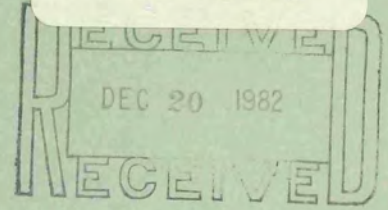


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**MINNESOTA STATE
RETIREMENT SYSTEM**

**Actuarial Valuations
as of
June 30, 1982**

STATE EMPLOYEES RETIREMENT FUND

**HIGHWAY PATROLMENS
RETIREMENT FUND**

JUDGES RETIREMENT FUND

LEGISLATORS RETIREMENT PLAN

MINNESOTA STATE RETIREMENT SYSTEM
STATE EMPLOYEES' RETIREMENT FUND

ACTUARIAL VALUATION AS OF
JUNE 30, 1982

Touche Ross & Co.

December 17, 1982

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

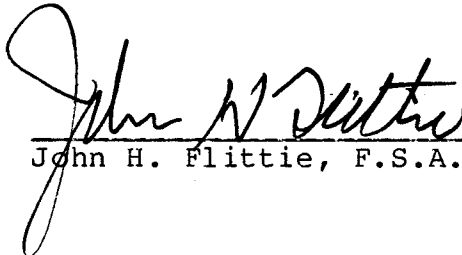
Ladies and Gentlemen:

We have performed an actuarial valuation of the Minnesota State Retirement System, State Employees' Retirement Fund as of June 30, 1982.

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 93.8% 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.

TOUCHE ROSS & CO.



John H. Flittie, F.S.A.



Andrea Feshbach, F.S.A.

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REPORT HIGHLIGHTS

Comparison with Previous Valuation

	<u>6/30/82</u>	<u>6/30/81</u>
A. Financial and Actuarial Status		
1. Valuation Assets	783,649,606	675,227,139
2. Accrued Liability	1,038,907,353	861,658,302
3. Unfunded Accrued Liability (A2 - A1)	255,257,747	186,431,163
4. Accrued Liability Funding Ratio (A1/A2)	75.43%	78.36%
5. Normal Cost		
General Plan	54,667,828	52,378,019
	(6.84%)*	(6.73%)#
Correctional Plan	2,150,391	2,027,036
	(10.52%)*	(11.05%)#
B. Contributions		
1. Chapter 356 Requirement	75,105,904	68,352,121
2. Actual Prescribed Contribution (Chapter 352)	70,465,799	81,463,385
3. Sufficiency (B2 / B1)	0.938	1.19
C. Depth of Funding - Plan Continuation Basis		
1. Present Value of Accrued Benefits	862,867,653	739,501,542
2. Depth of Funding (A1 / C1)	90.82%	91.31%

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

Parentheses indicate contribution levels as a percentage of salary for all participants.

REPORT HIGHLIGHTS (continued)

	<u>6/30/82</u>	<u>6/30/81</u>
D. Plan Participants		
1. Active Members		
a. Number	44,637	47,634
b. Payroll of employees under maximum assumed retire- ment age	\$819,226,464	
c. Total payroll	830,395,472	\$796,297,430
2. Retired Members/Beneficiaries		
a. Number	10,504	9,917
b. Average annual benefit payable	\$2,817	\$2,501
3. Deferred Annuitants		
a. Number	890	798
b. Average annual vested benefit	\$3,151	\$2,967
4. Former Members Without Vested Rights		
a. Number	4,993	4,790
b. Average employee contributions	\$293	\$219

REPORT HIGHLIGHTSResults for General and Correctional
Employees

	<u>General</u>	<u>Correctional</u>
A. Financial and Actuarial Status		
1. Valuation Assets	753,249,422	30,400,184
2. Accrued Liability	1,004,387,821	34,519,532
3. Unfunded Accrued Liability (A2 - A1)	251,138,399	4,119,348
4. Accrued Liability Funding Ratio (A1/A2)	75.00%	88.07%
5. Normal Cost*	\$54,667,828 (6.84%)	\$2,150,391 (10.52%)
B. Contributions		
1. Chapter 356 Requirement	\$72,645,811 (9.09%)	\$2,460,093 (12.04%)
2. Actual Prescribed Contribution (Chapter 352)	67,897,597 (8.50%)	2,568,202 (12.57%)
3. Sufficiency (2 / 1)	.935	1.044
C. Depth of Funding - Plan Continuation Basis		
1. Present Value of Accrued Benefits	830,737,159	32,130,494
2. Depth of Funding (A1 / C1)	90.67%	94.61%

* Parentheses indicate contribution levels as a percentage of salary.

REPORT HIGHLIGHTS (continued)

*Payroll taken
from file
from page*

	<u>General</u>	<u>Correctional</u>
D. Plan Participants		
1. Active Members		
a. Number	43,627	1,010
b. Valuation payroll of employees under maximum assumed retirement age	798,795,264	20,431,200
c. Total valuation payroll	809,410,816	20,984,656
2. Retired Members/Beneficiaries		
a. Number	10,211	293
b. Average annual benefit payable	\$2,744	\$5,346
3. Deferred Annuitants		
a. Number	880	10
b. Average annual vested benefit	\$3,105	\$7,180
4. Former Members Without Vested Rights		
a. Number	4,954	39
b. Average employee contributions	\$283	\$1,549

MINNESOTA STATE RETIREMENT SYSTEM
STATE EMPLOYEES' RETIREMENT FUND

ACTUARIAL VALUATION AS OF JUNE 30, 1982

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.

As discussed in Appendix 3, the contributions required from employees and the State under Minnesota Statutes (Chapter 352) are not sufficient to meet the requirements set forth in Chapter 356.

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 5% interest rate and a 3-1/2% 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, 1982 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, 1982 and as of January 1, 1983) 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, 1982, 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.

There have been no changes from last year in the methods used in the valuation.

VALUATION ASSETS

The Executive Director furnished us with a Financial Report setting forth the assets and liabilities of the Fund as of June 30, 1982. 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 1A) 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 1982 base before allocation of investment earnings.
4. Allocate investment earnings, net of operating expenses, in proportion to the new base.

) The June 30, 1982 allocation on this basis results in valuation assets as follows:

General Plan	\$753,249,422
Correctional Plan	<u>30,400,184</u>
Total	\$783,649,606

ADDITION OF THE METROPOLITAN TRANSIT COMMISSION/TRANSIT OPERATING DIVISION

Effective July 1, 1978, the MTC/TOD Retirement Fund was transferred to MSRS. As set forth in Chapter 600, Section 10 of the 1980 Minnesota Laws, MTC is to make additional annual contributions in the amount of 3.8% of covered payroll until the additional unfunded accrued liability of \$7,307,545 is paid off. As of June 30, 1982, the additional deficiency was reported as \$1,703,581.

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 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 3(c) which set forth the determination of the unfunded accrued liability and the status of the MPRI Fund as of June 30, 1982.

Table 1(a)

MINNESOTA STATE RETIREMENT SYSTEM
STATE EMPLOYEES' RETIREMENT FUND

Accounting Balance Sheet as of June 30, 1982

A. ASSETS		
1. Cash		31,422
2. Short term investments (at cost)		39,515,850
3. Accounts receivable:		
a. Accrued employee contributions	1,262,434	
b. Accrued employer contributions	1,992,205	
c. Employee buy backs	156,883	
d. Other	<u>15,288</u>	
4. Due from other plans		3,426,810
5. Accrued interest on investments		96,286
6. Dividends declared and payable, but not yet received		6,203,984
7. Investment in debt securities at amortized cost		1,157,269
8. Due from the MPRI Funds		234,149,014
9. Investment in equities at cost*		503,548
10. Equipment at depreciated cost		225,588,545
11. Deferred yield adjustment account		18,077
12. Participation in MPRI Fund**		3,713,620
13. TOTAL ASSETS		<u>281,990,853</u> <u>796,395,278</u>
B. LIABILITIES		
<u>Liabilities</u>		
1. Accounts payable		
a. Annuities	268	
b. Annuitant deposits	17,834	
c. Accrued expenses	110,258	
d. Due to unclassified retirement	204,131	
e. Due MPRI Fund	<u>12,413,181</u>	
2. Total liabilities		<u>12,745,672</u>
<u>Reserves</u>		
1. Participation in MPRI Fund**		281,990,853
2. Survivor benefit reserve		193,698
3. Employee contribution reserve		165,800,421
4. State contribution reserve		335,664,634
5. Total reserves (valuation assets)***		<u>783,649,606</u>
6. TOTAL LIABILITIES AND RESERVES		<u>796,395,278</u>

* Market value is \$214,515,664.

** Participation equals Required Reserves for retired lives.

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

Table 1(b)

MINNESOTA STATE RETIREMENT SYSTEM
STATE EMPLOYEES' RETIREMENT FUND

Allocation of June 30, 1982 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, 1981	429,060,080	15,542,172	444,602,252
2. Allocated Contributions During the Year	70,696,188	3,026,378	73,722,566
3. Transfers of Assets to MPRI Fund During the Year	45,009,445	1,143,485	46,152,930
4. Refunds Allocable During the Year	8,980,302	264,838	9,245,140
5. Estimated Base as of June 30, 1982, Before Allocation of Investment Earnings and Expenses (1) + (2) - (3) - (4)	445,766,521	17,160,227	462,926,748
6. Employee Contribution Reserve as of June 30, 1982	160,573,619	5,226,802	165,800,421
7. Estimated State Contribution Reserve as of June 30, 1981 (5) - (6)	285,192,902	11,933,425	297,126,327
8. Actual State Contribution Reserve, Including Investment Earnings During the Year and Expenses Allocated According to Item 7	322,183,403	13,481,231	335,664,634
9. MPRI Fund Reserve	270,298,702	11,692,151	281,990,853
10. Survivor Benefit Reserve	193,698	0	193,698
11. Total Valuation Assets (6) + (8) + (9) + (10)	753,249,422	30,400,184	783,649,606

* 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, 1982

A. ASSETS

1. Assets on hand from accounting balance sheet:		
a. Reserves for MPRI Fund benefits	281,990,853	
b. All other assets	<u>514,404,425</u>	796,395,278
2. Present value of employees' future contributions		264,993,396
3. Present value of state future contributions applicable to:		
a. Entry age normal costs	244,038,035	
b. Unfunded accrued liability (Balance of "matching" contribution less .18% for operating expense)	13,111,924	
c. Unfunded accrued liability (Portion to be funded by "additional" contribution)	<u>242,145,823</u>	<u>499,295,782</u>
4. TOTAL ASSETS		<u><u>1,560,684,456</u></u>

B. LIABILITIES

1. Current liabilities from accounting balance sheet		12,745,672
2. Present value of earned and earnable benefits payable to presently active members:		
a. Retirement benefits	940,017,242	
b. Disability benefits	69,509,058	
c. Refundments due to death or withdrawal	110,473,106	
d. Surviving spouse benefits	30,161,633	
e. Deferred retirement benefits	<u>98,751,386</u>	1,248,912,425
3. Present value of benefits for deferred annuitants		15,378,676
4. Present value of refundment to former members without vested rights		1,463,132
5. Present value of survivor benefits		193,698
6. Participation in MPRI Fund		<u>281,990,853</u>
7. TOTAL LIABILITIES		<u><u>1,560,684,456</u></u>

Table 3(a)

MINNESOTA STATE RETIREMENT SYSTEM
STATE EMPLOYEES' RETIREMENT FUND

Chapter 356 Balance Sheet as of June 30, 1982

ASSETS AND UNFUNDED ACCRUED LIABILITY

A. ASSETS(1)

1. Cash		31,422
2. Short term investments (at cost)		39,515,850
a. Accrued employee contributions	1,262,434	
b. Accrued employer contributions	1,992,205	
c. Employee buybacks	156,883	
d. Other	15,288	3,426,810
3. Due from other plans		96,286
4. Accrued interest on investments		6,203,984
5. Dividends declared and payable, but not yet received		1,157,269
6. Investment in debt securities at amortized cost		234,149,014
7. Due from MPRI Fund		503,548
8. Investment in equities at cost		225,588,545
9. Equipment at depreciated cost		18,077
10. Deferred yield adjustment account		3,713,620
11. Participation in MPRI Fund(2)		281,990,853
12. TOTAL ASSETS		<u>796,395,278</u>

B. UNFUNDED ACCRUED LIABILITY

1. Unfunded accrued liability to be funded by portion of employee contributions and State "matching" contribution in excess of entry age normal cost contribution and operating expenses		13,111,924
2. Unfunded accrued liability to be funded by State's "additional" contribution		242,145,823
3. Total unfunded accrued liability		255,257,747
4. TOTAL ASSETS AND UNFUNDED ACCRUED LIABILITY		<u>1,051,653,025</u>

(continued)

Table 3(a)(continued)

CURRENT LIABILITIES AND RESERVES REQUIRED

C. LIABILITIES

1. Accounts payable:		
a. Annuities	268	
b. Annuitant deposits	17,834	
c. Accrued expenses	110,258	
d. Due unclassified retirement	204,131	
e. Due MPRI Fund	<u>12,413,181</u>	
2. Total liabilities		12,745,672

RESERVES REQUIRED

1. Total reserves required per attached Table 3(b)	<u>1,038,907,353</u>
2. TOTAL CURRENT LIABILITIES AND RESERVES REQUIRED	<u><u>1,051,653,025</u></u>

- (1) Accumulated contributions, without interest, of members not yet retired amounted to 165,800,421 as of June 30, 1982 (includes accrued but unpaid contributions).
- (2) Participation equals Required Reserves for retired lives as of June 30, 1982, excluding the January 1, 1983 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, 1982

	(1) <u>Present Value of Benefits</u>	(2) <u>Present Value of Applicable Portion of Normal Cost Contribution</u>	(3) <u>Accrued Liability Equals Reserves Required (1) - (2)</u>
A. DETERMINATION OF ACCRUED LIABILITY			
1. Active Members			
a. Retirement benefits	940,017,242	335,679,330	604,337,912
b. Disability benefits	69,509,058	25,759,855	43,749,203
c. Refundments due to death or withdrawal	110,473,106	104,447,161	6,025,945
d. Surviving spouse benefits	30,161,633	9,269,646	20,891,987
e. Deferred retirement benefits	98,751,386	33,875,439	64,875,947
f. Subtotal	<u>1,248,912,425</u>	<u>509,031,431</u>	<u>739,880,994</u>
2. Deferred annuitants	15,378,676		15,378,676
3. Former members without vested rights	1,463,132		1,463,132
4. Survivors	193,698		193,698
5. Participation in MPRI Fund	<u>281,990,853</u>		<u>281,990,853</u>
6. Total	<u>1,547,938,784</u>	<u>509,031,431</u>	<u>1,038,907,353</u>
B. DETERMINATION OF UNFUNDED ACCRUED LIABILITY			
1. Accrued Liability			1,038,907,353
2. Valuation assets			783,649,606
3. Unfunded accrued liability (1 - 2)			255,257,747

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, 1982

Table 3(c) sets forth the determination of MPRI Fund net assets and reserve requirements as of June 30, 1982.

As required by Chapter 11A, Table 3(c) allocates the mortality gain and reserve determinations for January 1, 1983 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, 1982

	Members Eligible for 1/1/83 Increase	Members Not Eligible for Increase	Total
1. Unadjusted MPRI Fund Participation as of June 30, 1982	--	--	\$277,344,464
2. Transfer (from) to MPRI Fund for Mortality (Gain) Loss	(547,666)	44,118	(503,548)
3. Participation as of June 30, 1982 (1) + (2)	--	--	276,840,916
4. Required Reserves as of June 30, 1982	236,386,239	45,604,614	281,990,853
5. Required Reserves as of January 1, 1983	233,055,037	45,064,874	278,119,911

This exhibit does not reflect benefit increases to become effective on January 1, 1983.

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		28,387,528
2. Contributions from employers		45,335,038
3. General fund appropriation		1,557,327
4. From investments		
a. Investment income	41,651,673	
b. Gain on sale of stock	3,361,029	
c. Interest on back payments by employees	<u>112,144</u>	45,124,846
5. From MPRI Fund participation		26,959,352
6. Transferred from Unclassified Plan		132,199
7. Other revenues		<u>21,372</u>
8. TOTAL INCOME		147,517,662

B. DEDUCTIONS FROM INCOME

1. Benefits		
a. Service retirement and disability annuities	28,759,003	
b. Survivor benefits (spouse)	<u>24,229</u>	28,783,232
2. Refundments (employee contributions)		
a. Refunds	8,795,184	
b. Interest on refundments	<u>449,956</u>	9,245,140
3. Administrative expenses		955,110
4. Other		797

Table 4 (continued)

5.	Increase in total reserves required		
a.	Reserves required 6/30/81	861,658,302	
b.	Reserves required 6/30/82	<u>1,038,907,353</u>	<u>177,249,051</u>
6.	TOTAL DEDUCTIONS FROM INCOME		216,233,330
C.	OTHER FINANCING SOURCES (USES)		
1.	Cumulative effect of accounting principles change		(46,236)
2.	Transfers to other funds/plans		<u>(64,680)</u>
3.	TOTAL OTHER FINANCING SOURCES (USES)		<u>(110,916)</u>
D.	DEFICIENCY OF INCOME AND OTHER SOURCES OVER DEDUCTIONS FROM INCOME AND OTHER USES		<u>68,826,584</u>
E.	INCREASE IN UNFUNDED ACCRUED LIABILITY		
1.	Unfunded accrued liability 6/30/81		186,431,163
2.	Unfunded accrued liability 6/30/82		<u>255,257,747</u>
3.	INCREASE IN UNFUNDED ACCRUED LIABILITY		<u>68,826,584</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, 1982

1. Unfunded accrued liability as of June 30, 1981		186,431,163
2. Change due to current rate of funding and interest requirements		
a. 1981-82 past service contribution	(19,057,594)	
b. 5% interest requirement	<u>9,321,558</u>	(9,736,036)
3. Change due to actuarial gains (indicated by parentheses) or losses (no parentheses) because of experience deviations from expected		
a. Salary increases	35,715,690	
b. Investment income	(22,306,939)	
c. MPRI Fund mortality	(503,548)	
d. Withdrawals, death, disability of active members (balancing item)	<u>2,780,422</u>	15,685,625
4. Increase due to elimination of 40 years service credit limitation		13,555,956
5. Increase due to decrease in employee contribution rate		5,809,400
6. Increase due to change in assumption*		<u>43,511,639</u>
7. Unfunded accrued liability as of June 30, 1982		<u>255,257,747</u>

* Assumption change is discussed on page 47.

