

**MINNESOTA STATE  
RETIREMENT SYSTEM**

Actuarial Valuations  
as of

**JUNE 30, 1984**

**STATE EMPLOYEES RETIREMENT FUND**

**STATE PATROL RETIREMENT FUND**

**JUDGES RETIREMENT FUND**

**LEGISLATORS RETIREMENT PLAN**

MINNESOTA STATE RETIREMENT SYSTEM  
STATE EMPLOYEES' RETIREMENT FUND

ACTUARIAL VALUATION AS OF

JUNE 30, 1984

Board of Directors  
Minnesota State Retirement System  
529 Jackson at 10th Street  
St. Paul, Minnesota

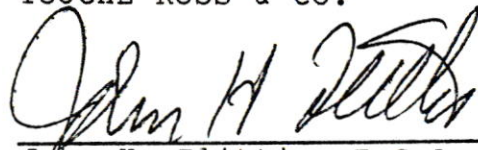
Ladies and Gentlemen:

We have performed an actuarial valuation of the Minnesota State Retirement System, State Employees' Retirement Fund as of June 30, 1984.

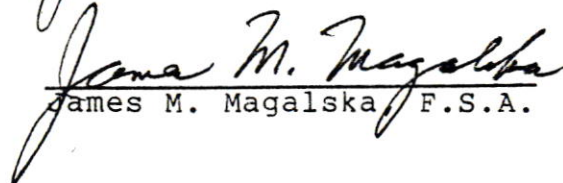
The valuation was performed on the basis of accepted actuarial methods and procedures, in accordance with the applicable provisions set forth in Minnesota Statutes (Chapter 356) and stipulated in the Contract between the State of Minnesota and Touche Ross & Co.

We hereby certify that on the basis of our valuation, contributions required from employees and the State under Minnesota Statutes (Chapter 352) represent 97.28% of the requirements set forth in Chapter 356. Furthermore, the entry age normal cost method was utilized in determining the accrued liability for all benefits payable under the Fund, and the valuation was completed in accordance with the temporary rules adopted by the Legislative Commission on Pensions and Retirement on June 14, 1984.

TOUCHE ROSS & CO.



John H. Flittie, F.S.A.



James M. Magalska, F.S.A.

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REPORT HIGHLIGHTS

Comparison with Previous Valuation

	<u>6/30/84</u>	<u>6/30/83</u>
A. Financial and Actuarial Status		
1. Valuation Assets	\$ 996,003,433	\$ 902,506,393
2. Accrued Liability	1,311,550,300	1,167,124,433
3. Unfunded Accrued Liability (A2 - A1)	315,546,867	264,618,040
4. Accrued Liability Funding Ratio (A1/A2)	75.94%	77.33%
5. Normal Cost		
General Plan	\$55,387,116 (6.13%)*	\$59,653,471 (6.96%)*
Correctional Plan	2,562,340 (9.49%)*	2,602,521 (10.62%)*
B. Contributions		
1. Chapter 356 Requirement	74,573,650	81,478,564
2. Actual Prescribed Contribution (Chapter 352)	72,545,081	83,961,561
3. Sufficiency (B2/B1)	.973	1.03
C. Depth of Funding - Plan Contin- uation Basis		
1. Present Value of Accrued Benefits	\$1,069,079,217	\$973,921,853
2. Depth of Funding (A1/C1)	93.16%	92.67%

\* Parentheses indicate contribution levels as a percentage of salary for participants below assumed maximum retirement age.

REPORT HIGHLIGHTS (continued)

	<u>6/30/84</u>	<u>6/30/83</u>
D. Plan Participants		
1. Active Members		
a. Number	45,332	44,315
b. Payroll of employees under assumed retirement age	\$929,661,232	\$881,572,208
c. Total payroll	949,950,593	893,430,208
2. Retired Members/Beneficiaries		
a. Number	11,169	10,772
b. Average annual benefit payable	\$3,349	\$3,053
3. Deferred Annuitants		
a. Number	877	995
b. Average annual vested benefit	\$3,953	3,242
4. Former Members Without Vested Rights		
a. Number	5,590	4,908
b. Average employee contributions	\$353	\$328

REPORT HIGHLIGHTS

Results Shown Separately for General and Correctional Employees.

	<u>General</u>	<u>Correctional</u>
A. Financial and Actuarial Status		
1. Valuation Assets	\$ 955,850,470	\$ 40,152,963
2. Accrued Liability	1,267,662,330	43,887,970
3. Unfunded Accrued Liability (A2 - A1)	311,811,860	3,735,007
4. Accrued Liability Funding Ratio (A1/A2)	75.40%	91.49%
5. Normal Cost*	55,387,116 (6.13%)	2,562,340 (9.49%)
B. Contributions		
1. Chapter 356 Requirement	\$71,785,754 (7.95%)	\$2,787,896 (10.33%)
2. Actual Prescribed Contribution (Chapter 352)	68,873,902 (7.63%)	3,671,179 (13.60%)
3. Sufficiency (2 / 1)	.959	1.317
C. Depth of Funding - Plan Continuation Basis		
1. Present Value of Accrued Benefits	\$1,031,525,757	\$37,553,460
2. Depth of Funding (A1/C1)	92.66%	106.92%

\* Parentheses indicate contribution levels as a percentage of salary.

REPORT HIGHLIGHTS (continued)

	<u>General</u>	<u>Correctional</u>
D. Plan Participants		
1. Active Members		
a. Number	44,158	1,174
b. Valuation payroll of employees under assumed retirement age	\$902,667,264	\$26,993,968
c. Total valuation payroll	922,951,956	26,998,637
2. Retired Members/Beneficiaries		
a. Number	10,843	326
b. Average annual benefit payable	\$3,271	\$5,959
3. Deferred Annuitants		
a. Number	852	25
b. Average annual vested benefit	\$3,859	\$7,136
4. Former Members Without Vested Rights		
a. Number	5,495	95
b. Average employee contributions	\$319	\$2,314

MINNESOTA STATE RETIREMENT SYSTEM  
STATE EMPLOYEES' RETIREMENT FUND

ACTUARIAL VALUATION AS OF JUNE 30, 1984

PURPOSE AND SUMMARY

The purpose of this report is to set forth the financial status of the Minnesota State Retirement System (MSRS), State Employees' Retirement Fund in accordance with the applicable provisions set forth in Chapter 356 and Chapter 11A of the Minnesota Statutes.

Chapter 356 of the Minnesota Statutes sets forth the annual reporting requirements which govern the public employee retirement systems in Minnesota. The principal requirement (in addition to the experience study required every fourth year) is that an actuarial valuation be performed each year and that the valuation specifically set forth the following items based on an assumed 8% pre-retirement and 5% post-retirement interest rate, and a 6-1/2% salary scale assumption:

1. The assets of the plan and the present value of all benefits which will be payable from the plan.
2. The normal cost of the plan (as a level percentage of payroll) based on the entry age normal cost method.
3. The accrued liability of the plan, defined as the present value of all benefits less the present value of future entry age normal costs.
4. An actuarial balance sheet showing accrued assets, accrued liabilities, and the deficit from full funding of the accrued liability (unfunded accrued liability).
5. The annual contribution required to pay normal cost and amortize the June 30, 1984 unfunded accrued liability by June 30, 2010, the full funding date established in the June 30, 1982 valuation.
6. An analysis explaining the increase or decrease in the unfunded accrued liability since the last valuation.

Chapter 11A of the Minnesota Statutes pertains to the operation of the Minnesota Post Retirement Investment Fund (MPRI Fund). It includes requirements regarding the determination of the present value of benefits payable from the MPRI Fund (as of

June 30, 1984 and as of January 1, 1985) and the corresponding mortality gain or loss each year, the latter to facilitate an appropriate transfer between the State Employees' Retirement Fund and the MPRI Fund.

This reporting on the status of the State Employees' Retirement Fund as of June 30, 1984, is intended to comply with all of the requirements regarding actuarial reporting that are set forth in Chapters 356 and 11A of the Statutes. Appendix 1 at the end of the report cross-references the information of the Minnesota Statutes set forth herein with that specifically called for under Chapters 356 and 11A respectively.

Changes from last year in the methods used in the valuation are discussed on page 47.

#### VALUATION ASSETS

The Executive Director furnished us with a Financial Report setting forth the assets and liabilities of the Fund as of June 30, 1984. The accounting balance sheet furnished by the Executive Director is set forth in Table 1(a).

In order to determine the Chapter 356 contribution requirements, as well as the unfunded accrued liability and depth of funding ratio, separately for Correctional and General Employees, we must allocate the State Contribution Reserve (item B.4 in Table 1(a)) between the General and Correctional Employees' portions of the Fund. The method used in last year's report has been retained and may be briefly outlined as follows:

1. Start with last year's resulting allocation.
2. Add estimated State contributions to each plan, determined by allocating the actual State contribution for the year in proportion to the respective amounts derived by applying the State contribution rates to average General and Correctional payrolls during the year.
3. Deduct any refund of contributions and transfers of assets to the MPRI Fund (estimated, based on new retirees during the year reported at the end of the year). Note that this step is performed only in regard to those items which we can definitely allocate on the valuation date. Determine new 1984 base before allocation of investment earnings.
4. Allocate investment earnings, net of operating expenses, in proportion to the new base.

The June 30, 1984 allocation on this basis results in valuation assets as follows:

General Plan	\$955,850,470
Correctional Plan	<u>40,152,963</u>
Total	\$996,003,433

#### ACTUARIAL BALANCE SHEETS

Table 2 sets forth an actuarial balance sheet summarizing the actuarial valuation. Whereas the previously mentioned accounting balance sheet [Table 1(a)] balances the current assets to date with current accumulated reserves for benefits payable, the actuarial balance sheet compares total assets, including the present value of all future contributions payable to the Fund, with the present value of all benefits payable from the Fund.

Table 3(a) sets forth a balance sheet comparing the assets and unfunded accrued liability (the total of the two equaling the accrued liability) to the current liabilities and reserves required under the plan. This table is in the format specifically required by Chapter 356 and is supported by attachments in the form of Tables 3(b) and 3(c), which set forth the determination of the unfunded accrued liability and the status of the MPRI Fund as of June 30, 1984.

Table 1(a)

MINNESOTA STATE RETIREMENT SYSTEM  
STATE EMPLOYEES' RETIREMENT FUND

Accounting Balance Sheet as of June 30, 1984

A. ASSETS

1. Cash		\$	13,180
2. Short term investments (at cost)			18,925,000
3. Accounts receivable:			
a. Accrued employee contributions	\$1,550,192		
b. Accrued employer contributions	2,381,656		
c. Employee buy backs	84,240		
d. Other	<u>11,169</u>		4,027,257
4. Due from other plans			106,823
5. Interest receivable			430,421
6. Cash equivalents (at cost)			40,251,532
7. Investment in debt securities (actuarial value)****			171,238,046
8. Due from MPRI Fund			28,727
9. Investment in equities (actuarial value)*			412,584,480
10. Equipment at depreciated cost			63,045
11. Participation in MPRI Fund**			<u>356,378,679</u>
12. TOTAL ASSETS			<u>\$1,004,047,190</u>

B. LIABILITIES

Liabilities

1. Accounts payable			
a. Annuitants	\$	1,752	
b. Accrued expenses		7,532,593	
c. Due to unclassified retirement		205,642	
d. Due MPRI Fund		274,622	
e. Due General Fund		<u>29,148</u>	
2. Total liabilities			<u>\$ 8,043,757</u>

Reserves

1. Participation in MPRI Fund**		356,378,679
2. Survivor benefit reserve		220,479
3. Employee contribution reserve		205,710,981
4. State contribution reserve		<u>444,226,317</u>
5. Total reserves		\$1,006,536,456
6. Unrealized loss on equities		(10,533,023)
7. VALUATION ASSETS***		<u>996,003,433</u>
8. TOTAL LIABILITIES AND RESERVES		<u>\$1,004,047,190</u>

\* Market value as of June 30, 1984 is \$391,740,950 for equities.

\*\* Participation equals Required Reserves for retired lives.

\*\*\* Portion of assets to be applied as valuation assets towards providing benefits.

\*\*\*\* The value at cost as of June 30, 1984 is \$171,349,304 for debt securities.

Table 1(b)

MINNESOTA STATE RETIREMENT SYSTEM  
STATE EMPLOYEES' RETIREMENT FUND

Allocation of June 30, 1984 Valuation Assets  
Between General and Correctional Employees

	<u>General Plan</u>	<u>Correctional Plan</u>	<u>Total</u>
1. Original Base, Equal to the Employee and State Contribution Fund, as Allocated on June 30, 1983	\$565,581,171	\$ 23,130,385	\$588,711,556
2. Allocated Contributions During the Year	80,027,580	3,955,215	83,982,795
3. Transfers of Assets to MPRI Fund During the Year	28,446,234	2,982,488	31,428,722
4. Refunds Allocable During the Year	14,495,441	304,280	14,799,721
5. Estimated Base as of June 30, 1984, Before Allocation of Investment Earnings and Expenses (1) + (2) - (3) - (4)	602,667,076	23,798,832	626,465,908
6. Employee Contribution Reserve as of June 30, 1984	199,293,575	6,417,406	205,710,981
7. Estimated State Contribution Reserve as of June 30, 1983 (5) - (6)	403,373,501	17,381,426	420,754,927
8. Actual State Contribution Reserve, Including Investment Earnings During the Year and Expenses Allocated According to Item 7	415,777,383	17,915,911	433,693,294
9. MPRI Fund Reserve	340,559,033	15,819,646	356,378,679
10. Survivor Benefit Reserve	220,479	0	220,479
11. Total Valuation Assets* (6) + (8) + (9) + (10)	955,850,470	40,152,963	996,003,433

\* Includes Employee and State Contribution Reserves, MPRI Fund Participation and Survivor Benefit Reserve.

Table 2

MINNESOTA STATE RETIREMENT SYSTEM  
STATE EMPLOYEES' RETIREMENT FUND

Actuarial Balance Sheet as of June 30, 1984

## A. ASSETS

1. Assets on hand from accounting balance sheet:		
a. Reserves for MPRI Fund benefits	\$356,378,679	
b. All other assets	<u>647,668,511</u>	\$1,004,047,190
2. Present value of employees' future contributions		329,709,085
3. Present value of state future contributions applicable to:		
a. Entry age normal costs	197,923,596	
b. Statutory supplemental contribution	291,813,834	
c. Excess of Chapter 356 requirement over Chapter 352 prescribed contribution (balancing item)	<u>23,733,033</u>	<u>513,470,463</u>
4. TOTAL ASSETS		<u>\$1,847,226,738</u>

## B. LIABILITIES

1. Current liabilities from accounting balance sheet		\$8,043,757
2. Present value of earned and earnable benefits payable to presently active members:		
a. Current Benefit Obligations*	\$787,106,131	
b. Future Benefit Obligations	<u>673,844,321</u>	\$1,460,950,452
3. Present value of benefits for deferred annuitants		19,662,417
4. Present value of refundment to former members without vested rights		1,970,954
5. Present value of survivor benefits		220,479
6. Participation in MPRI Fund		<u>356,378,679</u>
7. TOTAL LIABILITIES		<u>\$1,847,226,738</u>

\* Includes augmentation of benefits equal to \$23,495,328.

Table 3(a)

MINNESOTA STATE RETIREMENT SYSTEM  
STATE EMPLOYEES' RETIREMENT FUND

Chapter 356 Balance Sheet as of June 30, 1984

ASSETS AND UNFUNDED ACCRUED LIABILITIES

A. ASSETS\*

1. Cash		\$	13,180
2. Short term investments (at cost)			18,925,000
3. Accounts receivable:			
a. Accrued employee contributions	\$1,550,192		
b. Accrued employer contributions	2,381,656		
c. Employee buybacks	84,240		
d. Other	<u>11,169</u>		4,027,257
4. Due from other plans			106,823
5. Interest receivable			430,421
6. Cash equivalents (at cost)			40,251,532
7. Investment in debt securities (actuarial value)			171,238,046
8. Due from MPRI Fund			28,727
9. Investment in equities (actuarial value)			412,584,480
10. Equipment at depreciated cost			63,045
11. Participation in MPRI Fund**			<u>356,378,679</u>
12. TOTAL ASSETS			<u>\$1,004,047,190</u>

B. UNFUNDED ACCRUED LIABILITIES

1. Total unfunded accrued liability	<u>315,546,867</u>
2. TOTAL ASSETS AND UNFUNDED ACCRUED LIABILITIES	<u>\$1,319,594,057</u>

(continued)

Table 3(a)(continued)

CURRENT LIABILITIES AND RESERVES REQUIRED

C. LIABILITIES

1. Accounts payable:		
a. Annuitants	\$	1,752
b. Accrued expenses		7,532,593
c. Due unclassified retirement		205,642
d. Due MPRI Fund		274,622
e. Due to General Fund		<u>29,148</u>
2. Total liabilities	\$	<u>8,043,757</u>

D. RESERVES REQUIRED

1. Total reserves required per attached Table 3(b)	<u>1,311,550,300</u>
2. TOTAL CURRENT LIABILITIES AND RESERVES REQUIRED	<u>\$1,319,594,057</u>

\* Accumulated contributions, without interest, of members not yet retired amounted to \$205,710,981 as of June 30, 1984 (includes accrued but unpaid contributions).

\*\* Participation equals Required Reserves for retired lives as of June 30, 1984, excluding the January 1, 1985 benefit increases.

Table 3(b)

MINNESOTA STATE RETIREMENT SYSTEM  
STATE EMPLOYEES' RETIREMENT FUND

Determination of Accrued Liability and  
Unfunded Accrued Liability as of June 30, 1984

	(1)	(2)	(3)
	Present Value of Benefits	Present Value of Applicable Portion of Normal Cost Contribution	Accrued Liability Equals Reserves Required (1) - (2)

A. DETERMINATION OF ACCRUED LIABILITY

1. Active Members			
a. Retirement benefits	\$1,064,265,824	\$295,551,528	\$ 768,714,296
b. Disability benefits	71,205,517	23,855,095	47,350,422
c. Refundments due to death or withdrawal	146,717,231	147,660,146	(942,915)
d. Surviving spouse benefits	73,871,520	22,805,568	51,065,952
e. Deferred retirement benefits	104,890,360	37,760,344	67,130,016
f. Subtotal	\$1,460,950,452	\$527,632,681	\$ 933,317,771

2. Deferred annuitants	\$ 19,662,417		\$ 19,662,417
3. Former members without vested rights	1,970,954		1,970,954
4. Survivors	220,479		220,479
5. Participation in MPRI Fund	356,378,679		\$ 356,378,679
6. TOTAL	\$1,839,182,981	\$527,632,681	\$1,311,550,300

B. DETERMINATION OF UNFUNDED ACCRUED LIABILITY

1. Accrued Liability	1,311,550,300
2. Valuation Assets	996,003,433
3. Unfunded Accrued Liability (1 - 2)	315,546,867

MINNESOTA POST RETIREMENT INVESTMENT FUND

Background

The Minnesota Post Retirement Investment Fund (MPRI Fund), previously termed the Minnesota Adjustable Fixed Benefit Fund (MAFB), is basically a vehicle for providing variable annuity payments to pensioners. When an active participant retires, assets equal to the present value of future benefits payable to that participant (and beneficiary, if applicable) are transferred from the State and Employee Contribution Reserves, to the MPRI Fund. Thereafter, benefits are paid from the MPRI Fund. Future benefit increases are determined on the basis of the investment performance of MPRI Fund assets.

Chapter 11A of the Minnesota Statutes provides a method for determining benefit increases. A benefit increase is granted in any year in which the earnings of MPRI Fund assets exceed 5%. In a year in which there is an MPRI Fund deficit (i.e., required reserves exceed MPRI Fund assets) 5% of any income in excess of the 5% requirement is credited towards amortizing the deficit, with the remaining 95% being used to provide benefit increases. If there is no MPRI Fund deficit, all income in excess of the required 5% is used to provide benefit increases.

MPRI Fund Status as of June 30, 1984

Table 3(c) sets forth the determination of MPRI Fund net assets and reserve requirements as of June 30, 1984.

As required by Chapter 11A, Table 3(c) allocates the mortality gain and reserve determinations for January 1, 1985 benefit increase purposes to the eligible and non-eligible groups.

Unfunded Accrued Liability

Tables 4 and 5 reconcile the change in the unfunded accrued liability during the year. Table 4 sets forth an illustration that the decrease in the unfunded accrued liability is equal to the excess of income over deductions during the year, where any increase in required actuarial reserves is indicated as a deduction item. Table 5 sets forth our analysis of the change in the unfunded accrued liability.

Table 3(c)

MINNESOTA STATE RETIREMENT SYSTEM  
STATE EMPLOYEES' RETIREMENT FUND

Determination of MPRI Fund Participation and Reserves  
as of June 30, 1984

	Members Eligible for 1/1/85 Increase	Members Not Eligible For Increase	Total
1. Unadjusted MPRI Fund Participation as of June 30, 1984	--	--	\$349,947,231
2. Transfer to (from) MPRI Fund for Mortality (gain) Loss	176,640	87,521	264,161
3. Participation as of June 30, 1984 (1) + (2)	--	--	350,211,392
4. Required Reserves as of June 30, 1984	325,354,703	31,023,976	356,378,679
5. Required Reserves as of January 1, 1985	320,573,626	30,619,230	351,192,856

This exhibit does not reflect benefit increases to become effective on January 1, 1985.

