

STATE EMPLOYEES RETIREMENT FUND  
(GENERAL)

ACTUARIAL VALUATION REPORT

JULY 1, 1986

FEB 6 1987 LCP&R

THE *Wyatt* COMPANY

ACTUARIES AND CONSULTANTS

)  
EMPLOYEE BENEFITS  
COMPENSATION PROGRAMS  
EMPLOYEE COMMUNICATIONS  
ADMINISTRATIVE SYSTEMS  
RISK MANAGEMENT  
INTERNATIONAL SERVICES

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OFFICES IN PRINCIPAL CITIES  
AROUND THE WORLD

December 19, 1986

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

**RE: STATE EMPLOYEES RETIREMENT FUND (GENERAL)**

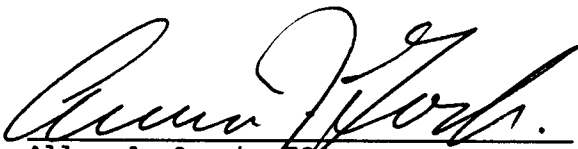
Gentlemen:

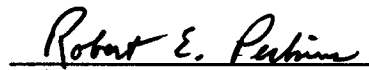
)  
We have prepared an actuarial valuation of the Fund as of July 1, 1986 based on membership and financial data supplied by the Fund.

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

STATE EMPLOYEES RETIREMENT FUND (GENERAL)

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# STATE EMPLOYEES RETIREMENT FUND (GENERAL)

## REPORT HIGHLIGHTS (DOLLARS IN THOUSANDS)

	<u>07/01/85 VALUATION</u>	<u>07/01/86 VALUATION</u>
<b>A. CONTRIBUTIONS (TABLE 11)</b>		
1. Statutory Contributions - Chapter 352 % of Payroll	7.63%	7.63%
2. Required Contributions - Chapter 356 % of Payroll	7.18%	6.96%
3. Sufficiency (Deficiency) (A1-A2)	0.45%	0.67%
<b>B. FUNDING RATIOS</b>		
1. Accrued Benefit Funding Ratio		
a. Current Assets (Table 2)	\$1,109,815	\$1,313,155
b. Current Benefit Obligations (Table 8)	\$1,239,375	\$1,388,785
c. Funding Ratio (a/b)	89.55%	94.55%
2. Accrued Liability Funding Ratio		
a. Current Assets (Table 2)	\$1,109,815	\$1,313,155
b. Actuarial Accrued Liability (Table 9)	\$1,489,214	\$1,656,860
c. Funding Ratio (a/b)	74.52%	79.26%
3. Projected Benefit Funding Ratio (Table 8)		
a. Current and Expected Future Assets	\$2,089,415	\$2,373,711
b. Current and Expected Future Benefit Obligations	\$1,992,556	\$2,223,246
c. Funding Ratio (a/b)	104.86%	106.77%
<b>C. PLAN PARTICIPANTS</b>		
1. Active Members		
a. Number (Table 3)	44,399	45,172
b. Projected Annual Earnings	\$1,047,928	\$1,135,260
c. Average Annual Earnings (Actual \$)	\$23,603	\$25,132
d. Average Age	39.7	39.9
e. Average Service	9.0	9.1
2. Others		
a. Service Retirements (Table 4)	10,155	10,601
b. Disability Retirements (Table 5)	683	670
c. Survivors (Table 6)	529	599
d. Deferred Retirements (Table 7)	910	957
e. Terminated Other Non-vested (Table 7)	4,878	4,402
f. Total	17,155	17,229

## STATE EMPLOYEES RETIREMENT FUND (GENERAL)

### 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 State Employees Retirement Fund (General) are sufficient for 1986 by an amount of 0.67% of payroll. According to this valuation a contribution rate of 6.96% 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 94.55%. The corresponding ratio for the prior year was 89.55%.
- 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 79.26%, which is an increase from the 1985 value of 74.52%.

- o The Projected Benefit Funding Ratio is a measure of the adequacy or deficiency in the contribution level. This ratio, which is more than 100%, 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	\$477,287,000
Reserves Plus Excess Earnings	517,000,000
MPRIF Market Value	597,000,000

#### 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.

) The service retirements are shown in Table 4 and disabled members 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 MPRIIF. 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 65 who are assumed to retire a year from the valuation date.

### Plan Provisions

The eligibility for the Surviving Spouse Benefit 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 0.1%.

)

### Annuitants in MPRIF

Recently it was determined that Members retiring in June of 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 MSRS and a liability of \$61,000 has been included in this report (Table 9, line A5) to represent the past due payments.

### General and Correctional

Table 2 allocates the Current Assets between the General and Correctional Plans. This allocation is performed by separating the assets between MPRIF and Non-MPRIF. The MPRIF portion is allocated automatically as a result of the liability calculations at the beginning of the year.

The Non-MPRIF portion, referred to in Table 2 as the Allocable Assets, is determined by starting with last year's allocation and projecting to the current valuation date based on the receipts and disbursements by Plan. Numbers marked with an asterisk represent approximations based on the following assumptions:

- o Lines G1 and G2 - Allocates contributions based on prior fiscal year salaries.
- o Line G3 - Assumes all State appropriations are for the General Plan.
- o Line H1 - Allocates new MPRIF annuitants in proportion to liabilities for those retired on or after July 1, 1985.

- o Line H2 - Places all of the State appropriation and the Non-MPRIF payouts in the General Plan.
- o Line H3 - Allocates refunds in proportion to the payroll of members who received refunds during the prior fiscal year.
- o Line H4 - Assumes expenses in proportion to prior fiscal year salary.
- o Line H5 - Allocates the MPRIF mortality loss in proportion to the MPRIF reserves at the end of the year.

STATE EMPLOYEES RETIREMENT FUND

TABLE 1

ACCOUNTING BALANCE SHEET  
(DOLLARS IN THOUSANDS)

July 1, 1986

	<u>MARKET VALUE</u>	<u>COST VALUE</u>
A. ASSETS		
1. Cash and Cash Equivalents	\$38,449	\$38,449
2. Investments		
a. Fixed Income	226,811	225,929
b. Equity	706,733	552,650
c. Real Estate	0	0
3. Equity in Minnesota Post-Retirement Investment Fund (MPRIF)	497,345	497,345
4. Other	4,447	4,447
B. TOTAL ASSETS	<u>\$1,473,785</u>	<u>\$1,318,820</u>
C. AMOUNTS CURRENTLY PAYABLE	\$426	\$426
D. ASSETS AVAILABLE FOR BENEFITS		
1. Member Reserves	\$248,006	\$248,006
2. Employer Reserves	728,008	573,043
3. MPRIF Reserves	497,345	497,345
4. Non-MPRIF Reserves	0	0
5. Total Assets Available for Benefits	<u>\$1,473,359</u>	<u>\$1,318,394</u>
E. TOTAL AMOUNTS CURRENTLY PAYABLE AND ASSETS AVAILABLE FOR BENEFITS	<u>\$1,473,785</u>	<u>\$1,318,820</u>

F. DETERMINATION OF ACTUARIAL VALUE OF ASSETS

1. Cost Value of Assets Available for Benefits (D5)		\$1,318,394
2. Market Value (D5)	\$1,473,359	
3. Cost Value (D5)	1,318,394	
4. Market Over Cost (F2-F3)	\$154,965	
5. 1/3 of Market Over Cost(F4)/3		51,655
6. Actuarial Value of Assets (F1+F5) (Same as "Current Assets")		<u>\$1,370,049</u>

TABLE 2

## STATE 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	\$1,200,642	\$1,137,254
B. OPERATING REVENUES		
1. Member Contributions	\$38,356	\$38,356
2. Employer Contributions	40,565	40,565
3. Investment Income	99,486	99,486
4. MPRIF Income	52,303	52,303
5. Net Realized Gain (Loss)	9,939	9,939
6. Other	1,300	1,300
7. Net Change in Unrealized Gain (Loss)	91,577	0
	-----	-----
8. Total Revenue	\$333,526	\$241,949
	-----	-----
C. OPERATING EXPENSES		
1. Service Retirements	\$47,166	\$47,166
2. Disability Benefits	2,267	2,267
3. Survivor Benefits	0	0
4. Refunds	7,724	7,724
5. Expenses	2,730	2,730
6. Other	0	0
	-----	-----
7. Total Disbursements	\$59,887	\$59,887
	-----	-----
D. OTHER CHANGES IN RESERVES	(922)	(922)
E. ASSETS AVAILABLE AT END OF YEAR	\$1,473,359	\$1,318,394
	=====	=====

TABLE 2  
(cont)

## STATE EMPLOYEES RETIREMENT FUND

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

YEAR ENDING JUNE 30, 1986

	<u>GENERAL</u>	<u>CORRECTIONAL</u>	<u>TOTAL</u>
F. BEGINNING OF YEAR			
1. Current Assets	\$1,109,815	\$48,568	\$1,158,383
2. MPRIF Reserves	404,861	19,722	424,583
3. Allocable Assets(F1-F2)	704,954	28,846	733,800
G. RECEIPTS			
1. Member Contributions	36,851 *	1,505 *	38,356
2. Employer Contributions	37,933 *	2,632 *	40,565
3. Other	1,300 *	0 *	1,300
4. Total	76,084	4,137	80,221
H. DISBURSEMENTS			
1. MPRIF New Annuitants	67,022 *	1,513 *	68,535
2. Non-MPRIF Benefits	1,295 *	0 *	1,295
3. Refunds	7,491 *	233 *	7,724
4. Expenses	2,648 *	82 *	2,730
5. Other	59 *	3 *	62
6. Total	78,515	1,831	80,346
I. EXPECTED INVESTMENT RETURN 8% OF (F3+.5XG4-.5X(H6-H5))	56,301	2,400	58,701
J. ALLOCATION OF REMAINING ASSETS IN PROPORTION TO LINE I	77,044	3,284	80,328
K. END OF YEAR			
1. Allocable Assets	835,868	36,836	872,704
2. MPRIF Reserves	477,287	20,058	497,345
3. Current Assets	1,313,155	56,894	1,370,049

\* Allocated by Wyatt



TABLE 3

## STATE EMPLOYEES RETIREMENT FUND (GENERAL)

## 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	1,139	1,407	250						2,796
25-29	1,318	3,088	2,090	169					6,665
30-34	980	2,464	3,141	1,658	151				8,394
35-39	779	1,867	2,400	2,133	1,053	126			8,358
40-44	371	1,045	1,263	1,120	999	561	46		5,405
45-49	213	696	901	729	610	568	296	67	4,080
50-54	161	426	643	635	546	412	355	301	3,479
55-59	107	328	580	567	590	369	300	373	3,214
60-64	44	163	394	467	502	312	159	278	2,319
65+	13	21	86	105	111	53	33	40	462
TOTAL	5,125	11,505	11,748	7,583	4,562	2,401	1,189	1,059	45,172

## AVERAGE ANNUAL EARNINGS

AGE	YEARS OF SERVICE								ALL
	<1	1-4	5-9	10-14	15-19	20-24	25-29	30+	
<25	5,029	15,031	16,928						11,126
25-29	6,791	17,872	20,007	20,042					16,405
30-34	7,346	18,657	21,876	23,087	22,517				19,486
35-39	7,209	19,321	23,085	26,119	26,137	25,172			21,955
40-44	7,960	19,183	23,732	26,982	28,625	29,339	26,989		23,957
45-49	6,573	18,387	22,569	25,561	26,744	29,662	30,354	29,330	23,842
50-54	6,437	18,486	21,950	24,902	25,871	27,933	31,111	30,536	24,348
55-59	5,290	17,441	21,598	23,472	24,427	25,589	30,034	31,228	23,844
60-64	4,700	16,798	20,398	23,786	24,833	25,423	27,214	30,217	23,810
65+	12,939	10,313	16,835	22,407	22,679	23,626	25,204	29,926	21,609
ALL	6,600	18,059	21,842	24,900	26,162	27,744	29,806	30,597	20,827

## 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
33,824	207,774	256,600	188,813	119,353	66,613	35,439	32,402	940,818

TABLE 4

## STATE EMPLOYEES RETIREMENT FUND (GENERAL)

## 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	91	111						202
60-64	321	904	31					1,256
65-69	157	1,756	861	9	1			2,784
70-74	6	299	1,838	489	15			2,647
75-79	1	7	151	1,529	139	23	1	1,851
80-84		2	2	427	579	76	19	1,105
85+			1	11	219	338	187	756
TOTAL	576	3,079	2,884	2,465	953	437	207	10,601

## 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	7,068	7,127						7,101
60-64	5,667	6,028	5,019					5,911
65-69	4,235	4,882	5,147	2,281	1,795			4,918
70-74	3,666	4,220	3,899	3,881	2,129			3,921
75-79	1,172	4,093	3,303	3,585	2,502	1,954	1,228	3,460
80-84		2,903	6,868	3,522	2,351	2,341	2,420	2,813
85+			950	4,753	2,767	2,270	2,571	2,523
ALL	5,470	5,232	4,253	3,633	2,465	2,265	2,550	4,184

## TOTAL ANNUAL ANNUITY (IN THOUSANDS) BY YEARS OF RETIREMENT

<1	1-4	5-9	10-14	15-19	20-24	25+	TOTAL
3,151	16,110	12,267	8,956	2,349	990	528	44,351

TABLE 5

## STATE EMPLOYEES RETIREMENT FUND (GENERAL)

## DISABILITY RETIREMENTS AS OF JUNE 30, 1986

AGE	YEARS DISABLED							TOTAL
	<1	1-4	5-9	10-14	15-19	20-24	25+	
<50	4	14	4	3				25
50-54	3	16	9	2				30
55-59	7	36	19	7		1		70
60-64	13	70	71	23	6	2		185
65-69		21	108	28	1	4		162
70-74			49	57	13	2	2	123
75-79				20	16	4	1	41
80-84					11	9	2	22
85+						4	8	12
TOTAL	27	157	260	140	47	26	13	670

## AVERAGE ANNUAL BENEFIT

AGE	YEARS DISABLED							ALL
	<1	1-4	5-9	10-14	15-19	20-24	25+	
<50	2,716	3,864	2,573	1,789				3,225
50-54	5,426	3,042	3,584	1,982				3,372
55-59	2,202	3,442	4,178	2,526		1,493		3,398
60-64	4,315	3,567	3,992	2,361	2,605	2,887		3,594
65-69		2,930	3,274	2,523	3,492	1,713		3,062
70-74			2,626	3,022	2,023	2,025	2,629	2,736
75-79				2,431	2,692	1,503	2,841	2,453
80-84					1,533	1,648	2,733	1,689
85+						3,065	2,444	2,651
TOTAL	3,653	3,426	3,414	2,663	2,242	1,972	2,547	3,115

## TOTAL ANNUAL BENEFIT (IN THOUSANDS) BY YEARS OF DISABILITY

<1	1-4	5-9	10-14	15-19	20-24	25+	TOTAL
99	538	888	373	105	51	33	2,087

TABLE 6

## STATE EMPLOYEES RETIREMENT FUND (GENERAL)

SURVIVORS AS OF JUNE 30, 1986

AGE	YEARS SINCE DEATH							TOTAL
	<1	1-4	5-9	10-14	15-19	20-24	25+	
<50		10	1		1			12
50-54	3	9			1			13
55-59	2	32	7	1			1	43
60-64	9	49	37	8	1	1		105
65-69	3	30	45	17	1	1	2	99
70-74		5	39	45	5	5	4	103
75-79			7	57	13	16	7	100
80-84			1	8	20	25	10	64
85+				4	8	21	27	60
TOTAL	17	135	137	140	50	69	51	599

## AVERAGE ANNUAL BENEFIT

AGE	YEARS SINCE DEATH							ALL
	<1	1-4	5-9	10-14	15-19	20-24	25+	
<50		2,782	1,995		1,733			2,629
50-54	2,994	3,331			1,095			3,081
55-59	1,816	4,692	5,420	1,797			1,634	4,538
60-64	3,388	4,265	4,146	2,690	443	1,620		3,966
65-69	1,881	2,998	3,791	2,841	2,150	1,510	1,120	3,236
70-74		4,209	3,870	3,364	2,094	1,639	1,312	3,372
75-79			3,040	3,756	1,749	1,941	1,315	2,984
80-84			2,610	3,397	1,876	1,853	1,559	2,019
85+				1,976	2,003	1,982	1,606	1,815
ALL	2,868	3,911	3,933	3,373	1,843	1,889	1,515	3,151

## TOTAL ANNUAL BENEFIT (IN THOUSANDS) BY YEARS SINCE DEATH

<1	1-4	5-9	10-14	15-19	20-24	25+	TOTAL
49	528	539	472	92	130	77	1,887

STATE EMPLOYEES RETIREMENT FUND (GENERAL)

TABLE 7

RECONCILIATION OF MEMBERS

	<u>ACTIVES</u>	<u>TERMINATED</u>	
		<u>DEFERRED RETIREMENT</u>	<u>OTHER NON-VESTED</u>
A. On June 30, 1985	44,399	910	4,878
B. Additions	5,213	175	NA
C. Deletions:			
1. Service Retirement	(786)	(96)	
2. Disability	(25)		
3. Death	(77)	0	
4. Terminated-Deferred	(107)		
5. Terminated-Refund	(2,556)	0	NA
6. Terminated-Other Non-vested	(880)		
7. Returned as Active		0	NA
D. Data Adjustments	(9)	(32)	NA
	Vested		
	Non-Vested		
	16,794		
	28,378		
E. Total on June 30, 1986	45,172	957	4,402

	<u>RECIPIENTS</u>		
	<u>RETIREMENT ANNUITANTS</u>	<u>DISABLED</u>	<u>SURVIVORS</u>
A. On June 30, 1985	10,155	683	529
B. Additions	873	40	89
C. Deletions:			
1. Service Retirement		0	
2. Death	(420)	(52)	(13)
3. Annuity Expired	0	0	0
4. Returned as Active	0	0	
D. Data Adjustments	(7)	(1)	(6)
E. Total on June 30, 1986	10,601	670	599

STATE EMPLOYEES RETIREMENT FUND (GENERAL)

TABLE 8

ACTUARIAL BALANCE SHEET  
(DOLLARS IN THOUSANDS)

JULY 1, 1986

A. CURRENT ASSETS (TABLE 2, K3)				\$1,313,155
B. EXPECTED FUTURE ASSETS				
1. Present Value of Expected Future Supplemental Contributions				494,170
2. Present Value of Future Normal Costs				566,386
3. Total Expected Future Assets				1,060,556
C. TOTAL CURRENT AND EXPECTED FUTURE ASSETS				\$2,373,711
D. CURRENT BENEFIT OBLIGATIONS	<u>Non-Vested</u>	<u>Vested</u>	<u>Total</u>	
1. Benefit Recipients				
a. Retirement Annuities		\$437,577		\$437,577
b. Disability Benefits		19,273		19,273
c. Surviving Spouse's Benefits		20,498		20,498
d. Surviving Children's Benefits		0		0
2. Deferred Retirements with Future Augmentation		15,017		15,017
3. Former Members without Vested Rights		2,221		2,221
4. Active Members				
a. Retirement Annuities	73,005	546,261		619,266
b. Disability Benefits	6,535	40,123		46,658
c. Survivors' Benefits	6,572	51,054		57,626
d. Deferred Retirements	17,053	61,880		78,933
e. Refund Liability Due to Death or Withdrawal	44,072	47,644		91,716
5. Total Current Benefit Obligations	\$147,237	\$1,241,548		\$1,388,785
E. EXPECTED FUTURE BENEFIT OBLIGATIONS				\$834,461
F. TOTAL CURRENT AND EXPECTED FUTURE BENEFIT OBLIGATIONS				\$2,223,246
G. CURRENT UNFUNDED LIABILITY (D5-A)				\$75,630
H. CURRENT AND FUTURE UNFUNDED LIABILITY (F-C)				(\$150,465)

TABLE 9

## STATE EMPLOYEES RETIREMENT FUND (GENERAL)

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	\$1,243,766	\$341,779	\$901,987
b. Disability Benefits	89,114	27,555	61,559
c. Survivors Benefits	108,605	32,049	76,556
d. Deferred Retirements	132,488	45,180	87,308
e. Refunds Due to Death or Withdrawal	154,687	119,823	34,864
f. Total	<u>\$1,728,660</u>	<u>\$566,386</u>	<u>\$1,162,274</u>
2. Deferred Retirements with Future Augmentation	\$15,017		\$15,017
3. Former Members Without Vested Rights	2,221		2,221
4. Annuitants in MPRIF	477,287		477,287
5. Recipients Not in MPRIF	61		61
6. Total AAL	<u>\$2,223,246</u>	<u>\$566,386</u>	<u>\$1,656,860</u>
B. DETERMINATION OF UNFUNDED ACTUARIAL ACCRUED LIABILITY (UAAL)			
1. AAL (A6)			\$1,656,860
2. Current Assets (Table 1, F6)			1,313,155
3. UAAL (B1-B2)			<u>\$343,705</u>
C. DETERMINATION OF SUPPLEMENTAL CONTRIBUTION RATE			
1. Present Value of Future Payrolls to the Amortization Date of July 1, 2010			\$22,360,635
2. Supplemental Contribution Rate (B3/C1)			1.54%

TABLE 10

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

YEAR ENDING JUNE 30, 1986

A. UAAL AT BEGINNING OF YEAR	\$379,399
B. CHANGE DUE TO INTEREST REQUIREMENTS AND CURRENT RATE OF FUNDING	
1. Normal Cost and Expenses	\$53,350
2. Contribution	(74,784)
3. Interest on A, B1, and B2	29,495
	-----
4. Total (B1+B2+B3)	\$8,061
	-----
C. EXPECTED UAAL AT END OF YEAR (A+B4)	\$387,460
D. INCREASE (DECREASE) DUE TO ACTUARIAL LOSSES (GAINS) BECAUSE OF EXPERIENCE DEVIATIONS FROM EXPECTED	
1. Salary Increases	\$8,745
2. Investment Return	(77,044)
3. MPRIF Mortality	59
4. Mortality of Other Benefit Recipients	0
5. Other Items	23,330
	-----
6. Total	(\$44,910)
	-----
E. UAAL AT END OF YEAR BEFORE PLAN AMENDMENTS AND CHANGES IN ACTUARIAL ASSUMPTIONS (C+D6)	\$342,550
F. CHANGE IN ACTUARIAL ACCRUED LIABILITY DUE TO PLAN AMENDMENTS	\$1,155
G. CHANGE IN ACTUARIAL ACCRUED LIABILITY DUE TO CHANGES IN ACTUARIAL ASSUMPTIONS	\$0
	-----
H. UAAL AT END OF YEAR (E+F+G)	\$343,705
	=====



TABLE 11

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

JULY 1, 1986

	<u>% OF PAYROLL</u>	<u>\$ AMOUNT</u>
<b>A. STATUTORY CONTRIBUTIONS - CHAPTER 352</b>		
1. Employee Contributions	3.73%	\$42,345
2. Employer Contributions	3.90%	44,275
3. Total	----- 7.63% =====	----- \$86,620 =====
<b>B. REQUIRED CONTRIBUTIONS - CHAPTER 356</b>		
1. Normal Cost		
a. Retirement Benefits	3.13%	\$35,555
b. Disability Benefits	0.24%	2,719
c. Survivors	0.27%	3,034
d. Deferred Retirement Benefits	0.39%	4,472
e. Refunds Due to Death or Withdrawal	1.12%	12,689
f. Total	----- 5.15% -----	----- \$58,469 -----
2. Supplemental Contribution Amortization by July 1, 2010 of UAAL of \$343,705	1.54%	\$17,483
3. Allowance for Expenses	0.27%	\$3,065
4. Total	----- 6.96%	----- \$79,017
<b>C. CONTRIBUTION SUFFICIENCY (DEFICIENCY)     (A3-B4)</b>	0.67%	\$7,603

Note: Projected Annual Payroll for Fiscal Year Beginning  
 on July 1, 1986 is \$1,135,260

STATE EMPLOYEES RETIREMENT FUND (GENERAL)

TABLE 12

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					\$835,868
1987	\$86,620	\$32,522	\$15,460	\$68,415	942,921
1988	92,251	56,877	30,301	75,637	1,023,631
1989	98,247	36,032	39,943	82,781	1,128,684
1990	104,633	49,588	47,775	90,586	1,226,540
1991	111,434	59,601	54,270	98,026	1,322,129
1992	118,677	68,643	60,009	105,371	1,417,525
1993	126,391	70,820	65,121	113,020	1,520,995
1994	134,607	75,502	69,839	121,250	1,631,511
1995	143,356	81,177	74,060	130,046	1,749,676
1996	152,674	89,816	78,379	139,353	1,873,508
1997	162,598	100,248	82,355	149,080	2,002,583
1998	173,167	115,634	85,214	159,099	2,134,001
1999	184,423	119,414	88,068	169,798	2,280,740
2000	196,411	130,486	90,964	181,458	2,437,159
2001	209,177	150,493	94,254	193,550	2,595,139
2002	222,774	160,756	97,447	206,194	2,765,904
2003	237,254	177,586	100,792	219,627	2,944,407
2004	252,676	194,641	104,225	233,705	3,131,922
2005	269,100	210,340	107,723	248,595	3,331,554
2006	286,591	252,397	111,774	263,421	3,517,395
2007	305,219	285,233	115,877	277,556	3,699,060
2008	325,059	318,093	120,214	291,395	3,877,207
2009	346,188	333,965	124,665	305,679	4,070,444
2010	368,690	351,953	129,131	321,140	4,279,190
2011	392,655	430,739	134,366	335,437	4,442,177

TABLE 13

**STATE EMPLOYEES RETIREMENT FUND (GENERAL)**  
**SUMMARY OF ACTUARIAL ASSUMPTIONS AND METHODS**

Interest:	Pre-Retirement: 8% per annum Post-Retirement: 5% per annum
Salary Increases:	Reported salary at valuation date increased 6.5% to current fiscal year and 6.5% annually for each future year. Prior fiscal year salary is annualized for new Members.
Mortality:	Pre-Retirement: Male - 1971 Group Annuity Mortality Table Female - 1971 Group Annuity Mortality Table male rates set back 8 years  Post-Retirement: Male - Same as above Female - Same as above  Post-Disability: Male - Combined Annuity Mortality Table Female - Combined Annuity Mortality Table
Retirement Age:	Graded rates beginning at age 58 as shown in rate table plus 50% of those eligible to retire under the Rule of 85, and Members who have attained the highest assumed retirement age will retire in one year.
Separation:	Graded rates based on actual experience developed by the June 30, 1971 experience analysis. Rates are shown in rate table.
Disability:	Rates adopted by MSRS as shown in rate table.
Expenses:	Prior year expenses expressed as a percentage of prior year payroll. (.27% of payroll)
Return of Contributions:	60% of Members separating before retirement elect return of contributions in lieu of deferred benefit.
Family Composition:	85% of Members are married. Female is three years younger than male. Married families have 1 child.

