

PUBLIC EMPLOYEES RETIREMENT FUND

ACTUARIAL VALUATION REPORT

JULY 1, 1986

 **FILE COPY**

THE *Wyatt* COMPANY

ACTUARIES AND CONSULTANTS

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EMPLOYEE BENEFITS
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OFFICES IN PRINCIPAL CITIES
AROUND THE WORLD

October 28, 1986

Legislative Commission on
Pensions and Retirement
55 State Office Building
St. Paul, Minnesota 55155

RE: PUBLIC EMPLOYEES RETIREMENT FUND

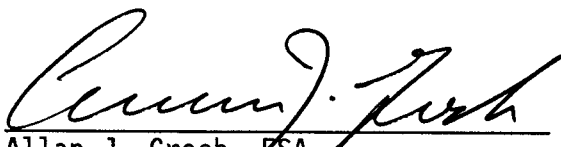
Gentlemen:

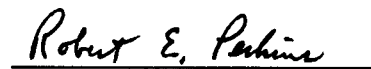
We have prepared an actuarial valuation of the Fund as of July 1, 1986 based on membership and financial data supplied by the Fund.

We certify that to the best of our knowledge and belief this actuarial valuation was performed in accordance with the requirements of Section 356.215, Minnesota Statutes, and the requirements of the Standards for Actuarial Work, adopted by the Commission on June 30, 1986 and amended on July 21 and July 28 of 1986.

Respectfully submitted,

THE WYATT COMPANY


Allan J. Grosh, FSA
Consulting Actuary


Robert E. Perkins, FSA
Consulting Actuary

PUBLIC EMPLOYEES RETIREMENT FUND

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PUBLIC EMPLOYEES RETIREMENT FUND

REPORT HIGHLIGHTS (DOLLARS IN THOUSANDS)

	<u>07/01/85</u> <u>VALUATION</u>	<u>07/01/86</u> <u>VALUATION</u>
A. CONTRIBUTIONS (TABLE 11)		
1. Statutory Contributions - Chapter 353 % of Payroll	9.36%	9.20%
2. Required Contributions - Chapter 356 % of Payroll	8.77%	8.55%
3. Sufficiency (Deficiency) (A1-A2)	0.59%	0.65%
B. FUNDING RATIOS		
1. Accrued Benefit Funding Ratio		
a. Current Assets (Table 1)	\$1,842,957	\$2,148,114
b. Current Benefit Obligations (Table 8)	\$2,310,374	\$2,590,445
c. Funding Ratio (a/b)	79.77%	82.92%
2. Accrued Liability Funding Ratio		
a. Current Assets (Table 1)	\$1,842,957	\$2,148,114
b. Actuarial Accrued Liability (Table 9)	\$2,614,116	\$2,925,006
c. Funding Ratio (a/b)	70.50%	73.44%
3. Projected Benefit Funding Ratio (Table 8)		
a. Current and Expected Future Assets	\$3,373,562	\$3,773,569
b. Current and Expected Future Benefit Obligations	\$3,209,739	\$3,580,782
c. Funding Ratio (a/b)	105.10%	105.38%
C. PLAN PARTICIPANTS		
1. Active Members		
a. Number (Table 3)	86,312	89,336
b. Projected Annual Earnings	\$1,423,911	\$1,551,555
c. Average Annual Earnings (Actual \$)	\$16,497	\$17,368
d. Average Age	42.2	42.2
e. Average Service	8.1	8.0
2. Others		
a. Service Retirements (Table 4)	17,277	18,719
b. Disability Retirements (Table 5)	654	633
c. Survivors (Table 6)	3,854	3,970
d. Deferred Retirements (Table 7)	1,863	1,746
e. Terminated Other Non-vested (Table 7)	38,986	40,023
f. Total	62,634	65,091

PUBLIC EMPLOYEES RETIREMENT FUND

COMMENTARY

Purpose

The purpose of this valuation is to determine the financial status of the Fund. In order to achieve this purpose, an actuarial valuation is made at the beginning of each fiscal year as required by Section 356.215 of Minnesota Statutes.

Report Highlights

The statutory contributions for the Public Employees Retirement Fund continue to be sufficient. The margin of sufficiency has increased from 0.59% in 1985 to 0.65% in 1986. According to this valuation a contribution rate of 8.55% is required to comply with Minnesota Law.

The financial status of the Fund can be measured by three different funding ratios:

- o The Accrued Benefit Funding Ratio is a measure of current funding status, and when viewed over a period of years, presents a view of the funding progress. This ratio is based on the Proposed Statement of Governmental Accounting Standards. This year's ratio is 82.92%. The corresponding ratio for the prior year was 79.77%.
- o The Accrued Liability Funding Ratio is also a measure of funding status and funding progress. It is based on the actuarial cost method that

has historically been used. For 1986 the ratio is 73.44%, which is an increase from the 1985 value of 70.50%.

- o The Projected Benefit Funding Ratio is a measure of the adequacy or deficiency in the contribution level. This ratio exceeds 100% and verifies that the current statutory contributions are adequate.

Asset Information

Beginning in 1984, changes in Section 356.215 of Minnesota Statutes require that the asset value used for actuarial purposes reflect a portion of the unrealized gains and losses. Only a portion of these gains and losses are considered because market values are typically volatile and could produce erratic changes in the contribution requirements from year to year.

The calculation of assets for actuarial purposes begins with the reporting of Total Assets by the Fund (Table 1, line B). These Total Assets, reduced by any Amounts Currently Payable (line C), produce the Assets Available for Benefits (line D5), which is the starting value for determining the Actuarial Value of Assets.

The calculation of the Actuarial Value of Assets is shown in Table 1 on lines F1 to F6. It combines the cost value and one-third of the difference between market value and cost value.

The term "Actuarial Value of Assets" is used to indicate that the value was determined for use in this actuarial valuation. Since Minnesota Statutes refer

to this value as "Current Assets", the latter phrase will be used in the remainder of this report.

Since this Fund participates in the Minnesota Post Retirement Investment Fund, referred to as MPRIF, the asset value shown on line A3 is initially calculated by the State Board of Investment(SBI), and is the expected amount of MPRIF participation assuming the Fund earns 5% interest. The actual amount is determined by calculating the liability based on annuitant information supplied by the Fund. If the actual liability is larger than expected, the difference is labeled a mortality loss and if smaller a gain.

Investment performance by SBI above the 5% level is not shown in the assets but will be added in on January 1, 1987 when benefits will be increased for those annuitants who have been receiving payments for 18 months. Next year's valuation will include the 1987 benefit increase in determining the MPRIF value.

After the MPRIF liability has been calculated for each participating Fund, SBI will determine each Fund's portion of the excess earnings for the January benefit increase as well as the Fund's allocated market share of MPRIF. An approximation of those values on June 30, 1986 provides the following relative comparison.

MPRIF Reserves	\$ 997,977,000
Reserves Plus Excess Earnings	1,080,000,000
MPRIF Market Value	1,250,000,000

Membership Data

Tables 3 through 6 summarize statistical information on members by category. Active members are grouped by age and completed years of service in Table 3. The earnings shown for these members are for the prior fiscal year except in the case of new hires whose earnings have been annualized.

The service retirements in Table 4 include not only those retiring from active status but also disabled members who have attained retirement age. Disabled members under retirement age are shown in Table 5. The survivors category (Table 6) includes spouses and children of deceased members.

Actuarial Balance Sheet

An actuarial balance sheet is required by Section 356.215, Subdivision 4f of Minnesota Law. This balance sheet (Table 8) establishes a method for evaluating both current and future levels of funding.

Current funding levels are evaluated by comparing Current Assets on line A to Current Benefit Obligations on line D5. The difference between the obligations and the assets is shown as Current Unfunded Liability on line G.

The measurement of the Current Benefit Obligation is based on the Proposed Statement of Governmental Accounting Standards published by the Governmental Accounting Standards Board (GASB) in August 1985. This value is known as the Actuarial Present Value of Credited Projected Benefits.

The first step in the GASB calculation for active members involves projecting salaries and service to determine future benefits payable under the plan and

) then discounting those projected benefits to the date of the valuation. The second step is to determine the discounted value of benefits for the non-active members. For those non-active members whose benefits have not commenced, the liability includes augmentation of benefits to date of commencement. The result of the first two steps is shown on line F, Total Current and Expected Future Benefit Obligations.

The third step is to determine the portion that represents Current Benefit Obligations. In the case of active members the Current Benefit Obligation is computed by attributing an equal benefit amount to each year of credited and expected future employee service. For all others, their entire liability is considered a Current Benefit Obligation.

) Current and future funding levels are evaluated by comparing Current and Future Expected Assets on line C to Current and Expected Future Benefit Obligations on line F. The difference between the obligations and the assets is shown as the Current and Future Unfunded Liability on line H.

Since line F has already been calculated, the remaining step is to determine the Expected Future Assets. The portion of the statutory contribution rate in excess of the combined normal cost rate and expense rate is first calculated. The amount of assets for line B1 can be determined by projecting from the valuation date to the amortization date (the date for paying off all unfunded liabilities) on the assumption that total payroll is increasing at 6.5% annually and then discounted to the date of the valuation.

) The Current Unfunded Liability, line G, is a measurement of the status of the

funding to the date of the valuation. The Current and Future Unfunded Liability is a measurement of the adequacy of the current statutory contribution level.

Contribution Sufficiency

The approach used by the State of Minnesota to determine contribution sufficiency is the Entry Age Normal Cost Method. The primary characteristic of this method is that it allocates costs as a level percentage of payroll.

A comparison of this actuarial method (Table 9) to the actuarial balance sheet (Table 8) shows similarities and differences. The similarity is that both approaches calculate the value of all future benefits the same way. This can be verified by comparing line F of Table 8 to line A6, column 1, of Table 9. The difference arises from the technique for allocating liabilities of active members to past and future. As noted in the prior section, the balance sheet allocates benefits and the corresponding liabilities, on the basis of service. The method used in Table 9 allocates liabilities so that the cost each year will be a constant percentage of payroll.

An Unfunded Actuarial Accrued Liability is computed under the Entry Age Normal Cost Method by comparing the liabilities allocated to past service (Actuarial Accrued Liability) to the Current Assets. This amount, line B3, is funded over the remaining years to the amortization date by a series of payments. Prior to 1984 these payments were calculated to be a level dollar amount similar to a fixed interest rate mortgage. The method of funding was changed in 1984 to produce a series of payments that remain a constant percentage of payroll each year.

Under this new approach the payments will increase 6.5% each year since that is the assumed rate of increase in payroll. Although the payment schedule will be adequate to amortize the existing unfunded, the lower payments in the earlier years will not be sufficient to cover the interest on the unfunded liability. After a few years the annual payment will cover the interest and also repay a portion of the unfunded.

Projected Cash Flow

Table 12 illustrates the anticipated cash flow over the amortization period. The cash flow begins with the Non-MPRIF Assets, which are the Current Assets reduced by the MPRIIF Reserves. Contributions are then added based on the present statutory rates for employers and employees. As members become eligible for payments from MPRIIF an amount of reserve is transferred to SBI. The other disbursements represent benefit payments made directly by the Fund.

This projected cash flow assumes that future payrolls increase by 6.5%. For purposes of this table only, new members are assumed to be hired in order to replace those who terminate from the active group. This open group method provides a more realistic picture of future cash flow. The statutory interest rate of 8% is used to project future investment return.

The amounts transferred to MPRIIF will be affected by the number of members who reach the assumed retirement age during a given year. The amount for 1988 is large because it includes those already over age 64 who are assumed to retire a year from the valuation date.

Plan Provisions

The eligibility for the Surviving Spouse Optional Annuity has been changed by decreasing the age requirement from age 55 to age 50. However, the earliest age for benefits to commence remains age 55. As a result, the increase in the Actuarial Accrued Liability (Table 10, line F) is less than 0.5%.

Annuitants in MPRI

Recently it was determined that Members retiring in 1979, 1980 and 1981 did not receive the initial benefit increase they were due from MPRI. Those missed increases are scheduled to be paid by PERA and a liability of \$651,000 has been included in this report to represent the past due payments.