CONTRIBUTIONS

Chapters 356 and 352 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	6.84	54,667,828
2. Assumed operating expense	.18	1,437,831
3. Amortization by June 30, 2009 of the Unfunded Accrued Liability of \$188,771,133 before plan amendments	1.57	12,580,847
4. Amortization by June 30, 2012 of additional Unfunded Accrued Liability arising of \$62,367,266 from change in benefit plan and assumptions	.50	3,959,305
5. Total Chapter 356 requirement (1) + (2) + (3) + (4)	9.09	72,645,811

Actual Contributions:

1. Employee contributions	3.46	27,638,316
2. Employer matching contribution	3.46	27,638,316
3. Employer "additional" contribution	1.58	12,620,965
4. Total Chapter 352A prescribed contribution	8.50	67,897,597

Contribution Sufficiency: .935

Note: Expected annual payroll = \$798,795,264

*Assumed that this percentage is contributed in each payroll period throughout the year ending June 30, 1983.

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	10.52	2,150,391
2. Assumed operating expense	.18	36,776
3. Amortization by June 30, 2009 of the Unfunded Accrued Liability before plan amendment of \$3,609,619	1.18	240,567
4. Amortization by June 30, 2012 of increase in Unfunded Accrued Liability of \$509,729 arising from change in benefit plan	0.16	32,359
5. Total Chapter 356 requirement (1) + (2) + (3) + (4)	12.04	2,460,093

Actual Contributions:

1. Employee contributions	4.50	919,404
2. Employer "matching" contribution	6.75	1,379,106
3. Employer "additional" contribution	1.32	269,692
4. Total Chapter 352 prescribed contribution	12.57	2,568,202

Contribution Sufficiency: 1.044

NOTE: Expected Annual Payroll = \$20,431,200

*Assumed that this percentage is contributed in each payroll period throughout the year ending June 30, 1983.

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, 1982

	<u>General</u>	<u>Correctional</u>
1. Active members	544,223,658	19,617,636
2. Deferred annuitants	14,618,375	760,301
3. Former members without vested rights	1,402,726	60,406
4. Survivors	193,698	-
5. Participation in MPRI Fund	<u>270,298,702</u>	<u>11,692,151</u>
6. Total present values of accrued benefits	830,737,159	32,130,494
7. Valuation assets	753,249,422	30,400,184
8. Depth of Funding (7 / 6)	90.67%	94.61%

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).

PAYROLL ADJUSTMENT

The data, reported as of June 30, 1982, reflects covered payrolls of \$752,604,771 and \$19,432,192 for General and Correctional Employees, respectively. Chapter 356, Section 356.215, Subdivision 4 of the Statutes requires that the actuarial valuation reflect salaries that will be in force during the ensuing fiscal year for which the valuation is being performed. In order to satisfy this requirement, salaries as reported have been adjusted for valuation purposes as follows:

) Based on salary information available to the Executive Director at the time employee data were submitted, an across the board increase of 8% was to become effective during the year ending June 30, 1983, for Correctional and General Employees, excluding those employed with MTC/TOD. Accordingly, we increased reported salaries by 8%. For MTC employees, we increased reported salaries by \$104, representing a 10¢ per hour increase in November, 1982, a 10¢ increase in May, 1983, and expected cost of living increases totaling \$222 during the year, based on 2,080 hours per year, an estimated 6% inflation rate, and quarterly cost of living increases of 1¢ per hour for each .35 point change in CPI.

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, 1982.

) There were two changes to Chapter 352 since the June 30, 1981 actuarial valuation. The first involves the contribution rates, which were amended by the 1982 laws as follows:

General Plan

	Prior Support Rate (before 1/1/82)	Rate for 6 months (1/1-7/1/82)	Rate Beginning 7/1/82
Employee	4	3.46	3.46
Employer	<u>4</u>	<u>3.46</u>	<u>3.46</u>
	8	6.92	6.92
Additional	<u>2</u>	<u>1.74</u>	<u>1.58</u>
TOTAL	10	8.66	8.50

Correctional Plan

Employee	6	3.78	4.50
Employer	<u>9</u>	<u>5.66</u>	<u>6.75</u>
	15	9.44	11.25
Additional	<u>5</u>	<u>3.16</u>	<u>1.32</u>
TOTAL	20	12.60	12.57

The second change removed the forty year limit on service credit which was created by 1978 legislation.

Table 7(a)

MINNESOTA STATE RETIREMENT SYSTEM
STATE EMPLOYEES' RETIREMENT FUND

Covered General Employees' Census Data as of June 30, 1982

	<u>Number</u>	<u>Annual Payroll</u>
Active at June 30, 1981	46,669	\$721,713,729
New Entrants*	<u>6,470</u>	
Total	53,139	
Less Separations from Active Service:		
Refund of Contributions*	6,583	60,428,605
Separation with a Deferred Annuity	157	2,012,715
Separation with Neither Refundment nor Right to a Deferred Annuity	1,769	11,888,451
Disability	61	962,471
Death, No Spouse's Benefits*	75	1,174,539
Service Retirement	800	14,048,875
Death Spouse's Benefits Payable	<u>6</u>	100,269
Total Separations	9,451	
Net Transfers to and From Other Plans	<u>61</u>	
Active at June 30, 1982	43,627	\$752,604,771

Average Entry Age of New Employees

<u>For the Fiscal Year Ending</u>	<u>Male</u>	<u>Female</u>	<u>Average of Total</u>
6/30/78	30.7	29.1	29.5
6/30/79	30.7	28.9	29.4
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

Average age at entry in State service for all active employees at 6/30/82:

Male	29.3
Female	28.4
Total	28.8

* Includes those who entered the plan and terminated during the period from July 1, 1981 to June 30, 1982.

Table 7(b)

MINNESOTA STATE RETIREMENT SYSTEM
STATE EMPLOYEES' RETIREMENT FUND

General Employees' Annuitant Census Data as of June 30, 1982

	<u>Number</u>	<u>Annual Annuity Benefit Payable</u>
<u>A. Service Retirement Annuitants</u>		
Receiving at June 30, 1981	8,635	21,379,956.92
New	892	3,792,621.12
Deaths	354	887,404.56
Adjustments-Net Result	(35)	1,327,823.80
Receiving at June 30, 1982	9,138	25,612,997.28
<u>B. Disabled Employees</u>		
Receiving at June 30, 1981	639	1,387,805.16
New	63	200,283.72
Deaths	43	79,328.16
Disability Rescinded	0	0
Adjustments-Net Result	22	103,013.76
Receiving at June 30, 1982	681	1,611,774.48
<u>C. Widows Receiving an Annuity or Survivor Benefit</u>		
1. Beneficiaries Receiving an Optional or Reversionary Annuity:		
Receiving at June 30, 1981	351	660,787.32
New	43	105,856.80
Deaths	15	23,896.80
Adjustments-Net Result	(3)	34,991.04
Receiving at June 30, 1982	376	777,738.36

Table 7(b) (con't.)

	<u>Number</u>	<u>Annual Annuity Benefit Payable</u>
2. Spouse Receiving a Survivor Benefit:		
Receiving at June 30, 1981	17	21,020.16
Deaths	1	1,150.32
Adjustments-Net Result	0	1,477.20
Receiving at June 30, 1982	16	21,347.04
D. <u>Children Receiving a Survivor Benefit</u>		
Receiving at June 30, 1982	None	
E. <u>Deferred Annuitants</u>		
Deferred as of June 30, 1981	793	2,334,290.84
New	167	681,147.60
Began Receiving	59	112,766.40
Adjustments - Net Result	(21)	(170,325.36)
Deferred as of June 30, 1982	880	2,732,346.68

Average Age at Retirement of New Service Annuitants

<u>Fiscal Year Ending</u>	<u>Average Retirement Age</u>
6/30/78	64.0
6/30/79	63.9
6/30/80	64.1
6/30/81	63.4
6/30/82	63.2
All Existing Service Annuitants	64.2

Table 7(c)

MINNESOTA STATE RETIREMENT SYSTEM
STATE EMPLOYEES' RETIREMENT FUND

Military Affairs Annuitant Census Data as of June 30, 1982

	<u>Number</u>	<u>Annual Annuity Benefit Payable</u>
A. <u>Service Retirement Annuitants</u>		
Receiving at June 30, 1981	0	0.00
New	0	0.00
Deaths	0	0.00
Adjustments-Net Result	3	28,321.44
Receiving at June 30, 1982	3	28,321.44
B. <u>Disabled Employees</u>		
Receiving at June 30, 1982	None	
C. <u>Widows Receiving an Annuity or Survivor Benefit</u>		
Receiving at June 30, 1982	None	
D. <u>Children Receiving a Survivor Benefit</u>		
Receiving at June 30, 1982	None	
E. <u>Deferred Annuitants</u>		
Deferred as of June 30, 1982	None	

Average Age at Retirement of New Service Annuitants

<u>Fiscal Year Ending</u>	<u>Average Retirement Age</u>
6/30/82	---
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, 1982

	<u>Number</u>	<u>Annual Annuity Benefit Payable</u>
A. <u>Service Retirement Annuitants</u>		
Receiving at June 30, 1981	4	4,444.32
New	0	0.00
Deaths	0	0.00
Adjustments-Net Result	0	330.72
Receiving at June 30, 1982	4	4,775.04
B. <u>Disabled Employees</u>		
Receiving at June 30, 1982	None	
C. <u>Widows Receiving an Annuity or Survivor Benefit</u>		
Receiving at June 30, 1982	None	
D. <u>Children Receiving a Survivor Benefit</u>		
Receiving at June 30, 1982	None	
E. <u>Deferred Annuitants</u>		
Deferred as of June 30, 1982	None	

Average Age at Retirement of New Service Annuitants

<u>Fiscal Year Ending</u>	<u>Average Retirement Age</u>
6/30/82	---
All Existing Service Annuitants	63.0

Table 8(a)

MINNESOTA STATE RETIREMENT SYSTEM
STATE EMPLOYEES' RETIREMENT PLAN

Covered Correctional Employees' Census Data
as of June 30, 1982

	<u>Number</u>	<u>Annual Payroll</u>
Active at June 30, 1981	965	\$16,947,979
New Entrants*	<u>187</u>	
Total	1,152	
Less Separations from Active Service:		
Refund of Contributions*	79	1,211,157
Separation with a Deferred Annuity	4	65,396
Separation with Neither Refundment nor Right to a Deferred Annuity	15	144,440
Disability	3	37,191
Service Retirement	<u>14</u>	291,699
Total Separations	115	
New Transfers to and from other plans	<u>27</u>	
Active at June 30, 1982	1,010	\$19,432,192

Average Entry Age of New Employees

<u>For the Fiscal Year Ending</u>	<u>Male</u>	<u>Female</u>	<u>Average of Total</u>
6/30/78	29.1	30.0	29.2
6/30/79	28.5	31.0	28.9
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

Average age at entry in State service for all active employees at 6/30/82:

Male: 28.0 Female: 28.7 Total 28.1

* Includes those who entered the plan and terminated during the period from July 1, 1981 to June 30, 1982.

Table 8(b)

MINNESOTA STATE RETIREMENT SYSTEM
STATE EMPLOYEES' RETIREMENT FUND

Correctional Employees' Annuitant Census Data as of June 30, 1982

	<u>Number</u>	<u>Annual Annuity Benefit Payable</u>
A. <u>Service Retirement Annuitants</u>		
Receiving at June 30, 1981	264	1,320,505.32
New	23	225,087.96
Deaths	7	20,015.28
Adjustments-Net Result	0	(15,999.84)
Receiving at June 30, 1982	280	1,509,578.16
B. <u>Disabled Employees</u>		
Receiving at June 30, 1981	8	26,275.08
New	3	23,862.36
Deaths	1	4,507.92
Adjustments-Net Result	0	230.40
Receiving at June 30, 1982	10	45,859.92
C. <u>Widows Receiving an Annuity or Survivor Benefit</u>		
Beneficiaries Receiving an Optional or Reversionary Annuity:		
Receiving at June 30, 1981	3	11,184.60
New	0	0.00
Adjustments-Net Result	0	(336.96)
Receiving at June 30, 1982	3	10,847.64

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, 1981	5	33,612.00
New	5	38,191.07
Began Receiving	0	0.00
Deferred as of June 30, 1982	10	71,803.07

Average Age at Retirement of New Service Annuitants

<u>Fiscal Year Ending</u>	<u>Average Retirement Age</u>
6/30/78	56.5
6/30/79	57.9
6/30/80	58.4
6/30/81	56.1
6/30/82	56.4
All Existing Service Annuitants	58.3

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 & over	
<u>Male</u>							
0 - 19	118						118
20 - 24	953	6					959
25 - 29	2191	458	5				2654
30 - 34	1974	1436	439	5			3854
35 - 39	1056	946	928	312	5		3247
40 - 44	550	508	530	557	201	22	2368
45 - 49	377	330	350	383	275	238	1953
50 - 54	341	269	390	283	285	367	1935
55 - 59	249	363	374	323	197	571	2077
60 - 64	123	223	319	249	136	353	1403
65 & over	<u>26</u>	<u>63</u>	<u>54</u>	<u>49</u>	<u>19</u>	<u>50</u>	<u>261</u>
Total	7958	4602	3389	2161	1118	1601	20829
<u>Female</u>							
0 - 19	172						172
20 - 24	2523	50					2573
25 - 29	4019	1061	84				5164
30 - 34	2459	1292	627	25			4403
35 - 39	1374	631	464	225	6		2700
40 - 44	916	443	252	142	94	6	1853
45 - 49	614	398	256	113	71	49	1501
50 - 54	480	357	299	146	74	83	1439
55 - 59	352	343	424	232	114	130	1595
60 - 64	166	252	259	212	96	134	1119
65 & over	<u>31</u>	<u>61</u>	<u>70</u>	<u>50</u>	<u>41</u>	<u>33</u>	<u>286</u>
Total	13106	4888	2735	1145	496	435	22805

Table 9(b)

MINNESOTA STATE RETIREMENT SYSTEM
STATE EMPLOYEES' RETIREMENT FUND

General Employees

Distribution of Annual Earnings by Age Groups

Age Group	Male			Female			All		
	No.	Total	Average	No.	Total	Average	No.	Total	Average
0 - 19	118	1354760	11481	172	2036426	11840	290	3391186	11694
20 - 24	959	13371066	13943	2573	33236735	12918	3532	46607801	13196
25 - 29	2654	45951144	17314	5164	76910665	14894	7818	122861809	15715
30 - 34	3854	77841153	20197	4403	72102461	16376	8257	149943614	18160
35 - 39	3247	73810573	22732	2700	46069435	17063	5947	119880008	20158
40 - 44	2368	57021834	24080	1853	30937693	16696	4221	87959527	20839
45 - 49	1953	46811214	23969	1501	24822414	16537	3454	71633628	20739
50 - 54	1935	46832148	24203	1439	23188586	16114	3374	70020734	20753
55 - 59	2077	49270519	23722	1595	26623710	16692	3672	75894229	20668
60 - 64	1403	32225140	22969	1119	18621702	16641	2522	50846842	20161
65 - 69	249	5673661	22786	270	4388452	16254	519	10062113	19388
70 - 74	12	294951	24579	15	286334	19089	27	581285	21529
75 & over	0	0	0	1	3037	3037	1	3037	3037
Total	20829	450458163	21626	22805	359227650	15752	43634	809685813	18556

Distribution of Annual Earnings by Service Groups

Service Group	Male			Female			All		
	No.	Total	Average	No.	Total	Average	No.	Total	Average
0	1421	19345168	13614	2680	32367933	12078	4101	51713101	12610
1	2506	41264284	16466	4802	65279614	13594	7308	106543898	14579
2	1774	34247874	19305	2551	38039229	14911	4325	72287103	16714
3	1022	20413921	19974	1697	26895704	15849	2719	47309625	17400
4	1235	26598228	21537	1375	22389318	16283	2610	48987546	18769
0-4	7958	141869475	17827	13104	184971797	14116	21062	326841272	15518
5-9	4602	104097724	22620	4888	84652159	17318	9490	188749883	19889
10-14	3389	81054905	23917	2735	49438333	18076	6124	130493238	21308
15-19	2161	51971995	24050	1145	21704517	18956	3306	73676512	22286
20-24	1118	28862824	25816	496	9677175	19510	1614	38539999	23879
25-29	878	22577525	25715	261	5074754	19444	1139	27652279	24278
30+	723	20023715	27695	174	3708915	21316	897	23732630	26458
Total	20829	450458163	21626	22805	359227650	15752	43634	809685813	18556

Table 9(c)

MINNESOTA STATE RETIREMENT SYSTEM
STATE EMPLOYEES' RETIREMENT FUND

Correctional Employees
DISTRIBUTION OF SERVICE GROUPS BY AGE GROUPS
MALE SERVICE GROUPS

AGE GROUP	0-4	5-9	10-14	15-19	20-24	25-29	30+	TOTAL
0-19	1	0	0	0	0	0	0	1
20-24	81	3	0	0	0	0	0	84
25-29	142	35	0	0	0	0	0	177
30-34	101	96	15	0	0	0	0	212
35-39	57	54	23	9	1	0	0	144
40-44	32	26	20	12	2	1	0	93
45-49	18	29	13	12	12	3	0	87
50-54	6	11	11	15	9	10	5	67
55-59	0	2	9	10	1	4	3	29
60-64	0	1	1	1	1	1	0	5
65-69	0	0	0	1	0	0	0	1
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+	0	0	0	0	0	0	0	0
TOTAL	438	257	92	60	26	19	8	900