Table 4

MINNESOTA STATE RETIREMENT SYSTEM  
STATE EMPLOYEES' RETIREMENT FUND

Analysis of Income and Deductions from Income  
and Effect on the Unfunded Accrued Liability

## A. INCOME

1. Contributions from employees		\$ 33,342,707
2. Contributions from employers		50,640,088
3. General fund appropriation		1,353,689
4. From investments		
a. Investment income	\$36,680,417	
b. Realized and unrealized gains	<u>9,057,892</u>	45,738,309
5. From MPRI Fund participation		37,583,610
6. Other revenues		<u>821</u>
7. TOTAL INCOME		\$168,659,224

## B. DEDUCTIONS FROM INCOME

1. Benefits		
a. Service retirement and disability annuities	\$37,142,884	
b. Survivor benefits (spouse)	<u>23,665</u>	37,166,549
2. Refundments (employee contributions)		
a. Refunds	14,463,349	
b. Interest on refundments	<u>336,372</u>	14,799,721
3. Administrative expenses		1,405,816
4. Deferred yield write off		11,562,673
5. Unrealized market loss		10,533,023
6. Increase in total reserves required		
a. Reserves required 6/30/83	\$1,167,124,436	
b. Reserves required 6/30/84	<u>1,311,550,300</u>	<u>144,425,864</u>
7. TOTAL DEDUCTIONS FROM INCOME		<u>\$219,893,646</u>

Table 4 (continued)

C. OTHER FINANCING SOURCES (USES)	
1. Unclassified plan transfers	<u>305,595</u>
2. TOTAL OTHER FINANCING SOURCES (USES)	<u>\$ 305,595</u>
D. DEFICIENCY OF INCOME AND OTHER SOURCES OVER DEDUCTIONS FROM INCOME AND OTHER USES	<u>\$ 50,928,827</u>
E. INCREASE IN UNFUNDED ACCRUED LIABILITY	
1. Unfunded accrued liability 6/30/83	\$264,618,040
2. Unfunded accrued liability 6/30/84	<u>315,546,867</u>
3. INCREASE IN UNFUNDED ACCRUED LIABILITY	<u>\$ 50,928,827</u>

Table 5

MINNESOTA STATE RETIREMENT SYSTEM  
STATE EMPLOYEES' RETIREMENT FUND

Analysis of Change in the Unfunded Accrued Liability  
During the Fiscal Year Ending June 30, 1984

1. Unfunded accrued liability as of June 30, 1983		264,618,040
2. Change due to current rate of funding and interest requirements		
a. 1983-84 past service contribution	(22,216,542)	
b. 5% interest requirement	<u>13,230,902</u>	(8,985,640)
3. Change due to actuarial gains (indicated by parentheses) or losses (no parentheses) because of experience deviations from expected		
a. Salary increases	19,533,927	
b. Investment income	5,993,423	
c. MPRI Fund mortality	264,161	
d. Withdrawals, death, disability of active members (balancing item)	<u>3,398,759</u>	29,190,270
4. Decrease due to change in interest, salary scale, and retirement assumptions		(77,995,910)
5. Increase due to change in actuarial cost method		60,558,690
6. Increase due to Rule of 85 retirement		17,674,009
7. Increase due to change in death benefit		30,168,672
8. Increase due to increase in Correctional Plan Retirement Benefit		<u>318,736</u>
9. Unfunded accrued liability as of June 30, 1984		<u>\$315,546,867</u>

CONTRIBUTIONS

Chapters 352 and 356 set forth requirements as to the level of contributions. Chapter 352 prescribes the actual amount of contributions and Chapter 356 describes the method used to determine the amount of contribution required to fully fund the Normal Cost and the Unfunded Accrued Liability. Together, the actual contribution and required contribution are used to determine the sufficiency of the actual contribution. These calculations are illustrated in Tables 6(a) and 6(b).

Table 6(a)

MINNESOTA STATE RETIREMENT SYSTEM  
STATE EMPLOYEES' RETIREMENT FUND

General Employees' Plan Annual Requirement in  
Accordance With Chapter 356

	<u>% of Payroll*</u>	<u>Amount</u>
1. Normal cost	6.13	55,387,116
2. Assumed operating expense	.18	1,624,819
3. Amortization by June 30, 2010 of the Unfunded Accrued Liability of \$311,811,860	1.64	14,773,819
4. Total Chapter 356 requirement (1) + (2) + (3)	7.95	71,785,754

Actual Contributions:

1. Employee contributions	3.73	33,669,489
2. Employer contribution	3.90	35,204,413
3. Total Chapter 352A prescribed contribution	7.63	68,873,902

Contribution Sufficiency: .959

Note: Expected annual payroll = \$902,667,264

\* Assumed that this percentage is contributed in each payroll period throughout the year ending June 30, 1985.

Table 6(b)

MINNESOTA STATE RETIREMENT SYSTEM  
STATE EMPLOYEES' RETIREMENT FUND

Correctional Employees' Plan Annual Requirement  
in Accordance With Chapter 356

	<u>Percent of Payroll*</u>	<u>Amount</u>
1. Normal cost	9.49	2,562,340
2. Assumed operating expense	.18	48,589
3. Amortization by June 30, 2010 of the Unfunded Accrued Liability of \$3,735,007	.66	176,967
4. Total Chapter 356 requirement (1) + (2) + (3)	10.33	2,787,896
<u>Actual Contributions:</u>		
1. Employee contributions	4.90	1,322,704
2. Employer contribution	8.70	2,348,475
3. Total Chapter 352A prescribed contribution	13.60	3,671,179
<u>Contribution Sufficiency:</u>		1.317

NOTE: Expected Annual Payroll = \$26,993,968

\* Assumed that this percentage is contributed in each payroll period throughout the year ending June 30, 1985.

DEPTH OF FUNDING - PLAN CONTINUATION BASIS

The depth of funding is an indication of the extent to which the accrued benefits are funded and is measured by the ratio of valuation assets to the present value of accrued benefits. These measurements are made on the plan continuation basis (applying all ongoing actuarial assumptions including assumed salary increases and turnover) and are illustrated as follows:

Table 6(c)

MINNESOTA STATE RETIREMENT SYSTEM  
STATE EMPLOYEES' RETIREMENT FUND

Depth of Funding June 30, 1984

	<u>General</u>	<u>Correctional</u>
1. Active members	\$ 671,076,016	\$19,770,672
2. Deferred annuitants	17,919,082	1,743,335
3. Former members without vested rights	1,751,147	219,807
4. Survivors	220,479	-
5. Participation in MPRI Fund	<u>340,559,033</u>	<u>15,819,646</u>
6. Total present values of accrued benefits	\$1,031,525,757	\$37,553,460
7. Valuation assets	955,850,470	40,152,963
8. Depth of Funding (7/6)	92.66%	106.92%

EMPLOYEE DATA

The Executive Director furnished us with employee information pertaining to all active members, inactive members and retired members of the Fund. Tables 7(a), 7(b), 7(c), 7(d), 8(a) and 8(b) summarize the changes in active, inactive and retired membership during the year in accordance with the requirements set forth in Section 356.215 of the Minnesota Statutes, Subdivisions 4 and 5. In addition, age and service distributions are provided in Tables 9(a) - 9(d).

PLAN VALUED

The provisions of the Minnesota State Retirement System, State Employees' Retirement Fund are governed principally by Chapters 352 and 11A of the Minnesota Statutes pertaining to MPRI Fund Benefits. Table 11 sets forth a summary of the principal provisions as of June 30, 1984.

The following changes which have been made to Chapter 352 since the June 30, 1983 valuation affect this valuation.

1. The Correctional Plan Benefit for the 21st through the 25th year of service was increased from 2.0% of salary to 2.5% of salary.
2. The employee contribution rate for Correctional Employees was changed from 4.89% to 4.90%.
3. State employees who reach age 55 before December 31, 1986, and whose age plus service total at least 85 are eligible for unreduced retirement benefits.
4. The death benefit for State employees was increased to a 100% Joint and Survivor Benefit, reduced actuarially if not eligible for normal retirement. Eligibility requirements were reduced to 30 years of service or 10 years of service if age 55 or older. Previously, requirements were age 58 with 20 years of service, or age 62 with 10 years of service.

Table 7(a)

MINNESOTA STATE RETIREMENT SYSTEM  
STATE EMPLOYEES' RETIREMENT FUND

Covered General Employees' Census Data as of June 30, 1984

	<u>Number</u>	<u>Annual Payroll</u>
Active at June 30, 1983	43,191	\$807,540,026
New Entrants*	7,493	
Total	<u>50,684</u>	
Less Separations from Active Service:		
Refund of Contributions*	4,495	26,567,103
Separation with a Deferred Annuity	84	1,603,095
Separation with Neither Refundment nor Right to a Deferred Annuity	1,526	8,344,408
Disability	55	955,813
Death, No Spouse's Benefits*	98	811,058
Service Retirement	471	8,572,701
Death Spouse's Benefits Payable	13	278,512
Total Separations	<u>6,742</u>	
Net Transfers to and From Other Plans	<u>216</u>	
Active at June 30, 1984	<u>44,158</u>	<u>\$922,846,717</u>

Average Entry Age of New Employees

<u>For the Fiscal Year Ending</u>	<u>Male</u>	<u>Female</u>	<u>Average of Total</u>
6/30/80	31.4	29.9	30.5
6/30/81	28.9	27.8	28.2
6/30/82	28.4	27.3	27.7
6/30/83	28.7	27.4	27.9
6/30/84	29.7	29.4	29.6

Average age at entry in State service for all active employees  
at 6/30/84:

Male	30.1
Female	30.4
Total	30.3

\* Includes those who entered the plan and terminated during  
the period from July 1, 1983 to June 30, 1984.

Table 7(b)

MINNESOTA STATE RETIREMENT SYSTEM  
STATE EMPLOYEES' RETIREMENT FUND

General Employees' Annuitant Census Data as of June 30, 1984

	<u>Number</u>	<u>Annual Annuity Benefit Payable</u>
<b>A. <u>Service Retirement Annuitants</u></b>		
Receiving at June 30, 1983	9,385	\$28,635,457.44
New	676	2,787,444.24
Deaths	(369)	(959,703.48)
Adjustments-Net Result	<u>1</u>	<u>2,011,821.00</u>
Receiving at June 30, 1984*	9,693	\$32,475,019.20
<b>B. <u>Disabled Employees</u></b>		
Receiving at June 30, 1983	674	1,712,959.92
New	55	161,346.72
Deaths	(40)	(102,301.20)
Disability Rescinded	0	0
Adjustments-Net Result	<u>(2)</u>	<u>97,824.12</u>
Receiving at June 30, 1984	687	\$1,869,829.56
<b>C. <u>Widows Receiving an Annuity or Survivor Benefit</u></b>		
1. Beneficiaries Receiving an Optional or Reversionary Annuity:		
Receiving at June 30, 1983	402	924,652.92
New	64	160,653.48
Deaths	(17)	(38,124.24)
Adjustments-Net Result	<u>(2)</u>	<u>55,478.40</u>
Receiving at June 30, 1984	447	\$1,102,660.56

\* Includes three annuitants from Military Affairs.

Table 7(b) (continued)

	<u>Number</u>	<u>Annual Annuity Benefit Payable</u>
2. Spouse Receiving a Survivor Benefit:		
Receiving at June 30, 1983	16	\$22,809.72
Deaths	0	
Adjustments-Net Result	<u>0</u>	<u>1,710.60</u>
Receiving at June 30, 1984	16	\$24,520.32
D. <u>Deferred Annuitants</u>		
Deferred as of June 30, 1983	983	\$3,139,434.00
New	85	474,245.64
Began Receiving	(59)	(105,055.68)
Adjustments - Net Result	<u>(157)</u>	<u>(220,399.96)</u>
Deferred as of June 30, 1984	852	\$3,288,224.00

Average Age at Retirement of New Service Annuitants

<u>Fiscal Year Ending</u>	<u>Average Retirement Age</u>
6/30/80	64.1
6/30/81	63.4
6/30/82	63.2
6/30/83	63.3
6/30/84	64.0
All Existing Service Annuitants	64.3

\* The conversion to a new data base caused a one time adjustment in status for a number of individuals.

Table 7(c)

MINNESOTA STATE RETIREMENT SYSTEM  
STATE EMPLOYEES' RETIREMENT FUND

Military Affairs Annuitant Census Data as of June 30, 1984

	<u>Number</u>	<u>Annual Annuity Benefit Payable</u>
A. <u>Service Retirement Annuitants</u>		
Receiving at June 30, 1983	3	30,262.44
New	0	0.00
Deaths	0	0.00
Adjustments-Net Result	<u>0</u>	<u>2,269.44</u>
Receiving at June 30, 1984	3	\$32,531.88
B. <u>Disabled Employees</u>		
Receiving at June 30, 1984		None
C. <u>Widows Receiving an Annuity or Survivor Benefit</u>		
Receiving at June 30, 1984		None
D. <u>Children Receiving a Survivor Benefit</u>		
Receiving at June 30, 1984		None
E. <u>Deferred Annuitants</u>		
Deferred as of June 30, 1984		None

Average Age at Retirement of New Service Annuitants

<u>Fiscal Year Ending</u>	<u>Average Retirement Age</u>
6/30/82	---
6/30/83	---
6/30/84	---
All Existing Service Annuitants	60.0

Table 7(d)

MINNESOTA STATE RETIREMENT SYSTEM  
STATE EMPLOYEES' RETIREMENT FUND

Unclassified Plan Annuitant Census Data as of June 30, 1984

	<u>Number</u>	<u>Annual Annuity Benefit Payable</u>
A. <u>Service Retirement Annuitants</u>		
Receiving at June 30, 1983	5	\$5,720.28
New	1	3,201.96
Deaths	0	0.00
Adjustments-Net Result	<u>0</u>	<u>1,015.44</u>
Receiving at June 30, 1984	6	\$9,937.68
B. <u>Disabled Employees</u>		
Receiving at June 30, 1984		None
C. <u>Widows Receiving an Annuity or Survivor Benefit</u>		
Receiving at June 30, 1984		None
D. <u>Children Receiving a Survivor Benefit</u>		
Receiving at June 30, 1984		None
E. <u>Deferred Annuitants</u>		
Deferred as of June 30, 1984		None

Average Age at Retirement of New Service Annuitants

<u>Fiscal Year Ending</u>	<u>Average Retirement Age</u>
6/30/82	---
6/30/83	60.8
6/30/84	67.1
All Existing Service Annuitants	63.2

Table 8(a)

MINNESOTA STATE RETIREMENT SYSTEM  
STATE EMPLOYEES' RETIREMENT FUND

Covered Correctional Employees' Census Data  
as of June 30, 1984

	<u>Number</u>	<u>Annual Payroll</u>
Active at June 30, 1983	1,124	\$21,667,164
New Entrants*	<u>208</u>	
Total	1,332	
Less Separations from Active Service:		
Refund of Contributions*	52	574,707
Separation with a Deferred Annuity	18	353,018
Separation with Neither Refundment nor Right to a Deferred Annuity	63	515,012
Death	3	30,485
Service Retirement	<u>30</u>	625,373
Total Separations	166	
New Transfers to and from other plans	<u>8</u>	
Active at June 30, 1984	1,174	\$26,993,968

Average Entry Age of New Employees

<u>For the Fiscal Year Ending</u>	<u>Male</u>	<u>Female</u>	<u>Average of Total</u>
6/30/80	30.1	32.8	30.7
6/30/81	28.4	29.2	28.6
6/30/82	27.7	27.3	27.9
6/30/83	26.5	28.3	26.7
6/30/84	28.7	32.4	29.4

Average age at entry in State service for all active employees  
at 6/30/84:

Male	28.8
Female	31.1
Total	29.1

\* Includes those who entered the plan and terminated during  
the period from July 1, 1983 to June 30, 1984.

Table 8(b)

MINNESOTA STATE RETIREMENT SYSTEM  
STATE EMPLOYEES' RETIREMENT FUND

Correctional Employees' Annuitant Census Data  
as of June 30, 1984

	<u>Number</u>	<u>Annual Annuity Benefit Payable</u>
<b>A. <u>Service Retirement Annuitants</u></b>		
Receiving at June 30, 1983	282	1,536,753.72
New	33	341,136.12
Deaths	(7)	(38,000.28)
Adjustments-Net Result	<u>0</u>	<u>\$ 717.24</u>
Receiving at June 30, 1984	308	\$1,840,606.80
<b>B. <u>Disabled Employees</u></b>		
Receiving at June 30, 1983	10	47,685.12
New	2	13,528.44
Deaths	0	0.00
Adjustments-Net Result	<u>0</u>	<u>3,568.64</u>
Receiving at June 30, 1984	12	\$64,782.20
<b>C. <u>Widows Receiving an Annuity or Survivor Benefit</u></b>		
Beneficiaries Receiving an Optional or Reversionary Annuity:		
Receiving at June 30, 1983	3	11,591.04
New	3	24,839.88
Adjustments-Net Result	<u>0</u>	<u>869.28</u>
Receiving at June 30, 1984	6	\$37,300.20

Table 8(b) (con't.)

	<u>Number</u>	<u>Annual Annuity Benefit Payable</u>
D. <u>Children Receiving a Survivor Benefit</u>	None	
E. <u>Deferred Annuitants</u>		
Deferred as of June 30, 1983	12	86,520.00
New	18	129,612.00
Began Receiving	(1)	(5,976.60)
Adjustments	<u>(4)</u>	<u>(31,751.40)</u>
Deferred as of June 30, 1984	25	\$178,404.00

Average Age at Retirement of New Service Annuitants

<u>Fiscal Year Ending</u>	<u>Average Retirement Age</u>
6/30/80	58.4
6/30/81	56.1
6/30/82	56.4
6/30/83	55.6
6/30/84	57.8
All Existing Service Annuitants	58.4

Table 9(a)

MINNESOTA STATE RETIREMENT SYSTEM  
STATE EMPLOYEES' RETIREMENT FUND

General Employees

Service Groups by Age Groups

Age Group	Service Group							Total
	0-4	5-9	10-14	15-19	20-24	25-29	30 +	
<u>Male</u>								
0 - 19	57	0	0	0	0	0	0	57
20 - 24	759	19	0	0	0	0	0	778
25 - 29	1834	413	15	0	0	0	0	2262
30 - 34	2061	1359	415	8	0	0	0	3843
35 - 39	1179	1193	973	456	7	0	0	3808
40 - 44	578	591	548	740	201	9	0	2667
45 - 49	361	402	294	454	318	227	28	2084
50 - 54	272	319	270	362	292	315	142	1972
55 - 59	224	317	278	356	220	224	339	1958
60 - 64	130	235	247	290	180	140	291	1513
65 - 69	31	46	63	52	25	13	23	253
70 & over	15	4	2	3	2	1	4	31
Total	7501	4898	3105	2721	1245	929	827	21226
<u>Female</u>								
0 - 19	115	0	0	0	0	0	0	115
20 - 24	1864	48	0	0	0	0	0	1912
25 - 29	3482	1050	46	0	0	0	0	4578
30 - 34	2479	1501	693	65	1	0	0	4739
35 - 39	1506	924	601	349	29	0	0	3409
40 - 44	934	580	281	259	91	9	0	2154
45 - 49	641	462	279	121	83	61	12	1659
50 - 54	442	331	271	185	73	51	43	1396
55 - 59	319	355	326	269	108	65	67	1509
60 - 64	180	234	242	247	131	56	66	1156
65 - 69	32	60	58	66	25	22	13	276
70 - 74	2	3	1	7	1	3	0	17
75 & over	9	1	0	2	0	0	0	12
Total	12005	5549	2798	1570	542	267	201	22932

Table 9(b)

MINNESOTA STATE RETIREMENT SYSTEM  
STATE EMPLOYEES' RETIREMENT FUND

General Employees

Employee Salary Distribution

Distribution of Annual Earnings by Age Groups

Age Group	Male			Female			All		
	No.	Total	Average	No.	Total	Average	No.	Total	Average
0 - 19	57	\$ 407689	7152	115	\$ 853944	\$ 7426	172	\$ 1261633	\$ 7335
20 - 24	778	11058568	14214	1912	25491157	13332	2690	36549725	13587
25 - 29	2262	43253648	19122	4578	74437605	16260	6840	117691253	17206
30 - 34	3843	83809504	21808	4739	84988570	17934	8582	168798074	19669
35 - 39	3808	96781110	25415	3409	64979680	19061	7217	161760790	22414
40 - 44	2667	73241648	27462	2154	40824770	18953	4821	114066418	23660
45 - 49	2084	58025053	27843	1659	30057462	18118	3743	88082515	23533
50 - 54	1972	54907854	27844	1396	25264518	18098	3368	80172372	23804
55 - 59	1958	53424863	27285	1509	27291709	18086	3467	80716572	23281
60 - 64	1513	40058451	26476	1156	21428484	18537	2669	61486935	23037
65 - 69	253	6430979	25419	276	4793549	17368	529	11224528	21218
70 - 74	21	543804	25895	17	287490	16911	38	831294	21876
75 & over	10	180400	18040	12	129447	10787	22	309847	14084
Total	21226	\$522123571	\$24598	22932	\$400828385	\$17479	44158	\$922951956	\$20901

Distribution of Annual Earnings by Service Groups

Service Group	Male			Female			All		
	No.	Total	Average	No.	Total	Average	No.	Total	Average
0	2076	32863761	15830	2983	36777378	12329	5059	69641139	13766
1	1607	29360392	18270	2830	42252287	14930	4437	71612679	16140
2	1020	20112090	19718	1795	28523369	15890	2815	48635459	17277
3	1389	30300899	21815	2369	40289791	17007	3758	70590690	18784
4	1409	33569600	23825	2028	35482101	17496	3437	69051701	20091
0-4	7501	146206742	19492	12005	183324926	15271	19506	329531668	16894
5-9	4898	125527410	25628	5549	105151136	18950	10447	230678546	22081
10-14	3105	85473918	27528	2798	56780403	20293	5903	142254321	24099
15-19	2721	74844785	27506	1570	33144676	21111	4291	107989461	25167
20-24	1245	35965337	28888	542	11767386	21711	1787	47732723	26711
25-29	929	28066867	30212	267	5916867	22161	1196	33983734	28414
30 +	827	26038512	31486	201	4742991	23597	1028	30781503	29943
TOTAL	21,226	\$522123571	\$24598	22932	\$400828385	\$17479	44158	\$922951956	\$20901

Table 9(c)

MINNESOTA STATE RETIREMENT SYSTEM  
STATE EMPLOYEES' RETIREMENT FUND

## Correctional Employees

Service Groups by Age Groups

Age Group	Service Group							Total
	0-4	5-9	10-14	15-19	20-24	25-29	30 +	
<u>Male</u>								
0 - 19	1	0	0	0	0	0	0	1
20 - 24	89	1	0	0	0	0	0	90
25 - 29	185	43	0	0	0	0	0	228
30 - 34	139	106	18	0	0	0	0	263
35 - 39	63	72	41	6	1	0	0	183
40 - 44	29	39	14	21	5	0	0	108
45 - 49	15	22	23	17	8	3	1	89
50 - 54	6	11	15	10	11	7	4	64
55 - 59	3	2	4	5	3	3	0	20
60 - 64	0	0	3	2	0	0	0	5
65 and over	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Total	530	296	118	61	28	13	5	1,051
<u>Female</u>								
0 - 19	0	0	0	0	0	0	0	0
20 - 24	13	0	0	0	0	0	0	13
25 - 29	21	6	0	0	0	0	0	27
30 - 34	11	11	1	0	0	0	0	23
35 - 39	14	6	4	0	0	0	0	24
40 - 44	4	4	2	0	0	0	0	10
45 - 49	4	4	3	1	0	0	0	12
50 - 54	3	0	5	2	0	1	0	11
55 - 59	1	0	0	0	0	0	0	1
60 - 64	1	0	0	0	1	0	0	2
65 +	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Total	72	31	15	3	1	1	0	123