TABLE 13  
(cont)

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
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	5	4	2,400	3,700	0	0	0	0
21	5	4	2,250	3,550	0	0	0	0
22	5	4	2,080	3,390	0	0	0	0
23	6	4	1,920	3,230	0	0	0	0
24	6	4	1,760	3,070	0	0	0	0
25	6	5	1,600	2,910	0	0	0	0
26	7	5	1,470	2,750	0	0	0	0
27	7	5	1,340	2,600	0	0	0	0
28	7	5	1,230	2,430	0	0	0	0
29	8	5	1,130	2,270	0	0	0	0
30	8	5	1,040	2,120	2	0	0	0
31	9	6	950	1,970	2	0	0	0
32	9	6	890	1,820	2	0	0	0
33	10	6	830	1,680	2	0	0	0
34	10	7	770	1,540	2	0	0	0
35	11	7	720	1,410	2	1	0	0
36	12	7	680	1,300	2	1	0	0
37	13	8	640	1,190	2	1	0	0
38	14	8	600	1,090	2	1	0	0
39	15	9	560	1,000	2	2	0	0
40	16	9	530	920	2	2	0	0
41	18	10	500	850	2	2	0	0
42	20	10	480	780	2	4	0	0
43	23	11	460	720	3	4	0	0
44	26	12	430	680	3	4	0	0
45	29	13	410	630	3	5	0	0
46	33	14	390	590	5	6	0	0
47	38	15	370	560	7	7	0	0
48	42	16	350	530	9	7	0	0
49	47	18	340	500	11	10	0	0
50	53	20	320	470	14	10	0	0
51	59	23	300	440	16	12	0	0
52	65	26	280	410	20	14	0	0
53	71	29	260	390	24	16	0	0
54	78	33	240	360	28	20	0	0

TABLE 13  
(cont)

Age	Death		Withdrawal		Disability		Retirement	
	Male	Female	Male	Female	Male	Female	Male	Female
55	85	38	210	330	34	24	0	0
56	93	42	170	290	40	30	0	0
57	100	47	140	230	46	36	0	0
58	109	53	90	170	56	44	30	50
59	119	59	40	90	66	52	30	50
60	131	65	0	0	76	62	40	150
61	144	71	0	0	90	74	150	150
62	159	78	0	0	110	88	500	200
63	174	85	0	0	136	104	500	350
64	192	93	0	0	174	122	2,000	1,100
65	213	100	0	0	0	0	10,000	10,000
66	236	109	0	0	0	0	0	0
67	263	119	0	0	0	0	0	0
68	292	131	0	0	0	0	0	0
69	324	144	0	0	0	0	0	0
70	361	159	0	0	0	0	0	0

## STATE EMPLOYEES RETIREMENT FUND (GENERAL)

## SUMMARY OF PLAN PROVISIONS

Eligibility	State employees, non-academic staff of the University of Minnesota, and employees of certain Metro level governmental units, unless excluded by law.
Contributions	
Member	3.73% of Salary.
Employer	3.90% of Salary.
Allowable Service	Service during which Member contributions were made. May also include certain leaves of absence, military service, and periods while temporary Worker's Compensation is paid.
Salary	Includes wages, allowances, and fees. Excludes lump sum payments at separation.
Average Salary	Average of the 5 highest successive years (60 successive months) of Salary.
<b>RETIREMENT</b>	
Normal Retirement Benefit	
Eligibility	Age 65 and 10 years of Allowable Service. Age 62 and 30 years of Allowable Service. Rule of 85: Age 55 and age plus Allowable Service totals 85 prior to 1/1/87, and retirement prior to 7/1/87.
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 augmentation to age 65 (or age 62 if 30 years of Allowable Service) and actuarial reduction for each month the Member is under age 65 (or age 62 if 30 years of Allowable Service) at the time of retirement.
Form of Payment	Life annuity. Actuarially equivalent options are: 50% or 100% joint and survivor 15 year certain and life thereafter.

TABLE 14

(cont)

Benefit Increases	Benefits may be increased each January 1 depending on the investment performance of the Minnesota Post Retirement Investment Fund (MPRIF).
<b>DISABILITY</b>	
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.  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	Same as for retirement.
<b>Retirement After Disability</b>	
Disability Eligibility	Age 65 with continued disability.
Amount	Any optional annuity continues. Otherwise a normal retirement benefit equal to the disability benefit paid before age 65 or an actuarially equivalent optional annuity.
Benefit Increases	Same as for retirement.
<b>DEATH</b>	
Surviving Spouse Benefit 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 and has less than 30 years of Allowable Service, benefits commence when Member would have been age 55. (Amended 1986)
Amount	Surviving spouse receives the 100% joint and survivor benefit the Member could have elected if terminated. In lieu of this benefit the surviving spouse may elect a refund of contributions with interest.



TABLE 14

(cont)

Benefit Increases	Same as for retirement.
Refund of Contributions With Interest	
Eligibility	Active employee dies and survivor benefits are not payable, or a former employee dies before annuity begins.
Amount	The Member's contributions with 5% interest.
Refund of Contributions Without Interest	
Eligibility	Former employee who is not entitled to an annuity dies, or a retired or disabled annuitant who did not select an optional annuity dies, or the remaining recipient of an option dies.
Amount	The excess of the Member's contributions without interest over all benefits paid.
<b>TERMINATION</b>	
Refund of Member's Contributions	
Eligibility	Termination of state 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.

**STATE EMPLOYEES RETIREMENT FUND (GENERAL)**

**TABLE 15**

**MEMBERSHIP CHANGES  
(DOLLARS IN THOUSANDS)**

**JUNE 30, 1986**

<b>A. ACTIVE MEMBERS</b>	<u><b>NUMBER</b></u>	<u><b>PAYROLL</b></u>
1. As of the Last Valuation Date	44,399	\$983,970
2. New Entrants	5,213	NA
3. Total	49,612	NA
4. Separations from Active Service		
a. Refund of Contributions	(2,556)	(43,944)
b. Separation with Deferred Annuity	(107)	(2,295)
c. Separation with neither Refund nor Deferred Annuity	(880)	(9,172)
d. Disability	(25)	(489)
e. Death	(77)	(1,298)
f. Retirement with Service Annuity	(786)	(19,865)
5. Total Separations	(4,431)	(77,063)
6. Data Adjustments	(9)	NA
7. As of Current Valuation Date	45,172	\$1,065,972
<b>B. SERVICE RETIREMENT ANNUITANTS</b>	<u><b>NUMBER</b></u>	<u><b>ANNUAL ANNUITY</b></u>
1. As of the Last Valuation Date	10,155	\$38,058
2. New Entrants	873	4,987
3. Total	11,028	43,045
4. Terminations		
a. Deaths	(420)	(1,423)
b. Others	0	0
5. Total Terminations	(420)	(1,423)
6. Data Adjustments	(7)	2,729
7. As of Current Valuation Date	10,601	\$44,351
<b>C. DISABLED ANNUITANTS</b>	<u><b>NUMBER</b></u>	<u><b>ANNUAL ANNUITY</b></u>
1. As of the Last Valuation Date	683	\$1,962
2. New Entrants	40	142
3. Total	723	2,104
4. Terminations		
a. Deaths	(52)	(154)
b. Others	0	0
5. Total Terminations	(52)	(154)
6. Data Adjustments	(1)	137
7. As of Current Valuation Date	670	\$2,087

TABLE 15

(cont)

D. SURVIVING SPOUSE ANNUITANTS		
	<u>NUMBER</u>	<u>ANNUAL ANNUITY</u>
1. As of the Last Valuation Date	529	\$1,478
2. New Entrants	89	360
3. Total	618	1,838
4. Terminations		
a. Deaths	(13)	(28)
b. Others	0	0
5. Total Terminations	(13)	(28)
6. Data Adjustments	(6)	77
7. As of Current Valuation Date	599	\$1,887
E. SURVIVING CHILDREN ANNUITANTS		
	<u>NUMBER</u>	<u>ANNUAL ANNUITY</u>
1. As of the Last Valuation Date	0	\$0
2. New Entrants	0	0
3. Total	0	0
4. Terminations		
a. Deaths	0	0
b. Others	0	0
5. Total Terminations	0	0
6. Data Adjustments	0	0
7. As of Current Valuation Date	0	\$0
F. DEFERRED ANNUITANTS		
	<u>NUMBER</u>	<u>ANNUAL ANNUITY</u>
1. As of the Last Valuation Date	910	\$3,225
2. New Entrants	175	849
3. Total	1,085	4,074
4. Terminations		
a. Deaths	0	0
b. Others	(96)	(178)
5. Total Terminations	(96)	(178)
6. Data Adjustments	(32)	(33)
7. As of Current Valuation Date	957	\$3,863

STATE EMPLOYEES RETIREMENT FUND  
(CORRECTIONAL)

ACTUARIAL VALUATION REPORT

JULY 1, 1986

FEB 6 1987 LCP&R

THE *Wyatt* COMPANY

ACTUARIES AND CONSULTANTS

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COMPENSATION PROGRAMS  
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8400 NORMANDALE LAKE BOULEVARD  
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December 29, 1986

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

RE: STATE EMPLOYEES RETIREMENT FUND (CORRECTIONAL)

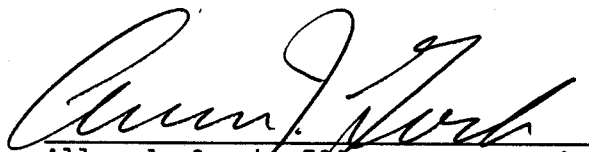
Gentlemen:

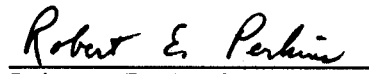
We have prepared an actuarial valuation of the Fund as of July 1, 1986 based on membership and financial data supplied by the Fund.

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

STATE EMPLOYEES RETIREMENT FUND (CORRECTIONAL)

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# STATE EMPLOYEES RETIREMENT FUND (CORRECTIONAL)

## REPORT HIGHLIGHTS (DOLLARS IN THOUSANDS)

	<u>07/01/85 VALUATION</u>	<u>07/01/86 VALUATION</u>
<b>A. CONTRIBUTIONS (TABLE 11)</b>		
1. Statutory Contributions - Chapter 352 % of Payroll	13.60%	13.60%
2. Required Contributions - Chapter 356 % of Payroll	8.95%	8.57%
3. Sufficiency (Deficiency) (A1-A2)	4.65%	5.03%
<b>B. FUNDING RATIOS</b>		
1. Accrued Benefit Funding Ratio		
a. Current Assets (Table 2)	\$48,568	\$56,894
b. Current Benefit Obligations (Table 8)	\$45,822	\$50,349
c. Funding Ratio (a/b)	105.99%	113.00%
2. Accrued Liability Funding Ratio		
a. Current Assets (Table 2)	\$48,568	\$56,894
b. Actuarial Accrued Liability (Table 9)	\$53,345	\$59,042
c. Funding Ratio (a/b)	91.05%	96.36%
3. Projected Benefit Funding Ratio (Table 8)		
a. Current and Expected Future Assets	\$105,708	\$117,094
b. Current and Expected Future Benefit Obligations	\$76,308	\$83,876
c. Funding Ratio (a/b)	138.53%	139.60%
<b>C. PLAN PARTICIPANTS</b>		
1. Active Members		
a. Number (Table 3)	1,191	1,220
b. Projected Annual Earnings	\$31,055	\$33,561
c. Average Annual Earnings (Actual \$)	\$26,075	\$27,509
d. Average Age	36.0	36.7
e. Average Service	7.0	7.4
2. Others		
a. Service Retirements (Table 4)	309	309
b. Disability Retirements (Table 5)	12	11
c. Survivors (Table 6)	8	8
d. Deferred Retirements (Table 7)	30	35
e. Terminated Other Non-vested (Table 7)	79	83
f. Total	438	446

## STATE EMPLOYEES RETIREMENT FUND (CORRECTIONAL)

### 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 State Employees Retirement Fund (Correctional) are sufficient for 1986 by an amount of 5.03% of payroll. According to this valuation a contribution rate of 8.57% 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 113.00%. The corresponding ratio for the prior year was 105.99%.
- 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 96.36%, which is an



increase from the 1985 value of 91.05%.

- o The Projected Benefit Funding Ratio is a measure of the adequacy or deficiency in the contribution level. This ratio, which is more than 100%, 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	\$ 20,058,000
Reserves Plus Excess Earnings	21,700,000
MPRIF Market Value	25,100,000

#### 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.

) The service retirements are shown in Table 4 and disabled members 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 MPRIIF. 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 58 who are assumed to retire a year from the valuation date.

### Plan Provisions

The eligibility for the Surviving Spouse Benefit 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. This change did not increase the Actuarial Accrued Liability (Table 10, line F), since it is assumed that spouses of active members who die would receive a refund of contributions.

### Annuitants in MPRIF

Recently it was determined that Members retiring in June of 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 MSRS and a liability of \$12,000 has been included in this report (Table 9, line A5) to represent the past due payments.

### General and Correctional

Table 2 allocates the Current Assets between the General and Correctional Plans. This allocation is performed by separating the assets between MPRIF and Non-MPRIF. The MPRIF portion is allocated automatically as a result of the liability calculations at the beginning of the year.

The Non-MPRIF portion, referred to in Table 2 as the Allocable Assets, is determined by starting with last year's allocation and projecting to the current valuation date based on the receipts and disbursements by Plan. Numbers marked with an asterisk represent approximations based on the following assumptions:

- o Lines G1 and G2 - Allocates contributions based on prior fiscal year salaries.
- o Line G3 - Assumes all State appropriations are for the General Plan.
- o Line H1 - Allocates new MPRIF annuitants in proportion to liabilities for those retired on or after July 1, 1985.

- o Line H2 - Places all of the State appropriation and the Non-MPRIF payouts in the General Plan.
- o Line H3 - Allocates refunds in proportion to the payroll of members who received refunds during the prior fiscal year.
- o Line H4 - Assumes expenses in proportion to prior fiscal year salary.
- o Line H5 - Allocates the MPRIF mortality loss in proportion to the MPRIF reserves at the end of the year.



## STATE EMPLOYEES RETIREMENT FUND

TABLE 1

ACCOUNTING BALANCE SHEET  
(DOLLARS IN THOUSANDS)

July 1, 1986

	<u>MARKET VALUE</u>	<u>COST VALUE</u>
A. ASSETS		
1. Cash and Cash Equivalents	\$38,449	\$38,449
2. Investments		
a. Fixed Income	226,811	225,929
b. Equity	706,733	552,650
c. Real Estate	0	0
3. Equity in Minnesota Post-Retirement Investment Fund (MPRIF)	497,345	497,345
4. Other	4,447	4,447
	-----	-----
B. TOTAL ASSETS	<u>\$1,473,785</u>	<u>\$1,318,820</u>
	=====	=====
C. AMOUNTS CURRENTLY PAYABLE	\$426	\$426
D. ASSETS AVAILABLE FOR BENEFITS		
1. Member Reserves	\$248,006	\$248,006
2. Employer Reserves	728,008	573,043
3. MPRIF Reserves	497,345	497,345
4. Non-MPRIF Reserves	0	0
	-----	-----
5. Total Assets Available for Benefits	<u>\$1,473,359</u>	<u>\$1,318,394</u>
	-----	-----
E. TOTAL AMOUNTS CURRENTLY PAYABLE AND ASSETS AVAILABLE FOR BENEFITS	<u>\$1,473,785</u>	<u>\$1,318,820</u>
	=====	=====

## F. DETERMINATION OF ACTUARIAL VALUE OF ASSETS

1. Cost Value of Assets Available for Benefits (D5)		\$1,318,394
2. Market Value (D5)	\$1,473,359	
3. Cost Value (D5)	1,318,394	
	-----	
4. Market Over Cost (F2-F3)	\$154,965	
5. 1/3 of Market Over Cost(F4)/3		51,655
		-----
6. Actuarial Value of Assets (F1+F5) (Same as "Current Assets")		<u>\$1,370,049</u>
		=====

TABLE 2

## STATE 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	\$1,200,642	\$1,137,254
B. OPERATING REVENUES		
1. Member Contributions	\$38,356	\$38,356
2. Employer Contributions	40,565	40,565
3. Investment Income	99,486	99,486
4. MPRIF Income	52,303	52,303
5. Net Realized Gain (Loss)	9,939	9,939
6. Other	1,300	1,300
7. Net Change in Unrealized Gain (Loss)	91,577	0
	-----	-----
8. Total Revenue	\$333,526	\$241,949
	-----	-----
C. OPERATING EXPENSES		
1. Service Retirements	\$47,166	\$47,166
2. Disability Benefits	2,267	2,267
3. Survivor Benefits	0	0
4. Refunds	7,724	7,724
5. Expenses	2,730	2,730
6. Other	0	0
	-----	-----
7. Total Disbursements	\$59,887	\$59,887
	-----	-----
D. OTHER CHANGES IN RESERVES	(922)	(922)
E. ASSETS AVAILABLE AT END OF YEAR	\$1,473,359	\$1,318,394
	=====	=====

TABLE 2  
(cont)

## STATE EMPLOYEES RETIREMENT FUND

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

YEAR ENDING JUNE 30, 1986

	<u>GENERAL</u>	<u>CORRECTIONAL</u>	<u>TOTAL</u>
F. BEGINNING OF YEAR			
1. Current Assets	\$1,109,815	\$48,568	\$1,158,383
2. MPRIF Reserves	404,861	19,722	424,583
3. Allocable Assets(A1-A2)	704,954	28,846	733,800
G. RECEIPTS			
1. Member Contributions	36,851 *	1,505 *	38,356
2. Employer Contributions	37,933 *	2,632 *	40,565
3. Other	1,300 *	0 *	1,300
4. Total	76,084	4,137	80,221
H. DISBURSEMENTS			
1. MPRIF New Annuitants	67,022 *	1,513 *	68,535
2. Non-MPRIF Benefits	1,295 *	0 *	1,295
3. Refunds	7,491 *	233 *	7,724
4. Expenses	2,648 *	82 *	2,730
5. Other	59 *	3 *	62
6. Total	78,515	1,831	80,346
I. EXPECTED INVESTMENT RETURN 8% OF (F3+.5XG4-.5X(H6-H5))	56,301	2,400	58,701
J. ALLOCATION OF REMAINING ASSETS IN PROPORTION TO LINE I	77,044	3,284	80,328
K. END OF YEAR			
1. Allocable Assets	835,868	36,836	872,704
2. MPRIF Reserves	477,287	20,058	497,345
3. Current Assets	1,313,155	56,894	1,370,049

\* Allocated by Wyatt

TABLE 3

## STATE EMPLOYEES RETIREMENT FUND (CORRECTIONAL)

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	31	41							72
25-29	34	164	53						251
30-34	20	105	107	35					267
35-39	17	79	71	80	12				259
40-44	7	29	41	38	18	7			140
45-49	3	10	28	17	21	15	2	1	97
50-54	4	8	19	20	16	11	11	2	91
55-59		1	4	8	11	5	3		32
60-64		1	3		5	2			11
65+									0
TOTAL	116	438	326	198	83	40	16	3	1,220

## AVERAGE ANNUAL EARNINGS

AGE	YEARS OF SERVICE								ALL
	<1	1-4	5-9	10-14	15-19	20-24	25-29	30+	
<25	11,986	17,397							15,067
25-29	14,309	21,240	24,462						20,981
30-34	14,360	22,236	25,542	28,087					23,738
35-39	15,567	22,757	25,560	28,364	28,510				25,052
40-44	16,099	23,969	27,410	28,841	29,781	26,623			26,786
45-49	17,314	20,026	25,982	28,865	30,877	28,596	30,354	23,466	27,133
50-54	19,275	23,507	27,253	25,741	27,782	30,883	29,403	23,018	26,939
55-59		24,158	28,586	29,546	30,910	30,259	34,230		30,277
60-64		19,474	25,310		28,685	30,331			27,226
65+									0
ALL	14,238	21,590	25,778	28,232	29,573	29,174	30,427	23,167	23,999