FEMALE SERVICE GROUPS

AGE GROUP	0-4	5-9	10-14	15-19	20-24	25-29	30+	TOTAL
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	6	3	0	0	0	0	0	9
35-39	9	8	3	0	0	0	0	20
40-44	4	4	2	1	0	0	0	11
45-49	4	2	4	1	1	0	0	12
50-54	1	3	4	3	0	0	0	11
55-59	1	0	2	1	1	2	0	7
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+	0	0	0	0	0	0	0	0
TOTAL	59	26	15	6	2	2	0	110

Table 9(d)

MINNESOTA STATE RETIREMENT SYSTEM
STATE EMPLOYEES' RETIREMENT FUND

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	11531	11531	0	0	0	1	11531	11531
20-24	84	1384371	16481	13	214280	16483	97	1598651	16481
25-29	177	3306132	18679	27	511011	18926	204	3817143	18711
30-34	212	4336718	20456	9	177353	19706	221	4514071	20426
35-39	144	3161880	21958	20	411329	20566	164	3573209	21788
40-44	93	2100287	22584	11	224168	20379	104	2324455	22351
45-49	87	2008154	23082	12	241536	20128	99	2249690	22724
50-54	67	1673163	24973	11	237422	21584	78	1910585	24495
55-59	29	681400	23497	7	157697	22528	36	839097	23308
60-64	5	126944	25389	0	0	0	5	126944	25389
65-69	1	21386	21386	0	0	0	1	21386	21386
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	900	18811966	20902	110	2174796	19771	1010	20986762	20779

DISTRIBUTION OF ANNUAL EARNINGS BY SERVICE GROUPS

SERVICE GROUP	MALE			FEMALE			ALL		
	NO.	TOTAL	AVERAGE	NO.	TOTAL	AVERAGE	NO.	TOTAL	AVERAGE
0	131	1976388	15087	10	146731	14673	141	2123119	15058
1	78	1414480	18134	18	319663	17759	96	1734143	18064
2	88	1706696	19394	10	182767	18277	98	1889463	19280
3	73	1488018	20384	13	245307	18870	86	1733325	20155
4	68	1435404	21109	8	171018	21377	76	1606422	21137
0-4	438	8020986	18313	59	1065486	18059	497	9086472	18283
5-9	257	5760798	22416	26	550156	21160	283	6310954	22300
10-14	92	2267561	24647	15	326023	21735	107	2593584	24239
15-19	60	1414333	23572	6	137727	22955	66	1552060	23516
20-24	26	664305	25550	2	52633	26317	28	716938	25605
25-29	19	470216	24748	2	42771	21386	21	512987	24428
30+	8	213767	26721	0	0	0	8	213767	26721
TOTAL	900	18811966	20902	110	2174796	19771	1010	20986762	20779

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 & over	
Male							
Under 40	0	1	0	0	1	3	5
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	14	0	0	0	0	0	14
60 - 64	550	6	0	0	0	0	556
65 - 69	1134	225	6	0	0	1	1366
70 - 74	136	1026	68	8	0	0	1238
75 - 79	2	322	465	46	11	0	846
80 - 84	1	14	224	221	44	14	518
85 & over	0	0	31	113	140	82	366
Total	1837	1594	794	388	196	100	4909
Female							
Under 40	0	0	0	0	0	1	1
40 - 44	0	0	1	0	0	0	1
45 - 49	1	0	0	0	0	0	1
50 - 54	3	0	1	0	0	0	4
55 - 59	24	5	0	1	0	0	30
60 - 64	378	15	0	1	0	0	394
65 - 69	977	289	6	1	2	1	1276
70 - 74	155	956	76	14	5	0	1206
75 - 79	2	325	416	71	10	3	827
80 - 84	0	16	212	230	38	10	506
85 & over	0	1	21	108	159	74	363
Total	1540	1607	733	426	214	89	4609

* 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	4	4919	1230	1	656	656	5	5575	1115
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	1506	1506	0	0	0	1	1506	1506
35 - 39	0	0	0	0	0	0	0	0	0
40 - 44	0	0	0	1	1308	1308	1	1308	1308
45 - 49	0	0	0	1	1543	1543	1	1543	1543
50 - 54	0	0	0	4	6159	1540	4	6159	1540
55 - 59	14	59266	4233	30	76445	2548	44	135711	3084
60 - 64	556	3062501	5508	394	1187697	3014	950	4250198	4474
65 - 69	1366	5337268	3907	1276	3124975	2449	2642	8462243	3203
70 - 74	1238	3988937	3222	1206	2525545	2094	2444	6514482	2666
75 - 79	846	2291616	2709	827	1519748	1838	1673	3811364	2278
80 - 84	518	1137715	2196	506	766189	1514	1024	1903904	1859
85+	366	793182	2167	363	543493	1497	729	1336675	1834
Total	4909	16676910	3397	4609	9753758	2116	9518	26430668	2777

Distribution of Annual Benefits by Service Groups

Service Group	Male			Female			All		
	No.	Total	Average	No.	Total	Average	No.	Total	Average
0	464	2440290	5259	301	992910	3299	765	3433200	4488
1	422	1694178	4015	354	895125	2529	776	2589303	3337
2	302	1412310	4677	275	717602	2609	577	2129912	3691
3	324	1228874	3793	260	669770	2576	584	1898644	3251
4	325	1178779	3627	350	760691	2173	675	1939470	2873
0-4	1837	7954431	4330	1540	4036099	2621	3377	1990530	3551
5-9	1594	5472166	3433	1607	3548908	2208	3201	9021074	2818
10-14	794	1828316	2303	733	1152360	1572	1527	2980676	1952
15-19	388	790103	2036	426	554105	1301	814	1344208	1651
20-24	196	391376	1997	214	295975	1383	410	687351	1676
25-29	87	212871	2447	82	157641	1922	169	370512	2192
30+	13	27647	2127	7	8670	1239	20	36317	1816
Total	4909	16676910	3397	4609	9753758	2116	9518	26430668	2777

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 & over</u>	
<u>Male</u>							
Under 40	2	0	0	0	0	0	2
40 - 44	2	1	0	0	0	0	3
45 - 49	9	2	0	0	0	0	11
50 - 54	12	2	0	0	0	0	14
55 - 59	46	23	4	2	0	0	75
60 - 64	91	30	9	3	1	0	134
65 - 69	44	70	13	3	0	0	130
70 - 74	1	20	14	7	1	1	44
75 - 79	0	0	15	7	0	4	26
80 - 84	0	0	0	1	5	0	6
85 & over	0	0	0	0	3	10	13
Total	207	148	55	23	10	15	458
<u>Female</u>							
Under 40	2	0	0	0	0	0	2
40 - 44	0	1	0	0	0	0	1
45 - 49	2	1	0	0	0	0	3
50 - 54	7	0	0	1	0	0	8
55 - 59	11	4	0	0	0	0	15
60 - 64	45	11	3	0	0	0	59
65 - 69	32	38	4	1	0	0	75
70 - 74	0	11	16	3	0	1	31
75 - 79	0	0	8	12	1	1	22
80 - 84	0	0	0	5	1	1	7
85 & over	0	0	0	0	1	2	3
Total	99	66	31	22	3	5	226

* 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	4496	2248	2	3443	1722	4	7939	1985
40 - 44	3	7546	2515	1	1683	1683	4	9229	2307
45 - 49	11	35893	3263	3	4812	1604	14	40705	2908
50 - 54	14	39231	2802	8	21406	2676	22	60637	2756
55 - 59	75	243905	3252	15	31971	2131	90	275876	3065
60 - 64	134	406310	3032	59	121322	2056	193	527632	2734
65 - 69	130	295094	2270	75	134942	1799	205	430036	2098
70 - 74	44	91041	2069	31	42863	1383	75	133904	1785
75 - 79	26	48604	1869	22	26908	1223	48	75512	1573
80 - 84	6	10165	1694	7	10365	1481	13	20530	1579
85+	13	28813	2216	3	6094	2031	16	34907	2182
Total	458	1211098	2644	226	405809	1796	684	1616907	2364

Distribution of Annual Benefits by Service Groups

Service Group	Male			Female			All		
	No.	Total	Average	No.	Total	Average	No.	Total	Average
0	31	116326	3752	17	39064	2298	48	155390	3237
1	34	119676	3520	14	29312	2094	48	148988	3104
2	43	166957	3883	19	39553	2082	62	206510	3331
3	48	137945	2874	24	57160	2382	72	195105	2710
4	51	113555	2227	25	52443	2098	76	165998	2184
0-4	207	654459	3162	99	217532	2197	306	871991	2850
5-9	148	362479	2449	66	106873	1619	214	469352	2193
10-14	55	105527	1919	31	39471	1273	86	144998	1686
15-19	23	35889	1560	22	27544	1252	45	63433	1410
20-24	10	19293	1929	3	4694	1565	13	23987	1845
25-29	13	28850	2219	4	7633	1908	17	36483	2146
30+	2	4601	2301	1	2062	2062	3	6663	2221
Total	458	1211098	2644	226	405809	1796	684	1616907	2364

Table 10(e)

MINNESOTA STATE RETIREMENT SYSTEM
STATE EMPLOYEES' RETIREMENT FUND

Correctional Annuityants in MPRIF
(Includes Retired and Disabled)

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 & over</u>	
<u>Male</u>							
Under 40	0	0	0	0	0	0	0
40 - 44	1	0	0	0	0	0	1
45 - 49	0	0	0	0	0	0	0
50 - 54	1	0	0	0	0	0	1
55 - 59	54	1	0	0	0	0	55
60 - 64	29	58	0	0	0	0	87
65 - 69	17	56	0	0	0	0	73
70 - 74	0	42	0	0	0	0	42
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	102	157	0	0	0	0	259
<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	5	0	0	0	0	0	5
60 - 64	2	9	0	0	0	0	11
65 - 69	0	14	0	0	0	0	14
70 - 74	0	4	0	0	0	0	4
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	7	27	0	0	0	0	34

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	4,636	4,636	0	0	0	1	4,636	4,636
45 - 49	0	0	0	0	0	0	0	0	0
50 - 54	1	2,556	2,556	0	0	0	1	2,556	2,556
55 - 59	55	493,132	8,966	5	24,563	4,913	60	517,695	8,628
60 - 64	87	557,259	6,405	11	38,112	3,465	98	595,371	6,075
65 - 69	73	258,052	3,535	14	21,016	1,501	87	279,068	3,208
70 - 74	42	131,683	3,135	4	11,998	3,000	46	143,681	3,124
75 & over	0	0	0	0	0	0	0	0	0
Total	259	1,447,318	5,676	34	95,689	2,814	293	1,543,007	5,266

Distribution of Annual Benefits by Service Groups

Service Group	Male			Female			All		
	No.	Total	Average	No.	Total	Average	No.	Total	Average
0	20	181,407	9,070	1	6,147	6,147	21	187,554	8,931
1	23	157,677	6,856	2	9,640	4,820	25	167,317	6,693
2	29	217,877	2,513	2	12,307	6,154	31	230,184	7,425
3	19	139,416	7,338	2	9,364	4,682	21	148,780	7,085
4	15	93,651	6,243	0	0	0	15	93,651	6,243
0-4	106	790,028	7,453	7	37,458	5,351	113	827,486	7,323
5-9	153	657,290	4,296	27	58,231	2,157	180	715,521	3,975
10+	0	0	0	0	0	0	0	0	0
Total	259	1,447,318	5,676	34	95,689	2,814	293	1,543,007	5,266

Table 11

MINNESOTA STATE RETIREMENT SYSTEM
STATE EMPLOYEES' RETIREMENT FUND

Summary of Principal Plan Provisions as of June 30, 1982

A. General Employees

1. Coverage: From first date of employment.
2. Service Credit: Service is credited from date of coverage.
3. Contributions:
 - a. Employee: 3.46% of salary.
 - b. State of Minnesota 5.04% 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.
 - 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 62 and completion of 10 years of service; or
 - . attainment of age 58 and completion of 20 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 3-1/2% interest compounded annually.

11. Surviving Spouse Death

Benefit:

a. Eligibility:

Death of member in service at least 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 3-1/2% interest; or
- . 50% of the annuity the member would have received had he retired early (if eligible) and elected a 50% joint and survivor annuity commencing on his date of death.

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: 4.50% of salary.
- b. State of Minnesota: 8.07% 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 ten 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. We have continued to use the version employed in prior years.

Under the method used, the normal cost rate is determined 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.

Tables 12(a) through 12(e) summarize the actuarial assumptions used. They are unchanged from the previous valuation, with the following exception:

) Change in assumption with respect to employees terminating with eligibility for a deferred annuity: In previous valuations, it was assumed that all such individuals would elect a refund of contributions in lieu of a deferred benefit. However, actual experience over the past three years indicates that, on average, approximately 40% of such individuals elect the deferred benefit. Accordingly, for this valuation, we recommended, and the Board agreed, that the assumption should reflect actual experience.

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: 5% per annum.
6. Salary Scale: 3-1/2% per annum.
7. Assumed Retirement Age: Graded rates beginning at age 58 set forth in the Separation from Active Service Table.
8. Actuarial Cost Method: Entry age cost method, with normal cost determined as a level percentage of future covered payroll, on an aggregate basis.
9. Social Security: Based on the present law (2nd phase 1982) and 3-1/2% salary scale applicable to current salaries. No wage base increases in the current year are projected. No cost of living increases are projected.
10. Return of Contributions: 60% of employees withdrawing before retirement are assumed to elect return of contribution 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	150
63		174	136	250
64		192	174	1,350
65				10,000

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

APPENDIX 1

MINNESOTA STATE RETIREMENT SYSTEM STATE EMPLOYEES' RETIREMENT FUND

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* Chapters 356 and 11A of the Minnesota Statutes.

** All as of June 30, 1982.

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	7
2. Annual Payroll	\$195,645
Extra normal cost for special military affairs benefits:	
3. - amount	5,672
4. - percentage of pay	2.899%
Sufficiency of extra 3.2% contribution	
3.2% / (4)	110.38%

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

APPENDIX 3

MINNESOTA STATE RETIREMENT SYSTEM
STATE EMPLOYEES' RETIREMENT FUNDEffect of Valuation Results on Contribution Levels

Third Extra Session Laws 1981, Chapter 2, Sections 64 to 67, (HF 2) as amended by Laws 1982, Chapter 641, Sections 9 to 12 (HF 2190), amended Minnesota Statutes, Sections 352.04 and 352.92 to reduce the employer and employee contribution rates for state employees with MSRS General retirement coverage and MSRS Correctional Employees coverage.

Chapter 641 also contains a section providing that, if a valuation filed with the Commissioner of Finance before June 30, 1983 shows that the reduced contribution rate will not be sufficient to amortize the unfunded liability of the Fund by the established date for full funding, the reduced rates provided for by that act shall cease to be effective and shall return to the level in effect before enactment of this act starting the first full pay period thirty days after the filing of the valuation report. If the next valuation showed that the deficit will not be funded by the established date for full funding, the rates in effect would be as follows:

	<u>General</u>	<u>Correctional</u>
Employee	3.73%	4.89%
Employer	3.73%	7.34%
Additional	<u>1.87%</u>	<u>4.08%</u>
Total	9.33%	16.31%

As indicated by the calculation below, the established date for full funding (after taking into account the benefit and assumption changes reflected in this valuation) is June 30, 2010. Based on this valuation, the reduced contribution rate will not be sufficient to fund the unfunded liability by 2010. In fact, it will be insufficient even to provide interest on the unfunded liability.

) Recalculation of established date for full funding in accordance with Subdivision 4(7) of Chapter 356.215.

Previous date:	June 30, 2009
(i) Unfunded accrued liability prior to benefit changes	\$192,380,752
(ii) Level dollar annual contribution to fund (i) by previous date	12,821,414
(iii) Unfunded accrued liability after benefit changes during year ended June 30, 1982	255,257,747
(iv) Level dollar annual contribution to fund excess of (iii) over (i) by 30 years from end of plan year of amendment i.e., by June 30, 2012	3,991,664
(v) Sum of (ii) and (iv)	16,813,078
(vi) Period over which (v) will fund (iii) rounded to nearest year	27.674 years 28 years
(vii) New established date for full funding	June 30, 2010

MEMORANDUM TO: Legislative Commission on Pensions and Retirement

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

RE: June 30, 1982 Actuarial Valuation of Minnesota State Retirement System - State Employees Retirement Fund

DATE: January 21, 1983

The purpose of this memorandum is to review and discuss the results of the June 30, 1982 Actuarial Valuation of the Minnesota State Retirement System - State Employees Retirement Fund. The Actuarial Valuation was prepared by John H. Flittie and Andrea Feshbach of Touche Ross & Co.

The Actuarial Valuation was conducted using the Entry Age Normal Cost actuarial method, interest at 5%, and a salary increase assumption of $3\frac{1}{2}\%$, which are in accordance with Minnesota Statutes, Chapter 356.

The following changes were reflected in the provisions of the plan and the actuarial assumptions. There were no changes in the actuarial method except for certain technical applications which are discussed under Contribution Levels and Support Rates.

Plan Provisions

- The 40 year limit on service credits was removed.
- The support rates were changed to 8.50% for General Employees and 12.57% for Correctional Employees as of July 1, 1982. The support rates prior January 1, 1982 were 10.00% and 20.00%, respectively.

Actuarial Assumptions

- In previous Actuarial Valuations, it was assumed that all members who terminated with a vested interest would elect a refund of their own contributions in lieu of a deferred benefit. Experience has proven that approximately 40% of the members elect the deferred benefit and this assumption was incorporated this year.

