of 4.91%. So, we conclude that the statutory rates include about a 5% fixed allowance for health care expenses. This fixed allowance under the current scenario of rapidly increasing health care costs is the major deficiency in the statutory rate structure.

The balance of the statutory rate, 24.5% for Police and 29.0% for Firemen, is thus the applicable contribution rate for pension and disability benefits. Also, an estimated State of Ohio appropriation for 1991 of \$5.7 million generates an additional contribution of about .65% for Police and .75% for Firemen. So the estimated total statutory 1991 contribution rate for pension and disability benefits is 25.15% for Police and 29.75% for Firemen.

These rates compare to the 28.75% Police rate and 29.11% Firemen rate developed in this valuation. Thus, while the Police rate exceeds the statutory rate by 3.6%, the Firemen rate is below the statutory rate by .64%.

But other factors must also be considered in assessing adequacy. These include (1) variations in asset performance and their effects on the actuarial rate per cents, (2) the sensitivity of the actuarial rate per cents to the actuarial assumptions, and (3) expected changes in the actuarial rates as the major benefit improvements in the 1980's become funded.

With respect to the first item, in Table 6 we indicated that based on valuation assets, expected investment growth during 1990 exceeded actual by some \$27.8 million. Of course, 1990 was not a particularly good year for investment results. But if indeed the \$27.8 million had actually been realized, the Police contribution rate would have decreased by .35%, and the Firemen, by .33%.

With respect to the second point, a .5% increase in the actuarial valuation interest rates, from 8.25% to 8.75%, will decrease the actuarial rate per cents by about 4% for both Police and Firemen.

Finally, with respect to expected future trends, the 35-Year Forecast Study presented to the Board on June 18, 1991 shows that under current valuation assumptions, an assumed active population the same size as the January 1, 1990 population, and constant annual postretirement health care expenses of 6.5% of payroll, the Fund is expected to be in a sound financial position for the next 35 years. Financial soundness is also maintained if various mortality improvements are considered. Also, under current assumptions, pension and disability rate per cents for both Police and Fireman are expected to decline over the next 35 years to below statutory levels.

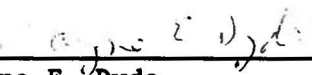
In summary, we believe that the results of this valuation, the results of the 35-Year Forecast Study, and the above observations suggest that the current statutory rates for Police and Firemen are adequate with respect to pension and disability benefits. However, the fixed postretirement health care rate of 5% may cause solvency problems in the next century if projected health care cost rate increases as shown in the Forecast Study actually occur.

* * * * *

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

Respectfully submitted,

THE WYATT COMPANY



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, 1991 1/

	<u>Police</u>	<u>Firemen</u>
A. <u>MEMBERSHIP</u>		
1. Number of Active Members	13,273	9,801
2. Number of Retirants	6,246	5,595
3. Number of Beneficiary-Survivors		
a. Surviving Spouses and Beneficiaries	2,724	2,195
b. Children	358	184
c. Total Beneficiary-Survivors	3,082	2,379
4. Total Membership 2/	22,601	17,775
B. <u>SUMMARY OF ACTUARIAL PRESENT VALUES OF FUTURE BENEFITS</u>		
1. Active Members 3/	\$2,110,800,000	\$1,680,900,000
2. Retirants	1,042,100,000	915,100,000
3. Beneficiary-Survivors	111,800,000	82,600,000
4. Actuarial Present Value for All Members	3,264,700,000	2,678,600,000
C. <u>DEVELOPMENT OF CURRENT RATE PER CENT FOR DISABILITY AND PENSION BENEFITS</u>		
1. Actuarial Present Value of Future Benefits	\$3,264,700,000	\$2,678,600,000
2. Valuation Assets	1,769,000,000	1,401,200,000
3. Actuarial Present Value of Employer Accrued Liability	211,900,000	195,100,000
4. Actuarial Present Value of Active Member Future Compensation	4,499,500,000	3,746,100,000
5. Net Rate Per Cent, Prior to Expense Loading ((Item C1 - C2 - C3) ÷ C4)	28.53%	28.89%
6. Current Rate Per Cent for Disability and Pension Benefits	28.75%	29.11%

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>	\$ 60,699,500	
2.	Estimated Aggregate Annual Payroll	831,200,000	
3.	Current Rate Per Cent for Health Care Plan and Medicare (Item D1 ÷ D2)		7.30%
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)	28.75%	29.11%
2.	Current Rate Per Cent for Health Care Plan and Medicare (Item D3)	7.30	7.30
3.	Total Current Rate Per Cent (Item E1 + E2)	36.05	36.41

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 64 inactive policemen and 41 inactive firemen.