## 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
1,652	9,454	8,404	5,590	2,455	1,167	487	70	29,279

TABLE 4

## STATE EMPLOYEES RETIREMENT FUND (CORRECTIONAL)

## 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	8	37	6					51
60-64		27	52					79
65-69		6	43	48				97
70-74			10	57				67
75-79				15				15
80-84								0
85+								0
TOTAL	8	70	111	120	0	0	0	309

## 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	6,458	6,473	5,593					6,367
60-64		6,457	6,044					6,185
65-69		3,696	4,882	4,579				4,659
70-74			3,051	3,524				3,454
75-79				4,627				4,627
80-84								0
85+								0
ALL	6,458	6,229	5,300	4,084	0	0	0	5,068

## TOTAL ANNUAL ANNUITY (IN THOUSANDS) BY YEARS OF RETIREMENT

<1	1-4	5-9	10-14	15-19	20-24	25+	TOTAL
52	436	588	490	0	0	0	1,566

TABLE 5

## STATE EMPLOYEES RETIREMENT FUND (CORRECTIONAL)

## DISABILITY RETIREMENTS AS OF JUNE 30, 1986

<u>AGE</u>	<u>YEARS DISABLED</u>							<u>TOTAL</u>
	<u>&lt;1</u>	<u>1-4</u>	<u>5-9</u>	<u>10-14</u>	<u>15-19</u>	<u>20-24</u>	<u>25+</u>	
<50			1					1
50-54		3	1					4
55-59		1	3					4
60-64				2				2
65-69								0
70-74								0
75-79								0
80-84								0
85+								0
TOTAL	0	4	5	2	0	0	0	11

## AVERAGE ANNUAL BENEFIT

<u>AGE</u>	<u>YEARS DISABLED</u>							<u>ALL</u>
	<u>&lt;1</u>	<u>1-4</u>	<u>5-9</u>	<u>10-14</u>	<u>15-19</u>	<u>20-24</u>	<u>25+</u>	
<50			6,142					6,142
50-54		8,214	3,386					7,007
55-59		15,396	5,893					8,269
60-64				2,039				2,039
65-69								0
70-74								0
75-79								0
80-84								0
85+								0
TOTAL	0	10,010	5,441	2,039	0	0	0	6,484

## TOTAL ANNUAL BENEFIT (IN THOUSANDS) BY YEARS OF DISABILITY

<u>&lt;1</u>	<u>1-4</u>	<u>5-9</u>	<u>10-14</u>	<u>15-19</u>	<u>20-24</u>	<u>25+</u>	<u>TOTAL</u>
0	40	27	4	0	0	0	71

STATE EMPLOYEES RETIREMENT FUND (CORRECTIONAL)

TABLE 6

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						2
50-54		2						2
55-59								0
60-64			1					1
65-69				2				2
70-74				1				1
75-79								0
80-84								0
85+								0
TOTAL	0	4	1	3	0	0	0	8

AVERAGE ANNUAL BENEFIT

AGE	YEARS SINCE DEATH							ALL
	<1	1-4	5-9	10-14	15-19	20-24	25+	
<50		7,902						7,902
50-54		7,148						7,148
55-59								0
60-64			3,272					3,272
65-69				3,405				3,405
70-74				3,738				3,738
75-79								0
80-84								0
85+								0
ALL	0	7,525	3,272	3,516	0	0	0	5,490

TOTAL ANNUAL BENEFIT (IN THOUSANDS) BY YEARS SINCE DEATH

<1	1-4	5-9	10-14	15-19	20-24	25+	TOTAL
0	30	3	11	0	0	0	44

STATE EMPLOYEES RETIREMENT FUND (CORRECTIONAL)

TABLE 7

RECONCILIATION OF MEMBERS

	<u>ACTIVES</u>	<u>TERMINATED</u>	
		<u>DEFERRED RETIREMENT</u>	<u>OTHER NON-VESTED</u>
A. On June 30, 1985	1,191	30	79
B. Additions	114	8	NA
C. Deletions:			
1. Service Retirement	(8)	(1)	
2. Disability	0		
3. Death	0	0	
4. Terminated-Deferred	(6)		
5. Terminated-Refund	(71)	0	NA
6. Terminated-Other Non-vested	(16)		
7. Returned as Active		0	NA
D. Data Adjustments	16	(2)	NA
	Vested 340		
	Non-Vested 880		
E. Total on June 30, 1986	1,220	35	83

	<u>RECIPIENTS</u>		
	<u>RETIREMENT ANNUITANTS</u>	<u>DISABLED</u>	<u>SURVIVORS</u>
A. On June 30, 1985	309	12	8
B. Additions	9	0	1
C. Deletions:			
1. Service Retirement		0	
2. Death	(9)	(1)	0
3. Annuity Expired	0	0	0
4. Returned as Active	0	0	
D. Data Adjustments	0	0	(1)
E. Total on June 30, 1986	309	11	8



STATE EMPLOYEES RETIREMENT FUND (CORRECTIONAL)

TABLE 8

ACTUARIAL BALANCE SHEET  
(DOLLARS IN THOUSANDS)

JULY 1, 1986

A. CURRENT ASSETS (TABLE 2, K3)			\$56,894
B. EXPECTED FUTURE ASSETS			
1. Present Value of Expected Future Supplemental Contributions			35,366
2. Present Value of Future Normal Costs			24,834
3. Total Expected Future Assets			60,200
C. TOTAL CURRENT AND EXPECTED FUTURE ASSETS			\$117,094
D. CURRENT BENEFIT OBLIGATIONS	<u>Non-Vested</u>	<u>Vested</u>	<u>Total</u>
1. Benefit Recipients			
a. Retirement Annuities		\$18,497	\$18,497
b. Disability Benefits		906	906
c. Surviving Spouse's Benefits		666	666
d. Surviving Children's Benefits		0	0
2. Deferred Retirements with Future Augmentation		2,236	2,236
3. Former Members without Vested Rights		225	225
4. Active Members			
a. Retirement Annuities	5,215	17,245	22,460
b. Disability Benefits	212	424	636
c. Survivors' Benefits	0	0	0
d. Deferred Retirements	0	0	0
e. Refund Liability Due to Death or Withdrawal	2,585	2,138	4,723
5. Total Current Benefit Obligations	\$8,012	\$42,337	\$50,349
E. EXPECTED FUTURE BENEFIT OBLIGATIONS			\$33,527
F. TOTAL CURRENT AND EXPECTED FUTURE BENEFIT OBLIGATIONS			\$83,876
G. CURRENT UNFUNDED LIABILITY (D5-A)			(\$6,545)
H. CURRENT AND FUTURE UNFUNDED LIABILITY (F-C)			(\$33,218)

TABLE 9

## STATE EMPLOYEES RETIREMENT FUND (CORRECTIONAL)

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	\$50,996	\$18,293	\$32,703
b. Disability Benefits	1,334	580	754
c. Survivors Benefits	0	0	0
d. Deferred Retirements	0	0	0
e. Refunds Due to Death or Withdrawal	9,016	5,961	3,055
f. Total	<u>\$61,346</u>	<u>\$24,834</u>	<u>\$36,512</u>
2. Deferred Retirements with Future Augmentation	\$2,236		\$2,236
3. Former Members Without Vested Rights	225		225
4. Annuitants in MPRIF	20,057		20,057
5. Recipients Not in MPRIF	12		12
6. Total AAL	<u>\$83,876</u>	<u>\$24,834</u>	<u>\$59,042</u>
B. DETERMINATION OF UNFUNDED ACTUARIAL ACCRUED LIABILITY (UAAL)			
1. AAL (A6)			\$59,042
2. Current Assets (Table 1, F6)			56,894
3. UAAL (B1-B2)			<u>\$2,148</u>
C. DETERMINATION OF SUPPLEMENTAL CONTRIBUTION RATE			
1. Present Value of Future Payrolls to the Amortization Date of July 1, 2010			\$661,041
2. Supplemental Contribution Rate (B3/C1)			0.32%

TABLE 10

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

YEAR ENDING JUNE 30, 1986

A. UAAL AT BEGINNING OF YEAR	\$4,777
B. CHANGE DUE TO INTEREST REQUIREMENTS AND CURRENT RATE OF FUNDING	
1. Normal Cost and Expenses	\$2,519
2. Contribution	(4,137)
3. Interest on A, B1, and B2	317
4. Total (B1+B2+B3)	----- (\$1,301) -----
C. EXPECTED UAAL AT END OF YEAR (A+B4)	\$3,476
D. INCREASE (DECREASE) DUE TO ACTUARIAL LOSSES (GAINS) BECAUSE OF EXPERIENCE DEVIATIONS FROM EXPECTED	
1. Salary Increases	\$75
2. Investment Return	(3,284)
3. MPRIF Mortality	3
4. Mortality of Other Benefit Recipients	0
5. Other Items	1,878
6. Total	----- (\$1,328) -----
E. UAAL AT END OF YEAR BEFORE PLAN AMENDMENTS AND CHANGES IN ACTUARIAL ASSUMPTIONS (C+D6)	\$2,148
F. CHANGE IN ACTUARIAL ACCRUED LIABILITY DUE TO PLAN AMENDMENTS	\$0
G. CHANGE IN ACTUARIAL ACCRUED LIABILITY DUE TO CHANGES IN ACTUARIAL ASSUMPTIONS	\$0
H. UAAL AT END OF YEAR (E+F+G)	----- \$2,148 =====

TABLE 11

## STATE EMPLOYEES RETIREMENT FUND (CORRECTIONAL)

DETERMINATION OF CONTRIBUTION SUFFICIENCY  
(DOLLARS IN THOUSANDS)

JULY 1, 1986

	<u>% OF PAYROLL</u>	<u>\$ AMOUNT</u>
A. STATUTORY CONTRIBUTIONS - CHAPTER 352		
1. Employee Contributions	4.90%	\$1,645
2. Employer Contributions	8.70%	2,920
3. Total	13.60%	\$4,565
	=====	=====
B. REQUIRED CONTRIBUTIONS - CHAPTER 356		
1. Normal Cost		
a. Retirement Benefits	5.94%	\$1,992
b. Disability Benefits	0.19%	63
c. Survivors	0.00%	0
d. Deferred Retirement Benefits	0.00%	0
e. Refunds Due to Death or Withdrawal	1.85%	622
f. Total	7.98%	\$2,677
2. Supplemental Contribution Amortization by July 1, 2010 of UAAL of \$2,148	0.32%	\$107
3. Allowance for Expenses	0.27%	\$91
4. Total	8.57%	\$2,875
C. CONTRIBUTION SUFFICIENCY (DEFICIENCY) (A3-B4)	5.03%	\$1,690

Note: Projected Annual Payroll for Fiscal Year Beginning  
on July 1, 1986 is \$33,561

## STATE EMPLOYEES RETIREMENT FUND (CORRECTIONAL)

TABLE 12

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					\$36,836
1987	\$4,565	\$710	\$662	\$3,075	43,104
1988	4,861	2,858	708	3,500	47,899
1989	5,177	1,479	765	3,949	54,781
1990	5,513	1,421	826	4,513	62,560
1991	5,872	2,251	885	5,114	70,410
1992	6,254	2,338	950	5,751	79,127
1993	6,660	3,216	1,015	6,427	87,983
1994	7,093	3,501	1,084	7,139	97,630
1995	7,554	2,678	1,164	7,959	109,301
1996	8,045	4,274	1,245	8,845	120,672
1997	8,568	3,584	1,334	9,800	134,122
1998	9,125	3,158	1,433	10,911	149,567
1999	9,718	4,894	1,530	12,097	164,958
2000	10,350	4,608	1,636	13,361	182,425
2001	11,022	5,341	1,747	14,751	201,110
2002	11,739	7,265	1,859	16,193	219,918
2003	12,502	7,389	1,977	17,719	240,773
2004	13,314	7,755	2,103	19,400	263,629
2005	14,180	12,498	2,219	21,069	284,161
2006	15,102	12,266	2,346	22,752	307,403
2007	16,083	10,391	2,494	24,720	335,321
2008	17,129	13,769	2,640	26,854	362,895
2009	18,242	15,818	2,783	29,017	391,553
2010	19,428	17,148	2,941	31,298	422,190
2011	20,690	19,329	3,103	33,706	454,154

## STATE EMPLOYEES RETIREMENT FUND (CORRECTIONAL)

## SUMMARY OF ACTUARIAL ASSUMPTIONS AND METHODS

Interest:	Pre-Retirement: 8% per annum
	Post-Retirement: 5% per annum
Salary Increases:	Reported salary at valuation date increased 6.5% to current fiscal year and 6.5% annually for each future year. Prior fiscal year salary is annualized for new Members.
Mortality:	Pre-Retirement:
	Male - 1971 Group Annuity Mortality Table
	Female - 1971 Group Annuity Mortality Table
	male rates set back 8 years
	Post-Retirement:
	Male - Same as above
	Female - Same as above
	Post-Disability:
	Male - Combined Annuity Mortality Table
	Female - Combined Annuity Mortality Table
Retirement Age:	Age 58, or if over age 58, 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 based on actual experience developed by the June 30, 1971 experience analysis. Rates are shown in rate table.
Disability:	Rates adopted by MSRS as shown in rate table.
Expenses:	Prior year expenses expressed as a percentage of prior year payroll. (.27% of payroll)
Return of Contributions:	100% of Members separating before retirement elect return of contributions in lieu of deferred benefit.
Family Composition:	85% of Members are married. Female is three years younger than male. Married families have 1 child.

TABLE 13  
(cont)

Social Security:	Based on the present law and 6.5% salary scale. Only earnings history while in state service is used. Future Social Security benefits replace the same proportion of salary as at present.
Benefit Increases after Retirement:	Payment of earnings on retired reserves in excess of 5% accounted for by 5% post-retirement assumptions.
Special Consideration:	NA
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	<u>Death</u>		<u>Withdrawal</u>		<u>Disability</u>		<u>Retirement</u>	
	<u>Male</u>	<u>Female</u>	<u>Male</u>	<u>Female</u>	<u>Male</u>	<u>Female</u>	<u>Male</u>	<u>Female</u>
20	5	4	2,400	3,700	0	0	0	0
21	5	4	2,250	3,550	0	0	0	0
22	5	4	2,080	3,390	0	0	0	0
23	6	4	1,920	3,230	0	0	0	0
24	6	4	1,760	3,070	0	0	0	0
25	6	5	1,600	2,910	0	0	0	0
26	7	5	1,470	2,750	0	0	0	0
27	7	5	1,340	2,600	0	0	0	0
28	7	5	1,230	2,430	0	0	0	0
29	8	5	1,130	2,270	0	0	0	0
30	8	5	1,040	2,120	2	0	0	0
31	9	6	950	1,970	2	0	0	0
32	9	6	890	1,820	2	0	0	0
33	10	6	830	1,680	2	0	0	0
34	10	7	770	1,540	2	0	0	0
35	11	7	720	1,410	2	1	0	0
36	12	7	680	1,300	2	1	0	0
37	13	8	640	1,190	2	1	0	0
38	14	8	600	1,090	2	1	0	0
39	15	9	560	1,000	2	2	0	0
40	16	9	530	920	2	2	0	0
41	18	10	500	850	2	2	0	0
42	20	10	480	780	2	4	0	0
43	23	11	460	720	3	4	0	0
44	26	12	430	680	3	4	0	0
45	29	13	410	630	3	5	0	0
46	33	14	390	590	5	6	0	0
47	38	15	370	560	7	7	0	0
48	42	16	350	530	9	7	0	0
49	47	18	340	500	11	10	0	0
50	53	20	320	470	14	10	0	0
51	59	23	300	440	16	12	0	0
52	65	26	280	410	20	14	0	0
53	71	29	260	390	24	16	0	0
54	78	33	240	360	28	20	0	0



TABLE 13  
(cont)

Age	Death		Withdrawal		Disability		Retirement	
	Male	Female	Male	Female	Male	Female	Male	Female
55	85	38	210	330	34	24	0	0
56	93	42	170	290	40	30	0	0
57	100	47	140	230	46	36	0	0
58	109	53	90	170	56	44	10,000	10,000
59	119	59	40	90	66	52	0	0
60	131	65	0	0	76	62	0	0
61	144	71	0	0	90	74	0	0
62	159	78	0	0	110	88	0	0
63	174	85	0	0	136	104	0	0
64	192	93	0	0	174	122	0	0
65	213	100	0	0	0	0	0	0
66	236	109	0	0	0	0	0	0
67	263	119	0	0	0	0	0	0
68	292	131	0	0	0	0	0	0
69	324	144	0	0	0	0	0	0
70	361	159	0	0	0	0	0	0

## STATE EMPLOYEES RETIREMENT FUND (CORRECTIONAL)

## SUMMARY OF PLAN PROVISIONS

Eligibility	State employees in covered correctional service.
Contributions	
Member	4.90% of Salary.
Employer	8.70% of Salary.
Allowable Service	Service during which Member contributions were made. May also include certain leaves of absence, military service, and periods while temporary Worker's Compensation is paid.
Salary	Includes wages, allowances, and fees. Excludes lump sum payments at separation and reduced Salary while receiving Worker's Compensation benefits.
Average Salary	Average of the 5 highest successive years of Salary.
<b>RETIREMENT</b>	
Normal Retirement Benefit	
Eligibility	Age 55 and 10 years of Allowable Service under the Correctional and General plans.
Amount	2.5% of Average Salary for the first 25 years of Allowable Service and 2.0% of Average Salary for each subsequent year, pro rata for completed months. Maximum of 75% of Average Salary.  After 84 months, or age 65 if earlier, benefit changes to unreduced General Plan benefit. If combined General Plan benefit and Social Security (based on State service) are less than the Correctional benefit then an additional benefit will be paid to prevent a decrease.
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 15 year certain and life thereafter.
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****Occupational Disability Benefit****Eligibility**

Member under age 55 who cannot perform his duties as a direct result of disability related to an act of duty.

**Amount**

50% of Average Salary plus 2.5% of Average Salary for the first 5 years after 20 years of Allowable Service and 2.0% of Average Salary for each subsequent year, pro rata for completed months. Maximum of 75% Average Salary.

Payment begins at disability and stops at age 62 or earlier if disability ceases or death occurs. Benefits may be paid upon reemployment in order to attain previous salary level.

**Form of Payment**

Same as for retirement.

**Benefit Increases**

Adjusted by MSRS to provide same increase as MPRIF.

**Normal Disability Benefit****Eligibility**

Under age 55 with at least 5 years of Correctional service and disability not related to covered employment.

**Amount**

Normal Retirement Benefit based on Allowable Service (minimum 10 years) and Average Salary at disability.

Payment begins at disability and stops at age 62 or earlier if disability ceases or death occurs. Benefits may be paid upon reemployment in order to attain previous salary level.

**Form of Payment**

Same as for retirement.

**Benefit Increases**

Adjusted by MSRS to provide same increase as MPRIF.

**Retirement Benefits****Eligibility**

Age 62 if still disabled.

**Amount**

Benefit computed as a normal retirement benefit under General Plan based on same Allowable Service and without reduction for age.

**Form of Payment**

Same as for retirement.

**Benefit Increases**

Same as for retirement.

TABLE 14

(cont)

**DEATH****Surviving Spouse Benefit  
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**

Surviving spouse receives the General Plan 100% joint and survivor benefit the Member could have elected if terminated. In lieu of this benefit the surviving spouse may elect a refund of contributions with interest.

**Benefit Increases**

Adjusted by MSRS to provide same increase as MPRIF.

**Refund of Contributions  
With Interest  
Eligibility**

Active employee dies and survivor benefits are not payable, or a former employee dies before annuity begins.

**Amount**

The Member's contributions with 5% interest.

**TERMINATION****Refund of Member's Contri-  
butions  
Eligibility**

Termination of state 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 Correctional and General Service.

**Amount**

Benefit computed under law in effect at termination.

STATE EMPLOYEES RETIREMENT FUND (CORRECTIONAL)

TABLE 15

MEMBERSHIP CHANGES  
(DOLLARS IN THOUSANDS)

JUNE 30, 1986

A. ACTIVE MEMBERS		
	<u>NUMBER</u>	<u>PAYROLL</u>
1. As of the Last Valuation Date	1,191	\$29,160
2. New Entrants	114	NA
3. Total	1,305	NA
4. Separations from Active Service		
a. Refund of Contributions	(71)	(1,370)
b. Separation with Deferred Annuity	(6)	(128)
c. Separation with neither Refund nor Deferred Annuity	(16)	(246)
d. Disability	0	0
e. Death	0	0
f. Retirement with Service Annuity	(8)	(251)
5. Total Separations	(101)	(1,995)
6. Data Adjustments	16	NA
7. As of Current Valuation Date	1,220	\$31,513
B. SERVICE RETIREMENT ANNUITANTS		
	<u>NUMBER</u>	<u>ANNUAL ANNUITY</u>
1. As of the Last Valuation Date	309	\$1,984
2. New Entrants	9	111
3. Total	318	2,095
4. Terminations		
a. Deaths	(9)	(36)
b. Others	0	0
5. Total Terminations	(9)	(36)
6. Data Adjustments	0	80
7. As of Current Valuation Date	309	\$2,139
C. DISABLED ANNUITANTS		
	<u>NUMBER</u>	<u>ANNUAL ANNUITY</u>
1. As of the Last Valuation Date	12	\$71
2. New Entrants	0	0
3. Total	12	71
4. Terminations		
a. Deaths	(1)	(4)
b. Others	0	0
5. Total Terminations	(1)	(4)
6. Data Adjustments	0	4
7. As of Current Valuation Date	11	\$71

TABLE 15

(cont)

D. SURVIVING SPOUSE ANNUITANTS		
	<u>NUMBER</u>	<u>ANNUAL ANNUITY</u>
1. As of the Last Valuation Date	8	\$52
2. New Entrants	1	8
3. Total	9	60
4. Terminations		
a. Deaths	0	0
b. Others	0	0
5. Total Terminations	0	0
6. Data Adjustments	(1)	(5)
7. As of Current Valuation Date	8	\$55
E. SURVIVING CHILDREN ANNUITANTS		
	<u>NUMBER</u>	<u>ANNUAL ANNUITY</u>
1. As of the Last Valuation Date	0	\$0
2. New Entrants	0	0
3. Total	0	0
4. Terminations		
a. Deaths	0	0
b. Others	0	0
5. Total Terminations	0	0
6. Data Adjustments	0	0
7. As of Current Valuation Date	0	\$0
F. DEFERRED ANNUITANTS		
	<u>NUMBER</u>	<u>ANNUAL ANNUITY</u>
1. As of the Last Valuation Date	30	\$264
2. New Entrants	8	58
3. Total	38	322
4. Terminations		
a. Deaths	0	0
b. Others	(1)	(11)
5. Total Terminations	(1)	(11)
6. Data Adjustments	(2)	(21)
7. As of Current Valuation Date	35	\$290

**STATE PATROL RETIREMENT FUND**

**ACTUARIAL VALUATION REPORT**

**JULY 1, 1986**

FEB 6 1987 LCP&R

THE *Wyatt* COMPANY

ACTUARIES AND CONSULTANTS

EMPLOYEE BENEFITS  
COMPENSATION PROGRAMS  
EMPLOYEE COMMUNICATIONS  
ADMINISTRATIVE SYSTEMS  
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SUITE 1525  
8400 NORMANDALE LAKE BOULEVARD  
MINNEAPOLIS, MINNESOTA 55437  
(612) 921-8700

OFFICES IN PRINCIPAL CITIES  
AROUND THE WORLD

December 11, 1986

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

RE: STATE PATROL RETIREMENT FUND

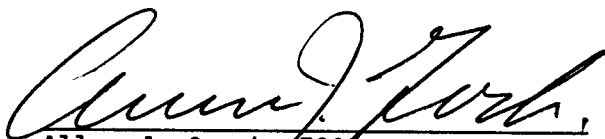
Gentlemen:

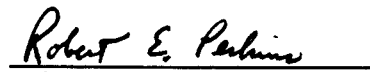
We have prepared an actuarial valuation of the Fund as of July 1, 1986 based on membership and financial data supplied by the Fund.