The effect of these changes increased the Unfunded Accrued Liability by \$62,876,995.

SUMMARY OF ACTUARIAL VALUATION RESULTS

1. Membership	<u>6-30-81</u>	<u>6-30-82</u>	<u>Increase</u>	<u>(%)</u>
Active Members	47,634*	44,637*	-2,997	(-6.3%)
Inactive Members	4,790	4,993	203	(4.2%)
Retired Members	8,899	9,425**	526	(5.9%)
Disabled Members	647	691	44	(6.8%)
Survivors and Beneficiaries	371	395	24	(6.5%)
Deferred Annuitants	798	890	92	(11.5%)
	<u>63,139</u>	<u>61,031</u>	<u>-2,108</u>	<u>(-3.3%)</u>

* Includes 965 and 1,010 Correctional Employees for 6-30-81 and 6-30-82, respectively.

** Includes 3 Military Affairs Annuitants and 4 Unclassified Plan Annuitants.

2. Payroll

6-30-81:	\$796,297,430
6-30-82:	\$830,395,472
Increase:	\$ 34,098,042
% Increase:	4.3%

3. Annuities In Force: Annual Basis

6-30-81:	\$ 24,807,535
6-30-82:	\$ 29,623,239
Increase:	\$ 4,815,704
% Increase:	19.4%

4. Actuarial Balance Sheet: (In \$1,000's)

	<u>6-30-81</u>	<u>6-30-82</u>	<u>Increase</u>	<u>(%)</u>
Accrued Liabilities				
Annuities In Force	\$ 230,625	\$ 282,185	\$ 51,560	(22.4%)
Deferred Annuities	12,109	16,842	4,733	(39.1%)
Active Members	618,924	739,881	120,957	(19.5%)
	<u>861,658</u>	<u>1,038,908</u>	<u>\$177,250</u>	<u>(20.6%)</u>
Assets	\$ 675,227	\$ 783,650	\$108,423	(16.1%)
Unfunded Accrued Liability	\$ 186,431	\$ 255,258	\$ 68,827	(36.9%)
Funding Ratio	78.4%	75.4%	-3.0%	
Prospective Funding Ratio*	70.5%	66.3%	-4.2%	

* Assets less Accrued Liabilities for Annuities In Force divided by Accrued Liabilities for other than Annuities In Force.

SUMMARY OF ACTUARIAL VALUATION RESULTS

5. Analysis of Increase in Unfunded Accrued Liability

The Unfunded Accrued Liability increased by \$68,826,584 from June 30, 1981 to June 30, 1982. The items making up this increase are shown below:

Actuarial Experience

Interest	\$22,306,939	Gain
Salary Scale	35,715,690	Loss
Mortality: Retired Members	503,548	Gain
Pre-Retirement Experience	2,780,422	Loss
	<hr/>	
	\$15,685,625	Loss

Contribution Deficiency (\$ 9,736,036)

Increases In Unfunded Accrued Liability

Removal of 40 year service maximum	\$13,555,956
Change (decrease) in member contribution rate	\$ 5,809,400
Actuarial assumption change	\$43,511,639
	<hr/>
	\$62,876,995
	<hr/>
	\$68,826,584

6. Contribution Levels and Support Rates

This year, the contribution, expressed as a percentage of payroll, utilized a different payroll base. Only the payroll for those active members not assumed to be immediate retirements was used. Last year and in previous years, the payroll for all active members was used. The effect of this change is to increase the contribution rate percentages since a smaller payroll base is used (\$819,226,464). The change results in a truer technical expression of the contribution rates.

In addition, the method for determining the amortization of the Unfunded Accrued Liability was changed this year. In prior years, the amortization was developed assuming payment at the end of the year. This year, the amortization payment was assumed to be made mid-year. The effect of this change is to increase the amortization payment.

The contribution rates shown below in parentheses are the rates for 6-30-82 developed on the same basis as the rates for 6-30-81.

SUMMARY OF ACTUARIAL VALUATION RESULTS

6. Contribution Levels and Support Rates

Contribution Required to Keep the Unfunded Accrued Liability from Increasing	6-30-82	6-30-81
	<u>Regular</u>	
Normal Cost	6.84% (6.75%)	6.73%
Expense	.18 (.18)	.18
Interest	1.57 (1.55)	1.18
	<u>8.59%</u> (<u>8.48%</u>)	<u>8.09%</u>
	<u>Correctional</u>	
Normal Cost	10.52% (10.25%)	11.05%
Expense	.18 (.18)	.18
Interest	1.01 (.98)	.98
	<u>11.71%</u> (<u>11.41%</u>)	<u>12.21%</u>
Contribution Required to Amortize Unfunded Accrued Liability by June 30, 2010	<u>Regular</u>	
Normal Cost	6.84% (6.75%)	6.73%
Expense	.18 (.18)	.18
Amortization	2.07 (2.09)	1.58
	<u>9.09%</u> (<u>9.02%</u>)	<u>8.49%</u>
	<u>Correctional</u>	
Normal Cost	10.52% (10.25%)	11.05%
Expense	.18 (.18)	.18
Amortization	1.34 (1.33)	1.32
	<u>12.04%</u> (<u>11.76%</u>)	<u>12.55%</u>
Current Support:	<u>Regular</u>	
Member	3.46%	4.00%
Employer	3.46	4.00
Additional	1.58	2.00
	<u>8.50%</u>	<u>10.00%</u>
	<u>Correctional</u>	
Member	4.50%	6.00%
Employer	6.75	9.00
Additional	1.32	5.00
	<u>12.57%</u>	<u>20.00%</u>

SUMMARY OF ACTUARIAL VALUATION RESULTS

6. Contribution Levels and Support Rates

If the contribution percentages are applied to assumed active payroll, the following contribution amounts would apply:

	<u>Regular</u>	<u>Correctional</u>
<u>Contribution Required to Keep the Unfunded Accrued Liability from Increasing</u>	\$68,617,000	\$ 2,392,000
<u>Contribution Required to Amortize Unfunded Accrued Liability by June 30, 2010</u>	\$72,610,000	\$ 2,460,000
<u>Current Support</u>	\$67,898,000	\$ 2,568,000

The results would not be significantly different if the contribution rates (in parentheses) were applied to total payroll.

DISCUSSION OF ACTUARIAL VALUATION RESULTS

1. Total membership decreased by 2,108 from June 30, 1981 to June 30, 1982.
2. Total payroll increased by 4.3% from a year ago. Average annual compensation for active members increased from \$16,716 to \$18,603. Payroll, as of June 30, 1982 was adjusted by 8% to estimate payroll for the year ended June 30, 1983. This compares with an 8.2% increase the year before. Special adjustments were made for MTC/TOD members.
3. The Unfunded Accrued Liability increased by \$68,826,584 from June 30, 1981 and this increase was primarily due to plan and assumption changes incorporated in this valuation.

There was a \$15,685,625 actuarial loss for the year ended June 30, 1982 and this is primarily due to actuarial losses from salary.

Plan changes and assumption changes increased the Unfunded Accrued Liability by \$62,876,995. The assumption change for the treatment of vested benefits (deferred benefit in lieu of refund of contributions) increased the the Unfunded Accrued Liability by \$43,511,639. This is an increase of \$975 per active member and seems high taking into account the number of members who are over age 50 and the turnover assumption applied.

As a result of the increase in the Unfunded Accrued Liability, the funding period was extended from June 30, 2009 to June 30, 2010.

4. The funding ratios of the plan stayed the same as a year ago. Assets cover 91% of accrued benefit liabilities. If realistic assumptions were utilized, it would be expected that asset coverage would be over 100%.
5. Normal cost contribution rates did not change significantly from a year ago. The statutory contribution rate (normal cost + expense + amortization of the unfunded accrued liability) increased for Regular Members and decreased for Correctional Members from a year ago.

DISCUSSION OF ACTUARIAL VALUATION RESULTS

6. Since the current support rates do not provide for funding by June 30, 2010, the support rates will return to those in effect prior to the change in the support rates. The revised support rates are slightly in excess of those required to amortize the Unfunded Accrued Liability by June 30, 2010. A copy of Appendix 3 from the Actuarial Report is attached.

CONCLUSION

The Actuarial Valuation complies with the requirements of Minnesota Statutes, Chapter 356. Certain changes have been made this year which were different than last year in the development of the contribution rates.

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

APPENDIX 3

MINNESOTA STATE RETIREMENT SYSTEM
STATE EMPLOYEES' RETIREMENT FUND

Effect of Valuation Results on Contribution Levels

Third Extra Session Laws 1981, Chapter 2, Sections 64 to 67, (HF 2) as amended by Laws 1982, Chapter 641, Sections 9 to 12 (HF 2190), amended Minnesota Statutes, Sections 352.04 and 352.92 to reduce the employer and employee contribution rates for state employees with MSRS General retirement coverage and MSRS Correctional Employees coverage.

Chapter 641 also contains a section providing that, if a valuation filed with the Commissioner of Finance before June 30, 1983 shows that the reduced contribution rate will not be sufficient to amortize the unfunded liability of the Fund by the established date for full funding, the reduced rates provided for by that act shall cease to be effective and shall return to the level in effect before enactment of this act starting the first full pay period thirty days after the filing of the valuation report. If the next valuation showed that the deficit will not be funded by the established date for full funding, the rates in effect would be as follows:

	<u>General</u>	<u>Correctional</u>
Employee	3.73%	4.89%
Employer	3.73%	7.34%
Additional	1.87%	4.08%
Total	<u>9.33%</u>	<u>16.31%</u>

As indicated by the calculation below, the established date for full funding (after taking into account the benefit and assumption changes reflected in this valuation) is June 30, 2010. Based on this valuation, the reduced contribution rate will not be sufficient to fund the unfunded liability by 2010. In fact, it will be insufficient even to provide interest on the unfunded liability.

MINNESOTA STATE RETIREMENT SYSTEM

HIGHWAY PATROLMEN'S FUND

ACTUARIAL VALUATION AS OF

JUNE 30, 1982

Touche Ross & Co.

December 17, 1982

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

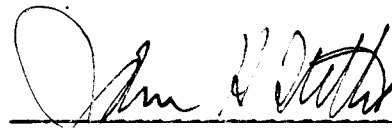
Ladies and Gentlemen:

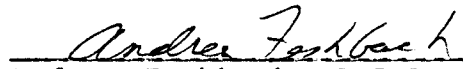
We have performed an actuarial valuation of the Minnesota State Retirement System Highway Patrolmen's Fund as of June 30, 1982.

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 87.9% 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.

TOUCHE ROSS & CO.



John H. Flittie, F.S.A.

Andrea Feshbach, F.S.A.

HP82

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REPORT HIGHLIGHTS

	<u>6/30/82</u>	<u>6/30/81</u>
A. Financial and Actuarial Status		
1. Valuation Assets	68,183,407	58,720,161
2. Accrued Liability	111,455,693	100,517,909
3. Unfunded Accrued Liability	43,272,286	41,797,748
4. Accrued Liability Funding Ratio (A1/A2)	61.18%	58.42%
5. Normal Cost	3,323,371 (16.96)*	3,149,108 (15.77)#
B. Contributions		
1. Chapter 356 Requirement	6,242,579	5,990,620
2. Actual Prescribed Contribution (Chapter 352)	5,488,273 (28.00)*	5,590,875 (28.00)#
3. Sufficiency (2 / 1)	87.9%	93.3%
C. Depth of Funding - Plan Continuation Basis		
1. Present Value of Accrued Benefits	101,966,601	91,527,942
2. Depth of Funding (A1 / C1)	66.87%	64.16%

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

Parentheses indicate contribution levels as a percentage of salary of all active participants.

REPORT HIGHLIGHTS (continued)

	<u>6/30/82</u>	<u>6/30/81</u>
D. Plan Participants		
1. Active Members		
a. Number	763	793
b. Covered payroll under assumed retirement age	19,600,976	18,887,584
c. Total Payroll for all members	20,922,575	19,967,408
2. Retired Members/Beneficiaries		
a. Number	339	312
b. Average annual benefit payable	6,614	5,699
3. Deferred Annuitants		
a. Number	28	25
b. Average annual vested benefit	8,636	8,503
4. Former Members Without Vested Rights		
a. Number	10	10
b. Average employee contributions	1,246	876

MINNESOTA STATE RETIREMENT SYSTEM
HIGHWAY PATROLMEN'S FUND

ACTUARIAL VALUATION AS OF JUNE 30, 1982

PURPOSE AND SUMMARY

The purpose of this report is to set forth the financial status of the Minnesota State Retirement System (MSRS) Highway Patrolmen's 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 5% interest rate and a 3-1/2% 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, 1982 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, 1982 and as of January 1, 1983), and the corresponding mortality gain or loss each year, the latter to facilitate an appropriate transfer between the Highway Patrolmen's Fund and the MPRI Fund.

This reporting on the status of the Highway Patrolmen's Fund as of June 30, 1982, 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.

There have been no significant changes from last year in the methods used in the valuation. One minor change is discussed on page 27.

VALUATION ASSETS

The Executive Director furnished us with a Financial Report setting forth the assets and liabilities of the Fund as of June 30, 1982. 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.

The derivation of items A3, a, b and c in that table is as follows:

1. Present value of future normal costs (Table 3b)	\$40,285,731
2. Present value of future employee contributions (A2)	\$17,209,052
3. <u>Item A3a</u> = (1) - (2)	\$23,076,679
4. Present value of future employer matching contribution (12% of pay)	\$29,501,232
5. Amount for expenses (.18% of pay)	\$ 442,518
6. <u>Item A3b</u> = (4) - (3) - (5)	\$ 5,982,035
7. Unfunded Accrued Liability (Table 3b)	\$43,272,286
8. <u>Item A3c</u> = (7) - (6)	\$37,290,251

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, 1982.

Table 1

MINNESOTA STATE RETIREMENT SYSTEM
HIGHWAY PATROLMEN'S FUND

Summary of Actuarial Valuation as of June 30, 1982

A. BASIC DATA

1. Active members	
a. Number	763
b. Covered payroll under assumed retirement age	19,600,976
c. Total payroll for all members	20,922,575
2. Retired members/beneficiaries	
a. Number	339
b. Average annual benefit payable	6,614
3. Deferred annuitants	
a. Number	28
b. Average annual vested benefit	8,636
4. Former members without vested rights	
a. Number	10
b. Average employee contributions	1,246

B. BASIC FINANCIAL RESULTS

1. Normal cost	3,323,371
2. Accrued liability	111,455,693
3. Valuation assets	68,183,407
4. Portion of accrued liability funded	61.18%
5. Unfunded accrued liability (2 - 3)	43,272,286

C. DETERMINATION OF ANNUAL REQUIREMENT IN ACCORDANCE
WITH CHAPTER 356*

1. Normal cost	3,323,371
	(16.96)
2. Assumed operating expenses	35,282
	(0.18)
3. Amortization of the unfunded accrued liability by June 30, 2009	2,883,926
	(14.71)
4. Total Chapter 356 requirement (1 + 2 + 3)	6,242,579
	(31.85)

D. DETERMINATION OF CONTRIBUTION SUFFICIENCY**

1. Actual prescribed contributions (Chapter 352B)	
a. Employee contributions	1,372,068
	(7.00)
b. Employer "matching" contribution	2,352,117
	(12.00)
c. Employer "additional" contribution	1,764,088
	(9.00)
d. Total of (a) through (c)	5,488,273
	(28.00)

(con't.)

Table 1 (con't.)

2.	Chapter 356 requirements (Per Item C4)	6,242,579
3.	Sufficiency (1(d) / 2)	87.9%
E. DEPTH OF FUNDING - PLAN CONTINUATION BASIS		
1.	Present value of accrued benefits	
a.	Active members	73,832,952
b.	Deferred annuitants	2,630,219
c.	Former members without vested rights	(516)
d.	Survivors - children	146,908
e.	Disabled members	567,702
f.	Participation in MPRI Fund	24,789,336
g.	Total present value of accrued benefits	101,966,601
2.	Valuation assets	68,183,407
3.	Portion of accrued benefits funded (2 / 1(g))	66.87%

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

** Estimated July 1, 1982 - June 30, 1983 contributions on an accrual basis. Parentheses indicate statutory annual contribution levels as a percentage of salary for employees under assumed retirement age, as set forth in Chapter 352B of the Minnesota Statutes.

Table 2(a)

MINNESOTA STATE RETIREMENT SYSTEM
HIGHWAY PATROLMEN'S FUND

Accounting Balance Sheet as of June 30, 1982

A. ASSETS		
1. Cash		4,840
2. Short term investments (at cost)		4,779,000
3. Accounts receivable:		
a. Accrued employee contributions	54,416	
b. Accrued employer contributions	<u>160,015</u>	214,431
4. Accrued interest on investments		574,336
5. Dividends declared and payable, but not yet received		104,330
6. Investment in debt securities at amortized cost		20,189,073
7. Investment in equities at cost*		18,166,500
8. Deferred yield adjustment account		142,938
9. Participation in MPRI Fund**		<u>24,789,336</u>
10. TOTAL ASSETS		<u>68,964,784</u>
B. LIABILITIES AND RESERVES		
<u>Liabilities</u>		
1. Due to MPRI Fund		740,547
2. Due state employees retirement fund		<u>40,830</u>
3. Total liabilities		<u>781,377</u>
<u>Reserves</u>		
1. MPRI Fund Reserve**		24,789,336
2. Disability benefit reserve		567,702
3. Survivor benefit reserve - children		146,908
4. Employee contribution reserve		10,954,514
5. State contribution reserve		<u>31,724,947</u>
6. TOTAL REQUIRED RESERVES (VALUATION ASSETS)***		<u>68,183,407</u>
7. TOTAL LIABILITIES AND RESERVES		<u>68,964,784</u>

* Market value as of June 30, 1982 is \$16,996,243.

