

**OR  
SC**

# *Final Report*

The Ohio Retirement Study Commission

December 14, 1994

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## **Adequacy of Contribution Rates for the Police and Firemen's Disability and Pension Fund**

### **Review and Recommendations**

Ohio Retirement Study Commission  
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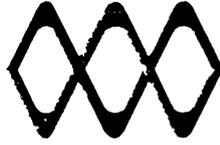
The Ohio Retirement Study Commission was created by the Ohio General Assembly in 1968 to provide continuing study of public pensions, their costs and financing. It was conceived as an agency to review the administration and financing of pensions, with power to recommend improvements in benefits, financing and the investment of funds. It must study all statutory changes in the retirement laws proposed to the General Assembly and report to the General Assembly on their probable cost, actuarial implications and desirability as a matter of public policy.

The Commission is empowered to make an impartial review from time to time of the laws governing the administration and financing of the Public Employees Retirement System, the Police and Firemen's Disability and Pension Fund, the State Teachers Retirement System, the School Employees Retirement System, the Highway Patrol Retirement System and the Volunteer Fire Fighters' Dependents Fund. It may recommend to the General Assembly any changes it considers desirable with respect to the allowances and benefits, the sound financing of the cost of benefits, the prudent investment of funds, and the improvement of the language, structure and organization of the laws.

It must report to the Governor and the General Assembly concerning its evaluation and recommendations with respect to the operations of the systems and their funds.

The Commission is composed of fourteen members: three members of the House, three members of the Senate, three members appointed by the Governor, and the five executive directors of the state retirement systems, who are non-voting members.

The annual expenses of the Commission are borne by the five state retirement systems in the proportion determined by the ratio of assets of each system to the total assets of all five systems.



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December 6, 1994

Mr. Aristotle L. Hutras  
Director  
Ohio Retirement Study Commission  
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88 East Broad Street  
Columbus, OH 43215-3580

Re: Actuarial Review to Determine Adequacy of PFDPF Statutory Contribution Rates

Dear Aris:

After reviewing a draft copy of the Summary of the Actuarial Reviews of PFDPF and Recommendations to the Ohio Retirement Study Commission, I believe you have accurately summarized our analyses, conclusions and recommendations to the Commission and believe that the ORSC recommendations are reasonable and will enhance the long-term actuarial soundness of PFDPF.

Sincerely,

William A. Reimert

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## INTRODUCTION

This report is submitted to the Ohio General Assembly pursuant to R.C. §742.311. That section was enacted in Am. Sub. H.B. 721 in 1986, and 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 benefits of the police and firemen’s disability and pension fund.”*

In fulfilling this legislative mandate, the Ohio Retirement Study Commission engaged its consulting actuary, Milliman & Robertson, Inc., to review the adequacy of the employee and employer contribution rates to support the current level of benefits provided by the Police and Firemen’s Disability and Pension Fund (PFDPF). This report is based on that review which, in turn, was based solely on information provided by PFDPF’s actuary, the Wyatt Company.

## BACKGROUND

PFDPF became operational in 1967 with the consolidation of 454 local police and firemen’s relief and pension funds. The law establishing PFDPF provided for an actuarial valuation of the assets and liabilities of each local fund as of April 1, 1966. These local funds had assets of approximately \$75 million and accrued liabilities of approximately \$490 million, leaving an unfunded accrued liability of over \$415 million.<sup>1</sup> This unfunded liability was frozen and charged to the respective local governments. The initial law allowed local governments to pay off their indebtedness over 20 years; this law was later amended to extend the funding period from 20 years to 59 years, and then to 67 years.\* Under the present 67-year schedule the frozen initial liability will be paid off in the year 2035.<sup>3</sup>

The implication of this separate payment schedule for the frozen initial liability was that *no additional liability was to be generated in the future*; that is, all liabilities created since 1966 were to be treated as “current or normal” costs and were to be covered by contributions over the future working lifetime of current active members and by investment earnings on the assets. (The anticipated investment earnings are accounted for by the interest rate assumption used to discount future benefit payments.) Under this funding method, any increase in the cost of future benefits was to be paid for by (1) increased contributions over the future working lifetime of active members; or (2) investment earnings in excess of the actuarial interest rate assumption; or (3) actuarial gains resulting from non-investment experience being other than what was expected (e.g., shorter life expectancies than assumed).

Prior to 1986 the law authorized the PFDPF board to fix the employer contribution rates for police and firemen as of the first of each year based on the annual actuarial valuations of the fund. The employee contribution rates were fixed by statute.

On July 24, 1986 the legislature enacted H.B. 721 which repealed the board’s authority to fix the employer contribution rates on the basis of the actuarial valuation. The Act froze the policemen’s employer contribution rate at 19.5% of payroll and the firemen’s employer contribution rate at 24% of payroll; these were the rates certified by the board for calendar year 1986.<sup>4</sup> This action was taken in response to employers’ concerns over the ever increasing and fluctuating rates. The Act also increased the employee contribution rate from 8.5% to 9.5% of payroll, and required the Ohio Retirement Study Commission to report annually to the General Assembly on the adequacy of the employer and employee contribution rates established under the Act.

<sup>1</sup>PFDPF Comprehensive Annual Financial Report (1993)

<sup>2</sup>H.B. 642 (1965); H.B. 756 (1967); H.B. 215 (1969)

<sup>3</sup>In 1993 H.B. 38 authorized the PFDPF board to enter into agreements with local governments permitting them to pay off the remaining balance of their unfunded liability at a substantial discount. The board adopted 65% as the discounted amount it would accept for payments received by October 15, 1994.

<sup>4</sup>PFDPF Memo to Municipal Fiscal Officers and Township Clerks, Certification of Employer’s Rate for 1986, (July 1985)

## BENEFIT IMPROVEMENTS SINCE 1956

Prior to the enactment of H.B. 721 in 1986, benefit improvements were funded by increasing the contribution rates and also by assuming greater investment earnings through changes in the actuarial interest rate assumption.

The frozen rates of contribution established under H.B. 721 significantly decreased the flexibility previously accorded to the PFDPF board to fund any increase in the cost of future benefits. Any increased costs resulting from benefit improvements could no longer be funded by increased contribution rates; such increased costs could only be funded through investment gains or other actuarial experience gains.

The legislature enacted several major benefit improvements in PFDPF since the contribution rates were frozen. In 1986 H.B. 721 granted an annual 3% COLA for members retiring after July 24, 1986. The actuarial cost of this benefit change was 3.51% of payroll for police and 3.80% of payroll for firemen.<sup>5</sup>

Also, in 1986 S.B. 112 was enacted which increased monthly survivor benefits from \$256 to \$310 for spouses, and from \$68 to \$93 for dependent children. It also provided an ad hoc post-retirement increase to members who retired before February 28, 1984 on an annual pension of less than \$13,000. The increase was the greater of \$600 per year or an amount necessary to increase the member's annual pension to \$4,200. The actuarial cost of these benefit changes amounted to 0.93% of payroll for police and 0.99% of payroll for firemen?

In 1988 the legislature enacted H.B. 389 which reduced normal retirement age from 52 to 48. It also granted an annual \$360 COLA for members who retired before July 24, 1986 on an annual pension of less than \$18,000.<sup>7</sup> It further increased monthly survivor benefits from \$310 to \$410 for spouses, and \$93 to \$118 for dependent children. The actuarial cost of these benefit changes totaled 6.70% of payroll for police and 5.95% of payroll for firemen?

In 1989 H.B. 377 was enacted which provided a \$1,000 lump sum death benefit. The actuarial cost of this benefit change was 0.08% of payroll for police and 0.09% of payroll for firemen.<sup>9</sup>

In addition to the increased costs resulting from the benefit changes enacted by the legislature, PFDPF continued to experience double-digit increases in retiree health care costs, which is financed on a pay-as-you-go basis, throughout most of this period. Though the cost and funding of retiree health care benefits are a continuing concern for each of the state pension funds, PFDPF is particularly hard hit by the younger retirement ages of its members who are not eligible for Medicare until age 65. The cost of providing health care coverage for non-Medicare eligible individuals is typically three to four times higher than for Medicare eligible individuals.

In 1986 PFDPF allocated 5.63% of the employer contribution toward retiree health care costs. By 1992 7.51% of the employer contribution was allocated toward retiree health care benefits. Due to several cost containment initiatives taken by the board and lower medical inflation, PFDPF actually experienced a decrease in health care expenditures in 1993 for the first time since it began providing retiree health care benefits in 1974, and was able to stay just below the 6.5% health care contribution allocation established by the board.

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<sup>5</sup>PFDPF Actuarial Evaluation (October 23, 1987)

<sup>6</sup>PFDPF Actuarial Evaluation (October 23, 1987)

<sup>7</sup>The \$18,000 is increased \$500 each year thereafter.

<sup>8</sup>PFDPF Actuarial Evaluation (April 24, 1990)

<sup>9</sup>PFDPF Actuarial Evaluation (November 26, 1990)

## DEVELOPMENTS SINCE 1992 ORSC REPORT

In 1992, the Commission submitted its review and recommendations to the Ohio General Assembly relative to the adequacy of the PFDPF statutory contribution rates. The actuarial review was prepared by Milliman & Robertson (M&R), the Commission's consulting actuary, and was based solely on various actuarial reports and analyses provided by the Wyatt Company, the actuary employed by PFDPF.

In that initial review, M&R concluded that there was a need for either increases in the contribution rates from employers, members or the state or reductions in benefits provided to the members (or some combination of these) in order to maintain the actuarial soundness of PFDPF. Of particular concern was the pay-as-you-go financing of post-retirement health care benefits and the projected growth in medical costs as determined in the Wyatt Company's 35-year forecast study.

Since the 1992 ORSC Report, a number of significant changes have occurred. There are still other changes, however, which were recommended in the report but have not yet been made. The following summary highlights each of these areas.

- No benefit changes have been enacted which would create any additional liabilities to PFDPF. The Commission has consistently recommended against all proposed legislation creating any additional liabilities to the fund.

There were only two benefit changes enacted in PFDPF during the last two legislative sessions: H.B. 394 (119th G.A.) and H.B. 197 (120th G.A.). H.B. 394 allowed members to purchase up to two years of service for any lay-off period, but was amended upon the recommendation of the Commission to require the member or the employer to pay the additional liabilities resulting from the purchase, as determined by the fund's actuary. Similarly, H.B. 197 allowed members to purchase up to five years of federal or out-of-state service, and was amended upon the recommendation of the Commission to require the member to pay the additional liability as determined by the fund's actuary. Neither piece of legislation had any negative fiscal impact upon the actuarial condition of PFDPF.

- The PFDPF board has established a health care stabilization fund with an initial allocation of \$150 million so that assets used to pay health care benefits are accounted separately from those used to pay pension and disability benefits. In conjunction with the establishment of this fund, the board has also adopted a goal to limit post-retirement health care costs to 6.5% of payroll. Both of these measures were recommended in the 1992 ORSC report.

In addition, the PFDPF board has implemented a retail pharmacy network and a managed care network, both of which incorporate negotiated payment levels and utilization controls to achieve savings. The board has also begun charging premiums to certain classes of benefit recipients, generally ranging from \$5/month for retirees with Medicare coverage to \$10/month for retirees without Medicare coverage (\$40/month for certain retirees with partial or off-duty disabilities). Spouses without Medicare coverage also pay \$40/month. No premiums are charged to spouses with Medicare coverage, dependent children under age 18 or retirees receiving annual pensions of less than \$10,000. Other cost containment measures adopted by the board include a prescription drug formulary rebate program and subrogation recoveries.

The effect of these changes has been that for the first time since the fund began providing health care benefits in 1974, PFDPF actually experienced a decrease in health care costs from \$68.1 million (7.7% of payroll) in 1992 to \$64.3 million (6.4% of payroll) in 1993.

The 1992 ORSC report made several other recommendations with respect to the PFDPF health care plan which have not yet been implemented.

First, the 1992 report recommended that Medicare Part B reimbursements be capped in PFDPF. This recommendation was also made in the ORSC health care report which was done in 1991 pursuant to a legislative mandate. In 1993 legislation was introduced (S.B. 161 - 120th G.A.) which included such a provision, but was never enacted. The Medicare Part B premium is presently \$41.10/month and will increase to \$46.10/month (12.2% increase) effective January 1, 1995. The legislature has capped the Medicare Part B reimbursement at \$24.80/month in the School Employees Retirement System,

\$29.90/month in the State Teachers Retirement System and \$41.10/month in the Highway Patrol Retirement System. Medicare Part B reimbursements in PFDPF increased from \$2.94 million in 1992 to \$3.51 million in 1993 (19.2% increase), with only an additional enrollment of 229 benefit recipients.

Second, the 1992 report recommended that the retirement board index deductibles and out-of-pocket maximums to the previous year's percentage increase in health care costs. This same recommendation was made in the ORSC health care report. Deductibles (\$100/\$200) and out-of-pocket maximums (\$500/\$750) remain flat dollar amounts under the PFDPF health care plan, which lose their intended effects over time due to medical inflation. Higher deductibles (\$250/\$500) and out-of-pocket maximums (\$1,500/\$2,250) are, however, applied to individuals who receive out-of-network medical services.

Third, the 1992 report recommended that the retirement board charge premiums for all dependents covered under the PFDPF health care plan, and that the premium charges for pre-65 retirees reflect the increased health care costs associated with the normal retirement age of 48 established under H.B. 389 in 1988.

Under the premium schedule adopted by the board, spouses covered by Medicare and dependent children under age 18 are exempt from any premium charges.

While the premium schedule generally distinguishes between retirees covered by Medicare and those not covered by Medicare, the amount of the premium does not vary based on the member's age at retirement. Service retirees who are not covered by Medicare pay a flat \$10/month, whether they retire as early as age 48 or at later ages. The normal retirement age of 48 established by H.B. 389 in 1988 exposes the PFDPF health care plan to significant medical costs for up to 17 years before eligible retirees become covered by Medicare (generally age 65) as the primary payer of their medical claims. The cost of coverage is typically three to four times higher for individuals without Medicare than for individuals with Medicare. The premiums charged to individuals who retire at earlier ages should reflect these higher costs to PFDPF.

- Legislation was enacted (H.B. 38 - 120th G.A.) which authorized the retirement board to enter into agreements with municipal corporations permitting them to pay off the remaining balance of their initial indebtedness at the time PFDPF was created in 1967. The board adopted 65% as the discount amount it would accept for payments received by October 15, 1994. Under this legislation the cities received a substantial discount, while the retirement system exchanged a long-term, low-yielding asset (4.25% annual interest) for cash which could be invested to earn a higher return (8.25% actuarial interest rate assumption).

This legislation was favorably recommended by the Commission, and was generally consistent with a recommendation included in the 1992 ORSC report that the statutory payment schedule for the frozen initial liability be accelerated.

- The 1992 ORSC report included other recommendations which received no legislative action. In the area of disability retirement, it recommended that legislation be enacted to offset Workers' Compensation benefits against PFDPF duty-related disability benefits. Also, it recommended that the annual \$1.2 million state subsidy established in law upon the creation of PFDPF in 1967, otherwise known as the "state contribution," be increased to \$4.8 million and indexed to general inflation. Finally, it recommended that the member contribution rate be increased from 10% to 11%. None of these recommendations were adopted.

## SUMMARY OF ACTUARIAL REVIEW

Milliman & Robertson, the Commission's consulting actuary, has prepared the actuarial review to determine the adequacy of the current statutory contribution rates to support the benefits provided by PFDPF. The review is based solely on actuarial reports and analyses prepared by the Wyatt Company, the actuary employed by PFDPF, and is not based on an independent analysis of such data. The review includes the results of the quinquennial study completed by Wyatt in May, 1993 which compared the actuarial assumptions with the actual experience in PFDPF for the period January 1, 1987 to December 31, 1991. It also includes Wyatt's analysis of disability and service retirement experience for 1992-1993 completed in October, 1994 and its 15-year forecast study for the period 1994-2009 completed in November, 1994.

Based on its analysis of such data, M&R concludes that the current statutory contribution rates are likely to be deficient unless *future experience is more favorable than actual 1987-91 experience*. In particular, M&R cites more individuals retiring at age 48 than assumed, more individuals going out on disability retirement than assumed, and both healthy and disabled retirees living longer than assumed as reasons for this conclusion. Each of these factors has the effect of increasing future benefit costs.

Moreover, M&R concludes that aside from future medical inflation, demographic pressures alone will make it difficult for the PFDPF board to provide post-retirement health insurance at 6.5% of active member payroll *without significant increases in deductibles, co-pays and/or retiree contributions*. The ratio of active members to retirees is expected to decrease from two employees for every retiree in 1990 to approximately 1.2 to 1.4 employees for every retiree by the year 2025. This means that instead of having contributions from two active members to support health insurance for each retiree, there will be only 1.2 to 1.4 active members supporting each retiree's health care benefits. Under the pay-as-you-go financing method currently employed by PFDPF, this will have the effect of increasing health care costs as a percent of active member payroll. To the extent that the board is unsuccessful in limiting health care costs to 6.5% of payroll, such excess costs would add to any deficiency in the contribution rates.

The M&R actuarial review does not indicate that there is any immediate or near-term crisis with respect to the ability of PFDPF to meet its obligations for current retirees and beneficiaries. Moreover, it does not recommend that the employer contribution rates which were fixed in 1986 at 19.5% for police and 24.0% for firefighters be increased by the legislature prior to the completion of a disability study. Rather, the M&R actuarial review serves as an early warning signal of recent experience which could affect future benefit costs and the long-term financial condition of the fund.

M&R recommends that a study be made to examine the cause(s) of the high rates of disability among both police and firefighters since 1986. During the 1987-91 period, disabilities comprised 41% of all police retirements and 35% of all firefighter retirements, compared to 35% and 25%, respectively, during the 1982-86 period. One purpose of the study would be to determine if changes are necessary in the statutory provisions and/or administrative procedures governing disability retirement. Another purpose of the study would be to develop appropriate actuarial assumptions regarding future disability experience.