3/ Includes present values of \$5,200,000 for 64 policemen and \$4,200,000 for 41 firemen who have terminated with more than 15 years of service.

4/ Includes \$206,500 representing the difference between 1990 actual cost (\$52,979,700) and estimated cost (\$52,773,200).

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, 1991

(Females are indicated in parentheses and are included in adjacent totals)

Attained Age Group	0-4 ^{1/}	5-9	10-14	15-19	20-24	25-29	30-Over	Totals	Average Annual Salary	
									As of January 1, 1991	As of January 1, 1990
Under 25	377(44)	-	-	-	-	-	-	377(44)	\$23,105	\$21,918
25 - 29	1,626(142)	205(25)	2(1)	-	-	-	-	1,833(168)	28,095	26,501
30 - 34	840(82)	1,035(109)	392(38)	-	-	-	-	2,267(229)	32,197	30,980
35 - 39	369(53)	698(79)	1,264(81)	338(11)	-	-	-	2,669(224)	34,492	32,652
40 - 44	164(11)	263(32)	642(66)	1,262(19)	543(5)	5	-	2,879(133)	36,031	34,410
45 - 49	58(8)	60(7)	110(9)	390(11)	1,061(8)	297(4)	4(1)	1,980(48)	37,166	35,187
50 - 54	25(3)	26(1)	19	40	354(2)	401(5)	70	935(11)	37,732	35,910
55 - 59	13	12	10(1)	14	25(1)	62	101(2)	237(4)	36,548	35,348
60 - 64	3	1	2	3	8	2	49	68	36,269	35,214
65 & Over	3	-	1	1	1	1	21	28	39,135	36,653
Total	3,478(343)	2,300(253)	2,442(196)	2,048(41)	1,992(16)	768(9)	245(3)	13,273(861)	\$33,910	\$32,351

January 1, 1991

January 1, 1990

Average Attained Age

39

39

Average Hire Age

26

26

-
13
-

^{1/} Includes 847 members hired in 1990.

POLICE AND FIREMEN'S DISABILITY AND PENSION FUND OF OHIO

Police

Distribution of Retirants by Attained Age Group
and Sex as of January 1, 1991

<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, 1991</u> (6)	<u>As of January 1, 1990</u> (7)
Under 40	109	22	131	2%	\$ 1,797,578	\$ 1,896,254
40 - 44	234	19	253	4	4,123,834	3,469,072
45 - 49	439	5	444	7	8,424,540	6,788,914
50 - 54	818	7	825	13	17,861,920	14,648,526
55 - 59	980	10	990	16	20,345,742	19,784,418
60 - 64	1,334	9	1,343	22	23,404,276	22,209,928
65 - 69	1,015	9	1,024	16	14,536,992	12,229,138
70 - 74	522	8	530	8	6,273,290	5,936,865
75 - 79	426	4	430	7	4,425,157	3,807,470
80 - 84	162	2	164	3	1,416,607	1,171,165
85 - 89	82	3	85	1	661,957	601,590
90 & Over	26	1	27	1	177,466	172,167
TOTAL	6,147	99	6,246	100%	\$103,449,359	\$92,715,512

Average

Attained Age

January 1, 1990 62 55 62

January 1, 1991 62 54 62

Average Annual

Benefit

January 1, 1990

\$15,548

January 1, 1991

16,562

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, 1991

<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	45	2%
40 - 44	59	2
45 - 49	74	3
50 - 54	122	5
55 - 59	181	7
60 - 64	303	12
65 - 69	343	14
70 - 74	357	15
75 - 79	345	14
80 - 84	328	13
85 - 89	205	8
90 & Over	127	5
TOTAL	2,489	100%
Average Attained Age	71	
B. <u>BENEFICIARIES RECEIVING OPTIONS</u>		
Under 35	4	2%
35 - 39	7	3
40 - 44	17	7
45 - 49	19	8
50 - 54	28	12
55 - 59	35	15
60 - 64	57	24
65 - 69	35	15
70 - 74	25	10
75 - 79	7	3
80 - 84	1	1
85 - 89	-	-
90 & Over	-	-
TOTAL	235	100%
C. <u>CHILDREN</u>	358	

1/ Includes dependent parents.

