

MINNESOTA STATE RETIREMENT SYSTEM
STATE EMPLOYEES' RETIREMENT FUND

ACTUARIAL VALUATION AS OF
JUNE 30, 1983

Touche Ross & Co.

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, 1983.

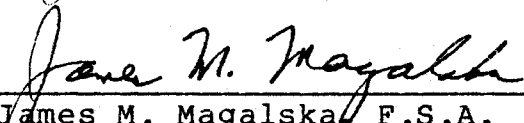
The valuation was performed on the basis of accepted actuarial methods and procedures, in accordance with the applicable provisions set forth in Minnesota Statutes (Chapter 356) and stipulated in the Contract between the State of Minnesota and Touche Ross & Co.

We hereby certify that on the basis of our valuation, contributions required from employees and the State under Minnesota Statutes (Chapter 352) represent 103.05% 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.



James M. Magalska F.S.A.

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REPORT HIGHLIGHTS

Comparison with Previous Valuation

	<u>6/30/83</u>	<u>6/30/82</u>
A. Financial and Actuarial Status		
1. Valuation Assets	902,506,393	783,649,606
2. Accrued Liability	1,167,124,433	1,038,907,353
3. Unfunded Accrued Liability (A2 - A1)	264,618,040	255,257,747
4. Accrued Liability Funding Ratio (A1/A2)	77.33%	75.43%
5. Normal Cost		
General Plan	59,653,471 (6.96%)*	54,667,828 (6.84%)*
Correctional Plan	2,602,521 (10.62%)*	2,150,391 (10.52%)*
B. Contributions		
1. Chapter 356 Requirement	81,478,564	75,105,904
2. Actual Prescribed Contribution (Chapter 352)	83,961,561	70,465,799
3. Sufficiency (B2 / B1)	1.03	0.938
C. Depth of Funding - Plan Continuation Basis		
1. Present Value of Accrued Benefits	973,921,853	862,867,653
2. Depth of Funding (A1 / C1)	92.67%	90.82%

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

REPORT HIGHLIGHTS (continued)

	<u>6/30/83</u>	<u>6/30/82</u>
D. Plan Participants		
1. Active Members		
a. Number	44,315	44,637
b. Payroll of employees under maximum assumed retire- ment age	\$881,572,208	\$819,226,464
✓c. Total payroll	893,430,208	830,395,472
2. Retired Members/Beneficiaries		
a. Number	10,772	10,504
b. Average annual benefit payable	\$3,053	\$2,817
3. Deferred Annuitants		
a. Number	995	890
b. Average annual vested benefit	\$3,242	\$3,151
4. Former Members Without Vested Rights		
a. Number	4,908	4,993
b. Average employee contributions	\$328	\$293

REPORT HIGHLIGHTSResults Shown Separately for General and
Correctional Employees

	<u>General</u>	<u>Correctional</u>
A. Financial and Actuarial Status		
1. Valuation Assets	866,438,610	36,067,783
2. Accrued Liability	1,127,574,029	39,550,404
3. Unfunded Accrued Liability (A2 - A1)	261,135,419	3,482,621
4. Accrued Liability Funding Ratio (A1/A2)	76.84%	91.19%
5. Normal Cost*	\$59,653,471 (6.96%)	\$2,602,521 (10.62%)
B. Contributions		
1. Chapter 356 Requirement	\$78,599,820 (9.17%)	\$2,878,744 (11.75%)
2. Actual Prescribed Contribution (Chapter 352)	79,963,803 (9.33%)	3,997,758 (16.31%)
3. Sufficiency (2 / 1)	1.017	1.389
C. Depth of Funding - Plan Continuation Basis		
1. Present Value of Accrued Benefits	937,132,696	36,789,157
2. Depth of Funding (A1 / C1)	92.46%	98.04%

* Parentheses indicate contribution levels as a percentage of salary.