M&R makes the observation that the lower statutory employer contribution rate for police (19.5%) compared to firefighters (24.0%) is inconsistent with the actuarially determined rates for these two groups. Based on the Frozen Initial Liability Normal Cost method used by the Wyatt Company in its valuations, the actuarial rate is actually higher for police than firefighters. Based on the Entry Age Normal Cost method used by M&R for comparative purposes, the actuarial rates are estimated to be roughly the same for both police and firefighters assuming a 40-year funding period.

In its initial review dated October 6, 1994, M&R observes that based on Wyatt's actuarial valuation of PFDPF as of January 1, 1993 the combined actuarial contribution rate for police and firefighters (32.7%) exceeds the combined statutory contribution rate (32.0%) by 0.7% of payroll. M&R further observes that the assumptions used in the 1993 actuarial valuation relative to disability rates, retirement rates at age 48, and mortality rates among retirees are more favorable than actual 1987-91 experience as shown in the most recent quinquennial study. The combined effect of these more favorable assumptions has the potential of significantly underestimating future benefit costs.

In evaluating the adequacy of the current statutory contribution rates, M&R has estimated the effect on costs of using modified actuarial assumptions relative to disability rates, retirement rates at age 48 and mortality rates among retired members. In addition, M&R has estimated the effect on costs of using an alternative actuarial cost method. *The results are shown in Tables A and B found on pages 15 and 16 of the October 6 letter.*

Table A shows the actuarial contribution rates under the Frozen Initial Liability Normal Cost method (the method used by Wyatt in the 1993 actuarial valuation.) Table B shows the actuarial contribution rates and funding periods under the Entry Age Normal Cost method (the method used by the other Ohio retirement systems). Both tables reflect the same modifications in the actuarial assumptions.

Under the first set of assumptions referred to as "Generally Realistic with Optimistic Disability and Health Cost Assumptions," M&R modifies the retirement rates and mortality rates, but *not* the disability rates. Under the second set of assumptions referred to as "Generally Realistic with Pessimistic Disability and Optimistic Health Cost Assumptions," M&R modifies the disability rates, retirement rates and mortality rates. Given the uncertainties surrounding the causes of the unfavorable disability experience from 1987 through 1991, M&R has thus attempted to show the results on both an optimistic and pessimistic basis in order to gauge the range within which the true long-term costs are likely to be.

The estimated cost effect of modifying the disability and retirement rates are based on figures shown in Wyatt's quinquennial study. Such rates were developed by Wyatt based on actual 1987-91 experience, but were not adopted by the board pending further study of 1992-93 disability and retirement experience. The modified mortality rates generally reflect actual 1987-91 experience with some margin for continuing improvement in the life expectancies of retired members.

As Table A indicates, M&R estimates the deficiency in the current statutory contribution rates under the Frozen Initial Liability Normal Cost method to be 3.6% of payroll under the first set of assumptions and 5.4% of payroll under the second set of assumptions. As indicated in Table B, M&R estimates the deficiency in the current statutory contribution rates under the Entry Age Normal Cost method to be 0.5% of payroll under the first set of assumptions and 1.6% of payroll under the second set of assumptions assuming a 40-year funding period. The principal reason for the higher deficiency under the Frozen Initial Liability Normal Cost method than the Entry Age Normal Cost method relates to the much shorter funding period under the former (about 15 years) than the latter (40 years). Though both are generally acceptable actuarial cost methods, M&R observes that the Entry Age Normal Cost method is traditionally used to test the adequacy of fixed contribution rates.

The estimated deficiencies in the current statutory contribution rates assume that the board will be able to limit the average cost of post-retirement health insurance to 6.5% of payroll which, M&R concludes, will be difficult to do given the demographic trends of the fund.

At the October 12 meeting of the Commission, M&R presented its conclusions and recommendations relative to the adequacy of the current statutory contribution rates of PFDPF. At the same hearing, the Wyatt Company indicated its disagreement with such conclusions and recommendations based upon more recent disability and retirement experience and more favorable assumptions regarding investment returns, membership growth and health care cost trends.

At the November 16 meeting of the Commission, the Wyatt Company presented its analysis of the 1992-1993 disability and retirement experience dated October 31, 1994, along with its 15-year forecast study dated November 7, 1994. Copies of these reports are included herein.

Though lower than 1987-91 disability experience, the number of disabilities for police and firefighters in 1992-93 remained higher than the number expected under current assumptions. Also, despite improvement in the rates of service retirement in 1992-93, the number of retirements at age 48 remained higher than currently assumed for both police and firefighters. Accordingly, the Wyatt Company recommended a change in the actuarial assumptions relative to the incidence of disability retirement and the rate of service retirement at age 48 to reflect such recent experience. As previously noted, the high incidence of disability retirement and service retirement at age 48 were two major concerns of M&R in its review of the current actuarial assumptions.

# Effects of Assumption Changes, Benefit Improvements, Plan Experience and Health Care Costs on PFDPF Actuarial Rates Since 1986

Year	Police	Employer & Employee Contribution	State Subsidy	Total Actual Contribution	Actuarial Rate % as of 1/1	Change due to Assumptions & Methods	Increase due to Benefit Changes	Change due to Plan Experience	Change due to Health Insurance	Expected Rate % Following Year
1986					27.80%					31.12%
1987	29.00%		1.02%	30.02%	31.12%	0.63%	4.44% <sup>1</sup>	(1.69)%	0.57%	30.68
1988	29.00%		0.88	29.88	32.58%	(4.46) <sup>3</sup>	6.70 <sup>4</sup>	(1.04)	0.91	34.49
1989	29.50		0.78	30.28	34.40		0.08 <sup>5</sup>	0.35	(0.64)	34.28
1990	29.50		0.68	30.18	34.28	0.20		0.53	1.04	36.05
1991	29.50		0.65	30.15	36.05	(1.92) <sup>8</sup>		(0.56)	0.21	33.78
1992	29.50		0.60	30.10	33.78	0.11 <sup>9</sup>		0.28	(1.01) <sup>10</sup>	33.16
1993	29.50		0.50	30.00	33.16					
Total						(5.44)%	11.22%	(2.99)%	0.87%	
Firefighters										
1986					31.25%					34.11%
1987	33.50%		1.12%	34.62%	34.11	0.90%	4.79% <sup>1</sup>	(2.50)%	0.57%	32.71
1988	33.50%		0.98	34.48	34.02%	(4.39) <sup>3</sup>	5.95 <sup>4</sup>	(2.09)	0.91	37.82
1989	34.00		0.86	34.86	37.82		0.09 <sup>5</sup>	(1.67)	(0.64)	35.60
1990	34.00		0.74	34.74	35.60	(0.24)		0.01	1.04	36.41
1991	34.00		0.75	34.75	36.41	(1.76) <sup>8</sup>		(0.68)	0.21	34.18
1992	34.00		0.60	34.60	34.18	(0.92) <sup>9</sup>		(0.12)	(1.01) <sup>10</sup>	32.13
1993	34.00		0.60	34.60	32.13					
Total						(6.41)%	10.83%	(5.72)%	0.87%	

<sup>1</sup>Benefit changes enacted in H.B. 721 and S.B. 112.

<sup>2</sup>Increase to 29.5% for police and 34% for fire due to change in member contribution from 9.5% to 10% effective 10/1/88.

<sup>3</sup>Change due to increasing interest rate assumption from 7.75% to 8.25% and salary scale assumption from 5.5% to 5.75%, together with change due to new assumption on occurrence of disability by type.

<sup>4</sup>Benefit changes enacted in H.B. 389.

<sup>5</sup>Benefit changes enacted in H.B. 377.

<sup>6</sup>Increase of 1.7% due to revised data.

<sup>7</sup>Increase of 1.31% due to revised data.

<sup>8</sup>Decrease due to new asset valuation method.

<sup>9</sup>Net change due to establishment of Health Care Stabilization Fund, use of new asset valuation method and adoption of new assumptions relative to terminations, salary increases, mortality and remarriage.

<sup>10</sup>Decrease due to board decision to allocate 6.5% of employer contribution to \$150 million Health Care Stabilization Fund.

**Breakdown of Total Actuarial Rate Between  
Pension & Disability Benefits and Health Care Benefits**

Year	Pension & Disability		Health	Total Actuarial Rate	
	Police	Fire		Police	Fire
1983	25.22%	30.34%	3.15%	28.37%	33.49%
1984	26.12%	31.40%	4.73%	30.85%	36.13%
1985	24.55%	29.11%	4.91%	29.46%	34.02%
1986	22.17%	25.62%	5.63%	27.80%	31.25%
1987	24.92%	27.91%	6.20%	31.12%	34.11%
1988	26.39%	28.03%	5.99%	32.38%	34.02%
1989	27.59%	30.92%	6.90%	34.49%	37.82%
1990	28.02%	29.34%	6.26%	34.28%	35.60%
1991	28.75%	29.11%	7.30%	36.05%	36.41%
1992	26.27%	26.67%	7.51%	33.78%	34.18%
1993	26.66%	25.63%	6.50%	33.16%	32.13%

## RECOMMENDATIONS

Since 1983 the legislature has sought some resolution to the funding/benefit cost problems of PFDPF. In 1984 the Ohio Retirement Study Commission's study, "Costs and Funding of Police and Firefighter Pensions in Ohio," included several recommendations addressing these problems. In 1992 the Ohio Retirement Study Commission's report, "Adequacy of Contribution Rates for the Police and Firemen's Disability and Pension Fund," recommended additional changes. A number of these recommendations have been adopted by the legislature and/or retirement board over the years. Included among the recommendations of this report are certain prior recommendations which have not yet been adopted, but remain germane to the problems facing PFDPF today..

Recommendation No. 1 - That no future legislation creating additional liabilities to PFDPF be enacted unless a fiscal note, prepared by an actuary, be provided to the Ohio Retirement Study Commission and the standing committees of the House and Senate with primary responsibility for retirement legislation.<sup>10</sup>

Rationale - Retirement benefits are very costly. They create long-term obligations 20 to 30 years in the future. The legislature has a duty and an obligation to know their costs.

Recommendation No. 2 - That consideration of future benefit improvements be deferred or additional contributions be provided to finance such improvements<sup>11</sup>

Rationale - In light of the concerns about the long-term ability of the current statutory contribution rates to support the current benefit structure of PFDPF, prudence dictates that the legislature refrain from enacting any benefit improvements without providing additional funding.

Recommendation No. 3 - That a study into the causes of the high rates of disability since 1986 be undertaken in order to determine if changes in the statutory provisions and/or administrative procedures would be appropriate and to develop appropriate actuarial assumptions regarding future experience.<sup>12</sup>

-- Rationale - Rates of disabilities have shown a dramatic increase since the creation of the fund in 1967, with an especially large increase during the 1987-91 quinquennial study period. It is not clear, however, what has been causing the high rates of disability.

The study should identify the causes of permanent-and-total disabilities and partial disabilities, the standards applied to determine if a member is disabled and the procedures used to monitor disabilities. Such information would allow for a determination to be made as to whether any changes in the statutory provisions and/or administrative procedures would be appropriate to eliminate any unintended results. Such information would also aid in the development of appropriate actuarial assumptions regarding future experience.

Recommendation No. 4 - That Workers' Compensation benefits be offset against PFDPF duty-related disability benefits?<sup>13</sup>

Rationale - The purpose of the disability program is to provide replacement income for members unable to earn an income due to a disabling condition. The Workers' Compensation program has a similar purpose. One of the basic differences is that Workers' Compensation requires that the disabling condition have resulted from employment in order to qualify for benefits. Under the pension program the condition may have been caused from any activity. The important consideration is that employers are providing two sources of income for the same injury in those cases in which the disabling condition is work-related.

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<sup>10</sup>" Costs and Funding of Police and Firefighter Pensions in Ohio," Ohio Retirement Study Commission (1984)

<sup>11</sup>" Prepared Statement to Retirement Study Commission regarding Police and Firemen's Disability and Pension Fund," Milliman & Robertson, Inc. (1994)

<sup>12</sup>" Review of the Police & Firemen's Disability and Pension Fund of Ohio," Milliman & Robertson, Inc. (1994)

<sup>13</sup>" Costs and Funding of Police and Firefighter Pensions in Ohio," Ohio Retirement Study Commission (1984)

Recommendation No. 5 - That actuarial calculations based on the Entry Age Normal Cost method be provided to the Ohio Retirement Study Commission, in addition to such calculations presently provided under the Frozen Initial Liability Normal Cost method, for purposes of reviewing the adequacy of the statutory contribution rates.

Rationale - The Entry Age Normal Cost method is traditionally used to evaluate the adequacy of fixed contribution rates. This method allows for direct testing of fixed contribution rates, and is used by the other four state pension funds. Under this method, a normal cost is developed which can be expected to be relatively stable over time since it reflects the average cost of the current benefit program for the average new hire. It can also develop an amortization rate which would remain constant as a percent of payroll over the entire period required to amortize any unfunded liabilities. As long as that funding period is of reasonable length, the fixed contribution rates can be considered adequate to support the benefits. Since the statutory contribution rates are constant, this method allows for easy comparison.

The Frozen Initial Liability Normal Cost method presently used by PFDPF for valuation purposes develops an actuarial rate intended to fund all benefits over the working lifetime of current members. Though a generally acceptable actuarial cost method, this method is not the ideal method for purposes of evaluating the adequacy of fixed contribution rates. Under this method, the actuarial rate can be expected to decline over time if there are any unfunded actuarial losses or benefit improvements, largely due to a shorter amortization period than normally used to finance unfunded liabilities among public employee retirement systems. Comparing declining actuarial rates with fixed contribution rates is more difficult, and requires additional actuarial projections through periodic forecast studies. Moreover, a fixed contribution rate should not be set equal to the actuarial rate developed under this method when unfunded actuarial losses or benefit improvements exist to avoid fixing a contribution rate at a higher level than the expected long-term level cost of benefits.

Recommendation No. 6 - That the PFDPF board continue to limit post-retirement health insurance to 6.5% of payroll by exercising its discretionary authority to increase deductibles, co-pays and/or retiree premium contributions, as necessary.

Rationale - The cost of post-retirement health insurance is a major component of the total benefit costs of PFDPF. Aside from future medical inflation, demographics alone will make it quite difficult for the board to continue providing the current level of health insurance for 6.5% of payroll without increasing deductibles, co-pays and/or retiree premium contributions. To the extent the board is unsuccessful in limiting health care costs to 6.5% of payroll, such excess costs will simply add to any deficiency in the current statutory contribution rates.

Recommendation No. 7 - That the reimbursement of monthly Medicare Part B premiums be capped in PFDPF.<sup>14</sup>

Rationale - When PFDPF began reimbursing retired members for the Medicare Part B premium in 1977, the amount of the premium was \$7.20 per month. The cost in 1994 is \$41.10 per month, an increase of over 470%. The Medicare Part B premium is scheduled to increase to \$46.10 in 1995, and to continue increasing at such rate as necessary to finance 25% of future program costs.

Capping the Medicare Part B premium reimbursement eliminates the impact of future increases on PFDPF's health care costs.

#### ORSC ACTION

At its meeting of December 14, 1994 the Ohio Retirement Study Commission voted to accept the report and its recommendations and to submit the same to the Ohio General Assembly as required by Section 742.311 of the Ohio Revised Code.

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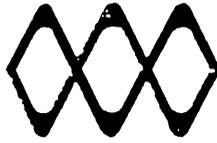
<sup>14</sup>"Adequacy of Contribution Rates for the Police and Firemen's Disability and Pension Fund," Ohio Retirement Study Commission (1992)

**October 6, 1994**

**Milliman & Robertson, Inc.**

***Review of the Police & Firemen's  
Disability and Pension Fund of'  
Ohio***

pp. 1-18



**MILLIMAN & ROBERTSON, INC.**

**Actuaries and Consultants**

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Telephone: 610/687-4644  
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October 6, 1994

Mr. Aristotle L. Hutras  
Director  
Ohio Retirement Study Commission  
88 East Broad Street  
Suite 1175  
Columbus, OH 43215-3580

Re: Review of the Police & Firemen's Disability and Pension Fund of Ohio

Dear Aris:

As you requested, we have reviewed various actuarial reports regarding the Police & Firemen's Disability and Pension Fund of Ohio, "PFDPF", in order to determine the ability of the current statutory employer and member contribution rates to support PFDPF. Our review has been based solely on the actuarial reports prepared by the Wyatt Company provided to us-and was not based on independent analysis of PFDPF data - Our review does not constitute an audit-or detailed verification of the reports provided

**Summary Conclusions**

Based on an analyses of the reports provided, our conclusions are:

- the current statutory contribution rates are likely to be deficient unless future results are more favorable than actual 1987-1991 experience;
- a study into the causes of the high rates of disability since 1986 should be undertaken in order to determine if changes would be appropriate in statutory provisions and/or administrative procedures and to develop appropriate actuarial assumptions;
- demographic pressures alone will make it quite difficult for PFDPF to continue to provide health insurance for 6.5% of payroll without significant increases in deductibles and co-pays and/or retiree contributions (a rebound in health cost inflation trends from current low levels would exacerbate the problem); and,

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- lower employer contribution rates for police than for firemen are not consistent with the actuarially determined contribution rate percents.

We will discuss below our reasons for reaching these conclusions.

#### Materials utilized in our review

The actuarial reports prepared by the Wyatt Company which were provided to us are:

1. Quinquennial Evaluation - January 1, 1987 to December 31, 1991 (dated May 21, 1993).
2. Actuarial Evaluation to determine the Actuarial Rate Percent of Contribution as of January 1, 1993 (dated January 28, 1994).

In addition, we also received a copy of the Comprehensive Annual Financial Report for the year ended December 31, 1993.

#### Review of Current and Required Contributions as Set Forth in January 1, 1993 Valuation

The current employer and member contribution-rates are established by statute. The employer contribution rate is 19.5% for Police and 24.0% for Firemen; the member contribution rate is 10.0%. In addition, there are state subsidies of approximately \$4.9 million per year to help finance pension benefits. These rates total approximately 30.0% for Police and 34.6% for Firemen. The total combined statutory rate (including State contributions) for 1993 was 32.0%.