** Participation equals Required Reserves for retired lives participating in MPRI Fund.

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

Table 2(b)

MINNESOTA STATE RETIREMENT SYSTEM
HIGHWAY PATROLMEN'S FUND

Actuarial Balance Sheet as of June 30, 1982

A. ASSETS

1. Assets on hand from accounting balance sheet:		
a. Reserves for MPRI Fund benefits	24,789,336	
b. All other assets	<u>44,175,448</u>	68,964,784
2. Present value of employees' future contributions		17,209,052
3. Present value of state future contributions applicable to:		
a. Entry age normal costs	23,076,679	
b. Unfunded accrued liability (Balance of "matching" contribution less .18% for operating expense)	5,982,035	
c. Unfunded accrued liability (Portion to be funded by "additional" contribution)	<u>37,290,251</u>	<u>66,348,965</u>
4. TOTAL ASSETS		<u><u>152,522,801</u></u>

B. LIABILITIES

1. Current liabilities from accounting balance sheet		781,377
2. Present value of earned and earnable benefits payable to presently active members:		
a. Retirement benefits	109,300,112	
b. Disability benefits	7,413,068	
c. Refundments due to death or withdrawal	216,238	
d. Surviving spouse and child benefits	3,589,786	
e. Vested termination benefits	<u>3,088,571</u>	
Total for actives		123,607,775
3. Present value of benefits for deferred annuitants		2,630,219
4. Present value of refundment to former members without vested rights		(516)
5. Present value of survivor benefits - children		146,908
6. Present value of disability benefits		567,702
7. Participation in MPRI Fund		<u>24,789,336</u>
8. TOTAL LIABILITIES		<u><u>152,522,801</u></u>

Table 3(a)

MINNESOTA STATE RETIREMENT SYSTEM
HIGHWAY PATROLMEN'S FUND

Chapter 356 Balance Sheet as of June 30, 1982

ASSETS AND UNFUNDED ACCRUED LIABILITY

A. ASSETS(1)

1. Cash		4,840
2. Short term investments (at cost)		4,779,000
3. Accounts receivable:		
a. Accrued employee contributions	54,416	
b. Accrued employer contributions	<u>160,015</u>	214,431
4. Accrued interest on investments		574,336
5. Dividends declared and payable, but not yet received		104,330
6. Investment in debt securities at amortized cost		20,189,073
7. Investment in equities at cost		18,166,500
8. Deferred yield adjustment account		142,938
9. Participation in MPRI Fund(2)		24,789,336
10. TOTAL ASSETS		<u><u>68,964,784</u></u>

B. UNFUNDED ACCRUED LIABILITY

1. Unfunded accrued liability to be funded by portion of employee contributions and State "matching" contribution in excess of entry age normal cost contribution and operating expenses	5,982,035
2. Unfunded accrued liability to be funded by State's "additional" contribution	37,290,251
3. Total unfunded accrued liability	<u>43,272,286</u>
4. TOTAL ASSETS AND UNFUNDED ACCRUED LIABILITY	<u><u>112,237,070</u></u>

CURRENT LIABILITIES AND RESERVES REQUIRED

C. LIABILITIES

1. Due to MPRI Fund	740,547
2. Due state employees retirement fund	40,830
3. Total liabilities	<u><u>781,377</u></u>

D. RESERVES REQUIRED

1. Total reserves required per attached Table 3(b)	111,455,693
2. TOTAL CURRENT LIABILITIES AND RESERVES REQUIRED	<u><u>112,237,070</u></u>

(1) Accumulated contributions, without interest, of members not yet retired amounted to \$10,954,514 as of June 30, 1982 (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
HIGHWAY PATROLMEN'S FUND

Determination of Accrued Liability and
Unfunded Accrued Liability as of June 30, 1982

	<u>Present Value of Benefits</u>	<u>Present Value of Applicable Portion of Normal Cost Contribution</u>	<u>Accrued Liability Equals Reserves Required (1) - (2)</u>
A. DETERMINATION OF ACCRUED LIABILITY			
1. Active Members			
a. Retirement benefits	109,300,112	31,499,280	77,800,832
b. Disability benefits	7,413,068	3,840,077	3,572,991
c. Refundments due to death or withdrawal	216,238	516,272	(300,034)
d. Survivor and childrens' benefits	3,589,786	2,205,217	1,384,569
e. Vested termination benefits	3,088,571	2,224,885	863,686
f. Total active	123,607,775	40,285,731	83,322,044
2. Deferred annuitants	2,630,219	-	2,630,219
3. Former members without vested rights*	(516)	-	(516)
4. Survivors - children	146,908	-	146,908
5. Disabled members	567,702	-	567,702
6. Participation in MPRI Fund	24,789,336	-	24,789,336
7. Total	151,741,424	40,285,731	111,455,693
B. DETERMINATION OF UNFUNDED ACCRUED LIABILITY			
1. Accrued Liability	-	-	111,455,693
2. Valuation assets	-	-	68,183,407
3. Unfunded accrued liability (1 - 2)	-	-	43,272,286

*Net of contributions erroneously transferred and not returned before 6/30/82 of \$12,979.

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 \$19,600,976 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	16.96	\$3,323,371
2. Assumed operating expense	.18	35,282
3. Amortization of the Unfunded Accrued Liability by June 30, 2009	14.71	2,883,926
4. Total Chapter 356 requirement (1 + 2 + 3)	31.85	6,242,579

Actual Contributions:

1. Employee contributions	7.00	1,372,068
2. Employer "matching" contribution	12.00	2,352,117
3. Employer "additional" contribution	9.00	1,764,088
4. Total Chapter 352B prescribed contribution	28.00	5,488,273

Contribution Sufficiency: 87.9%

* Assumed contributed in each payroll period during the year ending June 30, 1983.

The Chapter 356 requirement increased from 30.00% of payroll at June 30, 1981 to 31.85% at June 30, 1982. The primary reason for this increase is the greater-than-expected increase in salaries. Since the level of funding produces only a moderate leveraging effect, this factor more than offset the Fund's favorable investment performance to produce an overall loss.

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, 1982

Table 4 sets forth the determination of MPRI Fund net assets and reserve requirements as of June 30, 1982.

As required by Chapter 11A, Table 4 allocates the mortality gain and reserve determinations for January 1, 1983 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
HIGHWAY PATROLMEN'S FUND

Determination of MPRI Fund Participation and Reserves
as of June 30, 1982

	<u>Members Eligible for 1/1/82 Increase</u>	<u>Members Not Eligible for Increase</u>	<u>Total</u>
1. Unadjusted MPRI Fund Participation as of June 30, 1982	--	--	23,873,039
2. Transfer (from) to MPRI Fund for Mortality (Gain) Loss	393,730	14,720	408,450
3. Participation as of June 30, 1982 (1) + (2)	--	--	24,281,489
4. Required Reserves as of June 30, 1982	20,709,613	4,079,722	24,789,335
5. Required Reserves as of January 1, 1983	20,450,126	4,036,716	24,486,842

This exhibit does not reflect benefit increases to become effective on January 1, 1983.

Table 5

MINNESOTA STATE RETIREMENT SYSTEM
HIGHWAY PATROLMEN'S FUND

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

A. INCOME AND OTHER FINANCING SOURCES			
1. Contributions from employees			1,340,657
2. Contributions from employers			4,009,217
3. From investments			
a. Investment income	3,658,526		
b. General fund appropriation	62,704		
c. Gain on sale of stock	<u>375,325</u>	4,096,555	
4. From MPRI Fund participation		2,226,129	
5. Other		30	
6. TOTAL INCOME		<u><u>11,672,588</u></u>	
B. DEDUCTIONS FROM INCOME AND OTHER FINANCING USES			
1. Benefits			
a. Service retirement annuities	1,976,555		
b. Disability retirement benefits & children	<u>105,436</u>	2,081,991	
2. Refundments (employee contributions)		86,521	
3. Operating expenses - administrative		40,830	
4. Increase in total reserves required			
a. Reserves required 6/30/81	100,517,909		
b. Reserves required 6/30/82	<u>111,455,693</u>	<u>10,937,784</u>	
5. TOTAL DEDUCTIONS FROM INCOME		<u><u>13,147,126</u></u>	
7. EXCESS OF DEDUCTIONS FROM INCOME OVER INCOME		<u><u>1,474,538</u></u>	
C. INCREASE IN UNFUNDED ACCRUED LIABILITY			
1. Unfunded accrued liability 6/30/81		41,797,748	
2. Unfunded accrued liability 6/30/82		<u>43,272,286</u>	
3. INCREASE IN UNFUNDED ACCRUED LIABILITY		<u><u>1,474,538</u></u>	

Table 6

MINNESOTA STATE RETIREMENT SYSTEM
HIGHWAY PATROLMEN'S FUND

Analysis of Change in the Unfunded Accrued Liability
During the Fiscal Year Ending June 30, 1982

1. Unfunded accrued liability as of June 30, 1981		41,797,748
2. Change due to current rate of funding and interest requirements		
a. 1981-82 past service contribution	(2,135,207)	
b. 5% interest requirement	<u>2,089,887</u>	(45,320)
3. Change due to actuarial gains (indicated by parentheses) or losses (no parentheses) because of experience deviations from expected		
a. Salary increases	3,004,946	
b. Investment income	(2,053,358)	
c. MPRI Fund mortality	408,450	
d. Withdrawals, death, disability of active members (balancing item)	<u>159,820</u>	<u>1,519,858</u>
4. Unfunded accrued liability as of June 30, 1982		<u>43,272,286</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).

Payroll adjustment: The data, reported as of June 30, 1982, reflect an annualized covered payroll of \$19,372,755 which represents total member earnings during the year ended June 30, 1982. Chapter 356, Section 365.215, Subdivision 4 of the Statutes requires that the actuarial valuation reflect salaries that will be in force during the ensuing fiscal year for which the valuation is being performed. The Executive Director indicated that the average July 1982 increase was approximately 8.0% for all employees. Accordingly, we increased the reported salaries by that percentage. This has resulted in covered payroll of \$20,922,595, of which \$19,600,976 is payroll for participants under the assumed retirement age.

PLAN VALUED

) The provisions of the Minnesota State Retirement System, Highway Patrolmen's 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, 1982.

Various changes to Chapter 352B were made by the 1982 Statutes. However, because those changes did not become effective until July 1, 1982, the Executive Director instructed us not to reflect them in this valuation.

Table 7

MINNESOTA STATE RETIREMENT SYSTEM
HIGHWAY PATROLMEN'S FUND

Covered Highway Patrolmen Census Data as of June 30, 1982

	<u>Number</u>	<u>Annual Payroll</u>
Active at June 30, 1981	793	\$18,413,457
New Entrants*	<u>7</u>	
Total	800	
Less Separations from Active Service:		
Refund of Contributions*	8	114,759
Separation with a Vested Right to a Deferred Annuity	4	54,217
Separation with Neither Refund or Right to a Deferred Annuity	1	1
Death Surviving Spouse Receiving Annuity	1	27,893
Service Retirement	22	548,902
Death	<u>1</u>	26,793
Total Separations	37	
Active at June 30, 1982	763	\$19,372,555

Average Entry Age of New Employees

<u>For the Fiscal Year</u> <u>Ending</u>	<u>Male</u>	<u>Female</u>	<u>Average of</u> <u>Total</u>
6/30/78	26.1	26.3	26.1
6/30/79	28.2	26.5	28.1
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

Average age at entry in State service for all active employees at 6/30/82:

Male	26.2
Female	24.6
Total	26.2

* Includes those who entered the plan and terminated during the period from July 1, 1981 to June 30, 1982.

Table 8

MINNESOTA STATE RETIREMENT SYSTEM
HIGHWAY PATROLMEN'S FUND

Highway Patrolmen's Plan Annuitant Census Data as of June 30, 1982

	<u>Number</u>	<u>Annual Annuity Benefit Payable</u>
A. <u>Service Retirement Annuitants</u>		
Receiving at June 30, 1981	195	1,417,521.60
New	26	329,457.96
Deaths	4	23,328.48
Adjustments-Net Result	5	136,387.68
Receiving at June 30, 1982*	222	1,860,038.76
B. <u>Disabled Employees</u>		
Receiving at June 30, 1981	10	74,198.52
New	0	0.00
Deaths	1	11,942.16
Adjustments-Net Result*	(4)	(23,579.28)
Receiving at June 30, 1982	5	38,677.08
C. <u>Widows Receiving an Annuity or Survivor Benefit</u>		
Beneficiaries Receiving an Optional or Reversionary Annuity:		
Receiving at June 30, 1981	85	259,683.36
New	5	23,510.64
Deaths	2	4,404.60
Adjustments-Net Result	3	32,785.44
Receiving at June 30, 1982	91	311,574.84

Table 8 (con't)

	<u>Number</u>	<u>Annual Annuity Benefit Payable</u>
<u>D. Children Receiving a Survivor Benefit</u>		
Receiving at June 30, 1981	22	26,533.44
New	6	14,534.40
Reinstated	0	0.00
No longer eligible	7	10,908.60
Adjustments-Net Result	0	1,735.56
Receiving at June 30, 1982	21	31,894.80
<u>E. Deferred Annuitants</u>		
Deferred as of June 30, 1981	25	212,584.68
New	5	52,358.76
Began Receiving	2	20,569.08
Adjustments-Net Result	0	2,565.96
Deferred as of June 30, 1982	28	246,940.32

Average Age at Retirement of New Service Annuitants

<u>Fiscal Year Ending</u>	<u>Average Retirement Age</u>
6/30/78	57.8
6/30/79	59.0
6/30/80	57.6
6/30/81	61.4
6/30/82	58.6
All Existing Service Annuitants	58.6

* Disabilitants who have attained normal retirement age have been transferred to annuitant status.

Table 9(a)

MINNESOTA STATE RETIREMENT SYSTEM
HIGHWAY PATROLMEN'S FUND

Service Groups by Age Groups

Age Group	Service Group							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>								
0 - 19								0
20 - 24	17							17
25 - 29	70	12						82
30 - 34	35	55	24					114
35 - 39	11	32	106	11				160
40 - 44	5	3	56	37	10			111
45 - 49	0	1	10	16	41	13		81
50 - 54	0	2	3	7	41	31	4	88
55 - 59	0	2	4	6	22	19	21	74
60 - 64	0	0	2	0	5	1	6	14
65 - 69	0	0	0	0	1	0	1	2
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	138	107	205	77	120	64	32	743

Female

0 - 19								0
20 - 24	3							3
25 - 29	1	5						6
30 - 34	2	1	2					5
35 - 39	1	3	1	0				5
40 - 44	0	0	0	0	0			0
45 - 49	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	7	9	4	0	0	0	0	20

Table 9(b)

MINNESOTA STATE RETIREMENT SYSTEM
HIGHWAY PATROLMEN'S 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	17	411,274	24,193	3	65,123	21,708	20	476,397	23,820
25 - 29	82	1,979,234	24,137	6	149,938	24,990	88	2,129,172	24,195
30 - 34	114	2,863,773	25,121	5	121,418	24,284	119	2,985,191	25,086
35 - 39	160	4,402,344	27,515	5	135,345	27,069	165	4,537,689	27,501
40 - 44	111	3,180,592	28,654	0	0	0	111	3,180,592	28,654
45 - 49	81	2,412,354	29,782	0	0	0	81	2,412,354	29,782
50 - 54	88	2,570,329	29,208	1	28,826	28,826	89	2,599,155	29,204
55 - 59	74	2,169,209	29,314	0	0	0	74	2,169,209	29,314
60 - 64	14	381,404	27,243	0	0	0	14	381,404	27,243
65 - 69	2	51,410	25,705	0	0	0	2	51,410	25,705
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	743	20,421,923	27,486	20	500,650	25,033	763	20,922,573	27,421

Distribution of Annual Earnings by Service Groups

Service Group	Male			Female			All		
	No.	Total	Average	No.	Total	Average	No.	Total	Average
0	3	59,065	19,688	0	0	0	3	59,065	19,688
1	26	571,619	21,985	1	25,324	25,234	27	596,943	22,109
2	52	1,217,264	23,409	4	84,554	21,139	56	1,301,818	23,247
3	29	700,151	24,143	2	44,692	22,346	31	744,843	24,027
4	28	702,784	25,099	0	0	0	28	702,784	25,099
0-4	138	3,250,883	23,557	7	154,570	22,082	145	3,405,453	23,486
5-9	107	2,747,298	25,676	9	236,069	26,230	116	2,983,367	25,719
10-14	205	5,842,624	28,501	4	110,011	27,503	209	5,952,635	28,482
15-19	77	2,196,791	28,530	0	0	0	77	2,196,791	28,530
20-24	120	3,467,870	28,899	0	0	0	120	3,467,870	28,899
25-29	64	1,950,828	30,482	0	0	0	64	1,950,828	30,482
30+	32	965,629	30,176	0	0	0	32	965,629	30,176
Total	743	20,421,923	27,486	20	500,650	25,033	763	20,922,573	27,421

Table 9(c)

MINNESOTA STATE RETIREMENT SYSTEM
HIGHWAY PATROLMEN'S RETIREMENT FUND

Annuitants in MPRIF
(Includes Retired and Disabled)