REPORT HIGHLIGHTS (continued)

	<u>General</u>	<u>Correctional</u>
D. Plan Participants		
1. Active Members		
a. Number	43,191	1,124
b. Valuation payroll of employees under maximum assumed retirement age	\$857,061,120	\$24,511,088
c. Total valuation payroll	868,528,661	25,186,035
2. Retired Members/Beneficiaries		
a. Number	10,477	295
b. Average annual benefit payable	\$2,987	\$5,410
3. Deferred Annuitants		
a. Number	983	12
b. Average annual vested benefit	\$3,194	\$7,210
4. Former Members Without Vested Rights		
a. Number	4,881	27
b. Average employee contributions	\$323	\$1,211

MINNESOTA STATE RETIREMENT SYSTEM
STATE EMPLOYEES' RETIREMENT FUND

ACTUARIAL VALUATION AS OF JUNE 30, 1983

PURPOSE AND SUMMARY

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

Chapter 356 of the Minnesota Statutes sets forth the annual reporting requirements which govern the public employee retirement systems in Minnesota. The principal requirement (in addition to the experience study required every fourth year) is that an actuarial valuation be performed each year and that the valuation specifically set forth the following items based on an assumed 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, 1983 unfunded accrued liability by June 30, 2010, the full funding date established in the June 30, 1982 valuation.
6. An analysis explaining the increase or decrease in the unfunded accrued liability since the last valuation.

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

) value of benefits payable from the MPRI Fund (as of June 30, 1983 and as of January 1, 1984) 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, 1983, 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, 1983. 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 1983 base before allocation of investment earnings.
-) 4. Allocate investment earnings, net of operating expenses, in proportion to the new base.

The June 30, 1983 allocation on this basis results in valuation assets as follows:

General Plan	\$866,438,610
Correctional Plan	36,067,783
Total	<u>\$902,506,393</u>

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, 1983, the additional deficiency was entirely paid off.

ACTUARIAL BALANCE SHEETS

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

Table 3(a) sets forth a balance sheet comparing the assets and unfunded accrued liability (the total of the two equaling the accrued liability) to the current liabilities and reserves required under the plan. This table is in the format specifically required by Chapter 356 and is supported by attachments in the form of Tables 3(b) and 3(c), which set forth the determination of the unfunded accrued liability and the status of the MPRI Fund as of June 30, 1983.

Table 1(a)

MINNESOTA STATE RETIREMENT SYSTEM
STATE EMPLOYEES' RETIREMENT FUND

Accounting Balance Sheet as of June 30, 1983

A. ASSETS

1. Cash		28,599
2. Short term investments (at cost)		31,534,988
3. Accounts receivable:		
a. Accrued employee contributions	1,787,196	
b. Accrued employer contributions	905,536	
c. Employee buy backs	113,949	
d. Security sales	1,170,620	
e. Other	14,977	
4. Due from other plans		122,035
5. Accrued interest on investments		5,375,811
6. Dividends declared and payable, but not yet received		1,045,540
7. Investment in debt securities at amortized cost		200,163,762
8. Pooled investments at cost*		108,536,064
9. Investment in equities at cost*		228,897,810
10. Equipment at depreciated cost		75,684
11. Deferred yield adjustment account		11,896,960
12. Participation in MPRI Fund**		313,583,605
13. TOTAL ASSETS		<u>905,253,136</u>

B. LIABILITIES

Liabilities

1. Accounts payable		
a. Annuities	4,206	
b. Security purchases	2,047,738	
c. Accrued expenses	193,463	
d. Due to unclassified retirement	180,549	
e. Due MPRI Fund	320,787	
2. Total liabilities		<u>2,746,743</u>

Reserves

1. Participation in MPRI Fund**	313,583,605
2. Survivor benefit reserve	211,232
3. Employee contribution reserve	192,707,448
4. State contribution reserve	396,004,108
5. Total reserves (valuation assets)***	<u>902,506,393</u>
6. TOTAL LIABILITIES AND RESERVES	<u>905,253,136</u>

* Market values as of June 30, 1983 are \$118,825,834 for pooled investments and \$281,669,564 for equities.

** Participation equals Required Reserves for retired lives.

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

MINNESOTA STATE RETIREMENT SYSTEM
STATE EMPLOYEES' RETIREMENT FUND

Allocation of June 30, 1983 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, 1982	482,757,022	18,708,033	501,465,055
2. Allocated Contributions During the Year	63,642,287	2,801,002	66,443,289
3. Transfers of Assets to MPRI Fund During the Year	26,603,305	570,404	27,173,709
4. Refunds Allocable During the Year	5,922,142	125,714	6,047,856
5. Estimated Base as of June 30, 1983, Before Allocation of Investment Earnings and Expenses (1) + (2) - (3) - (4)	513,873,862	20,812,917	534,686,779
6. Employee Contribution Reserve as of June 30, 1983	186,564,209	6,143,239	192,707,448
7. Estimated State Contribution Reserve as of June 30, 1982 (5) - (6)	327,309,653	14,669,678	341,979,331
8. Actual State Contribution Reserve, Including Investment Earnings During the Year and Expenses Allocated According to Item 7	379,016,962	16,987,146	396,004,108
9. MPRI Fund Reserve	300,646,207	12,937,398	313,583,605
10. Survivor Benefit Reserve	211,232	0	211,232
11. Total Valuation Assets* (6) + (8) + (9) + (10)	866,438,610	36,067,783	902,506,393