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



# STATE PATROL RETIREMENT FUND

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# STATE PATROL RETIREMENT FUND

## REPORT HIGHLIGHTS (DOLLARS IN THOUSANDS)

	<u>07/01/85 VALUATION</u>	<u>07/01/86 VALUATION</u>
<b>A. CONTRIBUTIONS (TABLE 11)</b>		
1. Statutory Contributions - Chapter 352B % of Payroll	27.40%	27.40%
2. Required Contributions - Chapter 356 % of Payroll	25.92%	25.00%
3. Sufficiency (Deficiency) (A1-A2)	1.48%	2.40%
<b>B. FUNDING RATIOS</b>		
1. Accrued Benefit Funding Ratio		
a. Current Assets (Table 1)	\$100,486	\$118,174
b. Current Benefit Obligations (Table 8)	\$128,874	\$142,626
c. Funding Ratio (a/b)	77.97%	82.86%
2. Accrued Liability Funding Ratio		
a. Current Assets (Table 1)	\$100,486	\$118,174
b. Actuarial Accrued Liability (Table 9)	\$134,508	\$149,064
c. Funding Ratio (a/b)	74.71%	79.28%
3. Projected Benefit Funding Ratio (Table 8)		
a. Current and Expected Future Assets	\$202,389	\$225,623
b. Current and Expected Future Benefit Obligations	\$194,860	\$213,091
c. Funding Ratio (a/b)	103.86%	105.88%
<b>C. PLAN PARTICIPANTS</b>		
1. Active Members		
a. Number (Table 3)	764	769
b. Projected Annual Earnings	\$25,846	\$27,474
c. Average Annual Earnings (Actual \$)	\$33,830	\$35,727
d. Average Age	40.5	40.2
e. Average Service	13.7	13.5
2. Others		
a. Service Retirements (Table 4)	285	306
b. Disability Retirements (Table 5)	13	13
c. Survivors (Table 6)	109	106
d. Deferred Retirements (Table 7)	21	18
e. Terminated Other Non-vested (Table 7)	9	9
f. Total	437	452

## STATE PATROL 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 State Patrol Retirement Fund continue to be sufficient. The margin of sufficiency has increased from 1.48% in 1985 to 2.40% in 1986. According to this valuation a contribution rate of 25.00% 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 82.86%. The corresponding ratio for the prior year was 77.97%.
- 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 79.28%, which is an increase from the 1985 value of 74.71%.

- 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	\$ 53,535,000
Reserves Plus Excess Earnings	58,000,000
MPRIF Market Value	66,900,000

) The non-MPRIF Reserves amount of \$1,142,000 on line D4 of Table 1 represents the liability for disability and survivor benefits that are paid directly by the Fund. The liability on line A5 of Table 9 would normally show the same \$1,142,000 for recipients not in MPRIF. But this report displays a larger liability of \$7,432,000 which contains an amount of \$6,287,000 for the 6% supplement provided pre-1973 retirees. MSRS classifies this liability as part of the State Reserves in Table 1.

### 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.

) 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 58 who are assumed to retire a year from the valuation date.

#### Annuitants in MPRIF

) Recently it was determined that Members retiring in June of 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 SPRF and a liability of \$3,000 has been included in this report (Table 9, line A5) to represent the past due payments.

TABLE 1

## STATE PATROL RETIREMENT FUND

ACCOUNTING BALANCE SHEET  
(DOLLARS IN THOUSANDS)

July 1, 1986

	<u>MARKET VALUE</u>	<u>COST VALUE</u>
<b>A. ASSETS</b>		
1. Cash and Cash Equivalents	\$5,036	\$5,036
2. Investments		
a. Fixed Income	16,354	16,326
b. Equity	50,941	40,105
c. Real Estate	0	0
3. Equity in Minnesota Post-Retirement Investment Fund (MPRIF)	53,535	53,535
4. Other	391	391
<b>B. TOTAL ASSETS</b>	<u>\$126,257</u>	<u>\$115,393</u>
<b>C. AMOUNTS CURRENTLY PAYABLE</b>	\$840	\$840
<b>D. ASSETS AVAILABLE FOR BENEFITS</b>		
1. Member Reserves	\$15,361	\$15,361
2. State Reserves	55,379	44,515
3. MPRIF Reserves	53,535	53,535
4. Non-MPRIF Reserves	1,142	1,142
<b>5. Total Assets Available for Benefits</b>	<u>\$125,417</u>	<u>\$114,553</u>
<b>E. TOTAL AMOUNTS CURRENTLY PAYABLE AND ASSETS AVAILABLE FOR BENEFITS</b>	<u>\$126,257</u>	<u>\$115,393</u>
<b>F. DETERMINATION OF ACTUARIAL VALUE OF ASSETS</b>		
1. Cost Value of Assets Available for Benefits (D5)		\$114,553
2. Market Value (D5)	\$125,417	
3. Cost Value (D5)	114,553	
	<u>-----</u>	
4. Market Over Cost (F2-F3)	\$10,864	
5. 1/3 of Market Over Cost(F4)/3		3,621
		<u>-----</u>
6. Actuarial Value of Assets (F1+F5) (Same as "Current Assets")		<u>\$118,174</u>

TABLE 2

STATE PATROL RETIREMENT 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	\$103,479	\$98,989
B. OPERATING REVENUES		
1. Member Contributions	\$2,062	\$2,062
2. Employer Contributions	4,660	4,660
3. Investment Income	7,419	7,419
4. MPRIF Income	5,550	5,550
5. Net Realized Gain (Loss)	718	718
6. Other	0	0
7. Net Change in Unrealized Gain (Loss)	6,374	0
	-----	-----
8. Total Revenue	\$26,783	\$20,409
	-----	-----
C. OPERATING EXPENSES		
1. Service Retirements	\$4,567	\$4,567
2. Disability Benefits	57	57
3. Survivor Benefits	22	22
4. Refunds	52	52
5. Expenses	147	147
6. Other	0	0
	-----	-----
7. Total Disbursements	\$4,845	\$4,845
	-----	-----
D. OTHER CHANGES IN RESERVES	0	0
E. ASSETS AVAILABLE AT END OF PERIOD	\$125,417	\$114,553
	=====	=====

TABLE 3

## STATE PATROL 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	15	7							22
25-29	14	57	32						103
30-34	6	29	70	16					121
35-39	1	13	33	56	34				137
40-44	1	1	12	30	104	5			153
45-49		1	3	3	55	35	4		101
50-54				2	9	27	36	3	77
55-59			1	3	3	12	15	11	45
60-64				1	3	3	1	1	9
65+							1		1
TOTAL	37	108	151	111	208	82	57	15	769

## AVERAGE ANNUAL EARNINGS

AGE	YEARS OF SERVICE								ALL
	<1	1-4	5-9	10-14	15-19	20-24	25-29	30+	
<25	16,567	24,444							19,073
25-29	17,625	26,052	29,661						26,028
30-34	20,074	26,864	29,646	31,533					28,754
35-39	5,126	25,505	30,816	32,707	33,249				31,501
40-44	7,237	26,194	31,471	35,357	32,818	34,662			33,060
45-49		31,984	28,959	34,385	33,149	33,545	32,140		33,147
50-54				36,362	37,408	32,913	34,380	38,896	34,447
55-59			31,893	33,821	33,663	33,269	35,358	33,478	34,049
60-64				33,373	42,350	31,491	31,769	46,112	36,975
65+							31,696		31,696
ALL	16,975	26,156	30,051	33,401	33,324	33,289	34,387	35,404	31,015

## 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
628	2,825	4,538	3,708	6,931	2,730	1,960	531	23,851

TABLE 4

## STATE PATROL 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	1							1
55-59	19	45	1					65
60-64	7	53	33	1				94
65-69	1	13	34	15				63
70-74		1	6	19	11			37
75-79				3	16	14		33
80-84				3		2	5	10
85+					3			3
TOTAL	28	112	74	41	30	16	5	306

## AVERAGE ANNUAL ANNUITY

AGE	YEARS RETIRED							ALL
	<1	1-4	5-9	10-14	15-19	20-24	25+	
<50								0
50-54	10,584							10,584
55-59	18,415	15,803	12,030					16,509
60-64	19,825	16,507	13,073	10,032				15,479
65-69	19,877	16,298	13,615	8,687				13,095
70-74		13,466	14,449	11,493	6,143			10,435
75-79				12,807	7,683	5,437		7,196
80-84				10,490		6,007	5,337	7,017
85+					7,433			7,433
ALL	18,540	16,173	13,419	10,454	7,093	5,509	5,337	13,332

## TOTAL ANNUAL ANNUITY (IN THOUSANDS) BY YEARS OF RETIREMENT

<1	1-4	5-9	10-14	15-19	20-24	25+	TOTAL
519	1,811	993	429	213	88	27	4,080

TABLE 5

## STATE PATROL 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		1	1					2
50-54		1						1
55-59			3	3				6
60-64			2	2				4
65-69								0
70-74								0
75-79								0
80-84								0
85+								0
TOTAL	0	2	6	5	0	0	0	13

## AVERAGE ANNUAL BENEFIT

AGE	YEARS DISABLED							ALL
	<1	1-4	5-9	10-14	15-19	20-24	25+	
<50		12,750	12,168					12,459
50-54		19,814						19,814
55-59			9,504	7,763				8,634
60-64			16,242	7,119				11,680
65-69								0
70-74								0
75-79								0
80-84								0
85+								0
TOTAL	0	16,282	12,194	7,505	0	0	0	11,020

## TOTAL ANNUAL BENEFIT (IN THOUSANDS) BY YEARS OF DISABILITY

<1	1-4	5-9	10-14	15-19	20-24	25+	TOTAL
0	33	72	38	0	0	0	143

TABLE 6

## STATE PATROL 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		1	5	4				10
50-54		2	2	1	1			6
55-59		1	4	1	1			7
60-64		1	6	2	2	1		12
65-69		1	1	4	2	1	2	11
70-74				4	3	7	1	15
75-79				2	6	2	6	16
80-84					2	4	7	13
85+					1	3	12	16
TOTAL	0	6	18	18	18	18	28	106

## AVERAGE ANNUAL BENEFIT

AGE	YEARS SINCE DEATH							ALL
	<1	1-4	5-9	10-14	15-19	20-24	25+	
<50		2,943	2,484	2,045				2,354
50-54		7,812	9,347	3,263	2,957			6,756
55-59		17,256	10,455	10,583	2,968			10,375
60-64		9,761	11,629	8,326	3,742	3,036		8,892
65-69		14,660	6,601	5,203	5,059	3,019	3,075	5,578
70-74				6,781	6,278	2,986	3,067	4,662
75-79				7,134	4,283	3,066	3,080	4,036
80-84					3,082	3,405	3,076	3,178
85+					3,023	3,039	3,080	3,069
ALL	0	10,041	8,295	5,604	4,291	3,101	3,078	4,997

## TOTAL ANNUAL BENEFIT (IN THOUSANDS) BY YEARS SINCE DEATH

<1	1-4	5-9	10-14	15-19	20-24	25+	TOTAL
0	60	150	101	77	56	86	530



STATE PATROL RETIREMENT FUND  
RECONCILIATION OF MEMBERS

TABLE 7

	<u>ACTIVES</u>	<u>TERMINATED</u>	
		<u>DEFERRED RETIREMENT</u>	<u>OTHER NON-VESTED</u>
A. On June 30, 1985	764	21	9
B. Additions	38	1	1
C. Deletions:			
1. Service Retirement	(27)	(3)	
2. Disability	0	0	
3. Death	0	0	
4. Terminated-Deferred	(1)		
5. Terminated-Refund	(3)	0	(1)
6. Terminated-Other Non-vested	(1)		
7. Returned as Active		0	0
D. Data Adjustments	(1)	(1)	0
	Vested	473	
	Non-Vested	296	
E. Total on June 30, 1986	769	18	9

	<u>RECIPIENTS</u>		
	<u>RETIREMENT ANNUITANTS</u>	<u>DISABLED</u>	<u>SURVIVORS</u>
A. On June 30, 1985	285	13	109
B. Additions	30	0	4
C. Deletions:			
1. Service Retirement		0	
2. Death	(7)	0	(4)
3. Annuity Expired	0		(5)
4. Returned as Active	0	0	
D. Data Adjustments	(2)	0	2
E. Total on June 30, 1986	306	13	106

## STATE PATROL RETIREMENT FUND

TABLE 8

ACTUARIAL BALANCE SHEET  
(DOLLARS IN THOUSANDS)

JULY 1, 1986

A. CURRENT ASSETS (TABLE 1, F6)				\$118,174
B. EXPECTED FUTURE ASSETS				
1. Present Value of Expected Future Supplemental Contributions				43,422
2. Present Value of Future Normal Costs				64,027
3. Total Expected Future Assets				107,449
C. TOTAL CURRENT AND EXPECTED FUTURE ASSETS				\$225,623
D. CURRENT BENEFIT OBLIGATIONS	<u>Non-Vested</u>	<u>Vested</u>	<u>Total</u>	
1. Benefit Recipients				
a. Retirement Annuities		\$50,695		\$50,695
b. Disability Benefits		2,183		2,183
c. Surviving Spouse's Benefits		8,021		8,021
d. Surviving Children's Benefits		68		68
2. Deferred Retirements with Future Augmentation		1,844		1,844
3. Former Members without Vested Rights		41		41
4. Active Members				
a. Retirement Annuities	5,320	56,725		62,045
b. Disability Benefits	988	5,629		6,617
c. Survivors' Benefits	428	2,221		2,649
d. Deferred Retirements	1,461	6,729		8,190
e. Refund Liability Due to Death or Withdrawal	225	48		273
5. Total Current Benefit Obligations	\$8,422	\$134,204		\$142,626
E. EXPECTED FUTURE BENEFIT OBLIGATIONS				\$70,465
F. TOTAL CURRENT AND EXPECTED FUTURE BENEFIT OBLIGATIONS				\$213,091
G. CURRENT UNFUNDED LIABILITY (D5-A)				\$24,452
H. CURRENT AND FUTURE UNFUNDED LIABILITY (F-C)				(\$12,532)

TABLE 9

## STATE PATROL RETIREMENT 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)
<b>A. DETERMINATION OF ACTUARIAL ACCRUED LIABILITY (AAL)</b>			
1. Active Members			
a. Retirement Annuities	\$118,476	\$45,933	\$72,543
b. Disability Benefits	11,870	6,175	5,695
c. Survivors Benefits	4,683	2,689	1,994
d. Deferred Retirements	14,711	8,330	6,381
e. Refunds Due to Death or Withdrawal	499	900	(401)
f. Total	<u>\$150,239</u>	<u>\$64,027</u>	<u>\$86,212</u>
2. Deferred Retirements with Future Augmentation	\$1,844		\$1,844
3. Former Members Without Vested Rights	41		41
4. Annuitants in MPRIF	53,535		53,535
5. Recipients Not in MPRIF	7,432		7,432
6. Total AAL	<u>\$213,091</u>	<u>\$64,027</u>	<u>\$149,064</u>
<b>B. DETERMINATION OF UNFUNDED ACTUARIAL ACCRUED LIABILITY (UAAL)</b>			
1. AAL (A6)			\$149,064
2. Current Assets (Table 1,F6)			118,174
3. UAAL (B1-B2)			<u>\$30,890</u>
<b>C. DETERMINATION OF SUPPLEMENTAL CONTRIBUTION RATE</b>			
1. Present Value of Future Payrolls to the Amortization Date of July 1, 2009			\$521,904
2. Supplemental Contribution Rate (B3/C1)			5.92%

TABLE 10

## STATE PATROL RETIREMENT FUND

CHANGES IN UNFUNDED ACTUARIAL ACCRUED LIABILITY (UAAL)  
(DOLLARS IN THOUSANDS)

YEAR ENDING JUNE 30, 1986

A. UAAL AT BEGINNING OF YEAR	\$34,022
B. CHANGE DUE TO INTEREST REQUIREMENTS AND CURRENT RATE OF FUNDING	
1. Normal Cost and Expenses	\$4,668
2. Contribution	(6,723)
3. Interest on A, B1, and B2	2,640
4. Total (B1+B2+B3)	\$585
C. EXPECTED UAAL AT END OF YEAR (A+B4)	\$34,607
D. INCREASE (DECREASE) DUE TO ACTUARIAL LOSSES (GAINS) BECAUSE OF EXPERIENCE DEVIATIONS FROM EXPECTED	
1. Salary Increases	(\$42)
2. Investment Return	(5,749)
3. MPRIF Mortality	781
4. Mortality of Other Benefit Recipients	392
5. Other Items	901
6. Total	(\$3,717)
E. UAAL AT END OF YEAR BEFORE PLAN AMENDMENTS AND CHANGES IN ACTUARIAL ASSUMPTIONS (C+D6)	\$30,890
F. CHANGE IN ACTUARIAL ACCRUED LIABILITY DUE TO PLAN AMENDMENTS	\$0
G. CHANGE IN ACTUARIAL ACCRUED LIABILITY DUE TO CHANGES IN ACTUARIAL ASSUMPTIONS	\$0
H. UAAL AT END OF YEAR (E+F+G)	\$30,890

TABLE 11

STATE PATROL RETIREMENT FUND  
DETERMINATION OF CONTRIBUTION SUFFICIENCY  
(DOLLARS IN THOUSANDS)

JULY 1, 1986

	<u>% OF PAYROLL</u>	<u>\$ AMOUNT</u>
A. STATUTORY CONTRIBUTIONS - CHAPTER 352B		
1. Employee Contributions	8.50%	\$2,335
2. Employer Contributions	18.90%	5,193
3. Total	----- 27.40% =====	----- \$7,528 =====
B. REQUIRED CONTRIBUTIONS - CHAPTER 356		
1. Normal Cost		
a. Retirement Benefits	13.32%	\$3,657
b. Disability Benefits	1.79%	493
c. Survivors	0.81%	222
d. Deferred Retirement Benefits	2.31%	636
e. Refunds Due to Death or Withdrawal	0.24%	67
f. Total	----- 18.47% -----	----- \$5,075 -----
2. Supplemental Contribution Amortization by July 1, 2009 of UAAL of \$30,890	5.92%	\$1,626
3. Allowance for Expenses	0.61%	\$168
4. Total	----- 25.00%	----- \$6,869
C. CONTRIBUTION SUFFICIENCY (DEFICIENCY) (A3-B4)	2.40%	\$659

Note: Projected Annual Payroll for Fiscal Year Beginning  
on July 1, 1986 is \$27,474

STATE PATROL RETIREMENT FUND

TABLE 12

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					\$64,639
1987	\$7,528	\$623	\$398	\$5,431	76,577
1988	8,017	8,636	822	6,069	81,205
1989	8,538	4,138	1,263	6,622	90,964
1990	9,093	5,855	1,735	7,337	99,804
1991	9,684	5,184	2,237	8,075	110,142
1992	10,314	7,042	2,764	8,832	119,482
1993	10,984	6,077	3,330	9,622	130,681
1994	11,698	7,331	3,935	10,472	141,585
1995	12,459	7,774	4,558	11,332	153,044
1996	13,269	8,177	5,212	12,239	165,163
1997	14,131	12,002	5,932	13,061	174,421
1998	15,050	12,817	6,663	13,776	183,767
1999	16,028	14,690	7,416	14,458	192,147
2000	17,070	11,088	8,225	15,282	205,186
2001	18,179	19,532	9,073	15,998	210,758
2002	19,361	22,730	9,987	16,326	213,728
2003	20,619	23,119	10,952	16,560	216,836
2004	21,959	25,721	11,971	16,718	217,821
2005	23,387	21,023	13,061	16,998	224,122
2006	24,907	22,606	14,239	17,452	229,636
2007	26,526	26,695	15,490	17,745	231,722
2008	28,250	25,635	16,797	17,970	235,510
2009	30,086	20,402	18,195	18,500	245,499
2010	32,042	21,690	19,684	19,267	255,434
2011	34,125	30,048	21,229	19,749	258,031

STATE PATROL RETIREMENT FUND  
SUMMARY OF ACTUARIAL ASSUMPTIONS AND METHODS

Interest:	Pre-Retirement: 8% per annum Post-Retirement: 5% per annum
Salary Increases:	Reported salary at valuation date increased 6.5% to current fiscal year and 6.5% annually for each future year.
Mortality:	Pre-Retirement: Male - 1971 Group Annuity Mortality Table Female - 1971 Group Annuity Mortality Table male rates set back 8 years  Post-Retirement: Male - Same as above Female - Same as above  Post-Disability: Male - Same as above Female - Same as above
Retirement Age:	Age 58 for State Troopers and for State Police Officers hired after June 30, 1961, or Age 63 for State Police Officers hired before July 1, 1961. If over assumed retirement age, one year from the valuation date.
Separation:	Graded rates starting at .03 at age 20 and decreasing to .005 at age 45-49 and .02 for ages 50-54. Adopted 1984.
Disability:	Rates adopted by MSRS as shown in rate table.
Expenses:	Prior year expenses expressed as percentage of prior year payroll. (0.61% 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:	100% of members are married. Female is three years younger than male. 15% load on spouse benefits for children's benefits.
Social Security:	NA

TABLE 13  
(cont)

Benefit Increases After Retirement:	Payment of earnings on retired reserves in excess of 5% accounted for by 5% post-retirement assumptions.
Special Consideration:	NA
Actuarial Cost Method:	Entry Age Actuarial Cost Method based on earnings and the date the employee entered the plan is applied to all plan benefits. 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 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	5	4	300	300	4	4	0	0
21	5	4	290	290	4	4	0	0
22	5	4	280	280	5	5	0	0
23	6	4	270	270	5	5	0	0
24	6	4	260	260	6	6	0	0
25	6	5	250	250	6	6	0	0
26	7	5	240	240	6	6	0	0
27	7	5	230	230	7	7	0	0
28	7	5	220	220	7	7	0	0
29	8	5	210	210	8	8	0	0
30	8	5	200	200	8	8	0	0
31	9	6	190	190	9	9	0	0
32	9	6	180	180	9	9	0	0
33	10	6	170	170	10	10	0	0
34	10	7	160	160	10	10	0	0
35	11	7	150	150	11	11	0	0
36	12	7	140	140	12	12	0	0
37	13	8	130	130	13	13	0	0
38	14	8	120	120	15	15	0	0
39	15	9	110	110	16	16	0	0
40	16	9	100	100	18	18	0	0
41	18	10	90	90	20	20	0	0
42	20	10	80	80	22	22	0	0
43	23	11	70	70	24	24	0	0
44	26	12	60	60	26	26	0	0
45	29	13	50	50	29	29	0	0
46	33	14	50	50	32	32	0	0
47	38	15	50	50	36	36	0	0
48	42	16	50	50	41	41	0	0
49	47	18	50	50	46	46	0	0
50	53	20	200	200	50	50	0	0
51	59	23	200	200	57	57	0	0
52	65	26	200	200	64	64	0	0
53	71	29	200	200	72	72	0	0
54	78	33	200	200	80	80	0	0

TABLE 13  
(cont)

Age	<u>Death</u>		<u>Withdrawal</u>		<u>Disability</u>		<u>Retirement</u>	
	Male	Female	Male	Female	Male	Female	Male	Female
55	85	38	0	0	88	88	0	0
56	93	42	0	0	98	98	0	0
57	100	47	0	0	108	108	0	0
58	109	53	0	0	118	118	10,000	10,000
59	119	59	0	0	129	129	0	0
60	131	65	0	0	141	141	0	0
61	144	71	0	0	154	154	0	0
62	159	78	0	0	167	167	0	0
63	174	85	0	0	0	0	0	0
64	192	93	0	0	0	0	0	0
65	213	100	0	0	0	0	0	0
66	236	109	0	0	0	0	0	0
67	263	119	0	0	0	0	0	0
68	292	131	0	0	0	0	0	0
69	324	144	0	0	0	0	0	0
70	361	159	0	0	0	0	0	0

## STATE PATROL RETIREMENT FUND

## SUMMARY OF PLAN PROVISIONS

Eligibility	State troopers, conservation officers, and certain crime bureau officers.
Contributions	
Member	8.50% of Salary.
Employer	18.90% of Salary.
Allowable Service	Service during which member contributions were deducted. Includes period receiving temporary Worker's Compensation. Allowable Service for benefit purposes stops at age 60 for new members and most of the current members.
Salary	Salaries excluding lump sum payments at separation.
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. Actuarially equivalent options are: 50% or 100% joint and survivor 50% or 100% bounceback 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).  Members retired under laws in effect as of May 30, 1973 receive an additional 6% supplement. Each year the supplement increases by 6% of the total annuity, which includes both MPRIF and supplemental amounts.