TABLE 1

PUBLIC EMPLOYEES RETIREMENT FUND

ACCOUNTING BALANCE SHEET
(DOLLARS IN THOUSANDS)

July 1, 1986

	<u>MARKET VALUE</u>	<u>COST VALUE</u>
A. ASSETS		
1. Cash and Cash Equivalents	\$51,269	\$51,269
2. Investments		
a. Fixed Income	304,839	301,882
b. Equity	855,763	656,968
c. Real Estate	93,544	81,546
3. Equity in Minnesota Post-Retirement Investment Fund (MPRIF)	997,977	997,977
4. Other	893	893
B. TOTAL ASSETS	<u>\$2,304,285</u>	<u>\$2,090,535</u>
C. AMOUNTS CURRENTLY PAYABLE	\$13,671	\$13,671
D. ASSETS AVAILABLE FOR BENEFITS		
1. Member Reserves	\$421,678	\$421,678
2. Employer Reserves	870,959	657,209
3. MPRIF Reserves	997,977	997,977
4. Non-MPRIF Reserves	0	0
5. Total Assets Available for Benefits	<u>\$2,290,614</u>	<u>\$2,076,864</u>
E. TOTAL AMOUNTS CURRENTLY PAYABLE AND ASSETS AVAILABLE FOR BENEFITS	<u>\$2,304,285</u>	<u>\$2,090,535</u>
F. DETERMINATION OF ACTUARIAL VALUE OF ASSETS		
1. Cost Value of Assets Available for Benefits (D5)		\$2,076,864
2. Market Value (D5)	\$2,290,614	
3. Cost Value (D5)	2,076,864	
4. Market Over Cost (F2-F3)	<u>\$213,750</u>	
5. 1/3 of Market Over Cost(F4)/3		71,250
6. Actuarial Value of Assets (F1+F5) (Same as "Current Assets")		<u>\$2,148,114</u>

TABLE 2

PUBLIC EMPLOYEES RETIREMENT FUND

CHANGES IN ASSETS AVAILABLE FOR BENEFITS AND ASSET ALLOCATION
(DOLLARS IN THOUSANDS)

YEAR ENDING JUNE 30, 1986

	<u>MARKET VALUE</u>	<u>COST VALUE</u>
A. ASSETS AVAILABLE AT BEGINNING OF YEAR	\$1,904,822	\$1,812,025
B. OPERATING REVENUES		
1. Member Contributions	\$64,778	\$64,778
2. Employer Contributions	71,434	71,434
3. Investment Income	152,601	152,601
4. MPRIF Income	98,860	98,860
5. Net Realized Gain (Loss)	0	0
6. Other	2,642	2,642
7. Net Change in Unrealized Gain (Loss)	120,953	0
	-----	-----
8. Total Revenue	\$511,268	\$390,315
	-----	-----
C. OPERATING EXPENSES		
1. Service Retirements	\$96,584	\$96,584
2. Disability Benefits	3,375	3,375
3. Survivor Benefits	8,174	8,174
4. Refunds	12,566	12,566
5. Expenses	4,723	4,723
6. Other	54	54
	-----	-----
7. Total Disbursements	\$125,476	\$125,476
	-----	-----
D. OTHER CHANGES IN RESERVES	0	0
E. ASSETS AVAILABLE AT END OF YEAR	\$2,290,614	\$2,076,864
	=====	=====

TABLE 3

PUBLIC EMPLOYEES RETIREMENT FUND

ACTIVE MEMBERS AS OF JUNE 30, 1986

AGE	YEARS OF SERVICE								TOTAL
	<1	1-4	5-9	10-14	15-19	20-24	25-29	30+	
<25	1,653	2,624	268						4,545
25-29	1,824	4,764	3,376	151					10,115
30-34	1,811	4,556	4,760	1,942	86				13,155
35-39	1,842	4,460	4,498	2,785	884	37			14,506
40-44	1,626	3,337	3,568	2,049	1,313	317	16		12,226
45-49	687	2,094	3,006	2,146	1,391	617	250	26	10,217
50-54	483	1,473	2,292	2,026	1,735	661	420	197	9,287
55-59	295	1,023	1,789	1,811	1,813	847	441	275	8,294
60-64	134	586	1,096	1,225	1,296	623	250	209	5,419
65+	54	225	420	390	272	108	55	48	1,572
TOTAL	10,409	25,142	25,073	14,525	8,790	3,210	1,432	755	89,336

AVERAGE ANNUAL EARNINGS

AGE	YEARS OF SERVICE								ALL
	<1	1-4	5-9	10-14	15-19	20-24	25-29	30+	
<25	8,306	11,916	14,546						10,758
25-29	9,706	15,072	17,369	18,066					14,916
30-34	9,497	15,387	20,057	20,635	20,995				17,078
35-39	8,347	14,104	19,793	24,429	25,621	22,696			17,843
40-44	7,584	12,856	16,725	21,733	26,975	26,758	28,490		16,669
45-49	8,062	12,328	15,074	17,379	22,661	27,591	27,305	27,008	16,642
50-54	8,051	12,075	14,498	16,084	18,849	26,061	30,192	29,140	16,781
55-59	7,045	11,396	14,427	15,999	17,500	22,536	26,251	30,551	16,797
60-64	7,210	10,347	13,504	15,445	17,232	20,496	24,421	29,018	16,243
65+	5,099	6,629	9,225	11,054	12,478	19,292	18,790	23,467	11,189
ALL	8,559	13,594	17,140	19,102	20,654	24,147	27,010	29,186	16,319

PRIOR FISCAL YEAR EARNINGS (IN THOUSANDS) BY YEARS OF SERVICE

<1	1-4	5-9	10-14	15-19	20-24	25-29	30+	TOTAL
89,087	341,789	429,741	277,455	181,550	77,513	38,678	22,035	1,457,848

TABLE 4

PUBLIC EMPLOYEES RETIREMENT FUND

SERVICE RETIREMENTS AS OF JUNE 30, 1986

AGE	YEARS RETIRED							TOTAL
	<1	1-4	5-9	10-14	15-19	20-24	25+	
<50								0
50-54	3	3						6
55-59	227	463	1					691
60-64	511	2,074	92	1				2,678
65-69	385	4,004	1,163	22				5,574
70-74	46	728	3,763	342	5			4,884
75-79	7	74	359	2,124	108	2		2,674
80-84	2	15	44	372	801	46	2	1,282
85+		3	16	59	282	396	174	930
TOTAL	1,181	7,364	5,438	2,920	1,196	444	176	18,719

AVERAGE ANNUAL ANNUITY

AGE	YEARS RETIRED							ALL
	<1	1-4	5-9	10-14	15-19	20-24	25+	
<50								0
50-54	19,582	8,527						14,054
55-59	8,912	10,463	6,824					9,948
60-64	5,979	7,640	7,822	7,755				7,329
65-69	4,612	5,116	5,568	5,357				5,176
70-74	2,893	3,567	4,625	6,638	2,714			4,590
75-79	2,229	1,665	3,516	3,906	3,250	3,779		3,761
80-84	4,964	2,464	2,759	2,922	3,095	3,394	5,502	3,043
85+		1,373	3,198	4,049	3,350	3,346	3,277	3,370
ALL	5,987	5,970	4,789	4,116	3,167	3,353	3,302	5,072

TOTAL ANNUAL ANNUITY (IN THOUSANDS) BY YEARS OF RETIREMENT

<1	1-4	5-9	10-14	15-19	20-24	25+	TOTAL
7,071	43,960	26,041	12,019	3,788	1,489	581	94,949

TABLE 5

PUBLIC EMPLOYEES RETIREMENT FUND

DISABILITY RETIREMENTS AS OF JUNE 30, 1986

AGE	YEARS DISABLED							TOTAL
	<1	1-4	5-9	10-14	15-19	20-24	25+	
<50	5	27	7	1				40
50-54	10	44	12	8				74
55-59	26	93	52	10	2			183
60-64	20	156	123	33	3	1		336
65-69								0
70-74								0
75-79								0
80-84								0
85+								0
TOTAL	61	320	194	52	5	1	0	633

AVERAGE ANNUAL BENEFIT

AGE	YEARS DISABLED							ALL
	<1	1-4	5-9	10-14	15-19	20-24	25+	
<50	3,359	5,136	3,443	5,014				4,615
50-54	3,450	6,854	5,054	3,638				5,754
55-59	3,652	5,353	5,006	5,617	2,998			5,001
60-64	2,893	4,889	5,933	3,673	2,707	2,672		5,007
65-69								0
70-74								0
75-79								0
80-84								0
85+								0
TOTAL	3,346	5,315	5,540	4,067	2,824	2,672	0	5,068

TOTAL ANNUAL BENEFIT (IN THOUSANDS) BY YEARS OF DISABILITY

<1	1-4	5-9	10-14	15-19	20-24	25+	TOTAL
204	1,701	1,075	211	14	3	0	3,208

TABLE 6

PUBLIC EMPLOYEES RETIREMENT FUND

SURVIVORS AS OF JUNE 30, 1986

AGE	YEARS SINCE DEATH							TOTAL
	<1	1-4	5-9	10-14	15-19	20-24	25+	
<50	5	41	47	26	16	10		145
50-54	6	41	28	8	9	1		93
55-59	12	106	50	36	18	11	5	238
60-64	15	139	111	58	41	26	4	394
65-69	11	123	221	109	62	38	16	580
70-74	11	71	159	200	108	59	37	645
75-79	18	62	115	164	141	83	47	630
80-84	14	56	94	119	117	130	47	577
85+	9	61	99	142	144	112	101	668
TOTAL	101	700	924	862	656	470	257	3,970

AVERAGE ANNUAL BENEFIT

AGE	YEARS SINCE DEATH							ALL
	<1	1-4	5-9	10-14	15-19	20-24	25+	
<50	6,810	6,098	4,933	3,424	1,326	1,391		4,414
50-54	7,847	6,172	5,077	3,546	1,394	1,603		5,213
55-59	7,064	6,022	5,157	3,518	1,453	1,600	1,628	4,872
60-64	5,529	5,024	5,063	3,842	1,545	1,526	1,629	4,253
65-69	3,344	3,729	4,467	3,428	1,505	1,512	1,624	3,505
70-74	1,940	2,511	3,627	3,174	1,553	1,535	1,631	2,682
75-79	1,981	2,018	2,294	3,030	1,856	1,574	1,617	2,206
80-84	1,889	1,738	1,957	2,449	2,054	1,726	1,637	1,977
85+	1,798	1,697	1,876	1,736	1,857	1,821	1,769	1,799
ALL	3,814	4,004	3,670	2,912	1,759	1,659	1,683	2,886

TOTAL ANNUAL BENEFIT (IN THOUSANDS) BY YEARS SINCE DEATH

<1	1-4	5-9	10-14	15-19	20-24	25+	TOTAL
385	2,803	3,391	2,510	1,154	780	433	11,456

TABLE 7

PUBLIC EMPLOYEES RETIREMENT FUND

RECONCILIATION OF MEMBERS

	<u>ACTIVES</u>	<u>TERMINATED</u>	
		<u>DEFERRED RETIREMENT</u>	<u>OTHER NON-VESTED</u>
A. On June 30, 1985	86,312	1,863	38,986
B. Additions	13,876	426	NA
C. Deletions:			
1. Service Retirement	(1,487)	(193)	
2. Disability	(107)		
3. Death	(107)	(2)	
4. Terminated-Deferred	(54)		
5. Terminated-Refund	(5,338)	(33)	NA
6. Terminated-Other Non-vested	(3,572)		
7. Returned as Active		(16)	NA
D. Data Adjustments	(187)	(299)	NA
	Vested 28,712		
	Non-Vested 60,624		
E. Total on June 30, 1986	89,336	1,746	40,023

	<u>RECIPIENTS</u>		
	<u>RETIREMENT ANNUITANTS</u>	<u>DISABLED</u>	<u>SURVIVORS</u>
A. On June 30, 1985	17,277	654	3,854
B. Additions	1,680	107	292
C. Deletions:			
1. Service Retirement		(2)	
2. Death	(212)	(127)	(178)
3. Annuity Expired	0	0	0
4. Returned as Active	0	0	
D. Data Adjustments	(26)	1	2
E. Total on June 30, 1986	18,719	633	3,970

TABLE 8

PUBLIC EMPLOYEES RETIREMENT FUND

ACTUARIAL BALANCE SHEET
(DOLLARS IN THOUSANDS)

JULY 1, 1986

A. CURRENT ASSETS (TABLE 1, F6)				\$2,148,114
B. EXPECTED FUTURE ASSETS				
1. Present Value of Expected Future Supplemental Contributions				969,679
2. Present Value of Future Normal Costs				655,776
3. Total Expected Future Assets				1,625,455
C. TOTAL CURRENT AND EXPECTED FUTURE ASSETS				\$3,773,569
D. CURRENT BENEFIT OBLIGATIONS	<u>Non-Vested</u>	<u>Vested</u>	<u>Total</u>	
1. Benefit Recipients				
a. Retirement Annuities		\$978,617		\$978,617
b. Disability Benefits		16,422		16,422
c. Surviving Spouse's Benefits		106,520		106,520
d. Surviving Children's Benefits		676		676
2. Deferred Retirements with Future Augmentation		42,574		42,574
3. Former Members without Vested Rights		8,550		8,550
4. Active Members				
a. Retirement Annuities	107,099	799,664		906,763
b. Disability Benefits	9,989	59,957		69,946
c. Survivors' Benefits	10,189	89,066		99,255
d. Deferred Retirements	75,079	191,114		266,193
e. Refund Liability Due to Death or Withdrawal	57,645	37,284		94,929
5. Total Current Benefit Obligations	\$260,001	\$2,330,444		\$2,590,445
E. EXPECTED FUTURE BENEFIT OBLIGATIONS				\$990,337
F. TOTAL CURRENT AND EXPECTED FUTURE BENEFIT OBLIGATIONS				\$3,580,782
G. CURRENT UNFUNDED LIABILITY (D5-A)				\$442,331
H. CURRENT AND FUTURE UNFUNDED LIABILITY (F-C)				(\$192,787)

TABLE 9

PUBLIC EMPLOYEES RETIREMENT FUND

**DETERMINATION OF UNFUNDED ACTUARIAL ACCRUED LIABILITY
AND SUPPLEMENTAL CONTRIBUTION RATE
(DOLLARS IN THOUSANDS)**

JULY 1, 1986

	ACTUARIAL PRESENT VALUE OF PROJECTED BENEFITS <u>(1)</u>	ACTUARIAL PRESENT VALUE OF FUTURE NORMAL COSTS <u>(2)</u>	ACTUARIAL ACCRUED LIABILITY <u>(3)=(1)-(2)</u>
A. DETERMINATION OF ACTUARIAL ACCRUED LIABILITY (AAL)			
1. Active Members			
a. Retirement Annuities	\$1,589,985	\$314,482	\$1,275,503
b. Disability Benefits	114,869	26,921	87,948
c. Survivors Benefits	161,353	43,403	117,950
d. Deferred Retirements	424,164	146,724	277,440
e. Refunds Due to Death or Withdrawal	137,052	124,246	12,806
f. Total	<u>\$2,427,423</u>	<u>\$655,776</u>	<u>\$1,771,647</u>
2. Deferred Retirements with Future Augmentation	\$42,574		\$42,574
3. Former Members Without Vested Rights	8,550		8,550
4. Annuitants in MPRIF	997,977		997,977
5. Recipients Not in MPRIF	104,258		104,258
6. Total AAL	<u>\$3,580,782</u>	<u>\$655,776</u>	<u>\$2,925,006</u>
B. DETERMINATION OF UNFUNDED ACTUARIAL ACCRUED LIABILITY (UAAL)			
1. AAL (A6)			\$2,925,006
2. Current Assets (Table 1,F6)			2,148,114
3. UAAL (B1-B2)			<u>\$776,892</u>
C. DETERMINATION OF SUPPLEMENTAL CONTRIBUTION RATE			
1. Present Value of Future Payrolls Through the Amortization Date of July 1, 2009			\$29,473,525
2. Supplemental Contribution Rate (B3/C1)			2.64%