Table 9(d)

MINNESOTA STATE RETIREMENT SYSTEM  
STATE EMPLOYEES' RETIREMENT FUND

Employee Salary Distribution

## Correctional Employees

Distribution of Annual Earnings by Age Groups

Age Group	Male			Female			All		
	No.	Total	Average	No.	Total	Average	No.	Total	Average
0 - 19	1	\$ 20492	\$20492	0	\$ 0	\$ 0	1	\$ 20492	\$20492
20 - 24	90	1530955	17011	13	234879	18068	103	1765834	17144
25 - 29	228	4656872	20425	27	580416	21497	255	5237288	20538
30 - 34	263	5934503	22565	23	465776	20251	286	6400279	22379
35 - 39	183	4514596	24670	24	501665	20903	207	5016261	24233
40 - 44	108	2802691	25951	10	231982	23198	118	3034673	25718
45 - 49	89	2415457	27140	12	266722	22227	101	2682179	26556
50 - 54	64	1811996	28312	11	288139	26194	75	2100135	28002
55 - 59	20	537498	26875	1	19361	19361	21	556859	26517
60 - 64	5	133585	26717	2	51052	25526	7	184637	26377
65 & over	0	0	0	0	0	0	0	0	0
Total	1051	\$24358645	\$23177	123	\$2639992	\$21463	1174	\$26998637	\$22997

Distribution of Annual Earnings by Service Groups

Age Group	Male			Female			All		
	No.	Total	Average	No.	Total	Average	No.	Total	Average
0	124	\$ 2028074	\$16355	23	\$ 381286	\$16578	147	\$ 2409360	\$16390
1	156	3023314	19380	22	427865	19448	178	3451179	19389
2	118	2445072	20721	8	146941	18368	126	2592013	20572
3	59	1318157	22342	12	269446	22454	71	1587603	22361
4	73	1661805	22764	7	152592	21799	80	1814397	22680
0-4	530	10476422	19767	72	1378130	19141	602	11854552	19692
5-9	296	7484865	25287	31	732189	23619	327	8217054	25129
10-14	118	3360353	28478	15	388233	25882	133	3748586	28185
15-19	61	1721662	28224	3	78785	26262	64	1800447	28132
20-24	28	802732	28669	1	32448	32448	29	835180	28799
25-29	13	380623	29279	1	30207	30207	14	410830	29345
30 +	5	131988	26398	0	0	0	5	131988	26398
Total	1051	\$24358645	\$23177	123	\$2639992	\$21463	1174	\$26998637	\$22997

Table 10(a)

MINNESOTA STATE RETIREMENT SYSTEM  
STATE EMPLOYEES' RETIREMENT FUND

## Retired General Annuitants in MPRIF\*

Distribution of Years Retired by Age Groups

Age Group	Years Retired							Total
	0-4	5-9	10-14	15-19	20-24	25-29	30 +	
<u>Male</u>								
Under 40	0	1	0	0	0	0	0	1
40 - 44	0	0	0	0	0	0	0	0
45 - 49	0	0	0	0	0	0	0	0
50 - 54	1	0	0	0	0	0	0	1
55 - 59	20	0	0	0	0	0	0	20
60 - 64	507	12	0	0	0	0	0	519
65 - 69	1177	290	5	0	0	0	0	1472
70 - 74	159	975	112	7	0	0	0	1253
75 - 79	5	267	585	53	7	0	0	917
80 - 84	1	11	273	238	40	17	0	580
85 & over	<u>0</u>	<u>0</u>	<u>13</u>	<u>140</u>	<u>157</u>	<u>67</u>	<u>16</u>	<u>393</u>
Total	1870	1556	988	438	204	84	16	5156
<u>Female</u>								
Under 40	0	0	0	0	0	0	0	0
40 - 44	2	0	0	0	0	0	0	2
45 - 49	1	0	0	1	0	0	0	2
50 - 54	6	0	1	0	0	0	0	7
55 - 59	38	2	2	0	0	0	0	42
60 - 64	393	23	4	1	0	0	0	421
65 - 69	912	295	17	1	2	1	0	1228
70 - 74	179	1021	153	14	2	1	0	1370
75 - 79	4	253	561	64	19	3	0	904
80 - 84	0	11	258	260	46	9	1	585
85 & over	<u>0</u>	<u>1</u>	<u>11</u>	<u>134</u>	<u>182</u>	<u>78</u>	<u>19</u>	<u>425</u>
Total	1535	1606	1007	475	251	92	20	4986

\* includes widows

Table 10(b)

MINNESOTA STATE RETIREMENT SYSTEM  
STATE EMPLOYEES' RETIREMENT FUND

Retired General Annuitants in MPRIF

Distribution of Annual Benefits by Age Groups

Age Group	Male			Female			All		
	No.	Total	Average	No.	Total	Average	No.	Total	Average
0 - 19	0	\$ 0	\$ 0	0	\$ 0	\$ 0	0	\$ 0	\$ 0
20 - 24	0	0	0	0	0	0	0	0	0
25 - 29	0	0	0	0	0	0	0	0	0
30 - 34	1	1730	1730	0	0	0	1	1730	1730
35 - 39	0	0	0	0	0	0	0	0	0
40 - 44	0	0	0	2	7912	3956	2	7912	3956
45 - 49	0	0	0	2	2653	1327	2	2653	1327
50 - 54	1	632	632	7	16804	2401	8	17436	2180
55 - 59	20	106731	5337	42	149396	3557	62	256127	4131
60 - 64	519	2998536	5778	421	1342840	3190	940	4341376	4618
65 - 69	1472	7278515	4945	1228	3663916	2984	2700	10942431	4053
70 - 74	1253	4795941	3828	1370	3562034	2600	2623	8357975	3186
75 - 79	917	3236548	3530	904	2034407	2250	1821	5270955	2895
80 - 84	580	1538981	2653	585	1100481	1881	1165	2639462	2266
85 +	393	1013133	2578	425	709999	1671	818	1723132	2107
Total	5156	\$20970747	\$4067	4986	\$12590442	\$2525	10142	\$33561189	\$3309

Distribution of Annual Benefits by Service Groups

Service Group	Male			Female			All		
	No.	Total	Average	No.	Total	Average	No.	Total	Average
0	305	\$ 1479109	\$4850	242	\$ 728798	\$3012	547	\$ 2207907	\$4036
1	359	1706353	4753	294	958789	3261	653	2665142	4081
2	510	2798821	5488	368	1271300	3455	878	4070121	4636
3	403	1875063	4653	358	1055083	2947	761	2930146	3850
4	293	1591806	5433	273	809142	2964	566	2400948	4242
0-4	1870	9451152	5054	1535	4823112	3142	3405	14274264	4192
5-9	1556	6357298	4086	1606	4250582	2647	3162	10607880	3355
10-14	988	3335785	3376	1007	2199810	2185	1995	5535595	2775
15-19	438	1078785	2463	475	731283	1540	913	1810068	1983
20-24	204	472287	2315	251	364081	1451	455	836368	1838
25-29	84	234487	2792	92	177100	1925	176	411587	2339
30 +	16	40953	2560	20	44474	2224	36	85427	2373
Total	5156	\$20970747	\$4067	4986	\$12590442	\$2525	10142	\$33561189	\$3309

Table 10(c)

MINNESOTA STATE RETIREMENT SYSTEM  
STATE EMPLOYEES' RETIREMENT FUND

Disabled General Annuitants in MPRIF\*

Distribution of Years Retired by Age Groups

Age Group	Years Retired							Total
	<u>0-4</u>	<u>5-9</u>	<u>10-14</u>	<u>15-19</u>	<u>20-24</u>	<u>25-29</u>	<u>30 +</u>	
<u>Male</u>								
Under 40	2	0	0	0	0	0	0	2
40 - 44	4	1	0	0	0	0	0	5
45 - 49	5	1	0	0	0	0	0	6
50 - 54	15	5	1	0	0	0	0	21
55 - 59	33	10	4	0	0	0	0	47
60 - 64	74	49	15	6	2	0	0	146
65 - 69	20	84	11	6	0	0	0	121
70 - 74	0	35	15	8	0	0	1	59
75 - 79	0	0	17	8	1	0	0	26
80 - 84	0	0	0	4	5	1	2	12
85 +	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>2</u>	<u>1</u>	<u>5</u>	<u>8</u>
Total	153	185	63	32	10	2	8	453
<u>Female</u>								
Under 40	0	1	0	0	0	0	0	1
40 - 44	3	0	0	0	0	0	0	3
45 - 49	1	1	1	0	0	0	0	3
50 - 54	9	2	0	0	0	0	0	11
55 - 59	9	6	1	1	0	0	0	17
60 - 64	35	12	4	1	0	0	0	52
65 - 69	17	51	7	3	0	0	0	78
70 - 74	0	18	15	1	0	1	0	35
75 - 79	0	0	11	8	4	0	0	23
80 - 84	0	0	0	4	8	1	0	13
85 +	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>1</u>	<u>1</u>	<u>2</u>
Total	74	91	39	18	12	3	1	238

\* includes widows

Table 10(d)

MINNESOTA STATE RETIREMENT SYSTEM  
STATE EMPLOYEES' RETIREMENT FUND

## Disabled General Annuitants in MPRIF

Distribution of Annual Benefits by Age Groups

Age Group	Male			Female			All		
	No.	Total	Average	No.	Total	Average	No.	Total	Average
0 - 19	0	\$ 0	\$ 0	0	\$ 0	\$ 0	0	\$ 0	\$ 0
20 - 24	0	0	0	0	0	0	0	0	0
25 - 29	0	0	0	0	0	0	0	0	0
30 - 34	0	0	0	0	0	0	0	0	0
35 - 39	2	4957	2479	1	1957	1957	3	6914	2305
40 - 44	5	16243	3249	3	7482	2494	8	23725	2966
45 - 49	6	26051	4342	3	4367	1456	9	30418	3380
50 - 54	21	66850	3183	11	25195	2290	32	92045	2876
55 - 59	47	161776	3442	17	57729	3396	64	219505	3430
60 - 64	146	501707	3436	52	118882	2286	198	620589	3134
65 - 69	121	343594	2840	78	153011	1962	199	496605	2496
70 - 74	59	157540	2670	35	70594	2017	94	228134	2427
75 - 79	26	56718	2181	23	36177	1573	49	92895	1896
80 - 84	12	22235	1853	13	20233	1556	25	42468	1699
85 +	8	20174	2522	2	4779	2390	10	24953	2495
Total	453	\$1377845	\$3042	238	\$500406	\$2103	691	\$1878251	\$2718

Distribution of Annual Benefits by Service Groups

Service Group	Male			Female			All		
	No.	Total	Average	No.	Total	Average	No.	Total	Average
0	26	\$ 74848	\$2879	10	\$ 30333	\$3033	36	\$ 105181	\$2922
1	27	97489	3611	20	45916	2296	47	143405	3051
2	33	134922	4089	16	35490	2218	49	170412	3478
3	30	118503	3950	12	30773	2564	42	149276	3554
4	37	160692	4343	16	37941	2371	53	198633	3748
0-4	153	586454	3833	74	180453	2439	227	766907	3378
5-9	185	535070	2892	91	207980	2285	276	743050	2692
10-14	63	146100	2319	39	60177	1543	102	206277	2022
15-19	32	63901	1997	18	23687	1316	50	87588	1752
20-24	10	20818	2082	12	19152	1596	22	39970	1817
25-29	2	4979	2490	3	6588	2196	5	11567	2313
30 +	8	20523	2565	1	2369	2369	9	22892	2544
Total	453	\$1377845	\$3042	238	\$500406	\$2103	691	\$1878251	\$2718

Table 10(e)

MINNESOTA STATE RETIREMENT SYSTEM  
STATE EMPLOYEES' RETIREMENT FUND

Correctional Annuitants in MPRIF  
(Includes Retired and Disabled)

Distribution of Years Retired by Age Groups\*

Age Group	Years Retired							Total
	0-4	5-9	10-14	15-19	20-24	25-29	30 +	
<u>Male</u>								
Under 40	0	0	0	0	0	0	0	0
40 - 44	1	0	0	0	0	0	0	1
45 - 49	1	0	0	0	0	0	0	1
50 - 54	2	1	0	0	0	0	0	3
55 - 59	51	2	0	0	0	0	0	53
60 - 64	37	48	0	0	0	0	0	85
65 - 69	10	68	1	0	0	0	0	79
70 - 74	0	49	9	0	0	0	0	58
75 +	<u>0</u>	<u>0</u>	<u>2</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>2</u>
Total	102	168	12	0	0	0	0	282
<u>Female</u>								
Under 40	0	0	0	0	0	0	0	0
40 - 44	0	0	0	0	0	0	0	0
45 - 49	1	0	0	0	0	0	0	1
50 - 54	1	0	0	0	0	0	0	1
55 - 59	8	0	0	0	0	0	0	8
60 - 64	5	2	0	0	0	0	0	7
65 - 69	0	14	0	0	0	0	0	14
70 - 74	0	12	1	0	0	0	0	13
75 +	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Total	15	28	1	0	0	0	0	44

\* Includes years since January 1, 1974.

Table 10(f)

MINNESOTA STATE RETIREMENT SYSTEM  
STATE EMPLOYEES' RETIREMENT FUND

## Correctional Annuitants in MPRIF

Distribution of Annual Benefits by Age Groups\*

Age Group	Male			Female			All		
	No.	Total	Average	No.	Total	Average	No.	Total	Average
0 - 19	0	\$ 0	\$ 0	0	\$ 0	\$ 0	0	\$ 0	\$ 0
20 - 24	0	0	0	0	0	0	0	0	0
25 - 29	0	0	0	0	0	0	0	0	0
30 - 34	0	0	0	0	0	0	0	0	0
35 - 39	0	0	0	0	0	0	0	0	0
40 - 44	1	5326	5326	0	0	0	1	5326	5326
45 - 49	1	8314	8314	1	14628	14628	2	22942	11471
50 - 54	3	15469	5156	1	7774	7774	4	23243	5811
55 - 59	53	548632	10352	8	53735	6717	61	602367	9875
60 - 64	85	651078	7660	7	49279	7040	92	700357	7613
65 - 69	79	328243	4155	14	27628	1973	93	355871	3827
70 - 74	58	198950	3430	13	26490	2038	71	225440	3175
75 & over	2	7150	3575	0	0	0	2	7150	3575
Total	282	\$1763162	\$ 6252	44	\$179534	\$ 4080	326	\$1942696	\$ 5959

Distribution of Annual Benefits by Service Groups

Service Group	Male			Female			All		
	No.	Total	Average	No.	Total	Average	No.	Total	Average
0	27	\$ 282204	\$10452	4	\$ 32568	\$8142	31	\$ 314772	\$10154
1	7	60373	8625	5	46785	9357	12	107158	8930
2	19	201388	10599	2	14382	7191	21	215770	10275
3	22	167099	7595	2	11073	5537	24	178172	7424
4	27	247204	9156	2	14138	7069	29	261342	9012
0-4	102	958268	9395	15	118946	7930	117	1077214	9207
5-9	168	748525	4456	28	57347	2048	196	805872	4112
10 +	12	56369	4697	1	3241	3241	13	59610	4585
Total	282	\$1763162	\$6252	44	\$179534	\$4080	326	\$1942696	\$5959

\* Includes years since January 1, 1974.

Table 11

MINNESOTA STATE RETIREMENT SYSTEM  
STATE EMPLOYEES' RETIREMENT FUND

Summary of Principal Plan Provisions as of June 30, 1984

A. General Employees

1. Coverage: From first date of employment.
2. Service Credit: Service is credited from date of coverage.
3. Contributions:
  - a. Employee: 3.73% of salary.
  - b. State of Minnesota 3.90% of salary.
4. Final Average Salary: Monthly average for the highest 5 successive years of salary.
5. Normal Retirement:
  - a. Eligibility: Earlier of:
    - attainment of age 65 and completion of 10 years of service; or
    - attainment of age 62 with 30 years of service.
    - at any point between April 27, 1984 and December 31, 1986, if age is greater than or equal to 55, and age plus service is greater than or equal to 85.
  - b. Benefit Amount: 1% of Final Average Salary for each of the first 10 years of service plus 1-1/2% of Final Average Salary for each year of service thereafter.
6. Early Retirement:
  - a. Eligibility: Earlier of:
    - attainment of age 55 and completion of 10 years of service; or
    - completion of 30 years of service.
  - b. Benefit Amount: Normal Retirement benefit formula based on service and Final Average Salary to date of early retirement but actuarially reduced to reflect payment prior to age 65 (or age 62 if 30 years of service have been completed).

7. Form of Payment: Life annuity with return on death of any balance of contributions over aggregate monthly payments. Actuarially equivalent options are also available.
8. Disability Retirement:
- a. Eligibility: Earlier of:
- attainment of age 50 and completion of 5 years of service; or
  - completion of 10 years of service.
- b. Benefit Amount: Normal Retirement benefit formula based on service and Final Average Salary to date of Disability Retirement.
9. Deferred Service Retirement:
- a. Eligibility: Completion of 10 years of service and election to leave employee contributions on deposit.
- b. Benefit Amount: Retirement benefits payable at Normal Retirement date are determined according to the Normal Retirement benefit formula based on the member's Final Average Salary and service at termination, such amount being subject to an increase for each year between termination and retirement of 5% for years prior to January 1, 1981 and 3% compounded annually thereafter.
10. Return of Contributions: Upon termination of employment, a member may elect the return of contributions in lieu of all other benefits under the plan. Contributions made after the first 3 years of service are credited with 5% interest compounded annually.

11. Surviving Spouse Death Benefit:

a. Eligibility:

Death of member in service at least age 55 with 10 years of service or any age with 30 years of service. Prior to June 30, 1984, the requirements were age 58 with 20 years of service, or age 62 with at least 10 years of service.

b. Benefit Amount:

The surviving spouse may elect one of:

- refund of member contributions with 5% interest (changed from 3-1/2% as of June 30, 1984); or
- 100% of the annuity the member would have received had he retired early (if eligible) and elected a 100% joint and survivor annuity commencing on his date of death. Prior to June 30, 1984, the benefit was a 50% joint and survivor annuity.

12. Combined Service Provisions:

a. Eligible Members:

Members who have had coverage under two or more Minnesota Public Retirement Systems, with a total of at least 10 years of credited service.

b. Benefit Provisions:

Benefits under both plans are based on the highest Final Average Salary including all years from both plans, and on the plans in effect on the member's last day in covered public employment.

13. Proportionate Annuity:

Any member who terminates after attaining age 65 and completing at least one year of service is entitled to a proportionate retirement annuity based on his allowable service credit.

B. Correctional Employees

Same as above except:

1. Contributions:

- a. Employee: 4.90% of salary.
- b. State of Minnesota: 8.70% of salary.

2. Normal Retirement:

- a. Eligibility: Attainment of age 55 and completion of 10 years of service.
- b. Retirement Benefit: General Plan benefit plus an additional benefit defined below.
- c. Additional Benefit: Final Average Salary times the sum of:

- 1-1/2% for each of first 10 years of service; plus
- 1% for each of next 15 years of service; plus
- 1/2% for each year of service thereafter.

d. Limitation on Additional Benefit:

That amount which, when added to the General Plan benefit, provides a retirement benefit of 75% of Final Average Salary.

e. Additional Benefits Period:

84 months or until attainment of age 65, whichever comes first.

f. Minimum Benefit Following Additional Benefit Period:

That amount which, when added to Social Security benefits, equals the benefit payable during the additional benefit period.

3. Disability Retirement:

a. Eligibility:

- In line of duty: None.
- Not in line of duty: Five years of service and less than age 55.

b. Benefit Amount:

• In line of duty:

50% of average monthly salary plus 2% for each year of service in excess of 20, offset by Workers' Compensation.

• Not in line of duty:

2-1/2% of average monthly salary for each year up to and including 20 years, plus 2% for each year in excess of 20, subject to a minimum of 25%.

c. Limitation:

At age 62, General Plan benefit based on credited service is payable subject to a minimum benefit of 10% of pay.

ACTUARIAL METHODS AND ASSUMPTIONS

Chapter 356 of the Minnesota Statutes calls for the determination of normal cost and accrued liability in accordance with the entry age normal cost method, one of several available projected cost methods. For the June 30, 1984 valuation, we changed to the individual entry age normal method from the aggregate entry age normal method used in prior valuations.

Under the new method, normal cost rate is determined for each individual by dividing the total present value at entry of all benefits by the total present value at entry of all future pay. This percentage is applied to current annual payroll to determine the normal cost.

In addition, the unfunded liability is now being amortized by the level percent of payroll method, rather than the level dollar amount method used in previous valuations. (Each amortization payment is now calculated as if the following year's payment will increase by 6.5%.)

Tables 12(a) through 12(e) summarize the actuarial assumptions used. The following assumptions have changed since the previous valuation:

Item	Assumptions Used In	
	June 30, 1984 Valuation	Prior Valuations
Pre-retirement Interest	8% per annum	5% per annum
Salary Scale	6.5% per annum	3.5% per annum
Retirement (General Employees Only)	See Separation from Service Tables. In addition, 50% of those eligible for Rule of 85 were assumed to do so, and all members aged 65 or over were assumed to retire one year hence	See Separation from Service Tables
Social Security Cost of Living and Wage Base Increases (Correctional Employees Only)	3% per annum	No increase

Table 12(a)

MINNESOTA STATE RETIREMENT SYSTEM  
STATE EMPLOYEES' RETIREMENT FUND

Summary of Actuarial Assumptions and Methods

1. Mortality: 1971 Group Annuity Mortality Table with ages set back 8 years for females.
2. Post-Disablement Mortality: Combined Annuity Mortality Table.
3. Withdrawal: Graded rates based on actual experience developed by the June 30, 1971 experience analysis and set forth in the Separation from Active Service Table.
4. Expenses: .18% of covered payroll.
5. Interest Rate: Pre-retirement - 8% per annum.  
Post-retirement - 5% per annum.
6. Salary Scale: 6-1/2% per annum.
7. Assumed Retirement Age: Graded rates beginning at age 58 set forth in the Separation from Active Service Table. Fifty percent of those eligible to retire under the Rule of 85 are assumed to do so, and members age 65 or over are assumed to retire in one year hence.
8. Actuarial Cost Method: Entry age cost method, with normal cost determined as a level percentage of future covered payroll, on an individual basis.
9. Social Security: Based on the present law and 6-1/2% salary scale applicable to current salaries. Three percent wage base and cost of living increases projected.
10. Return of Contributions: 60% of employees withdrawing before retirement are assumed to elect return of contributions in lieu of a deferred benefit.