TABLE 14  
(cont)

**DISABILITY**

**Occupational Disability  
Benefit**

Eligibility	Member under age 55 who cannot perform his duties because of a disability directly resulting from an act of duty.
Amount	Normal Retirement Benefit based on Allowable Service (minimum of 20 years) and Average Salary at disability without reduction for commencement before age 55. Benefit is reduced by Workers' Compensation.  Payments cease at age 55 or earlier if disability ceases or death occurs. Benefits may be paid upon reemployment in order to attain previous salary.
Form of Payment	Same as for retirement.
Benefit Increases	Adjusted by MSRS to provide same increase as MPRIF.

**Normal Disability Benefit**

Eligibility	Under age 55 with at least 5 years of Allowable Service and disability not related to covered employment.
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 or earlier if disability ceases or death occurs. Benefits may be paid upon reemployment in order to attain previous salary.
Form of Payment	Same as for retirement.
Benefit Increases	Adjusted by MSRS to provide same increase as MPRIF.

**Retirement After  
Disability**

Eligibility	Age 55 with continued disability.
Amount	Optional annuity continues. Otherwise a normal retirement annuity equal to disability benefit paid, or an actuarially equivalent option.
Form of Payment	Same as for retirement.
Benefit Increases	Same as for retirement.

**TABLE 14**  
**(cont)**

**DEATH**

**Surviving Spouse Benefit**

**Eligibility**

Member who is active or receiving a disability benefit.

**Amount**

20% Annual Salary if member was active or occupational disability and either had less than 10 years of Allowable Service or was under age 55. Payment for life or until remarriage.

Surviving spouse receives the 100% joint and survivor benefit commencing on the member's 55th birthday if was active or occupational disability with 10 years of Allowable Service or normal disability with 20 years of Allowable Service. A spouse who had been receiving the 20% benefit shall be entitled to the larger of the two. Payment for life or until remarriage.

**Benefit Increases**

Adjusted by MSRS to provide same increase as MPRIF.

**Surviving Dependent**

**Children's Benefit**

**Eligibility**

Member who is active or receiving a disability benefit. Child must be unmarried, under age 18 (or 22 if full time student), and dependent upon the member.

**Amount**

10% of Average Salary for each child and \$20 per month prorated among all dependent children. Maximum benefit of 40% Average Salary.

**Refund of Contributions**

**Eligibility**

Member dies before receiving any retirement benefits and survivor benefits are not payable.

**Amount**

Member's contributions with 5% interest.

**TERMINATION**

**Refund of Contributions**

**Eligibility**

Termination of state service.

**Amount**

Member's contributions with 5% interest.

**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 retirement.

TABLE 15

## STATE PATROL 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		764	\$24,268
2. New Entrants		38	NA
3. Total		802	NA
4. Separations from Active Service			
a. Refund of Contributions	(3)		(68)
b. Separation with Deferred Annuity	(1)		(35)
c. Separation with neither Refund nor Deferred Annuity	(1)		(29)
d. Disability	0		0
e. Death	0		0
f. Retirement with Service Annuity	(27)		(942)
5. Total Separations	(32)		(1,074)
6. Data Adjustments	(1)		NA
7. As of Current Valuation Date		769	\$25,797
B. SERVICE RETIREMENT ANNUITANTS		<u>NUMBER</u>	<u>ANNUAL ANNUITY</u>
1. As of the Last Valuation Date		285	\$3,347
2. New Entrants		30	560
3. Total		315	3,907
4. Terminations			
a. Deaths	(7)		(53)
b. Others	0		0
5. Total Terminations	(7)		(53)
6. Data Adjustments	(2)		226
7. As of Current Valuation Date		306	\$4,080
C. DISABLED ANNUITANTS		<u>NUMBER</u>	<u>ANNUAL ANNUITY</u>
1. As of the Last Valuation Date		13	\$135
2. New Entrants		0	0
3. Total		13	135
4. Terminations			
a. Deaths	0		0
b. Others	0		0
5. Total Terminations	0		0
6. Data Adjustments	0		8
7. As of Current Valuation Date		13	\$143

TABLE 15  
(cont)

D. SURVIVING SPOUSE ANNUITANTS		
	<u>NUMBER</u>	<u>ANNUAL ANNUITY</u>
1. As of the Last Valuation Date	96	\$459
2. New Entrants	4	15
3. Total	100	474
4. Terminations		
a. Deaths	(4)	(12)
b. Others	0	0
5. Total Terminations	(4)	(12)
6. Data Adjustments	1	47
7. As of Current Valuation Date	97	\$509
E. SURVIVING CHILDREN ANNUITANTS		
	<u>NUMBER</u>	<u>ANNUAL ANNUITY</u>
1. As of the Last Valuation Date	13	\$26
2. New Entrants	0	0
3. Total	13	26
4. Terminations		
a. Deaths	0	0
b. Others	(5)	(9)
5. Total Terminations	(5)	(9)
6. Data Adjustments	1	4
7. As of Current Valuation Date	9	\$21
F. DEFERRED ANNUITANTS		
	<u>NUMBER</u>	<u>ANNUAL ANNUITY</u>
1. As of the Last Valuation Date	21	\$189
2. New Entrants	1	24
3. Total	22	213
4. Terminations		
a. Deaths	0	0
b. Others	(3)	(26)
5. Total Terminations	(3)	(26)
6. Data Adjustments	(1)	12
7. As of Current Valuation Date	18	\$199

**JUDGES RETIREMENT FUND**  
**ACTUARIAL VALUATION REPORT**  
**JULY 1, 1986**

DEC 11 1986 LCP&R



THE *Wyatt* COMPANY

ACTUARIES AND CONSULTANTS

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OFFICES IN PRINCIPAL CITIES  
AROUND THE WORLD

November 21, 1986

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

RE: JUDGES RETIREMENT FUND

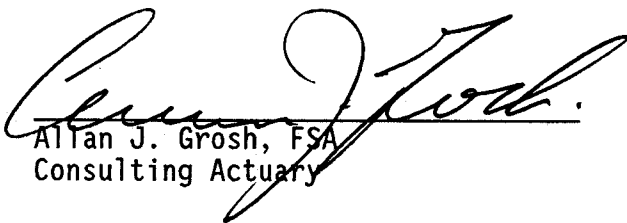
Gentlemen:

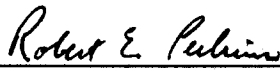
We have prepared an actuarial valuation of the Fund as of July 1, 1986 based on membership and financial data supplied by the Fund.

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

## JUDGES RETIREMENT FUND

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# JUDGES RETIREMENT FUND

## REPORT HIGHLIGHTS (DOLLARS IN THOUSANDS)

	<u>07/01/85</u> <u>VALUATION</u>	<u>07/01/86</u> <u>VALUATION</u>
<b>A. CONTRIBUTIONS (TABLE 11)</b>		
1. Statutory Contributions - Chapter 490 % of Payroll	4.13%	4.11%
2. Required Contributions - Chapter 356 % of Payroll	24.86%	25.32%
3. Sufficiency (Deficiency) (A1-A2)	-20.73%	-21.21%
<b>B. FUNDING RATIOS</b>		
1. Accrued Benefit Funding Ratio		
a. Current Assets (Table 1)	\$13,785	\$15,982
b. Current Benefit Obligations (Table 8)	\$47,074	\$51,178
c. Funding Ratio (a/b)	29.28%	31.23%
2. Accrued Liability Funding Ratio		
a. Current Assets (Table 1)	\$13,785	\$15,982
b. Actuarial Accrued Liability (Table 9)	\$46,662	\$51,360
c. Funding Ratio (a/b)	29.54%	31.12%
3. Projected Benefit Funding Ratio (Table 8)		
a. Current and Expected Future Assets	\$21,459	\$23,279
b. Current and Expected Future Benefit Obligations	\$72,435	\$77,843
c. Funding Ratio (a/b)	29.63%	29.91%
<b>C. PLAN PARTICIPANTS</b>		
1. Active Members		
a. Number (Table 3)	240	243
b. Projected Annual Earnings	\$15,521	\$16,718
c. Average Annual Earnings (Actual \$)	\$64,671	\$68,800
d. Average Age	53.2	53.6
e. Average Service	11.5	11.8
2. Others		
a. Service Retirements (Table 4)	83	83
b. Disability Retirements (Table 5)	4	5
c. Survivors (Table 6)	52	50
d. Deferred Retirements (Table 7)	7	7
e. Terminated Other Non-vested (Table 7)	0	0
f. Total	146	145

## JUDGES 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, representing only member contributions, for the Judges Retirement Fund are 4.11%. The remaining 21.21% needed to reach the required contribution level of 25.32% will be paid by the State as needed in future years according to Chapter 490 of Minnesota Statutes.

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 31.23%. The corresponding ratio for the prior year was 29.28%.
- 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 31.12%, which is an increase from the 1985 value of 29.54%.

- o The Projected Benefit Funding Ratio is a measure of the adequacy or deficiency in the contribution level. This year's ratio of 29.91% verifies that the current statutory contributions by members are going to cover only a portion of the plan benefits. Since the State will make the necessary payments to fund annuities payable from MPRIF and to pay other benefits as they come due, this Funding Ratio may be considered to be 100%.

#### 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) produces 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 January benefit increase as well as the Fund's market share of MPRIF. An approximation of these values on June 30, 1986 provides the following relative comparison.

MPRIF Reserves	\$ 10,620,000
Reserves Plus Excess Earnings	11,500,000
MPRIF Market Value	13,300,000

) The non-MPRIF Reserves amount of \$11,035,000 on line D4 of Table 1 represents the liability for benefits that are paid directly by the Fund.

### 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.

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. Since the State does not have a set statutory contribution rate, only future member contributions (net of expenses) are included in Expected Future Assets on line B2.

) 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 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. Future payments required by the State may be approximated from Table 12 by assuming that the State pays 90% of the amount transferred to MPRIIF (the remaining 10% coming from member contributions) and 100% of the other disbursements.

) 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 68 who are assumed to retire a year from the valuation date.

TABLE 1

**JUDGES RETIREMENT FUND**  
**ACCOUNTING BALANCE SHEET**  
**(DOLLARS IN THOUSANDS)**

July 1, 1986

	<u>MARKET VALUE</u>	<u>COST VALUE</u>
<b>A. ASSETS</b>		
1. Cash and Cash Equivalents	\$1,376	\$1,376
2. Investments		
a. Fixed Income	1,107	1,106
b. Equity	3,444	2,682
c. Real Estate	0	0
3. Equity in Minnesota Post-Retirement Investment Fund (MPRIF)	10,620	10,620
4. Other	47	47
	-----	-----
<b>B. TOTAL ASSETS</b>	<b>\$16,594</b>	<b>\$15,831</b>
	=====	=====
<b>C. AMOUNTS CURRENTLY PAYABLE</b>	<b>\$103</b>	<b>\$103</b>
<b>D. ASSETS AVAILABLE FOR BENEFITS</b>		
1. Member Reserves	\$3,670	\$3,670
2. State Reserves	(8,834)	(9,597)
3. MPRIF Reserves	10,620	10,620
4. Non-MPRIF Reserves	11,035	11,035
	-----	-----
5. Total Assets Available for Benefits	<b>\$16,491</b>	<b>\$15,728</b>
	-----	-----
<b>E. TOTAL AMOUNTS CURRENTLY PAYABLE AND ASSETS AVAILABLE FOR BENEFITS</b>	<b>\$16,594</b>	<b>\$15,831</b>
	=====	=====
<b>F. DETERMINATION OF ACTUARIAL VALUE OF ASSETS</b>		
1. Cost Value of Assets Available for Benefits (D5)		\$15,728
2. Market Value (D5)	\$16,491	
3. Cost Value (D5)	15,728	
	-----	
4. Market Over Cost (F2-F3)	\$763	
5. 1/3 of Market Over Cost(F4)/3		254
		-----
6. Actuarial Value of Assets (F1+F5) (Same as "Current Assets")		<b>\$15,982</b>
		=====

TABLE 2

**JUDGES RETIREMENT 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	\$13,993	\$13,681
B. OPERATING REVENUES		
1. Member Contributions	\$562	\$562
2. Employer Contributions	2,173	2,173
3. Investment Income	549	549
4. MPRIF Income	1,057	1,057
5. Net Realized Gain (Loss)	54	54
6. Other	81	81
7. Net Change in Unrealized Gain (Loss)	451	0
	-----	-----
8. Total Revenue	\$4,927	\$4,476
	-----	-----
C. OPERATING EXPENSES		
1. Service Retirements	\$1,837	\$1,837
2. Disability Benefits	47	47
3. Survivor Benefits	507	507
4. Refunds	0	0
5. Expenses	38	38
6. Other	0	0
	-----	-----
7. Total Disbursements	\$2,429	\$2,429
	-----	-----
D. OTHER CHANGES IN RESERVES	0	0
E. ASSETS AVAILABLE AT END OF PERIOD	\$16,491	\$15,728
	=====	=====

TABLE 3

## JUDGES 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									0
25-29									0
30-34		1							1
35-39	2	18	1						21
40-44	1	20	9	4					34
45-49	3	7	12	11	2				35
50-54	2	3	9	9	7	1			31
55-59		2	9	17	5	6	2	2	43
60-64	1	4	5	12	11	9	11	2	55
65+		1	1	7	5	5	2	2	23
TOTAL	9	56	46	60	30	21	15	6	243

## 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		61,710							61,710
35-39	52,881	60,984	61,710						60,247
40-44	54,703	61,926	62,005	62,710					61,827
45-49	55,063	62,089	61,735	61,951	61,710				61,300
50-54	60,128	61,710	61,777	61,710	62,375	61,710			61,777
55-59		65,739	62,005	58,268	61,710	61,710	61,710	63,036	60,660
60-64	51,321	63,036	64,933	62,382	62,443	62,299	61,089	62,035	62,188
65+		67,116	61,710	61,710	63,322	63,322	69,080	61,710	63,287
ALL	55,248	61,936	62,195	60,980	62,402	62,346	62,237	62,260	61,621

## 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
497	3,468	2,861	3,659	1,872	1,309	934	374	14,974

TABLE 4

## JUDGES 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								0
55-59								0
60-64		2	1					3
65-69	1	5						6
70-74	3	14	11	1				29
75-79		1	15	6				22
80-84			2	9	1			12
85+				5	4	2		11
TOTAL	4	22	29	21	5	2	0	83

## 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								0
60-64		16,593	14,098					15,761
65-69	21,230	28,297						27,119
70-74	26,253	27,517	25,507	10,844				26,049
75-79		5,416	18,053	19,467				17,864
80-84			20,382	19,987	24,444			20,424
85+				17,307	13,159	22,814		16,800
ALL	24,997	25,696	20,905	18,765	15,416	22,814	0	21,546

## TOTAL ANNUAL ANNUITY (IN THOUSANDS) BY YEARS OF RETIREMENT

<1	1-4	5-9	10-14	15-19	20-24	25+	TOTAL
100	565	606	394	77	46	0	1,788

TABLE 5

## JUDGES RETIREMENT FUND

## DISABILITY RETIREMENTS AS OF JUNE 30, 1986

AGE	YEARS DISABLED							TOTAL
	<u>&lt;1</u>	<u>1-4</u>	<u>5-9</u>	<u>10-14</u>	<u>15-19</u>	<u>20-24</u>	<u>25+</u>	
<50								0
50-54								0
55-59								0
60-64					1			1
65-69		2						2
70-74		1	1					2
75-79								0
80-84								0
85+								0
TOTAL	0	3	1	0	1	0	0	5

## AVERAGE ANNUAL BENEFIT

AGE	YEARS DISABLED							ALL
	<u>&lt;1</u>	<u>1-4</u>	<u>5-9</u>	<u>10-14</u>	<u>15-19</u>	<u>20-24</u>	<u>25+</u>	
<50								0
50-54								0
55-59								0
60-64					17,925			17,925
65-69		25,974						25,974
70-74		18,182	13,691					15,937
75-79								0
80-84								0
85+								0
TOTAL	0	23,377	13,691	0	17,925	0	0	20,349

## TOTAL ANNUAL BENEFIT (IN THOUSANDS) BY YEARS OF DISABILITY

<u>&lt;1</u>	<u>1-4</u>	<u>5-9</u>	<u>10-14</u>	<u>15-19</u>	<u>20-24</u>	<u>25+</u>	<u>TOTAL</u>
0	70	14	0	18	0	0	102

TABLE 6

## JUDGES 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								0
50-54								0
55-59		1	1	1				3
60-64		3	1	1	2			7
65-69	1	1						2
70-74		1	1	1	2	1		6
75-79	1	3	3	3	1		1	12
80-84		2	4		1	3		10
85+		1	2	1	2	4		10
TOTAL	2	12	12	7	8	8	1	50

## AVERAGE ANNUAL BENEFIT

AGE	YEARS SINCE DEATH							ALL
	<1	1-4	5-9	10-14	15-19	20-24	25+	
<50								0
50-54								0
55-59		12,968	11,182	7,801				10,650
60-64		14,587	4,722	7,177	12,222			11,444
65-69	5,381	22,385						13,883
70-74		16,904	8,630	12,222	7,764	5,729		9,835
75-79	9,208	13,485	12,256	9,064	3,305		5,538	10,206
80-84		12,222	9,145		12,222	7,766		9,654
85+		12,222	14,475	12,222	12,222	10,551		12,004
ALL	7,295	14,428	10,569	9,516	9,993	8,904	5,538	10,758

## TOTAL ANNUAL BENEFIT (IN THOUSANDS) BY YEARS SINCE DEATH

<1	1-4	5-9	10-14	15-19	20-24	25+	TOTAL
15	172	127	67	80	71	6	538



TABLE 7

**JUDGES 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	240	7	0
B. Additions	10	1	NA
C. Deletions:			
1. Service Retirement	(5)	0	
2. Disability	0		
3. Death	(1)	0	
4. Terminated-Deferred	(1)		
5. Terminated-Refund	0	0	
6. Terminated-Other Non-vested	0		
7. Returned as Active		0	NA
D. Data Adjustments	0	(1)	0
Vested	132		
Non-Vested	111		
E. Total on June 30, 1986	243	7	0

	<u>RETIREMENT ANNUITANTS</u>	<u>RECIPIENTS</u>	
		<u>DISABLED</u>	<u>SURVIVORS</u>
A. On June 30, 1985	83	4	52
B. Additions	5	1	2
C. Deletions:			
1. Service Retirement		0	
2. Death	(5)	0	(4)
3. Annuity Expired	0		0
4. Returned as Active	0	0	
D. Data Adjustments	0	0	0
E. Total on June 30, 1986	83	5	50

TABLE 8

**JUDGES RETIREMENT FUND**  
**ACTUARIAL BALANCE SHEET**  
**(DOLLARS IN THOUSANDS)**

JULY 1, 1986

A. CURRENT ASSETS (TABLE 1, F6)				\$15,982
B. EXPECTED FUTURE ASSETS				
1. Present Value of Expected Future Supplemental Contributions				0
2. Present Value of Future Normal Costs				7,297
				-----
3. Total Expected Future Assets				7,297
				-----
C. TOTAL CURRENT AND EXPECTED FUTURE ASSETS				\$23,279
				=====
D. CURRENT BENEFIT OBLIGATIONS	<u>Non-Vested</u>	<u>Vested</u>		<u>Total</u>
1. Benefit Recipients				
a. Retirement Annuities		\$15,721		\$15,721
b. Disability Benefits		1,127		1,127
c. Surviving Spouse's Benefits		4,807		4,807
d. Surviving Children's Benefits		0		0
2. Deferred Retirements		776		776
3. Former Members without Vested Rights		0		0
4. Active Members				
a. Retirement Annuities	3,099	19,639		22,738
b. Disability Benefits	407	1,321		1,728
c. Survivors' Benefits	1,246	2,912		4,158
d. Deferred Retirements	0	0		0
e. Refund Liability Due to Death or Withdrawal	17	106		123
	-----	-----		-----
5. Total Current Benefit Obligations	\$4,769	\$46,409		\$51,178
	-----	-----		-----
E. EXPECTED FUTURE BENEFIT OBLIGATIONS				\$26,665
				-----
F. TOTAL CURRENT AND EXPECTED FUTURE BENEFIT OBLIGATIONS				\$77,843
				=====
G. CURRENT UNFUNDED LIABILITY (D5-A)				\$35,196
H. CURRENT AND FUTURE UNFUNDED LIABILITY (F-C)				\$54,564

TABLE 9

## JUDGES RETIREMENT 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)
<b>A. DETERMINATION OF ACTUARIAL ACCRUED LIABILITY (AAL)</b>			
1. Active Members			
a. Retirement Annuities	\$44,239	\$19,041	\$25,198
b. Disability Benefits	3,290	2,030	1,260
c. Survivors Benefits	7,658	5,301	2,357
d. Deferred Retirements	0	0	0
e. Refunds Due to Death or Withdrawal	225	111	114
f. Total	<u>\$55,412</u>	<u>\$26,483</u>	<u>\$28,929</u>
2. Deferred Retirements	\$776		\$776
3. Former Members Without Vested Rights	0		0
4. Annuitants in MPRIF	10,620		10,620
5. Recipients Not in MPRIF	11,035		11,035
6. Total AAL	<u>\$77,843</u>	<u>\$26,483</u>	<u>\$51,360</u>
<b>B. DETERMINATION OF UNFUNDED ACTUARIAL ACCRUED LIABILITY (UAAL)</b>			
1. AAL (A6)			\$51,360
2. Current Assets (Table 1,F6)			15,982
3. UAAL (B1-B2)			<u>\$35,378</u>
<b>C. DETERMINATION OF SUPPLEMENTAL CONTRIBUTION RATE</b>			
1. Present Value of Future Payrolls to the Amortization Date of July 1, 2009			\$317,584
2. Supplemental Contribution Rate (B3/C1)			11.14%