TABLE 10

PUBLIC EMPLOYEES RETIREMENT FUND
CHANGES IN UNFUNDED ACTUARIAL ACCRUED LIABILITY (UAAL)
(DOLLARS IN THOUSANDS)

YEAR ENDING JUNE 30, 1986

A. UAAL AT BEGINNING OF YEAR	\$771,159
B. CHANGE DUE TO INTEREST REQUIREMENTS AND CURRENT RATE OF FUNDING	
1. Normal Cost and Expenses	\$88,775
2. Contribution	(136,212)
3. Interest on A, B1, and B2	59,795

4. Total (B1+B2+B3)	\$12,358

C. EXPECTED UAAL AT END OF YEAR (A+B4)	\$783,517
D. INCREASE (DECREASE) DUE TO ACTUARIAL LOSSES (GAINS) BECAUSE OF EXPERIENCE DEVIATIONS FROM EXPECTED	
1. Salary Increases	\$5,803
2. Investment Return	(100,539)
3. MPRIF Mortality	13,178
4. Mortality of Other Benefit Recipients	4,335
5. Other Items	56,960

6. Total	(\$20,263)

E. UAAL AT END OF YEAR BEFORE PLAN AMENDMENTS AND CHANGES IN ACTUARIAL ASSUMPTIONS (C+D6)	\$763,254
F. CHANGE IN ACTUARIAL ACCRUED LIABILITY DUE TO PLAN AMENDMENTS	\$13,638
G. CHANGE IN ACTUARIAL ACCRUED LIABILITY DUE TO CHANGES IN ACTUARIAL ASSUMPTIONS	\$0

H. UAAL AT END OF YEAR (E+F+G)	\$776,892
	=====

TABLE 11

PUBLIC EMPLOYEES RETIREMENT FUND
DETERMINATION OF CONTRIBUTION SUFFICIENCY
(DOLLARS IN THOUSANDS)

JULY 1, 1986

	<u>% OF PAYROLL</u>	<u>\$ AMOUNT</u>
A. STATUTORY CONTRIBUTIONS - CHAPTER 353		
1. Employee Contributions	4.37%	\$67,813
2. Employer Contributions	4.83%	74,926
	-----	-----
3. Total	9.20%	\$142,739
	=====	=====
B. REQUIRED CONTRIBUTIONS - CHAPTER 356		
1. Normal Cost		
a. Retirement Benefits	2.74%	\$42,573
b. Disability Benefits	0.22%	3,406
c. Survivors	0.36%	5,595
d. Deferred Retirement Benefits	1.18%	18,236
e. Refunds Due to Death or Withdrawal	1.09%	16,928
	-----	-----
f. Total	5.59%	\$86,738
	-----	-----
2. Supplemental Contribution Amortization by July 1, 2009 of UAAL of \$776,892	2.64%	\$40,961
3. Allowance for Expenses	0.32%	\$4,965
	-----	-----
4. Total	8.55%	\$132,664
C. CONTRIBUTION SUFFICIENCY (DEFICIENCY) (A3-B4)		
	0.65%	\$10,075

Note: Projected Annual Payroll for Fiscal Year Beginning
on July 1, 1986 is \$1,551,555

TABLE 12

PUBLIC EMPLOYEES RETIREMENT FUND

PROJECTED CASH FLOW
(DOLLARS IN THOUSANDS)

<u>FISCAL YEAR</u>	<u>STATUTORY CONTRIBUTIONS</u>	<u>TRANSFERS TO MPRIF</u>	<u>OTHER DISBURSEMENTS</u>	<u>INVESTMENT RETURN</u>	<u>NON-MPRIF ASSETS YEAR END</u>
1986					\$1,150,137
1987	142,739	\$37,113	\$36,818	\$94,763	1,313,708
1988	149,679	119,389	34,239	104,939	1,414,698
1989	158,179	63,194	33,125	115,650	1,592,208
1990	167,169	80,585	32,905	129,524	1,775,411
1991	176,727	93,735	32,744	144,043	1,969,702
1992	186,824	108,367	33,245	159,385	2,174,299
1993	197,648	116,701	34,176	175,815	2,396,885
1994	209,128	126,922	35,697	193,611	2,637,005
1995	221,404	141,644	37,554	212,649	2,891,860
1996	234,470	153,810	39,360	233,001	3,166,161
1997	248,232	189,145	41,527	253,995	3,437,716
1998	262,973	190,541	43,874	276,160	3,742,434
1999	278,884	193,690	46,605	300,938	4,081,961
2000	295,908	214,860	49,684	327,811	4,441,136
2001	313,913	247,088	52,646	355,858	4,811,173
2002	333,219	255,987	55,863	385,749	5,218,291
2003	353,871	260,460	59,397	418,824	5,671,129
2004	376,038	262,942	63,290	455,683	6,176,618
2005	399,856	319,926	67,508	494,626	6,683,666
2006	425,283	335,323	71,926	535,415	7,237,115
2007	452,334	371,123	76,727	579,149	7,820,748
2008	481,286	380,514	81,728	626,422	8,466,214
2009	512,144	402,660	87,190	678,189	9,166,697
2010	545,147	527,175	92,812	730,342	9,822,199
2011	580,440	568,955	98,320	782,303	10,517,667

TABLE 13

PUBLIC EMPLOYEES RETIREMENT FUND
SUMMARY OF ACTUARIAL ASSUMPTIONS AND METHODS

Interest:	Pre-Retirement: 8% per annum
	Post-Retirement: 5% per annum
Salary Increases:	Reported salary for prior fiscal year, with new hires annualized, increased 6.5% to current fiscal year and 6.5% annually for each future year.
Mortality:	Pre-Retirement:
	Male - UP-1984 Unisex set forward 1 year
	Female - UP-1984 Unisex set back 4 years
	Post-Retirement:
	Male - Same as above
	Female - Same as above
	Post-Disability:
	Male - 1965 RRB rates
	Female - 1965 RRB rates
Retirement Age:	Age 64, or if over age 64, one year from valuation date. In addition, 50% of employees are assumed to retire under the Rule of 85 or Rule of 90 when first eligible.
Separation:	Graded rates shown in rate table.
Disability:	Rates as shown in rate table.
Administrative and Investment Expenses:	Prior year expenses expressed as percentage of prior year payroll. (0.32% of payroll)
Return of Contributions:	All employees withdrawing after age 40 were assumed to leave their contributions on deposit and receive a deferred annuitant benefit.
Family Composition:	85% of male Members and 65% of female Members are assumed to be married. Female is four years younger than male. Assume Members have no children.
Social Security:	NA
Benefit Increases After Retirement:	Payment of earnings on retired reserves in excess of 5% accounted for by 5% post-retirement assumptions.
Special Consideration:	NA

TABLE 13
(cont)

Actuarial Cost Method:	Entry Age Normal Cost Method with normal costs expressed as a level percentage of earnings. Under this method Actuarial Gains(Losses) reduce(increase) the Unfunded Actuarial Accrued Liability.
Asset Valuation Method:	Cost Value plus one-third Unrealized Gains or Losses.
Payment on the Unfunded Actuarial Accrued Liability:	A level percentage of payroll each year to the statutory amortization date assuming payroll increases of 6.5% per annum.
Projected Cash Flow Method:	Cash flows from the Non-MPRIF portion of the Fund were projected based on the current plan benefits, participant data, and actuarial assumptions. In addition, new entrants were assumed so that the total payroll would increase by 6.5% per annum.

TABLE 13
(cont)SEPARATIONS EXPRESSED AS THE
NUMBER OF OCCURRENCES PER 10,000

Age	Death		Withdrawal		Disability		Retirement	
	Male	Female	Male	Female	Male	Female	Male	Female
20	13	14	2,750	3,832	9	9	0	0
21	12	14	2,638	3,777	9	9	0	0
22	12	14	2,505	3,712	9	9	0	0
23	11	14	2,390	3,631	10	10	0	0
24	11	13	2,265	3,516	10	10	0	0
25	11	13	2,160	3,356	10	10	0	0
26	11	12	2,045	3,226	10	10	0	0
27	11	12	1,925	3,103	10	10	0	0
28	11	11	1,820	2,997	11	11	0	0
29	11	11	1,715	2,891	11	11	0	0
30	11	11	1,610	2,805	11	11	0	0
31	12	11	1,528	2,694	11	11	0	0
32	12	11	1,435	2,590	11	11	0	0
33	13	11	1,330	2,463	12	12	0	0
34	14	11	1,245	2,325	12	12	0	0
35	15	11	1,170	2,160	12	12	0	0
36	16	12	1,092	1,990	12	12	0	0
37	18	12	1,010	1,830	13	13	0	0
38	19	13	940	1,650	13	13	0	0
39	21	14	880	1,485	14	14	0	0
40	23	15	818	1,340	15	15	0	0
41	26	16	762	1,230	16	16	0	0
42	28	18	715	1,130	17	17	0	0
43	31	19	670	1,045	18	18	0	0
44	34	21	622	972	20	20	0	0
45	38	23	580	900	22	22	0	0
46	42	26	539	830	23	23	0	0
47	46	28	497	787	25	25	0	0
48	51	31	450	745	27	27	0	0
49	56	34	420	704	30	30	0	0
50	62	38	385	663	33	33	0	0
51	69	42	345	628	36	36	0	0
52	75	46	310	595	40	40	0	0
53	83	51	270	555	45	45	0	0
54	90	56	230	522	51	51	0	0

TABLE 13
(cont)

Age	Death		Withdrawal		Disability		Retirement	
	Male	Female	Male	Female	Male	Female	Male	Female
55	99	62	195	478	58	58	0	0
56	108	69	150	410	66	66	0	0
57	119	75	100	362	76	76	0	0
58	130	83	50	210	88	88	0	0
59	142	90	0	50	102	102	0	0
60	155	99	0	0	118	118	0	0
61	170	108	0	0	136	136	0	0
62	187	119	0	0	157	157	0	0
63	205	130	0	0	181	181	0	0
64	226	142	0	0	208	208	10,000	10,000
65	248	155	0	0	0	0	0	0
66	272	170	0	0	0	0	0	0
67	296	187	0	0	0	0	0	0
68	321	205	0	0	0	0	0	0
69	347	226	0	0	0	0	0	0
70	377	248	0	0	0	0	0	0

TABLE 15

PUBLIC EMPLOYEES RETIREMENT FUND

MEMBERSHIP CHANGES
(DOLLARS IN THOUSANDS)

JUNE 30, 1986

A.	ACTIVE MEMBERS	<u>NUMBER</u>	<u>PAYROLL</u>
1.	As of the Last Valuation Date	86,312	\$1,337,535
2.	New Entrants	13,876	NA
3.	Total	100,188	NA
4.	Separations from Active Service		
a.	Refund of Contributions	(5,338)	NA
b.	Separation with Deferred Annuity	(54)	NA
c.	Separation with neither Refund nor Deferred Annuity	(3,572)	NA
d.	Disability	(107)	NA
e.	Death	(107)	NA
f.	Retirement with Service Annuity	(1,487)	NA
5.	Total Separations	(10,665)	NA
6.	Data Adjustments	(187)	NA
7.	As of Current Valuation Date	89,336	1,457,848
B.	SERVICE RETIREMENT ANNUITANTS	<u>NUMBER</u>	<u>ANNUAL ANNUITY</u>
1.	As of the Last Valuation Date	17,277	\$79,759
2.	New Entrants	1,680	NA
3.	Total	18,957	NA
4.	Terminations		
a.	Deaths	(212)	NA
b.	Others	0	NA
5.	Total Terminations	(212)	NA
6.	Data Adjustments	(26)	NA
7.	As of Current Valuation Date	18,719	94,949
C.	DISABLED ANNUITANTS	<u>NUMBER</u>	<u>ANNUAL ANNUITY</u>
1.	As of the Last Valuation Date	654	\$3,212
2.	New Entrants	107	NA
3.	Total	761	NA
4.	Terminations		
a.	Deaths	(127)	NA
b.	Others	(2)	NA
5.	Total Terminations	(129)	NA
6.	Data Adjustments	1	NA
7.	As of Current Valuation Date	633	3,208

TABLE 15
(cont)

D. SURVIVING SPOUSE ANNUITANTS		
	<u>NUMBER</u>	<u>ANNUAL ANNUITY</u>
1. As of the Last Valuation Date	3,787	\$9,650
2. New Entrants	292	NA
3. Total	4,079	NA
4. Terminations		
a. Deaths	(178)	NA
b. Others	0	NA
5. Total Terminations	(178)	NA
6. Data Adjustments	(2)	NA
7. As of Current Valuation Date	3,899	11,156
E. SURVIVING CHILDREN ANNUITANTS		
	<u>NUMBER</u>	<u>ANNUAL ANNUITY</u>
1. As of the Last Valuation Date	67	\$270
2. New Entrants	0	NA
3. Total	67	NA
4. Terminations		
a. Deaths	0	NA
b. Others	0	NA
5. Total Terminations	0	NA
6. Data Adjustments	4	NA
7. As of Current Valuation Date	71	300
F. DEFERRED ANNUITANTS		
	<u>NUMBER</u>	<u>ANNUAL ANNUITY</u>
1. As of the Last Valuation Date	1,863	\$2,093
2. New Entrants	426	NA
3. Total	2,289	NA
4. Terminations		
a. Deaths	(2)	NA
b. Others	(242)	NA
5. Total Terminations	(244)	NA
6. Data Adjustments	(299)	NA
7. As of Current Valuation Date	1,746	5,150