Table 12(b)

MINNESOTA STATE RETIREMENT SYSTEM  
STATE EMPLOYEES' RETIREMENT FUND

## Male General Members

Probabilities of Separation From Active Service

(Number Separating at Each Age Per 10,000 Working at That Age)

<u>Age</u>	<u>Withdrawal</u>	<u>Death</u>	<u>Disability</u>	<u>Age and Service Retirement</u>
20	2,400	5		
21	2,250	5		
22	2,080	5		
23	1,920	6		
24	1,760	6		
25	1,600	6		
26	1,470	7		
27	1,340	7		
28	1,230	7		
29	1,130	8		
30	1,040	8	2	
31	950	9	2	
32	890	9	2	
33	830	10	2	
34	770	10	2	
35	720	11	2	
36	680	12	2	
37	640	13	2	
38	600	14	2	
39	560	15	2	
40	530	16	2	
41	500	18	2	
42	480	20	2	
43	460	23	3	
44	430	26	3	
45	410	29	3	
46	390	33	5	
47	370	38	7	
48	350	42	9	
49	340	47	11	
50	320	53	14	
51	300	59	16	
52	280	65	20	
53	260	71	24	
54	240	78	28	

Table 12(b) (continued)

<u>Age</u>	<u>Withdrawal</u>	<u>Death</u>	<u>Disability</u>	<u>Age and Service Retirement</u>
55	210	85	34	
56	170	93	40	
57	140	100	46	
58	90	109	56	30
59	40	119	66	30
60		131	76	40
61		144	90	150
62		159	110	500 (500)*
63		174	136	500 (250)
64		192	174	2,000 (1350)
65				10,000

\* Retirement rates shown parenthetically are those used in prior valuations.

Table 12(c)

MINNESOTA STATE RETIREMENT SYSTEM  
STATE EMPLOYEES' RETIREMENT FUND

Female General Members  
Probabilities of Separation From Active Service  
(Number Separating at Each Age Per 10,000 Working at That Age)

<u>Age</u>	<u>Withdrawal</u>	<u>Death</u>	<u>Disability</u>	<u>Age and Service Retirement</u>
20	3,700	4		
21	3,550	4		
22	3,390	4		
23	3,230	4		
24	3,070	4		
25	2,910	5		
26	2,750	5		
27	2,600	5		
28	2,430	5		
29	2,270	5		
30	2,120	5		
31	1,970	6		
32	1,820	6		
33	1,680	6		
34	1,540	7		
35	1,410	7	1	
36	1,300	7	1	
37	1,190	8	1	
38	1,090	8	1	
39	1,000	9	2	
40	920	9	2	
41	850	10	2	
42	780	10	4	
43	720	11	4	
44	680	12	4	
45	630	13	5	
46	590	14	6	
47	560	15	7	
48	530	16	7	
49	500	18	10	
50	470	20	10	
51	440	23	12	
52	410	26	14	
53	390	29	16	
54	360	33	20	

Table 12(c) (continued)

<u>Age</u>	<u>Withdrawal</u>	<u>Death</u>	<u>Disability</u>	<u>Age and Service Retirement</u>
55	330	38	24	
56	290	42	30	
57	230	47	36	
58	170	53	44	50
59	90	59	52	50
60		65	62	150
61		71	74	150
62		78	88	200
63		85	104	350
64		93	122	1,100
65				10,000

Table 12(d)

MINNESOTA STATE RETIREMENT SYSTEM  
STATE EMPLOYEES' RETIREMENT FUND

Male Correctional Members  
Probabilities of Separation From Active Service  
(Number Separating at Each Age Per 10,000 Working at That Age)

<u>Age</u>	<u>Withdrawal</u>	<u>Death</u>	<u>Disability</u>	<u>Age and Service Retirement</u>
20	2,400	5		
21	2,250	5		
22	2,080	5		
23	1,920	6		
24	1,760	6		
25	1,600	6		
26	1,470	7		
27	1,340	7		
28	1,230	7		
29	1,130	8		
30	1,040	8	2	
31	950	9	2	
32	890	9	2	
33	830	10	2	
34	770	10	2	
35	720	11	2	
36	680	12	2	
37	640	13	2	
38	600	14	2	
39	560	15	2	
40	530	16	2	
41	500	18	2	
42	480	20	2	
43	460	23	3	
44	430	26	3	
45	410	29	3	
46	390	33	5	
47	370	38	7	
48	350	42	9	
49	340	47	11	
50	320	53	14	
51	300	59	16	
52	280	65	20	
53	260	71	24	
54	240	78	28	
55	210	85	34	
56	170	93	40	
57	140	100	46	
58				10,000

Table 12(e)

MINNESOTA STATE RETIREMENT SYSTEM  
STATE EMPLOYEES' RETIREMENT FUND

Female Correctional Members  
Probabilities of Separation From Active Service  
(Number Separating at Each Age Per 10,000 Working at That Age)

<u>Age</u>	<u>Withdrawal</u>	<u>Death</u>	<u>Disability</u>	<u>Age and Service Retirement</u>
20	3,700	4		
21	3,500	4		
22	3,390	4		
23	3,230	4		
24	3,070	4		
25	2,910	5		
26	2,750	5		
27	2,600	5		
28	2,430	5		
29	2,270	5		
30	2,120	5		
31	1,970	6		
32	1,820	6		
33	1,680	6		
34	1,540	7		
35	1,410	7	1	
36	1,300	7	1	
37	1,190	8	1	
38	1,090	8	1	
39	1,000	9	2	
40	920	9	2	
41	850	10	2	
42	780	10	4	
43	720	11	4	
44	680	12	4	
45	630	13	5	
46	590	14	6	
47	560	15	7	
48	530	16	7	
49	500	18	10	
50	470	20	10	
51	440	23	12	
52	410	26	14	
53	390	29	16	
54	360	33	20	
55	330	38	24	
56	290	42	30	
57	230	47	36	
58				10,000

MINNESOTA STATE RETIREMENT SYSTEM  
STATE EMPLOYEES' RETIREMENT FUND

Touche Ross & Co.

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Touche Ross &amp; Co.

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\* Chapters 356 and 11A of the Minnesota Statutes

\*\* All as of June 30, 1984.

## APPENDIX 2

MINNESOTA STATE RETIREMENT SYSTEM  
STATE EMPLOYEES' RETIREMENT FUNDMilitary Affairs Calculation

Section 352.85 of Chapter 352 of Minnesota laws provides that certain military affairs personnel may retire at age 60 without being subject to the early retirement reduction of Section 352.116, Subdivision 1. In addition, they may receive disability benefits upon being found disqualified for retention in active military duty. To fund these special benefits, employees and employer contribute an extra 1.6% of payroll.\*

At the request of the Executive Director, we have made a determination as to whether the extra 3.2% contribution is sufficient to pay for the additional normal costs arising from the special benefits.

The results of our determination are as follows:

1. Number of active participants	4
2. Annual Payroll	\$113,421
3. Extra normal cost for special military affairs benefits:	
a. amount	3,493
b. percentage of pay	3.08%
4. Sufficiency of extra 3.2% contribution 3.2% / 3(b)	103.9%

\* Amended by 1982 Minnesota Laws. Previously, the extra contribution was 1% of payroll.

## APPENDIX 3

MINNESOTA STATE RETIREMENT SYSTEM  
STATE EMPLOYEES' RETIREMENT FUNDPilots Calculation

Section 352.86 of Chapter 352 of Minnesota laws provides that certain transportation department pilots may retire at age 62 without being subject to the early retirement reduction of Section 352.116, Subdivision 1. In addition, they may receive disability benefits upon being found disqualified for retention as pilots. To fund these special benefits, employees and employer contribute an extra 1.6% of payroll.

At the request of the Executive Director, we have made a determination as to whether the extra 3.2% contribution is sufficient to pay for the additional normal costs arising from the special benefits.

The results of our determination are as follows:

1. Number of active participants	2
2. Annual Payroll	\$ 71,234
3. Extra normal cost for special military affairs benefits:	
a. amount	1,296
b. percentage of pay	1.82%
4. Sufficiency of extra 3.2% contribution 3.2% / 3(b)	175.82%

MEMORANDUM TO: Legislative Commission on Pensions and Retirement

FROM: James R. Bordewick, F.S.A.

RE: June 30, 1984 Actuarial Valuation of the Minnesota State Retirement System - State Employees' Retirement Fund

DATE: August 6, 1985

Chapter 356, Subdivision 2 requires that an actuarial valuation of the fund be conducted each year. An actuarial valuation is a calculation to determine the normal cost and accrued liability of the fund and includes a determination of the payment necessary to amortize the unfunded accrued liability over a stated period and a determination of the payment necessary to keep the unfunded accrued liability from increasing.

The actuarial valuation is conducted according to a stated actuarial cost method, Entry Age Normal Cost, and stated actuarial assumptions. The interest assumption of 8% pre-retirement and 5% post-retirement and the salary scale assumption of  $6\frac{1}{2}\%$  are prescribed in Chapter 356, Subdivision 4(4). The additional contribution required to amortize the unfunded accrued liability by June 30, 2010 is determined as a level percentage of compensation in accordance with Chapter 356, Subdivision 4(7).

The actuarial valuation was conducted by John H. Flittie and James M. Magalska of Touche Ross & Co.

The actuarial valuation shows some results separately for the General Employees and the Correctional Employees. The key actuarial results are combined in this memorandum for both groups.

The following changes were incorporated in this year's actuarial valuation:

- 1) In accordance with Chapter 356, Subdivision 4(6), the assets utilized to determine the unfunded accrued liability are based on cost plus one-third of any unrealized gains or losses. Prior to this time, the assets utilized were on combination cost and amortized basis. The result of this change is not separately identified in the actuarial report. This change reflects the release of the Deferred Yield Adjustment Account of \$313,794,837 as of June 30, 1984.
- 2) The pre-retirement interest assumption was changed to 8% and the salary increase assumption was changed to  $6\frac{1}{2}\%$ . The prior assumptions were 5% and  $3\frac{1}{2}\%$ , respectively. In addition, the retirement age assumption was also revised. The result of this change decreased the unfunded accrued liability by \$77,995,910.

- 3) The actuarial funding method was changed from an aggregate Entry Normal Cost method to a seriatim Entry Age Normal cost method as prescribed by the Temporary Rules. This change increased the unfunded accrued liability by \$60,558,690.
- 4) The temporary Rule of 85 is reflected in this actuarial valuation. As a result, the unfunded accrued liability increased by \$17,674,009.
- 5) Interest on return of member contributions was changed to 5% and the pre-retirement death benefit for General Employees was changed to a 100% Joint and Survivor basis. The effect of these changes increased the unfunded accrued liability by \$30,168,672.
- 6) The Correctional Employees benefit was increased to 2½% per year for years 21 to 25. This increased the unfunded accrued liability by \$318,736.

The combined effect of the changes in Items (2) through (6) above was to increase the unfunded accrued liability by \$30,724,197.

<u>SUMMARY OF KEY ACTUARIAL RESULTS</u>	<u>6-30-83</u>	<u>6-30-84</u>
Total Membership	60,997	62,968
Active Membership	44,315	45,332
Payroll	\$ 893,430,208	\$ 949,950,593
Accrued Liability	1,167,124,433	1,311,550,330
Assets	902,506,393	996,003,433
Unfunded Accrued Liability	264,618,040	315,546,867
Funding Ratio - Total	77.3%	75.9%
Prospective	69.0%	67.0%
Actuarial Losses	\$10,083,927	\$29,190,270
Actuarially Determined Contribution Requirement:		
Amortization by June 30, 2010	9.24%	8.02%

#### COMMENT SUMMARY

1. There was a total increase in membership of 1,971 members from June 30, 1983. Active membership increased by 1,017 from June 30, 1983.
2. Total payroll increased by 6.3% from June 30, 1983. Average salary for active members increased from \$20,160 to \$20,955 over the past valuation year. This was an 3.9% increase.
3. The unfunded accrued liability increased by \$50,928,827 from a year ago. The elements contributing to this increase are shown on the next page:

COMMENT SUMMARY

Actuarial Losses	\$ 29,190,270
Liability Decrease for Assumptions and Method Changes	(17,437,220)
Contribution Sufficiency	( 8,985,640)
Liability Increases for Plan Changes	<u>48,161,417</u>
	\$ 30,928,827

4. Both the total funding ratio and the prospective funding ratio showed slight decreases from a year ago. The total funding ratio is the ratio of total assets to total accrued liabilities. The prospective funding ratio is the ratio of total assets less accrued liabilities for members in a payment status to accrued liabilities for members not in a payment status.

Total assets on the actuarial basis cover 85% of the value of all benefits accrued, (including augmentation) to June 30, 1984.

The value of augmentation included in benefits accrued to June 30, 1984 is \$23,495,328. Without augmentation, the actuarial value of assets fully covers 87% of the value of benefits accrued to June 30, 1984.

If service was recognized to June 30, 1984, but salaries were assumed to increase at 6½% a year until retirement, the asset coverage of the value of accrued benefits would be 93.1% which ignores any augmentation and includes pre-retirement discount for turnover.

5. The actuarial loss of \$29,190,270 was primarily a result of salary increases greater than the 3½% assumption. This loss amounted to \$19,553,927. In addition, there was an actuarial loss of \$5,993,423 from interest less than expected according to the 5% assumption and from the change in the basis of the actuarial value. Technically, the change in the basis of the actuarial value is not an actuarial gain or loss item. As mentioned earlier, the amount of this change is not identified in the actuarial report.

There was also a loss of \$264,121 from post-retirement mortality.

There were also actuarial losses from pre-retirement mortality, turnover, disability, and retirement experience which is a balancing item in the analysis set forth in the actuarial valuation.

6. The contribution, as a percentage of payroll, which will provide for the normal cost, expenses, and amortize the unfunded accrued liability by June 30, 2010 is 8.02%.

The current support rates are 3.90% of salary by the employer and 3.73% of salary by the member for the General Employees and 8.70% of salary by the employer and 4.90% of salary by the member for the Correctional Employees.

COMMENT SUMMARY

A comparison of the actuarial determined contribution rates and the statutory rates is shown below:

	<u>General</u>	<u>Correctional</u>	<u>Total</u>
Actuarially Determined	7.95%	10.33%	8.02%
Statutory	<u>7.63%</u>	<u>13.60%</u>	<u>7.80%</u>
Surplus	(.32%)	3.27%	(.22%)

Based on current payroll, the combined statutory contribution rates fall .22% of payroll short of the actuarially determined rates.

7. This is the first year that a new actuarial balance sheet is required in the actuarial report. This is specified in Chapter 356.215, Sub. 4. (6) as amended. One of the objectives of this balance sheet is to show if future statutory contributions are sufficient to provide for the funding of future expected benefits payable.

This balance sheet was adjusted from the presentation in the actuarial report. The results are:

Current and Future Assets	\$ 1,815,449,948
Current and Future Liabilities	\$ 1,839,182,981
Deficit (Current and Future Unfunded Liability)	\$ 23,733,033
Current Unfunded Accrued Liability	\$ 169,335,227

The current and future unfunded liability of \$23,733,033 is the amount by which the total statutory contribution rates less the normal cost rate and expenses fall short, over time, of providing for amortization by June 30, 2010 if all actuarial assumptions are realized.

The current unfunded accrued liability of \$169,335,227 is the amount by which the current assets fall short of the value of benefits accrued to June 30, 1984.

CONCLUSIONS

The actuarial valuation complies with the requirements of Minnesota Statutes, Chapter 356 and the Temporary Rules.

Based on the results of the actuarial valuation, the current support rates do not provide for adequate funding of the plan.

*James R. Bordewick*

James R. Bordewick, F.S.A.  
Commission Actuary

MINNESOTA STATE RETIREMENT SYSTEM  
STATE PATROL RETIREMENT FUND

ACTUARIAL VALUATION AS OF  
JUNE 30, 1984

Board of Directors  
Minnesota State Retirement System  
529 Jackson at 10th Street  
St. Paul, Minnesota 55101

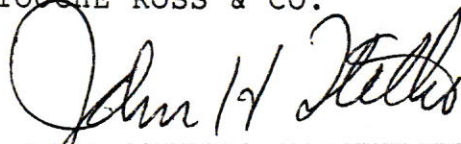
Ladies and Gentlemen:

We have performed an actuarial valuation of the Minnesota State Retirement System State Patrol Retirement Fund as of June 30, 1984.

The valuation was performed on the basis of accepted actuarial methods and procedures, in accordance with the applicable provisions set forth in Minnesota Statutes (Chapter 356) and stipulated in the Contract between the State of Minnesota and Touche Ross & Co.

We hereby certify that on the basis of our valuation, contributions required from employees and the State under Minnesota Statutes (Chapter 352B) represent 105.6% of the requirements set forth in Chapter 356. Furthermore, the entry age normal cost method was utilized in determining the accrued liability for all benefits payable under the Fund, and the valuation was completed in accordance with the temporary rules adopted by the Legislative Commission on Pensions and Retirement on June 14, 1984.

TOUCHE ROSS & CO.

  
\_\_\_\_\_  
John H. Flittie, F.S.A.

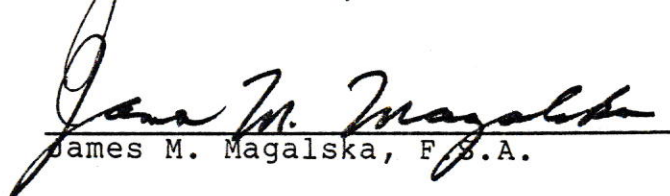
  
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James M. Magalska, F.S.A.

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REPORT HIGHLIGHTS

	<u>6/30/84</u>	<u>6/30/83</u>
A. Financial and Actuarial Status		
1. Valuation Assets	86,784,592	78,774,772
2. Accrued Liability	119,682,218	132,174,955
3. Unfunded Accrued Liability	32,897,626	53,400,183
4. Accrued Liability Funding Ratio (A1/A2)	72.51%	59.60%
5. Normal Cost	4,300,078 (18.68)*	3,805,348 (17.65)*
B. Contributions		
1. Chapter 356 Requirement	5,972,650 (25.95)*	7,469,382 (34.64)*
2. Actual Prescribed Contribution (Chapter 352)	6,306,458 (27.40)*	6,360,927 (29.50)*
3. Sufficiency (2 / 1)	105.6%	85.2%
C. Depth of Funding - Plan Continuation Basis		
1. Present Value of Accrued Benefits	119,250,314	120,160,775
2. Depth of Funding (A1 / C1)	72.78%	65.56%

\* Parentheses indicate contribution levels as a percentage of salary of Troopers under assumed retirement age.

REPORT HIGHLIGHTS (continued)

	<u>6/30/84</u>	<u>6/30/83</u>
D. Plan Participants		
1. Active Members		
a. Number	741	774
b. Covered payroll under assumed retirement age	23,016,272	21,562,464
c. Total Payroll for all members	23,016,272	23,066,558
2. Retired Members/Beneficiaries		
a. Number	397	359
b. Average annual benefit payable	8,907	7,736
3. Deferred Annuitants		
a. Number	21	22
b. Average annual vested benefit	8,085	8,858
4. Former Members Without Vested Rights		
a. Number	10	10
b. Average employee contributions	1,998	568

MINNESOTA STATE RETIREMENT SYSTEM  
STATE PATROL RETIREMENT FUND

ACTUARIAL VALUATION AS OF JUNE 30, 1984

PURPOSE AND SUMMARY

The purpose of this report is to set forth the financial status of the Minnesota State Retirement System (MSRS) State Patrol Retirement Fund in accordance with the applicable provisions set forth in Chapter 356 and Chapter 11A of the Minnesota Statutes.

Chapter 356 of the Minnesota Statutes sets forth the annual reporting requirements which govern the public employee retirement systems in Minnesota. The principal requirement (in addition to the experience study required every fourth year) is that an actuarial valuation be performed each year and that the valuation specifically set forth the following items based on an assumed 8% pre-retirement and 5% post-retirement interest rate, and a 6-1/2% salary scale assumption:

1. The assets of the plan and the present value of all benefits which will be payable from the plan.
2. The normal cost of the plan (as a level percentage of payroll) based on the entry age normal cost method.
3. The accrued liability of the plan, defined as the present value of all benefits less the present value of future entry age normal costs.
4. An actuarial balance sheet showing accrued assets, accrued liabilities, and the deficit from full funding of the accrued liability (unfunded accrued liability).
5. The annual contribution required to pay normal cost and amortize the June 30, 1984 unfunded accrued liability by June 30, 2009.
6. An analysis explaining the increase or decrease in the unfunded accrued liability since the last valuation.

Chapter 11A of the Minnesota Statutes pertains to the operation of the Minnesota Post Retirement Investment Fund (MPRI Fund). It includes requirements regarding the determination of the present value of benefits payable from the MPRI Fund (as of June 30, 1984 and as of January 1, 1985), and the corresponding mortality gain or loss each year, the latter to facilitate an appropriate transfer between the State Patrol Retirement Fund and the MPRI Fund.

This reporting on the status of the State Patrol Retirement Fund as of June 30, 1984, is intended to comply with all of the requirements regarding actuarial reporting that are set forth in Chapters 356 and 11A of the Statutes. The Appendix at the end of the report cross-references the information of the Minnesota Statutes set forth herein with that specifically called for under Chapters 356 and 11A respectively.

#### VALUATION ASSETS

The Executive Director furnished us with a Financial Report setting forth the assets and liabilities of the Fund as of June 30, 1984. The Accounting Balance Sheet furnished by the Executive Director is set forth in Table 2(a).