TABLE 10

## JUDGES RETIREMENT FUND

CHANGES IN UNFUNDED ACTUARIAL ACCRUED LIABILITY (UAAL)  
(DOLLARS IN THOUSANDS)

YEAR ENDING JUNE 30, 1986

A. UAAL AT BEGINNING OF YEAR	\$32,877
B. CHANGE DUE TO INTEREST REQUIREMENTS AND CURRENT RATE OF FUNDING	
1. Normal Cost and Expenses	\$1,920
2. Contribution	(2,735)
3. Interest on A, B1, and B2	2,598
4. Total (B1+B2+B3)	<u>\$1,783</u>
C. EXPECTED UAAL AT END OF YEAR (A+B4)	\$34,660
D. INCREASE (DECREASE) DUE TO ACTUARIAL LOSSES (GAINS) BECAUSE OF EXPERIENCE DEVIATIONS FROM EXPECTED	
1. Salary Increases	\$110
2. Investment Return	(464)
3. MPRIF Mortality	(33)
4. Mortality of Other Benefit Recipients	(459)
5. Other Items	1,564
6. Total	<u>\$718</u>
E. UAAL AT END OF YEAR BEFORE PLAN AMENDMENTS AND CHANGES IN ACTUARIAL ASSUMPTIONS (C+D6)	\$35,378
F. CHANGE IN ACTUARIAL ACCRUED LIABILITY DUE TO PLAN AMENDMENTS	\$0
G. CHANGE IN ACTUARIAL ACCRUED LIABILITY DUE TO CHANGES IN ACTUARIAL ASSUMPTIONS	\$0
H. UAAL AT END OF YEAR (E+F+G)	<u>\$35,378</u> =====

Revised 12/17/86

TABLE 11

**JUDGES RETIREMENT FUND**  
**DETERMINATION OF CONTRIBUTION SUFFICIENCY**  
**(DOLLARS IN THOUSANDS)**

JULY 1, 1986

	<u>% OF PAYROLL</u>	<u>\$ AMOUNT</u>
<b>A. STATUTORY CONTRIBUTIONS - CHAPTER 490</b>		
1. Employee Contributions	4.11%	\$687
2. Employer Contributions	0.00%	0
3. Total	----- 4.11% =====	----- \$687 =====
<b>B. REQUIRED CONTRIBUTIONS - CHAPTER 356</b>		
1. Normal Cost		
a. Retirement Benefits	9.85%	\$1,647
b. Disability Benefits	1.03%	172
c. Survivors	2.96%	495
d. Deferred Retirement Benefits	0.00%	0
e. Refunds Due to Death or Withdrawal	0.06%	10
f. Total	----- 13.90% -----	----- \$2,324 -----
2. Supplemental Contribution Amortization by July 1, 2009 of UAAL of \$35,378	11.14%	\$1,862
3. Allowance for Expenses	0.28%	\$47
4. Total	----- 25.32%	----- \$4,233
<b>C. CONTRIBUTION SUFFICIENCY (DEFICIENCY)</b> (A3-B4)	-21.21%	(\$3,546)

Note: Projected Annual Payroll for Fiscal Year Beginning  
on July 1, 1986 is \$16,718

TABLE 12

## JUDGES 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					\$5,362
1987	\$687	\$750	\$1,178	\$379	4,500
1988	700	3,848	1,132	189	409
1989	766	2,097	1,089	(64)	(2,075)
1990	796	3,837	1,045	(329)	(6,490)
1991	851	3,686	995	(672)	(10,992)
1992	905	3,709	949	(1,029)	(15,774)
1993	965	7,451	903	(1,557)	(24,720)
1994	1,031	3,557	856	(2,113)	(30,215)
1995	1,110	4,309	811	(2,578)	(36,803)
1996	1,197	4,628	767	(3,112)	(44,113)
1997	1,293	6,739	719	(3,776)	(54,054)
1998	1,395	4,102	677	(4,460)	(61,898)
1999	1,519	5,796	632	(5,148)	(71,955)
2000	1,631	5,423	586	(5,932)	(82,265)
2001	1,772	4,236	546	(6,702)	(91,977)
2002	1,908	2,587	509	(7,406)	(100,571)
2003	2,068	4,986	472	(8,181)	(112,142)
2004	2,260	10,447	433	(9,316)	(130,078)
2005	2,452	8,579	390	(10,667)	(147,262)
2006	2,668	7,442	358	(11,986)	(164,380)
2007	2,927	12,486	317	(13,545)	(187,801)
2008	3,184	8,615	288	(15,253)	(208,773)
2009	3,479	11,220	262	(17,022)	(233,798)
2010	3,813	14,781	235	(19,152)	(264,153)
2011	4,133	9,322	213	(21,348)	(290,903)

**JUDGES RETIREMENT FUND**  
**SUMMARY OF ACTUARIAL ASSUMPTIONS AND METHODS**

Interest:	Pre-Retirement: 8% per annum Post-Retirement: 5% per annum
Salary Increases:	Reported salary at valuation date increased 2% to current fiscal year and 6.5% annually for each future year.
Mortality:	Pre-Retirement: Male - 1971 Group Annuity Mortality Table Female - 1971 Group Annuity Mortality Table male rates set back 8 years  Post-Retirement: Male - Same as above Female - Same as above  Post-Disability: Male - Same as above Female - Same as above
Retirement Age:	Judges: Age 68, or if over age 68, one year from the valuation date. Supreme Court Justices in Pre-1974 Plan: Latest of Age 70, 12 years of service, or one year from valuation date.
Separation:	None.
Disability:	Rates adopted by MSRS based on actual experience, most recently adjusted in 1979, as shown in rate table.
Expenses:	Prior year expenses expressed as percentage of prior year payroll. (0.28% of payroll)
Return of Contributions:	NA
Family Composition:	Marital status as indicated by data. Female is three years younger than male.
Social Security:	Maximum Current Primary amount (\$760/month for 1986), increasing with salary scale. Covered annual wages: \$42,000 Contribution rate: 7.15% for 1986-87, 7.51% for 1988-89, 7.65% for 1990 and later.

TABLE 13  
(cont)

Benefit Increases After Retirement:	Payment of earnings on retired reserves in excess of 5% accounted for by 5% post-retirement assumptions.
Special Consideration:	NA
Actuarial Cost Method:	Entry Age Actuarial Cost Method based on earnings and the date the employee entered the plan is applied to all plan benefits. 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 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	5	4	0	0	0	0	0	0
21	5	4	0	0	0	0	0	0
22	5	4	0	0	0	0	0	0
23	6	4	0	0	0	0	0	0
24	6	4	0	0	0	0	0	0
25	6	5	0	0	0	0	0	0
26	7	5	0	0	0	0	0	0
27	7	5	0	0	0	0	0	0
28	7	5	0	0	0	0	0	0
29	8	5	0	0	0	0	0	0
30	8	5	0	0	2	0	0	0
31	9	6	0	0	2	0	0	0
32	9	6	0	0	2	0	0	0
33	10	6	0	0	2	0	0	0
34	10	7	0	0	2	0	0	0
35	11	7	0	0	2	1	0	0
36	12	7	0	0	2	1	0	0
37	13	8	0	0	2	1	0	0
38	14	8	0	0	2	1	0	0
39	15	9	0	0	2	2	0	0
40	16	9	0	0	2	2	0	0
41	18	10	0	0	2	2	0	0
42	20	10	0	0	2	4	0	0
43	23	11	0	0	3	4	0	0
44	26	12	0	0	3	4	0	0
45	29	13	0	0	3	5	0	0
46	33	14	0	0	5	6	0	0
47	38	15	0	0	7	7	0	0
48	42	16	0	0	9	7	0	0
49	47	18	0	0	11	10	0	0
50	53	20	0	0	14	10	0	0
51	59	23	0	0	16	12	0	0
52	65	26	0	0	20	14	0	0
53	71	29	0	0	24	16	0	0
54	78	33	0	0	28	20	0	0

TABLE 13  
(cont)

Age	Death		Withdrawal		Disability		Retirement	
	Male	Female	Male	Female	Male	Female	Male	Female
55	85	38	0	0	34	24	0	0
56	93	42	0	0	40	30	0	0
57	100	47	0	0	46	36	0	0
58	109	53	0	0	56	44	0	0
59	119	59	0	0	66	52	0	0
60	131	65	0	0	76	62	0	0
61	144	71	0	0	90	74	0	0
62	159	78	0	0	110	88	0	0
63	174	85	0	0	136	104	0	0
64	192	93	0	0	174	122	0	0
65	213	100	0	0	0	0	0	0
66	236	109	0	0	0	0	0	0
67	263	119	0	0	0	0	0	0
68	292	131	0	0	0	0	10,000	10,000
69	324	144	0	0	0	0	0	0
70	361	159	0	0	0	0	0	0

JUDGES RETIREMENT FUND

TABLE 14  
BASIC

SUMMARY OF PLAN PROVISIONS

Eligibility	A judge or justice of any court who is not covered under the Social Security Act. If the Member was active prior to 1/1/74, benefits may be computed according to provisions of the prior plan.
Contributions Member	0.5% of Salary plus the Social Security tax rate. Members who were active prior to 1/1/74 may contribute 4% to a special survivor retirement account.
Employer	Terminal funding basis.
Allowable Service	Service as a judge. Half credit is received for service not compensated at an annual salary or for service while entitled to practice law. Credit may also be earned for uncredited judicial service if the appropriate employee contributions, with interest, are made.
Salary	Salary set by law
Average Salary	Average of the 5 highest years of Salary of the last 10 years prior to retirement.
<b>RETIREMENT</b>	
Normal Retirement Benefit	
Eligibility	Age 65 and 10 years of Allowable Service. Age 70.
Amount	2.5% of Average Salary for each year of Allowable Service prior to 7/1/80 and 3% of Average Salary for each year of Allowable Service after 6/30/80. Maximum benefit of 65% of salary for the 12 months preceding retirement.
Early Retirement Benefit	
Eligibility	Age 62 and 10 years of Allowable Service.
Amount	Normal Retirement Benefit based on Allowable Service and Average Salary at retirement date with reduction of 0.5% for each month the Member is under age 65 at time of retirement.
Form of Payment	Life annuity. Actuarially equivalent options are: 50% or 100% joint and survivor 10 or 15 year certain and life.

**TABLE 14**  
**BASIC**  
**(cont)**

Benefit Increases	Benefits may be increased each January 1 depending on the investment performance of the Minnesota Post Retirement Investment Fund (MPRIF).
<b>DISABILITY</b>	
Disability Benefit Eligibility	Permanent inability to perform the functions of judge.
Amount	No benefit is paid by the Fund. Instead salary is continued for 2 years, but not beyond age 70. Employee and Employer contributions continue and Allowable Service is earned.
Retirement After Disability Eligibility	Member is still disabled after salary payments cease after 2 years, or at age 70, if earlier.
Amount	Larger of 25% of Average Salary or the Normal Retirement Benefit, without reduction.
Benefit Increases	Same as for retirement.
<b>DEATH</b>	
Survivors' Benefit Eligibility	Active or disabled Member dies before retirement or a former Member eligible for a deferred annuity dies.
Amount	Larger of 25% of Average Salary or 60% of Normal Retirement Benefit had the Member retired at date of death.  Benefit paid to spouse for life. If no spouse, benefit is paid to surviving dependent children until child marries, dies, or attains age 18 (age 22 if full time student).
Benefit Increases	Same as for retirement.
Prior Survivors' Benefit Eligibility	Retired Member dies who did not elect an optional annuity and such Member retired prior to 1/1/74 or was in office prior to 1/1/74 and continued contributing 4% of pay to provide this post-retirement death benefit.
Amount	50% of the retired Member's benefit continues to the surviving spouse if married 3 years. Benefit begins immediately unless spouse is not yet age 40 and continues to the earlier of remarriage or death.

**TABLE 14**  
**BASIC**  
**(cont)**

Benefit Increases	Adjusted by MSRS to provide same increase as MPRIF.
Refund of Contributions Eligibility	Member dies prior to retirement or former Member eligible for a deferred annuity dies and survivors' benefits are not payable.
Amount	Member's contributions with 5% interest.
<b>TERMINATION</b>	
Refund of Contributions Eligibility	Termination of service as a judge.
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. Amount is payable as a normal or early retirement annuity.

**JUDGES RETIREMENT FUND**  
**SUMMARY OF PLAN PROVISIONS**

**TABLE 14**  
**COORDINATED**  
**(cont)**

Eligibility	A judge or justice of any court who is covered under the Social Security Act.
Contributions	
Member	0.5% of Salary plus the Social Security tax rate reduced by the Member's Social Security tax.
Employer	Terminal funding basis.
Allowable Service	Service as a judge. Half credit is received for service not compensated at an annual salary or for service while entitled to practice law. Credit may also be earned for uncredited judicial service if the appropriate employee contributions, with interest, are made.
Salary	Salary set by law
Average Salary	Average of the 5 highest years of Salary of the last 10 years prior to retirement.
<b>RETIREMENT</b>	
Normal Retirement Benefit	
Eligibility	Age 65 and 10 years of Allowable Service. Age 70.
Amount	2.5% of Average Salary for each year of Allowable Service prior to 7/1/80 and 3% of Average Salary for each year of Allowable Service after 6/30/80 reduced by 75% of the member's primary Social Security. Maximum benefit of 65% of salary for the 12 months preceding retirement.
Early Retirement Benefit	
Eligibility	Age 62 and 10 years of Allowable Service.
Amount	Normal Retirement Benefit based on Allowable Service and Average Salary at retirement date with reduction of 0.5% for each month the Member is under age 65 at time of retirement.
Form of Payment	Life annuity. Actuarially equivalent options are: 50% or 100% joint and survivor 10 or 15 year certain and life.

**TABLE 14**  
**COORDINATED**  
**(cont)**

Benefit Increases	Benefits may be increased each January 1 depending on the investment performance of the Minnesota Post Retirement Investment Fund (MPRIF).
<b>DISABILITY</b>	
Disability Benefit Eligibility	Permanent inability to perform the functions of judge.
Amount	No benefit is paid by the Fund. Instead salary is continued for 2 years, but not beyond age 70. Employee and Employer contributions continue and Allowable Service is earned.
Retirement After Disability Eligibility	Member is still disabled after salary payments cease after 2 years, or at age 70, if earlier.
Amount	Larger of 25% of Average Salary reduced by 75% of the Member's primary Social Security or the Normal Retirement Benefit, without reduction for age.
Benefit Increases	Same as for retirement.
<b>DEATH</b>	
Survivors' Benefit Eligibility	Active or disabled Member dies before retirement or a former Member eligible for a deferred annuity dies.
Amount	Larger of 25% of Average Salary or 60% of Normal Retirement Benefit had the Member retired at date of death. The primary Social Security is the amount upon which Social Security survivors' benefits are based.  Benefit paid to spouse for life. If no spouse, benefit is paid to surviving dependent children until child marries, dies, or attains age 18 (age 22 if full time student).
Benefit Increases	Same as for retirement.
Refund of Contributions Eligibility	Member dies prior to retirement or former Member eligible for a deferred annuity dies and survivors' benefits are not payable.

TABLE 14  
COORDINATED  
(cont)

Amount	Member's contributions with 5% interest.
<b>TERMINATION</b>	
Refund of Contributions	
Eligibility	Termination of service as a judge.
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. Amount is payable as a normal or early retirement annuity.



TABLE 15

## JUDGES 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	240	\$15,217
2. New Entrants	10	670
3. Total	250	15,887
4. Separations from Active Service		
a. Refund of Contributions	0	0
b. Separation with Deferred Annuity	(1)	(63)
c. Separation with neither Refund nor Deferred Annuity	0	0
d. Disability	0	0
e. Death	(1)	(63)
f. Retirement with Service Annuity	(5)	(317)
5. Total Separations	(7)	(443)
6. Data Adjustments	0	946
7. As of Current Valuation Date	243	\$16,390
B. SERVICE RETIREMENT ANNUITANTS		
	<u>NUMBER</u>	<u>ANNUAL ANNUITY</u>
1. As of the Last Valuation Date	83	\$1,650
2. New Entrants	5	114
3. Total	88	1,764
4. Terminations		
a. Deaths	(5)	(131)
b. Others	0	0
5. Total Terminations	(5)	(131)
6. Data Adjustments	0	155
7. As of Current Valuation Date	83	\$1,788
C. DISABLED ANNUITANTS		
	<u>NUMBER</u>	<u>ANNUAL ANNUITY</u>
1. As of the Last Valuation Date	4	\$79
2. New Entrants	1	18
3. Total	5	97
4. Terminations		
a. Deaths	0	0
b. Others	0	0
5. Total Terminations	0	0
6. Data Adjustments	0	5
7. As of Current Valuation Date	5	\$102

TABLE 15  
(cont)

D. SURVIVING SPOUSE ANNUITANTS		
	<u>NUMBER</u>	<u>ANNUAL ANNUITY</u>
1. As of the Last Valuation Date	52	\$514
2. New Entrants	2	15
3. Total	54	529
4. Terminations		
a. Deaths	(4)	(30)
b. Others	0	0
5. Total Terminations	(4)	(30)
6. Data Adjustments	0	39
7. As of Current Valuation Date	50	\$538
E. SURVIVING CHILDREN ANNUITANTS		
	<u>NUMBER</u>	<u>ANNUAL ANNUITY</u>
1. As of the Last Valuation Date	0	\$0
2. New Entrants	0	0
3. Total	0	0
4. Terminations		
a. Deaths	0	0
b. Others	0	0
5. Total Terminations	0	0
6. Data Adjustments	0	0
7. As of Current Valuation Date	0	\$0
F. DEFERRED ANNUITANTS		
	<u>NUMBER</u>	<u>ANNUAL ANNUITY</u>
1. As of the Last Valuation Date	7	\$115
2. New Entrants	1	22
3. Total	8	137
4. Terminations		
a. Deaths	0	0
b. Others	0	0
5. Total Terminations	0	0
6. Data Adjustments	(1)	(19)
7. As of Current Valuation Date	7	\$118

**LEGISLATORS RETIREMENT FUND**

**ACTUARIAL VALUATION REPORT**

**JULY 1, 1986**

THE *Wyatt* COMPANY

ACTUARIES AND CONSULTANTS

NORTHWESTERN FINANCIAL CENTER  
7900 XERXES AVENUE SOUTH, SUITE 1200  
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November 6, 1986

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

**RE: LEGISLATORS RETIREMENT FUND**

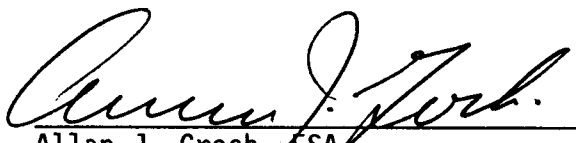
Gentlemen:

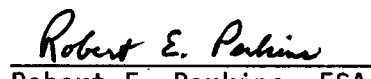
We have prepared an actuarial valuation of the Fund as of July 1, 1986 based on membership and financial data supplied by the Fund.

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

## LEGISLATORS RETIREMENT FUND

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# LEGISLATORS RETIREMENT FUND

## REPORT HIGHLIGHTS (DOLLARS IN THOUSANDS)

	<u>07/01/85 VALUATION</u>	<u>07/01/86 VALUATION</u>
<b>A. CONTRIBUTIONS (TABLE 11)</b>		
1. Statutory Contributions - Chapter 3A % of Payroll	9.00%	9.00%
2. Required Contributions - Chapter 356 % of Payroll	29.92%	31.77%
3. Sufficiency (Deficiency) (A1-A2)	-20.92%	-22.77%
<b>B. FUNDING RATIOS</b>		
1. Accrued Benefit Funding Ratio		
a. Current Assets (Table 1)	\$8,398	\$9,535
b. Current Benefit Obligations (Table 8)	\$18,066	\$20,532
c. Funding Ratio (a/b)	46.49%	46.44%
2. Accrued Liability Funding Ratio		
a. Current Assets (Table 1)	\$8,398	\$9,535
b. Actuarial Accrued Liability (Table 9)	\$18,145	\$21,591
c. Funding Ratio (a/b)	46.28%	44.16%
3. Projected Benefit Funding Ratio (Table 8)		
a. Current and Expected Future Assets	\$15,697	\$13,656
b. Current and Expected Future Benefit Obligations	\$27,923	\$30,540
c. Funding Ratio (a/b)	56.22%	44.72%
<b>C. PLAN PARTICIPANTS</b>		
1. Active Members		
a. Number (Table 3)	201	201
b. Projected Annual Earnings	\$4,507	\$4,880
c. Average Annual Earnings (Actual \$)	\$22,423	\$24,279
d. Average Age	45.6	46.6
e. Average Service	5.9	6.9
2. Others		
a. Service Retirements (Table 4)	108	115
b. Disability Retirements (Table 5)	NA	NA
c. Survivors (Table 6)	41	41
d. Deferred Retirements (Table 7)	111	101
e. Terminated Other Non-vested (Table 7)	15	12
f. Total	275	269

## LEGISLATORS 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, representing only member contributions, for the Legislators Retirement Fund are 9.00% for the first 20 years of service. The remaining 22.77% needed to reach the required contribution level of 31.77% will be paid by the State as needed in future years according to Chapter 3A of Minnesota Statutes.

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 46.44%. The corresponding ratio for the prior year was 46.49%.
- 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 by the State. For 1986 the ratio is 44.16%, which is a decrease from the 1985 value of 46.28%.

- o The Projected Benefit Funding Ratio is a measure of the adequacy or deficiency in the contribution level. The 1986 ratio is lower than the 1985 ratio due to revisions in the Standards for Actuarial Work. This year's ratio of 44.72% verifies that the current statutory contributions by members are going to cover only a portion of the plan benefits. Since the State will make the necessary payments to fund annuities payable from MPRIF and to pay other benefits as they come due, this Funding Ratio may be considered to be 100%.

#### 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) produces 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 January benefit increase as well as the Fund's market share of MPRIF. An approximation of these values on June 30, 1986 provides the following relative comparison.

MPRIF Reserves	\$ 6,950,000
Reserves Plus Excess Earnings	7,530,000
MPRIF Market Value	8,690,000

### 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.

The service retirements in Table 4 include not only those retiring from active status but also members with deferred benefits who have attained retirement age and started receiving benefits.

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. Since the State does not have a set statutory contribution rate, only future member contributions (net of expenses) are included in Expected Future Assets on line B2.

) 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, representing 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 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. Future payments required by the State may be approximated from Table 12 by assuming that the State pays 85% of the amount transferred to MPRIIF (the remaining 15% coming from member contributions) and 100% of the other disbursements. In future years the member contributions will provide a larger portion of the benefit as the pre-1979 benefit formula phases out.

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.