The total (employer and member) actuarially determined contribution rates to support PFDPF indicated in the Actuarial Evaluation of the January 1, 1993 are 33.16 % for Police and 32.13 % for Firemen. The actuarially determined combined rate for 1993 was 32.7%. On this basis the combined statutory contribution rates are insufficient to fund the ongoing actuarial cost of the system by 0.7% of payroll.

In addition, local governments are required to pay the unfunded portion of the local police and firemen's relief and pension funds that were merged to form PFDPF in 1967. Interest is charged on these obligations at 4.25%. Payments will be completed in 2035.

These are the total contributions available to support the benefits provided by the Police & Firemen's Disability and Pension Fund of Ohio including the cost of providing post-retirement health insurance benefits. (The portion of the contributions established by the Board to be allocated to provide health insurance is 6.5% of payroll.)

### Review of Actuarial Assumptions

We reviewed the Quinquennial Evaluation Report in order to determine the appropriateness of the proposed actuarial assumptions regarding salary growth, mortality among retirees, and termination, death, disability, and retirement rates among active members, etc. We also examined the current investment portfolio of the fund in order to determine the reasonableness of the assumed rate of investment return. Finally, we also considered the historical information provided in the Comprehensive Annual Financial Reports.

Before discussing our analyses of the actuarial assumptions, it may be well to review in general terms the effect of the various actuarial assumptions on the valuation. An actuarial valuation involves a projection of the salaries and service of present members of the system and a determination of the value of the expected benefits payable to them. Required contribution rates depend on the relationship between the system's projected income and outgo. Thus for example, if many members die or terminate before becoming eligible for benefits, required contributions to the fund will be smaller than if members work longer. Similarly, a high investment yield will mean greater investment income so that there would be a reduction in required contributions.

Because of the interplay of the various actuarial assumptions it is not adequate to review only one of the assumptions but rather the overall effect must be evaluated. This interplay is well illustrated by recent trends in investment income and salary progression. Probably most systems have earned investment income in the last few years well in excess of the actuarial interest assumption. Thus, contributions would seem to be overstated because the interest assumption was set too low. But many systems have also seen salaries increase faster than the assumed trend in salary progression. Thus, contributions were understated because benefits receivable at retirement were underestimated. As a consequence, the overstatement of the contribution due to a low assumed interest rate and the understatement of the contribution due to a low assumed salary progression offset each other to some extent.

On the other hand, it is possible for understatements in individual assumptions to compound on top of each other rather than offset each other. For example, the rates of disability assumed by the actuary could underestimate the number of active members who will become disabled during their careers, and the retirement age assumption could anticipate that members would work longer than actual retirement patterns indicate. Such assumptions would understate costs both by (1) underestimating benefits paid and (2) overestimating the number of years over which members and employer contributions will be received. Since understatements in each assumption have a similar effect on costs, their combined effect is compounded.

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Costs could be further understated in the event the actuarially assumed life expectancy for members after they retire is too short because pension and health insurance benefits will be paid longer than estimated.

As we will discuss in the following review of the assumptions adopted by the PFDPF Board for the January 1993 actuarial valuation, we are concerned that just this kind of compounded underestimating of costs is taking place; i.e., that the disability and retirement rates among active members are understated and mortality rates among retirees are overstated, thus assuming members will work longer and then have a shorter retirement than recent experience indicates. The combined effect of these assumptions has the potential of seriously underestimating costs.

In presenting our analyses and conclusions regarding the actuarial assumptions, we will first discuss the investment return and salary growth assumptions since they should reflect consistent underlying economic assumptions regarding inflation, productivity, etc. We will then move to the mortality assumption among healthy retirees, followed by the termination, disability and retirement rates among active members.

### Economic Assumptions

With respect to assumed rates of future investment returns, we reviewed the information regarding the distribution of investments as of December 1989, 1990, 1991, 1992 and 1993 from the Comprehensive Annual Financial Report as well as the Target Portfolio Distribution reported for PFDPF in the 1992 Public Pension Coordinating Council Database. Ideally, the investment return assumption should reflect the long-term investment strategy and asset allocation targets for the Fund's investment managers. We relied on the allocation of investments during the time period and the Target Distribution as being representative of future allocations. Based on this data, it appears that a long-term real rate of return on plan assets above the rate of inflation might be expected to approximate 4.0% to 4.5% assuming that approximately 30% and 19% of the fund's assets are invested in government and corporate bonds respectively, 35% in stocks, 1% venture capital, 10% in real estate and 5% in short-term investments. This real rate of return assumption would be consistent with actual historical returns during the period 1926 through 1992, as well as reasonable estimates regarding the future.

The Quinquennial Evaluation indicates that the proposed investment return assumption is 8.25 % and that the assumed rate of inflation is 4%. This implies an assumed real rate of return of approximately 4.25% which falls in the middle of the 4.0% to 4.5% range mentioned previously. On this basis the 8.25% investment return assumption is reasonable.

With respect to salary growth, the proposed actuarial assumption is divided into two components:

1. Promotional and longevity increases varying from 3 % (ages under 30) to 1% (ages 35 and over).
2. Inflationary increases of 4% per year.

Historical data regarding rates of salary increase were summarized in the Quinquennial Evaluation covering the period 1967 through 1991. These rates track individual members over successive 5-year periods and hence allow the measurement of both inflationary and promotional/longevity increases. The salary increase assumption is in line with 1987-91 experience although somewhat less than average experience since 1967. On this basis the salary increase assumption is reasonable.

#### Mortality Assumption Among Healthy Retirees

During the most recent study period, actual deaths were approximately 88% of the deaths expected based on the previous mortality assumption for healthy retirees. An actual to expected ratio below 100% means that fewer retirees are dying than expected, or to put it another way, retirees are living longer than anticipated. To the extent that retirees are living longer than expected, the actuarially computed costs of PFDPF will be understated.

PFDPF has been experiencing a pattern of continuing improvements in mortality among retirees which serve to lengthen the life expectancies of retired members;- This is a common phenomenon with the vast majority of retirement systems due to the continuing improvement in life expectancy. Moreover, most actuaries believe that life expectancies will continue to increase in the future. Therefore, the mortality assumptions for retirement plans normally anticipate longer life expectancies than recent actual data would indicate in order to provide a margin for continued improvement. Thus, frequently the ratio of actual to expected deaths would be somewhere in the range of 105% to 110% (slightly more deaths would occur than the assumptions).

A modified mortality assumption for healthy retirees was adopted for the 1993 valuation which increased this ratio from 88 % to approximately 95%. While this would bring life expectancies more in line with actual experience, it would still result in assumed life expectancies shorter than actual recent experience among healthy retirees.

Since the new assumption produces a ratio of only 95%, we believe it would be desirable to reduce the assumed mortality rates by approximately 10% at all ages so that actual to expected rates under the new assumption would increase to 105% and some margin for continuing mortality improvements is provided.

Rates of Decrement from Active Service

The quinquennial study includes data regarding the historical pattern in rates of decrement due to terminations, deaths and disabilities for the 25-year period 1967 through 1991. This data is summarized in the table below.

	<u>Period</u>	<u>Number of Decrements per Thousand Active Life Years</u>			<u>All Causes</u>
		<u>Terminations</u>	<u>Deaths</u>	<u>Disabilities</u>	
Poke					
	67-71	42.4	3.3	2.7	48.4
	72-76	32.4	3.4	6.6	42.4
	77-81	36.5	2.2	7.7	46.4
	82-86	32.2	1.7	9.6	43.5
	87-91	21.5	1.0	14.7	37.2
Firemen					
	67-71	13.2	2.9	4.4	20.5
	72-76	10.8	3.4	8.8	23.0
	77-81	11.8	1.5	8.6	21.9
	82-86	11.8	0.8	9.2	21.8
	87-91	10.4	0.9	12.6	23.9

This data indicates there has been a significant decrease in the rate of terminations over this quarter of a century, especially among policemen. Terminations declined almost 50% from the initial study period (1967-71) to the most recent study period and declined by approximately 33% just from the previous study period to the current study period. The comparable rates of decline among firemen are a 21% decrease over the entire period and a 12% decline since the previous study period.

The rate of deaths among active members have also showed a sharp decline among both groups from rates of approximately 3 per thousand down to rates of approximately 1 per thousand during the most recent study period: a decline of almost 70%.

Rates of disabilities, though, have shown a dramatic increase over the quarter of a century with an especially large increase during the most recent study period. Rates of disabilities had been approximately 2.7 and 4.4 per thousand police and firemen members during the first five years of PFDPF's existence and increased to 14.7 and 12.6 per thousand respectively during the most recent study period. These represent increases of over 400% among policemen and almost 200% among firemen.

From 1972 through 1986 there was a gradual decline from decrements caused by death and an increase in decrements caused by disabilities. Since 1986 there appears to have been a significant shift from terminations to disabilities, especially among policemen. This is highlighted in the table below which compares the average number of decrements over the 15-year period 1972 through 1986 with the number of decrements during the most recent study period.

<u>Period</u>	<u>Number of Decrement per Thousand Active Life Years</u>			<u>All Causes</u>
	<u>Terminations</u>	<u>Deaths</u>	<u>Disabilities</u>	
<b>Policemen</b>				
Ave. 1972-86	33.7	2.4	8.0	44.1
1987-91	21.5	1.0	14.7	37.2
Increase (Decrease)	(12.2)	(1.4)	6.7	(6.9)
<b>Firemen</b>				
Ave. 1972-86	11.5	1.9	8.9	22.3
1987-91	10.4	0.9	12.6	23.9
Increase (Decrease)	(1.1)	(1.0)	(3.7)	1.6

These statistics highlight the increase in the rate of disability retirements in the recent past. It is not clear, though, from this information what has been causing the increased rates of disability. (This table omitted the first five years of PFDPF's operation since the statistics for that period differ markedly from those of the following periods, especially with regard to disabilities. If we had included that initial period, the changes shown in the above table would have been even more dramatic.)

An alternative measure of the increase in disabilities is the percentage of all retirements attributable to disabilities. During 1987 to 1991 disabilities comprised 41% of all police retirements up from 35% from 1982 to 1986. The comparable percentages for firemen were 35% from 1987 to 1991, an increase from 25% from 1982 to 1986.

Rates of Disability

We have summarized below historical data for each type of disability from the last two experience studies as well as an update analysis of 1992 experience. This table summarizes the permanent and total disabilities ("P&T"), partial disabilities and off-duty disabilities for both police and firemen on a combined basis. The table illustrates this year-by-year for each of the eleven years and also summarizes the average number of disabilities in three subperiods: 1982 through 1986, 1987 through 1991, and 1992 alone.

Historical Summary of Disabilities by Type - Police & Firemen Combined

<u>Year</u>	<u>P &amp; T</u>	<u>Partial</u>	<u>Off-Duty</u>	<u>Total</u>
1982	92	56	11	159
1983	130	68	6	204
1984	146	73	6	225
1985	36	152	4	252
1986	67	99	0	166
1987	146	177	3	326
1988	117	164	7	288
1989	116	175	5	296
1990	97	195	6	298
1991	91	193	5	289
1992	59	138	3	200
Ave. 82-86	106	90	5	201
Ave. 87-91	113	181	5	299
1992	59	138	3	200

The average number of disabilities during 1987-1991 was about 50% higher than the average during the preceding 5 years. Most of the increase was among partial disabilities whose number doubled.

To provide an additional frame of reference for PFDPF disability experience, we compared the graduated rates of permanent-and-total on-duty disabilities under PFDPF during 1987-1991 with the actuarially assumed rates of disabilities under the Ohio Highway Patrol Retirement System, Ohio Public Employee Retirement System - Law Enforcement Division and for three other State-wide systems covering police and firemen (New Jersey, Idaho and Alaska). Since the PFDPF rate of disability includes permanent-and-total, partial and off-duty disabilities, in the table below we have adjusted the 1987-1991 PFDPF graduated disability rates for police and firemen to isolate the permanent-and-total on-duty disabilities from the partial and off-duty disabilities by using 35% of the police rate and 40% of the firemen rate. (These percentages are Wyatt's recommendation in the experience study for such a split.)

Number of Disabilities per Thousand Active Life Years

Age	Ohio PFDPF P&T Portion Poke <u>35.00%</u>	Ohio PFDPF P&T Portion Firemen <u>40.00%</u>	Ohio Highway Patrol	Ohio PERS Law Enforcement	NJ PFRS Duty	NJ PFRS Total	Idaho PERS Police & Fire	Alaska PERS Police & Fire
30	1.0	0.8	0.6	1.5	0.7	2.2	0.5	1.1
35	2.4	1.7	0.8	2.7	1.2	3.6	0.5	1.2
40	4.7	3.5	1.6	4.1	1.5	4.7	0.7	1.4
45	8.2	6.9	2.2	7.8	1.5	5.5	2.5	2.0
50	11.8	14.3	3.8	12.4	1.2	5.6	6.3	3.0
55	18.4	23.3	7.0	17.0	1.1	4.6*	9.5	5.0

\*Age 54

As indicated above the rates of permanent-and-total on-duty disability at age 30 are relatively consistent among all of the systems included in this table. But at ages 35 and higher, the rates of permanent-and-total on-duty disability in PFDPF are generally two to four times the rates of disability in the, other systems, except for Ohio PERS - Law Enforcement Division.

For some reason, the rate of permanent-and-total on-duty disabilities in PFDPF is over 2x the level in all but one of the other systems. Moreover the number of partial disabilities has more than doubled over the last decade (from *approximately* 65 per year from 1982 through 1984 to an average of 174 from 1987 through 1992). The new disability assumption proposed by Wyatt would have made provision for the recent level of disabilities if it had been adopted by the PFDPF Board. Instead the Board decided to continue using the prior assumption, pending further study.

It would be helpful to study the causes of these high rates of both (a) permanent-and-total disabilities and (b) partial disabilities. Such an analysis should go well beyond a simple tabulation of additional data for 1993 or subsequent years. It should identify the causes of permanent-and-total disabilities and partial disabilities, the standards applied to determine whether a member is disabled and the procedures to monitor disabilities so that members who recover are identified. After such a study it would be possible to determine whether modifications in statutory provisions and/or administrative procedures would be appropriate. This would also form a basis for selecting an assumption regarding future experience.

#### Rates of Termination

With respect to termination rates among active members, the new assumptions are reasonably related to experience during the period 1987 through 1991.

#### Rates of Retirement

With respect to retirement rates, it is appropriate to reflect only the experience since 1988 when the law governing PFDPF was amended to allow unreduced retirement at age 48 with 25 years of service. Wyatt's proposed assumption would have accomplished this. Moreover, their proposed rates are consistent with experience we have seen under similar provisions in other states.

Nevertheless the PFDPF Board decided to defer the adoption of Wyatt's proposed assumption. The Executive Summary for the January 1, 1993 valuation prepared by Wyatt suggests that 1992 and 1993 experience would be examined to determine whether the proposed assumption should be adopted for the January 1, 1994 valuation. Such an evaluation of either 1992 or 1993 experience has not been provided to us.

#### Asset Valuation Method

Prior to 1992, Wyatt's approach has been to utilize the book value of assets to determine contribution requirements. They modified that approach effective January 1, 1993 so that common stocks would be valued at market with future realized and unrealized gains and losses spread over 4 years.

Actuaries frequently use approaches to value assets which smooth out year to year fluctuations in market values. Each of the other four State-wide systems also uses a method of smoothing to dampen market volatility. The use of a market related value for common stocks brings this component of the asset valuation method in line with common practice,

### Financing Health Insurance Benefits

Effective with the January 1, 1993 actuarial valuation, the Board allocated to a health care stabilization fund \$150 million of assets (these assets were excluded from the total assets available for pension and disability benefits). Moreover, the previous pay-as-you-go determination of the health care rate percent was replaced by a fiat 6.5% of payroll Board defined allocation to the health care fund. The Trustees goal of maintaining medical expenses at 6.5% of payroll was communicated to members on page 10 of the Comprehensive Annual Financial Report for the year ended December 31, 1993 along with a warning to the effect that "if the cost of health care continued to increase at its historical rate of approximately 20% per year, a continuation of such medical benefits would be in jeopardy". PFDPF implemented during 1993 the ORS Individual Option Network with Blue Cross Blue Shield of Ohio and Aetna Health Plans as the preferred provider networks and also implemented the PAID Prescription retail drug program. In addition, retiree contributions are now required to partially finance the health insurance benefits.

With respect to health insurance costs, we estimate that PFDPF health insurance costs can be expected to grow 1.0 % faster than health cost inflation trends over the next decade due to the continued decrease in the ratio of active members to retired members (both service and disabled). For example, Wyatt's 35-year forecast (prepared in 1990) indicates this ratio will decrease from 2.0 in 1990 to between 1.2 and 1.4 by 2025; i.e., instead of having contributions from 2 active members to support health insurance for each retiree, there will be only 1.2 to 1.4 active members supporting each retiree. (It is worth noting that the 1990 forecast was based on prior disability, retirement and mortality rates and thus understate the likely deterioration in this ratio if future experience is in line with 1987-91 results. An update reflecting the recent experience would present a worse picture.)

Given the unfavorable demographics, significant increases in retiree co-payments and/or premium sharing will be necessary to limit net costs to 6.5% of payroll even if health cost inflation were to drop to the level of general inflation (a quite optimistic assumption). We are concerned about the Trustees' ability to accomplish their goal in light of the significant demographic tide which is running against it (the ratio of active to retired members is expected to decline significantly over the next 25 years).

Health insurance cost trends have declined significantly from approximately 12% in 1990 to approximately 4% in 1993. Thus, actual health cost experience through 1994 may appear to justify optimism. Health care cost trends are related to the economy, and improvement in the economy is likely to lead to substantial increases in health insurance cost trends over the next 12 to 24 months. This would further impair the Board's ability to meet it's goal.