#### ACTUARIAL BALANCE SHEETS

Table 2(b) sets forth an Actuarial Balance Sheet summarizing the actuarial valuation. Whereas the previously mentioned Accounting Balance Sheet (Table 2(a)) balances the current assets to date with current accumulated reserves for benefits payable, the Actuarial Balance Sheet compares total assets, including the present value of all future contributions payable to the plan, with the present value of all benefits payable from the plan.

Table 3(a) sets forth a balance sheet comparing the assets and unfunded accrued liability (the total of the two equaling the accrued liability) to the current liabilities and reserves required under the plan. This table is in the format specifically required by Chapter 356 and is supported by attachments in the form of Tables 3(b) and 4 which set forth the determination of the unfunded accrued liability and the status of the MPRI Fund as of June 30, 1984.

Table 1

MINNESOTA STATE RETIREMENT SYSTEM  
STATE PATROL RETIREMENT FUND

Summary of Actuarial Valuation as of June 30, 1984

A. BASIC DATA	
1. Active members	
a. Number	741
b. Covered payroll under assumed retirement age	23,016,272
c. Total payroll for all members	23,016,272
2. Retired members/beneficiaries	
a. Number	397
b. Average annual benefit payable	8,907
3. Deferred annuitants	
a. Number	21
b. Average annual vested benefit	8,085
4. Former members without vested rights	
a. Number	10
b. Average employee contributions	1,998
B. BASIC FINANCIAL RESULTS	
1. Normal cost	4,300,078
2. Accrued liability	119,682,218
3. Valuation assets	86,784,592
4. Portion of accrued liability funded	72.51%
5. Unfunded accrued liability (2 - 3)	32,897,626
C. DETERMINATION OF ANNUAL REQUIREMENT IN ACCORDANCE WITH CHAPTER 356*	
1. Normal cost	4,300,078 (18.68)
2. Assumed operating expenses	62,144 (0.27)
3. Amortization of the unfunded accrued liability by June 30, 2009	1,610,428 (7.00)
4. Total Chapter 356 requirement (1 + 2 + 3)	5,972,650 (25.95)
D. DETERMINATION OF CONTRIBUTION SUFFICIENCY**	
1. Actual prescribed contributions (Chapter 352B)	
a. Employee contributions	1,956,383 (8.50)
b. Employer contribution	4,350,075 (18.90)
c. Total of (a) and (b)	6,306,458 (27.40)

Table 1(continued)

2.	Chapter 356 requirements (Per Item C4)	5,972,650
3.	Sufficiency (1(c) / 2)	105.6%
E. DEPTH OF FUNDING - PLAN CONTINUATION BASIS		
1.	Present value of accrued benefits	
a.	Active members	72,298,348
b.	Deferred annuitants	1,741,638
c.	Former members without vested rights	19,976
d.	Survivors - children	109,502
e.	Disabled members	585,402
f.	Participation in MPRI Fund	40,454,943
g.	6% Increase for Pre-73 Retirees	4,040,505
h.	Total present value of accrued benefits	119,250,314
2.	Valuation assets	86,784,592
3.	Portion of accrued benefits funded (2 / 1(h))	72.78%

\* Parentheses indicate Chapter 356 contribution levels as a percentage of salary.

\*\* Estimated July 1, 1984 - June 30, 1985 contributions on an accrual basis. Parentheses indicate statutory annual contribution levels as a percentage of salary for Troopers under assumed retirement age, as set forth in Chapter 352B of the Minnesota Statutes.

Table 2(a)

MINNESOTA STATE RETIREMENT SYSTEM  
STATE PATROL RETIREMENT FUND

Accounting Balance Sheet as of June 30, 1984

<b>A. ASSETS</b>		
1. Cash		\$ 6,083
2. Short term investments (at cost)		2,631,000
3. Accounts receivable:		
a. Accrued employee contributions	90,775	
b. Accrued employer contributions	<u>224,266</u>	315,041
4. Interest receivable		37,915
5. Cash equivalents (at cost)		2,429,279
6. Investment in debt securities (actuarial value)****		11,479,723
7. Investment in equities (actuarial value)*		30,009,994
8. Participation in MPRI Fund**		<u>40,454,943</u>
9. TOTAL ASSETS		<u>\$87,363,978</u>
<b>B. LIABILITIES AND RESERVES</b>		
<u>Liabilities</u>		
1. Accounts payable - accrued expenses		193,812
2. Due state employees retirement fund		46,912
3. Due MPRI fund		<u>338,662</u>
4. Total liabilities		<u>579,386</u>
<u>Reserves</u>		
1. MPRI Fund Reserve**		40,454,943
2. Disability benefit reserve		585,402
3. Survivor benefit reserve - children		109,502
4. Employee contribution reserve		12,762,346
5. State contribution reserve		<u>33,653,900</u>
6. TOTAL REQUIRED RESERVES		87,566,093
7. Unrealized loss on equities		<u>(781,501)</u>
8. Valuation assets ***		<u>86,784,592</u>
9. TOTAL LIABILITIES AND RESERVES		<u>\$87,363,978</u>
* Market value as of June 30, 1984 is \$28,461,912 for equities.		
** Participation equals Required Reserves for retired lives participating in MPRI Fund.		
*** Portion of assets to be applied as valuation assets toward providing benefits.		
**** The value at cost as of June 30, 1984 is \$11,487,183 for debt securities.		

Table 2(b)

MINNESOTA STATE RETIREMENT SYSTEM  
STATE PATROL RETIREMENT FUND

Actuarial Balance Sheet as of June 30, 1984

## A. ASSETS

1. Assets on hand from accounting balance sheet:		
a. Reserves for MPRI Fund benefits	\$40,454,943	
b. All other assets	<u>46,909,035</u>	\$87,363,978
2. Present value of employees' future contributions		24,474,382
3. Present value of state future contributions applicable to:		
a. Entry age normal costs	25,917,617	
b. Statutory Supplemental Contribution	41,497,331	
c. Excess of Chapter 356 requirement over 352B prescribed contribution (balancing item)	<u>(8,599,705)</u>	<u>58,815,243</u>
4. TOTAL ASSETS		<u>\$170,653,603</u>

## B. LIABILITIES

1. Current liabilities from accounting balance sheet		579,386
2. Present value of earned and earnable benefits payable to presently active members:		
a. Current Benefit Obligations*	71,554,420	
b. Future Benefit Obligations	<u>51,567,831</u>	
Total for actives		123,122,251
3. Present value of benefits for deferred annuitants		1,741,638
4. Present value of refundment to former members without vested rights		19,976
5. Present value of survivor benefits - children		109,502
6. Present value of disability benefits		585,402
7. Participation in MPRI Fund		40,454,943
8. 6% increase in retirement benefits for pre-73 retirees		<u>4,040,505</u>
9. TOTAL LIABILITIES		<u>\$170,653,603</u>

\* Includes augmentation of benefits equal to \$1,244,078.

Table 3(a)

MINNESOTA STATE RETIREMENT SYSTEM  
STATE PATROL RETIREMENT FUND

Chapter 356 Balance Sheet as of June 30, 1984

ASSETS AND UNFUNDED ACCRUED LIABILITY

A. ASSETS(1)

1. Cash		\$ 6,083
2. Short term investments (at cost)		2,631,000
3. Accounts receivable:		
a. Accrued employee contributions	90,775	
b. Accrued employer contributions	<u>224,266</u>	315,041
4. Interest receivable		37,915
5. Cash equivalents (at cost)		2,429,279
6. Investment in debt securities (actuarial value)		11,479,723
7. Investment in equities (actuarial value)		30,009,994
8. Participation in MPRI Fund(2)		<u>40,454,943</u>
9. TOTAL ASSETS		<u>\$ 87,363,978</u>

B. UNFUNDED ACCRUED LIABILITIES

1. Total unfunded accrued liability	<u>32,897,626</u>
2. TOTAL ASSETS AND UNFUNDED ACCRUED LIABILITIES	<u>\$120,261,604</u>

CURRENT LIABILITIES AND RESERVES REQUIRED

C. LIABILITIES

1. Accounts payable - accrued expenses	193,812
2. Due SER Fund	46,912
3. Due MPRI Fund	<u>338,662</u>
4. Total liabilities	<u>\$579,386</u>

Table 3(a) (continued)

D. RESERVES REQUIRED

1. Total reserves required per attached Table 3(b)	<u>\$119,682,218</u>
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2. TOTAL CURRENT LIABILITIES AND RESERVES REQUIRED	<u>\$120,261,604</u>
--	----------------------

(1) Accumulated contributions, without interest, of Troopers not yet retired amounted to \$12,762,346 as of June 30, 1984 (includes accrued but unpaid contributions).

(2) Participation equals Required Reserves for retired lives participating in the MPRI Fund.

Table 3(b)

MINNESOTA STATE RETIREMENT SYSTEM  
STATE PATROL RETIREMENT FUND

Determination of Accrued Liability and  
Unfunded Accrued Liability as of June 30, 1984

	Present Value of Benefits	Present Value of Applicable Portion of Normal Cost Contribution	Accrued Liability Equals Reserves Required (1) - (2)
<b>A. DETERMINATION OF ACCRUED LIABILITY</b>			
1. Active Members			
a. Retirement benefits	\$ 99,944,384	\$ 36,817,648	\$ 63,126,736
b. Disability benefits	8,855,669	4,605,574	4,250,095
c. Refundments due to death or withdrawal	296,503	777,743	(481,240)
d. Survivor and childrens' benefits	3,879,756	2,383,508	1,496,248
e. Vested termination benefits	10,145,939	5,807,526	4,338,413
f. Total active	123,122,251	50,391,999	72,730,252
2. Deferred Annuitants	1,741,638	-	1,741,638
3. Former members without vested rights	19,976	-	19,976
4. Survivors - children	109,502	-	109,502
5. Disabled members	585,402	-	585,402
6. Participation in MPRI Fund	40,454,943	-	40,454,943
7. 6% increase in retirement benefit fund for pre-73 retirees	4,040,505	-	4,040,505
8. TOTAL	\$170,074,217	\$50,391,999	\$119,682,218

**B. DETERMINATION OF UNFUNDED ACCRUED LIABILITY**

1. Accrued Liability	-	\$119,682,218
2. Valuation Assets	-	86,784,592
3. Unfunded Accrued Liability (1 - 2)	-	32,897,626

CONTRIBUTIONS

Chapters 356 and 352B set forth requirements as to the level of contributions. Chapter 352B prescribes the actual amount of contributions and Chapter 356 describes the method used to determine the amount of contribution required to fully fund the Normal Cost and the Unfunded Accrued Liability. Together, the actual contribution and required contribution are used to determine the sufficiency of the actual contribution. These calculations are illustrated below, using a payroll figure of \$23,016,272 for employees below the maximum assumed retirement age.

Annual Requirement in Accordance with Chapter 356:

	Percent of Payroll*	Amount
1. Normal cost	18.68%	\$4,300,078
2. Assumed operating expense	.27	62,144
3. Amortization of the Unfunded Accrued Liability by June 30, 2009	7.00	1,610,428
4. Total Chapter 356 requirement (1 + 2 + 3)	25.95%	5,972,650

Actual Contributions:

1. Employee contributions	8.50	1,956,383
2. Employer contribution	18.90	4,350,075
3. Total Chapter 352B prescribed contribution	27.40%	6,306,458

Contribution Sufficiency: 105.6%

\* Assumed contributed in each payroll period during the year ending June 30, 1985.

The Chapter 356 requirement decreased from 34.64% of payroll at June 30, 1983 to 25.95% at June 30, 1984. The primary reasons for this decrease are the decrease in unfunded liabilities due to the change in assumptions, and the newly required amortization of this liability over future payroll rather than as a level amount.

MINNESOTA POST RETIREMENT INVESTMENT FUND

Background

The Minnesota Post Retirement Investment Fund (MPRI Fund), previously termed the Minnesota Adjustable Fixed Benefit Fund (MAFB), is basically a vehicle for providing variable annuity payments to pensioners. When an active participant retires, assets equal to the present value of future benefits payable to that participant (and beneficiary, if applicable) are transferred from the State and Employee Contribution Reserves, to the MPRI Fund. Thereafter, benefits are paid from the MPRI Fund. Future benefit increases are determined on the basis of the investment performance of MPRI Fund assets.

Chapter 11A of the Minnesota Statutes provides a method for determining benefit increases. A benefit increase is granted in any year in which the earnings of MPRI Fund assets exceed 5%. In a year in which there is an MPRI Fund deficit (i.e., required reserves exceed MPRI Fund assets), 5% of any income in excess of the 5% requirement is credited towards amortizing the deficit, with the remaining 95% being used to provide benefit increases. If there is no MPRI Fund deficit, all income in excess of the required 5% is used to provide benefit increases.

MPRI Fund Status as of June 30, 1984

Table 4 sets forth the determination of MPRI Fund net assets and reserve requirements as of June 30, 1984.

As required by Chapter 11A, Table 4 allocates the mortality gain and reserve determinations for January 1, 1985 benefit increase purposes to the eligible and non-eligible groups.

UNFUNDED ACCRUED LIABILITY

Tables 5 and 6 reconcile the change in the unfunded accrued liability during the year. Table 5 sets forth an illustration that the decrease in the unfunded accrued liability is equal to the excess of income over deductions during the year, where any decrease in required actuarial reserves is indicated as an income item. Table 6 sets forth our analysis of the change in the unfunded accrued liability.

Table 4

MINNESOTA STATE RETIREMENT SYSTEM  
STATE PATROL RETIREMENT FUND

Determination of MPRI Fund Participation and Reserves  
as of June 30, 1984

	Members Eligible For 1/1/85 Increase	Members Not Eligible For Increase	Total
1. Unadjusted MPRI Fund Participation as of June 30, 1984	--	--	\$39,508,092
2. Transfer (From) to MPRI Fund for Mortality (Gain) Loss	308,486	30,176	338,662
3. Participation as of June 30, 1984 (1) + (2)	--	--	39,846,754
4. Required Reserves as of June 30, 1984	32,928,974	7,525,969	40,454,943
5. Required Reserves as of January 1, 1985	32,519,771	7,452,317	39,972,088

This exhibit does not reflect benefit increases to become effective on January 1, 1985.

Table 5

MINNESOTA STATE RETIREMENT SYSTEM  
STATE PATROL RETIREMENT FUND

Analysis of Income and Deductions From Income and  
Effect on the Unfunded Accrued Liability

<b>A. INCOME AND OTHER FINANCIAL SOURCES</b>			
1.	Contributions from employees		\$ 1,877,412
2.	Contributions from employers		4,637,670
3.	From investments		
	a. Investment income	2,795,738	
	b. General fund appropriation	59,008	
	c. Gain on sale of stock	<u>292,606</u>	3,147,352
4.	From MPRI Fund participation		3,687,517
5.	Decrease in total reserves required		
	a. Reserves required 6/30/83	132,174,953	
	b. Reserves required 6/30/84	<u>119,682,218</u>	12,492,735
6.	Other		<u>274</u>
7.	TOTAL INCOME		<u>\$25,842,960</u>
<b>B. DEDUCTIONS FROM INCOME AND OTHER FINANCING USES</b>			
1.	Benefits		
	a. Service retirement annuities	3,239,440	
	b. Disability retirement benefits & children	58,061	
	c. Survivor benefits (spouses & children)	<u>133,560</u>	3,431,061
2.	Refundments (employee contributions)		279,120
3.	Administrative expenses		46,912
4.	Deferred yield write off		801,809
5.	Unrealized market loss		<u>781,501</u>
6.	TOTAL DEDUCTIONS FROM INCOME		<u>5,340,403</u>
7.	EXCESS OF INCOME OVER DEDUCTIONS FROM INCOME		<u>\$20,502,557</u>
<b>C. DECREASE IN UNFUNDED ACCRUED LIABILITY</b>			
1.	Unfunded accrued liability 6/30/83		53,400,183
2.	Unfunded accrued liability 6/30/84		<u>32,897,626</u>
3.	DECREASE IN UNFUNDED ACCRUED LIABILITY		<u>\$20,502,557</u>

Table 6

MINNESOTA STATE RETIREMENT SYSTEM  
STATE PATROL RETIREMENT FUND

Analysis of Change in the Unfunded Accrued Liability  
During the Fiscal Year Ending June 30, 1984

1. Unfunded accrued liability as of June 30, 1983		\$53,400,183
2. Change due to current rate of funding and interest requirements		
a. 1983-84 past service contribution	(2,789,875)	
b. 5% interest requirement	<u>2,670,009</u>	(119,866)
3. Change due to actuarial gains (indicated by parentheses) or losses (no parentheses) because of experience deviations from expected		
a. Salary increases	525,998	
b. Investment Income	(817,796)	
c. MPRI Fund mortality	338,662	
d. Withdrawals, death, disability of active members (balancing item)	<u>303,437</u>	350,301
4. Decrease due to change in interest, salary scale retirement and withdrawal assumptions		(6,312,730)
5. Decrease due to change in actuarial cost method		<u>(14,420,262)</u>
6. Unfunded accrued liability as of June 30, 1984		<u>\$32,897,626</u>

EMPLOYEE DATA

The Executive Director furnished us with employee information pertaining to all active members, inactive members and retired members of the Fund. Tables 7 and 8 summarize the changes in active, inactive and retired membership during the year in accordance with the requirements set forth in Section 356.215 of the Minnesota Statutes, Subdivisions 4 and 5. In addition, age, service and salary distributions are provided in Tables 9(a) and 9(b).

PLAN VALUED

The provisions of the Minnesota State Retirement System, State Patrol Retirement Fund are governed principally by Chapters 352B and 11A of the Minnesota Statutes pertaining to MPRI Fund Benefits. Table 10 sets forth a summary of the principal provisions as of June 30, 1984.

Table 7

MINNESOTA STATE RETIREMENT SYSTEM  
STATE PATROL RETIREMENT FUND

Covered State Troopers Census Data as of June 30, 1984

	<u>Number</u>	<u>Annual Payroll</u>
Active at June 30, 1983	774	\$21,357,924
New Entrants*	<u>17</u>	
Total	791	
Less Separations from Active Service:		
Refund of Contributions*	8	147,025
Separation with a Vested Right to a Deferred Annuity	3	76,562
Separation with Neither Refundment nor Right to a Deferred Annuity	2	0
Death While Eligible, Surviving Spouse Receiving Annuity	1	21,611
Service Retirement	35	894,020
Death	<u>1</u>	31,234
Total Separations	50	
Active at June 30, 1984	<u>741</u>	<u>\$23,016,272</u>

Average Entry Age of New Employees

<u>For the Fiscal Year Ending</u>	<u>Male</u>	<u>Female</u>	<u>Average of Total</u>
6/30/80	25.7	22.5	25.5
6/30/81	27.6	27.8	27.6
6/30/82	24.7	-	24.7
6/30/83	26.4	23.0	26.2
6/30/84	28.0	31.7	28.3

Average age at entry in State service for all active employees at 6/30/84:

Male	27.1
Female	26.0
Total	27.0

\* Includes those who entered the plan and terminated during the period from July 1, 1983 to June 30, 1984.

Table 8

MINNESOTA STATE RETIREMENT SYSTEM  
STATE PATROL RETIREMENT FUND

State Troopers Annuitant Census Data as of June 30, 1984

	<u>Number</u>	<u>Annual Annuity Benefit Payable</u>
<b>A. <u>Service Retirement Annuitants</u></b>		
Receiving at June 30, 1983	244	\$2,330,046.72
New	41	608,274.36
Deaths	(6)	(38,121.72)
Adjustments-Net Result	<u>1</u>	<u>148,542.00</u>
Receiving at June 30, 1984	280	\$3,048,741.36
<b>B. <u>Disabled Employees</u></b>		
Receiving at June 30, 1983	5	39,020.40
New	1	15,800.64
Deaths	(1)	(15,800.64)
Adjustments-Net Result	<u>0</u>	<u>3,496.68</u>
Receiving at June 30, 1984	5	\$ 42,517.08
<b>C. <u>Widows Receiving an Annuity or Survivor Benefit</u></b>		
Beneficiaries Receiving an Optional or Reversionary Annuity:		
Receiving at June 30, 1983	95	382,633.56
New	3	10,805.88
Deaths	(2)	(4,508.64)
Adjustments-Net Result	<u>0</u>	<u></u>
Receiving at June 30, 1984	<u>96</u>	\$ 416,280.96

Table 8 (con't)

	<u>Number</u>	<u>Annual Annuity Benefit Payable</u>
D. <u>Children Receiving a Survivor Benefit</u>		
Receiving at June 30, 1983	15	\$ 25,409.40
New	0	0
Reinstated	2	2,054.04
No longer eligible	(1)	(953.64)
Adjustments-Net Result	<u>0</u>	<u>2,076.72</u>
Receiving at June 30, 1984	16	\$ 28,586.52
E. <u>Deferred Annuitants</u>		
Deferred as of June 30, 1983	22	194,885.64
New	3	48,096.00
Began Receiving	(3)	(36,440.16)
Adjustments-Net Result	<u>(1)</u>	<u>(36,754.32)</u>
Deferred as of June 30, 1984	21	\$169,787.16

Average Age at Retirement of New Service Annuitants

<u>Fiscal Year Ending</u>	<u>Average Retirement Age</u>
6/30/80	57.6
6/30/81	61.4
6/30/82	58.6
6/30/83	59.8
6/30/84	58.6
All Existing Service Annuitants	58.5

Table 9(a)

MINNESOTA STATE RETIREMENT SYSTEM  
STATE PATROL RETIREMENT FUND

Service Groups by Age Groups

Age Group	Service Group							Total
	0-4	5-9	10-14	15-19	20-24	25-29	30 +	
<u>Male</u>								
0 - 19	0	0	0	0	0	0	0	0
20 - 24	14	0	0	0	0	0	0	14
25 - 29	58	26	0	0	0	0	0	84
30 - 34	32	49	22	0	0	0	0	103
35 - 39	13	41	70	27	0	0	0	151
40 - 44	2	8	37	74	10	0	0	131
45 - 49	0	2	6	38	39	5	0	90
50 - 54	0	0	3	9	27	41	1	81
55 - 59	0	1	2	1	19	19	12	54
60 - 64	0	1	0	2	2	2	2	9
65 - 69	0	0	0	0	0	0	0	0
70 - 74	0	0	0	0	0	0	0	0
75 - 79	0	0	0	0	0	0	0	0
80 - 84	0	0	0	0	0	0	0	0
85 +	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Total	119	128	140	151	97	67	15	717
<u>Female</u>								
0 - 19	0	0	0	0	0	0	0	0
20 - 24	1	0	0	0	0	0	0	1
25 - 29	4	3	0	0	0	0	0	7
30 - 34	2	6	0	0	0	0	0	8
35 - 39	1	1	3	0	0	0	0	5
40 - 44	0	2	0	0	0	0	0	2
45 - 49	0	0	0	0	0	0	0	0
50 - 54	0	0	1	0	0	0	0	1
55 - 59	0	0	0	0	0	0	0	0
60 - 64	0	0	0	0	0	0	0	0
65 - 69	0	0	0	0	0	0	0	0
70 - 74	0	0	0	0	0	0	0	0
75 - 79	0	0	0	0	0	0	0	0
80 - 84	0	0	0	0	0	0	0	0
85+	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Total	8	12	4	0	0	0	0	24