TABLE 1

## LEGISLATORS 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	\$1,016	\$1,016
2. Investments		
a. Fixed Income	0	0
b. Equity	0	0
c. Real Estate	0	0
3. Equity in Minnesota Post-Retirement Investment Fund (MPRIF)	6,950	6,950
4. Other	2,743	2,743
	-----	-----
B. TOTAL ASSETS	\$10,709	\$10,709
	=====	=====
C. AMOUNTS CURRENTLY PAYABLE	\$1,174	\$1,174
D. ASSETS AVAILABLE FOR BENEFITS		
1. Member Reserves	\$2,742	\$2,742
2. State Reserves	(157)	(157)
3. MPRIF Reserves	6,950	6,950
4. Non-MPRIF Reserves	0	0
	-----	-----
5. Total Assets Available for Benefits	\$9,535	\$9,535
	-----	-----
E. TOTAL AMOUNTS CURRENTLY PAYABLE AND ASSETS AVAILABLE FOR BENEFITS	\$10,709	\$10,709
	=====	=====

## F. DETERMINATION OF ACTUARIAL VALUE OF ASSETS

1. Cost Value of Assets Available for Benefits (D5)		\$9,535
2. Market Value (D5)	\$9,535	
3. Cost Value (D5)	9,535	
	-----	
4. Market Over Cost (F2-F3)	\$0	
5. 1/3 of Market Over Cost(F4)/3		0
		-----
6. Actuarial Value of Assets (F1+F5) (Same as "Current Assets")		\$9,535
		=====

TABLE 2

**LEGISLATORS RETIREMENT 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	\$8,398	\$8,398
 B. OPERATING REVENUES		
1. Member Contributions	\$387	\$387
2. Employer Contributions	981	981
3. Investment Income	0	0
4. MPRIF Income	749	749
5. Net Realized Gain (Loss)	0	0
6. Other	0	0
7. Net Change in Unrealized Gain (Loss)	0	0
	-----	-----
8. Total Revenue	\$2,117	\$2,117
	-----	-----
 C. OPERATING EXPENSES		
1. Service Retirements	\$777	\$777
2. Disability Benefits	0	0
3. Survivor Benefits	108	108
4. Refunds	3	3
5. Expenses	29	29
6. Other	63	63
	-----	-----
7. Total Disbursements	\$980	\$980
	-----	-----
 D. OTHER CHANGES IN RESERVES	0	0
 E. ASSETS AVAILABLE AT END OF PERIOD	\$9,535	\$9,535
	=====	=====

TABLE 3

## LEGISLATORS 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									0
25-29		5							5
30-34		13	5	1					19
35-39		17	5	5					27
40-44		22	9	13					44
45-49		17	10	8					35
50-54		13	7	6	1				27
55-59		8	7	10	4				29
60-64		5	1	1		2			9
65+		2		2	1		1		6
TOTAL	0	102	44	46	6	2	1	0	201

## 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		21,745							21,745
30-34		21,745	21,745	21,745					21,745
35-39		21,745	21,745	21,745					21,745
40-44		21,745	21,745	21,745					21,745
45-49		21,745	21,745	21,745					21,745
50-54		21,745	21,745	21,745	21,745				21,745
55-59		21,745	21,745	21,745	21,745				21,745
60-64		21,745	21,745	21,745		21,745			21,745
65+		21,745		21,745	21,745		21,745		21,745
ALL	0	21,745	21,745	21,745	21,745	21,745	21,745	0	21,745

## 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
0	2,219	957	1,000	130	43	22	0	4,371



TABLE 4

## LEGISLATORS 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								0
55-59	2							2
60-64	5	28						33
65-69		10	18					28
70-74		1	9	14				24
75-79		1	4	9				14
80-84				5	6			11
85+					3			3
TOTAL	7	40	31	28	9	0	0	115

## 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	4,562							4,562
60-64	9,044	6,450						6,843
65-69		8,277	9,362					8,974
70-74		956	9,467	5,002				6,508
75-79		11,735	5,707	5,801				6,198
80-84				8,257	4,754			6,346
85+					5,658			5,658
ALL	7,763	6,902	8,921	5,840	5,055	0	0	7,095

## TOTAL ANNUAL ANNUITY (IN THOUSANDS) BY YEARS OF RETIREMENT

<1	1-4	5-9	10-14	15-19	20-24	25+	TOTAL
54	276	277	164	45	0	0	816

TABLE 6

## LEGISLATORS 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			7	3	1			11
50-54					1			1
55-59		1						1
60-64		1	1	1				3
65-69		4			1			5
70-74		1	3	2	2			8
75-79	1	5	1	1				8
80-84			1		1			2
85+				2				2
TOTAL	1	12	13	9	6	0	0	41

## AVERAGE ANNUAL BENEFIT

AGE	YEARS SINCE DEATH							ALL
	<1	1-4	5-9	10-14	15-19	20-24	25+	
<50			3,089	855	670			2,260
50-54					1,760			1,760
55-59		1,850						1,850
60-64		1,077	4,110	3,208				2,798
65-69		3,604			1,902			3,263
70-74		4,010	4,711	2,492	1,973			3,384
75-79	2,124	2,451	2,980	2,148				2,439
80-84			1,318		1,665			1,492
85+				1,783				1,783
ALL	2,124	2,801	3,397	1,830	1,657	0	0	2,593

## TOTAL ANNUAL BENEFIT (IN THOUSANDS) BY YEARS SINCE DEATH

<1	1-4	5-9	10-14	15-19	20-24	25+	TOTAL
2	34	44	16	10	0	0	106

TABLE 7

**LEGISLATORS 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	201	111	15
B. Additions	0	0	NA
C. Deletions:			
1. Service Retirement	0	(10)	
2. Disability	0		
3. Death	0	0	
4. Terminated-Deferred	0		
5. Terminated-Refund	0	0	
6. Terminated-Other Non-vested	0		
7. Returned as Active		0	NA
D. Data Adjustments	0	0	NA
	Vested	95	
	Non-Vested	106	
E. Total on June 30, 1986	201	101	12

	<u>RECIPIENTS</u>		
	<u>RETIREMENT ANNUITANTS</u>	<u>DISABLED</u>	<u>SURVIVORS</u>
A. On June 30, 1985	108	NA	41
B. Additions	9	NA	3
C. Deletions:			
1. Service Retirement		NA	
2. Death	(3)	NA	(3)
3. Annuity Expired	0		0
4. Returned as Active	0	NA	
D. Data Adjustments	1	NA	0
E. Total on June 30, 1986	115	NA	41

TABLE 8

## LEGISLATORS RETIREMENT FUND

ACTUARIAL BALANCE SHEET  
(DOLLARS IN THOUSANDS)

JULY 1, 1986

A. CURRENT ASSETS (TABLE 1, F6)				\$9,535
B. EXPECTED FUTURE ASSETS				
1. Present Value of Expected Future Supplemental Contributions				0
2. Present Value of Future Normal Costs				\$4,121
3. Total Expected Future Assets				4,121
C. TOTAL CURRENT AND EXPECTED FUTURE ASSETS				\$13,656
D. CURRENT BENEFIT OBLIGATIONS	<u>Non-Vested</u>	<u>Vested</u>	<u>Total</u>	
1. Benefit Recipients				
a. Retirement Annuities		\$8,512		\$8,512
b. Disability Benefits		0		0
c. Surviving Spouse's Benefits		1,042		1,042
d. Surviving Children's Benefits		40		40
2. Deferred Retirements with Future Augmentation		3,832		3,832
3. Former Members without Vested Rights		40		40
4. Active Members				
a. Retirement Annuities	905	5,472		6,377
b. Disability Benefits	0	0		0
c. Survivors' Benefits	68	329		397
d. Deferred Retirements	30	32		62
e. Refund Liability Due to Death or Withdrawal	186	44		230
5. Total Current Benefit Obligations	\$1,189	\$19,343		\$20,532
E. EXPECTED FUTURE BENEFIT OBLIGATIONS				\$10,008
F. TOTAL CURRENT AND EXPECTED FUTURE BENEFIT OBLIGATIONS				\$30,540
G. CURRENT UNFUNDED LIABILITY (D5-A)				\$10,997
H. CURRENT AND FUTURE UNFUNDED LIABILITY (F-C)				\$16,884

TABLE 9

## LEGISLATORS RETIREMENT 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	\$15,732	\$7,850	\$7,882
b. Disability Benefits	0	0	0
c. Survivors Benefits	893	538	355
d. Deferred Retirements	105	128	(23)
e. Refunds Due to Death or Withdrawal	345	433	(88)
f. Total	\$17,075	\$8,949	\$8,126
2. Deferred Retirements with Future Augmentation	\$3,832		\$3,832
3. Former Members Without Vested Rights	40		40
4. Annuitants in MPRIF	6,950		6,950
5. Recipients Not in MPRIF	2,643		2,643
6. Total AAL	\$30,540	\$8,949	\$21,591
B. DETERMINATION OF UNFUNDED ACTUARIAL ACCRUED LIABILITY (UAAL)			
1. AAL (A6)			\$21,591
2. Current Assets (Table 1,F6)			9,535
3. UAAL (B1-B2)			\$12,056
C. DETERMINATION OF SUPPLEMENTAL CONTRIBUTION RATE			
1. Present Value of Future Payrolls to the Amortization Date of July 1, 2009			\$92,702
2. Supplemental Contribution Rate (B3/C1)			13.01%

TABLE 10

## LEGISLATORS RETIREMENT FUND

CHANGES IN UNFUNDED ACTUARIAL ACCRUED LIABILITY (UAAL)  
(DOLLARS IN THOUSANDS)

YEAR ENDING JUNE 30, 1986

A. UAAL AT BEGINNING OF YEAR	\$9,747
B. CHANGE DUE TO INTEREST REQUIREMENTS AND CURRENT RATE OF FUNDING	
1. Normal Cost and Expenses	\$814
2. Contribution	(1,368)
3. Interest on A, B1, and B2	758
4. Total (B1+B2+B3)	----- \$204 -----
C. EXPECTED UAAL AT END OF YEAR (A+B4)	\$9,951
D. INCREASE (DECREASE) DUE TO ACTUARIAL LOSSES (GAINS) BECAUSE OF EXPERIENCE DEVIATIONS FROM EXPECTED	
1. Salary Increases	\$132
2. Investment Return	207
3. MPRIF Mortality	158
4. Mortality of Other Benefit Recipients	28
5. Other Items	1,580
6. Total	----- \$2,105 -----
E. UAAL AT END OF YEAR BEFORE PLAN AMENDMENTS AND CHANGES IN ACTUARIAL ASSUMPTIONS (C+D7)	\$12,056
F. CHANGE IN ACTUARIAL ACCRUED LIABILITY DUE TO PLAN AMENDMENTS	\$0
G. CHANGE IN ACTUARIAL ACCRUED LIABILITY DUE TO CHANGES IN ACTUARIAL ASSUMPTIONS	\$0
H. UAAL AT END OF YEAR (E+F+G)	----- \$12,056 =====

TABLE 11

**LEGISLATORS RETIREMENT FUND**  
**DETERMINATION OF CONTRIBUTION SUFFICIENCY**  
**(DOLLARS IN THOUSANDS)**

JULY 1, 1986

	<u>% OF PAYROLL</u>	<u>\$ AMOUNT</u>
<b>A. STATUTORY CONTRIBUTIONS - CHAPTER 3A</b>		
1. Employee Contributions	9.00%	\$439
2. Employer Contributions	0.00%	0
3. Total	----- 9.00% =====	----- \$439 =====
<b>B. REQUIRED CONTRIBUTIONS - CHAPTER 356</b>		
1. Normal Cost		
a. Retirement Benefits	15.92%	\$777
b. Disability Benefits	0.00%	0
c. Survivors	0.90%	44
d. Deferred Retirement Benefits	0.31%	15
e. Refunds Due to Death or Withdrawal	0.96%	47
f. Total	----- 18.09% -----	----- \$883 -----
2. Supplemental Contribution Amortization by July 1, 2009 of UAAL of \$12,056	13.01%	\$635
3. Allowance for Expenses	0.67%	\$33
4. Total	----- 31.77%	----- \$1,551
<b>C. CONTRIBUTION SUFFICIENCY (DEFICIENCY)</b> (A3-B4)	-22.77%	(\$1,112)

Note: Projected Annual Payroll for Fiscal Year Beginning  
on July 1, 1986 is \$4,880

TABLE 12

## LEGISLATORS 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					\$2,585
1987	\$439	\$247	\$261	\$204	2,720
1988	465	944	163	\$192	2,270
1989	491	603	231	\$168	2,095
1990	523	730	210	\$151	1,829
1991	557	1,773	263	\$87	437
1992	599	1,184	248	\$2	(394)
1993	619	857	252	(\$51)	(935)
1994	660	1,715	282	(\$128)	(2,400)
1995	654	1,484	288	(\$237)	(3,755)
1996	697	928	306	(\$322)	(4,614)
1997	707	1,908	318	(\$430)	(6,563)
1998	762	1,260	331	(\$558)	(7,950)
1999	777	1,983	346	(\$698)	(10,200)
2000	838	2,305	359	(\$889)	(12,915)
2001	860	3,175	377	(\$1,141)	(16,748)
2002	924	2,400	386	(\$1,414)	(20,024)
2003	901	1,810	405	(\$1,654)	(22,992)
2004	973	2,367	415	(\$1,912)	(26,713)
2005	981	3,938	427	(\$2,272)	(32,369)
2006	1,043	3,495	436	(\$2,705)	(37,962)
2007	1,181	5,246	451	(\$3,218)	(45,696)
2008	1,333	6,528	453	(\$3,882)	(55,226)
2009	1,414	3,489	466	(\$4,520)	(62,287)
2010	1,528	3,889	481	(\$5,097)	(70,226)
2011	1,640	4,169	483	(\$5,739)	(78,977)



TABLE 13

**LEGISLATORS RETIREMENT FUND**  
**SUMMARY OF ACTUARIAL ASSUMPTIONS AND METHODS**

Interest:	Pre-Retirement: 8% per annum Post-Retirement: 5% per annum																											
Salary Increases:	Reported salary at valuation date increased 2% to current fiscal year and 6.5% annually for each future year.																											
Mortality:	Pre-Retirement: Male - 1971 Group Annuity Mortality Table Female - 1971 Group Annuity Mortality Table male rates set back 8 years  Post-Retirement: Male - Same as above Female - Same as above  Post-Disability: Male - NA Female - NA																											
Retirement Age:	Age 62, or if over age 62, one year from the valuation date.																											
Separation:	Rates based on years of service: <table><tr><td><u>Year</u></td><td><u>House</u></td><td><u>Senate</u></td></tr><tr><td>1</td><td>0%</td><td>0%</td></tr><tr><td>2</td><td>30</td><td>0</td></tr><tr><td>3</td><td>0</td><td>0</td></tr><tr><td>4</td><td>20</td><td>25</td></tr><tr><td>5</td><td>0</td><td>0</td></tr><tr><td>6</td><td>10</td><td>0</td></tr><tr><td>7</td><td>0</td><td>0</td></tr><tr><td>8</td><td>5</td><td>10</td></tr></table>	<u>Year</u>	<u>House</u>	<u>Senate</u>	1	0%	0%	2	30	0	3	0	0	4	20	25	5	0	0	6	10	0	7	0	0	8	5	10
<u>Year</u>	<u>House</u>	<u>Senate</u>																										
1	0%	0%																										
2	30	0																										
3	0	0																										
4	20	25																										
5	0	0																										
6	10	0																										
7	0	0																										
8	5	10																										
Disability:	None																											
Expenses:	Prior year expenses expressed as percentage of prior year payroll. (0.67% of payroll)																											
Return of Contributions:	All employees withdrawing after 6 years of service were assumed to leave their contributions on deposit and receive a deferred annuitant benefit.																											
Family Composition:	85% of Members are married. Female is three years younger than male. Each Member may have up to two dependent children depending on Member's age.																											

TABLE 13  
(cont)

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
Actuarial Cost Method:	Entry Age Actuarial Cost Method based on earnings and the date the employee entered the plan is applied to all plan benefits. 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 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.

## LEGISLATORS RETIREMENT FUND

## SUMMARY OF PLAN PROVISIONS

Eligibility	Members of the State Legislature. A Member of PERA who is elected to the Legislature may elect to remain a Member of PERA and receive credit under PERA for service as a legislator.
Contributions	
Member	9% of Salary during the first 20 years.
Employer	No statutory contributions.
Service	Granted for the full term unless termination occurs before the end of the term, to a maximum of 20 years of Service. Service during all or part of 4 regular legislative sessions is deemed to be 8 years of Service.
Salary	Compensation received for service as a Member of the legislature.
Average Salary	Average of the 5 highest successive years of Salary.
<b>RETIREMENT</b>	
Normal Retirement Benefit	
Eligibility	Age 62 and either 6 full years of Service or Service during all or part of 4 regular legislative sessions. For eligibility purposes, Service does not include credit for time not served when a Member does not serve a full term of office.
Amount	A percentage of Average Salary for each year of service as follows: Prior to 1/1/79 - 5% for the first 8 years - 2.5% for subsequent years After 12/31/78 - 2.5%.
Early Retirement Benefit	
Eligibility	Age 60 and either 6 full years of Service or Service during all or part of 4 regular legislative sessions.
Amount	Normal Retirement Benefit based on Service and Average Salary at retirement date with reduction of 0.5% for each month the Member is under age 62 at time of retirement.
Form of Payment	Paid as a joint and survivor annuity to Member, spouse, and dependent children.

TABLE 14  
(cont)

Benefit Increases	Benefits may be increased each January 1 depending on the investment performance of the Minnesota Post Retirement Investment Fund (MPRIF).
<b>DISABILITY</b>	None.
<b>DEATH BENEFITS</b>	
Surviving Spouse Benefit Eligibility	Death while active, or after termination if Service requirements for a Normal Retirement Benefit are met but payments have not begun.
Amount	Survivor's payment of 50% of the retirement benefit of the Member assuming the Member had attained normal retirement age and had a minimum of 8 years of Service. Benefit is paid for life or until remarriage. A former Member's benefit is augmented as a Deferred Annuity to date of death before determining the portion payable to the spouse.
Surviving Dependent Children's Benefit Eligibility	Same as spouse's benefit.
Amount	Benefit for first child is 25% of the retirement benefit (computed as for surviving spouse) with 12.5% for each additional child. Maximum payable (including spouse) is 100% of the retirement benefit. Benefits cease when a child marries or attains age 18 (22 if a full time student).
Benefit Increases	Adjusted by MSRS to provide same increase as MPRIF.
Refund of Contributions Eligibility	Member dies before receiving any retirement benefits and survivor benefits are not payable.
Amount	Member's contributions without interest.
<b>TERMINATION</b>	
Refund of Contributions Eligibility	Termination of Service.
Amount	Member's contributions with 5% interest. A deferred annuity may be elected in lieu of a refund.
Deferred Annuity Eligibility	Same Service requirement as for Normal Retirement.

TABLE 14  
(cont)

Amount

Benefit computed under law in effect at termination and increased by the following annual percentage: 0% before 7/1/73, 5% from 7/1/73 to 1/1/81, and 3% thereafter until the annuity begins. Amount is payable as a normal or early retirement.

TABLE 15

## LEGISLATORS 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	201	\$4,419
2. New Entrants	0	0
3. Total	201	4,419
4. Separations from Active Service		
a. Refund of Contributions	0	0
b. Separation with Deferred Annuity	0	0
c. Separation with neither Refund nor Deferred Annuity	0	0
d. Disability	0	0
e. Death	0	0
f. Retirement with Service Annuity	0	0
5. Total Separations	0	0
6. Data Adjustments	0	365
7. As of Current Valuation Date	201	\$4,784
B. SERVICE RETIREMENT ANNUITANTS		
	<u>NUMBER</u>	<u>ANNUAL ANNUITY</u>
1. As of the Last Valuation Date	108	\$709
2. New Entrants	9	69
3. Total	117	778
4. Terminations		
a. Deaths	(3)	(20)
b. Others	0	0
5. Total Terminations	(3)	(20)
6. Data Adjustments	1	58
7. As of Current Valuation Date	115	\$816
C. DISABLED ANNUITANTS		
	<u>NUMBER</u>	<u>ANNUAL ANNUITY</u>
1. As of the Last Valuation Date	NA	NA
2. New Entrants	NA	NA
3. Total	NA	NA
4. Terminations		
a. Deaths	NA	NA
b. Others	NA	NA
5. Total Terminations	NA	NA
6. Data Adjustments	NA	NA
7. As of Current Valuation Date	NA	NA

TABLE 15  
(cont)

D. SURVIVING SPOUSE ANNUITANTS		
	<u>NUMBER</u>	<u>ANNUAL ANNUITY</u>
1. As of the Last Valuation Date	32	\$88
2. New Entrants	3	11
3. Total	35	99
4. Terminations		
a. Deaths	(3)	(11)
b. Others	0	0
5. Total Terminations	(3)	(11)
6. Data Adjustments	0	6
7. As of Current Valuation Date	32	\$94
E. SURVIVING CHILDREN ANNUITANTS		
	<u>NUMBER</u>	<u>ANNUAL ANNUITY</u>
1. As of the Last Valuation Date	9	\$12
2. New Entrants	0	0
3. Total	9	12
4. Terminations		
a. Deaths	0	0
b. Others	0	0
5. Total Terminations	0	0
6. Data Adjustments	0	1
7. As of Current Valuation Date	9	\$13
F. DEFERRED ANNUITANTS		
	<u>NUMBER</u>	<u>ANNUAL ANNUITY</u>
1. As of the Last Valuation Date	111	\$825
2. New Entrants	0	0
3. Total	111	825
4. Terminations		
a. Deaths	0	0
b. Others	(10)	(42)
5. Total Terminations	(10)	(42)
6. Data Adjustments	0	37
7. As of Current Valuation Date	101	\$820

ELECTIVE STATE OFFICERS RETIREMENT FUND

ACTUARIAL VALUATION REPORT

JULY 1, 1986



THE *Wyatt* COMPANY

ACTUARIES AND CONSULTANTS

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ADMINISTRATIVE SYSTEMS  
RISK MANAGEMENT  
INTERNATIONAL SERVICES

November 3, 1986

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

**RE: ELECTIVE STATE OFFICERS RETIREMENT FUND**

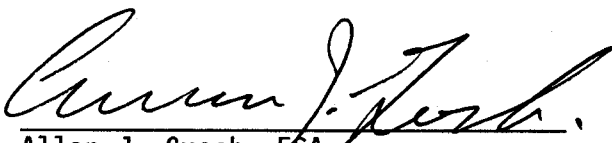
Gentlemen:

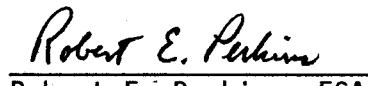
We have prepared an actuarial valuation of the Fund as of July 1, 1986 based on membership and financial data supplied by the Fund.

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

## ELECTIVE STATE OFFICERS RETIREMENT FUND

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# ELECTIVE STATE OFFICERS RETIREMENT FUND

## REPORT HIGHLIGHTS (DOLLARS IN THOUSANDS)

	<u>07/01/85 VALUATION</u>	<u>07/01/86 VALUATION</u>
<b>A. CONTRIBUTIONS (TABLE 11)</b>		
1. Statutory Contributions - Chapter 352C % of Payroll	9.00%	9.00%
2. Required Contributions - Chapter 356 % of Payroll	37.42%	35.06%
3. Sufficiency (Deficiency) (A1-A2)	-28.42%	-26.06%
<b>B. FUNDING RATIOS</b>		
1. Accrued Benefit Funding Ratio		
a. Current Assets (Table 1)	\$197	\$230
b. Current Benefit Obligations (Table 8)	\$1,595	\$1,555
c. Funding Ratio (a/b)	12.35%	14.79%
2. Accrued Liability Funding Ratio		
a. Current Assets (Table 1)	\$197	\$230
b. Actuarial Accrued Liability (Table 9)	\$1,745	\$1,706
c. Funding Ratio (a/b)	11.29%	13.48%
3. Projected Benefit Funding Ratio (Table 8)		
a. Current and Expected Future Assets	\$762	\$430
b. Current and Expected Future Benefit Obligations	\$2,116	\$2,054
c. Funding Ratio (a/b)	36.01%	20.93%
<b>C. PLAN PARTICIPANTS</b>		
1. Active Members		
a. Number (Table 3)	6	6
b. Projected Annual Earnings	\$366	\$392
c. Average Annual Earnings (Actual \$)	\$61,000	\$65,373
d. Average Age	46.2	47.2
e. Average Service	5.9	6.9
2. Others		
a. Service Retirements (Table 4)	6	4
b. Disability Retirements (Table 5)	NA	NA
c. Survivors (Table 6)	3	4
d. Deferred Retirements (Table 7)	5	5
e. Terminated Other Non-vested (Table 7)	1	1
f. Total	15	14

## ELECTIVE STATE OFFICERS 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, representing only member contributions, for the Elective State Officers Retirement Fund are 9.00%. The remaining 26.06% needed to reach the required contribution level of 35.06% will be paid by the State as needed in future years according to Chapter 352C of Minnesota Statutes.