Table 2(b)

POLICE AND FIREMEN'S DISABILITY AND PENSION FUND OF OHIO

FiremenDistribution of Members by Attained Age Group and Length of Service as of January 1, 1991

(Females are indicated in parentheses and are included in adjacent totals)

Attained Age Group	0-4 <u>1/</u>	5-9	10-14	15-19	20-24	25-29	30- Over	Totals	Average Annual Salary	
									As of January 1, 1991	As of January 1, 1990
Under 25	299(7)	1	-	-	-	-	-	300(7)	\$23,953	\$20,900
25 - 29	955(25)	253(6)	2	-	-	-	-	1,210(31)	27,844	25,975
30 - 34	726(28)	907(17)	293(2)	2	-	-	-	1,928(47)	31,394	30,163
35 - 39	266(11)	687(13)	808	224	1	-	-	1,986(24)	33,722	32,014
40 - 44	94(4)	172(6)	531(2)	913(1)	198	2	-	1,910(13)	34,869	33,335
45 - 49	21(1)	27	73(1)	403	668(1)	167	2	1,361(3)	36,923	35,512
50 - 54	6(1)	7	9	60	344(1)	308	73	807(2)	38,187	36,609
55 - 59	2	1	6	12	30	92	95	238	39,603	38,386
60 - 64	2	1	4	4	3	4	39	57	41,187	38,550
65 & Over	-	-	-	-	-	2	2	4	47,842	40,663
Total	2,371(77)	2,056(42)	1,726(5)	1,618(1)	1,244(2)	575	211	9,801(127)	\$33,467	\$31,863

January 1, 1991January 1, 1990

Average Attained Age

39

39

Average Hire Age

26

26

1/ Includes 448 members hired in 1990.

POLICE AND FIREMEN'S DISABILITY AND PENSION FUND OF OHIO

Firemen

Distribution of Retirants by Attained Age Group
and Sex as of January 1, 1991

Attained Age Group (1)	Males (2)	Females (3)	Total (4)	Col. (4) as % of TOTAL (5)	Annual Rate of Pension 1/	
					As of January 1, 1991 (6)	As of January 1, 1990 (7)
Under 40	54	2	56	1%	\$ 797,163	\$ 796,327
40 - 44	95	1	96	2	1,575,877	1,348,750
45 - 49	204	-	204	4	3,704,235	3,474,347
50 - 54	575	-	575	10	12,161,447	11,119,019
55 - 59	959	-	959	17	20,297,162	20,664,080
60 - 64	1,415	-	1,415	25	26,180,184	25,352,072
65 - 69	1,003	-	1,003	18	15,218,785	12,032,982
70 - 74	525	-	525	9	6,396,676	6,249,652
75 - 79	475	-	475	9	4,863,993	4,284,106
80 - 84	190	-	190	3	1,778,154	1,445,026
85 - 89	72	-	72	1	557,516	474,093
90 & Over	25	-	25	1	167,187	218,343
TOTAL	5,592	3	5,595	100%	\$93,698,379	\$87,458,800

Average Attained Age			
January 1, 1990	64	55	64
January 1, 1991	64	38	64

Average Annual Benefit		January 1, 1990	January 1, 1991
			\$15,974
			16,747

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, 1991

<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> <u>1/</u>		
Under 40	22	1%
40 - 44	25	1
45 - 49	50	2
50 - 54	64	3
55 - 59	123	6
60 - 64	221	11
65 - 69	270	13
70 - 74	299	15
75 - 79	335	17
80 - 84	263	13
85 - 89	214	11
90 & Over	138	7
TOTAL	2,024	100%
Average Attained Age	73	
B. <u>BENEFICIARIES RECEIVING OPTIONS</u>		
Under 35	4	2%
35 - 39	2	1
40 - 44	5	3
45 - 49	9	5
50 - 54	18	11
55 - 59	30	18
60 - 64	43	25
65 - 69	34	20
70 - 74	14	8
75 - 79	10	6
80 - 84	2	1
TOTAL	171	100%
C. <u>CHILDREN</u>	184	

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 48 and 25 years of service.
 - (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 \$5,000, whichever is greater.

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 48 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 48, 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 \$4,920.