Table 9(b)

MINNESOTA STATE RETIREMENT SYSTEM  
STATE PATROL RETIREMENT FUND

Distribution of Annual Earnings by Age Groups

Age Group	Male			Female			All		
	No.	Total	Average	No.	Total	Average	No.	Total	Average
0 - 19	0	0	0	0	0	0	0	0	0
20 - 24	14	\$ 322,353	\$23,025	1	\$ 24,091	\$24,091	15	\$ 346,444	\$23,096
25 - 29	84	2,212,901	26,344	7	177,347	25,335	91	2,390,248	26,266
30 - 34	103	2,996,793	29,095	8	212,186	26,523	111	3,208,979	28,910
35 - 39	151	4,775,154	31,624	5	154,712	30,942	156	4,929,866	31,602
40 - 44	131	4,215,527	32,180	2	66,951	33,476	133	4,282,478	32,199
45 - 49	90	2,947,788	32,753	0	0	0	90	2,947,788	32,753
50 - 54	81	2,692,832	33,245	1	32,232	32,232	82	2,725,064	33,232
55 - 59	54	1,849,149	34,244	0	0	0	54	1,849,149	34,244
60 - 64	9	338,189	37,577	0	0	0	9	338,189	37,577
65 - 69	0	0	0	0	0	0	0	0	0
70 - 74	0	0	0	0	0	0	0	0	0
75 - 79	0	0	0	0	0	0	0	0	0
80 - 84	0	0	0	0	0	0	0	0	0
85 +	0	0	0	0	0	0	0	0	0
Total	717	\$22,350,686	\$31,173	24	\$667,519	\$27,813	741	\$23,018,205	\$31,064

Distribution of Annual Earnings by Service Groups

Service Group	Male			Female			All		
	No.	Total	Average	No.	Total	Average	No.	Total	Average
0	15	\$ 286,544	\$19,103	1	\$ 18,539	\$18,539	16	\$ 305,083	\$19,068
1	45	1,103,606	24,525	3	71,824	23,941	48	1,175,430	24,488
2	3	81,998	27,333	0	0	0	3	81,998	27,333
3	24	621,002	25,875	1	29,787	29,787	25	650,789	26,032
4	32	883,796	27,619	3	78,998	26,333	35	962,794	27,508
0-4	119	2,976,946	25,016	8	199,148	24,894	127	3,176,094	25,009
5-9	128	3,933,103	30,727	12	339,185	28,265	140	4,272,288	30,516
10-14	140	4,615,299	32,966	4	129,186	32,297	144	4,744,485	32,948
15-19	151	4,886,124	32,358	0	0	0	151	4,886,124	32,358
20-24	97	3,192,663	32,914	0	0	0	97	3,192,663	32,914
25-29	67	2,216,225	33,078	0	0	0	67	2,216,225	33,078
30 +	15	530,326	35,355	0	0	0	15	530,326	35,355
TOTAL	717	\$22,350,686	\$31,173	24	\$667,519	\$27,813	741	\$23,018,205	\$31,064

Table 9(c)

MINNESOTA STATE RETIREMENT SYSTEM  
STATE PATROL RETIREMENT FUND

Retiree Age Distribution

Annuitants in MPRIF

Male Service Groups

Age Group	Years Retired							Total
	0-4	5-9	10-14	15-19	20-24	25-29	30 +	
0 - 19								0
20 - 24								0
25 - 29								0
30 - 34								0
35 - 39								0
40 - 44								0
45 - 49								0
50 - 54								0
55 - 59	61	2	1					64
60 - 64	52	26	1					79
65 - 69	16	32	11					59
70 - 74	0	4	16	11				31
75 - 79	0	1	3	13	14			31
80 - 84	0	0	4	1	3			8
85 +	0	0	0	3	2	0	0	5
Total	129	65	36	28	19	0	0	277

Female Service Groups

0 - 19								0
20 - 24								0
25 - 29								0
30 - 34	0	1						1
35 - 39	0	0						0
40 - 44	0	0						0
45 - 49	0	0						0
50 - 54	4	2	2	1				9
55 - 59	4	3	1	1				9
60 - 64	1	5	0	2				8
65 - 69	0	3	6	1	6			16
70 - 74	0	2	3	3	4	1		13
75 - 79	0	1	1	1	6	4	2	15
80 - 84	0	0	0	4	3	4	0	11
85 +	0	0	0	0	8	6	3	17
Total	9	17	13	13	27	15	5	99

Table 9(d)

MINNESOTA STATE RETIREMENT SYSTEM  
STATE PATROL RETIREMENT FUND

Retiree Benefit Distribution

Annuitants in MPRIF

Age Group	Male			Female			All		
	No.	Total	Average	No.	Total	Average	No.	Total	Average
Under 50	0	\$ 0	\$ 0	1	\$ 2,592	\$2,592	1	\$ 2,592	\$ 2,592
50 - 54	0	0	0	9	56,262	6,251	9	56,262	6,251
55 - 59	64	865,134	13,518	9	81,398	9,044	73	946,532	12,966
60 - 64	79	1,055,790	13,364	8	53,722	6,715	87	1,109,512	12,753
65 - 69	59	601,381	10,193	16	63,097	3,944	75	664,478	8,860
70 - 74	31	248,571	8,018	13	60,550	4,658	44	309,121	7,025
75 - 79	31	171,787	5,542	15	44,948	2,997	46	216,735	4,712
80 - 84	8	56,713	7,089	11	32,584	2,962	19	89,297	4,700
85 +	5	25,213	5,043	17	45,279	2,663	22	70,492	3,204
Total	277	\$3,024,589	\$10,919	99	\$440,432	\$4,449	376	\$3,465,021	\$9,215

Distribution of Annual Benefits by Years of Retirement

Years Retired	Male			Female			All		
	No.	Total	Average	No.	Total	Average	No.	Total	Average
0	37	553,390	14,956	1	9,420	9,420	38	562,810	14,811
1	31	443,862	14,318	2	13,199	6,600	33	457,061	13,850
2	27	379,882	14,070	2	27,673	13,837	29	407,555	14,054
3	22	249,600	11,345	3	26,473	8,824	25	276,073	11,043
4	12	147,640	12,303	1	14,664	14,664	13	162,304	12,485
0-4	129	1,774,374	13,755	9	91,429	10,159	138	1,865,803	13,520
5-9	65	737,141	11,341	17	111,477	6,557	82	848,618	10,349
10-14	36	278,551	7,738	13	69,646	5,357	49	348,197	7,106
15-19	28	147,291	5,260	13	40,300	3,100	41	187,591	4,575
20-24	19	87,232	4,591	27	74,167	2,747	46	161,399	3,509
25-29	0	0	0	15	39,976	2,665	15	39,976	2,665
30 +	0	0	0	5	13,437	2,687	5	13,437	2,687
TOTAL	277	\$3,024,589	\$10,919	99	\$440,432	\$4,449	376	\$3,465,021	\$9,215

Table 10

MINNESOTA STATE RETIREMENT SYSTEM  
STATE PATROL RETIREMENT FUND

Summary of Principal Plan Provisions as of June 30, 1984

1. Coverage: From first date of employment.
2. Service Credit: Service is credited from date of coverage. For State Police Officers hired after July 1, 1961, no service is credited after age 60.
3. Contributions:
  - a. Employee: 8.5% of salary.
  - b. State of Minnesota 18.9% of salary.
4. Final Average Salary: Monthly average for the highest 5 successive years of salary.
5. Normal Retirement:
  - a. Eligibility: Attainment of age 55 and completion of 10 years of service.
  - b. Benefit Amount: 2-1/2% of Final Average Salary for each of the first 25 years of service, plus 2% of Final Average Salary for each year of service thereafter.
6. Form of Payment: Life annuity with actuarially equivalent options also available.
7. Disability Retirement:
  - a. Eligibility:
    - In line of duty: None.
    - Not in line of duty: Five years of service and less than age 55.

b. Benefit Amount:

- In line of duty: 50% of average monthly salary plus 2% for each year of service in excess of 20, offset by Workers' Compensation.
- Not in line of duty: 2-1/2% of average monthly salary for each year up to and including 25 years, plus 2% for each year in excess of 25, subject to a minimum of 25% of average monthly salary.

c. Death benefits:

If a member dies while receiving a work related disability benefit, 20% of his Final Average Salary is payable to the surviving spouse for life.

8. Deferred Service Retirement:

a. Eligibility:

Completion of 10 years of service.

b. Benefit Amount:

Retirement benefits payable at normal retirement date are determined according to the normal retirement benefit formula based on the member's Final Average Salary and service at termination, such amount being subject to an increase for each year between termination and retirement of 5% for years prior to January 1, 1981 and 3% compounded annually thereafter.

9. Return of Contributions:

If a member terminates before becoming eligible for any other benefits under the plan, his employee contributions are returned with interest at 5%.

10. Surviving Spouse Death Benefit:

a. Eligibility:

Death of member in service.

b. Benefit Amount:

20% of Final Average Salary. With 10 or more years of service, changes to a 100% Joint & Survivor annuity amount as of the date the employee would have attained age 55.

11. Children's Death Benefits:

a. Eligibility:

Death benefits are payable to children (below age 18, or 22 if a student) of members who die in active service.

b. Amount:

10% of Final Average Salary, plus \$20 per month prorated equally to such children.

c. Maximum:

Total benefit to all children may not exceed 40% of Final Average Salary.

12. Repayment of Contributions:

a. Eligible Members:

Rehired members.

b. Repayment Provision:

Such rehired member may repay all refundments made to him, including interest at 5% compounded annually. In such case, service previously credited during the prior period of membership is restored.

13. Combined Service Provisions:

a. Eligible Members:

Members who have had coverage under two or more Minnesota Public Retirement Systems, with a total of at least 10 years of credited service.

b. Benefit Provisions:

Benefits under both plans are based on the highest Final Average Salary including all years from both plans, and on the plans in effect on the member's last day in covered public employment.

14. Proportionate Annuity:

Any member who terminates after attaining age 65 and completing at least one year of service is entitled to a proportionate retirement annuity based on his allowable service credit.

15. Pre-1973 Annuitants:

State Troopers who retired prior to 1973 are entitled to an annual 6% increase in benefits.

ACTUARIAL METHODS AND ASSUMPTIONS

Actuarial Methods

Chapter 356 of the Minnesota Statutes calls for the determination of normal cost and accrued liability in accordance with the entry age normal cost method, one of several available projected cost methods. For the June 30, 1984 valuation, we used the traditional individual entry age normal method with normal costs determined as a percentage of salary.

In prior years, the normal cost for retirement benefits was first determined (based on the age at hire of each member) as the level annual dollar deposit required to pay for the cost of each member's projected benefits over a period from his date of hire to his date of retirement. The accrued liability was equal to the present value of all projected benefits under the plan less the present value of all future normal costs (the level dollar normal costs were used for this purpose). The unfunded accrued liability was the net of the accrued liability and current valuation assets on hand. To comply with the requirements of Chapter 356 which call for normal cost to be determined as a level percentage of salary, the level dollar normal cost was then converted to a level percentage of payroll basis, by applying an approximation which produces a mathematical equivalency.

The normal cost as a percentage of payroll for disability, refund, survivor and vested termination benefits was, and continues to be, determined by dividing the present value at entry of the applicable benefit by the present value at entry of future compensation.

In addition, the unfunded liability is now being amortized by the level percent of payroll method, rather than the level dollar method used in previous valuations. (Each amortization payment is now calculated as if the following year's payment will increase by 6.5%.)

Actuarial Assumptions

Tables 11(a) and 11(b) summarize the actuarial assumptions used. The following assumptions have changed since the previous valuation:

<u>Item</u>	<u>Assumptions Used in:</u>	
	<u>June 30, 1984 Valuation</u>	<u>Prior Valuation</u>
Pre-Retirement Interest	8.0% per Annum	5.0% per Annum
Salary Scale	6.5% per Annum	3.5% per Annum
Retirement	Later of Age 63 for State Police Officers hired before 7/1/61; age 58 for all others; and one year hence.	Age 63 for State Police Officers hired before 7/1/61, age 57 for all others.
Withdrawal Ages 46-54	See Separation from Service Table	See Separation from Service Table
Expenses	.27% of Payroll	.18% of Payroll

Table 11(a)

MINNESOTA STATE RETIREMENT SYSTEM  
STATE PATROL RETIREMENT FUND

Summary of Actuarial Assumptions and Methods

1. Mortality: 1971 Group Annuity Mortality Table with ages set back 8 years for females.
2. Withdrawal: Rates starting at .03 at age 20 and decreasing to zero at age 55, as set forth in the Separation From Active Service Table.
3. Disability: The rates of disability were adapted from experience of the New York State Employees' Retirement System, as set forth in the Separation From Active Service Table.
4. Expenses: .27% of covered payroll.
5. Interest Rate: Pre-retirement - 8% per annum.  
Post-retirement - 5% per annum.
6. Salary Scale: 6-1/2% per annum, disregarding actual salary history. Benefits in excess of IRC Sec. 415 limits caused by salary increases are disregarded.
7. Assumed Retirement Age: Later of 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, and one year hence.
8. Actuarial Cost Method: Individual level percent entry age cost method.
9. Assumed Survivor Status: 100% assumed married, female spouse 3 years younger. Fifteen percent load on spouse benefits for children's benefits.
10. Contribution Refund: All employees withdrawing after ten years of service were assumed to leave their contributions on deposit and receive a deferred annuitant benefit. Retirement, death and disability benefits were loaded 2% for modified cash refund.

Table 11(b)

MINNESOTA STATE RETIREMENT SYSTEM  
STATE PATROL RETIREMENT FUND

Probabilities of Separation From Active Service  
(Number Separating at Each Age Per 10,000 Working at That Age)

<u>Age</u>	<u>Death*</u>		<u>Withdrawal**</u>	<u>Disability**</u>
	<u>Males</u>	<u>Females</u>		
20	5	4	300	4
21	5	4	290	4
22	5	4	280	5
23	6	4	270	5
24	6	4	260	6
25	6	5	250	6
26	7	5	240	6
27	7	5	230	7
28	7	5	220	7
29	8	5	210	8
30	8	5	200	8
31	9	6	190	9
32	9	6	180	9
33	10	6	170	10
34	10	7	160	10
35	11	7	150	11
36	12	7	140	12
37	13	8	130	13
38	14	8	120	15
39	15	9	110	16
40	16	9	100	18
41	18	10	90	20
42	20	10	80	22
43	23	11	70	24
44	26	12	60	26
45	29	13	50	29
46	33	14	50 (40)***	32
47	38	15	50 (30)	36
48	42	16	50 (20)	41
49	47	18	50 (10)	46
50	53	20	200 (0)	50
51	59	23	200 (0)	57
52	65	26	200 (0)	64
53	71	29	200 (0)	72
54	78	33	200 (0)	80

Table 11(b) (continued)

<u>Age</u>	<u>Death*</u>		<u>Withdrawal**</u>	<u>Disability**</u>
	<u>Males</u>	<u>Females</u>		
55	85	38		88
56	93	42		98
57	100	47		108
58	109	53		118
59	119	59		129
60	131	65		141
61	144	71		154
62	159	78		167

\* 1971 Group Annuity Mortality Table, with age set back 8 years for females.

\*\* Same withdrawal and disability rates pertain to males and females.

\*\*\* Withdrawal Rates shown parenthetically are those used in prior valuations.

MINNESOTA STATE RETIREMENT SYSTEM  
STATE PATROL RETIREMENT FUND

*Touche Ross & Co*

Table References to Chapter 356 and Chapter 11A\*

Table Number	Description**	References
1	Summary of Actuarial Valuation as of June 30, 1984	356.215 Subd. 4(1) 356.215 Subd. 4(7)
2(a)	Accounting Balance Sheet	
2(b)	Actuarial Balance Sheet	
3(a)	Chapter 356 Balance Sheet	356.20 Subd. 4(1) 356.215 Subd. 4(2)
3(b)	Determination of Accrued Liability and Unfunded Accrued Liability	356.215 Subd. 4(6) 356.215 Subd. 4(8)
4	Determination of MPRI Fund Participation and Reserves	11A.18 Subd. (9), (11)
5	Analysis of Income and Deductions From Income and Effect on the Unfunded Accrued Liability	356.20 Subd. 4(2) 356.20 Subd. 4(3) 356.215 Subd. 4(11)
6	Analysis of Change in the Unfunded Accrued Liability During the Fiscal Year Ending June 30, 1984	356.215 Subd. 4(9)
7	Covered State Troopers Census Data	
8	State Troopers Annuitant Census Data	356.20 Subd. 4(4) 356.215 Subd. 4(10)
9(a)	Service Groups by Age Groups	
9(b)	Distribution of Annual Earnings by Age Groups	
9(c)	Retiree Age Distribution	
9(d)	Retiree Benefit Distribution	
10	Summary of Principal Plan Provisions	356.215 Subd. 4(12)
11(a)	Summary of Actuarial Assumptions and Methods	
11(b)	Probabilities of Separation from Active Service	356.215 Subd. 4(4) 356.215 Subd. 4(5)

\* Chapter 356 and 11A of the Minnesota Statutes.

\*\* All as of June 30, 1984.

MINNESOTA STATE RETIREMENT SYSTEM  
JUDGES' RETIREMENT FUND

ACTUARIAL VALUATION AS OF  
JUNE 30, 1984

Board of Directors  
Minnesota State Retirement System  
529 Jackson at 10th Street  
St. Paul, Minnesota 55101

Ladies and Gentlemen:

We have performed an actuarial valuation of the Minnesota State Retirement System Judges' Retirement Fund as of June 30, 1984.

The valuation was performed on the basis of accepted actuarial methods and procedures, in accordance with the applicable provisions set forth in Minnesota Statutes (Chapter 356) and stipulated in the Contract between the State of Minnesota and Touche Ross & Co.

We hereby certify that the entry age normal cost method was utilized in determining the accrued liability for all benefits payable under the Fund, and that the valuation was completed in accordance with the temporary rules adopted by the Legislative Commission on Pensions and Retirement on June 14, 1984.

TOUCHE ROSS & CO.

  
John H. Flittie, F.S.A.

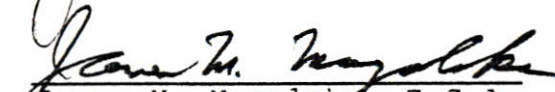
  
James M. Magalska, F.S.A.

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REPORT HIGHLIGHTS

June 30, 1984 Valuation

	<u>Judges' Plan</u>	<u>Supreme Court Justices*</u>	<u>Total</u>
<b>A. Financial and Actuarial Status</b>			
1. Valuation Assets	\$11,791,860	\$ --	\$11,791,860
2. Accrued Liability	41,739,797	638,092	42,377,889
3. Unfunded Accrued Liability (2 - 1)	29,947,937	638,092	30,586,029
4. Accrued Liability Funding Ratio (1 / 2)	28.25%	0.00%	27.83%
5. Normal Cost	1,902,073	47,666	1,949,739
<b>B. Contributions</b>			
1. Chapter 356 Requirement**	3,404,215 (24.51)	79,408 (40.72)	3,483,623 (24.73)
2. Actual Prescribed Contribution	580,914 (4.18)	7,800 (4.00)	588,714 (4.18)
<b>C. Depth of Funding - Plan Continuation Basis</b>			
1. Present Value of Accrued Benefits	46,544,371	835,161	47,379,532
2. Depth of Funding (A1 / C1)	25.34%	--	24.89%

\* Active Justices only - All retired Justices are included in Judges' Plan.

\*\* Parentheses indicate contribution levels as a percentage of the salary of those individuals not eligible for normal retirement (\$13,888,111 for Judges, \$195,000 for Justices.)

REPORT HIGHLIGHTS

## Comparison with Previous Valuation

	<u>6/30/84</u>	<u>6/30/83</u>
A. Financial and Actuarial Status		
1. Valuation Assets	\$11,791,860	\$11,049,076
2. Accrued Liability	42,377,889	40,556,310
3. Unfunded Accrued Liability	30,586,029	29,507,234
4. Accrued Liability Funding Ratio (A1/A2)	27.83%	27.24%
5. Normal Cost	1,949,739 (13.84)*	1,806,579 (15.09)*
B. Contributions		
1. Chapter 356 Requirement	3,483,623 (24.73)	3,829,509 (31.99)
2. Actual Prescribed Contribution	588,714 (4.18)	543,441 (4.54)
C. Depth of Funding - Plan Continuation Basis		
1. Present Value of Accrued Benefits	47,379,539	44,784,872
2. Depth of Funding (A1/C1)	24.89%	24.67%

\* Contribution level as a percentage of the salary of those individuals under assumed retirement age.

REPORT HIGHLIGHTS (continued)

	<u>06/30/84</u>	<u>06/30/83</u>
D. Plan Participants		
1. Active Members		
a. Number	244	229
b. Covered payroll - all	14,083,111	12,685,000
- under assumed		
retirement age	14,083,111	11,970,000
2. Retired Members/Beneficiaries		
a. Number	136	135
b. Average annual benefit	14,873	13,906
3. Deferred Annuitants		
a. Number	4	5
b. Average annual vested benefit	9,334	10,105
4. Former Members Without Vested Rights		
a. Number	2	0
b. Average employee contributions	0	0

MINNESOTA STATE RETIREMENT SYSTEM  
JUDGES' RETIREMENT FUND

ACTUARIAL VALUATION AS OF JUNE 30, 1984

PURPOSE AND SUMMARY

The purpose of this report is to set forth the financial status of the Minnesota State Retirement System (MSRS) Judges' Retirement Fund in accordance with the applicable provisions set forth in Chapter 356 and Chapter 11A of the Minnesota Statutes.