* 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, 1983

A. ASSETS

1. Assets on hand from accounting balance sheet:		
a. Reserves for MPRI Fund benefits	313,583,605	
b. All other assets	<u>591,669,531</u>	905,253,136
2. Present value of employees' future contributions		307,841,182
3. Present value of state future contributions applicable to:		
a. Entry age normal costs	257,450,987	
b. Unfunded accrued liability (Balance of "matching" contribution less .18% for operating expense)	41,258,569	
c. Unfunded accrued liability (Portion to be funded by "additional" contribution)	<u>223,359,471</u>	<u>522,069,027</u>
4. TOTAL ASSETS		<u><u>1,735,163,345</u></u>

B. LIABILITIES

1. Current liabilities from accounting balance sheet		2,746,743
2. Present value of earned and earnable benefits payable to presently active members:		
a. Retirement benefits	1,046,096,000	
b. Disability benefits	77,434,774	
c. Refundments due to death or withdrawal	130,389,630	
d. Surviving spouse benefits	33,677,232	
e. Deferred retirement benefits	<u>111,915,472</u>	1,399,513,108
3. Present value of benefits for deferred annuitants		17,563,206
4. Present value of refundment to former members without vested rights		1,545,451
5. Present value of survivor benefits		211,232
6. Participation in MPRI Fund		<u>313,583,605</u>
7. TOTAL LIABILITIES		<u><u>1,735,163,345</u></u>

Table 3(a)

MINNESOTA STATE RETIREMENT SYSTEM
STATE EMPLOYEES' RETIREMENT FUND

Chapter 356 Balance Sheet as of June 30, 1983

ASSETS AND UNFUNDED ACCRUED LIABILITY

A. ASSETS*

1. Cash		28,599
2. Short term investments (at cost)		31,534,988
a. Accrued employee contributions	1,787,196	
b. Accrued employer contributions	905,536	
c. Employee buybacks	113,949	
d. Security sales	1,170,620	
e. Other	<u>14,977</u>	3,992,278
3. Due from other plans		122,035
4. Accrued interest on investments		5,375,811
5. Dividends declared and payable, but not yet received		1,045,540
6. Investment in debt securities at amortized cost		200,163,762
7. Pooled investments at cost		108,536,064
8. Investment in equities at cost		228,897,810
9. Equipment at depreciated cost		75,684
10. Deferred yield adjustment account		11,896,960
11. Participation in MPRI Fund**		<u>313,583,605</u>
12. TOTAL ASSETS		<u>905,253,136</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		41,258,569
2. Unfunded accrued liability to be funded by State's "additional" contribution		<u>223,359,471</u>
3. Total unfunded accrued liability		264,618,040
4. TOTAL ASSETS AND UNFUNDED ACCRUED LIABILITY		<u>1,169,871,176</u>

(continued)

Table 3(a)(continued)

CURRENT LIABILITIES AND RESERVES REQUIRED

C. LIABILITIES

1. Accounts payable:		
a. Annuities	4,206	
b. Security purchases	2,047,738	
c. Accrued expenses	193,463	
d. Due unclassified retirement	180,549	
e. Due MPRI Fund	<u>320,787</u>	
2. Total liabilities		2,746,743

D. RESERVES REQUIRED

1. Total reserves required per attached Table 3(b)	<u>1,167,124,433</u>
2. TOTAL CURRENT LIABILITIES AND RESERVES REQUIRED	<u>1,169,871,176</u>

* Accumulated contributions, without interest, of members not yet retired amounted to \$192,707,448 as of June 30, 1983 (includes accrued but unpaid contributions).