PUBLIC EMPLOYEES RETIREMENT FUND

TABLE 3A
BASIC

ACTIVE MEMBERS AS OF JUNE 30, 1986

AGE	YEARS OF SERVICE								TOTAL
	<1	1-4	5-9	10-14	15-19	20-24	25-29	30+	
<25									0
25-29									0
30-34					1				1
35-39				1	83	25			109
40-44					221	250	15		486
45-49			1	4	247	466	227	23	968
50-54	1		4	2	334	521	323	176	1,361
55-59		1	1		356	640	347	207	1,552
60-64		1			270	484	204	144	1,103
65+		1		1	63	85	45	31	226
TOTAL	1	3	6	8	1,575	2,471	1,161	581	5,806

AVERAGE ANNUAL EARNINGS

AGE	YEARS OF SERVICE								ALL
	<1	1-4	5-9	10-14	15-19	20-24	25-29	30+	
<25									0
25-29									0
30-34					6,693				6,693
35-39				10,550	24,255	23,535			23,964
40-44					27,875	26,359	28,520		27,115
45-49			24,002	30,432	23,504	26,684	26,636	27,030	25,882
50-54	20,915		11,228	38,282	19,734	24,422	28,774	28,907	24,863
55-59		27,787	13,415		16,333	21,168	25,129	28,553	21,929
60-64		22,000			15,918	19,603	23,763	27,374	20,487
65+		5,384		6,075	11,294	18,108	16,999	23,766	16,654
ALL	20,915	18,390	13,722	26,865	19,937	23,032	25,926	28,053	23,266

PRIOR FISCAL YEAR EARNINGS (IN THOUSANDS) BY YEARS OF SERVICE

<1	1-4	5-9	10-14	15-19	20-24	25-29	30+	TOTAL
21	55	82	215	31,401	56,910	30,101	16,299	135,084

PUBLIC EMPLOYEES RETIREMENT FUND

TABLE 4A
BASIC

SERVICE RETIREMENTS AS OF JUNE 30, 1986

AGE	YEARS RETIRED							TOTAL
	<1	1-4	5-9	10-14	15-19	20-24	25+	
<50								0
50-54	3	3						6
55-59	146	347	1					494
60-64	218	1,295	85	1				1,599
65-69	126	2,069	802	19				3,016
70-74	13	269	2,376	299	5			2,962
75-79	1	18	197	1,508	103	2		1,829
80-84	1	8	22	259	628	46	2	966
85+		1	12	47	237	396	174	867
TOTAL	508	4,010	3,495	2,133	973	444	176	11,739

AVERAGE ANNUAL ANNUITY

AGE	YEARS RETIRED							ALL
	<1	1-4	5-9	10-14	15-19	20-24	25+	
<50								0
50-54	19,582	8,527						14,054
55-59	12,373	12,952	6,824					12,768
60-64	9,681	10,401	8,116	7,755				10,179
65-69	8,421	7,506	6,991	5,762				7,396
70-74	6,602	6,928	5,932	6,954	2,714			6,123
75-79	11,006	4,194	5,142	4,493	3,277	3,779		4,494
80-84	7,953	4,007	4,508	3,433	3,465	3,394	5,502	3,490
85+		3,176	4,019	4,577	3,520	3,346	3,277	3,456
ALL	10,121	8,851	6,169	4,724	3,455	3,353	3,302	6,619

TOTAL ANNUAL ANNUITY (IN THOUSANDS) BY YEARS OF RETIREMENT

<1	1-4	5-9	10-14	15-19	20-24	25+	TOTAL
5,141	35,494	21,559	10,076	3,361	1,489	581	77,701

PUBLIC EMPLOYEES RETIREMENT FUND

TABLE 5A
BASIC

DISABILITY RETIREMENTS AS OF JUNE 30, 1986

AGE	YEARS DISABLED							TOTAL
	<1	1-4	5-9	10-14	15-19	20-24	25+	
<50		8	5	1				14
50-54	1	24	6	6				37
55-59	4	43	31	8	1			87
60-64	3	57	69	29	3	1		162
65-69								0
70-74								0
75-79								0
80-84								0
85+								0
TOTAL	8	132	111	44	4	1	0	300

AVERAGE ANNUAL BENEFIT

AGE	YEARS DISABLED							ALL
	<1	1-4	5-9	10-14	15-19	20-24	25+	
<50		10,090	4,155	5,014				7,608
50-54	10,577	10,772	7,913	4,293				9,252
55-59	9,884	9,041	7,299	6,179	4,321			8,141
60-64	9,227	8,730	9,078	4,107	2,707	2,672		7,911
65-69								0
70-74								0
75-79								0
80-84								0
85+								0
TOTAL	9,724	9,285	8,297	4,530	3,111	2,672	0	8,129

TOTAL ANNUAL BENEFIT (IN THOUSANDS) BY YEARS OF DISABILITY

<1	1-4	5-9	10-14	15-19	20-24	25+	TOTAL
78	1,226	921	199	12	3	0	2,439

PUBLIC EMPLOYEES RETIREMENT FUND

TABLE 6A
BASIC

SURVIVORS AS OF JUNE 30, 1986

AGE	YEARS SINCE DEATH							TOTAL
	<1	1-4	5-9	10-14	15-19	20-24	25+	
<50	3	30	44	25	16	10		128
50-54	3	31	27	8	9	1		79
55-59	9	74	44	33	18	11	5	194
60-64	9	101	94	52	41	26	4	327
65-69	8	86	181	89	62	38	16	480
70-74	11	62	125	170	105	59	37	569
75-79	18	59	107	139	137	83	47	590
80-84	14	56	90	116	112	130	47	565
85+	9	61	99	141	139	112	100	661
TOTAL	84	560	811	773	639	470	256	3,593

AVERAGE ANNUAL BENEFIT

AGE	YEARS SINCE DEATH							ALL
	<1	1-4	5-9	10-14	15-19	20-24	25+	
<50	10,038	7,292	5,079	3,538	1,326	1,391		4,656
50-54	12,357	7,303	5,200	3,546	1,394	1,603		5,650
55-59	8,673	7,883	5,571	3,652	1,453	1,600	1,628	5,562
60-64	5,946	6,099	5,607	4,133	1,545	1,526	1,629	4,651
65-69	3,793	4,433	4,950	3,878	1,505	1,512	1,624	3,811
70-74	1,940	2,683	4,031	3,428	1,549	1,535	1,631	2,791
75-79	1,981	2,021	2,319	3,316	1,846	1,574	1,617	2,243
80-84	1,889	1,738	1,982	2,412	2,072	1,726	1,637	1,974
85+	1,798	1,697	1,876	1,744	1,882	1,821	1,773	1,806
ALL	3,914	4,486	3,882	3,062	1,762	1,659	1,684	2,976

TOTAL ANNUAL BENEFIT (IN THOUSANDS) BY YEARS SINCE DEATH

<1	1-4	5-9	10-14	15-19	20-24	25+	TOTAL
329	2,512	3,147	2,367	1,126	780	431	10,692

PUBLIC EMPLOYEES RETIREMENT FUND
DETERMINATION OF CONTRIBUTION SUFFICIENCY
(DOLLARS IN THOUSANDS)

TABLE 11A
BASIC

JULY 1, 1986

	<u>% OF PAYROLL</u>	<u>\$ AMOUNT</u>
A. STATUTORY CONTRIBUTIONS - CHAPTER 353		
1. Employee Contributions	8.00%	\$11,501
2. Employer Contributions	10.50%	15,095
	-----	-----
3. Total	18.50%	\$26,596
	=====	=====
B. REQUIRED CONTRIBUTIONS - CHAPTER 356		
1. Normal Cost		
a. Retirement Benefits	3.81%	\$5,475
b. Disability Benefits	0.42%	605
c. Survivors	1.52%	2,180
d. Deferred Retirement Benefits	1.85%	2,657
e. Refunds Due to Death or Withdrawal	2.03%	2,924
	-----	-----
f. Total	9.63%	\$13,841
	-----	-----

Note: Projected Annual Payroll for Fiscal Year Beginning
on July 1, 1986 is \$143,758

PUBLIC EMPLOYEES RETIREMENT FUND

**TABLE 14A
BASIC**

SUMMARY OF PLAN PROVISIONS

Eligibility	A public employee who is not covered under the Social Security Act. General exceptions are employees covered by other public funds and certain part-time employees. City managers and persons holding elective office may choose to become Members.
Contributions	
Member	8% of Salary.
Employer	10.5% of Salary.
Allowable Service	Service during which Member contributions were deducted. May also include certain leaves of absence, military service, and service prior to Membership.
Salary	Includes amounts deducted for deferred compensation or supplemental retirement plans, net income from fees and sick leave payments funded by the employer. Excludes lump sum payments at separation and Workers' Compensation benefits.
Average Salary	Average of the 5 highest successive years of Salary.

RETIREMENT

Normal Retirement Benefit

Eligibility Age 65 and 10 years of Allowable Service.
 Age 62 and 30 years of Allowable Service.
 Rule of 90: Age plus Allowable Service totals 90.
 Rule of 85: Age 55 and age plus Allowable Service
 totals 85 and retirement prior to 1/1/87.

Amount 2% of Average Salary for the first 10 years of
 Allowable Service and 2.5% of Average Salary for each
 subsequent year.

Early Retirement Benefit

Eligibility Age 55 and 10 years of Allowable Service.
 Any age with 30 years of Allowable Service.

Amount Normal Retirement Benefit based on Allowable Service
 and Average Salary at retirement date with reduction
 of 0.25% for each month the Member is under age 65 at
 time of retirement (age 62 if 30 years of Allowable
 Service).

TABLE 14A
BASIC
(cont)

Form of Payment	Life annuity with return on death of any balance of contributions over aggregate monthly payments. Actuarially equivalent options are: 50% or 100% joint and survivor 50% or 100% bounce back joint and survivor (option is cancelled if Member is pre-deceased by beneficiary)
Benefit Increases	Benefits may be increased each January 1 depending on the investment performance of the Minnesota Post Retirement Investment Fund (MPRIF).
DISABILITY	
Disability Benefit Eligibility	Total and permanent disability before age 65 with 5 years of Allowable Service if age 50 or older, or with 10 years of Allowable Service if younger than age 50.
Amount	Normal Retirement Benefit based on Allowable Service and Average Salary at disability without reduction for commencement before age 65. Supplemental benefit of \$5 per month for each year under age 65 at commencement of disability (maximum of \$50 per month). Benefit is reduced by Workers' Compensation. Payments stop at age 65, or earlier if disability ceases or death occurs. Benefits may be reduced on resumption of partial employment.
Form of Payment	Same as for retirement.
Benefit Increases	Adjusted by PERA to provide same increase as MPRIF.
Retirement After Disability Eligibility	Age 65 with continued disability.
Amount	Any optional annuity continues. Otherwise the larger of the disability benefit paid before age 65 or the normal retirement benefit available at age 65, or an actuarially equivalent optional annuity.
Benefit Increases	Same as for retirement.
DEATH	
Surviving Spouse Benefit Eligibility	Active Member with 18 months of Allowable Service or Member receiving a disability benefit.

TABLE 14A
BASIC
(cont)

Amount	50% of Salary averaged over last 6 months. Maximum family benefit is \$1,000 per month. Benefits paid until spouse's death but no payments while spouse is remarried.
	Surviving spouse optional annuity may be elected in lieu of this benefit.
Surviving Dependent Children's Benefit Eligibility	Active Member with 18 months of Allowable Service or Member receiving a disability benefit.
Amount	10% of Salary averaged over last 6 months for each child. Family benefit minimum (including spouse's benefit) of 50% of Salary and maximum of \$1,000 per month. Benefits paid until child marries, dies, or attains age 18 (age 22 if full time student).
Surviving Spouse Optional Annuity Eligibility	Member or former Member who dies before retirement or disability benefits commence, if age 50 with 10 years of Allowable Service or any age with 30 years of Allowable Service. If the Member dies before age 55, benefits commence when Member would have been age 55. (Amended 1986)
Amount	Survivor's payment of the 100% joint and survivor benefit the Member could have elected if terminated.
Benefit Increases	Adjusted by PERA to provide same increase as MPRIF.
Refund of Contributions Eligibility	Member dies before receiving any retirement benefits and survivor benefits are not payable.
Amount	The excess of the Member's contributions with 5% interest over any disability or survivor benefits paid.
TERMINATION	
Refund of Contributions Eligibility	Termination of public service.
Amount	Member's contributions with 5% interest. A deferred annuity may be elected in lieu of a refund.
Deferred Benefit Eligibility	10 years of Allowable Service.

TABLE 14A
BASIC
(cont)

Amount

Benefit computed under law in effect at termination and increased by the following annual percentage: 0% before 7/1/71, 5% from 7/1/71 to 1/1/81, and 3% thereafter until the annuity begins. Amount is payable as a normal or early retirement.