Chapter 356 of the Minnesota Statutes sets forth the annual reporting requirements which govern the public employee retirement systems in Minnesota. The principal requirement (in addition to the experience study required every fourth year) is that an actuarial valuation be performed each year and that the valuation specifically set forth the following items based on an assumed 8% preretirement and 5% postretirement interest rate and a 6-1/2% salary scale assumption:

1. The assets of the plan and the present value of all benefits which will be payable from the plan.
2. The normal cost of the plan (as a level percentage of payroll) based on the entry age normal cost method.
3. The accrued liability of the plan, defined as the present value of all benefits less the present value of future entry age normal costs.
4. An actuarial balance sheet showing accrued assets, accrued liabilities, and the deficit from full funding of the accrued liability (unfunded accrued liability).
5. The annual contribution required to pay normal cost and amortize the June 30, 1984 unfunded accrued liability by June 30, 2009.
6. An analysis explaining the increase or decrease in the unfunded accrued liability since the last valuation.

Chapter 11A of the Minnesota Statutes pertains to the operation of the Minnesota Post Retirement Investment Fund (MPRI Fund). It includes requirements regarding the determination of the present value of benefits payable from the MPRI Fund (as of June 30, 1984 and as of January 1, 1985), and the corresponding mortality gain or loss each year, the latter to facilitate an appropriate transfer between the Judges' Retirement Fund and the MPRI Fund.

This reporting on the status of the Judges' Retirement Fund as of June 30, 1984, is intended to comply with all of the requirements regarding actuarial reporting that are set forth in Chapters 356 and 11A of the Statutes. The Appendix at the end of the report cross-references the information of the Minnesota Statutes set forth herein with that specifically called for under Chapters 356 and 11A respectively.

#### VALUATION ASSETS

The Executive Director furnished us with a Financial Report setting forth the assets and liabilities of the Fund as of June 30, 1984. The Accounting Balance Sheet furnished by the Executive Director is set forth in Table 1.

#### ACTUARIAL BALANCE SHEETS

Table 2 sets forth an Actuarial Balance Sheet summarizing the actuarial valuation. Whereas the previously mentioned Accounting Balance Sheet (Table 1) balances the current assets to date with current accumulated reserves for benefits payable, the Actuarial Balance Sheet compares total assets, including the present value of all future contributions payable to the plan, with the present value of all benefits payable from the plan.

Table 3(a) sets forth a balance sheet comparing the assets and unfunded accrued liability (the total of the two equaling the accrued liability) to the current liabilities and reserves required under the plan. This table is in the format specifically required by Chapter 356 and is supported by attachments in the form of Tables 3(b) and 4 which set forth the determination of the unfunded accrued liability and the status of the MPRI Fund as of June 30, 1984.

Table 1

MINNESOTA STATE RETIREMENT SYSTEM  
JUDGES' RETIREMENT FUND

Accounting Balance Sheet as of June 30, 1984

A. ASSETS

1. Cash	\$ 6,289
2. Short term investments (at cost)	1,156,000
3. Accrued Judges' contributions	5,262
4. Interest receivable	11,587
5. Cash equivalents (at cost)	229,500
6. Investment in debt securities (actuarial value)****	735,712
7. Due from MPRI Fund	914,859
8. Investment in equities (actuarial value)*	2,109,395
9. Participation in MPRI Fund**	6,838,301
<b>TOTAL ASSETS</b>	<b><u>\$12,006,905</u></b>

B. LIABILITIES AND RESERVES

Liabilities

1. Due SER Fund	\$ 28,013
2. Accounts Payable	
a) Annuitants	83,819
b) Accrued expenses	103,213
3. Total liabilities	<u>215,045</u>

Reserves

1. MPRI Fund Reserve	6,838,301
2. Member contribution reserve	3,062,588
3. Retirement Reserve - "Old Law" Judges	1,811,700
4. Retirement Reserve - Additional Judges and Survivors	9,531,303
5. State contribution reserve	(9,398,520)
6. Total reserves	<u>11,845,372</u>
7. Unrealized loss on equities	(53,512)
8. Valuation Assets***	<u>11,791,860</u>
<b>9. TOTAL LIABILITIES AND RESERVES</b>	<b><u>\$12,006,905</u></b>

\* Market value as of June 30, 1984 is \$2,003,327 for equities.

\*\* Participation equals Required Reserves for retired lives participating in the MPRI fund.

\*\*\* Portion of assets to be applied as valuation assets towards providing benefits.

\*\*\*\* The value at cost as of June 30, 1984 is \$736,191 for debt securities.

Table 2

MINNESOTA STATE RETIREMENT SYSTEM  
JUDGES' RETIREMENT FUND

Actuarial Balance Sheet as of June 30, 1984

## A. ASSETS

1. Assets on hand from accounting balance sheet:		
a. Participation in MPRI Fund	6,838,301	
b. All other assets	<u>5,168,604</u>	12,006,905
2. Present value of employees' future contributions		5,977,102
3. Present value of state future contributions applicable to:		
a. Entry age normal costs	13,938,808	
b. Unfunded accrued liability	<u>30,586,029</u>	<u>44,524,837</u>
4. TOTAL ASSETS		<u>\$62,508,844</u>

## B. LIABILITIES

1. Current liabilities from accounting balance sheet		215,045
2. Present value of earned and earnable benefits payable to presently active members:		
a. Current benefit obligations	28,985,773	
b. Future benefit obligations	<u>14,914,267</u>	43,900,040
3. Present value of benefits for deferred annuitants		212,455
4. Present value of refundment to former members without vested rights		0
5. Present value of presently retired persons		
a. Participation in MPRI Fund	6,838,301	
b. From Judges' Fund	<u>11,343,003</u>	<u>18,181,304</u>
6. TOTAL LIABILITIES		<u>\$62,508,844</u>

Table 3(a)

MINNESOTA STATE RETIREMENT SYSTEM  
JUDGES' RETIREMENT FUND

Chapter 356 Balance Sheet as of June 30, 1984

ASSETS AND UNFUNDED ACCRUED LIABILITY

A. ASSETS(1)

1. Cash	6,289
2. Short term investments (at cost)	1,156,000
3. Accounts receivable	
- accrued judges' contributions	5,262
4. Interest receivable	11,587
5. Cash equivalents (at cost)	229,500
6. Investment in debt securities	
(actuarial value)	735,712
7. Due from MPRI Fund	914,859
8. Investment in equities (actuarial value)	2,109,395
9. Participation in MPRI Fund(2)	6,838,301
10. TOTAL ASSETS	<u>\$12,006,905</u>

B. UNFUNDED ACCRUED LIABILITY

1. Total unfunded accrued liability	30,586,029
2. TOTAL ASSETS AND UNFUNDED ACCRUED LIABILITY	<u>\$42,592,934</u>

CURRENT LIABILITIES AND RESERVES REQUIRED

C. LIABILITIES

1. Due SER Fund	28,013
2. Accounts Payable - annuitants	83,819
- accrued expenses	103,213
3. TOTAL LIABILITIES	<u>\$215,045</u>

D. RESERVES REQUIRED

1. Total reserves required per attached Table 3(b)	42,377,889
2. TOTAL CURRENT LIABILITIES AND RESERVES REQUIRED	<u>\$42,592,934</u>

(1) Accumulated contributions, without interest, of members not yet retired amounted to \$3,062,588 as of June 30, 1984 (includes accrued but unpaid contributions).

(2) Participation equals Required Reserves for retired lives participating in the MPRI fund as of June 30, 1984, excluding the January 1, 1985 benefit increases.

Table 3(b)

MINNESOTA STATE RETIREMENT SYSTEM  
JUDGES' RETIREMENT FUND

Determination of Accrued Liability and  
Unfunded Accrued Liability as of June 30, 1984

	Present Value of Benefits	Present Value of Applicable Portion of Normal Cost Contribution	Accrued Liability Equals Reserves Required (1) - (2)
<b>A. DETERMINATION OF ACCRUED LIABILITY</b>			
1. Active Members			
a. Retirement benefits	\$34,301,196	\$13,545,202	\$20,755,994
b. Disability benefits	2,997,356	1,926,118	1,071,238
c. Refundments due to death or withdrawal	-	-	-
d. Surviving spouse benefit	6,601,488	4,444,590	2,156,898
e. Subtotal	43,900,040	19,915,910	23,984,130
2. Deferred annuitants	212,455	-	212,455
3. Former members without vested rights	0	-	0
4. Retirement and survivors benefits from Judges' Fund	11,343,003	-	11,343,003
5. Participation in MPRI Fund	6,838,301	-	6,838,301
6. Total	\$62,293,799	\$19,915,910	\$42,377,889
<b>B. DETERMINATION OF UNFUNDED ACCRUED LIABILITY</b>			
1. Accrued Liability	-	-	42,377,889
2. Valuation assets	-	-	11,791,860
3. Unfunded accrued liability (1 - 2)	-	-	30,586,029

# CONTRIBUTIONS

Chapters 356 and 490 set forth requirements as to the level of contributions. Chapter 490 prescribes the actual amount of contributions and Chapter 356 describes the method used to determine the amount of contribution required to fully fund the Normal Cost and the Unfunded Accrued Liability. The calculations below use a payroll figure of \$14,083,111 for employees below the maximum assumed retirement age.

## Annual Requirement in Accordance with Chapter 356:

	<u>Percent of Payroll</u>	<u>Amount</u>
1. Normal cost	13.84%	\$1,949,739
2. Assumed operating expense	.26	36,616
3. Amortization of the Unfunded Accrued Liability by June 30, 2009	10.63	1,497,268
4. Total Chapter 356 requirement (1 + 2 + 3)	24.73	3,483,623

## DEPTH OF FUNDING

The depth of funding is an indication of the extent to which the accrued benefits are funded and is measured by the ratio of valuation assets to the present value of accrued benefits. These measurements are made on the plan continuation basis (applying actuarial assumptions including assumed salary increases) and are illustrated as follows:

### Depth of Funding:

1. Active members	\$28,985,773
2. Deferred annuitants	212,455
3. Former members without vested rights	0
4. Retirement and survivors' benefits not payable from MPRI Fund	11,343,003
5. Participation in MPRI Fund	<u>6,838,301</u>
6. Total present value of accrued benefits	47,379,532
7. Valuation assets	11,791,860
8. Depth of Funding (7 / 6)	24.89%

MINNESOTA POST RETIREMENT INVESTMENT FUND

Background

The Minnesota Post Retirement Investment Fund (MPRI Fund), previously termed the Minnesota Adjustable Fixed Benefit Fund (MAFB), is basically a vehicle for providing variable annuity payments to pensioners. When an active participant retires, assets equal to the present value of future benefits payable to that participant (and beneficiary, if applicable) are transferred from the State and Employee Contribution Reserves, to the MPRI Fund. Thereafter, benefits are paid from the MPRI Fund. Future benefit increases are determined on the basis of the investment performance of MPRI Fund assets.

Chapter 11A of the Minnesota Statutes provides a method for determining benefit increases. A benefit increase is granted in any year in which the earnings of MPRI Fund assets exceed 5%. In a year in which there is an MPRI Fund deficit (i.e., required reserves exceed MPRI Fund assets), 5% of any income in excess of the 5% requirement is credited towards amortizing the deficit, with the remaining 95% being used to provide benefit increases. If there is no MPRI Fund deficit, all income in excess of the required 5% is used to provide benefit increases.

MPRI Fund Status as of June 30, 1984

Table 4 sets forth the determination of MPRI Fund net assets and reserve requirements as of June 30, 1984.

As required by Chapter 11A, Table 4 allocates the mortality gain and reserve determinations for January 1, 1985 benefit increase purposes, to the eligible and non-eligible groups.

UNFUNDED ACCRUED LIABILITY

Tables 5 and 6 reconcile the change in the unfunded accrued liability during the year. Table 5 sets forth an illustration that the increase in the unfunded accrued liability is equal to the excess of deductions over income during the year, where any increase in required actuarial reserves is indicated as a deduction item. Table 6 sets forth our analysis of the change in the unfunded accrued liability.

Table 4

MINNESOTA STATE RETIREMENT SYSTEM  
JUDGES' RETIREMENT FUND

Determination of MPRI Fund Participation and Reserves  
as of June 30, 1984

	Members Eligible for 1/1/85 Increase	Members Not Eligible for Increase	Total
1. Unadjusted MPRI Fund Participation as of June 30, 1984	--	--	\$7,080,188
2. Transfer (from) to MPRI Fund for Mortality (Gain) Loss	\$ (286,907)	\$ 9,048	(277,859)
3. Participation as of June 30, 1984 (1) + (2)	--	--	6,802,329
4. Required Reserves as of June 30, 1984	6,341,263	497,038	6,838,301
5. Required Reserves as of January 1, 1985	6,233,520	487,836	6,721,356

This exhibit does not reflect benefit increases to become effective on January 1, 1985.

Table 5

MINNESOTA STATE RETIREMENT SYSTEM  
JUDGES' RETIREMENT FUND

Analysis of Income and Deductions From Income and  
Effect on the Unfunded Accrued Liability

<b>A. INCOME</b>			
1.	From Judges' contributions		\$ 465,758
2.	From Employer contributions		1,670,894
3.	From investments		
	a. Investment income	241,565	
	b. Gain on sale of stock	<u>(10,156)</u>	231,409
4.	Participation in MPRI Fund income		719,281
5.	Other Revenues - County reimbursements		<u>85,544</u>
6.	TOTAL INCOME		<u>\$3,172,886</u>
<b>B. DEDUCTIONS FROM INCOME</b>			
1.	Benefits		
	a. Judges' Plan service retirement annuities	1,843,260	
	b. Judges' Plan disability annuities	11,457	
	c. Judges' Plan survivor benefits (spouses) and other judges	<u>124,245</u>	1,978,962
2.	Refundments (employee contributions)		
	a. Refunds	107,679	
	b. Interest on refunds	<u>83</u>	107,762
3.	Administrative expenses		27,713
4.	Deferred yield write off		262,154
5.	Increase in total reserves required		
	a. Reserves required 6/30/83	40,556,310	
	b. Reserves required 6/30/84	<u>42,377,889</u>	1,821,579
6.	Unrealized market loss		<u>53,512</u>
7.	TOTAL DEDUCTIONS FROM INCOME		<u>\$ 4,251,682</u>
8.	EXCESS OF DEDUCTIONS FROM INCOME OVER INCOME		<u>\$ 1,078,796</u>
<b>C. INCREASE IN UNFUNDED ACCRUED LIABILITY</b>			
1.	Unfunded accrued liability 6/30/83		29,507,233
2.	Unfunded accrued liability 6/30/84		<u>30,586,029</u>
3.	INCREASE IN UNFUNDED ACCRUED LIABILITY		<u>\$ 1,078,796</u>

Table 6

MINNESOTA STATE RETIREMENT SYSTEM  
JUDGES' RETIREMENT FUND

Analysis of Change in the Unfunded Accrued Liability  
During the Fiscal Year Ending June 30, 1984

1. Unfunded accrued liability as of June 30, 1983		\$29,507,233
2. Change due to current rate of funding and interest requirements		
a. 5% interest requirement	1,475,362	
b. 1983-84 past service contribution	<u>309,920</u>	
c. Net addition: (a) - (b)		1,165,442
3. Change due to actuarial gains (indicated by parentheses) or losses (no parentheses) because of experience deviations from expected		
a. Salary	1,400,606	
b. Investment income	7,160	
c. MPRI Fund mortality	(277,859)	
d. Mortality on other retirees	129,942	
e. Social Security	576,541	
f. Withdrawals, death, disability of active members (balancing item)	<u>186,748</u>	2,023,138
4. Decrease due to change in pre-retirement interest assumption from 5% to 8% and change in salary scale assumption from 3.5% to 6.5%		(3,656,514)
5. Increase due to change in actuarial cost method from aggregate entry age normal to individual entry age normal		<u>1,546,730</u>
6. Unfunded accrued liability as of June 30, 1984		<u>\$30,586,029</u>

EMPLOYEE DATA

The Executive Director furnished us with employee information pertaining to all active members, inactive members and retired members of the Fund. Tables 7 and 8 summarize the changes in active, inactive and retired membership during the year in accordance with the requirements set forth in Section 356.215 of the Minnesota Statutes, Subdivisions 4 and 5. In addition, age and service, salary and benefit distributions are provided in Tables 9(a) and 9(b) for active employees and 10(a) and 10(b) for retirees.

PLAN VALUED

The provisions of the Minnesota State Retirement System, Judges' Retirement Fund are governed principally by Chapters 490 and 11A of the Minnesota Statutes pertaining to MPRI Fund Benefits. Table 11 sets forth a summary of the principal provisions as of June 30, 1984. No significant changes to Chapter 490 were reported since the last actuarial valuation as of June 30, 1983.

Table 7

MINNESOTA STATE RETIREMENT SYSTEM  
JUDGES' RETIREMENT FUND

Covered Judges' Retirement Fund Employee Census Data  
as of June 30, 1984

	<u>Number</u>	<u>Annual Payroll</u>
Active at June 30, 1983	226*	\$12,490,000
New Entrants	<u>21</u>	
Total	247	
Less Separations from Active Service:		
Refund of Contributions	1	48,000
Inactive Vested	1	48,000
Service Retirement	2	96,000
Death while eligible, Spouse Receiving Annuity	1	48,000
Death, Refund to Beneficiary	<u>1</u>	48,000
Total Separations	6	
Active at June 30, 1984	241	14,083,111

Average Entry Age of New Employees

<u>For the Fiscal Year Ending</u>	<u>Average Age at Entry</u>
6/30/80	46.3
6/30/81	43.8
6/30/82	41.3
6/30/83	41.0
6/30/84	43.7
Average age at entry in State service for all active employees at 6/30/84:	
Male	41.7
Female	41.8
Total	41.7

\* Not including three Supreme Court Justices.

Table 8

MINNESOTA STATE RETIREMENT SYSTEM  
JUDGES' RETIREMENT FUND

Judges' Retirement Fund Annuitant Census Data  
as of June 30, 1984

---

	<u>Number</u>	<u>Annual Annuity Benefit Payable</u>
<b>A. <u>Service Retirement Annuitants</u></b>		
Receiving at June 30, 1983	82	\$1,426,529.16
New	5	98,643.96
Deaths	(8)	(131,028.24)
Adjustments-Net Result	<u>0</u>	<u>85,213.32</u>
Receiving at June 30, 1984	79	1,479,358.20
<b>B. <u>Disabled Employees</u></b>		
Receiving at June 30, 1983	2	25,500.48
Deaths	0	0
Adjustments-Net Result	<u>0</u>	<u>1,912.32</u>
Receiving at June 30, 1984	2	27,412.80
<b>C. <u>Widows Receiving an Annuity or Survivor Benefit</u></b>		
Receiving at June 30, 1983	51	425,345.28
New	5	70,230.60
Deaths	(1)	(6,751.68)
Adjustments-Net Result	<u>0</u>	<u>27,181.56</u>
Receiving at June 30, 1984	55	516,005.76
<b>D. <u>Children Receiving a Survivor Benefit</u></b>		
Receiving at June 30, 1984	None	

Table 8 (con't)

	<u>Number</u>	<u>Annual Annuity Benefit Payable</u>
<b>E. <u>Deferred Annuitants</u></b>		
Deferred as of June 30, 1983	5	\$50,523.12
New	1	13,860.00
Began Receiving	(2)	<u>(27,046.56)</u>
Deferred as of June 30, 1984	4	\$37,336.56

Average Age at Retirement of New Service Annuitants\*

<u>Fiscal Year Ending</u>	<u>Average Retirement Age</u>
6/30/80	67.8
6/30/81	67.1
6/30/82	65.2
6/30/83	67.7
6/30/84	69.2
All Existing Service Annuitants	68.2

\* Not including District or Supreme Court, or County Paid Judges or Widows.