** Participation equals Required Reserves for retired lives as of June 30, 1983, excluding the January 1, 1984 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, 1983

	(1)	(2)	(3)
	Present Value of Benefits	Present Value of Applicable Portion of Normal Cost Contribution	Accrued Liability Equals Reserves Required (1) - (2)
A. DETERMINATION OF ACCRUED LIABILITY			
1. Active Members			
a. Retirement benefits	1,046,096,000	365,445,291	680,650,709
b. Disability benefits	77,434,774	27,954,252	49,480,522
c. Refundments due to death or withdrawal	130,389,630	124,884,634	5,504,996
d. Surviving spouse benefits	33,677,232	10,012,756	23,664,476
e. Deferred retirement benefits	111,915,472	36,995,236	74,920,236
f. Subtotal	1,399,513,108	565,292,169	834,220,939
2. Deferred annuitants	17,563,206		17,563,206
3. Former members without vested rights	1,545,451		1,545,451
4. Survivors	211,232		211,232
5. Participation in MPRI Fund	313,583,605		313,583,605
6. Total	1,732,416,602	565,292,169	1,167,124,433
B. DETERMINATION OF UNFUNDED ACCRUED LIABILITY			
1. Accrued Liability			1,167,124,433
2. Valuation assets			902,506,393
3. Unfunded accrued liability (1 - 2)			264,618,040

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, 1983

Table 3(c) sets forth the determination of MPRI Fund net assets and reserve requirements as of June 30, 1983.

As required by Chapter 11A, Table 3(c) allocates the mortality gain and reserve determinations for January 1, 1984 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, 1983

	Members Eligible for 1/1/84 Increase	Members Not Eligible for Increase	Total
1. Unadjusted MPRI Fund Participation as of June 30, 1983	--	--	\$305,353,184
2. Transfer (from) to MPRI Fund for Mortality (Gain) Loss	238,039	63,664	301,703
3. Participation as of June 30, 1983 (1) + (2)	--	--	305,654,887
4. Required Reserves as of June 30, 1983	286,735,074	26,848,531	313,583,605
5. Required Reserves as of January 1, 1984	282,868,856	26,523,353	309,392,209

This exhibit does not reflect benefit increases to become effective on January 1, 1984.

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		\$37,306,271
2. Contributions from employers		29,137,018
3. General fund appropriation		1,540,717
4. From investments		
a. Investment income	\$40,641,192	
b. Realized and unrealized gain	<u>19,989,022</u>	60,630,214
5. From MPRI Fund participation		30,470,119
6. Other revenues		<u>411,325</u>
7. TOTAL INCOME		\$159,495,664

B. DEDUCTIONS FROM INCOME

1. Benefits		
a. Service retirement and disability annuities	\$33,397,753	
b. Survivor benefits (spouse)	<u>22,078</u>	33,419,831
2. Refundments (employee contributions)		
a. Refunds	\$ 5,754,095	
b. Interest on refundments	<u>293,761</u>	6,047,856
3. Administrative expenses		932,521
4. Other		227,376
5. Increase in total reserves required		
a. Reserves required 6/30/82	\$1,038,907,353	
b. Reserves required 6/30/83	<u>1,167,124,433</u>	128,217,080
6. TOTAL DEDUCTIONS FROM INCOME		<u>\$168,844,664</u>

Table 4 (continued)

) C. OTHER FINANCING SOURCES (USES)	
1. Cumulative effect of accounting principles change	(11,293)
2. TOTAL OTHER FINANCING SOURCES (USES)	<u>\$ (11,293)</u>
D. DEFICIENCY OF INCOME AND OTHER SOURCES OVER DEDUCTIONS FROM INCOME AND OTHER USES	
	<u>\$ 9,360,293</u>
E. INCREASE IN UNFUNDED ACCRUED LIABILITY	
1. Unfunded accrued liability 6/30/82	\$255,257,747
2. Unfunded accrued liability 6/30/83	<u>264,618,040</u>
3. INCREASE IN UNFUNDED ACCRUED LIABILITY	<u>\$ 9,360,293</u>

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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, 1983

1. Unfunded accrued liability as of June 30, 1982		255,257,747
2. Change due to current rate of funding and interest requirements		
a. 1982-83 past service contribution based on expected State contribution levels	(18,300,300)	
b. 5% interest requirement	12,762,887	
c. Unpaid additional 2% employee contribution in lieu of State contribution	<u>8,082,836</u>	2,545,423
3. Change due to actuarial gains (indicated by parentheses) or losses (no parentheses) because of experience deviations from expected		
a. Salary increases	36,722,759	
b. Investment income	(23,989,746)	
c. MPRI Fund mortality	(301,703)	
d. Withdrawals, death, disability of active members (balancing item)	<u>(2,347,373)</u>	10,083,937
4. Decrease due to increase in employee contribution rate		<u>(3,269,067)</u>
5. Unfunded accrued liability as of June 30, 1983		<u>\$264,618,040</u>