### Adequacy of Statutory Contribution Rates

In evaluating the adequacy of the current contribution rates, it is helpful to view the actuarial costs from different perspectives in order to gauge the range of likely costs and possible downside risks. To this end, we have estimated the effect of several modifications in the actuarial assumptions and methods utilized by Wyatt in preparing the 1993 actuarial valuation. They include:

- using the entry age normal cost method;
- correcting a technical flaw by discounting the Frozen Past Service Payments from localities at the valuation interest assumption (8.25%) rather than using a 4.25% interest rate; and,
- illustrating alternative actuarial assumptions based on (1) Wyatt's proposed retirement and disability rates among active members, and (2) lower mortality rates among healthy retirees.

The reasons for these adjustments are discussed below.

#### Actuarial Cost Method

The actuarial cost method used by Wyatt for the actuarial valuation of the pension and disability program is the Frozen Initial Liability "FIL" Method. This method is not used for Health Insurance which is funded on a pay-as-you-go basis. The FIL method develops a contribution rate intended to fund all benefits over the working lifetime of current employees as a level percentage of payroll. This is a generally acceptable actuarial cost method, but it is not the ideal method to test the adequacy of fixed contribution rates. This is because this method amortizes any cumulative actuarial gains or losses as well as the costs of any benefit improvements over a much shorter period than the time period which is normally used to finance unfunded liabilities among public employee retirement systems. Under these circumstances, the normal cost rate under the FIL method can be expected to decrease over time. In order to compare the declining normal cost rate with the fixed statutory contribution rates, Wyatt periodically prepares forecast studies.

Traditionally actuaries utilize the Entry Age Normal Cost Method under circumstances where contribution rates are fixed. This method develops a normal cost which should be relatively stable over time since it reflects the average cost from hire. The number of years that will be required for the fixed contribution rates to amortize any remaining unfunded liabilities can then be determined. As long as that funding period is of reasonable length, the contribution rates can be considered adequate to support the benefits.

Funding over the future compensation of current active members was equivalent to roughly a 15-year funding period in the 1993 actuarial valuation. Funding periods of 40 years or less are generally accepted for public employee retirement systems and the recently proposed rules from the Governmental Accounting Standards Board (GASB) would allow periods of up to 40 years. (It should be noted that the proposed GASB rule would require systems to reduce to a 30-year funding period within 10 years.)

The other four Ohio Retirement Systems (HPRS, PERS, SERS and STRS), all use the Entry Age Normal Cost Method for pension and disability benefits. Amortization periods for the other Ohio Retirement Systems range between 20 and 40 years.

Since Entry Age Normal actuarial calculations were not available from Wyatt, we have estimated funding requirements on that basis to assist in reviewing the adequacy of current contribution rates. We have not shown estimates of applying this method to health insurance benefits due to the Board's goal of maintaining such costs at 6.5% of payroll.

#### Localities Accrued Liability Contributions

Local governments are required to fund any unfunded liabilities in the local police and firemen's relief and pension funds that were merged when PFDPF formed in 1967. Interest on the outstanding balance is being accrued at a rate of 4.25% and final payments to discharge this liability will not be made until 2035. Based on the December 31, 1992 Comprehensive Annual Financial Report, the total projected payments over the 42-year period will equal \$857 million. The present value of those payment at a 4.25% interest rate is \$400 million. If those future contributions are discounted at an 8.25% rate consistent with the rest of the actuarial calculations, their present value is \$240 million as of December 31, 1992. It is worth noting that this is roughly consistent with the PFDPF Board's offer to allow localities to pay off their remaining balance at a discounted amount of 65% of the outstanding balance (\$240 million divided by \$400 million equals 60%).

#### Actuarial Assumptions

The quinquennial experience study presents no basis for judging whether the rates of disability experience during the most recent study period are new levels that are likely to persist in the future or merely the result of temporary fluctuations. Moreover, Wyatt offers no opinion on this question. With respect to retirement rates, Wyatt indicates that "only experience after 1988 is relevant for developing expected future experience", due to the adoption of unreduced retirement at age 48 with 25 years of service in 1988. The Board of PFDPF has delayed adoption of both the proposed new disability and retirement assumptions.

We have no reason to believe that Wyatt's proposed disability and retirement assumptions are inappropriate. Thus, we have illustrated the effect of using those proposed assumptions in the analysis below of the adequacy of the statutory contribution rates.

With respect to mortality rates among healthy retirees, we indicated earlier that we do not believe the new assumptions provide for mortality rates consistent with past experience with adequate margin provision for continued future improvements. Accordingly, we have also shown the effect on plan costs of using mortality rates for healthy retirees which are 10% lower than the assumptions used in the January 1, 1993 valuation.

#### Findings

As stated previously, we believe that it is helpful in reviewing the adequacy of the current statutory contribution rates to review those rates from several perspectives. Initially we will illustrate the actuarially determined contribution rate percents using the Frozen Initial Liability cost method (this is the method used by Wyatt in preparing the actuarial valuation reports) adjusted to reflect the effects of modifying the actuarial assumptions with respect to disability, retirement and post-retirement mortality and discounting the frozen past service payments from localities at the 8.25% valuation assumption instead of 4.25%. Those results are summarized in Table A. (The estimated effect of modifying the disability and retirement rates are based on figures shown in Wyatt's Quinquennial Evaluation.)

In presenting results showing the effects on costs of using alternative actuarial assumptions, we have grouped those modifications into two sets of assumptions. The first of these we believe represents a realistic estimation of the cost of PFDPF except in the area of disability experience where we continued the use of the old disability rates which are much more favorable than actual experience from 1987 through 1991. Thus, we view this set of assumptions as optimistic with respect to disability experience but realistic with respect to the other assumptions. The second set uses the proposed new assumptions developed by Wyatt which reflects actual 1987 through 1991 disabilities. In other respects it includes the same assumptions as the first. Thus, this set of assumptions could be described as somewhat pessimistic with respect to future disability experience but realistic with respect to the other assumptions.

Given the significant uncertainties surrounding the causes of the unfavorable disability experience from 1987 through 1991 it is not realistic to develop a single assumption which could be considered reasonably accurate with a high degree of confidence. By showing results on both an optimistic and pessimistic basis we have attempted to estimate the range within which the true long term costs are likely to be.

It is important to keep in mind that all of these figures assume that the Board will be successful in managing the health insurance program so that its cost averages 6.5% of payroll (which we believe will be very difficult to achieve given the-demographic trends).

Table A

Adequacy of Contribution Rates  
 Based on the Frozen Initial Liability Normal Cost Method for Pension Benefits  
 with 6.5% of Payroll as the Normal Cost of Health Insurance

---

(\$Amounts in Millions)

	<u>Police</u>	<u>Firemen</u>	<u>Combined</u>
statutory Rate	30.0%	34.6%	32.0%
<u>January 1, 1993 Valuation</u>			
Total Normal Cost	33.2%	32.1%	32.7%
Deficiency/(Surplus)	3.2%	(2.5%)	0.7%
<u>Generally Realistic with Optimistic Disability and Health Cost Assumptions</u>			
Total Normal Cost	36.4%	34.6%	35.6%
Deficiency/(Surplus)	6.4%	(0.0%)	3.6%
<u>Generally Realistic with Pessimistic Disability Assumptions and Optimistic Health Cost Assumptions</u>			
Total Normal Cost	38.3%	36.3%	37.4%
Deficiency/(Surplus)	8.3%	1.7%	5.4%

As indicated above, we estimate the deficiency in the statutory contribution rates on a combined basis using the FIL cost method, which was 0.7% based on the January 1, 1993 actuarial valuation, to be between 3.6% and 5.4% assuming health insurance costs can be held to 6.5% of payroll.

As a second basis, we have summarized in Table B our estimates of the funding periods required to amortize existing unfunded liabilities when measured on an entry age normal cost basis reflecting the same changes in assumptions as presented in Table A. (Funding periods of 40 or fewer years are currently considered acceptable. *Funding* periods greater than 40 years would not be acceptable under Governmental Accounting Standards Board proposed rules.)

T a b l e B

Adequacy of Current Contribution Rates  
 Based on the Entry Age Normal Cost Method for Pension Benefits  
 with 6.5% of Payroll as the Normal Cost of Health Insurance

(\$ Amounts in Millions)

	<u>Police</u>	<u>Firemen</u>	<u>Combined</u>
Statutory Rate	30.0%	34.6%	32.0%
<u>January 1, 1993 Valuation</u>			
Total Normal Cost	25.5%	25.8%	25.6%
Unfunded Accrued Liabilities*	\$ 520	\$ 380	\$ 900
Portion of Statutory Rate available to fund UAL	4.5%	8.8%	6.4%
Funding Period	80 years	15 years	30 years
Total rate percent required for 40 year funding	30.9%	31.1%	31.0%
<u>Generally Realistic with Optimistic Disability Assumptions and Health Cost Assumptions</u>			
Total Normal Cost	25.7%	25.8%	25.8%
Unfunded Accrued Liabilities*	\$ 650	\$ 470	\$1,120
Portion of Statutory Rate available to fund UAL	4.3%	8.8%	6.2%
Funding Period	Never**	25 years	45 years
Total rate percent required for 40 year funding	32.5%	32.4%	32.5%
<u>Generally Realistic with Pessimistic Disability Assumptions and Optimistic Health Cost Assumptions</u>			
Total Normal Cost	26.8%	26.8%	26.8%
Unfunded Accrued Liabilities*	\$ 650	\$ 480	\$1,130
Portion of Statutory Rate available to fund UAL	3.2%	7.8%	5.2%
Funding Period	Never**	30 years	Never**
Total rate percent required for 40 year funding	33.6%	33.5%	33.6%

\* In addition to the Frozen Past Service Payments from localities.  
 \*\* Unfunded liabilities would continue to grow indefinitely.

While the initial set of contribution rates summarized in Table A (which had been based on the Frozen Initial Liability method) all indicated a deficiency on a combined basis in the current PFDPF statutory contribution rates, using the Entry Age Normal Cost method produces a somewhat different picture. First of all, based on all of the actuarial assumptions utilized in the January 1, 1993 actuarial valuation, the funding period would be 30 years assuming 6.5% of payroll as the normal cost of health insurance. When we move to what we consider to be more realistic assumptions with respect to retirement ages, life expectancies after retirement and we discount the frozen past service payments from localities properly, but continue the use of the optimistic disability and health cost assumptions, the current statutory rates on a combined basis would produce a 45 year funding period. Replacing the old disability assumption (which we consider to be optimistic) with Wyatt's proposed disability assumption presented in the 1987 to 1991 quinquennial experience study (which we consider to be somewhat pessimistic), the unfunded liabilities would continue to grow indefinitely (which would be unacceptable). The combined statutory rate necessary to accomplish 40 year funding on this basis would be 33.6% of payroll, 1.6% of payroll higher than the current combined statutory rate.

These figures, though, still retain the use of the 6.5% of payroll health cost which we believe will be very difficult for the Board to accomplish. To the extent that the Board is unsuccessful in limiting health insurance costs to 6.5% of payroll, the contribution rates indicated in both Tables A and B would have to be increased by an amount equal to the excess costs.

It is also worth noting that police have higher actuarially computed contribution rates on an FIL basis and roughly the same contribution rates on a 40 year funding basis relative to firemen but the statutory rates for police are lower than the rates for firemen.

### Conclusion

Our conclusion from the above analysis is that the PFDPF statutory contribution rates are not likely to be adequate unless future experience is significantly more favorable than actual recent experience as indicated in the 1987-1991 experience study. While the PFDPF Board has adopted assumptions for the 1993 actuarial valuation that future experience will be more favorable with respect to both disabilities and retirement ages, little justification has been provided to support that decision. Too little information is available to judge what has been the cause of the high recent disability experience and hence it is not clear what future experience regarding disabilities can be expected. (Even if disability rates return to the levels experienced prior to the 1987-1991 experience study, the statutory contribution rates will still be slightly inadequate even when based on the entry age cost method.) With respect to retirement ages, the statutory change in

Mr. Aristotle L. Hutras  
October 6, 1994  
Page 18

1985 allowing retirement at age 48 needs to be reflected. Moreover, given the unfavorable demographic tide and a likely rebound in health cost trends from the current low levels, the PFDPF Board will have a difficult task in controlling the costs of the health insurance program so that it remains at 6.5% of payroll. As a result, we believe that the current statutory contribution rates are probably inadequate.

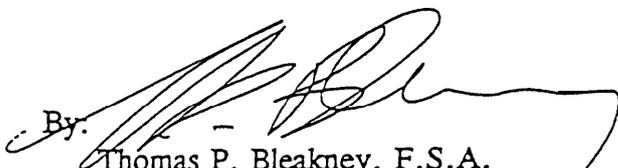
A major area of uncertainty is the future number of disability retirements. We recommend a thorough review of all aspects of the disability program. It should attempt to identify the cause of permanent and total disabilities and partial disabilities, the standards applied to determine whether a member is disabled and the procedures to monitor disabilities so that disabled members who recover are identified. Such an analysis could identify possible modifications in statutory provisions and/or administrative procedures which may be beneficial.

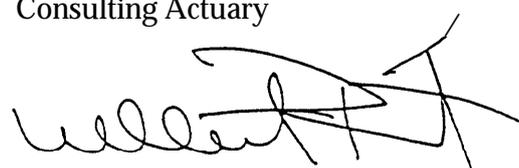
\* \* \* \* \*

We look forward to reviewing with YOU and the members of the Commission our analyses and conclusions during the Commission Meeting on October 12th.

Respectfully submitted,

MILLIMAN & ROBERTSON, INC.

By:   
Thomas P. Bleakney, F.S.A.  
Consulting Actuary

By:   
William A. Reimert, F.S.A.  
Consulting Actuary

TPB:WAR:wat

**October 31, 1994**

**The Wyatt Company**

***Disability Retirement  
Experience for 1992-1993 and  
Service Retirement Experience  
for 1992-1993 and 1990-1993***

pp. 1-21

The Wyatt Company  
Consultants and Actuaries

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Cleveland, Ohio 44114

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*Wyatt*

October 31, 1994

Mr. Henry E. Helling, III  
Executive Director  
The Police and Firemen's Disability  
and Pension Fund of Ohio  
230 East Town Street  
Columbus, Ohio 43215-4650

Re: Disability Retirement Experience for 1992-1993 and  
Service Retirement Experience for 1992-1993 and 1990-1993

Dear Henry:

The enclosed report presents our analysis of the Fund's experience for 1992-1993 with regard to the incidence of disability retirement and the rates of service retirement. In summary, both types of retirement showed significantly more favorable experience during 1992-1993 than was measured for the 1987-1991 Quinquennial Study. Service retirement experience for the four-year period 1990-1993 is also presented.

This study was undertaken as a follow-up to the Quinquennial. The Board decided that the Quinquennial results were not necessarily indicative of future trends for disability and service retirement. Hence, changes to the valuation assumptions, if any, were deferred until 1994 so that additional experience could be considered.

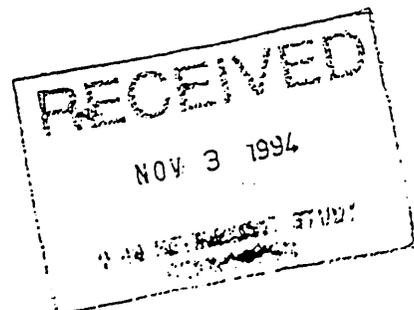
In this study we make recommendations concerning the disability and retirement rate assumptions to be used in both the 1994 valuation and the updated forecast study which is in preparation.

We will be pleased to review this report with you and the Board at your convenience.

Sincerely yours,

*Wayne E. Dydo*

Wayne E. Dydo, F.S.A.  
Actuary



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POLICE AND FIREMEN'S DISABILITY AND  
PENSION FUND OF OHIO

Experience Study of  
Disability Retirement and Service Retirement  
January 1, 1992 to December 31, 1993

October 31, 1994

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POLICE AND FIREMEN'S DISABILITY AND  
PENSION FUND OF OHIO

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

### A. Introduction and Purpose

The incidence of disability among active members of the Police and Firemen's Disability and Pension Fund is currently under scrutiny by both the Ohio Retirement Study Commission and a special legislative committee. This concern was prompted by the rapid growth in disability incidence measured in the 1987-1991 Quinquennial Study and by the emphasis placed on disability in the Milliman & Roberston report. The results of this 1992-1993 experience study show a decrease in disabilities, and help to put any disability concerns in proper perspective.

The original reason for undertaking this study, however, was for the purpose of determining appropriate disability assumptions for the 1994 valuation. Several other assumptions were changed for the 1993 valuation based on the results of the Quinquennial. The decision **was** made by the Board to defer any change in the disability assumptions until 1994, based on the more favorable experience in 1992 and on the Board's opinion that future experience would not be at the high levels seen in 1987-1991.

The above reference to more favorable experience in 1992 is based on our preliminary study of 1992 disability experience dated July 22, 1993. In the course of the current 1992-93 study we have found that the 1992 study somewhat understated the disability incidence for that year. As is discussed in the Data section below, it is now apparent that complete data was not available at the time of the prior study. However, it is still true that 1992 disability experience was significantly better than 1987-1991.

The rates of retirement also were unchanged for the 1993 valuation. The Quinquennial showed higher-than-assumed retirement rates at the younger ages, especially at age 48. However, the Board chose to defer any change in assumptions because only three years of experience were available under the provision for unreduced retirement at age 48 with 25 years of service. We and the Board felt that the initial high utilization of the new provisions might taper off with time.

### B. Data

The 1992-1993 retirement and disability study is based on the January 1 valuation data for 1992, 1993 and 1994, and on the PenMaster file we received on October 5, 1994. Decrements during 1993 were compiled by comparing the 1994 valuation data to the 1993 valuation data and extracting those members who had changed to retired status. Similarly, 1992 decrements were compiled using 1992 and 1993 valuation data. The valuation data was also used to determine the number of life years of exposure.

is important to note that the “valuation data” referred to above includes the retirees we added to the data in both 1993 and 1994. The data received from the Fund has a timing problem in that some retirements which occurred late in the prior year are not reflected in the subsequent January 1 retiree population, although they have been removed from the active population. For the January 1, 1993 data we added 36 retirees, based on a list provided by the Fund. For 1994 we used the PenMaster file to find 40 members with 1993 retirement dates who did not appear in the 1994 valuation data.