PUBLIC EMPLOYEES RETIREMENT FUND

TABLE 3B
COORDINATED

ACTIVE MEMBERS AS OF JUNE 30, 1986

AGE	YEARS OF SERVICE								TOTAL
	<1	1-4	5-9	10-14	15-19	20-24	25-29	30+	
<25	1,653	2,624	268						4,545
25-29	1,824	4,764	3,376	151					10,115
30-34	1,811	4,556	4,760	1,942	85				13,154
35-39	1,842	4,460	4,498	2,784	801	12			14,397
40-44	1,626	3,337	3,568	2,049	1,092	67	1		11,740
45-49	687	2,094	3,005	2,142	1,144	151	23	3	9,249
50-54	482	1,473	2,288	2,024	1,401	140	97	21	7,926
55-59	295	1,022	1,788	1,811	1,457	207	94	68	6,742
60-64	134	585	1,096	1,225	1,026	139	46	65	4,316
65+	54	224	420	389	209	23	10	17	1,346
TOTAL	10,408	25,139	25,067	14,517	7,215	739	271	174	83,530

AVERAGE ANNUAL EARNINGS

AGE	YEARS OF SERVICE								ALL
	<1	1-4	5-9	10-14	15-19	20-24	25-29	30+	
<25	8,306	11,916	14,546						10,758
25-29	9,706	15,072	17,369	18,066					14,916
30-34	9,497	15,387	20,057	20,635	21,164				17,078
35-39	8,347	14,104	19,793	24,434	25,763	20,948			17,797
40-44	7,584	12,856	16,725	21,733	26,792	28,250	28,036		16,236
45-49	8,062	12,328	15,071	17,355	22,479	30,393	33,906	26,842	15,675
50-54	8,024	12,075	14,504	16,062	18,638	32,160	34,914	31,085	15,393
55-59	7,045	11,380	14,427	15,999	17,785	26,766	30,393	36,634	15,616
60-64	7,210	10,327	13,504	15,445	17,577	23,604	27,337	32,658	15,158
65+	5,099	6,634	9,225	11,066	12,835	23,666	26,852	22,921	10,272
ALL	8,557	13,594	17,140	19,098	20,811	27,878	31,651	32,970	15,836

PRIOR FISCAL YEAR EARNINGS (IN THOUSANDS) BY YEARS OF SERVICE

<1	1-4	5-9	10-14	15-19	20-24	25-29	30+	TOTAL
89,066	341,734	429,658	277,240	150,150	20,602	8,577	5,737	1,322,764

PUBLIC EMPLOYEES RETIREMENT FUND

TABLE 4B
COORDINATED

SERVICE RETIREMENTS AS OF JUNE 30, 1986

AGE	YEARS RETIRED							TOTAL
	<1	1-4	5-9	10-14	15-19	20-24	25+	
<50								0
50-54								0
55-59	81	116						197
60-64	293	779	7					1,079
65-69	259	1,935	361	3				2,558
70-74	33	459	1,387	43				1,922
75-79	6	56	162	616	5			845
80-84	1	7	22	113	173			316
85+		2	4	12	45			63
TOTAL	673	3,354	1,943	787	223	0	0	6,980

AVERAGE ANNUAL ANNUITY

AGE	YEARS RETIRED							ALL
	<1	1-4	5-9	10-14	15-19	20-24	25+	
<50								0
50-54								0
55-59	2,674	3,019						2,877
60-64	3,224	3,051	4,244					3,106
65-69	2,759	2,560	2,405	2,790				2,559
70-74	1,432	1,596	2,386	4,436				2,227
75-79	766	852	1,540	2,470	2,699			2,174
80-84	1,974	701	1,011	1,751	1,749			1,676
85+		471	737	1,982	2,458			2,195
ALL	2,867	2,525	2,307	2,468	1,913	0	0	2,471

TOTAL ANNUAL ANNUITY (IN THOUSANDS) BY YEARS OF RETIREMENT

<1	1-4	5-9	10-14	15-19	20-24	25+	TOTAL
1,929	8,468	4,482	1,942	427	0	0	17,248

PUBLIC EMPLOYEES RETIREMENT FUND

TABLE 5B
COORDINATED

DISABILITY RETIREMENTS AS OF JUNE 30, 1986

AGE	YEARS DISABLED							TOTAL
	<1	1-4	5-9	10-14	15-19	20-24	25+	
<50	5	19	2					26
50-54	9	20	6	2				37
55-59	22	50	21	2	1			96
60-64	17	99	54	4				174
65-69								0
70-74								0
75-79								0
80-84								0
85+								0
TOTAL	53	188	83	8	1	0	0	333

AVERAGE ANNUAL BENEFIT

AGE	YEARS DISABLED							ALL
	<1	1-4	5-9	10-14	15-19	20-24	25+	
<50	3,359	3,051	1,663					3,003
50-54	2,659	2,152	2,194	1,671				2,256
55-59	2,519	2,181	1,621	3,369	1,675			2,155
60-64	1,775	2,677	1,913	526				2,303
65-69								0
70-74								0
75-79								0
80-84								0
85+								0
TOTAL	2,384	2,527	1,854	1,523	1,675	0	0	2,310

TOTAL ANNUAL BENEFIT (IN THOUSANDS) BY YEARS OF DISABILITY

<1	1-4	5-9	10-14	15-19	20-24	25+	TOTAL
126	475	154	12	2	0	0	769

PUBLIC EMPLOYEES RETIREMENT FUND

TABLE 6B
COORDINATED

SURVIVORS AS OF JUNE 30, 1986

AGE	YEARS SINCE DEATH							TOTAL
	<1	1-4	5-9	10-14	15-19	20-24	25+	
<50	2	11	3	1				17
50-54	3	10	1					14
55-59	3	32	6	3				44
60-64	6	38	17	6				67
65-69	3	37	40	20				100
70-74		9	34	30	3			76
75-79		3	8	25	4			40
80-84			4	3	5			12
85+				1	5		1	7
TOTAL	17	140	113	89	17	0	1	377

AVERAGE ANNUAL BENEFIT

AGE	YEARS SINCE DEATH							ALL
	<1	1-4	5-9	10-14	15-19	20-24	25+	
<50	1,967	2,843	2,782	584				2,597
50-54	3,337	2,667	1,776					2,747
55-59	2,239	1,720	2,116	2,044				1,832
60-64	4,902	2,168	2,058	1,320				2,309
65-69	2,147	2,092	2,278	1,424				2,034
70-74		1,333	2,145	1,736	1,687			1,869
75-79		1,956	1,963	1,443	2,201			1,662
80-84			1,409	3,877	1,647			2,125
85+				654	1,183		1,361	1,133
ALL	3,324	2,076	2,152	1,613	1,648	0	1,361	2,025

TOTAL ANNUAL BENEFIT (IN THOUSANDS) BY YEARS SINCE DEATH

	<1	1-4	5-9	10-14	15-19	20-24	25+	TOTAL
	57	290	243	144	28	0	1	763

PUBLIC EMPLOYEES RETIREMENT FUND
DETERMINATION OF CONTRIBUTION SUFFICIENCY
(DOLLARS IN THOUSANDS)

TABLE 11B
COORDINATED

JULY 1, 1986

	<u>% OF PAYROLL</u>	<u>\$ AMOUNT</u>
A. STATUTORY CONTRIBUTIONS - CHAPTER 353		
1. Employee Contributions	4.00%	\$56,312
2. Employer Contributions	4.25%	59,831
3. Total	8.25% =====	\$116,143 =====
B. REQUIRED CONTRIBUTIONS - CHAPTER 356 (NORMAL COST ONLY)		
1. Normal Cost		
a. Retirement Benefits	2.64%	\$37,098
b. Disability Benefits	0.20%	2,801
c. Survivors	0.24%	3,415
d. Deferred Retirement Benefits	1.11%	15,579
e. Refunds Due to Death or Withdrawal	0.99%	14,004
f. Total	5.18% -----	\$72,897 -----

Note: Projected Annual Payroll for Fiscal Year Beginning
on July 1, 1986 is \$1,407,797

PUBLIC EMPLOYEES RETIREMENT FUND

**TABLE 14B
COORDINATED**

SUMMARY OF PLAN PROVISIONS

Eligibility	A public employee who is covered under the Social Security Act. General exceptions are employees covered by other public funds and certain part-time employees. City managers and persons holding elective office may choose to become Members.
Contributions Member	4% of Salary.
Employer	4.25% of Salary.
Allowable Service	Service during which Member contributions were deducted. May also include certain leaves of absence, military service, and service prior to Membership.
Salary	Includes amounts deducted for deferred compensation or supplemental retirement plans, net income from fees and sick leave payments funded by the employer. Excludes lump sum payments at separation and Workers' Compensation benefits.
Average Salary	Average of the 5 highest successive years of Salary.

RETIREMENT

Normal Retirement Benefit

Eligibility Age 65 and 10 years of Allowable Service.
Age 62 and 30 years of Allowable Service.
Rule of 90: Age plus Allowable Service totals 90.
Rule of 85: Age 55 and age plus Allowable Service totals 85 and retirement prior to 1/1/87.

Amount 1% of Average Salary for the first 10 years of Allowable Service and 1.5% of Average Salary for each subsequent year.

Early Retirement Benefit

Eligibility Age 55 and 10 years of Allowable Service.
Any age with 30 years of Allowable Service.

Amount Normal Retirement Benefit based on Allowable Service and Average Salary at retirement date with reduction of 0.25% for each month the Member is under age 65 at time of retirement (age 62 if 30 years of Allowable Service).

**TABLE 14B
COORDINATED
(cont)**

Form of Payment	Life annuity with return on death of any balance of contributions over aggregate monthly payments. Actuarially equivalent options are: 50% or 100% joint and survivor 50% or 100% bounce back joint and survivor (option is cancelled if Member is pre-deceased by beneficiary).
-----------------	---

Benefit Increases	Benefits may be increased each January 1 depending on the investment performance of the Minnesota Post Retirement Investment Fund (MPRIF).
-------------------	--

DISABILITY

Disability Benefit Eligibility	Total and permanent disability before age 65 with 5 years of Allowable Service if age 50 or older, or with 10 years of Allowable Service if younger than age 50.
--------------------------------	--

Amount	Normal Retirement Benefit based on Allowable Service and Average Salary at disability without reduction for commencement before age 65. Benefit is reduced by Workers' Compensation.
--------	--

Payments stop at age 65, or earlier if disability ceases or death occurs. Benefits may be reduced on resumption of partial employment.

Form of Payment	Same as for retirement.
-----------------	-------------------------

Benefit Increases	Adjusted by PERA to provide same increase as MPRIF.
-------------------	---

Retirement After Disability Eligibility	Age 65 with continued disability.
---	-----------------------------------

Amount	Any optional annuity continues. Otherwise the larger of the disability benefit paid before age 65 or the normal retirement benefit available at age 65, or an actuarially equivalent optional annuity.
--------	--

Benefit Increases	Same as for retirement.
-------------------	-------------------------

DEATH

Surviving Spouse Optional Annuity Eligibility	Member or former Member who dies before retirement or disability benefits commence, if age 50 with 10 years of Allowable Service or any age with 30 years of Allowable Service. If the Member dies before age 55,
---	---

Member or former Member who dies before retirement or disability benefits commence, if age 50 with 10 years of Allowable Service or any age with 30 years of Allowable Service. If the Member dies before age 55,

TABLE 14B
COORDINATED
(cont)

	benefits commence when Member would have been age 55. (Amended 1986)
Amount	Survivor's payment of the 100% joint and survivor benefit the Member could have elected if terminated.
Benefit Increases	Adjusted by PERA to provide same increase as MPRIF.
Refund of Contributions Eligibility	Member dies before receiving any retirement benefits and survivor benefits are not payable.
Amount	The excess of the Member's contributions with 5% interest over any disability or survivor benefits paid.
TERMINATION	
Refund of Contributions Eligibility	Termination of public service.
Amount	Member's contributions with 5% interest. A deferred annuity may be elected in lieu of a refund.
Deferred Benefit Eligibility	10 years of Allowable Service.
Amount	Benefit computed under law in effect at termination and increased by the following annual percentage: 0% before 7/1/71, 5% from 7/1/71 to 1/1/81, and 3% thereafter until the annuity begins. Amount is payable as a normal or early retirement.

PUBLIC EMPLOYEES POLICE AND FIRE FUND

ACTUARIAL VALUATION REPORT

JULY 1, 1986

THE *Wyatt* COMPANY

ACTUARIES AND CONSULTANTS

NORTHWESTERN FINANCIAL CENTER
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October 28, 1986

Legislative Commission on
Pensions and Retirement
55 State Office Building
St. Paul, Minnesota 55155

RE: PUBLIC EMPLOYEES POLICE AND FIRE FUND

Gentlemen:


We have prepared an actuarial valuation of the Fund as of July 1, 1986 based on membership and financial data supplied by the Fund.

We certify that to the best of our knowledge and belief this actuarial valuation was performed in accordance with the requirements of Section 356.215, Minnesota Statutes, and the requirements of the Standards for Actuarial Work, adopted by the Commission on June 11, 1986 and amended on July 21 and July 28 of 1986.