Table 9(a)

MINNESOTA STATE RETIREMENT SYSTEM  
JUDGES' RETIREMENT FUND  
Active Judges

Employee Age and Service Distribution

Age	Service Group							
Group	0-4	5-9	10-14	15-19	20-24	25-30	30+	Total
	<u>Male</u>							
0 - 19								0
20 - 24								0
25 - 29								0
30 - 34	2							2
35 - 39	16	3						19
40 - 44	15	9	1					25
45 - 49	6	13	12	4	1			36
50 - 54	4	8	6	4				22
55 - 59	5	7	15	11	6	5	2	51
60 - 64	5	6	7	11	12	5	0	46
65 - 69	0	3	1	9	5	2	3	23
70 - 74	0	0	0	0	1	0	0	1
75 - 79	0	0	0	0	0	0	0	0
79 - 84	0	0	0	0	0	0	0	0
85+	0	0	0	0	0	0	0	0
TOTAL	53	49	42	39	25	12	5	225

Female

0 - 19								0
20 - 24								0
25 - 29								0
30 - 34	2							2
35 - 39	4	1						5
40 - 44	3							3
45 - 49	1	1						2
50 - 54	0	1	2					3
55 - 59	2	1	0					3
60 - 64	1	0	0					1
65 - 69	0	0	0					0
70 - 74	0	0	0					0
75 - 79	0	0	0					0
80 - 84	0	0	0					0
85+	0	0	0					0
TOTAL	13	4	2	0	0	0	0	19

Table 9(b)

MINNESOTA STATE RETIREMENT SYSTEM  
JUDGES' RETIREMENT FUND  
Active Judges

Employee Salary Distribution

Age Group	Male			Female			All		
	No.	Total	Average	No.	Total	Average	No.	Total	Average
0 - 19	0	\$ 0	\$ 0	0	\$ 0	\$ 0	0	\$ 0	\$ 0
20 - 24	0	0	0	0	0	0	0	0	0
25 - 29	0	0	0	0	0	0	0	0	0
30 - 34	2	114400	57200	2	114400	57200	4	228800	57200
35 - 39	19	1051342	55334	5	291199	58240	24	1342541	55939
40 - 44	25	1440397	57616	3	171600	57200	28	1611997	57571
45 - 49	36	2075446	57651	2	114400	57200	38	2189846	57628
50 - 54	22	1258397	57200	3	176800	58933	25	1435197	57408
55 - 59	51	2971794	58270	3	202800	67600	54	3174594	58789
60 - 64	46	2677995	58217	1	57200	57200	47	2735195	58196
65 - 69	23	1343197	58400	0	0	0	23	1343197	58400
70 - 74	1	21744	21744	0	0	0	1	21744	21744
75 +	0	0	0	0	0	0	0	0	0
Total	225	\$12954712	\$57576	19	\$1128399	\$59389	244	\$14083111	\$57718

Distribution of Annual Earnings by Service Groups

Service Group	Male			Female			All		
	No.	Total	Average	No.	Total	Average	No.	Total	Average
0	13	\$ 777399	\$ 59800	6	\$ 343199	\$ 57200	19	\$ 1120598	\$ 58979
1	18	1035448	57525	4	239200	59800	22	1274648	57939
2	6	343199	57200	1	57200	57200	7	400399	57200
3	9	479343	53260	1	57200	57200	10	536543	53654
4	7	410799	58686	1	67600	67600	8	478399	59800
0-4	53	3046188	57475	13	764399	58800	66	3810587	57736
5-9	49	2813196	57412	4	244400	61100	53	3057596	57690
10-14	42	2423195	57695	2	119600	59800	44	2542795	57791
15-19	39	2264595	58067	0	0	0	39	2264595	58067
20-24	25	1424741	56990	0	0	0	25	1424741	56990
25-29	12	686398	57200	0	0	0	12	686398	57200
30 +	5	296399	\$ 59280	0	0	0	5	296399	59280
Total	225	\$12954712	\$57576	19	\$1128399	\$59389	244	\$14083111	\$57718

Table 10(a)

MINNESOTA STATE RETIREMENT SYSTEM  
JUDGES' RETIREMENT FUND

Annuitants in MPRIF\*  
(Includes Retired and Disabled)

Retiree Age Distribution

Age Group	Years Retired							Total
	<u>0-4</u>	<u>5-9</u>	<u>10-14</u>	<u>15-19</u>	<u>20-24</u>	<u>25-29</u>	<u>30+</u>	
<u>Male</u>								
Under 40	0							0
40 - 44	0							0
45 - 49	0							0
50 - 54	0							0
55 - 59	0							0
60 - 64	4							4
65 - 69	6	2						8
70 - 74	9	6						15
75 - 79	3	10	1					14
80 - 84	0	4						4
85 & over	0	1						1
Total	22	23	1	0	0	0	0	46
<u>Female</u>								
Under 40	0							0
40 - 44	0							0
45 - 49	0							0
50 - 54	0							0
55 - 59	0							0
60 - 64	0							0
65 - 69	0							0
70 - 74	0							0
75 - 79	0	1						1
80 - 84	0	0						0
85 & over	0	0						0
Total	0	1	0	0	0	0	0	1

\*Only includes Judges retired after January 1, 1974.

Table 10(b)

MINNESOTA STATE RETIREMENT SYSTEM

Annuitants in MPRIF  
(Includes Retired and Disabled)

Distribution of Annual Benefit by Age Group

Age Group	Male			Female			All		
	No.	Total	Average	No.	Total	Average	No.	Total	Average
Under 50	0	\$ 0	\$ 0	0	\$ 0	\$ 0	0	\$ 0	\$ 0
50 - 54	0	0	0	0	0	0	0	0	0
55 - 59	0	0	0	0	0	0	0	0	0
60 - 64	4	63947	15987	0	0	0	4	63947	15987
65 - 69	8	149006	18626	0	0	0	8	149006	18626
70 - 74	15	254792	16986	0	0	0	15	254792	16986
75 - 79	14	239584	17113	1	10707	10707	15	250291	16686
80 - 84	4	75261	18815	0	0	0	4	75261	18815
85 +	1	9331	9331	0	0	0	1	9331	9331
TOTAL	46	\$791921	\$17216	1	\$10707	\$10707	47	\$802628	\$17077

Distribution of Annual Benefit by Years Retired

Years Retired	Male			Female			All		
	No.	Total	Average	No.	Total	Average	No.	Total	Average
0	3	\$ 63683	\$21228	0	\$ 0	\$ 0	3	\$ 63683	\$21228
1	7	135233	19319	0	0	0	7	135233	19319
2	2	46624	23312	0	0	0	2	46624	23312
3	6	97213	16202	0	0	0	6	97213	16202
4	4	86735	21684	0	0	0	4	86735	21684
0-4	22	429488	19522	0	0	0	22	429488	19522
5-9	23	348524	15153	1	10707	10707	24	359231	14968
10-14	1	13908	13908	0	0	0	1	13908	13908
15-19	0	0	0	0	0	0	0	0	0
20-24	0	0	0	0	0	0	0	0	0
25-29	0	0	0	0	0	0	0	0	0
30 +	0	0	0	0	0	0	0	0	0
Total	46	\$791920	\$17216	1	\$10707	\$10707	47	\$802627	\$17077

Table 11

MINNESOTA STATE RETIREMENT SYSTEM  
JUDGES' RETIREMENT FUND

Summary of Principal Plan Provisions as of June 30, 1984

A. JUDGES' PLAN

1. Coverage: From first date as a Judge.
2. Types of Coverage:
  - a. Including Social Security: All Judges except those excluded by Item 2(b) are covered by Social Security.
  - b. Not Including Social Security: Judges prior to January 1, 1974 were given the opportunity to elect not to be covered under Social Security.
3. Contributions:
  - a. From Judges: Judges pay the Social Security Tax Rate applied to the entire salary, plus an additional 1/2% of salary. For those Judges with Social Security coverage, the appropriate portion of this contribution is forwarded to Social Security.
  - b. From the State: The State provides any additional funds necessary to meet obligations, as Judges retire.
4. Final Average Salary: Monthly average for the highest 5 years of salary within the last 10 years.
5. Normal Retirement:
  - a. Eligibility: Earlier of:
    - attainment of age 65 and completion of 10 years of service; or
    - attainment of age 70.

Table 11 (con't.)

- |                     |   |
|---------------------|---|
| b. Benefit Amount:  | 2-1/2% of Final Average Salary for each year of service prior to June 30, 1980, plus 3% of Final Average Salary for each year thereafter. |
| c. Maximum Benefit: | 65% of annual salary in the year immediately preceding retirement.  |
| d. Minimum Benefit: | Benefits for Judges who retire at age 70 with at least 1 year of service.   |
6. Early Retirement
- |                    |   |
|--------------------|---|
| a. Eligibility:    | Attainment of age 62 and completion of 10 years of service.   |
| b. Benefit Amount: | Normal Retirement benefit formula based on service and Final Average Salary to date of early retirement but reduced 1/2% for each month that actual retirement precedes age 65. |
7. Form of Payment:
- Life annuity with no guarantees upon death. Joint & Survivor options are available.
8. Disability Retirement:
- |                    |  |
|--------------------|--|
| a. Eligibility:    | None other than disablement while in office.   |
| b. Benefit Amount: | <ul style="list-style-type: none"><li>● Full salary for the first two years of disability paid outside the plan.</li><li>● After two years of disability, an annuity computed in the same manner as the full benefit amount for service retirement, subject to a minimum of 25% of Final Average Salary.</li></ul> |

Table 11 (con't.)

- |   |   |
|---|---|
| 9. Deferred Service Retirement:         | Any annuity benefit described above may be deferred until the early or normal retirement date.  |
| 10. Return of Contributions:            | Upon termination of employment, if a Judge qualifies for no other benefits under this plan, he will receive his contributions accumulated with interest at a rate of 5% compounded annually.                        |
| 11. Pre-Retirement Survivor's Annuity:  | 60% of the annuity determined in the same manner as normal service retirement benefits assuming the Judge retired on his date of death. Subject to minimum of 25% of Final Average Salary.                          |
| 12. Post-Retirement Survivor's Annuity: |   |
| a. Joint and Survivor Election:         | In lieu of receiving benefits in the standard life annuity form of payment, a retiring Judge may elect actuarially reduced benefits in the joint and survivor annuity form.   |
| b. Prior Survivor's Benefits:           | Benefits for Judges who were in office prior to January 1, 1974 and who continue to make additional contributions of 4% of salary receive benefits in the 50% joint and survivor form, with no actuarial reduction. |
| 13. Social Security Offset:             | For Judges participating in Social Security, Judges' Plan benefits are reduced by 75% of the Social Security primary benefit payable.   |

Table 11 (con't.)

B. SUPREME COURT JUSTICES' PLAN

1. Coverage: Supreme Court Justices as of December 31, 1973 who elected coverage under Chapter 490.025 in lieu of coverage under Chapters 490.121 through 490.132.
2. Retirement With Continuation of Compensation:
  - a. Eligibility: Attainment of age 70 and completion of 12 years of Supreme Court service, or 15 years of service as Supreme Court Judge and Judge of District Court.
  - b. Benefit Amount: Continuation of final compensation until the end of the term to which the Supreme Court Justice was elected.  
  
50% of final salary plus an additional 2-1/2% of final salary for each year of Supreme Court service in excess of 12, except for service after age 73, payable after the continuation of compensation ceases. The maximum benefit is 75% of final salary.
3. Retirement Without Continuation of Compensation:
  - a. Eligibility: Earlier of:
    - attainment of age 65 and completion of 12 years of Supreme Court service; or
    - attainment of age 70 and completion of two full terms.
  - b. Benefit Amount: 50% of final salary plus an additional 2-1/2% of final salary for each year of Supreme Court service in excess of 12.

Table 11 (continued)

4. Disability Benefits:

a. Eligibility: Disablement after completion of two full terms.

b. Benefit Amount: 50% of final salary plus an additional 2-1/2% of final salary for each year of Supreme Court service in excess of 12.

5. Contributions from Judges:

4% of salary to provide a 50% joint and survivor benefit with no actuarial reduction.

ACTUARIAL METHODS AND ASSUMPTIONS

Chapter 356 of the Minnesota Statutes calls for the determination of normal cost and accrued liability in accordance with the entry age normal cost method, one of several available projected cost methods. For the June 30, 1984 valuation, we used the individual entry age normal method, with salary scale. This is a change from prior years, in that the values for service retirements for active members used to be calculated on the aggregate entry age normal method, with salary scale.

In addition, the unfunded liability is now being amortized by the level percent of payroll method, rather than the level dollar amount method used in previous valuations. In other words, each amortization payment is now calculated as if the following year's payment will increase by 6.5%.

Tables 12(a), (b) and (c) summarize the actuarial assumptions used. The following assumptions have changed since the previous valuation.

Item	Assumptions used in	
	June 30, 1984 Valuation	Prior Valuations
Pre-retirement interest	8% per annum	5% per annum
Salary scale	6.5% per annum	3.5% per annum
Judges' Retirement Age	Later of age 68 or one year hence	Later of age 68 or current age
Expenses	.26% of payroll	.16% of payroll

Table 12(a)

MINNESOTA STATE RETIREMENT SYSTEM  
JUDGES' RETIREMENT FUND

Summary of Actuarial Assumptions and Methods

A. JUDGES' RETIREMENT FUND

1. Mortality: 1971 Group Annuity Mortality Table with ages set back 8 years for females.
2. Withdrawal: None.
3. Disability: Graded rates based on actual experience, as adjusted by the June 30, 1979 experience analysis and as set forth in the Separation From Active Service Table.
4. Expenses: .27% of payroll.
5. Interest Rate: 8% per annum preretirement, 5% per annum postretirement.
6. Salary Scale: 6-1/2% per annum, disregarding actual salary history. Benefits in excess of IRC Sec. 415 limits caused by salary increases are disregarded.
7. Assumed Retirement Age: Later of age 68 or one year hence.
8. Actuarial Cost Method: Entry age cost method, with normal cost determined as a level percentage of future payroll on an individual basis.
9. Social Security:
  - a. Primary amount: Maximum current primary amount (\$729.00 per month for 1984), increasing with salary scale.
  - b. Level contribution rate: 7.05% assumed for all future years.
  - c. Covered annual wages: Current annual wage base (\$37,800 for 1984), increasing with salary scale.

Table 12(a) (continued)

B. SUPREME COURT JUSTICES

- |  |  |
|--|--|
| 1. Mortality (Pre- and Post-Retirement): | 1971 Group Annuity Mortality with ages set back 8 years for females.   |
| 2. Withdrawal:                           | None.  |
| 3. Interest Rate:                        | 8% preretirement, 5% postretirement.   |
| 4. Salary Scale:                         | 6-1/2% per annum, disregarding actual salary history. Benefits in excess of IRC Sec. 415 limits caused by salary increases are disregarded.                                |
| 5. Expenses:                             | .27% of covered payroll.   |
| 6. Retirement Age:                       | Latest of: <ul style="list-style-type: none"><li>• attainment of age 70;</li><li>• completion of 12 years of service; or</li><li>• one year from valuation date.</li></ul> |

Table 12(b)

MINNESOTA STATE RETIREMENT SYSTEM  
JUDGES' RETIREMENT FUND

Male Judges

Probabilities of Separation From Active Service  
(Number Separating at Each Age Per 10,000 Working at That Age)

<u>Age</u>	<u>Death</u>	<u>Disability</u>	<u>Age and Service Retirement</u>	<u>Age</u>	<u>Death</u>	<u>Disability</u>	<u>Age and Service Retirement</u>
20	5			45	29	3	
21	5			46	33	5	
22	5			47	38	7	
23	6			48	42	9	
24	6			49	47	11	
25	6			50	53	14	
26	7			51	59	16	
27	7			52	65	20	
28	7			53	71	24	
29	8			54	78	28	
30	8	2		55	85	34	
31	9	2		56	93	40	
32	9	2		57	100	46	
33	10	2		58	109	56	
34	10	2		59	119	66	
35	11	2		60	131	76	
36	12	2		61	144	90	
37	13	2		62	159	110	
38	14	2		63	174	136	
39	15	2		64	192	174	
40	16	2		65	213		
41	18	2		66	236		
42	20	2		67	263		
43	23	3		68			10,000
44	26	3					

Table 12(c)

MINNESOTA STATE RETIREMENT SYSTEM  
JUDGES' RETIREMENT FUND

Female Judges  
Probabilities of Separation From Active Service  
(Number Separating at Each Age Per 10,000 Working at That Age)

<u>Age</u>	<u>Death</u>	<u>Disability</u>	<u>Age and Service Retirement</u>	<u>Age</u>	<u>Death</u>	<u>Disability</u>	<u>Age and Service Retirement</u>
20	4			45	13	5	
21	4			46	14	6	
22	4			47	15	7	
23	4			48	16	7	
24	4			49	18	10	
25	5			50	20	10	
26	5			51	23	12	
27	5			52	26	14	
28	5			53	29	16	
29	5			54	33	20	
30	5			55	38	24	
31	6			56	42	30	
32	6			57	47	36	
33	6			58	53	44	
34	7			59	59	52	
35	7	1		60	65	62	
36	7	1		61	71	74	
37	8	1		62	78	88	
38	8	1		63	85	104	
39	9	2		64	93	122	
40	9	2		65	100		
41	10	2		66	109		
42	10	4		67	119		
43	11	4		68	131		
44	12	4					10,000

APPENDIX

MINNESOTA STATE RETIREMENT SYSTEM  
JUDGES' RETIREMENT FUND

Table References to Chapter 356 and Chapter 11A\*

Table Number	Description**	References
1	Accounting Balance Sheet	
2	Actuarial Balance Sheet	356.20 Subd. 4(1)
3(a)	Chapter 356 Balance Sheet	356.215 Subd. 4(2)
3(b)	Determination of Accrued Liability and Unfunded Accrued Liability	356.215 Subd. 4(6)
4	Determination of MPRI Fund Participation and Reserves	356.215 Subd. 4(8)
5	Analysis of Income and Deductions From Income and Effect on the Unfunded Accrued Liability	11A.18 Subd.(9),(11)
6	Analysis of Change in the Unfunded Accrued Liability During the Fiscal Year Ending June 30, 1984	356.20 Subd. 4(2)
7	Covered Judges' Retirement Fund Employee Census Data	356.20 Subd. 4(3)
8	Judges' Retirement Fund Annuitant Census Data	356.215 Subd. 4(11)
9(a)	Employee Age and Service Distribution	356.215 Subd. 4(9)
9(b)	Employee Salary Distribution	356.20 Subd. 4(4)
10(a)	Retiree Age Distribution	356.215 Subd. 4(10)
10(b)	Distribution of Annual Benefit by Age Group	
11	Summary of Principal Plan Provisions	356.215 Subd. 4(12)
12(a)	Summary of Actuarial Assumptions and Methods	
12(b)	Probabilities of Separation from Active Service - Male Judges	356.215 Subd. 4(4)
12(c)	Probabilities of Separation from Active Service - Female Judges	356.215 Subd. 4(5)

\* Chapter 356 and 11A of the Minnesota Statutes.

\*\* All as of June 30, 1984.

MINNESOTA STATE RETIREMENT SYSTEM  
LEGISLATORS' RETIREMENT FUND

ACTUARIAL VALUATION AS OF

JUNE 30, 1984

*Touche Ross & Co.*

Board of Directors  
Minnesota State Retirement System  
529 Jackson at 10th Street  
St. Paul, Minnesota 55101

RE: Legislative Members and Survivors Fund

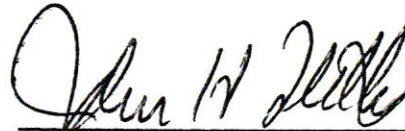
Ladies and Gentlemen:

We have prepared an actuarial valuation of the Minnesota State Retirement System, Legislators' Retirement Fund as of June 30, 1984.

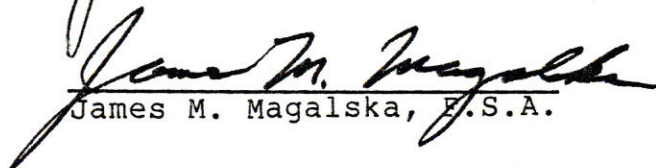
We certify that the valuation was based on the 5% interest assumption mandated by Chapter 356 of the Minnesota Statutes, as well as the 1971 Group Annuity Mortality Table with ages set back eight years for females.

Respectfully submitted,

TOUCHE ROSS & CO.



John H. Flittie, F.S.A.



James M. Magalska, F.S.A.

MINNESOTA STATE RETIREMENT SYSTEM  
LEGISLATIVE MEMBERS AND SURVIVORS FUND

Determination of MPRI Fund Participation and Reserves  
as of June 30, 1984

	Members Eligible for 1/1/85 Increase	Members Not Eligible for Increase	Total
1. Unadjusted MPRI Fund Participation as of June 30, 1984	--	--	\$5,331,217
2. Transfer (from) to MPRI Fund for Mortality (Gain) Loss	\$ 90,911	\$ 3,774	94,685
3. Participation as of June 30, 1984 (1) + (2)	--	--	5,425,902
4. Required Reserves as of June 30, 1984	5,027,434	473,992	5,501,426
5. Required Reserves as of January 1, 1985	4,940,044	467,489	5,407,533

This exhibit does not reflect benefit increases to become effective on January 1, 1985.

Table 1(a)

MINNESOTA STATE RETIREMENT SYSTEM  
LEGISLATORS' RETIREMENT FUND

Retired Annuitants in MPRIF

Distribution of Annual Benefit by Age Groups

Age Group	Male			Female			All		
	No.	Total	Average	No.	Total	Average	No.	Total	Average
Under 50	0	\$ 0	\$ 0	0	\$ 0	\$ 0	0	\$ 0	\$ 0
50 - 54	0	0	0	0	0	0	0	0	0
55 - 59	0	0	0	0	0	0	0	0	0
60 - 64	28	164422	5872	0	0	0	28	164422	5872
65 - 69	28	219590	7843	0	0	0	28	219590	7843
70 - 74	18	84618	4701	0	0	0	18	84618	4701
75 - 79	20	109582	5479	0	0	0	20	109582	5479
80 - 84	8	38036	4755	0	0	0	8	38036	4755
85 +	5	29542	5908	0	0	0	5	29542	5908
Total	107	645790	6035	0	0	0	107	645790	6035

Distribution of Annual Benefit by Years Retired

Years Retired	Male			Female			All		
	No.	Total	Average	No.	Total	Average	No.	Total	Average
0	7	\$ 42641	\$6092	0	0	0	7	\$ 42641	\$6092
1	14	84840	6060	0	0	0	14	84840	6060
2	8	50493	6312	0	0	0	8	50493	6312
3	15	143909	9594	0	0	0	15	143909	9594
4	3	21773	7258	0	0	0	3	21773	7258
0 - 4	47	343656	7312	0	0	0	47	343656	7312
5 - 9	28	151088	5396	0	0	0	28	151088	5396
10 - 14	24	123807	5159	0	0	0	24	123807	5159
15 - 19	8	27239	3405	0	0	0	8	27239	3405
20 - 24	0	0	0	0	0	0	0	0	0
25 - 29	0	0	0	0	0	0	0	0	0
30 +	0	0	0	0	0	0	0	0	0
Total	107	645790	6035	0	0	0	107	645790	6035

Table 1(b)

MINNESOTA STATE RETIREMENT SYSTEM  
LEGISLATORS' RETIREMENT FUND

## Retired Annuitants in MPRIF

Distribution of Years Retired by Age Groups

Age Group	Service Group						
	<u>0-4</u>	<u>5-9</u>	<u>10-14</u>	<u>15-19</u>	<u>20-24</u>	<u>25 &amp; over</u>	<u>Total</u>
<u>Male</u>							
Under 40	0	0	0	0	0	0	0
40 - 44	0	0	0	0	0	0	0
45 - 49	0	0	0	0	0	0	0
50 - 54	0	0	0	0	0	0	0
55 - 59	0	0	0	0	0	0	0
60 - 64	28	0	0	0	0	0	28
65 - 69	17	11	0	0	0	0	28
70 - 74	1	13	4	0	0	0	18
75 - 79	1	4	13	2	0	0	20
80 - 84	0	0	5	3	0	0	8
85 & over	0	0	2	3	0	0	5
Total	47	28	24	8	0	0	107
<u>Female</u>							
Under 40	0	0	0	0	0	0	0
40 - 44	0	0	0	0	0	0	0
45 - 49	0	0	0	0	0	0	0
50 - 54	0	0	0	0	0	0	0
55 - 59	0	0	0	0	0	0	0
60 - 64	0	0	0	0	0	0	0
65 - 69	0	0	0	0	0	0	0
70 - 74	0	0	0	0	0	0	0
75 - 79	0	0	0	0	0	0	0
80 - 84	0	0	0	0	0	0	0
85 & over	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0