These “missing” retirements are predominantly disabilities, presumably because a disability retirement can be retroactive to a date prior to the actual determination of the disability award. This explains part of the understatement in 1992 disability incidence in the prior study: none of the 36 missing retirees were included in the decrement data provided by the Fund. Moreover, we did not yet have the 1993 valuation data when we were analyzing the 1992 experience. The current study is more accurate because we do have the necessary valuation data.

Another important aspect of the decrement data, also related to retroactive disabilities, is that the decrements are counted as occurring in the year in which the valuation status changes, regardless of the date recorded as the date of retirement. For example, a member may receive a disability award on July 1, 1992, retroactive to December 1, 1991. Since the award had not yet been made, he is an active in the January 1, 1992 valuation data. In the January 1, 1993 valuation data he first appears as a disability retiree. Hence, he is considered to be a decrement during 1992, despite the fact that his data shows a 1991 retirement date. This situation was also not recognized in the prior study of 1992 experience, again leading to an understatement of the rates.

A final comment on the data is that the PenMaster file was also used as the source for military service information. This was used to tabulate the percentage of service retirements who utilize military credit, and the average years of credit.

### C. Experience Results

The results of the 1992-1993 disability and retirement experience study are presented on the eight tables which follow this commentary. Also included are graphs of Police and Firemen disability experience, comparing the 1992-1993 results to the Quinquennial results and to the current assumption.

Table 1 summarizes the 1992-1993 disability experience and compares it to the current assumptions, corresponding to Table B2 of the Quinquennial Study. The key statistic is the decrement ratio shown in Column (6), which is the ratio of actual decrements to expected decrements under assumed rates. The decrement ratio for 1992-1993 disability experience is 1.19 for Police and 1.10 for Firemen. This indicates that, over all ages combined, the actual number of disabilities is 10% to 19% higher than the number expected under current assumptions.

This is a significant improvement over the disability decrement ratios for 1987-1991 experience, which were 1.38 for Police and 1.40 for Firemen.

Tables 2(a) and 2(b) present the service retirement experience for 1992-1993, for Police and Firemen respectively. These correspond to Tables B4(a) and B4(b) of the Quinquennial, which covered the three-year period 1989-1991. Again we see improvement over the Quinquennial results, in that the rates of retirement are generally lower at the earlier ages.

The experience rates at age 48 remain higher than assumed for both Police and Firemen. However, the rates at virtually all other ages are lower than the current assumptions. The change is most dramatic for Police, where the 1992-1993 rates are roughly 20% for ages 49-52, compared to 25% for the current assumption and 30% for the 1987-1991 experience. The only increase in rates over the Quinquennial experience is a modest increase, 37% to 39%, at age 48 for Firemen.

Additional statistics are presented in Tables 3, 4 and 5, which correspond to Quinquennial Tables B5, B6, and B7. Table 3 provides age and service statistics for service retirements, covering 1992- 1993 as well as the 1987-1991 and 1982-1986 Quinquennial periods. The average retirement ages for 1992 and 1993 are essentially the same as for 1989-1991. The average service is approximately one year greater for 1992-1993 than for 1989-1991.

Table 4 presents disability retirements as a percentage of total retirements. This percentage is lower for 1992-1993 than for 1987-1991 for both Police and Firemen. However, the percentages remain higher than the 1982-1986 results.

The distribution of disabilities by type is also set forth in Table 4. This information indicates the continuation of a trend toward a higher percentage of partial disabilities and a correspondingly lower percentage of permanent-and-total. Partials accounted for nearly 80% of Police disabilities and over 70% of Firemen disabilities during 1992-1993.

The data on military credit purchases among service retirements is presented in Table 5. During 1992-1993 over half of all service retirees purchased military credit, with the average service credit slightly under three years. We expect the utilization to decline in the long run, which, on average, will delay retirement eligibility.

The data indicates that on average, most retirees with military service purchases used the purchase to enhance benefits, as opposed to advancing eligibility. This conclusion is based on the observation that the average service from hire for the purchasers exceeds 25 years.

The final Tables, 6(a) and 6(b), correspond to Appendix B Tables 3 and 4 of the Quinquennial. These display exposure, actual disabilities, calculated rates and assumed rates by individual ages.

Exhibits 1 and 2 provide graphs which show the disability rate curves for 1992-1993 experience, 1987-1991 experience and the current assumption (which is based on 1982-1986 experience). Exhibit 1 shows that for Police the improvement from 1987- 1991 to 1992-1993 occurs at ages 45 and over, with the gap widening with increasing age. For Firemen the 1992-1993 rates are below the 1987-1991 rates at all ages, but with the gap also widening at the higher ages.

#### D. Conclusions and Recommendations

Both the incidence of disability and the rates of service retirement declined in 1992-1993 from the levels measured in the 1987-1991 Quinquennial. This supports the Board's decision to not rely solely on Quinquennial results in establishing the valuation assumptions for 1993. However, changes may still be in order for the 1994 assumptions.

Despite the improvement in disability incidence, the rates remain 10% to 19% higher than the current assumption. On this basis it appears to be necessary to increase the assumed rates to reflect a greater number of disabilities. It is important to note that while for Police the overall decrement ratio is 1.19, ratios in the 35-54 age group average 1.30. Most of the disabilities occur in this age group. For Firemen, however, the ratio for the 35-54 age group is the same as the overall ratio of 1.10. For the 1987-1991 period, the corresponding ratios for the 35-54 age group were 1.36 for police and 1.27 for Firemen.

Because the overall ratio for police declined significantly, but the key age group rate declined only modestly, we recommend that 130% of the current Police disability rates be used for the 1994 valuation. For Firemen, we recommend 115%, giving somewhat less weight to the dramatic decline in the key age group experience than for Police during the 1992-1993 period.

The other disability-related assumption is the distribution of disabilities by type, which was also unchanged for the 1993 valuation. With the continuing shift toward a higher percentage of partials, we make the following recommendation for the 1994 valuation assumption:

	Police	Firemen
Partial	75%	70%
P&T	22%	27%
Off-duty	3%	3%

The assumption used for 1993, for both Police and Fireman, was 57% partial, 40% P&T and 3% off-duty.

For service retirement rates, the current study considers experience for 1992-1993. While this experience could be used as the basis for the 1994 assumption, a longer period of experience might be preferable. (We have previously noted that 1992-1993 experience completes the five-year period of experience under the provision for unreduced retirement at age 48 with 25 years of service. The experience for 1987-1991, the first three years of the period, was presented in the Quinquennial.)

o we present below an extended analysis of retirement experience, combining 1992-1993 with prior years.

The following table shows experience rates of retirement for the key age group 48-54:

Age	Police					Current Assumption
	1989	1990	1991	1992-93	1990-93	
48	.39	.49	.42	.37	.41	.25
49	.32	.26	.29	.21	.24	.25
50	.36	.30	.24	.20	.23	.25
51	.38	.29	.28	.19	.23	.25
52	.39	.31	.35	.19	.26	.25
53	.27	.27	.26	.23	.25	.25
54	.23	.21	.25	.19	.21	.25

1988	Firemen					Current Assumption
	1989	1990	1991	1992-93	1990-93	
48	.30	.35	.43	.39	.39	.25
49	.22	.19	.27	.20	.22	.25
50	.25	.27	.17	.20	.21	.25
51	.30	.23	.17	.18	.19	.25
52	.37	.25	.22	.27	.25	.25
53	.19	.25	.24	.21	.23	.30
54	.26	.18	.31	.25	.25	.30

This data indicates a downward trend in rates of retirement for ages 49-52 for Police. For Firemen the rates at ages 49-54 generally vary between .20 and .30. The age 48 rate for Police and Firemen remains fairly high at roughly .40.

Note that we present the 1989 experience above, but we use only 1990-1993 when developing combined experience. This is because the 1989 experience is likely skewed because it was the first full year under the new retirement provision.

This data leads us to make the following recommendations:

- (1) In light of the persistent high rate at age 48, we recommend that the age 48 rate be increased from .25 to .35 for both Police and Firemen.
- (2) For Police age 49-53, although 1992-1993 experience could justify a rate of .20, we prefer to keep the rates at .25 to be somewhat on the conservative side. The .25 is also somewhat conservative when compared to 1990-1993 experience.
- (3) For Firemen ages 49-52, the .25 current assumption appears to be similarly conservative.

(4) For Police ages 54-64 and Firemen ages 53-64 a .05 reduction in the current rates appears to be appropriate based on both 1992-1993 and 1990-1993 experience.

The recommended rates are summarized below:

Recommended rates based on analysis of  
1992-1993 and 1990-1993 experience:

Age	Poke		Age	Firemen	
	Current	Recommended		Current	Recommended
48	.25	.35	48	.25	.35
49-53	.25	.25	49-52	.25	.25
54-59	.25	.20	53-59	.30	.25
60-64	.30	.25	60-&	.40	.35

In summary, then, we are recommending that the Board adopt changes in both rates of disability and retirement based upon our analysis of 1992-1993 experience in conjunction with that of the last Quinquennial.

We will use the proposed rates in our forecast study (along with the current rates for comparison purposes). We will also send under separate cover a study showing the effect these proposed rates will have on the 1994 actuarial rate per cents.

Respectfully submitted,

THE WYATT COMPANY

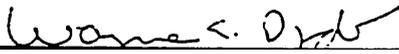
  
\_\_\_\_\_  
Wayne E. Dydo  
Fellow - Society of Actuaries

Table 1

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

Study of Disability Experience among Active Members for 1992-1993

<u>Age Group</u> (1)	<u>Exposure</u> (2)	<u>Number of Disabilities</u>		<u>Ratio of Actual to Expected Disabilities</u> (3)/(5)	<u>Average Crude Rate</u> (7)	<u>Central A&amp;F Graduated Rate</u> (8)	<u>Central Age Assumed Rate</u> (9)	
		<u>Number of Actual Disabilities</u> (3)	<u>Based on Graduated Rates</u> (4)					<u>Based on Assumed Rates</u> (5)
POLICE EXPERIENCE								
25-29	4311.0	2.0	1.3	5.5	0.36	.000464	.000191	.001252
30-34	4588.0	7.5	11.1	11.7	0.64	.001635	.002224	.002458
35-39	5451.6	42.5	46.0	31.6	1.34	.007796	.008281	.005684
40-44	5347.0	94.5	92.8	63.5	1.49	.017673	.017399	.011687
45-49	4324.0	109.0	107.9	86.2	1.26	.025208	.025507	.020580
50-54	1853.5	60.5	56.1	55.2	1.10	.032641	.030795	.030627
55-59	481.3	13.0	15.9	21.4	0.60	.027013	.033245	.046637
60-64	137.1	8.0	7.0	8.6	0.93	.058341	.054211	.065106
65-69	33.0	1.0	1.6	0.0	0.00	.030303	.046154	.000000
Totals	26526.5	338.0	339.7	283.8	1.19			
FIREMEN EXPERIENCE								
25-29	2725.0	1.0	1.3	1.4	0.71	.000367	.000325	.000423
30-34	4021.9	8.0	8.4	6.5	1.23	.001989	.002039	.001581
35-39	4183.4	17.5	18.3	15.6	1.12	.004183	.004324	.003615
40-44	3786.9	29.0	34.9	32.7	0.89	.007658	.008967	.008577
45-49	2982.0	58.5	59.0	50.2	1.17	.019618	.020364	.017132
50-54	1573.8	53.5	49.7	46.5	1.15	.033995	.032607	.030795
55-59	434.0	15.5	21.9	19.1	0.81	.035714	.053047	.045726
60-64	68.5	8.0	7.8	3.1	2.58	.116788	.126894	.044198
65-69	12.5	2.0	2.0	0.0	0.00	.160000	.160000	.000000
Totals	19787.9	193.0	203.2	175.1	1.10			

Table 2(a)

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

Analysis of Service Retirement Experience among Active Members for 1992-1993

## POLICE EXPERIENCE

Age	<u>Exposure</u>	Number of Actual <u>Retirements</u>	<u>Crude</u> <u>Rate</u>	<u>Smoothed</u> <u>Rate</u>	<u>Assumed</u> <u>Rate</u>
(1)	(2)	(3)	(4)	(5)	(6)
48	340.0	125.0	.367647	.350000	0.250000
49	306.0	63.0	.205882	.200000	0.250000
50	315.0	62.0	.196825	.200000	0.250000
51	280.0	52.0	.185714	.200000	0.250000
52	247.5	48.0	.193939	.200000	0.250000
53	202.5	47.0	.232099	.200000	0.250000
54	159.5	31.0	.194357	.200000	0.250000
55	140.5	34.0	.241993	.200000	0.250000
56	100.5	18.0	.179104	.200000	0.250000
57	64.0	13.0	.203125	.200000	0.250000
58	37.0	7.0	.189189	.200000	0.250000
59	33.5	5.0	.149254	.200000	0.250000
60	31.5	5.0	.158730	.200000	0.300000
61	27.0	8.0	.296296	.200000	0.300000
62	19.5	3.0	.153846	.200000	0.300000
63	19.0	4.0	.210526	.200000	0.300000
64	13.0	1.0	.076923	.200000	0.300000
65	10.0	3.0	.300000	1.000000	1.000000
66	8.5	3.0	.352941	1.000000	1.000000
67	7.0	3.0	.428571	1.000000	1.000000
68	3.5	0.0	.000000	1.000000	1.000000
69	4.0	1.0	.250000	1.000000	1.000000

Table 2(b)

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

Analysis of Service Retirement Experience among Active Members for 1992 - 1993

## FIREMENEXPERIENCE

Age (1)	<u>Exposure</u> (2)	<u>Number of Actual Retirements</u> (3)	<u>Crude Rate</u> (4)	<u>Smoothed Rate</u> (5)	<u>Assumed Rate</u> (6)
48	157.5	62.0	.393651	.400000	0.250000
49	200.5	41.0	.204489	.200000	0.250000
50	226.5	45.0	.198675	.200000	0.250000
51	221.5	40.0	.180587	.200000	0.250000
52	214.0	58.0	.271028	.250000	0.250000
53	173.5	37.0	.213256	.250000	0.300000
54	147.0	37.0	.251701	.250000	0.300000
55	122.5	29.0	.236735	.250000	0.300000
56	100.0	26.0	.260000	.250000	0.300000
57	75.0	15.0	.200000	.250000	0.300000
58	54.5	16.0	.293570	.250000	0.300000
59	36.5	9.0	.246575	.250000	0.300000
60	21.5	6.0	.279070	.300000	0.400000
61	13.5	5.0	.370370	.300000	0.400000
62	13.5	4.0	.296296	.300000	0.400000
63	6.5	1.0	.153846	.300000	0.400000
64	3.5	2.0	.571429	.300000	0.400000
65	4.5	2.0	.444444	1.000000	1.000000
66	4.0	1.0	.250000	1.000000	1.000000
67	2.5	1.0	.400000	1.000000	1.000000
68	1.0	0.0	.000000	1.000000	1.000000
69	0.5	0.0	.000000	1.000000	1.000000

Table 3

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

Study of Service Retirements

<u>Year</u>	POLICE EXPERIENCE			FIREMEN EXPERIENCE		
	<u>Number of Retirements</u>	<u>Average Service</u>	<u>Average Age</u>	<u>Number of Retirements</u>	<u>Average Service</u>	<u>Average Age</u>
1993	265	28.5	52.7	217	28.8	53.0
1992	275	30.1	52.2	220	29.1	53.2
1991	306	27.2	52.3	232	28.0	53.5
1990	313	28.0	52.1	207	28.4	53.0
1989	322	28.1	52.2	230	28.3	53.0
1988	207	28.9	53.7	222	29.1	54.0
1987	188	31.0	54.3	190	30.3	54.8
Totals;						
1992 - 1993	540	29.3	52.5	437	28.9	53.1
1987 - 1991	1,336	28.4	52.7	1,081	28.8	53.6
1982 - 1986	1,102	30.1	55.0	1,225	30.1	55.2
<u>Age Group at Retirement</u>	<u>Number of Retirements</u>			<u>Number of Retirements</u>		
	<u>1992-1993</u>	<u>1987-1991</u>	<u>1982-1986</u>	<u>1992-1943</u>	<u>1987-1991</u>	<u>1982-1986</u>
45 - 49	188	346	40	103	176	24
50 - 54	240	702	609	217	573	633
55 - 59	77	201	339	95	255	456
60 - 64	21	69	90	18	68	94
65 - 69	10	16	16	4	6	16
70 - 74	<u>4</u>	2	<u>8</u>	<u>      </u>	<u>3</u>	<u>2</u>
Total	540	1,336	1,102	437	1,081	1,225





Table 5

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

Military Service Credit Purchases for Service Retirements 1992-1993

Age	<u>Number of Service Retirements</u>			<u>Average Service for Purchasers</u>		
	<u>Total</u>	<u>Military Purchases</u>	<u>Purchase Percentage</u>	<u>Service From Hire</u>	<u>Military Service</u>	<u>Total Service</u>
POLICE						
48	123	70	56.9	25.1	3.0	28.1
49	64	41	64.1	25.6	3.1	28.7
50	57	30	52.6	25.2	3.1	28.3
51	55	32	58.2	25.0	2.8	27.8
52	49	27	55.1	31.0	2.9	33.9
53	46	30	65.2	26.8	2.2	29.0
54	33	17	51.5	27.2	2.7	29.9
55	33	15	45.5	28.1	2.3	30.4
56	20	10	50.0	30.1	1.6	31.7
57	13	3	23.1	29.9	2.3	32.2
58	6	2	33.3	30.0	2.9	32.9
59	5	2	40.0	29.4	3.0	32.4
60	6	1	16.7	35.2	3.2	38.4
61	8	3	37.5	31.7	2.7	34.4
62	3	1	33.3	31.5	1.4	32.9
63	3	1	33.3	32.6	0.4	33.0
64	2	1	50.0	33.6	1.0	34.6
Total	526	286	54.4	26.7	2.8	29.5
FIREMEN						
48	61	44	72.1	24.0	3.0	27.0
49	40	25	62.5	24.4	2.5	26.9
50	44	23	52.3	24.8	3.2	28.0
51	43	27	62.8	25.3	2.9	28.2
52	52	39	75.0	27.9	2.6	30.5
53	40	23	57.5	26.9	2.7	29.6
54	39	26	66.7	27.0	2.4	29.4
55	27	14	51.9	28.3	1.9	30.2
56	27	12	44.4	29.4	1.9	31.3
57	16	8	50.0	29.7	2.2	31.9
58	15	7	46.7	30.9	2.2	33.1
59	11	6	54.5	29.6	2.0	31.6
60	6	4	66.7	28.6	2.4	31.0
61	5	2	40.0	33.1	1.8	34.9
62	4	2	50.0	28.8	2.7	31.5
63	1	0	0.0	0.0	0.0	0.0
64	2	1	50.0	42.6	1.4	44.0
Total	433	263	60.7	26.6	2.6	29.2