Distribution of Years Retired by Age Groups

Age Group	Years Retired							
	0-4	5-9	10-14	15-19	20-24	25-29	30+	Total
Male Service Groups								
0 - 19	0	0	0	0	0	0	0	0
20 - 24	0	0	0	0	0	0	0	0
25 - 29	0	0	0	0	0	0	0	0
30 - 34	0	0	0	0	0	0	0	0
35 - 39	0	0	0	0	0	0	0	0
40 - 44	0	0	0	0	0	0	0	0
45 - 49	0	0	0	0	0	0	0	0
50 - 54	0	0	0	0	0	0	0	0
55 - 59	36	4	0	0	0	0	0	40
60 - 64	40	16	0	0	0	0	0	56
65 - 69	15	26	13	0	0	0	0	54
70 - 74	0	6	14	13	0	0	0	33
75 - 79	0	2	3	12	10	0	0	27
80 - 84	0	1	1	1	1	0	0	4
85+	<u>0</u>	<u>0</u>	<u>4</u>	<u>0</u>	<u>2</u>	<u>0</u>	<u>0</u>	<u>6</u>
Total	91	55	35	26	13	0	0	220
Female Service Groups								
0 - 19	0	0	0	0	0	0	0	0
20 - 24	0	0	0	0	0	0	0	0
25 - 29	0	0	0	0	0	0	0	0
30 - 34	0	1	0	0	0	0	0	1
35 - 39	0	0	0	0	0	0	0	0
40 - 44	0	0	0	0	0	0	0	0
45 - 49	2	0	0	0	0	0	0	2
50 - 54	3	3	0	2	0	0	0	8
55 - 59	3	3	1	0	0	0	0	7
60 - 64	0	3	1	2	1	0	0	7
65 - 69	0	3	4	4	3	0	0	14
70 - 74	0	2	1	4	4	2	0	13
75 - 79	0	0	2	2	7	4	0	15
80 - 84	0	0	2	2	6	2	1	13
85+	<u>0</u>	<u>0</u>	<u>0</u>	<u>3</u>	<u>6</u>	<u>4</u>	<u>0</u>	<u>13</u>
Total	8	15	11	19	27	12	1	93

Table 9(d)

MINNESOTA STATE RETIREMENT SYSTEM
HIGHWAY PATROLMEN'S RETIREMENT FUND

Annuitants in MPIRF
(Includes Retired and Disabled)

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	1	2,257	2,257	1	2,257	2,257
35 - 39	0	0	0	0	0	0	0	0	0
40 - 44	0	0	0	0	0	0	0	0	0
45 - 49	0	0	0	2	9,070	4,535	2	9,070	4,535
50 - 54	0	0	0	8	46,490	5,811	8	46,490	5,811
55 - 59	40	444,129	11,103	7	43,988	6,284	47	488,117	10,385
60 - 64	56	579,993	10,357	7	29,585	4,226	63	609,578	9,676
65 - 69	54	438,515	8,121	14	51,275	3,662	68	489,790	7,203
70 - 74	33	197,205	5,976	13	43,610	3,355	46	240,815	5,235
75 - 79	27	140,364	5,199	15	35,023	2,335	42	175,387	4,176
80 - 84	4	22,572	5,643	13	33,202	2,554	17	55,774	3,281
85+	6	24,434	4,072	13	29,901	2,300	19	54,335	2,860
Total	220	1,847,212	8,396	93	324,401	3,488	313	2,171,613	6,938

Distribution of Annual Benefits by Years of Retirement

0	24	323,707	13,488	1	4,977	4,977	25	328,684	13,147
1	22	217,297	9,877	3	18,007	6,002	25	235,304	9,412
2	12	128,532	10,711	1	12,766	12,766	13	141,298	10,869
3	15	153,695	10,246	0	0	0	15	153,695	10,246
4	18	185,501	10,306	3	24,691	8,230	21	210,192	10,009
0 - 4	91	1,008,732	11,085	8	60,441	7,555	99	1,069,173	10,800
5 - 9	55	472,336	8,588	15	82,669	5,511	70	555,005	7,929
10 - 14	35	193,388	5,525	11	40,013	3,638	46	233,401	5,074
15 - 19	26	120,479	4,634	19	46,723	2,459	45	167,202	3,716
20 - 24	13	52,277	4,021	27	64,337	2,383	40	116,614	2,915
25 - 29	0	0	0	12	27,882	2,324	12	27,882	2,324
30+	0	0	0	1	2,336	2,336	1	2,336	2,336
Total	220	1,847,212	8,396	93	324,401	3,488	313	2,171,613	6,938

Table 10

MINNESOTA STATE RETIREMENT SYSTEM
HIGHWAY PATROLMEN'S FUND

Summary of Principal Plan Provisions as of June 30, 1982

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: 7% of salary
 - b. State of Minnesota 21% 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 20 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 20 years plus 2% for each year in excess of 20, subject to a minimum of 25% of average monthly salary
- c. Death benefits: If a member dies while receiving a work related disability benefit, or a non-work related disability benefit after having completed 20 years of service, 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.
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.

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. We have continued to use the version employed in prior years.

Under the method used, the normal cost for retirement benefits is 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 is, by definition, 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 are used for this purpose). The unfunded accrued liability is 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 is 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 determined by dividing the present value at entry of the applicable benefit by the present value at entry of future compensation.

In this valuation, for the first time, only the payroll for participants not assumed to retire immediately was used in expressing the annual contribution amounts as a percentage of payroll.

Actuarial Assumptions

Tables 11(a) and 11(b) summarize the actuarial assumptions used.

Table 11(a)

MINNESOTA STATE RETIREMENT SYSTEM
HIGHWAY PATROLMEN'S PLAN

Summary of Actuarial Assumptions and Methods

1. Mortality: 1971 Group Annuity Mortality Table with ages set back 8 years for females.
2. Withdrawal: Graded rates starting at .03 at age 20 and decreasing uniformly to zero at age 50, 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: .18% of covered payroll.
5. Interest Rate: 5% per annum.
6. Salary Scale: 3-1/2% per annum.
7. Assumed Retirement Age: Age 57 for Highway Patrolmen and for State Police Officers hired after June 30, 1961. Age 63 for State Police Officers hired before July 1, 1961.
8. Actuarial Cost Method: Individual level dollar entry age cost method, modified to approximate a level percentage of future payroll normal cost.
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
HIGHWAY PATROLMEN'S PLAN

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

Age	Death *		Withdrawal**	Disability**
	Males	Females		
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	40	32
47	38	15	30	36
48	42	16	20	41
49	47	18	10	46
50	53	20		50
51	59	23		57
52	65	26		64
53	71	29		72
54	78	33		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.

APPENDIX

MINNESOTA STATE RETIREMENT SYSTEM
HIGHWAY PATROLMEN'S FUND

Table References to Chapter 356 and Chapter 11A*

Table Number	Description**	References
1(a)	Summary of Actuarial Valuation as of June 30, 1981	356.215 Subd. 4(1)
2(a)	Accounting Balance Sheet	356.215 Subd. 4(7)
2(b)	Actuarial Balance Sheet	
3(a)	Chapter 356 Balance Sheet	356.20 Subd. 4(1)
3(b)	Determination of Accrued Liability and Unfunded Accrued Liability	356.215 Subd. 4(2)
4	Determination of MPRI Fund Participation and Reserves	356.215 Subd. 4(6)
5	Analysis of Income and Deductions From Income and Effect on the Unfunded Accrued Liability	356.215 Subd. 4(8)
6	Analysis of Change in the Unfunded Accrued Liability During the Fiscal Year Ending June 30, 1980	11A.18 Subd.(9), (11)
7	Covered Employee Census Data	
8	General Annuitant Census Data	356.20 Subd. 4(2)
9(a)	Service Groups by Age Groups	356.20 Subd. 4(3)
9(b)	Distribution of Annual Earnings by Age Groups	356.215 Subd. 4(11)
10	Summary of Principal Plan Provisions	356.215 Subd. 4(9)
11(a)	Summary of Actuarial Assumptions and Methods	
11(b)	Probabilities of Separation from Active Service	356.20 Subd. 4(4)
		356.215 Subd. 4(10)

* Chapter 356 and 11A of the Minnesota Statutes.

** All as of June 30, 1982.

MEMORANDUM TO: Legislative Commission on Pensions and Retirement

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

RE: June 30, 1982 Actuarial Valuation of Minnesota State Retirement System - Highway Patrolmen's Fund

DATE: January 11, 1982

The purpose of this memorandum is to review and discuss the results of the June 30, 1982 Actuarial Valuation of the Minnesota State Retirement System - Highway Patrolmen's Fund. This Actuarial Valuation was prepared by John H. Flittie and Andrea Feshbach of Touche Ross & Co.

The Actuarial Valuation was conducted using the Entry Age Normal Cost actuarial method, interest at 5%, and a salary increase assumption of $3\frac{1}{2}\%$ which are in accordance with Minnesota Statutes, Chapter 356.

There were no changes in the actuarial assumptions, actuarial method, or the provisions of the plan since the last Actuarial Valuation. The method utilized to express contributions as a percentage of payroll was changed from the previous year and this is discussed under Contribution Levels and Support Rates.

SUMMARY OF ACTUARIAL VALUATION RESULTS

1. Membership	<u>6-30-81</u>	<u>6-30-82</u>	<u>Increase</u>
Active Members	793	763	-30
Deferred Annuitants	25	28	3
Retired Members	195	222	27
Disabled Members	10	5	- 5
Survivors and Beneficiaries	107	112	5
	<u>1,130</u>	<u>1,130</u>	<u>0</u>

2. Payroll

6-30-81: \$19,967,408
6-30-82: \$20,922,575
Increase: \$ 955,167
% Increase: 4.8%

3. Annuities In Force: Annual Basis

6-30-81: \$ 1,777,937
6-30-82: \$ 2,242,185
Increase: \$ 464,248
% Increase: 26.1%

SUMMARY OF ACTUARIAL VALUATION RESULTS

4. Actuarial Balance Sheet:	<u>6-30-81</u>	<u>6-30-82</u>	<u>Increase</u>	<u>(%)</u>
Accrued Liabilities				
Annuities In Force	\$ 20,255,867	\$ 25,503,946	\$ 5,248,079	(25.9%)
Deferred Annuities	2,171,932	2,629,703	457,771	(21.1%)
Active Members	78,090,110	83,322,044	5,231,934	(6.7%)
	<u>\$100,517,909</u>	<u>\$111,455,693</u>	<u>\$10,937,784</u>	<u>(10.9%)</u>
Assets	\$ 58,720,161	\$ 68,183,407	\$ 9,463,246	(16.1%)
Unfunded Accrued Liability	\$ 41,797,748	\$ 43,272,286	\$ 1,474,538	(3.5%)
Funding Ratio	58.4%	61.2%	2.8%	
Prospective Funding Ratio*	47.9%	49.7%	1.8%	

* Assets Less Accrued Liabilities for Annuities In Force divided by Accrued Liabilities for other than Annuities In Force

5. Analysis of Increase in Unfunded Accrued Liability

The Unfunded Accrued Liability increased by \$1,474,538 from June 30, 1981 to June 30, 1982. The items making up this increase are shown below:

Actuarial Experience

Interest	\$2,053,358	Gain
Salary Scale	3,004,946	Loss
Mortality: Retired Members	408,450	Loss
Pre-Retirement Experience	159,820	Loss
	<u>\$1,519,858</u>	<u>Loss</u>

Contribution Deficiency (\$ 45,320)

\$1,474,538

6. Contribution Levels and Support Rates

This year, the contribution, expressed as a percentage of payroll, utilized a different payroll base. Only the payroll for those active members not assumed to be immediate retirements was used. Last year and in previous years, the payroll for all active members was used. The effect of this change is to increase the contribution rate percentages since a smaller payroll base is used (\$19,600,976). The change results in a truer technical expression of the contribution rates.

SUMMARY OF ACTUARIAL VALUATION RESULTS

6. Contribution Levels and Support Rates

In addition, the method for determining the amortization of the Unfunded Accrued Liability was changed this year. In prior years, the amortization was developed assuming payment at the end of the year. This year, the amortization payment was assumed to be made mid-year. The effect of this change is to increase the amortization payment.

The contribution rates shown below in parentheses are the rates for 6-30-82 developed on the same basis as the rates for 6-30-81.

	<u>6-30-82</u>	<u>6-30-81</u>
<u>Contribution Required to Keep the Unfunded Accrued Liability from Increasing:</u>		
Normal Cost	16.96% (15.88%)	15.77%
Expense	.18 (.18)	.18
Interest	11.04 (10.34)	10.47
	<u>28.18% (26.40%)</u>	<u>26.42%</u>
<u>Contribution Required to Amortize Unfunded Accrued Liability by June 30, 2009:</u>		
Normal Cost	16.96% (15.88%)	15.77%
Expense	.18 (.18)	.18
Amortization	14.71 (14.12)	14.05
	<u>31.85% (30.18%)</u>	<u>30.00%</u>
<u>Current Support:</u>		
Member	7.00%	7.00%
Employer	12.00	12.00
Additional	9.00	9.00
	<u>28.00%</u>	<u>28.00%</u>

If the percentages developed in the Actuarial Valuation were applied to the active assumed payroll of \$19,600,976, the following contribution amounts would result for June 30, 1982:

Contribution Required to Keep the Unfunded Accrued Liability from Increasing:	\$5,524,000
Contribution Required to Amortize Unfunded Accrued Liability by June 30, 2009:	\$6,243,000
Current Support:	\$5,488,000

SUMMARY OF ACTUARIAL VALUATION RESULTS

6. Contribution Levels and Support Rates

If the percentages in parentheses were applied to total payroll of \$20,922,575, the dollar amounts for the required contributions would not be significantly different.

DISCUSSION OF ACTUARIAL VALUATION RESULTS

1. Total membership in the plan remained the same as a year ago. Total payroll increased by 4.8%. Payroll, as of June 30, 1982, was increased by approximately 8% to estimate payroll for the year ending June 30, 1983. The corresponding increase for the prior year was 8.2% to 8.5%.
2. The Funding Ratio and Prospective Funding Ratio increased from a year ago. The value of accrued benefits on June 30, 1982 was covered by the assets of the plan to the extent of 66.9%. This percentage was 64.2% a year ago. If realistic actuarial assumptions were utilized, the percentage of asset coverage of accrued benefits would be higher.
3. Actuarial losses were significantly lower than last year. This is primarily in the area of pre-retirement experience. This item is a balancing item in the actuarial experience and it probably included data changes and technical calculation changes last year.

Gains from interest included a realized gain of \$375,325 on the sale of securities.

4. Member contributions on June 30, 1982 were \$10,954,514. This compares with accumulated member contributions on June 30, 1981 of \$10,251,899.
5. The total support rate is about equal to that required to keep the Unfunded Accrued Liability from increasing (28.00% v. 28.18%).

The total support rate is less than that required to amortize the Unfunded Accrued Liability by June 30, 2009 (28.00% v. 31.85%). The deficit has increased from about 2% last year to 4% this year and unless actuarial gains emerge, this deficit will probably continue.

6. The actuarial method utilized to determine the costs and liabilities of the plan is an approximation to the Entry Age Normal percentage of pay method. Consideration should be given to adopting a truer approach. It is probable that the contribution rates which are actuarially determined would be higher if the approximation was eliminated.

CONCLUSION

) The Actuarial Valuation complies with the requirements of Minnesota Statutes, Chapter 356. Certain changes this year have been made in the methods to determine the contribution rates which were different than prior years.

It is expected that there will be some deterioration in the difference between current support rates and the amortization rate in future years.

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

MINNESOTA STATE RETIREMENT SYSTEM

JUDGES ' RETIREMENT FUND

ACTUARIAL VALUATION AS OF

JUNE 30, 1982

DECEMBER 17, 1982

Touche Ross & Co.

December 17, 1982

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, 1982.


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.

TOUCHE ROSS & CO.



John H. Flittie, F.S.A.



Andrea Feshbach, F.S.A.

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REPORT HIGHLIGHTS

June 30, 1982 Valuation

	<u>Judges' Plan</u>	<u>Supreme Court Justices*</u>	<u>Total</u>
A. Financial and Actuarial Status			
1. Valuation Assets	\$ 8,740,420	\$ —	\$ 8,740,420
2. Accrued Liability	34,399,347	817,799	35,217,146
3. Unfunded Accrued Liability (2 - 1)	25,658,927	817,799	26,476,726
4. Accrued Liability Funding Ratio (1 / 2)	25.41%	0.00%	24.82%
5. Normal Cost*	1,479,973	57,467	1,537,440
B. Contributions			
1. Chapter 356 Requirement**	3,205,888 (32.34)	112,328 (50.15)	3,318,216 (32.74)
2. Actual Prescribed Contribution***	450,874 (4.55)	8,960 (4.00)	459,834 (4.54)
C. Depth of Funding - Plan Continuation Basis			
1. Present Value of Accrued Benefits	38,718,439	966,819	39,685,258
2. Depth of Funding (A1 / C1)	22.57	-	22.02

* 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 (\$9,912,226 for Judges, \$224,000 for Justices.)

*** Includes \$7,680 for Judges and \$8,960 for Supreme Court Justices in nonrefundable contributions to provide certain survivor benefits.

REPORT HIGHLIGHTS

Comparison with Previous Valuation

	<u>6/30/82</u>	<u>6/30/81</u>
A. Financial and Actuarial Status		
1. Valuation Assets	\$ 8,740,420	\$ 8,513,941
2. Accrued Liability	35,217,146	32,615,251
3. Unfunded Accrued Liability	26,476,726	24,101,310
4. Accrued Liability Funding Ratio (A1/A2)	24.82%	26.10%
5. Normal Cost	1,537,440 (15.17)*	1,563,749 (14.73)#
B. Contributions		
1. Chapter 356 Requirement	3,318,216	3,198,480
2. Actual Prescribed Contribution	459,834	496,257
C. Depth of Funding - Plan Continuation Basis		
1. Present Value of Accrued Benefits	39,685,258	37,386,832
2. Depth of Funding (A1/C1)	22.02%	22.77%

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

Contribution level as a percentage of salary of all active participants.

REPORT HIGHLIGHTS (continued)

	<u>06/30/82</u>	<u>06/30/81</u>
D. Plan Participants		
1. Active Members		
a. Number	220	220
b. Covered payroll - all	10,616,226	10,618,500
- under assumed		
retirement age	10,136,226	10,282,500
2. Retired Members/Beneficiaries		
a. Number	128	126
b. Average annual benefit		
payable	12,703	11,715
3. Deferred Annuitants		
a. Number	5	4
b. Average annual vested		
benefit	10,105	7,048
4. Former Members Without		
Vested Rights		
a. Number	1	3
b. Average employee		
contributions	390	5,731

MINNESOTA STATE RETIREMENT SYSTEM
JUDGES' RETIREMENT FUND

ACTUARIAL VALUATION AS OF JUNE 30, 1982

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 5% interest rate and a 3-1/2% 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, 1982 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, 1982 and as of January 1, 1983), 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, 1982, 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, 1982. 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, 1982.