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	6.96	\$59,653,471
2. Assumed operating expense	.18	1,542,710
3. Amortization by June 30, 2010 of the Unfunded Accrued Liability of \$261,135,419	2.03	17,403,639
4. Total Chapter 356 requirement (1) + (2) + (3)	9.17	78,599,820

Actual Contributions:

1. Employee contributions	3.73	31,968,380
2. Employer matching contribution	3.73	31,968,380
3. Employer "additional" contribution	1.87	16,027,043
4. Total Chapter 352A prescribed contribution	9.33	79,963,803

Contribution Sufficiency: 1.017

Note: Expected annual payroll = \$857,061,120

*Assumed that this percentage is contributed in each payroll period throughout the year ending June 30, 1984.

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	10.62	\$2,602,521
2. Assumed operating expense	.18	44,120
3. Amortization by June 30, 2010 of the Unfunded Accrued Liability of \$3,482,621	.95	232,103
4. Total Chapter 356 requirement (1) + (2) + (3)	11.75	2,878,744

Actual Contributions:

1. Employee contributions	4.89	1,198,592
2. Employer "matching" contribution	7.34	1,799,114
3. Employer "additional" contribution	4.08	1,000,052
4. Total Chapter 352A prescribed contribution	16.31	3,997,758

Contribution Sufficiency: 1.389

NOTE: Expected Annual Payroll = \$24,511,088

*Assumed that this percentage is contributed in each payroll period throughout the year ending June 30, 1984.

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, 1983

	<u>General</u>	<u>Correctional</u>
1. Active members	\$618,069,492	\$22,948,867
2. Deferred annuitants	16,693,020	870,186
3. Former members without vested rights	1,512,745	32,706
) 4. Survivors	211,232	-
5. Participation in MPRI Fund	<u>300,646,207</u>	<u>12,937,398</u>
6. Total present values of accrued benefits	937,132,696	36,789,157
7. Valuation assets	866,438,610	36,067,783
8. Depth of Funding (7 / 6)	92.46%	98.04%

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, 1983, reflects covered payrolls of \$807,540,026 and \$21,667,164 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 5¢ per hour increase in November, 1983, a 10¢ increase in May, 1984, and expected cost of living increases totaling \$210 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, 1983.

No changes have been made to Chapter 352 since the June 30, 1982 valuation which would affect this valuation. However, since the 1982 valuation indicated that the contribution rates in effect at that time were not sufficient to fully fund the plan by the established date, the contribution rates were changed as follows:

	Rate for 6 months <u>(7/1/82 - 1/1/83)</u>	Rate Beginning <u>1/1/83</u>
<u>General Plan</u>		
Employee	3.46	3.73
Employer	<u>3.46</u>	<u>3.73</u>
	6.92	7.46
Additional	<u>1.58</u>	<u>1.87</u>
TOTAL	8.50	9.33
<u>Correctional Plan</u>		
Employee	4.50	4.89
Employer	<u>6.75</u>	<u>7.34</u>
	11.25	12.23
Additional	<u>1.32</u>	<u>4.08</u>
TOTAL	12.57	16.31

Table 7(a)

MINNESOTA STATE RETIREMENT SYSTEM
STATE EMPLOYEES' RETIREMENT FUND

Covered General Employees' Census Data as of June 30, 1983

	<u>Number</u>	<u>Annual Payroll</u>
Active at June 30, 1982	43,627	\$752,604,771
New Entrants*	<u>6,407</u>	
Total	50,034	
Less Separations from Active Service:		
Refund of Contributions*	4,390	41,343,063
Separation with a Deferred Annuity	129	1,976,010
Separation with Neither Refundment nor Right to a Deferred Annuity	1,649	8,454,381
Disability	48	828,533
Death, No Spouse's Benefits*	72	1,291,215
Service Retirement	497	9,683,379
Death Spouse's Benefits Payable	<u>5</u>	101,522
Total Separations	6,790	
Net Transfers to and From Other Plans	<u>(53)</u>	
Active at June 30, 1983	43,191	\$807,540,026

Average Entry Age of New Employees

For the Fiscal Year <u>Ending</u>	<u>Male</u>	<u>Female</u>	<u>Average of Total</u>
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
6/30/83	28.7	27.4	27.9

Average age at entry in State service for all active employees at 6/30/83:

Male	29.2
Female	28.3
Total	28.7

* Includes those who entered the plan and terminated during the period from July 1, 1982 to June 30, 1983.