Respectfully submitted,

THE WYATT COMPANY


Allan J. Grosh, FSA
Consulting Actuary


Robert E. Perkins, FSA
Consulting Actuary

PUBLIC EMPLOYEES POLICE AND FIRE FUND

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PUBLIC EMPLOYEES POLICE AND FIRE FUND

REPORT HIGHLIGHTS (DOLLARS IN THOUSANDS)

	<u>07/01/85</u> <u>VALUATION</u>	<u>07/01/86</u> <u>VALUATION</u>
A. CONTRIBUTIONS (TABLE 11)		
1. Statutory Contributions - Chapter 353 % of Payroll	20.00%	20.00%
2. Required Contributions - Chapter 356 % of Payroll	18.32%	17.10%
3. Sufficiency (Deficiency) (A1-A2)	1.68%	2.90%
B. FUNDING RATIOS		
1. Accrued Benefit Funding Ratio		
a. Current Assets (Table 1)	\$338,400	\$424,936
b. Current Benefit Obligations (Table 8)	\$352,356	\$402,314
c. Funding Ratio (a/b)	96.04%	105.62%
2. Accrued Liability Funding Ratio		
a. Current Assets (Table 1)	\$338,400	\$424,936
b. Actuarial Accrued Liability (Table 9)	\$382,998	\$447,742
c. Funding Ratio (a/b)	88.36%	94.91%
3. Projected Benefit Funding Ratio (Table 8)		
a. Current and Expected Future Assets	\$719,219	\$836,973
b. Current and Expected Future Benefit Obligations	\$673,023	\$752,324
c. Funding Ratio (a/b)	106.86%	111.25%
C. PLAN PARTICIPANTS		
1. Active Members		
a. Number (Table 3)	4,928	5,127
b. Projected Annual Earnings	\$139,222	\$153,714
c. Average Annual Earnings (Actual \$)	\$28,251	\$29,981
d. Average Age	37.2	37.3
e. Average Service	9.4	9.6
2. Others		
a. Service Retirements (Table 4)	765	838
b. Disability Retirements (Table 5)	54	58
c. Survivors (Table 6)	279	302
d. Deferred Retirements (Table 7)	163	555
e. Terminated Other Non-vested (Table 7)	350	461
f. Total	1,611	2,214

PUBLIC EMPLOYEES POLICE AND FIRE FUND

COMMENTARY

Purpose

The purpose of this valuation is to determine the financial status of the Fund. In order to achieve this purpose, an actuarial valuation is made at the beginning of each fiscal year as required by Section 356.215 of Minnesota Statutes.

Report Highlights

The statutory contributions for the PERA Police and Fire Fund continue to be sufficient. The margin of sufficiency has increased from 1.68% in 1985 to 2.90% in 1986. According to this valuation a contribution rate of 17.10% is required to comply with Minnesota Law.

The financial status of the Fund can be measured by three different funding ratios:

- o The Accrued Benefit Funding Ratio is a measure of current funding status, and when viewed over a period of years, presents a view of the funding progress. This ratio is based on the Proposed Statement of Governmental Accounting Standards. This year's ratio is 105.62. The corresponding ratio for the prior year was 96.04%.

- o The Accrued Liability Funding Ratio is also a measure of funding status and funding progress. It is based on the actuarial cost method that has historically been used. For 1986 the ratio is 94.91%, which is an increase from the 1985 value of 88.36%.
- o The Projected Benefit Funding Ratio is a measure of the adequacy or deficiency in the contribution level. This ratio exceeds 100% and verifies that the current statutory contributions are adequate.

Asset Information

Beginning in 1984, changes in Section 356.215 of Minnesota Statutes require that the asset value used for actuarial purposes reflect a portion of the unrealized gains and losses. Only a portion of these gains and losses are considered because market values are typically volatile and could produce erratic changes in the contribution requirements from year to year.

The calculation of assets for actuarial purposes begins with the reporting of Total Assets by the Fund (Table 1, line B). These Total Assets, reduced by any Amounts Currently Payable (line C), produce the Assets Available for Benefits (line D5), which is the starting value for determining the Actuarial Value of Assets.

The calculation of the Actuarial Value of Assets is shown in Table 1 on lines F1 to F6. It combines the cost value and one-third of the difference between market value and cost value.

The term "Actuarial Value of Assets" is used to indicate that the value was determined for use in this actuarial valuation. Since Minnesota Statutes refer to this value as "Current Assets", the latter phrase will be used in the remainder of this report.

Since this Fund participates in the Minnesota Post Retirement Investment Fund, referred to as MPRIF, the asset value shown on line A3 is initially calculated by the State Board of Investment(SBI), and is the expected amount of MPRIF participation assuming the Fund earns 5% interest. The actual amount is determined by calculating the liability based on annuitant information supplied by the Fund. If the actual liability is larger than expected, the difference is labeled a mortality loss and if smaller a gain.

Investment performance by SBI above the 5% level is not shown in the assets but will be added in on January 1, 1987 when benefits will be increased for those annuitants who have been receiving payments for 18 months. Next year's valuation will include the 1987 benefit increase in determining the MPRIF value.

After the MPRIF liability has been calculated for each participating Fund, SBI will determine each Fund's portion of the excess earnings for the January benefit increase as well as the Fund's allocated market share of MPRIF. An approximation of those values on June 30, 1986 provides the following relative comparison.

MPRIF Reserves	\$ 91,896,000
Reserves Plus Excess Earnings	99,600,000
MPRIF Market Value	115,000,000

Membership Data

Tables 3 through 6 summarize statistical information on members by category. Active members are grouped by age and completed years of service in Table 3. The earnings shown for these members are for the prior fiscal year except in the case of new hires whose earnings have been annualized.

The service retirements in Table 4 include not only those retiring from active status but also disabled members who have attained retirement age. Disabled members under retirement age are shown in Table 5. The survivors category (Table 6) includes spouses and children of deceased members.

Actuarial Balance Sheet

An actuarial balance sheet is required by Section 356.215, Subdivision 4f of Minnesota Law. This balance sheet (Table 8) establishes a method for evaluating both current and future levels of funding.

Current funding levels are evaluated by comparing Current Assets on line A to Current Benefit Obligations on line D5. The difference between the obligations and the assets is shown as Current Unfunded Liability on line G.

The measurement of the Current Benefit Obligation is based on the Proposed Statement of Governmental Accounting Standards published by the Governmental Accounting Standards Board (GASB) in August 1985. This value is known as the Actuarial Present Value of Credited Projected Benefits.

The first step in the GASB calculation for active members involves projecting salaries and service to determine future benefits payable under the plan and then discounting those projected benefits to the date of the valuation. The second step is to determine the discounted value of benefits for the non-active members. For those non-active members whose benefits have not commenced, the liability includes augmentation of benefits to date of commencement. The result of the first two steps is shown on line F, Total Current and Expected Future Benefit Obligations.

The third step is to determine the portion that represents Current Benefit Obligations. In the case of active members the Current Benefit Obligation is computed by attributing an equal benefit amount to each year of credited and expected future employee service. For all others, their entire liability is considered a Current Benefit Obligation.

Current and future funding levels are evaluated by comparing Current and Future Expected Assets on line C to Current and Expected Future Benefit Obligations on line F. The difference between the obligations and the assets is shown as the Current and Future Unfunded Liability on line H.

Since line F has already been calculated, the remaining step is to determine the Expected Future Assets. The statutory contribution rate in excess of the combined normal cost rate and expense rate is first calculated. The amount of assets for line B1 can be determined by projecting from the valuation date to the amortization date (the date for paying off all unfunded liabilities) on the

) assumption that total payroll is increasing at 6.5% annually and then discounted to the date of the valuation.

The Current Unfunded Liability, line G, is a measurement of the status of the funding to the date of the valuation. The Current and Future Unfunded Liability is a measurement of the adequacy of the current statutory contribution level.

Contribution Sufficiency

The approach used by the State of Minnesota to determine contribution sufficiency is the Entry Age Normal Cost Method. The primary characteristic of this method is that it allocates costs as a level percentage of payroll.

) A comparison of this actuarial method (Table 9) to the actuarial balance sheet (Table 8) shows similarities and differences. The similarity is that both approaches calculate the value of all future benefits the same way. This can be verified by comparing line F of Table 8 to line A6, column 1, of Table 9. The difference arises from the technique for allocating liabilities of active members to past and future. As noted in the prior section, the balance sheet allocates benefits and the corresponding liabilities, on the basis of service. The method used in Table 9 allocates liabilities so that the cost each year will be a constant percentage of payroll.

) An Unfunded Actuarial Accrued Liability is computed under the Entry Age Normal Cost Method by comparing the liabilities allocated to past service (Actuarial Accrued Liability) to the Current Assets. This amount, line B3, is funded over the remaining years to the amortization date by a series of payments. Prior to

1984 these payments were calculated to be a level dollar amount similar to a fixed interest rate mortgage. The method of funding was changed in 1984 to produce a series of payments that remain a constant percentage of payroll each year.

Under this new approach the payments will increase 6.5% each year since that is the assumed rate of increase in payroll. Although the payment schedule will be adequate to amortize the existing unfunded, the lower payments in the earlier years will not be sufficient to cover the interest on the unfunded liability. After a few years the annual payment will cover the interest and also repay a portion of the unfunded.

Projected Cash Flow

Table 12 illustrates the anticipated cash flow over the amortization period. The cash flow begins with the Non-MPRIF Assets, which are the Current Assets reduced by the MPRIIF Reserves. Contributions are then added based on the present statutory rates for employers and employees. As members become eligible for payments from MPRIIF an amount of reserve is transferred to SBI. The other disbursements represent benefit payments made directly by the Fund.

This projected cash flow assumes that future payrolls increase by 6.5%. For purposes of this table only, new members are assumed to be hired in order to replace those who terminate from the active group. This open group method provides a more realistic picture of future cash flow. The statutory interest rate of 8% is used to project future investment return.

The amounts transferred to MPRIF will be affected by the number of members who reach the assumed retirement age during a given year. The amount for 1988 is large because it includes those already over age 60 who are assumed to retire a year from the valuation date.

Plan Provisions

The eligibility for the Surviving Spouse Optional Annuity has been changed by decreasing the age requirement from age 55 to age 50. However, the earliest age for benefits to commence remains age 55. As a result, the increase in the Actuarial Accrued Liability (Table 10, line F) is less than 0.4%.

Annuitants in MPRIF

Recently it was determined that Members retiring in 1979, 1980 and 1981 did not receive the initial benefit increase they were due from MPRIF. Those missed increases are scheduled to be paid by PERA and a liability of \$46,000 has been included in this report to represent the past due payments.

TABLE 1

PUBLIC EMPLOYEES POLICE AND FIRE FUND

ACCOUNTING BALANCE SHEET
(DOLLARS IN THOUSANDS)

July 1, 1986

	<u>MARKET VALUE</u>	<u>COST VALUE</u>
A. ASSETS		
1. Cash and Cash Equivalents	\$19,034	\$19,034
2. Investments		
a. Fixed Income	88,681	88,157
b. Equity	239,145	185,461
c. Real Estate	26,092	22,966
3. Equity in Minnesota Post-Retirement Investment Fund (MPRIF)	91,896	91,896
4. Other	418	418
	-----	-----
B. TOTAL ASSETS	\$465,266	\$407,932
	=====	=====
C. AMOUNTS CURRENTLY PAYABLE	\$2,107	\$2,107
D. ASSETS AVAILABLE FOR BENEFITS		
1. Member Reserves	\$76,534	\$76,534
2. Benefit Reserves	294,729	237,395
3. MPRIF Reserves	91,896	91,896
4. Non-MPRIF Reserves	0	0
	-----	-----
5. Total Assets Available for Benefits	\$463,159	\$405,825
	-----	-----
E. TOTAL AMOUNTS CURRENTLY PAYABLE AND ASSETS AVAILABLE FOR BENEFITS	\$465,266	\$407,932
	=====	=====
F. DETERMINATION OF ACTUARIAL VALUE OF ASSETS		
1. Cost Value of Assets Available for Benefits (D5)		\$405,825
2. Market Value (D5)	\$463,159	
3. Cost Value (D5)	405,825	

4. Market Over Cost (F2-F3)	\$57,334	
5. 1/3 of Market Over Cost (F4)/3		19,111

6. Actuarial Value of Assets (F1+F5) (Same as "Current Assets")		\$424,936
		=====

TABLE 2

PUBLIC EMPLOYEES POLICE AND FIRE FUND
CHANGES IN ASSETS AVAILABLE FOR BENEFITS
(DOLLARS IN THOUSANDS)

YEAR ENDING JUNE 30, 1986

	<u>MARKET VALUE</u>	<u>COST VALUE</u>
A. ASSETS AVAILABLE AT BEGINNING OF PERIOD	\$353,877	\$330,662
B. OPERATING REVENUES		
1. Member Contributions	\$11,583	\$11,583
2. Employer Contributions	17,341	17,341
3. Investment Income	41,331	41,331
4. MPRIF Income	9,178	9,178
5. Net Realized Gain (Loss)	0	0
6. Other	480	480
7. Net Change in Unrealized Gain (Loss)	34,119	0
	-----	-----
8. Total Revenue	\$114,032	\$79,913
	-----	-----
C. OPERATING EXPENSES		
1. Service Retirements	\$7,750	\$7,750
2. Disability Benefits	504	504
3. Survivor Benefits	943	943
4. Refunds	906	906
5. Expenses	693	693
6. Other	12	12
	-----	-----
7. Total Disbursements	\$10,808	\$10,808
	-----	-----
D. OTHER CHANGES IN RESERVES	6,058	6,058
E. ASSETS AVAILABLE AT END OF PERIOD	\$463,159	\$405,825
	=====	=====

TABLE 3

PUBLIC EMPLOYEES POLICE AND FIRE FUND

ACTIVE MEMBERS AS OF JUNE 30, 1986

AGE	YEARS OF SERVICE								TOTAL
	<1	1-4	5-9	10-14	15-19	20-24	25-29	30+	
<25	96	186	1						283
25-29	114	482	315	2					913
30-34	53	264	609	231	1				1,158
35-39	16	135	316	500	113				1,080
40-44	5	63	106	177	291	31			673
45-49	5	21	40	75	182	106	12		441
50-54	3	23	28	56	86	81	49	12	338
55-59	1	12	22	24	31	30	24	16	160
60-64	1	3	10	5	25	11	10	6	71
65+				3	3	2	1	1	10
TOTAL	294	1,189	1,447	1,073	732	261	96	35	5,127