Table 6(a)

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

Analysis of Disability Experience among Active Members for 1992-1993

## POLICE EXPERIENCE

Age (1)	<u>Exposure</u> (2)	Number of Actual <u>Disabilities</u> (3)	<u>Crude</u> <u>Rate</u> (4)	<u>Graduated</u> <u>Rate</u> (5)	<u>Assumed</u> <u>Rate</u> (6)
25	656.5	0.0	.000000	.000000	.000904
26	818.8	0.0	.000000	.000000	.001088
27	911.4	1.0	.001097	.000191	.001252
28	955.3	1.0	.001047	.000437	.001417
29	969.1	0.0	.000000	.000722	.001600
30	950.1	1.0	.001052	.001089	.001823
31	917.0	1.0	.001091	.001576	.002102
32	874.3	0.5	.000572	.002224	.002458
33	881.9	0.5	.000567	.003066	.002907
34	964.8	4.5	.004664	.004101	.003453
35	1052.3	7.0	.006652	.005321	.004097
36	1097.8	8.0	.007288	.006717	.004841
37	1115.1	9.0	.008071	.008281	.005684
38	1109.6	9.5	.008561	.009996	.006631
39	1076.9	9.0	.008358	.011818	.007692
40	1067.6	11.0	.010303	.013695	.008880
41	1054.5	13.5	.012802	.015572	.010208
42	1031.8	19.0	.018415	.017399	.011687
43	1053.3	25.0	.023736	.019134	.013322
44	1139.9	26.0	.022810	.020789	.015075
45	1163.8	27.0	.023201	.022387	.016900
46	1023.3	24.5	.023943	.023952	.018751
47	840.6	23.0	.027361	.025507	.020580
48	689.9	15.5	.022468	.027051	.022365
49	606.5	19.0	.031327	.028479	.024172
50	547.4	12.5	.022836	.029665	.026091
51	456.5	7.5	.016429	.030480	.028213
52	358.3	16.5	.046057	.030795	.030627
53	276.4	16.5	.059701	.030585	.033395
54	215.0	7.5	.034884	.030236	.036463

Table 6(a)  
Page 2

Age (1)	<u>Exposure</u> (2)	Number of Actual <u>Disabilities</u> (3)	<u>Crude Rate</u> (4)	<u>Graduated Rate</u> (5)	<u>Assumed Rate</u> (6)
55	174.5	8.0	.045845	.030237	.039748
56	119.9	0.0	.000000	.031077	.043167
57	79.3	1.0	.012618	.033245	.046637
58	56.0	1.0	.017857	.037014	.050102
59	51.6	3.0	.058111	.041798	.053608
60	47.6	3.0	.062992	.046794	.057229
61	33.0	0.5	.015152	.051199	.061037
62	22.8	2.5	.109890	.054211	.065106
63	19.0	0.5	.026316	.055235	.069485
64	14.8	1.5	.101695	.054502	.074131
65	8.5	1.0	.117647	.052451	.000000
66	8.3	0.0	.000000	.049522	.000000
67	6.3	0.0	.000000	.046154	.000000
68	4.8	0.0	.000000	.042786	.000000
69	5.3	0.0	.000000	.039857	.000000

Table 6(b)

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

Analysis of Disability Experience among Active Members for 1992-1993

## FIREMEN EXPERIENCE

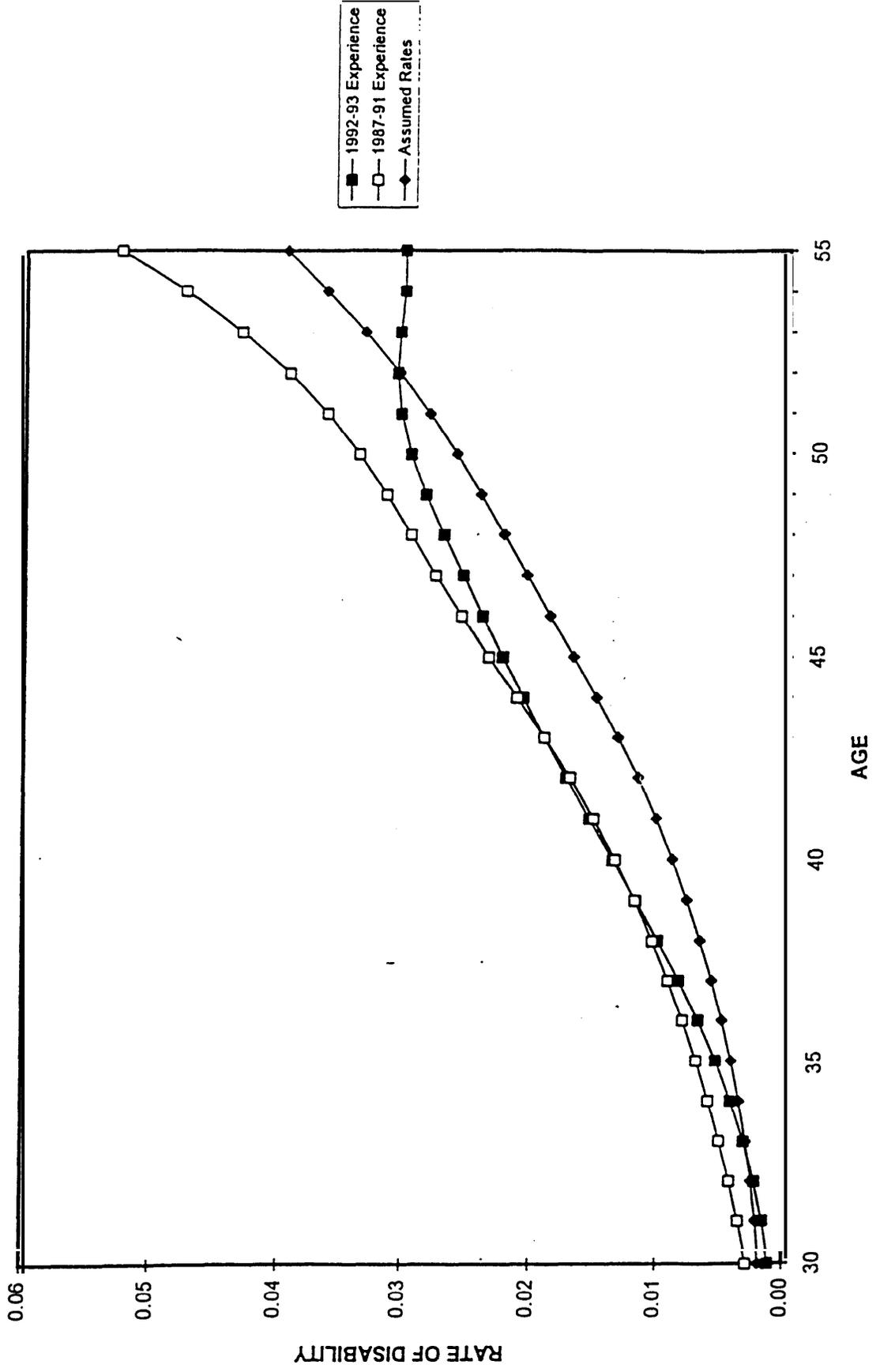
Age (1)	<u>Exposure</u> (2)	<u>Number of Actual Disabilities</u> (3)	<u>Crude Rate</u> (4)	<u>Graduated Rate</u> (5)	<u>Assumed Rate</u> (6)
25	350.9	0.0	.000000	.000000	.000205
26	450.1	0.0	.000000	.000001	.000205
27	559.3	0.0	.000000	.000325	.000423
28	652.1	0.0	.000000	.000649	.000641
29	712.6	1.0	.001403	.000978	.000862
30	729.9	0.0	.000000	.001316	.00109.0
31	785.9	1.0	.001272	.001669	.001329
32	831.6	5.0	.006012	.002039	.001581
33	833.8	0.0	.000000	.002433	.001854
34	840.8	2.0	.002379	.002855	.002169
35	852.6	3.0	.003519	.003308	.002551
36	853.5	4.0	.004687	.003796	.003024
37	833.5	2.5	.002999	.004324	.003615
38	821.3	2.5	.003044	.004906	.004343
39	822.5	5.5	.006687	.005597	.005208
40	811.5	6.5	.008010	.006461	.006205
41	777.4	4.0	.005146	.007563	.007329
42	743.4	5.0	.006726	.008967	.008577
43	713.9	8.0	.011206	.010720	.009948
44	740.8	5.5	.007425	.012789	.011462
45	778.8	9.5	.012199	.015120	.013147
46	674.3	16.0	.023730	.017663	.015029
47	532.0	14.0	.026316	.020364	.017132
48	492.8	9.0	.018265	.023158	.019475
49	504.3	10.0	.019831	.025919	.022040
50	462.9	16.0	.034567	.028508	.024800
51	376.8	7.0	.018580	.030784	.027727
52	312.0	14.5	.046474	.032607	.030795
53	237.9	8.5	.035733	.034023	.033965
54	184.3	7.5	.040706	.035811	.037146

Table 6(b)  
Page 2

Age (1)	<u>Exposure</u> (2)	Number of Actual <u>Disabilities</u> (3)	<u>Crude</u> <u>Rate</u> (4)	<u>Graduated</u> <u>Rate</u> (5)	<u>Assumed</u> <u>Rate</u> (6)
55	143.8	6.0	.041739	.038935	.040236
56	106.8	4.5	.042155	.044359	.043130
57	81.8	1.5	.018349	.053047	.045726
58	61.8	2.5	.040486	.065544	.047870
59	40.0	1.0	.025000	.080723	.049201
60	27.3	4.0	.146789	.097038	.049307
61	17.5	0.0	.000000	.112944	.047777
62	14.0	2.0	.142857	.126894	.044198
63	6.8	2.0	.296296	.137717	.038311
64	3.0	0.0	.000000	.145738	.030455
65	5.0	2.0	.400000	.151659	.000000
66	4.3	0.0	.000000	.156180	.000000
67	1.8	0.0	.000000	.160000	.000000
68	1.0	0.0	.000000	.163820	.000000
69	0.5	0.0	.000000	.168341	.000000

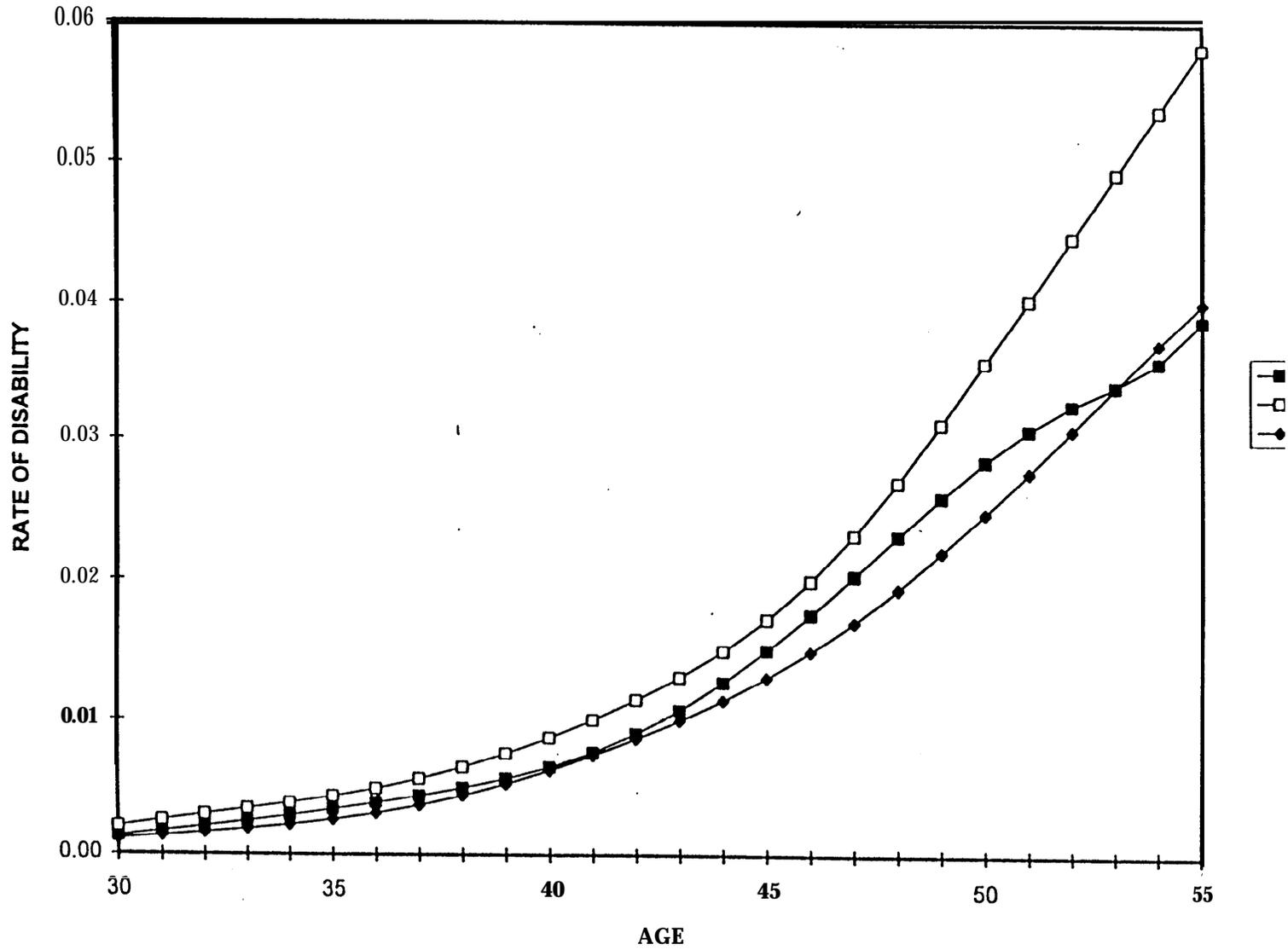
Exhibit 1

POLICE AND FIREMEN'S DISABILITY AND PENSION FUND OF OHIO  
ACTIVE POLICE DISABILITY INCIDENCE



## Exhibit 2

### POLICE AND FIREMEN'S DISABILITY AND PENSION FUND OF OHIO ACTIVE FIRE DISABILITY INCIDENCE



**November 7, 1994**

**The Wyatt Company**

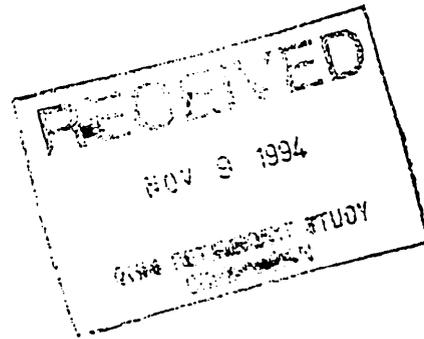
***15-Year Forecast Study***

pp. 1-17

*Wyatt*

November 7, 1994

Mr. Henry E. Helling, III  
Executive Director  
The Police and Firemen's Disability  
and Pension Fund of Ohio  
230 East Town Street  
Columbus, Ohio 43215-4650



Re: 15-Year Forecast Study

Dear Henry:

We have completed a 15-year forecast study of the Fund. The study is presented in the attached tables. The contents of each table is as follows:

Table 1: Description of Forecast Study

Table 2: Summary of Forecast Assumptions

Table 3 - 7 : Forecast Results Under Various Scenarios

- 3 - Baseline run
- 4 - Baseline but with modified disability and retirement rates
- 5 - Same as 4 but with 1.5% active membership annual growth
- 6 - Full modified run but with baseline health care cost trend
- 7 - Full modified run

Table 8: Observations and Conclusions

Enclosed are five copies.

We will see you on Thursday at about 8:30 a.m.

Sincerely yours,

*Wayne E. Dydo*  
Wayne E. Dydo, F.S.A.

WED/kas  
Enclosures

Table 1  
**POLICE AND FIREMEN'S DISABILITY  
AND PENSION FUND OF OHIO**

Forecast Study  
1994-2009

Purpose: To determine near-term adequacy of current statutory rates.

Methodology: Deterministic - stochastic variations in asset performance will be incorporated at a later date.

In general, there will be two scenarios:

- (1) baseline, and
- (2) modified.

Some variations in the modified scenario will also be introduced.

The baseline scenario uses 1993 valuation assumptions, no growth in active workforce, and a health care cost increase assumption which decreases over time (a typical assumption).

The modified scenario uses revised rates of disability and retirement, revised mortality for future disableds, revised percentages of disabilities expected to be partial, and health care cost increase assumptions which give heavy weight to recent experience. In addition, the assets are assumed to earn 0% in 1994 and 9.4% in 1995 and later years, and the active membership is assumed to grow 1.5% annually.

Both scenarios are based on 1994 valuation data.

The health care stabilization fund will be separately calculated.

Conclusions: Under each scenario, there will be presented a "funded status report" after 5, 10, and 15 years consisting of:

Present value of future benefits - Actives  
Present value of future benefits - Retirees

Present value of future payroll

Market value of assets excluding health care stabilization fund.

Balance in the health care stabilization fund (possibly negative).

Payroll and expected medical payments for the upcoming year.

These results will be used to make a statement concerning adequacy.

For example, if the funded percentage (assets divided by present value of future benefits) continues to increase, an aggregate method funding rate is near the statutory rates less 6.5%, the funding percentage is 65% or better, and the health care stabilization fund is at least positive, then the statutory rates can be considered adequate, at least for some initial portion of the 15-year study period.