The financial status of the Fund can be measured by three different funding ratios. These ratios are lower than the corresponding ratios for funds that include both member contributions and employer contributions in the assets.

- 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 14.79%. The corresponding ratio for the prior year was 12.35%.
  
- 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 by the State. For 1986 the ratio is 13.48%, which is an increase from the 1985 value of 11.29%.

- o The Projected Benefit Funding Ratio is a measure of the adequacy or deficiency in the contribution level. The 1986 ratio is lower than the 1985 ratio due to revisions in the Standards for Actuarial Work. This year's ratio of 20.93% verifies that the current statutory contributions by members are going to cover only a portion of the plan benefits. Since the State will make the necessary payments to pay other benefits as they come due, this Funding Ratio may be considered to be 100%.

#### 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) produces 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.

The term MPRIF appears on some of the tables with a corresponding value of zero. MPRIF stands for Minnesota Post Retirement Investment Fund, which is used by many of the public funds. For purposes of consistency all of the actuarial reports follow the same format.

#### 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.

The service retirements in Table 4 include not only those retiring from active status but also members with deferred benefits who have attained retirement age and started receiving benefits. 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. Since the State does not have a set statutory contribution rate, only future member contributions (net of expenses) are included in Expected Future Assets on line B2.

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, representing 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 Current Assets. Contributions are then added based on the present statutory rates for employees. As members become eligible for payments, disbursements are made from 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.

TABLE 1

## ELECTIVE STATE OFFICERS 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	\$17	\$17
2. Investments		
a. Fixed Income	0	0
b. Equity	0	0
c. Real Estate	0	0
3. Equity in Minnesota Post-Retirement Investment Fund (MPRIF)	0	0
4. Other	230	230
B. TOTAL ASSETS	----- \$247 =====	----- \$247 =====
C. AMOUNTS CURRENTLY PAYABLE	\$17	\$17
D. ASSETS AVAILABLE FOR BENEFITS		
1. Member Reserves	\$228	\$228
2. State Reserves	2	2
3. MPRIF Reserves	0	0
4. Non-MPRIF Reserves	0	0
5. Total Assets Available for Benefits	----- \$230 -----	----- \$230 -----
E. TOTAL AMOUNTS CURRENTLY PAYABLE AND ASSETS AVAILABLE FOR BENEFITS	----- \$247 =====	----- \$247 =====

## F. DETERMINATION OF ACTUARIAL VALUE OF ASSETS

1. Cost Value of Assets Available for Benefits (D5)		\$230
2. Market Value (D5)	\$230	
3. Cost Value (D5)	230	
4. Market Over Cost (F2-F3)	----- \$0	
5. 1/3 of Market Over Cost(F4)/3		0
6. Actuarial Value of Assets (F1+F5) (Same as "Current Assets")		----- \$230 =====

TABLE 2

**ELECTIVE STATE OFFICERS RETIREMENT 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	\$197	\$197
B. OPERATING REVENUES		
1. Member Contributions	\$31	\$31
2. Employer Contributions	101	101
3. Investment Income	0	0
4. MPRIF Income	0	0
5. Net Realized Gain (Loss)	0	0
6. Other	0	0
7. Net Change in Unrealized Gain (Loss)	0	0
	-----	-----
8. Total Revenue	\$132	\$132
	-----	-----
C. OPERATING EXPENSES		
1. Service Retirements	\$75	\$75
2. Disability Benefits	0	0
3. Survivor Benefits	24	24
4. Refunds	0	0
5. Expenses	2	2
6. Other	0	0
	-----	-----
7. Total Disbursements	\$101	\$101
	-----	-----
D. OTHER CHANGES IN RESERVES	2	2
E. ASSETS AVAILABLE AT END OF PERIOD	\$230	\$230
	=====	=====

TABLE 3

## ELECTIVE STATE OFFICERS 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									0
25-29									0
30-34									0
35-39		1							1
40-44		2							2
45-49									0
50-54			1	1					2
55-59				1					1
60-64									0
65+									0
TOTAL	0	3	1	2	0	0	0	0	6

## 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									0
35-39		44,608							44,608
40-44		57,060							57,060
45-49									0
50-54			51,755	47,440					49,598
55-59				85,730					85,730
60-64									0
65+									0
ALL	0	52,909	51,755	66,585	0	0	0	0	57,276

## 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
0	159	52	133	0	0	0	0	344

TABLE 4

## ELECTIVE STATE OFFICERS RETIREMENT FUND

## SERVICE RETIREMENTS AS OF JUNE 30, 1986

AGE	YEARS RETIRED							TOTAL
	<u>&lt;1</u>	<u>1-4</u>	<u>5-9</u>	<u>10-14</u>	<u>15-19</u>	<u>20-24</u>	<u>25+</u>	
<50								0
50-54								0
55-59								0
60-64								0
65-69								0
70-74			3					3
75-79								0
80-84				1				1
85+								0
TOTAL	0	0	3	1	0	0	0	4

## AVERAGE ANNUAL ANNUITY

AGE	YEARS RETIRED							ALL
	<u>&lt;1</u>	<u>1-4</u>	<u>5-9</u>	<u>10-14</u>	<u>15-19</u>	<u>20-24</u>	<u>25+</u>	
<50								0
50-54								0
55-59								0
60-64								0
65-69								0
70-74			15,920					15,920
75-79								0
80-84				20,534				20,534
85+								0
ALL	0	0	15,920	20,534	0	0	0	17,074

## TOTAL ANNUAL ANNUITY (IN THOUSANDS) BY YEARS OF RETIREMENT

<u>&lt;1</u>	<u>1-4</u>	<u>5-9</u>	<u>10-14</u>	<u>15-19</u>	<u>20-24</u>	<u>25+</u>	<u>TOTAL</u>
0	0	48	20	0	0	0	68

TABLE 6

## ELECTIVE STATE OFFICERS RETIREMENT FUND

SURVIVORS AS OF JUNE 30, 1986

AGE	YEARS SINCE DEATH							TOTAL
	<u>&lt;1</u>	<u>1-4</u>	<u>5-9</u>	<u>10-14</u>	<u>15-19</u>	<u>20-24</u>	<u>25+</u>	
<50								0
50-54								0
55-59								0
60-64								0
65-69								0
70-74	1							1
75-79								0
80-84					1			1
85+					2			2
TOTAL	1	0	0	0	3	0	0	4

## AVERAGE ANNUAL BENEFIT

AGE	YEARS SINCE DEATH							ALL
	<u>&lt;1</u>	<u>1-4</u>	<u>5-9</u>	<u>10-14</u>	<u>15-19</u>	<u>20-24</u>	<u>25+</u>	
<50								0
50-54								0
55-59								0
60-64								0
65-69								0
70-74	3,027							3,027
75-79								0
80-84					6,118			6,118
85+					8,999			8,999
ALL	3,027	0	0	0	8,039	0	0	6,786

## TOTAL ANNUAL BENEFIT (IN THOUSANDS) BY YEARS SINCE DEATH

	<u>&lt;1</u>	<u>1-4</u>	<u>5-9</u>	<u>10-14</u>	<u>15-19</u>	<u>20-24</u>	<u>25+</u>	<u>TOTAL</u>
	3	0	0	0	24	0	0	27

TABLE 7

## ELECTIVE STATE OFFICERS 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	6	5	1
B. Additions	0	0	NA
C. Deletions:			
1. Service Retirement	0	0	
2. Disability	0		
3. Death	0	0	
4. Terminated-Deferred	0		
5. Terminated-Refund	0	0	
6. Terminated-Other Non-vested	0		
7. Returned as Active		0	NA
D. Data Adjustments	0	0	NA
	Vested	2	
	Non-Vested	4	
E. Total on June 30, 1986	6	5	1

	<u>RECIPIENTS</u>		
	<u>RETIREMENT ANNUITANTS</u>	<u>DISABLED</u>	<u>SURVIVORS</u>
A. On June 30, 1985	6	0	3
B. Additions	0	0	1
C. Deletions:			
1. Service Retirement		0	
2. Death	(2)	0	0
3. Annuity Expired	0		0
4. Returned as Active	0	0	
D. Data Adjustments	0	0	0
E. Total on June 30, 1986	4	0	4

TABLE 8

## ELECTIVE STATE OFFICERS RETIREMENT FUND

ACTUARIAL BALANCE SHEET  
(DOLLARS IN THOUSANDS)

JULY 1, 1986

A. CURRENT ASSETS (TABLE 1, F6)				\$230
B. EXPECTED FUTURE ASSETS				
1. Present Value of Expected Future Supplemental Contributions				0
2. Present Value of Future Normal Costs				200
3. Total Expected Future Assets				----- \$200 -----
C. TOTAL CURRENT AND EXPECTED FUTURE ASSETS				----- \$430 =====
D. CURRENT BENEFIT OBLIGATIONS	<u>Non-Vested</u>	<u>Vested</u>		<u>Total</u>
1. Benefit Recipients				
a. Retirement Annuities		\$583		\$583
b. Disability Benefits		0		0
c. Surviving Spouse's Benefits		158		158
d. Surviving Children's Benefits		0		0
2. Deferred Retirements with Future Augmentation		228		228
3. Former Members without Vested Rights		14		14
4. Active Members				
a. Retirement Annuities	78	420		498
b. Disability Benefits	0	0		0
c. Survivors' Benefits	7	12		19
d. Deferred Retirements	0	0		0
e. Refund Liability Due to Death or Withdrawal	53	2		55
5. Total Current Benefit Obligations	----- \$138 -----	----- \$1,417 -----		----- \$1,555 -----
E. EXPECTED FUTURE BENEFIT OBLIGATIONS				----- \$499 -----
F. TOTAL CURRENT AND EXPECTED FUTURE BENEFIT OBLIGATIONS				----- \$2,054 =====
G. CURRENT UNFUNDED LIABILITY (D5-A)				\$1,325
H. CURRENT AND FUTURE UNFUNDED LIABILITY (F-C)				\$1,624



TABLE 9

## ELECTIVE STATE OFFICERS RETIREMENT 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)
<b>A. DETERMINATION OF ACTUARIAL ACCRUED LIABILITY (AAL)</b>			
1. Active Members			
a. Retirement Annuities	\$968	\$264	\$704
b. Disability Benefits	0	0	0
c. Survivors Benefits	33	18	15
d. Deferred Retirements	0	0	0
e. Refunds Due to Death or Withdrawal	70	66	4
f. Total	<u>\$1,071</u>	<u>\$348</u>	<u>\$723</u>
2. Deferred Retirements with Future Augmentation	\$228		\$228
3. Former Members Without Vested Rights	14		14
4. Annuitants in MPRIF	0		0
5. Recipients Not in MPRIF	741		741
6. Total AAL	<u>\$2,054</u>	<u>\$348</u>	<u>\$1,706</u>
<b>B. DETERMINATION OF UNFUNDED ACTUARIAL ACCRUED LIABILITY (UAAL)</b>			
1. AAL (A6)			\$1,706
2. Current Assets (Table 1,F6)			230
3. UAAL (B1-B2)			<u>\$1,476</u>
<b>C. DETERMINATION OF SUPPLEMENTAL CONTRIBUTION RATE</b>			
1. Present Value of Future Payrolls to the Amortization Date of July 1, 2009			\$7,451
2. Supplemental Contribution Rate (B3/C1)			19.81%

TABLE 10

**ELECTIVE STATE OFFICERS RETIREMENT FUND**  
**CHANGES IN UNFUNDED ACTUARIAL ACCRUED LIABILITY (UAAL)**  
**(DOLLARS IN THOUSANDS)**

**YEAR ENDING JUNE 30, 1986**

A. UAAL AT BEGINNING OF YEAR	\$1,548
B. CHANGE DUE TO INTEREST REQUIREMENTS AND CURRENT RATE OF FUNDING	
1. Normal Cost and Expenses	\$55
2. Contribution	(132)
3. Interest on A, B1, and B2	121
	-----
4. Total (B1+B2+B3)	\$44
	-----
C. EXPECTED UAAL AT END OF YEAR (A+B4)	\$1,592
D. INCREASE (DECREASE) DUE TO ACTUARIAL LOSSES (GAINS) BECAUSE OF EXPERIENCE DEVIATIONS FROM EXPECTED	
1. Salary Increases	\$7
2. Investment Return	17
3. MPRIF Mortality	0
4. Mortality of Other Benefit Recipients	(189)
5. Other Items	49
	-----
6. Total	(\$116)
	-----
E. UAAL AT END OF YEAR BEFORE PLAN AMENDMENTS AND CHANGES IN ACTUARIAL ASSUMPTIONS (C+D7)	\$1,476
F. CHANGE IN ACTUARIAL ACCRUED LIABILITY DUE TO PLAN AMENDMENTS	\$0
G. CHANGE IN ACTUARIAL ACCRUED LIABILITY DUE TO CHANGES IN ACTUARIAL ASSUMPTIONS	\$0
	-----
H. UAAL AT END OF YEAR (E+F+G)	\$1,476
	=====

TABLE 11

**ELECTIVE STATE OFFICERS RETIREMENT FUND**  
**DETERMINATION OF CONTRIBUTION SUFFICIENCY**  
**(DOLLARS IN THOUSANDS)**

JULY 1, 1986

	<u>% OF PAYROLL</u>	<u>\$ AMOUNT</u>
<b>A. STATUTORY CONTRIBUTIONS - CHAPTER 3A</b>		
1. Employee Contributions	9.00%	\$35
2. Employer Contributions	0.00%	0
3. Total	----- 9.00% =====	----- \$35 =====
<b>B. REQUIRED CONTRIBUTIONS - CHAPTER 356</b>		
1. Normal Cost		
a. Retirement Benefits	11.22%	\$44
b. Disability Benefits	0.00%	0
c. Survivors	0.77%	3
d. Deferred Retirement Benefits	0.00%	0
e. Refunds Due to Death or Withdrawal	2.81%	11
f. Total	----- 14.80% -----	----- \$58 -----
2. Supplemental Contribution Amortization by July 1, 2009 of UAAL of \$1,476	19.81%	\$78
3. Allowance for Expenses	0.45%	\$2
4. Total	----- 35.06%	----- \$138
<b>C. CONTRIBUTION SUFFICIENCY (DEFICIENCY)     (A3-B4)</b>	-26.06%	(\$103)

Note: Projected Annual Payroll for Fiscal Year Beginning  
on July 1, 1986 is \$392

TABLE 12

## ELECTIVE STATE OFFICERS 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>CURRENT ASSETS YEAR END</u>
1986					\$230
1987	35	\$0	\$135	\$14	144
1988	38	0	108	\$9	83
1989	40	0	95	\$4	32
1990	43	0	86	\$1	(10)
1991	45	0	167	(\$6)	(138)
1992	48	0	150	(\$15)	(255)
1993	52	0	146	(\$24)	(373)
1994	55	0	133	(\$33)	(484)
1995	58	0	144	(\$42)	(612)
1996	62	0	145	(\$52)	(747)
1997	66	0	162	(\$64)	(907)
1998	71	0	208	(\$78)	(1,122)
1999	75	0	194	(\$95)	(1,336)
2000	80	0	188	(\$111)	(1,555)
2001	85	0	191	(\$129)	(1,790)
2002	91	0	199	(\$148)	(2,046)
2003	97	0	199	(\$168)	(2,316)
2004	103	0	193	(\$189)	(2,595)
2005	110	0	213	(\$212)	(2,910)
2006	117	0	223	(\$237)	(3,253)
2007	124	0	242	(\$265)	(3,636)
2008	132	0	257	(\$296)	(4,057)
2009	141	0	295	(\$331)	(4,542)
2010	150	0	295	(\$369)	(5,056)
2011	160	0	335	(\$411)	(5,642)

**ELECTIVE STATE OFFICERS RETIREMENT FUND**  
**SUMMARY OF ACTUARIAL ASSUMPTIONS AND METHODS**

Interest:	Pre-Retirement: 8% per annum Post-Retirement: 5% per annum																		
Salary Increases:	Reported salary at valuation date increased 2% to current fiscal year and 6.5% annually for each future year.																		
Mortality:	Pre-Retirement: Male - 1971 Group Annuity Mortality Table Female - 1971 Group Annuity Mortality Table male rates set back 8 years  Post-Retirement: Male - Same as above Female - Same as above  Post-Disability: Male - NA Female - NA																		
Retirement Age:	Age 62, or if over age 62, one year from the valuation date.																		
Separation:	Rates based on years of service: <table> <tr> <th><u>Year</u></th><th><u>Rate</u></th></tr> <tr><td>1</td><td>0%</td></tr> <tr><td>2</td><td>0</td></tr> <tr><td>3</td><td>0</td></tr> <tr><td>4</td><td>50</td></tr> <tr><td>5</td><td>0</td></tr> <tr><td>6</td><td>0</td></tr> <tr><td>7</td><td>0</td></tr> <tr><td>8</td><td>50</td></tr> </table>	<u>Year</u>	<u>Rate</u>	1	0%	2	0	3	0	4	50	5	0	6	0	7	0	8	50
<u>Year</u>	<u>Rate</u>																		
1	0%																		
2	0																		
3	0																		
4	50																		
5	0																		
6	0																		
7	0																		
8	50																		
Disability:	None																		
Expenses:	Prior year expenses expressed as percentage of prior year payroll. (0.45% of payroll)																		
Return of Contributions:	All employees withdrawing after 8 years of service were assumed to leave their contributions on deposit and receive a deferred annuitant benefit.																		
Family Composition:	85% of Members are married. Female is three years younger than male. Each Member may have up to two dependent children depending on the Member's age.																		

TABLE 13  
(cont)

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 Considerations:	NA
Actuarial Cost Method:	Entry Age Actuarial Cost Method based on earnings and the date the employee entered the plan is applied to all plan benefits. 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 6.5% per annum.
Projected Cash Flow Method:	Cash flows for 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.

## ELECTIVE STATE OFFICERS RETIREMENT FUND

## SUMMARY OF PLAN PROVISIONS

Eligibility	Employment as a "Constitutional Officer".
Contributions	
Member	9% of Salary.
Employer	No statutory contributions.
Allowable Service	Service while in an eligible position.
Salary	Salary upon which Elective State Officers Retirement Plan contributions have been made.
Average Salary	Average of the 5 highest successive years of Salary.
<b>RETIREMENT</b>	
Normal Retirement Benefit	
Eligibility	Age 62 and 8 years of Allowable Service.
Amount	2.5% of Average Salary per year of Allowable Service.
Early Retirement Benefit	
Eligibility	Age 60 and 8 years of Allowable Service.
Amount	Normal Retirement Benefit based on Allowable Service and Average Salary at retirement date with reduction of 0.5% for each month the Member is under age 62 at time of retirement.
Form of Payment	Life annuity.
Benefit Increases	Adjusted by MSRS to provide same increase as MPRIF.
<b>DISABILITY</b>	None.
<b>DEATH</b>	
Surviving Spouse Benefit	
Eligibility	Death while active or after retirement or with at least 8 years of Allowable Service.
Amount	Survivor's payment of 50% of the retirement benefit of the Member assuming the Member had attained age 62 and had a minimum of 8 years of Allowable Service. Benefit is paid for life or until remarriage. A former Member's benefit is augmented the same as a Deferred Annuity to date of death before determining the portion payable to the spouse.

TABLE 14  
(cont)

Surviving Dependent  
Children's Benefit  
Eligibility

Same as spouse's benefit.

Amount

Benefit for first child is 25% of the retirement benefit (computed as for surviving spouse) with 12.5% for each additional child. Maximum payable (including spouse) is 100% of the retirement benefit. Benefits cease when a child marries or attains age 18 (22 if a full time student).

Benefit Increases

Adjusted by MSRS to provide same increase as MPRIF.

**TERMINATION**

Refund of Contributions  
Eligibility

Termination of Service.

Amount

Member's contributions with 5% interest. A deferred annuity may be elected in lieu of a refund.

Deferred Benefit  
Eligibility

8 years of Allowable Service.

Amount

Benefit computed under law in effect at termination and increased by the following annual percentage: 0% before 7/1/79, 5% from 7/1/79 to 1/1/81, and 3% thereafter until the annuity begins. Amount is payable as a normal or early retirement.



TABLE 15

## ELECTIVE STATE OFFICERS 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	6	\$359
2. New Entrants	0	0
3. Total	6	359
4. Separations from Active Service		
a. Refund of Contributions	0	0
b. Separation with Deferred Annuity	0	0
c. Separation with neither Refund nor Deferred Annuity	0	0
d. Disability	0	0
e. Death	0	0
f. Retirement with Service Annuity	0	0
5. Total Separations	0	0
6. Data Adjustments	0	26
7. As of Current Valuation Date	6	\$385
B. SERVICE RETIREMENT ANNUITANTS		
	<u>NUMBER</u>	<u>ANNUAL ANNUITY</u>
1. As of the Last Valuation Date	6	\$83
2. New Entrants	0	0
3. Total	6	83
4. Terminations		
a. Deaths	(2)	(20)
b. Others	0	0
5. Total Terminations	(2)	(20)
6. Data Adjustments	0	5
7. As of Current Valuation Date	4	\$68
C. DISABLED ANNUITANTS		
	<u>NUMBER</u>	<u>ANNUAL ANNUITY</u>
1. As of the Last Valuation Date	0	\$0
2. New Entrants	0	0
3. Total	0	0
4. Terminations		
a. Deaths	0	0
b. Others	0	0
5. Total Terminations	0	0
6. Data Adjustments	0	0
7. As of Current Valuation Date	0	\$0

TABLE 15  
(cont)

D. SURVIVING SPOUSE ANNUITANTS		
	<u>NUMBER</u>	<u>ANNUAL ANNUITY</u>
1. As of the Last Valuation Date	3	\$22
2. New Entrants	1	3
3. Total	4	25
4. Terminations		
a. Deaths	0	0
b. Others	0	0
5. Total Terminations	0	0
6. Data Adjustments	0	2
7. As of Current Valuation Date	4	\$27
E. SURVIVING CHILDREN ANNUITANTS		
	<u>NUMBER</u>	<u>ANNUAL ANNUITY</u>
1. As of the Last Valuation Date	0	\$0
2. New Entrants	0	0
3. Total	0	0
4. Terminations		
a. Deaths	0	0
b. Others	0	0
5. Total Terminations	0	0
6. Data Adjustments	0	0
7. As of Current Valuation Date	0	\$0
F. DEFERRED ANNUITANTS		
	<u>NUMBER</u>	<u>ANNUAL ANNUITY</u>
1. As of the Last Valuation Date	5	\$40
2. New Entrants	0	0
3. Total	5	40
4. Terminations		
a. Deaths	0	0
b. Others	0	0
5. Total Terminations	0	0
6. Data Adjustments	0	0
7. As of Current Valuation Date	5	\$40