AVERAGE ANNUAL EARNINGS

AGE	YEARS OF SERVICE								ALL
	<1	1-4	5-9	10-14	15-19	20-24	25-29	30+	
<25	13,713	21,408	19,077						18,790
25-29	15,182	25,434	27,912	28,634					25,016
30-34	13,608	25,600	29,646	29,188	32,772				27,901
35-39	14,055	24,467	29,935	31,268	32,666				29,919
40-44	8,640	20,565	27,761	30,974	33,559	37,270			30,735
45-49	12,788	18,826	26,376	31,012	32,296	34,993	34,330		31,382
50-54	8,332	16,682	23,665	25,067	31,339	33,636	35,883	33,882	29,762
55-59	10,434	19,445	24,121	27,564	30,771	31,067	36,201	37,685	29,960
60-64	12,185	34,783	22,123	26,183	27,672	29,213	27,192	30,976	27,318
65+				30,410	26,416	23,459	30,392	48,619	29,641
ALL	14,109	24,151	28,844	30,316	32,497	34,059	34,806	35,544	28,163

PRIOR FISCAL YEAR EARNINGS (IN THOUSANDS) BY YEARS OF SERVICE									
<1	1-4	5-9	10-14	15-19	20-24	25-29	30+	TOTAL	
4,148	28,715	41,738	32,529	23,788	8,889	3,341	1,244	144,392	

TABLE 4

PUBLIC EMPLOYEES POLICE AND FIRE FUND

SERVICE RETIREMENTS AS OF JUNE 30, 1986

AGE	YEARS RETIRED							TOTAL
	<1	1-4	5-9	10-14	15-19	20-24	25+	
<50								0
50-54								0
55-59	35	116						151
60-64	24	96	94					214
65-69	5	65	96	30				196
70-74	4	8	73	58	3			146
75-79	3	1	12	44	12			72
80-84			1	9	21	4		35
85+	1			1	13	9		24
TOTAL	72	286	276	142	49	13	0	838

AVERAGE ANNUAL ANNUITY

AGE	YEARS RETIRED							ALL
	<1	1-4	5-9	10-14	15-19	20-24	25+	
<50								0
50-54								0
55-59	12,238	12,931						12,771
60-64	11,941	10,702	10,695					10,837
65-69	16,378	7,832	10,151	7,014				9,061
70-74	2,030	6,762	8,083	6,734	3,487			7,214
75-79	4,669	1,266	4,824	5,757	5,150			5,392
80-84			4,091	6,709	4,098	3,865		4,743
85+	5,401			5,185	5,359	3,961		4,829
ALL	11,449	10,811	9,535	6,478	4,653	3,931	0	9,244

TOTAL ANNUAL ANNUITY (IN THOUSANDS) BY YEARS OF RETIREMENT

	<1	1-4	5-9	10-14	15-19	20-24	25+	TOTAL
	824	3,092	2,632	920	228	51	0	7,747

TABLE 5

PUBLIC EMPLOYEES POLICE AND FIRE FUND

DISABILITY RETIREMENTS AS OF JUNE 30, 1986

AGE	YEARS DISABLED							TOTAL
	<1	1-4	5-9	10-14	15-19	20-24	25+	
<50	1	13	14	2				30
50-54	3	8	13	3				27
55-59		1						1
60-64								0
65-69								0
70-74								0
75-79								0
80-84								0
85+								0
TOTAL	4	22	27	5	0	0	0	58

AVERAGE ANNUAL BENEFIT

AGE	YEARS DISABLED							ALL
	<1	1-4	5-9	10-14	15-19	20-24	25+	
<50	7,337	9,995	9,678	6,928				9,554
50-54	11,512	11,552	9,233	5,568				9,766
55-59		14,460						14,460
60-64								0
65-69								0
70-74								0
75-79								0
80-84								0
85+								0
TOTAL	10,468	10,764	9,464	6,112	0	0	0	9,737

TOTAL ANNUAL BENEFIT (IN THOUSANDS) BY YEARS OF DISABILITY

<1	1-4	5-9	10-14	15-19	20-24	25+	TOTAL
42	237	255	31	0	0	0	565

TABLE 6

PUBLIC EMPLOYEES POLICE AND FIRE FUND

SURVIVORS AS OF JUNE 30, 1986

AGE	YEARS SINCE DEATH							TOTAL
	<1	1-4	5-9	10-14	15-19	20-24	25+	
<50	4	20	11	4	9			48
50-54		4	12	5	2			23
55-59	3	8	7	9	1	1		29
60-64	1	6	11	12	4	1		35
65-69	2	3	20	16	3	7	1	52
70-74	3	2	7	11	4	4		31
75-79	3	3	8	13	7	6		40
80-84	1	4	4	5	4	2		20
85+	3	2	6	4	4	4	1	24
TOTAL	20	52	86	79	38	25	2	302

AVERAGE ANNUAL BENEFIT

AGE	YEARS SINCE DEATH							ALL
	<1	1-4	5-9	10-14	15-19	20-24	25+	
<50	7,355	8,035	6,580	2,593	1,280			5,925
50-54		10,053	6,125	3,930	1,166			5,900
55-59	5,377	7,007	5,190	3,525	1,562	1,586		4,945
60-64	2,763	8,044	6,530	4,920	1,168	1,572		5,375
65-69	3,668	3,069	4,674	5,307	1,567	1,623	1,606	4,088
70-74	3,507	1,637	4,658	3,633	1,555	1,607		3,194
75-79	1,142	2,407	4,299	2,308	1,600	1,601		2,396
80-84	3,270	1,805	2,304	2,147	2,057	1,130		2,046
85+	1,261	1,817	2,035	1,688	1,977	1,808	802	1,763
ALL	3,832	6,457	5,069	3,711	1,535	1,602	1,204	4,114

TOTAL ANNUAL BENEFIT (IN THOUSANDS) BY YEARS SINCE DEATH

	<1	1-4	5-9	10-14	15-19	20-24	25+	TOTAL
	77	336	436	293	58	40	2	1,242

TABLE 7

PUBLIC EMPLOYEES POLICE AND FIRE FUND

RECONCILIATION OF MEMBERS

	<u>ACTIVES</u>	<u>TERMINATED</u>	
		<u>DEFERRED RETIREMENT</u>	<u>OTHER NON-VESTED</u>
A. On June 30, 1985	4,928	163	350
B. Additions	488	30	NA
C. Deletions:			
1. Service Retirement	(79)	(18)	
2. Disability	(6)		
3. Death	(7)	(1)	
4. Terminated-Deferred	(7)		
5. Terminated-Refund	(88)	(4)	
6. Terminated-Other Non-vested	(97)		
7. Returned as Active		(2)	NA
D. Data Adjustments	(5)	387	NA
	Vested	2,197	
	Non-Vested	2,930	
E. Total on June 30, 1986	5,127	555	461

	<u>RECIPIENTS</u>		
	<u>RETIREMENT ANNUITANTS</u>	<u>DISABLED</u>	<u>SURVIVORS</u>
A. On June 30, 1985	765	54	279
B. Additions	97	6	17
C. Deletions:			
1. Service Retirement		0	
2. Death	(9)	(2)	(5)
3. Annuity Expired	0	0	0
4. Returned as Active	0	0	0
D. Data Adjustments	(15)	0	11
E. Total on June 30, 1986	838	58	302

TABLE 8

PUBLIC EMPLOYEES POLICE AND FIRE FUND

ACTUARIAL BALANCE SHEET
(DOLLARS IN THOUSANDS)

JULY 1, 1986

A. CURRENT ASSETS (TABLE 1, F6)				\$424,936
B. EXPECTED FUTURE ASSETS				
1. Present Value of Expected Future Supplemental Contributions				107,455
2. Present Value of Future Normal Costs				304,582
3. Total Expected Future Assets				412,037
C. TOTAL CURRENT AND EXPECTED FUTURE ASSETS				\$836,973
D. CURRENT BENEFIT OBLIGATIONS	<u>Non-Vested</u>	<u>Vested</u>	<u>Total</u>	
1. Benefit Recipients				
a. Retirement Annuities		\$88,158		\$88,158
b. Disability Benefits		5,169		5,169
c. Surviving Spouse's Benefits		14,122		14,122
d. Surviving Children's Benefits		443		443
2. Deferred Retirements with Future Augmentation		10,375		10,375
3. Former Members without Vested Rights		659		659
4. Active Members				
a. Retirement Annuities	31,189	158,163		189,352
b. Disability Benefits	5,837	18,650		24,487
c. Survivors' Benefits	7,104	18,881		25,985
d. Deferred Retirements	13,743	23,180		36,923
e. Refund Liability Due to Death or Withdrawal	5,107	1,534		6,641
5. Total Current Benefit Obligations	\$62,980	\$339,334		\$402,314
E. EXPECTED FUTURE BENEFIT OBLIGATIONS				\$350,010
F. TOTAL CURRENT AND EXPECTED FUTURE BENEFIT OBLIGATIONS				\$752,324
G. CURRENT UNFUNDED LIABILITY (D5-A)				(\$22,622)
H. CURRENT AND FUTURE UNFUNDED LIABILITY (F-C)				(\$84,649)

TABLE 9

PUBLIC EMPLOYEES POLICE AND FIRE FUND

**DETERMINATION OF UNFUNDED ACTUARIAL ACCRUED LIABILITY
AND SUPPLEMENTAL CONTRIBUTION RATE
(DOLLARS IN THOUSANDS)**

JULY 1, 1986

	ACTUARIAL PRESENT VALUE OF PROJECTED BENEFITS (1)	ACTUARIAL PRESENT VALUE OF FUTURE NORMAL COSTS (2)	ACTUARIAL ACCRUED LIABILITY (3)=(1)-(2)
A. DETERMINATION OF ACTUARIAL ACCRUED LIABILITY (AAL)			
1. Active Members			
a. Retirement Annuities	\$449,683	\$187,801	\$261,882
b. Disability Benefits	51,526	25,711	25,815
c. Survivors Benefits	55,409	31,930	23,479
d. Deferred Retirements	65,104	41,740	23,364
e. Refunds Due to Death or Withdrawal	11,676	17,400	(5,724)
f. Total	<u>\$633,398</u>	<u>\$304,582</u>	<u>\$328,816</u>
2. Deferred Retirements with Future Augmentation	\$10,375		\$10,375
3. Former Members Without Vested Rights	659		659
4. Annuitants in MPRIF	91,896		91,896
5. Recipients Not in MPRIF	<u>15,996</u>		<u>15,996</u>
6. Total AAL	<u>\$752,324</u>	<u>\$304,582</u>	<u>\$447,742</u>
B. DETERMINATION OF UNFUNDED ACTUARIAL ACCRUED LIABILITY (UAAL)			
1. AAL (A6)			\$447,742
2. Current Assets (Table 1,F6)			<u>424,936</u>
3. UAAL (B1-B2)			<u>\$22,806</u>
C. DETERMINATION OF SUPPLEMENTAL CONTRIBUTION RATE			
1. Present Value of Future Payrolls to the Amortization Date of July 1, 2009			\$2,919,970
2. Supplemental Contribution Rate (B3/C1)			0.78%

TABLE 10

PUBLIC EMPLOYEES POLICE AND FIRE FUND
CHANGES IN UNFUNDED ACTUARIAL ACCRUED LIABILITY (UAAL)
(DOLLARS IN THOUSANDS)

YEAR ENDING JUNE 30, 1986

A. UAAL AT BEGINNING OF YEAR	\$44,598
B. CHANGE DUE TO INTEREST REQUIREMENTS AND CURRENT RATE OF FUNDING	
1. Normal Cost and Expenses	\$24,165
2. Contribution	(28,924)
3. Interest on A, B1, and B2	3,377

4. Total (B1+B2+B3)	(\$1,382)

C. EXPECTED UAAL AT END OF YEAR (A+B4)	\$43,216
D. INCREASE (DECREASE) DUE TO ACTUARIAL LOSSES (GAINS) BECAUSE OF EXPERIENCE DEVIATIONS FROM EXPECTED	
1. Salary Increases	\$2,595
2. Investment Return	(29,068)
3. MPRIF Mortality	1,904
4. Mortality of Other Benefit Recipients	857
5. Other Items	1,808

6. Total	(\$21,904)

E. UAAL AT END OF YEAR BEFORE PLAN AMENDMENTS AND CHANGES IN ACTUARIAL ASSUMPTIONS (C+D6)	\$21,312
F. CHANGE IN ACTUARIAL ACCRUED LIABILITY DUE TO PLAN AMENDMENTS	\$1,494
G. CHANGE IN ACTUARIAL ACCRUED LIABILITY DUE TO CHANGES IN ACTUARIAL ASSUMPTIONS	\$0

H. UAAL AT END OF YEAR (E+F+G)	22,806
	=====

TABLE 11

PUBLIC EMPLOYEES POLICE AND FIRE FUND
DETERMINATION OF CONTRIBUTION SUFFICIENCY
(DOLLARS IN THOUSANDS)

JULY 1, 1986

	<u>% OF PAYROLL</u>	<u>\$ AMOUNT</u>
A. STATUTORY CONTRIBUTIONS - CHAPTER 353		
1. Employee Contributions	8.00%	\$12,297
2. Employer Contributions	12.00%	18,446
3. Total	----- 20.00% =====	----- \$30,743 =====
B. REQUIRED CONTRIBUTIONS - CHAPTER 356		
1. Normal Cost		
a. Retirement Benefits	9.84%	\$15,130
b. Disability Benefits	1.30%	1,999
c. Survivors	1.67%	2,569
d. Deferred Retirement Benefits	1.99%	3,060
e. Refunds Due to Death or Withdrawal	1.04%	1,597
f. Total	----- 15.84% -----	----- \$24,355 -----
2. Supplemental Contribution Amortization by July 1, 2009 of UAAL of \$22,806	0.78%	\$1,199
3. Allowance for Expenses	0.48%	\$738
4. Total	----- 17.10%	----- \$26,292
C. CONTRIBUTION SUFFICIENCY (DEFICIENCY) (A3-B4)	2.90%	\$4,451

Note: Projected Annual Payroll for Fiscal Year Beginning
on July 1, 1986 is \$153,714

TABLE 12

PUBLIC EMPLOYEES POLICE AND FIRE FUND

PROJECTED CASH FLOW
(DOLLARS IN THOUSANDS)