The effect on the stabilization fund of certain changes in the health care benefit structure - e.g. indexing member contributions to inflation - will also be determined.

Table 2

POLICE AND FIREMEN'S DISABILITY  
AND PENSION FUND OF OHIO

Summary of Forecast  
Assumptions  
November 4, 1994

Category	Baseline	Modified
Rates of disability:	As in 1993 valuation	1993 valuation rates x 1.30 Police, x 1.15 for Firemen
Partial Proportion:	57% 57%	75% Police 70% Firemen
Rates of Retirement:	1993 valuation rates	+ .10 at age 48 - .05 at ages 54-64 Police - .05 at ages 53-64 Firemen
Mortality:	1993 valuation rates	for future (post-93) disabilities, use 2-year age set back to reflect lower mortality of partial disableds and higher proportion of partial disabilities
<p>Note: 1993 valuation rates reflect mortality experience, separately for disabled retirees and healthy retirees, during the last quinquennial period 1987-1991.</p> <p>The 2-year set-back noted above is based upon partial disability retiree mortality rates during the 1987-1991 period.</p> <p>Possible improvements in future mortality may be accounted for by suitable percentage increases in liabilities at the end of the forecast period.</p>		
Investment Return:	8.25% from 1/1/94 on	0% for 1994; for 1995 and later, geometric average rate over a 15 year period as developed by Wyatt asset model with the following input assumptions

Asset Class	Arithmetic Mean	Standard Deviation
U.S. Large Cap Stocks	11.0%	16.5%
U.S. Small Cap Stocks	12.7%	21.1%
International Stocks	12.1%	20.7%
Real Estate	11.4%	18.0%
Inflation	4.0%	3.7%
Long Term Bonds	7.6%	5.6%



New Entrant Profile

Same as baseline

	Police	Firemen
Average Age	28.3	29.3
Average Pay	\$25,645*	\$25,362*

\* Increased by 4% for each year of hire after 1994.  
E.g. A new police hire in 2000 will have a starting pay of \$25,645 \* 1.04 \*\* 6 or \$32,449.

For the first five years after hire, pay increases will equal 10% for new entrants. Thereafter, the regular salary scale will apply. The 10% equals 4% inflation plus 6% promotional - the 6% is based on historical experience (1988-1993).

Timing: Employer and employee contributions                      Same as baseline  
          - monthly, end of month  
          Benefit payments - monthly, beginning of month  
          Expenses and State subsidy - mid year.

Administrative  
Expense

Growth Rate:                      7.5%                                      7.5%

Table 3

Police and Firemen's Disability and Pension Fund of Ohio

Forecast Study (Millions)

November, 1994

*B a s e l i n e*

January 1,	Present Value of Future Benefits				Market Value Assets	Present Value Pay	Retiree Funded Status	Active Funded Status	Total Funded Status	Aggregate Pension Contribution Rate	Assets Needed for		Funded Status w. Excess Assets Removed
	Actives	Post-93 Retirees	Pre-94 Retirees	Total							27.00% Rate	Excess Assets	
1994	\$4,441.50	\$0.00	\$2,829.00	\$7,270.50	\$4,542.50	\$9,791.30	100.00%	38.58%	62.48%	26.68%	\$4,511.10	\$31.40	62.05%
1999	\$5,347.70	\$1,509.90	\$2,462.70	\$9,320.30	\$6,346.30	\$11,719.90	100.00%	44.39%	68.09%	24.39%	\$6,048.63	\$297.67	64.90%
2004	\$6,480.30	\$3,220.20	\$2,019.70	\$11,720.20	\$8,372.60	\$13,981.40	100.00%	48.34%	71.44%	23.13%	\$7,839.69	\$532.91	66.89%
2009	\$7,739.70	\$5,272.50	\$1,542.10	\$14,554.30	\$10,785.40	\$16,892.40	100.00%	51.30%	74.10%	21.64%	\$9,879.35	\$906.05	67.88%

Transaction Summary and Health Care Stabilization Account (HCSA)

Year	Payments Pensions	Health	Investment Income	Payroll	Health Cost	HCSA	Excess Assets	HCSA + EXCESS
1994	\$311.70	\$61.30	\$374.60	\$972.80	6.30%	\$167.90	\$31.40	\$199.30
1995	\$335.00	\$68.00	\$404.80	\$1,005.90	6.76%	\$183.80		
1996	\$357.80	\$75.50	\$431.00	\$1,041.10	7.25%	\$196.50		
1997	\$381.30	\$84.10	\$458.10	\$1,078.80	7.60%	\$204.80		
1998	\$406.60	\$93.20	\$486.20	\$1,119.40	8.33%	\$207.60		
1999	\$432.70	\$102.80	\$515.20	\$1,162.40	8.84%	\$203.80	\$297.67	\$501.47
2000	\$459.00	\$112.50	\$545.40	\$1,208.20	9.31%	\$192.50		
2001	\$485.40	\$122.90	\$576.70	\$1,256.10	9.78%	\$173.00		
2002	\$512.80	\$133.50	\$609.30	\$1,306.60	10.22%	\$144.10		
2003	\$542.40	\$144.20	\$643.10	\$1,358.90	10.61%	\$105.00		
2004	\$573.30	\$155.90	\$678.20	\$1,412.20	11.04%	\$54.70	\$532.91	\$587.61
2005	\$606.50	\$167.90	\$714.60	\$1,467.20	11.44%	(\$8.60)		
2006	\$642.60	\$181.20	\$752.10	\$1,523.60	11.89%	(\$86.10)		
2007	\$679.90	\$194.10	\$790.70	\$1,580.70	12.28%	(\$180.10)		
2008	\$716.50	\$206.70	\$830.50	\$1,640.50	12.60%	(\$291.70)		
2009	\$753.10	\$220.70	\$871.60	\$1,704.00	12.95%	(\$421.70)	\$906.05	\$484.35



Table 4

## Police and Firemen's Disability and Pension Fund of Ohio

Forecast Study (Millions)

November, 1994

*Baseline: With Modified Disability and Retirement Rates*

January 1,	Present Value of Future Benefits				Market Value Assets	Present Value Pay	Retiree Funded Status	Active Funded status	Total Funded status	Aggregate Pension Contribution Rate	Assets Needed for		Funded status w. Excess A Removed
	Actives	Post-93 Retirees	Pre-94 Retirees	Total							27.00% Rate	Excess Assets	
1994	\$4,472.10	\$0.00	\$2,829.00	\$7,301.10	\$4,542.50	\$9,668.10	100.00%	38.32%	62.22%	27.34%	\$4,576.42	\$0.00	62.22%
1999	\$5,356.10	\$1,571.20	\$2,462.70	\$9,390.00	\$6,332.30	\$11,604.30	100.00%	42.91%	67.44%	25.35%	\$6,150.36	\$181.94	65.50%
2001	\$6,476.90	\$3,331.90	\$2,019.70	\$11,828.50	\$8,313.50	\$13,876.20	100.00%	45.73%	70.28%	24.52%	\$7,976.93	\$336.57	67.44%
2009	\$7,732.40	\$5,432.06	\$1,542.10	\$14,706.50	\$10,638.80	\$16,795.00	100.00%	47.39%	72.34%	23.54%	\$10,058.25	\$580.55	68.39%

## Transaction Summary and Health Care Stabilization Account (HCSA)

Year	Payments		Investment		Health		Excess	HCSA +
	Pensions	Health (est)	Income	Payroll	Cost	HCSA (est)	Assets	EXCESS
1994	\$312.20	\$61.35	\$374.60	\$972.80	6.31%	\$167.90	\$0.00	\$167.90
1995	\$336.40	\$68.23	\$404.70	\$1,005.50	6.79%	\$183.75		
1996	\$360.20	\$75.99	\$430.70	\$1,040.10	7.31%	\$196.20		
1997	\$384.30	\$84.71	\$457.50	\$1,077.10	7.86%	\$203.97		
1998	\$410.20	\$93.97	\$485.30	\$1,117.40	8.41%	\$206.06		
1999	\$437.10	\$103.84	\$513.90	\$1,160.30	8.95%	\$201.34	\$181.94	\$383.28
2000	\$464.10	\$113.79	\$543.40	\$1,205.60	9.44%	\$188.75		
2001	\$491.20	\$124.39	\$574.10	\$1,253.30	9.93%	\$167.60		
2002	\$519.10	\$135.21	\$605.90	\$1,303.60	10.37%	\$136.70		
2003	\$549.20	\$146.01	\$638.90	\$1,355.90	10.77%	\$95.22		
2004	\$581.00	\$158.12	\$673.00	\$1,409.10	11.22%	\$42.22	\$336.57	\$378.80
2005	\$614.80	\$170.37	\$708.20	\$1,463.70	11.64%	(\$24.41)		
2006	\$651.40	\$183.84	\$744.40	\$1,519.80	12.10%	(\$105.79)		
2007	\$689.10	\$196.98	\$781.50	\$1,577.00	12.49%	(\$204.16)		
2000	\$726.20	\$209.73	\$819.70	\$1,636.70	12.81%	(\$320.75)		
2009	\$763.10	\$223.89	\$859.10	\$1,700.20	13.17%	(\$456.29)	\$580.55	\$124.26



Table 5

## Police and Firemen's Disability and Pension Fund of Ohio

Forecast Study (Millions)

November, 1994

*Baseline: With Modified Disability and Retirement Rates & 1.5% Active Growth*

January 1,	Present Value of Future Benefits				Market Value Assets	Present Value pay	Retiree Funded Status	Active Funded status	Total Funded status	Aggregate Pension Contribution Rate	Assets Needed for 27.00% Rate	Excess Assets	Funded status w. Excess A Removed
	Actives	Post-93 Retirees	Pre-94 Retirees	Total									
1994	\$4,472.10	\$0.00	\$2,829.00	\$7,301.10	\$4,542.50	\$9,666.10	100.00%	38.32%	62.22%	27.35%	\$4,576.42	\$0.00	62.22%
1999	\$5,590.30	\$1,574.10	\$2,462.70	\$9,627.10	\$6,365.80	\$12,706.50	100.00%	41.66%	66.12%	24.73%	\$6,089.47	\$276.33	63.25%
2004	\$7,146.90	\$3,353.00	\$2,019.70	\$12,519.60	\$8,525.50	\$16,623.10	100.00%	44.11%	68.10%	23.31%	\$7,924.09	\$601.41	63.29%
2009	\$9,142.80	\$5,511.10	\$1,542.10	\$16,196.00	\$11,314.30	\$21,839.20	100.00%	46.61%	69.86%	21.80%	\$10,179.04	\$1,135.26	62.85%

## Transaction Summary and Health Care Stabilization Account (HCSA)

Year	Payments Pensions	Health	Investment Income	Payroll	Health Cost	HCSA	Excess Assets	HCSA + EXCESS
1994	\$312.20	\$61.30	\$374.60	\$972.80	6.30%	\$167.90	\$0.00	\$167.90
1995	\$336.50	\$68.20	\$404.80	\$1,016.10	6.71%	\$183.80		
1996	\$360.30	\$76.00	\$431.10	\$1,063.00	7.15%	\$197.10		
1997	\$384.50	\$84.70	\$458.60	\$1,114.00	7.60%	\$207.00		
1998	\$410.60	\$94.00	\$487.30	\$1,170.30	8.03%	\$212.20		
1999	\$437.80	\$104.00	\$517.30	\$1,231.40	8.45%	\$212.00	\$276.33	\$488.33
2000	\$465.20	\$114.10	\$548.70	\$1,297.10	8.80%	\$205.50		
2001	\$492.70	\$124.80	\$581.80	\$1,367.30	9.13%	\$192.30		
2002	\$521.10	\$135.80	\$616.60	\$1,442.10	9.42%	\$171.20		
2003	\$551.90	\$147.00	\$653.40	\$1,521.50	9.66%	\$141.80		
2004	\$584.50	\$159.20	\$692.20	\$1,604.10	9.92%	\$103.10	\$601.41	\$704.51
2005	\$619.30	\$171.80	\$732.90	\$1,690.90	10.16%	\$53.80		
2006	\$657.10	\$185.60	\$775.70	\$1,782.00	10.42%	(\$7.30)		
2007	\$696.30	\$199.30	\$820.70	\$1,877.20	10.62%	(\$82.10)		
2008	\$735.00	\$212.50	\$868.00	\$1,978.10	10.74%	(\$171.20)		
2009	\$773.80	\$227.30	\$918.00	\$2,086.30	10.89%	(\$275.10)	\$1,135.26	\$860.16

Table 6

Police and Firemen's Disability and Pension Fund of Ohio

Forecast Study (Millions)

November, 1994

**Modified: Baseline Health Care Cost Trend**

January 1,	Present Value of Future Benefits				Market Value Assets	Present Value pay	Retiree Funded Status	Active Funded status	Total Funded status	Aggregate Pension Contribution Rate	Assets Needed for 27.00% Rata	Excess Assets	Funded status w. Excess A Removed
	Actives	Post-93 Retirees	Pre-94 Retirees	Total									
1994	\$4,472.10	\$0.00	\$2,829.00	\$7,301.10	\$4,542.50	\$9,668.10	100.00%	38.32%	62.22%	27.35%	\$4,576.42	\$0.00	62.22%
1999	\$5,590.30	\$1,574.10	\$2,462.70	\$9,627.10	\$6,112.90	\$12,706.50	100.00%	37.14%	63.50%	26.72%	\$6,089.47	\$23.43	63.25%
2004	\$7,146.90	\$3,353.00	\$2,019.70	\$12,519.60	\$8,614.80	\$16,623.10	100.00%	45.36%	68.81%	22.77%	\$7,924.09	\$690.71	63.29%
2009	\$9,142.80	\$5,511.10	\$1,542.10	\$16,196.00	\$12,101.80	\$21,839.20	100.00%	55.22%	74.72%	18.20%	\$10,179.04	\$1,922.76	62.85%

Transaction Summary and Health Care Stabilization Account (HCSA)

Year	Payments Pensions	Health	Investment Income	Payroll	Health cost	HCSA	Excess Assets	HCSA + EXCESS
1994	\$312.20	\$61.30	\$0.00	\$972.80	6.30%	\$167.90	\$0.00	\$167.90
1995	\$336.50	\$68.20	\$426.00	\$1,016.10	6.71%	\$169.90		
1996	\$360.30	\$76.00	\$ASS.00	\$1,063.00	7.15%	\$184.00		
1997	\$384.50	\$64.70	\$491.80	\$1,114.00	7.60%	\$194.80		
1998	\$410.60	\$94.00	\$527.60	\$1,170.30	6.03%	\$201.20		
1999	\$437.80	\$104.00	\$565.60	\$1,231.40	8.45%	\$202.40	\$23.43	\$225.83
2000	\$465.20	\$114.10	\$606.00	\$1,297.10	8.80%	\$197.30		
2001	\$492.70	\$124.80	\$649.00	\$1,367.30	9.13%	\$185.40		
2002	\$521.10	\$135.80	\$695.10	\$1,442.10	9.42%	\$165.80		
2003	\$551.90	\$147.00	\$744.40	\$1,521.50	9.66%	\$137.50		
2004	\$564.50	\$159.20	\$797.00	\$1,604.10	9.92%	\$99.80	\$690.71	\$790.51
2005	\$619.30	\$171.80	\$853.30	\$1,690.90	10.16%	\$51.00		
2006	\$657.10	\$185.60	\$913.40	\$1,782.00	10.42%	(\$10.30)		
2007	\$696.30	\$199.30	\$977.60	\$1,877.20	10.62%	(\$85.60)		
2008	\$735.00	\$212.50	\$1,046.20	\$1,978.10	10.74%	(\$176.40)		
2009	\$773.80	\$227.30	\$1,119.90	\$2,086.30	10.89%	(\$283.30)	\$1,922.76	\$1,639.46



Table 7

Police and Firemen's Disability and Pension Fund of Ohio  
Forecast Study (Millions)  
November, 1994

**Modified**

January 1,	Present Value of Future Benefits				Market Value Assets	Present Value Pay	Retiree Funded Status	Active Funded status	Total Funded status	Aggregate Pension Contribution Rate	Assets Needed for 27.00% Rate	Excess Assets	Funded status w. Excess A Removed
	Actives	Post-93 Retirees	Pre-94 Retirees	Total									
1994	\$4472.10	\$0.00	\$2,829.00	\$7,301.10	\$4,542.50	\$9,668.10	100.00%	38.32%	62.22%	27.35%	\$4,576.42	\$0.00	62.22%
1999	\$5,590.30	\$1,574.10	\$2,462.70	\$9,627.10	\$6,112.90	\$12,706.50	100.00%	37.14%	63.50%	26.72%	\$6,089.47	\$23.43	63.25%
2001	\$7,146.96	\$3,353.00	\$2,019.70	\$12,519.60	\$6,614.60	\$16,623.10	100.00%	45.36%	68.81%	22.77%	\$7,924.09	\$690.71	63.20%
2009	\$9,142.80	\$5,511.10	\$1,542.10	\$16,196.00	\$12,101.80	\$21,839.20	100.00%	55.22%	74.72%	18.20%	\$10,179.04	\$1,922.76	62.85%

Transaction Summary and Health Care Stabilization Account (HCSA)

Year	Payments Pensions	Health	Investment Income	Payroll	Health cost	HCSA	Excess Assets	HCSA + EXCESS
1994	\$312.20	\$60.20	\$0.00	\$972.80	6.19%	\$167.90	\$0.00	\$167.90
1995	\$336.50	\$64.60	\$426.00	\$1,016.10	6.36%	\$171.00		
1996	\$360.30	\$69.70	\$458.00	\$1,063.00	6.56%	\$189.00		
1997	\$384.50	\$75.90	\$491.60	\$1,114.06	6.81%	\$206.90		
1998	\$410.60	\$83.10	\$527.60	\$1,170.30	7.10%	\$223.70		
1999	\$437.80	\$91.50	\$565.60	\$1,231.40	7.43%	\$238.40	\$23.43	\$261.83
2000	\$465.20	\$160.40	\$606.00	\$1,297.10	7.74%	\$249.80		
2001	\$492.70	\$109.80	\$649.00	\$1,367.30	8.03%	\$257.20		
2002	\$521.10	\$119.50	\$695.00	\$1,442.10	8.29%	\$259.90		
2003	\$551.90	\$129.40	\$744.00	\$1,521.50	8.50%	\$257.50		
2004	\$584.50	\$140.20	\$797.00	\$1,604.10	8.74%	\$249.50	\$690.71	\$940.21
2005	\$619.30	\$151.30	\$853.30	\$1,690.90	8.95%	\$234.70		
2006	\$657.10	\$163.60	\$913.40	\$1,782.00	9.18%	\$212.30		
2007	\$696.30	\$175.60	\$977.60	\$1,877.20	9.35%	\$180.80		
2008	\$735.00	\$187.30	\$1,046.20	\$1,978.10	9.47%	\$139.80		
2009	\$773.80	\$200.40	\$1,119.00	\$2,086.30	9.61%	\$89.00	\$1,922.76	\$2,011.76

*Wyatt*

## Table 8

### Observations & Conclusions

- An active funded status of between 45% and 50% should be sufficient to fully fund all accrued benefits.
- The aggregate cost method contribution rate is 2% to 3% higher than the entry age normal cost method with 40-year funding of unfunded accrued liability. Thus, an aggregate rate of 27% to 28% is about the same as an entry age rate of 25% (with 40-year amortization).
- Assets are developed net of the Health Care Stabilization Account (HCSA). Health costs are accounted for in the HCSA

## Table 8 (contd.) Observations & Conclusions

- The statutory rate for pension and disability benefits on a combined basis is 31.5%. Subtracting 6.5% allotted for the HCSA leaves 25% for pension and disability benefits.
- After 15 years, the health care pay as you go rate is projected to be 13.17% if there is no population growth and the high trend rate of the baseline occurs, but the rate declines to 10.89% if the active membership grows at 1.5% per year. Further, the 15-year rate declines to 9.61% under the low health care cost trend of the modified assumption set, along with 1.5% active membership growth.