Table 1

MINNESOTA STATE RETIREMENT SYSTEM
JUDGES' RETIREMENT FUND

Accounting Balance Sheet as of June 30, 1982

A. ASSETS

1. Cash	\$ 1,904
2. Short term investments (at cost)	357,000
3. Accounts receivable - Accrued Judges' contributions	3,279
4. Accrued interest on investments	44,159
5. Dividends declared and payable, but not yet received	6,247
6. Investment in debt securities at amortized cost	1,990,752
7. Due from MPRI Fund	66,520
8. Equities at cost*	755,809
9. Deferred yield adjustment account	79,976
10. Participation in MPRI Fund**	<u>5,535,498</u>
11. TOTAL ASSETS	<u>\$8,841,144</u>

B. LIABILITIES AND RESERVES

Liabilities

1. Due SER Fund	\$ 26,456
2. Deferred Credits and County Reimbursement	74,268
3. Total liabilities	<u>100,724</u>

Reserves

1. MPRI Fund Reserve	5,535,498
2. Member contribution reserve	2,535,186
3. Retirement Reserve - "Old Law" Judges	1,340,785
4. Retirement Reserve - Additional Judges and Survivors	7,940,810
5. State contribution reserve	(8,611,859)
6. Unrealized loss on equities	0
7. Total reserves (valuation assets)***	<u>8,740,420</u>
8. TOTAL LIABILITIES AND RESERVES	<u>\$8,841,144</u>

* Market value as of June 30, 1982 is \$771,285.

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

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

Table 2

MINNESOTA STATE RETIREMENT SYSTEM
JUDGES' RETIREMENT FUND

Actuarial Balance Sheet as of June 30, 1982

A. ASSETS

1. Assets on hand from accounting balance sheet:		
a. Participation in MPRI Fund	5,535,498	
b. All other assets	<u>3,305,646</u>	8,841,144
2. Present value of employees' future contributions		4,395,265
3. Present value of state future contributions applicable to:		
a. Entry age normal costs	12,932,131	
b. Unfunded accrued liability	<u>26,476,726</u>	<u>39,408,857</u>
4. TOTAL ASSETS		<u>\$52,645,266</u>

B. LIABILITIES

1. Current liabilities from accounting balance sheet		100,724
2. Present value of earned and earnable benefits payable to presently active members:		
a. Retirement benefits	30,337,310	
b. Disability benefits	2,315,455	
c. Refundments due to death or withdrawal	0	
d. Surviving spouse benefits	<u>4,888,167</u>	37,540,932
3. Present value of benefits for deferred annuitants		186,127
4. Present value of refundment to former members without vested rights		390
5. Present value of presently retired persons		
a. Participation in MPRI Fund	5,535,498	
b. From Judges' Fund	<u>9,281,595</u>	<u>14,817,093</u>
6. TOTAL LIABILITIES		<u>\$52,645,266</u>

Table 3(a)

MINNESOTA STATE RETIREMENT SYSTEM
JUDGES' RETIREMENT FUND

Chapter 356 Balance Sheet as of June 30, 1982

ASSETS AND UNFUNDED ACCRUED LIABILITY

A. ASSETS(1)

1. Cash	1,904
2. Short term investments (at cost)	357,000
3. Accounts receivable - accrued judges' contributions	3,279
4. Accrued interest on investments	44,159
5. Dividends declared and payable, but not yet received	6,247
6. Investment in debt securities at amortized cost	1,990,752
7. Due from MPRI Fund	66,520
8. Equities at cost	755,809
9. Deferred yield adjustment account	79,976
10. Participation in MPRI Fund(2)	5,535,498
11. TOTAL ASSETS	<u>8,841,144</u>

B. UNFUNDED ACCRUED LIABILITY

1. Total unfunded accrued liability	26,476,726
2. TOTAL ASSETS AND UNFUNDED ACCRUED LIABILITY	<u>35,317,870</u>

CURRENT LIABILITIES AND RESERVES REQUIRED

C. LIABILITIES

1. Due SER Fund	26,456
2. Deferred Credits and County Reimbursement	74,268
3. TOTAL LIABILITIES	<u>100,724</u>

D. RESERVES REQUIRED

1. Total reserves required per attached Table 3(b)	35,217,146
2. TOTAL CURRENT LIABILITIES AND RESERVES REQUIRED	<u>35,317,870</u>

(1) Accumulated contributions, without interest, of members not yet retired amounted to \$2,535,186 as of June 30, 1982 (includes accrued but unpaid contributions).

(2) Participation equals Required Reserves for retired lives participating in the MPRI fund as of June 30, 1982, excluding the January 1, 1983 benefit increases.

Table 3(b)

MINNESOTA STATE RETIREMENT SYSTEM
JUDGES' RETIREMENT FUND

Determination of Accrued Liability and
Unfunded Accrued Liability as of June 30, 1982

	<u>Present Value of Benefits</u>	<u>Present Value of Applicable Portion of Normal Cost Contribution</u>	<u>Accrued Liability Equals Reserves Required (1) - (2)</u>
A. DETERMINATION OF ACCRUED LIABILITY			
1. Active Members			
a. Retirement benefits	30,337,310	12,671,432	17,665,878
b. Disability benefits	2,315,455	1,417,407	898,048
c. Refundments due to death or withdrawal	-	-	-
d. Surviving spouse benefit	4,888,167	3,238,557	1,649,610
e. Subtotal	<u>37,540,932</u>	<u>17,327,396</u>	<u>20,213,536</u>
2. Deferred annuitants	186,127	-	186,127
3. Former members without vested rights	390	-	390
4. Retirement and survivors benefits from Judges' Fund	9,281,595	-	9,281,595
5. Participation in MPRI Fund	<u>5,535,498</u>	-	<u>5,535,498</u>
6. Total	<u>52,544,542</u>	<u>17,327,396</u>	<u>35,217,146</u>
B. DETERMINATION OF UNFUNDED ACCRUED LIABILITY			
1. Accrued Liability	-	-	35,217,146
2. Valuation assets	-	-	8,740,420
3. Unfunded accrued liability (1 - 2)	-	-	26,476,726

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.

Annual Requirement in Accordance with Chapter 356:

	<u>Percent of Payroll</u>	<u>Amount</u>
1. Normal cost	15.17%	\$1,537,440
2. Assumed operating expense	.16	16,218
3. Amortization of the Unfunded Accrued Liability by June 30, 2009	17.41	1,764,558
4. Total Chapter 356 requirement (1 + 2 + 3)	32.74	3,318,216

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 all ongoing actuarial assumptions including assumed salary increases and turnover) and are illustrated as follows:

Depth of Funding:

1. Active members	\$24,681,648
2. Deferred annuitants	186,127
3. Former members without vested rights	390
4. Retirement and survivors' benefits not payable from MPRI Fund	9,281,595
5. Participation in MPRI Fund	<u>5,535,498</u>
6. Total present value of accrued benefits	\$39,685,258
7. Valuation assets	\$ 8,740,420
8. Depth of Funding (7 / 6)	22.02%

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, 1982

Table 4 sets forth the determination of MPRI Fund net assets and reserve requirements as of June 30, 1982.

As required by Chapter 11A, Table 4 allocates the mortality gain and reserve determinations for January 1, 1983 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, 1982

	Members Eligible for 1/1/83 Increase	Members Not Eligible for Increase	Total
1. Unadjusted MPRI Fund Participation as of June 30, 1982	--	--	\$5,571,979
2. Transfer (from) to MPRI Fund for Mortality (Gain) Loss	\$ (69,128)	\$ 2,608	(66,520)
3. Participation as of June 30, 1982 (1) + (2)	--	--	5,505,459
4. Required Reserves as of June 30, 1982	4,756,777	788,721	5,535,498
5. Required Reserves as of January 1, 1983	4,673,955	769,871	5,443,826

This exhibit does not reflect benefit increases to become effective on January 1, 1983.

Table 5

MINNESOTA STATE RETIREMENT SYSTEM
JUDGES' RETIREMENT FUND

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

A. INCOME			
1.	From Judges' contributions		468,659
2.	From Employer contributions		437,500
3.	From investments		
	a. Investment income	314,138	
	b. Gain on sale of stock	<u>18,978</u>	333,116
4.	Participation in MPRI Fund income		525,034
5.	Other Revenues - County reimbursements		<u>87,544</u>
6.	TOTAL INCOME		<u>1,851,853</u>
B. DEDUCTIONS FROM INCOME			
1.	Benefits		
	a. Judges' Plan service retirement annuities	613,761	
	b. Judges' Plan "Old Law" Judges	140,631	
	c. Judges' Plan survivor benefits (spouses) and other judges	<u>818,926</u>	1,573,318
2.	Refundments (employee contributions)		
	a. Refunds	22,336	
	b. Interest on refunds	<u>3,564</u>	25,900
3.	Administrative expenses		26,156
4.	Increase in total reserves required		
	a. Reserves required 6/30/81	32,615,251	
	b. Reserves required 6/30/82	<u>35,217,146</u>	<u>2,601,895</u>
5.	TOTAL DEDUCTIONS FROM INCOME		<u>4,227,269</u>
6.	EXCESS OF DEDUCTIONS FROM INCOME OVER INCOME		<u>2,375,416</u>
C. INCREASE IN UNFUNDED ACCRUED LIABILITY			
1.	Unfunded accrued liability 6/30/81		24,101,310
2.	Unfunded accrued liability 6/30/82		<u>26,476,726</u>
3.	INCREASE IN UNFUNDED ACCRUED LIABILITY		<u>2,375,416</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, 1982

1. Unfunded accrued liability as of June 30, 1981		24,101,310
2. Change due to current rate of funding and interest requirements		
a. 5% interest requirement	1,205,066	
b. 1981-82 past service contribution	<u>(739,933)</u>	
c. Net addition: (a) - (b)		1,944,999
3. Change due to actuarial gains (indicated by parentheses) or losses (no parentheses) because of experience deviations from expected		
a. Salary	(755,275)	
b. Investment income	(134,186)	
c. MPRI Fund mortality	(66,520)	
d. Mortality on other retirees	91,096	
e. Social Security	(106,374)	
f. Withdrawals, death, disability of active members (balancing item)	<u>1,050,801</u>	79,542
4. Additional liability item at 6/30/82 not included at June 30, 1981 - value of survivor benefits for "Old law" judges		<u>350,875</u>
5. Unfunded accrued liability as of June 30, 1982		<u>26,476,726</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, 1982. No significant changes to Chapter 490 were reported since the last actuarial valuation as of June 30, 1981.

Table 7

MINNESOTA STATE RETIREMENT SYSTEM
JUDGES' RETIREMENT PLAN

Covered Judges' Retirement Fund Employee Census Data
as of June 30, 1982

	<u>Number</u>	<u>Annual Payroll</u>
Active at June 30, 1981	215*	\$10,335,500
New Entrants	<u>7</u>	
Total	222	
Less Separations from Active Service:		
Refund of Contributions	2	96,000
Service Retirement	3	144,000
Death Surviving		
Spouse Receiving Annuity	<u>1</u>	48,000
Total Separations	6	
Active at June 30, 1982	216*	10,392,230

Average Entry Age of New Employees

<u>For the Fiscal Year</u> <u>Ending</u>	<u>Average Age</u> <u>at Entry</u>
6/30/78	46.8
6/30/79	38.7
6/30/80	46.3
6/30/81	43.8
6/30/82	41.3

Average age at entry in State service for all active employees at
6/30/82:

41.2

*Not including Supreme Court Justices.

Table 8

MINNESOTA STATE RETIREMENT SYSTEM
JUDGES' RETIREMENT PLAN

Judges' Retirement Fund Annuitant Census Data
as of June 30, 1982

	<u>Number</u>	<u>Annual Annuity Benefit Payable</u>
A. <u>Service Retirement Annuitants</u>		
Receiving at June 30, 1981	77	1,136,140.32
New	4	95,352.00
Deaths	4	68,004.72
Adjustments-Net Result	0	71,198.04
Receiving at June 30, 1982	77	1,234,685.64
B. <u>Disabled Employees</u>		
Receiving at June 30, 1981	3	29,685.12
Adjustments-Net Result	0	2,207.40
Receiving at June 30, 1982	3	31,892.52
C. <u>Widows Receiving an Annuity or Survivor Benefit</u>		
Receiving at June 30, 1981	46	310,247.28
New	4	37,049.76
Deaths	2	10,316.76
Adjustments-Net Result	0	22,431.36
Receiving at June 30, 1982	48	359,411.64
D. <u>Children Receiving a Survivor Benefit</u>		
Receiving at June 30, 1982	None	

Table 8 (con't)

	<u>Number</u>	<u>Annual Annuity Benefit Payable</u>
E. <u>Deferred Annuitants</u>		
Deferred as of June 30, 1981	4	28,191.12
New	1	22,332.00
Began Receiving	0	0.00
Deferred as of June 30, 1982	5	50,523.12

Average Age at Retirement of New Service Annuitants*

<u>Fiscal Year Ending</u>	<u>Average Retirement Age</u>
6/30/78	70.3
6/30/79	67.5
6/30/80	67.8
6/30/81	67.1
6/30/82	65.2
All Existing Service Annuitants	66.7

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

Table 9(a)

MINNESOTA STATE RETIREMENT SYSTEM
ACTIVE JUDGES

Employee Age and Service Distribution

Age Group	Service Group							Total
	<u>0-4</u>	<u>5-9</u>	<u>10-14</u>	<u>15-19</u>	<u>20-24</u>	<u>25-30</u>	<u>30+</u>	
<u>Male</u>								
0 - 19								0
20 - 24								0
25 - 29								0
30 - 34	1							1
35 - 39	5	2						7
40 - 44	13	12	6					31
45 - 49	5	12	4	3				24
50 - 54	8	14	10	5	1	0	0	38
55 - 59	1	18	12	9	9	5	0	54
60 - 64	1	4	5	8	7	3	1	29
65 - 69	0	2	3	8	6	4	1	24
70 - 74	0	1	1	0	1	0	1	4
75 - 79	0	0	0	0	0	0	0	0
79 - 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	34	65	41	33	24	12	3	212

Female

0 - 19								0
20 - 24								0
25 - 29								0
30 - 34	1							1
35 - 39	1							1
40 - 44	0	0						0
45 - 49	1	1	0					2
50 - 54	2	0	1	0				3
55 - 59	1	0	0	0	0			1
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	6	1	1	0	0	0	0	8

Table 9(b)

MINNESOTA STATE RETIREMENT SYSTEM
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	1	48,000	48,000	1	48,000	48,000	2	96,000	48,000
35 - 39	7	336,000	48,000	1	48,000	48,000	8	384,000	48,000
40 - 44	31	1,489,730	48,056	0	0	0	31	1,489,730	48,056
45 - 49	24	1,152,000	48,000	2	96,000	48,000	26	1,248,000	48,000
50 - 54	38	1,824,320	48,008	3	144,000	48,000	41	1,968,320	48,008
55 - 59	54	2,608,550	48,306	1	56,050	56,050	55	2,664,600	48,447
60 - 64	29	1,413,580	48,744	0	0	0	29	1,413,580	48,744
65 - 69	24	1,152,000	48,000	0	0	0	24	1,152,000	48,000
70 - 74	4	200,000	50,000	0	0	0	4	200,000	50,000
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	212	10,224,180	48,227	8	392,050	49,006	220	10,616,230	48,256

Distribution of Annual Earnings by Service Groups

Service Group	Male			Female			All		
	No.	Total	Average	No.	Total	Average	No.	Total	Average
0	7	336,000	48,000	0	0	0	7	336,000	48,000
1	10	488,051	48,805	1	48,000	48,000	11	536,051	48,732
2	7	336,000	48,000	1	48,000	48,000	8	384,000	48,000
3	6	288,000	48,000	0	0	0	6	288,000	48,000
4	4	192,000	48,000	4	200,050	50,013	8	392,050	49,006
0-4	34	1,640,051	48,237	6	296,050	49,342	40	1,936,101	48,403
5-9	65	3,129,930	48,153	1	48,000	48,000	66	3,177,930	48,150
10-14	41	1,988,523	48,501	1	48,000	48,000	42	2,036,523	48,489
15-19	33	1,592,950	48,271	0	0	0	33	1,592,950	48,271
20-24	24	1,169,664	48,736	0	0	0	24	1,169,664	48,736
25-29	12	559,062	46,589	0	0	0	12	559,062	46,589
30+	3	144,000	48,000	0	0	0	3	144,000	48,000
Total	212	10,224,180	48,227	8	392,050	49,006	220	10,616,230	48,256

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>25-20</u>	<u>30+</u>	
<u>Male</u>								
Under 40	0	0	0	0	0	0	0	0
40 - 44	0	0	0	0	0	0	0	0
45 - 49	0	0	0	0	0	0	0	0
50 - 54	0	0	0	0	0	0	0	0
55 - 59	0	0	0	0	0	0	0	0
60 - 64	1	0	0	0	0	0	0	1
65 - 69	11	0	0	0	0	0	0	11
70 - 74	9	6	0	0	0	0	0	15
75 - 79	3	8	0	0	0	0	0	11
80 - 84	0	3	0	0	0	0	0	3
85 & over	0	1	0	0	0	0	0	1
Total	24	18	0	0	0	0	0	42
<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	0	0	0	0	0	0	0	0
50 - 54	0	0	0	0	0	0	0	0
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	1	0	0	0	0	0	1
75 - 79	0	0	0	0	0	0	0	0
80 - 84	0	0	0	0	0	0	0	0
85 & over	0	0	0	0	0	0	0	0
Total	0	1	0	0	0	0	0	1

Table 10(b)

MINNESOTA STATE RETIREMENT SYSTEM
JUDGES' RETIREMENT FUND

Annuitants in MPRIF
(Includes Retired and Disabled)

Retiree Benefit Distribution

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	1	13,359	13,359	0	0	0	1	13,359	13,359
65 - 69	11	187,653	17,059	0	0	0	11	187,653	17,059
70 - 74	15	215,427	14,362	1	9,321	9,321	16	224,748	14,047
75 - 79	11	147,667	13,424	0	0	0	11	147,667	13,424
80 - 84	3	50,596	16,865	0	0	0	3	50,596	16,865
85 +	1	8,123	8,123	0	0	0	1	8,123	8,123
Total	42	622,825	14,829	1	9,321	9,321	43	632,146	14,701

Distribution of Annual Benefit by Years Retired

Years Retired	Male			Female			All		
	No.	Total	Average	No.	Total	Average	No.	Total	Average
0	3	61,427	20,476	0	0	0	3	61,427	20,476
1	7	112,659	16,094	0	0	0	7	112,659	16,094
2	4	75,509	18,877	0	0	0	4	75,509	18,877
3	7	102,527	14,647	0	0	0	7	102,527	14,647
4	3	32,463	10,821	0	0	0	3	32,463	10,821
0 - 4	24	384,585	16,024	0	0	0	24	384,585	16,024
5 - 9	18	238,240	13,236	1	9,321	9,321	19	247,561	13,030
10 - 14	0	0	0	0	0	0	0	0	0
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	42	622,825	14,829	1	9,321	9,321	43	632,146	14,701

Table 11

MINNESOTA STATE RETIREMENT SYSTEM
JUDGES' RETIREMENT FUND

Summary of Principal Plan Provisions as of June 30, 1982

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 1/15th for each year or fraction thereof 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:
- . Full salary for the first two years of disability paid outside the plan.
 - . 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.