<u>FISCAL YEAR</u>	<u>STATUTORY CONTRIBUTIONS</u>	<u>TRANSFERS TO MPRIF</u>	<u>OTHER DISBURSEMENTS</u>	<u>INVESTMENT RETURN</u>	<u>NON-MPRIF ASSETS YEAR END</u>
1986					\$333,040
1987	\$30,826	\$6,736	\$2,938	\$27,489	381,681
1988	\$32,824	18,586	3,133	30,979	423,765
1989	\$34,869	4,845	3,336	34,969	485,422
1990	\$37,136	7,926	3,529	39,861	550,964
1991	\$39,550	8,066	3,776	45,185	623,857
1992	\$42,120	11,050	4,026	50,990	701,891
1993	\$44,858	18,827	4,383	57,017	780,556
1994	\$47,774	19,960	4,737	63,368	867,001
1995	\$50,879	21,502	5,132	70,330	961,576
1996	\$54,186	21,434	5,599	78,012	1,066,741
1997	\$57,708	23,522	6,208	86,458	1,181,177
1998	\$61,460	34,332	6,595	95,315	1,297,025
1999	\$65,454	38,547	7,175	104,551	1,421,308
2000	\$69,709	44,164	7,819	114,414	1,553,448
2001	\$74,240	46,050	8,531	125,062	1,698,169
2002	\$79,066	53,032	9,246	136,525	1,851,482
2003	\$84,205	77,045	9,852	148,011	1,996,801
2004	\$89,678	74,033	10,593	159,946	2,161,799
2005	\$95,507	79,178	11,370	173,142	2,339,900
2006	\$101,715	95,700	12,139	186,947	2,520,723
2007	\$108,327	117,967	12,999	200,752	2,698,836
2008	\$115,368	160,320	13,792	213,557	2,853,649
2009	\$122,867	145,926	14,619	226,785	3,042,756
2010	\$130,853	154,782	15,514	241,843	3,245,156
2011	\$139,359	181,066	16,326	257,291	3,444,414

PUBLIC EMPLOYEES POLICE AND FIRE FUND
SUMMARY OF ACTUARIAL ASSUMPTIONS AND METHODS

Interest:	Pre-Retirement: 8% per annum
	Post-Retirement: 5% per annum
Salary Increases:	Reported salary for prior fiscal year, with new hires annualized, increased 6.5% to current fiscal year and 6.5% annually for each future year.
Mortality:	Pre-Retirement:
	Male - UP-1984 Unisex set forward 1 year
	Female - UP-1984 Unisex set back 4 years
	Post-Retirement:
	Male - Same as above
	Female - Same as above
	Post-Disability:
	Male - 1965 RRB rates
	Female - 1965 RRB rates
Retirement Age:	Age 60, or if over age 60, one year from the valuation date. In addition, 50% of employees are assumed to retire under the Rule of 85 when first eligible.
Separation:	Graded rates shown in rate table.
Disability:	Rates as shown in rate table.
Expenses:	Prior year expenses expressed as percentage of prior year payroll. (0.48% of payroll)
Return of Contributions:	All employees withdrawing after 10 years of service were assumed to leave their contributions on deposit and receive a deferred annuitant benefit.
Family Composition:	85% of male Members and 65% of female Members are assumed to be married. Female is four years younger than male. Assume Members have no children.
Social Security:	NA
Benefit Increases After Retirement:	Payment of earnings on retired reserves in excess of 5% accounted for by 5% post-retirement assumptions.
Special Consideration:	NA

TABLE 13
(cont)

Actuarial Cost Method:	Entry Age Normal Cost Method with normal costs expressed as a level percentage of earnings. Under this method Actuarial Gains(Losses) reduce(increase) the Unfunded Actuarial Accrued Liability.
Asset Valuation Method:	Cost Value plus one-third Unrealized Gains or Losses.
Payment on the Unfunded Actuarial Accrued Liability:	A level percentage of payroll each year to the statutory amortization date assuming payroll increases of 6.5% per annum.
Projected Cash Flow Method:	Cash flows for the non-MPRIF portion of the Fund were projected based on the current plan benefits, participant data, and actuarial assumptions. In addition, new entrants were assumed so that the total payroll would increase by 6.5% per annum.

TABLE 13
(cont)SEPARATIONS EXPRESSED AS THE
NUMBER OF OCCURRENCES PER 10,000

Age	Death		Withdrawal		Disability		Retirement	
	Male	Female	Male	Female	Male	Female	Male	Female
20	13	14	700	700	11	11	0	0
21	12	14	700	700	11	11	0	0
22	12	14	700	700	12	12	0	0
23	11	14	699	699	12	12	0	0
24	11	13	698	698	13	13	0	0
25	11	13	697	697	13	13	0	0
26	11	12	694	694	14	14	0	0
27	11	12	689	689	14	14	0	0
28	11	11	680	680	15	15	0	0
29	11	11	670	670	15	15	0	0
30	11	11	658	658	15	15	0	0
31	12	11	643	643	16	16	0	0
32	12	11	624	624	17	17	0	0
33	13	11	598	598	17	17	0	0
34	14	11	561	561	18	18	0	0
35	15	11	511	511	19	19	0	0
36	16	12	454	454	20	20	0	0
37	18	12	395	395	22	22	0	0
38	19	13	336	336	23	23	0	0
39	21	14	287	287	24	24	0	0
40	23	15	245	245	26	26	0	0
41	26	16	213	213	28	28	0	0
42	28	18	185	185	29	29	0	0
43	31	19	160	160	31	31	0	0
44	34	21	137	137	34	34	0	0
45	38	23	118	118	36	36	0	0
46	42	26	102	102	40	40	0	0
47	46	28	87	87	46	46	0	0
48	51	31	73	73	52	52	0	0
49	56	34	61	61	60	60	0	0
50	62	38	50	50	69	69	0	0
51	69	42	39	39	80	80	0	0
52	75	46	29	29	91	91	0	0
53	83	51	22	22	104	104	0	0
54	90	56	15	15	119	119	0	0

TABLE 13
(cont)

Age	Death		Withdrawal		Disability		Retirement	
	Male	Female	Male	Female	Male	Female	Male	Female
55	99	62	11	11	135	135	0	0
56	108	69	7	7	152	152	0	0
57	119	75	5	5	171	171	0	0
58	130	83	3	3	192	192	0	0
59	142	90	1	1	215	215	0	0
60	155	99	0	0	0	0	10,000	10,000
61	170	108	0	0	0	0	0	0
62	187	119	0	0	0	0	0	0
63	205	130	0	0	0	0	0	0
64	226	142	0	0	0	0	0	0
65	248	155	0	0	0	0	0	0
66	272	170	0	0	0	0	0	0
67	296	187	0	0	0	0	0	0
68	321	205	0	0	0	0	0	0
69	347	226	0	0	0	0	0	0
70	377	248	0	0	0	0	0	0

TABLE 14

PUBLIC EMPLOYEES POLICE AND FIRE FUND

SUMMARY OF PLAN PROVISIONS

Eligibility	All full time, and certain part time, police officers and fire fighters, who are not contributing to any other local retirement fund.
Contributions	
Member	8% of Salary.
Employer	12% of Salary plus \$82,904 from the University of Minnesota on 7/1/85, 7/1/86, and 7/1/87.
Allowable Service	Police and fire service during which Member contributions were deducted. May also include certain leaves of absence, military service, and service prior to Membership.
Salary	Includes amounts deducted for deferred compensation or supplemental retirement plans, net income from fees and sick leave payments funded by the employer. Excludes lump sum payments at separation and Workers' Compensation benefits.
Average Salary	Average of the 5 highest successive years of Salary.
RETIREMENT	
Normal Retirement Benefit	
Eligibility	Age 55 and 10 years of Allowable Service.
Amount	2.5% of Average Salary for the first 25 years of Allowable Service and 2.0% of Average Salary for each subsequent year.
Form of Payment	Life annuity with return on death of any balance of contributions over aggregate monthly payments. Actuarially equivalent options are: 50% or 100% joint and survivor 50% or 100% bounce back joint and survivor (option is cancelled if Member is pre-deceased by beneficiary).
Benefit Increases	Benefits may be increased each January 1 depending on the investment performance of the Minnesota Post Retirement Investment Fund (MPRIF).

TABLE 14
(cont)

DISABILITY

Duty Disability Benefit
Eligibility

Under age 55 and physically unfit to perform his duties as a police officer or fire fighter as a direct result of an act of duty.

Amount

50% of Average Salary plus 2.5% of Average Salary for each year in excess of 20, but not exceeding 25 years of Allowable Service plus 2.0% of Average Salary for each year in excess of 25 years of Allowable Service. Benefit is reduced by Workers' Compensation. Payments cease at age 55.

Normal Disability Benefit
Eligibility

Totally and permanently disabled before age 55 with 5 years of Allowable Service.

Amount

Normal Retirement Benefit based on Allowable Service (minimum of 10 years) and Average Salary at disability without reduction for commencement before age 55. Payments cease at age 55.

Form of Payment

Same as for retirement.

Benefit Increases

Adjusted by PERA to provide same increase as MPRIF.

Retirement Benefits
Eligibility

Age 55 with continued disability.

Amount

Any optional annuity continues. Otherwise the larger of the disability benefit paid before age 55 or the normal retirement benefit available at age 55, or an actuarially equivalent optional annuity.

Benefit Increases

Same as for retirement.

DEATH

Surviving Spouse Benefit
Eligibility

Active Member with surviving spouse.

Amount

30% of Salary averaged over last 6 months. Benefit paid until spouse's death but no payments while spouse is remarried.

Surviving Dependent
Child Benefit
Eligibility

Active Member with dependent child.

TABLE 14
(cont)

Amount	10% of Salary averaged over last 6 months for each child. Family benefit minimum (including spouse's benefit) of 30% of Salary and maximum of 50% of Salary. Benefits paid until child marries, dies, or attains age 18.
Surviving Spouse Optional Annuity Eligibility	Member who dies before termination if age 50 with 10 years of Allowable Service. If the Member dies before age 55, benefits commence when Member would have been age 55. (Amended 1986)
Amount	Survivor's payment of the 100% joint and survivor benefit the Member could have elected if terminated. Alternatively, spouse may elect refund of deceased contributions with interest if there are no dependent children.
Benefit Increases	Adjusted by PERA to provide same increase as MPRIF.
TERMINATION Refund of Contributions Eligibility	Termination of public service.
Amount	Member's contributions with 5% interest compounded annually. A deferred annuity may be elected in lieu of a refund.
Deferred Annuity Eligibility	10 years of Allowable Service.
Amount	Benefit computed under law in effect at termination and increased by the following annual percentage: 0% before 7/1/71, 5% from 7/1/71 to 1/1/81, and 3% thereafter until the annuity begins. Amount is payable as a normal or early retirement.

TABLE 15

PUBLIC EMPLOYEES POLICE AND FIRE FUND

MEMBERSHIP CHANGES
(DOLLARS IN THOUSANDS)

JUNE 30, 1986

		<u>NUMBER</u>	<u>PAYROLL</u>
A. ACTIVE MEMBERS			
1. As of the Last Valuation Date		4,928	\$130,725
2. New Entrants		488	NA
3. Total		5,416	NA
4. Separations from Active Service			
a. Refund of Contributions	(88)		NA
b. Separation with Deferred Annuity	(7)		NA
c. Separation with neither Refund nor Deferred Annuity	(97)		NA
d. Disability	(6)		NA
e. Death	(7)		NA
f. Retirement with Service Annuity	(79)		NA
5. Total Separations	(284)		NA
6. Data Adjustments	(5)		NA
7. As of Current Valuation Date		5,127	\$144,392
B. SERVICE RETIREMENT ANNUITANTS		<u>NUMBER</u>	<u>ANNUAL ANNUITY</u>
1. As of the Last Valuation Date		765	\$6,327
2. New Entrants		97	NA
3. Total		862	NA
4. Terminations			
a. Deaths	(9)		NA
b. Others	0		NA
5. Total Terminations	(9)		NA
6. Data Adjustments	(15)		NA
7. As of Current Valuation Date		838	\$7,747
C. DISABLED ANNUITANTS		<u>NUMBER</u>	<u>ANNUAL ANNUITY</u>
1. As of the Last Valuation Date		54	\$488
2. New Entrants		6	NA
3. Total		60	NA
4. Terminations			
a. Deaths	(2)		NA
b. Others	0		NA
5. Total Terminations	(2)		NA
6. Data Adjustments	0		NA
7. As of Current Valuation Date		58	\$565

TABLE 15
(cont)

		<u>NUMBER</u>	<u>ANNUAL ANNUITY</u>
D. SURVIVING SPOUSE ANNUITANTS			
1. As of the Last Valuation Date		265	\$1,022
2. New Entrants		17	NA
3. Total		282	NA
4. Terminations			
a. Deaths	(5)		NA
b. Others	0		NA
5. Total Terminations	(5)		NA
6. Data Adjustments	11		NA
7. As of Current Valuation Date		288	\$1,183
E. SURVIVING CHILDREN ANNUITANTS			
1. As of the Last Valuation Date		14	\$62
2. New Entrants		0	NA
3. Total		14	NA
4. Terminations			
a. Deaths	0		NA
b. Others	0		NA
5. Total Terminations	0		NA
6. Data Adjustments	0		NA
7. As of Current Valuation Date		14	\$60
F. DEFERRED ANNUITANTS			
1. As of the Last Valuation Date		163	\$293
2. New Entrants		30	NA
3. Total		193	NA
4. Terminations			
a. Deaths	(1)		NA
b. Others	(24)		NA
5. Total Terminations	(25)		NA
6. Data Adjustments	387		NA
7. As of Current Valuation Date		555	\$1,029