(ii) Surviving Children - An annual amount equal to \$1,416, 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 \$1,416 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:

10% 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, 1988, 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.

Effective July 1, 1989, the minimum annual pension for current retirees with 25 or more years of service is \$5,000, the annual pension of a surviving spouse is increased to \$4,920, and the annual benefit of a dependent surviving child is increased to \$1,416.

Retirees prior to July 24, 1986 whose annual straight life pension is less than \$18,000 will receive an increase in their annual pension of \$360, actuarially adjusted to reflect optional annuity forms of benefits. The increase is paid only if the annual increase in the Consumer Price Index, plus unused prior increases, equals or exceeds 3%. The first increase is paid July 1, 1988. Beginning in 1989, the \$18,000 limit is increased by \$500 each year.

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, 1989, 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, 1989. 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 members with less than 15 years of service as of January 1, 1989.
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.
- Effective September 9, 1989, elected options may be cancelled within one year after benefits commence.
15. Lump Sum Death Benefit: Effective November 2, 1989, a \$1,000 lump sum payment will be made on account of death of a retired member.

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 8-1/4% 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:

Age	Rate of Disability	
	Police	Firemen
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 disability rates reflect the fact that the occurrence of disability by type approximates the following:

On duty permanent and total	40%
On duty partial	57
Off duty ordinary	3

(d) Salary Increase Rate:

A rate of future salary increase of 5-3/4% 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 5% per year.

(e) Retirement:

The rates of retirement for ages 53 through 65 are based upon the experience during the periods 1982 through 1986. The rates of retirement for ages 48 through 52 are based upon the experience for 1989. These rates are applicable after the member has satisfied the conditions for retirement. The rates are as follows:

Age(s)	Police	Firemen
48 - 52	.25	.25
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:

Table 4
(continued)

<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 1990 and 1991

	<u>1991</u>		<u>1990</u>	
	<u>Police</u>	<u>Firemen</u>	<u>Police</u>	<u>Firemen</u>
A. <u>MEMBERSHIP</u>				
1. Number of Active Members	13,273	9,801	13,088	9,698
2. Number of Retirants and Beneficiary-Survivors	9,328	7,974	9,035	7,806
3. Total Membership	22,601	17,775	22,123	17,504
B. <u>ACTUARIAL PRESENT VALUE AND ASSETS (000,000 omitted)</u>				
1. Present Value of Future Benefits	\$3,264.7	\$2,678.6	\$3,038.6	\$2,535.0
2. Valuation Assets	1,769.0	1,401.2	1,648.5	1,313.0
3. Present Value of Employer Accrued Liability	211.9	195.1	214.1	197.1
C. <u>CURRENT RATE PER CENT</u>				
1. Disability and Pension Benefits	28.75%	29.11%	28.02%	29.34%
2. Health Care Plan and Medicare	7.30	7.30	6.26	6.26
3. Total	36.05	36.41	34.28	35.60

Table 6

POLICE AND FIREMEN'S DISABILITY AND PENSION FUND OF OHIO

Asset Allocation 1991

The following table presents a development of the allocation of assets between police and firemen as of January 1, 1991.

	<u>Police</u>	<u>Firemen</u>	<u>Total</u>
(1) 1/1/90 Valuation Assets	\$1,648,534,700	\$1,312,949,200	\$2,961,483,900
(2) Transactions during 1990			
a. Employer contributions	89,056,529	79,167,475	168,224,004
b. Net employee contributions	44,987,425	33,773,659	78,761,084
c. Local Funds receipts	10,706,386	9,848,224	20,554,610
d. Benefit payments and expenses	<u>(144,830,854)</u>	<u>(130,201,262)</u>	<u>(275,032,116)</u>
e. Total transactions	(80,514)	(7,411,904)	(7,492,418)
(3) Item (1) plus Item 2(e)	1,648,454,186	1,305,537,296	2,953,991,482
(4) Expected Investment Growth	136,000,792	108,012,568	244,013,360
(5) Valuation Assets, Total	N/A	N/A	3,170,164,465
(6) Actual investment growth (Item 5 less Item 3)	N/A	N/A	216,172,983
(7) Allocation of Item 6 in proportion to Item 4	120,483,964	95,689,019	216,172,983
(8) January 1, 1991, Valuation Assets (Item 3 plus Item 7)	\$1,768,938,150	\$1,401,226,315	\$3,170,164,465