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 forms.
- 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.

Table 11 (con't.)

- 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.
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. We have continued to use the version employed in prior years.

Tables 12(a), (b) and (c) summarize the actuarial assumptions used. They are unchanged from the previous valuation.

Table 12(a)

MINNESOTA STATE RETIREMENT SYSTEM
JUDGES' RETIREMENT PLAN

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: .16% of payroll.
5. Interest Rate: 5% per annum.
6. Salary Scale: 3-1/2% per annum.
7. Assumed Retirement Age: Age 68.
8. Actuarial Cost Method: Entry age cost method, with normal cost determined as a level percentage of future payroll on an aggregate basis.
9. Social Security:
 - a. Primary amount: Maximum current primary amount (\$729.00 per month for 1982), increasing with salary scale.
 - b. Level contribution rate: 6.99% assumed for all future years.
 - c. Covered annual wages: Current annual wage base (\$32,400 for 1982), increasing with salary scale.

Table 12(a) (con't.)

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: | 5%. |
| 4. Salary Scale: | 3-1/2% per annum. |
| 5. Expenses: | .16% of covered payroll. |
| 6. Retirement Age: | Latest of: <ul style="list-style-type: none">. attainment of age 70;. completion of 12 years of service; or. one year from valuation date. |

Table 12(b)

MINNESOTA STATE RETIREMENT SYSTEM
JUDGES' RETIREMENT PLAN

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			
44	26	3					10,000

Table 12(c)

MINNESOTA STATE RETIREMENT SYSTEM
JUDGES' RETIREMENT PLAN

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 1

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	
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)
6	Analysis of Change in the Unfunded Accrued Liability During the Fiscal Year Ending June 30, 1982	356.215 Subd. 4(11)
7	Covered Judges' Retirement Fund Employee Census Data	
8	Judges' Retirement Fund Annuitant Census Data	356.215 Subd. 4(9)
9(a)	Employee Age and Service Distribution	356.20 Subd. 4(4)
9(b)	Employee Salary Distribution	356.215 Subd. 4(10)
10(a)	Retiree Age Distribution	
10(b)	Retiree Benefit Distribution	
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, 1982.

APPENDIX 2

ESTIMATED CASH NEEDS
FROM THE STATE'S GENERAL FUND
FOR THE JUDGES RETIREMENT FUND

	<u>FY 83</u>	<u>FY 84</u>	<u>FY 85</u>	<u>FY 86</u>	<u>FY 87</u>
NEW ANNUITANTS:					
Count	9	8	7	4	4
Present Value	\$1,885,000	\$1,940,000	\$1,815,000	\$ 900,000	\$1,035,000
Less: Contributions	200,000	200,000	185,000	120,000	120,000
State Contribution	<u>\$1,685,000</u>	<u>\$1,740,000</u>	<u>\$1,630,000</u>	<u>\$ 780,000</u>	<u>\$ 915,000</u>
Spouses Benefit	77,300	82,300	94,700	100,800	114,400
Supr. & Dist. Ct. Jd	385,700	388,100	390,600	393,300	396,200
Surv. - S & D Ct. Jd	291,100	319,400	349,500	381,600	415,800
Cty Court Survivors	34,700	36,900	43,200	46,000	52,900
Cty Paid Judges	22,700	29,400	34,500	41,500	48,300
	<u>\$2,496,500</u>	<u>\$2,596,100</u>	<u>\$2,542,500</u>	<u>\$1,743,200</u>	<u>\$1,942,600</u>
Administrative Expense	39,000	41,000	43,000	45,000	47,000
Interest on Refunds	1,000	1,000	1,000	1,000	1,000
Total Need	<u>\$2,536,500</u>	<u>\$2,638,100</u>	<u>\$2,586,500</u>	<u>\$1,789,200</u>	<u>\$1,990,600</u>
Less: Inv. Inc.	353,000	388,000	427,000	470,000	517,000
Net Cash Needs	<u><u>\$2,183,500</u></u>	<u><u>\$2,250,100</u></u>	<u><u>\$2,159,500</u></u>	<u><u>\$1,319,200</u></u>	<u><u>\$1,473,000</u></u>

This table was prepared by the Executive Director.

MEMORANDUM TO: Legislative Commission on Pensions and Retirement

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

RE: June 30, 1982 Actuarial Valuation of Minnesota State Retirement System - Judge's Retirement Plan

DATE: January 14, 1983

The purpose of this memorandum is to review and discuss the results of the June 30, 1982 Actuarial Valuation of the Minnesota State Retirement System - Judge's Retirement Plan.

The Actuarial Valuation was conducted using the Entry Age Normal Cost actuarial method, interest at 5%, and a salary increase assumption of $3\frac{1}{2}\%$ which are in accordance with Minnesota Statutes, Chapter 356.

There were no changes in the actuarial assumptions, actuarial methods, or the provisions of the plan since the last Actuarial Valuation.

Funding of this plan is essentially on a terminal basis. At the time of disability, death, or retirement, the State contributes enough so that the total amount, including the Judge's own contributions, will provide for the full funding of the benefit.

The Judges' contributions are equal to the Social Security tax rate (currently 6.7%) plus $\frac{1}{2}\%$ applied to total salary. If covered under Social Security, the portion of this contribution (currently 6.7% of the first \$35,700 of salary) is forwarded to Social Security.

SUMMARY OF ACTUARIAL VALUATION RESULTS

1. Membership	<u>6-30-81</u>	<u>6-30-82</u>
Active Members	220	220
Deferred Annuitants	7*	6**
Retired Members	77	77
Disabled Members	3	3
Survivors and Beneficiaries	46	48
	<u>353</u>	<u>354</u>

* Includes 3 members without vested rights.

** Includes 1 member without vested rights.

SUMMARY OF ACTUARIAL VALUATION RESULTS

2. Payroll:

6-30-81: \$10,618,500
6-30-82: \$10,616,226

3. Annuities In Force: Annual Basis

6-30-81: \$ 1,476,073
6-30-82: \$ 1,625,990

4. Actuarial Balance Sheet:	<u>6-30-81</u>	<u>6-30-82</u>	<u>Increase</u>
Accrued Liabilities			
Annuities In Force	\$13,155,634	\$14,817,093	\$ 1,661,459
Deferred Annuities	176,720	186,517	9,797
Active Members	19,282,897	20,213,536	930,639
	<u>\$32,615,251</u>	<u>\$35,217,146</u>	<u>\$ 2,601,895</u>
Assets	\$ 8,513,941	\$ 8,740,420	\$ 226,479
Unfunded Accrued Liability	\$24,101,310	\$26,476,726	\$ 2,375,416
Funding Ratio:	26.1%	24.8%	-1.3%

5. Analysis of Increase in Unfunded Accrued Liability

The Unfunded Accrued Liability increased by \$2,375,416 from June 30, 1981 to June 30, 1982. The items making up this increase are shown below:

Actuarial Experience

Interest	\$ 134,186	Gain
Salary Scale	755,275	Gain
Mortality: Retired Members	24,576	Loss
Social Security	106,374	Gain
Pre-Retirement Experience	1,050,801	Loss
	<u>\$ 79,542</u>	<u>Loss</u>

Contribution Deficiency \$1,944,999

Increase in Accrued Liability
For Survivor Benefits Not
Included in 6-30-81 Results \$ 350,875

\$2,375,416

SUMMARY OF ACTUARIAL VALUATION RESULTS

6. Contribution Levels

This year, the contribution, expressed as a percentage of payroll, utilized a different payroll base. Only the payroll for those active members not assumed to be immediate retirements was used. Last year and in previous years, the payroll for all active members was used. The effect of this change is to increase the contribution rate percentages since a smaller payroll base is used (\$10,136,226). The change results in a truer technical expression of the contribution rates.

In addition, the method for determining the amortization of the Unfunded Accrued Liability was changed this year. In prior years, the amortization was developed assuming payment at the end of the year. This year, the amortization payment was assumed to be made mid-year. The effect of this change is to increase the amortization payment.

The contribution rates shown below in parentheses are the rates for 6-30-82 developed on the same basis as the rates for 6-30-81.

	<u>6-30-82</u>	<u>6-30-81</u>
Contribution Required to Keep the Unfunded Accrued Liability from Increasing:		
Normal Cost	15.17% (14.48%)	14.73%
Expense	.16 (.16)	.16
Interest	13.06 (12.47)	11.35
	<u>28.39% (27.11%)</u>	<u>26.24%</u>
Contribution Required to Amortize Unfunded Accrued Liability by June 30, 2009		
Normal Cost	15.17% (14.48%)	14.73%
Expense	.16 (.16)	.16
Amortization	17.41 (17.03)	15.23
	<u>32.74% (31.67%)</u>	<u>30.12%</u>

DISCUSSION OF ACTUARIAL VALUATION RESULTS

1. There was little change in the number of active participants or total payroll when June 30, 1982 status is compared with the status for the last two years.
2. The increase in the Unfunded Accrued Liability is primarily due to the contribution deficiency for the year. It is expected with the funding approach which is utilized that contribution deficiencies will arise in years when there are few retirements and contribution sufficiencies will occur in years when there are several retirements.

DISCUSSION OF ACTUARIAL VALUATION RESULTS

3. There was a small actuarial loss of \$79,542 for the year ended June 30, 1982. The largest source of loss was pre-retirement experience. This is a balancing item and consists of actuarial experience and changes in liability from data corrections and technical calculations from the year before.
4. Normal cost percentages and the computed contribution rates increased from the year before. This is primarily due to the change in the methods used to determine these contribution rates. These changes were discussed under Contribution Levels.

The overall contribution rate for the Judges' was computed to be 4.54% as of June 30, 1982 compared to 4.67% on June 30, 1981.

5. There are approximately 26% of the Active Members who are age 60 and over. It was suggested last year that a projection be made to determine the future contribution requirements of the state since the state's share of the contribution is made on a terminal funding basis. The attached table shows the net cash needs in the next five years.

CONCLUSION

The Actuarial Valuation complies with the requirements of Minnesota Statutes, Chapter 356. Certain changes this year have been made in the methods to determine the contribution rates which are different than prior years.

James R. Bordewick

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

APPENDIX 2

ESTIMATED CASH NEEDS FROM THE STATE'S GENERAL FUND FOR THE JUDGES RETIREMENT FUND

	<u>FY 83</u>	<u>FY 84</u>	<u>FY 85</u>	<u>FY 86</u>	<u>FY 87</u>
NEW ANNUITANTS:					
Count	9	8	7	4	4
Present Value	\$1,885,000	\$1,940,000	\$1,815,000	\$ 900,000	\$1,035,000
Less: Contributions	200,000	200,000	185,000	120,000	120,000
State Contribution	<u>\$1,685,000</u>	<u>\$1,740,000</u>	<u>\$1,630,000</u>	<u>\$ 780,000</u>	<u>\$ 915,000</u>
Spouses Benefit	77,300	82,300	94,700	100,800	114,400
Supr. & Dist. Ct. Jd	385,700	388,100	390,600	393,300	396,200
Surv. - S & D Ct. Jd	291,100	319,400	349,500	381,600	415,800
Cty Court Survivors	34,700	36,900	43,200	46,000	52,900
Cty Paid Judges	22,700	29,400	34,500	41,500	48,300
	<u>\$2,496,500</u>	<u>\$2,596,100</u>	<u>\$2,542,500</u>	<u>\$1,743,200</u>	<u>\$1,942,600</u>
Administrative Expense	39,000	41,000	43,000	45,000	47,000
Interest on Refunds	1,000	1,000	1,000	1,000	1,000
Total Need	<u>\$2,536,500</u>	<u>\$2,638,100</u>	<u>\$2,586,500</u>	<u>\$1,789,200</u>	<u>\$1,990,600</u>
Less: Inv. Inc.	353,000	388,000	427,000	470,000	517,000
Net Cash Needs	<u><u>\$2,183,500</u></u>	<u><u>\$2,250,100</u></u>	<u><u>\$2,159,500</u></u>	<u><u>\$1,319,200</u></u>	<u><u>\$1,473,000</u></u>

This table was prepared by the Executive Director.

Touche Ross & Co.

December 17, 1982

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

RE: Legislative Members and Survivors Fund

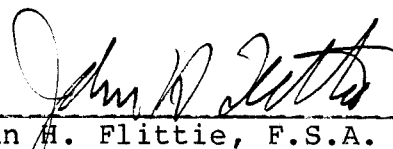
Ladies and Gentlemen:

We have prepared an actuarial valuation of the Minnesota State Retirement System, Legislators' Retirement Plan as of June 30, 1982.

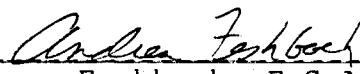
We certify that the valuation was based on the 5% interest assumption mandated by Chapter 356 of the Minnesota Statutes, as well as the 1971 Group Annuity Mortality Table with ages set back eight years for females.

Respectfully submitted,

TOUCHE ROSS & CO.



John H. Flittie, F.S.A.



Andrea Feshbach, F.S.A.

L82

Table 1(a)

MINNESOTA STATE RETIREMENT SYSTEM
LEGISLATORS' RETIREMENT FUND

Distribution of Annual Earnings 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	20	127,283	6,364	0	0	0	20	127,283	6,364
65 - 69	27	157,348	5,828	0	0	0	27	157,348	5,828
70 - 74	19	69,106	3,637	1	4,843	4,843	20	73,950	3,697
75 - 79	15	67,644	4,510	0	0	0	15	67,644	4,510
80 - 84	6	29,193	4,866	0	0	0	6	29,193	4,866
85 +	5	23,881	4,776	0	0	0	5	23,881	4,776
Total	92	474,456	5,157	1	4,843	4,843	93	479,299	5,154

Distribution of Annual Earnings by Service Groups

Service Group	Male			Female			All		
	No.	Total	Average	No.	Total	Average	No.	Total	Average
0	8	46,971	5,871	0	0	0	8	46,971	5,871
1	15	125,285	8,352	0	0	0	15	125,285	8,352
2	3	18,955	6,318	0	0	0	3	18,955	6,318
3	6	30,338	5,056	0	0	0	6	30,338	5,056
4	3	7,764	2,588	0	0	0	3	7,764	2,588
0 - 4	35	229,313	6,552	0	0	0	35	229,313	6,552
5 - 9	36	166,631	4,629	1	4,843	4,843	37	171,474	4,634
10 - 14	19	72,739	3,828	0	0	0	19	72,739	3,828
15 - 19	2	5,773	2,887	0	0	0	2	5,773	2,887
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	92	474,456	5,157	1	4,843	4,843	93	479,299	5,154

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						Total
	<u>0-4</u>	<u>5-9</u>	<u>10-14</u>	<u>15-19</u>	<u>20-24</u>	<u>25 & over</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	20	0	0	0	0	0	20
65 - 69	11	16	0	0	0	0	27
70 - 74	4	11	4	0	0	0	19
75 - 79	0	7	8	0	0	0	15
80 - 84	0	2	3	1	0	0	6
85 & over	0	0	4	1	0	0	5
Total	35	36	19	2	0	0	92
<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	1	0	0	0	0	1
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	1	0	0	0	0	1

MINNESOTA STATE RETIREMENT SYSTEM
LEGISLATIVE MEMBERS AND SURVIVORS FUND

Determination of MPRI Fund Participation and Reserves
as of June 30, 1982

Touche Ross & Co

	Members Eligible for 1/1/83 Increase	Members Not Eligible for Increase	Total
1. Unadjusted MPRI Fund Participation as of June 30, 1982	--	--	\$3,985,910
2. Transfer (from) to MPRI Fund for Mortality (Gain) Loss	86,514	3,863	90,377
3. Participation as of June 30, 1982 (1) + (2)	--	--	4,076,287
4. Required Reserves as of June 30, 1982	3,607,739	531,594	4,139,333
5. Required Reserves as of January 1, 1983	3,545,104	524,497	4,069,601

This exhibit does not reflect benefit increases to become effective on January 1, 1983.