## Table 8 (contd.) Observations & Conclusions

- Under the most conservative scenario (Table 4), the HCSA will still have a positive balance after 10 years. An additional \$337 million of assets can be moved into the account at that time and still have a contribution rate for pension and disability benefits on the entry age basis equal to the net statutory rate of 25% (31.5%-6.5%). If this move were made, the funded status of the pension and disability benefits would be 67.4%. If lower mortality rates become appropriate after ten years, then estimated increases in liability are 3% for actives, 4% for post-93 retirees, and 5% for pre-94 retirees.

## Table 8 (contd.) Observations & Conclusions

- The effect of these liability increases, would be to decrease the funded status from 70.28% to 67.83%, and the excess assets would reduce to zero with a 27% target rate, and \$46.7 million with a 28% target rate. The health care cost rate as of 1/1/04 is projected to be 11.22%.
- If valuation results over the next five years give clear indication that this worst-case scenario is developing, then the Board would need to increase retiree member contributions and/or have the statutory rate increased in the neighborhood of 2%-3%. A specific recommendation would be made after a thorough analysis of the situation.

## Table 8 (contd.) Observations & Conclusions

- But we do not think that this scenario has a high probability of occurring. Rather, we think that the modified scenarios shown on tables 6 & 7 are better representatives of expected future experience.
- Under these scenarios, membership will grow at an annual rate of 1.5% and assets in 1995 and later will earn on average 9.4% per year. These two types of growth will provide the needed extra assets to support health care expenses, under both health care cost trends. Mortality improvements can also be accommodated.

## Table 8 (contd.) Observations & Conclusions

- Specifically, under either scenario, a 1/1/04 increase in liability due to mortality improvements as noted above would still leave about \$241 million in extra assets to be transferred to the HCSA. This transfer along with the then existing assets in the HCSA would provide for continuing Fund financial soundness at least for the next 2-5 years thereafter without increasing contributions or changing benefits.

**(November 16, 1994)**

**Milliman & Robertson, Inc.**

***Prepared Statement to  
Retirement Study Commission  
Regarding Police & Firemen's  
Disability and Pension Fund***

pp. 1-9

PREPARED STATEMENT TO  
RETIREMENT STUDY COMMISSION REGARDING  
POLICE & FIREMEN'S DISABILITY AND PENSION FUND

by: Will A. Reimext, F.S.A.

At the October 12, 1994 Commission meeting, we presented to the Commission the results of our review of the Police & Firemen's Disability and Pension Fund (PFDPF) of Ohio dated October 6, 1994. At the same hearing, The Wyatt Company (Wyatt) indicated their disagreement with our conclusions and recommendations in part due to the availability to them of more recent data than had been provided to us for our review.

Since the October 12th hearing, M&R has been provided with updated disability and service retirement experience through the end of calendar year 1993 (report dated October 31, 1994). We were subsequently-provided with a summary of the methods, assumptions and results of a forecast study of PFDPF over the next fifteen years (report dated November 7, 1994). There are several significant areas where we do not concur with the assumptions used by Wyatt. We will identify those areas for you today.

Wyatt has developed new assumptions for the annual actuarial valuation regarding service retirements, disabilities and mortality among disabled retirees. Their proposed new assumptions are consistent with the more optimistic end of the range of assumptions we indicated in our letter of October 6th. In their forecasts, Wyatt incorporates two possible additional sources of gains. The first relates to a projected growth in the number of active members at the rate of 1.5% per year over each of the next 15 years. The second possible source of gains would arise from the new investment policy adopted by the Board of PFDPF which Wyatt projects will produce 9.4% investment returns over the next 15 years.

## Effect on Annual Actuarial Valuation

We have estimated that use of their new annual valuation assumptions would cause the statutory contribution rates to be deficient by roughly 0.5% of payroll based on the Entry Age Normal Cost Method with a 40-year level percentage of payroll amortization and a constant workforce. This deficiency would exist even if the long-term cost of health insurance will be limited to 6.5% of payroll.

## Recommended Action

Hence, we remain concerned about the long-term ability of the current statutory contribution rates to support the current benefit structure. We would emphasize, however, that this concern has not caused us to recommend any increase in statutory contribution rates.

What we recommended previously and continue to recommend is “a study into the causes of the high rates of disability since 1986 should be undertaken in order to (1) determine if changes would be appropriate in statutory provisions and/or administrative procedures and (2) to develop appropriate actuarial assumptions”. We also believe that consideration of benefit improvements should be deferred or additional contributions should be provided’ to finance any such improvements.

## Reservations regarding Assumptions

The major areas where we have reservations concerning the forecast assumptions utilized by Wyatt are:

- The rate of increase in the number of active members;
- The assumed 9.4% rate of investment returns and 4% salary inflation over the next 15 years;

- The assumed life expectancy among service retirees; and,
- The assumed increase in the average age at hire of future new members.

We will discuss in turn below the significance of each of these assumptions as well as the reasons for our reservations.

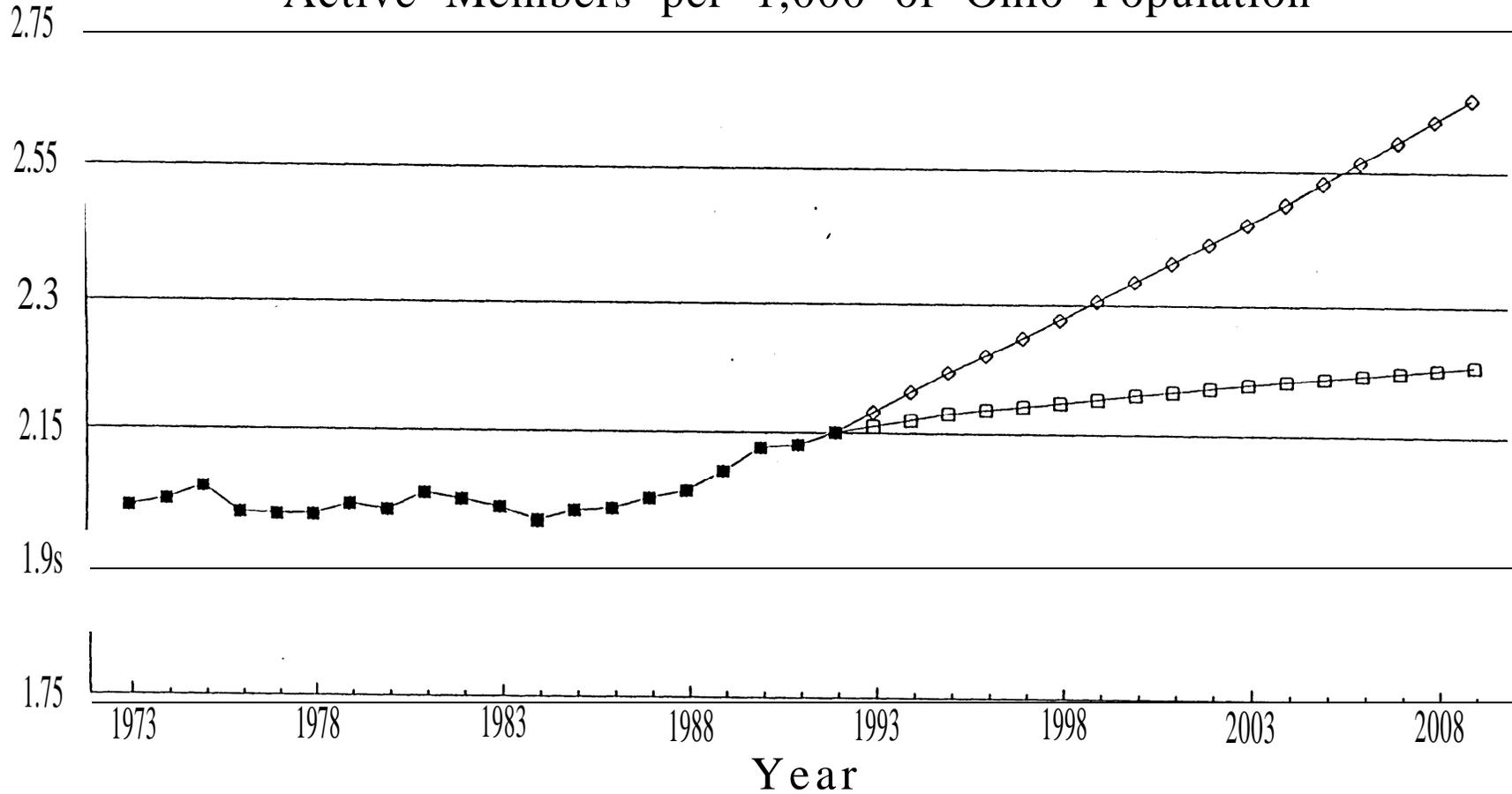
### Growth in Active Members

For purposes of the forecast studies, Wyatt assumed a 1.5% average rate of increase in the number of active members covered under PFDPF.

As a test of the reasonableness of this assumption, we compared (1) the actual past. rate of increase in the number of active police and firemen relative to the growth in the Ohio population and (2) Wyatt's projected membership in PFDPF with the Ohio population projections prepared by the Department of Development (a state affiliate of the U.S. Census Bureau). In summary, those tabulations indicate that in the past twenty years the number of active members of PFDPF per thousand population has. increased from 2.01 to 2.15 per 1,000 population. Wyatt's projection would increase; the number of active police and firemen to 2.6 per thousand population over the next 15 years assuming a 1.5% annual increase. To put it differently, this assumption anticipates that there will be an increase of almost 6,000 in the number of active police and firemen over the next fifteen years from 24,000 to 30,000. By comparison, there was an increase of 1,591 in the number of active members over the 15 years 1977 to 1992. (See following page.)

Since the average cost of the benefits provided under PFDPF to a new hire is less than the current statutory rate percents (assuming that health insurance costs are limited to 6.5% of payroll), this anticipated growth in the number of police and firemen would have a significant

# Ohio Police and Firemen's Disability and Pension Fund Active Members per 1,000 of Ohio Population



—◇— Projected 1.5% Annual Increase    
 —□— Projected 1973-1992 Average Increase  
—■— Historical Data

beneficial effect on the actuarial adequacy of the current contribution rate percents if this projected growth in the active membership were to materialize. This projected increase in the number of members would eliminate the deficiency in the contribution rates.

The Special Legislative Committee is in a better position than we are to judge the likelihood that the State and Local governments will be able to afford this significant increase in the number of police and firemen in excess of the modest growth in Ohio population projected by the Department of Development. We highlight it because it appears to us to be quite optimistic and, moreover, because it has a very beneficial effect on the financial projections.

#### Investment Return and Salary Inflation

Two of the most significant assumptions selected by an actuary for determining the actuarial value and long-term costs associated with a retirement plan are (1) the rate of investment earnings on assets in the Trust Fund and (2) the rate of salary increases during active employment. These assumptions are important because, over the long term, the ultimate cost of a retirement system will be equal to (a) the actual benefit payments made to members and their beneficiaries plus (b) expenses required to operate the fund less (c) any investment earnings on Trust Fund assets. Every additional dollar of investment income serves to reduce long-term costs on this basis by \$1. Moreover, benefit payments to members and beneficiaries are generally a percentage of the member's final average earnings. Thus, increases in member compensation serve to increase the ultimate benefit payout.

Actuaries traditionally look at investment return and salary growth assumptions together to insure that the underlying price and wage inflation and other economic factors which affect these two variables, are consistent. Thus, it may be acceptable to use an otherwise apparently high investment return assumption if a consistent high salary growth assumption is assumed also. Our concern with the assumptions utilized by Wyatt for their 1994-2009 forecast studies is that the investment return assumption is high relative to the salary inflation assumption.

While we could propose alternative detailed economic factors which would produce different assumptions from those utilized by Wyatt, we believe that for purposes of a second opinion, such as we are providing to this Committee and the Retirement Study Commission, it is more appropriate to measure the reasonableness of actuarial assumptions regarding investment returns and salary growth based on whether they are within the range of assumptions commonly used by other comparable retirement systems to determine long-term costs. This is the approach we took with our initial review (October 6, 1994 report) and which we have applied again.

A major frame of reference we use to determine the range of common practice is a survey of State and Local Government Employee Retirement Systems prepared for members of the Public Pension Coordinating Council in June of 1994 (members of the Public Pension Coordinating Council include the Government Finance Office Association, the National Association of State Retirement Administrators, the National Conference on Public Employee Retirement Systems and the National Council on Teacher Retirement). Within this survey we reviewed the 95 State and Local Government Employ& Retirement Systems with assets in excess of \$1 billion as being comparable to PFDPF. This survey included four Ohio statewide retirement systems: PERS, PFDPF, SERS and STRS.

The results of this comparison are:

- Of the 92 systems that reported their actuarial investment return assumption, only one used an investment return assumption greater than or equal to the 9.4% Wyatt used for its forecast; in fact, that system and only one other reported investment return assumptions higher than 9%;
- Of the 86 that reported their wage inflation assumption, only 12 utilized a wage inflation assumption equal to or lower than the 4% utilized by Wyatt for the projection; and,

- Of these 86, none used a spread between the investment return assumption and wage inflation assumption as high as the 5.4% spread Wyatt used (the greatest spread was 5%, used by only 3 systems).

The above reinforces our concern that the 9.4% investment return and 4% salary inflation assumptions utilized in preparing the forecast studies are, in combination, very optimistic for purposes of determining contribution requirements.

The assumptions previously used by Wyatt for the January 1, 1993 actuarial valuation included an investment return assumption of 8.25%. As we commented in our letter of October 6th, we found that assumption combination with the salary increase assumption to be reasonable.

It is worth noting that even that assumption was more optimistic than the assumptions used by the other three large Ohio Retirement Systems both with respect to investment return and salary inflation. The other systems use an investment return assumption of either 7.50% or 7.75% and assumes a spread between the investment returns and salary increases of 3% or less at all ages. Since all of the systems operate under the time statutory investment provisions and are subject to similar inflationary pressures for salary increase we know of no reason for assuming 1.5% higher investment returns and generally lower wage inflation under PFDPF than under the other Ohio Retirement Systems.

#### Life Expectancy Among Healthy Retirees

As indicated in our report of October 6th, we believe that the actuarial assumption regarding life expectancy of healthy retirees is inadequate. No additional information has been provided regarding this assumption since our earlier report and Wyatt has declined to modify the assumption. Accordingly, we remain concerned about the appropriateness of this assumption for the reasons cited in our October 6th report.

## Average Age at Hire Among Future New Members

In doing forecast studies an actuary needs to assume the demographic characteristics of future new hires. The assumed demographic characteristics may have a significant effect on the results of the forecast. (Since there is no need for an assumption regarding new entrants for the normal actuarial valuation, these assumptions are used only for purposes of a forecast study.)

Based on the 1987-1991 experience study, the average hire age has remained stable at age 26 over the 20-year period 1972 through 1992 for both police and firemen. Moreover, the 1993 actuarial valuation reported the same average hire age of 26 for both police and firemen. Nevertheless for purposes of the forecast study, Wyatt has assumed an average hire age of 28 years for police and 29 for firemen.

This assumed increase in the average hire age serves to lower the average costs associated with future hires by assuming that future hires will have to work until age 53 or age 54, for police and firemen respectively, in order to be eligible for service retirement. Historical data indicate that the average age for service retirement eligibility would be age 51 based on the age 26 average age at hire. Assuming members are on average two or three years older when they retire decreases the period of time over which pensions are assumed to be payable and hence reduces the average cost.

## Other Aspects of M&R's October 6th Report

Wyatt's forecasts indicate that health costs as a percentage of payroll will increase from 6.5% to between 9.6% and 13.2% of payroll over the next 15 years depending on the health cost trend scenario and the projected increase in active members. These projections confirm the warning in our earlier report that "demographic pressures alone will make it quite difficult for PFDPF to continue to provide health insurance for 6.5% of payroll without significant increases in deductibles and co-pays and/or retiree contributions".

We also observed in our earlier report that “lower employer contribution rates for police and firemen are not consistent with the actuarially determined contribution rate percents”.