Table 7(b)

MINNESOTA STATE RETIREMENT SYSTEM
STATE EMPLOYEES' RETIREMENT FUND

General Employees' Annuitant Census Data as of June 30, 1983

	<u>Number</u>	<u>Annual Annuity Benefit Payable</u>
A. <u>Service Retirement Annuitants</u>		
Receiving at June 30, 1982	9,138	25,612,997.28
New	624	2,430,396.84
Deaths	(386)	(966,446.04)
Adjustments-Net Result	9	1,558,509.36
Receiving at June 30, 1983*	9,385	28,635,457.44
B. <u>Disabled Employees</u>		
Receiving at June 30, 1982	681	1,611,794.48
New	50	155,581.32
Deaths	(57)	(143,443.92)
Disability Rescinded	0	0
Adjustments-Net Result	0	89,028.04
Receiving at June 30, 1983	674	1,712,959.92
C. <u>Widows Receiving an Annuity or Survivor Benefit</u>		
1. Beneficiaries Receiving an Optional or Reversionary Annuity:		
Receiving at June 30, 1982	376	777,738.36
New	49	132,891.12
Deaths	(22)	(35,613.60)
Adjustments-Net Result	(1)	49,637.04
Receiving at June 30, 1983	402	924,652.92

* Includes five annuitants under the Unclassified Plan and three from Military Affairs.

Table 7(b) (con't.)

	<u>Number</u>	<u>Annual Annuity Benefit Payable</u>
2. Spouse Receiving a Survivor Benefit:		
Receiving at June 30, 1982	16	21,347.04
Deaths	0	
Adjustments-Net Result	0	1,462.68
Receiving at June 30, 1983	16	22,809.72
D. <u>Children Receiving a Survivor Benefit</u>		
Receiving at June 30, 1983	None	
E. <u>Deferred Annuitants</u>		
Deferred as of June 30, 1982	880	2,732,347.00
New	150	626,429.00
Began Receiving	(67)	(131,654.00)
Adjustments - Net Result	20	(87,688.00)
Deferred as of June 30, 1983	983	3,139,434.00

Average Age at Retirement of New Service Annuitants

<u>Fiscal Year Ending</u>	<u>Average Retirement Age</u>
6/30/79	63.9
6/30/80	64.1
6/30/81	63.4
6/30/82	63.2
6/30/83	63.3
All Existing Service Annuitants	64.1

Table 7(c)

MINNESOTA STATE RETIREMENT SYSTEM
STATE EMPLOYEES' RETIREMENT FUND

Military Affairs Annuitant Census Data as of June 30, 1983

	<u>Number</u>	<u>Annual Annuity Benefit Payable</u>
A. <u>Service Retirement Annuitants</u>		
Receiving at June 30, 1982	3	\$28,321.44
New	0	0.00
Deaths	0	0.00
Adjustments-Net Result	0	1,941.00
Receiving at June 30, 1983	3	30,262.44
B. <u>Disabled Employees</u>		
Receiving at June 30, 1983	None	
C. <u>Widows Receiving an Annuity or Survivor Benefit</u>		
Receiving at June 30, 1983	None	
D. <u>Children Receiving a Survivor Benefit</u>		
Receiving at June 30, 1983	None	
E. <u>Deferred Annuitants</u>		
Deferred as of June 30, 1983	None	

Average Age at Retirement of New Service Annuitants

<u>Fiscal Year Ending</u>	<u>Average Retirement Age</u>
6/30/82	---
6/30/83	---
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, 1983

	<u>Number</u>	<u>Annual Annuity Benefit Payable</u>
A. <u>Service Retirement Annuitants</u>		
Receiving at June 30, 1982	4	4,775.04
New	0	617.88
Deaths	0	0.00
Adjustments-Net Result	0	327.36
Receiving at June 30, 1983	4	5,720.28
B. <u>Disabled Employees</u>		
Receiving at June 30, 1983	None	
C. <u>Widows Receiving an Annuity or Survivor Benefit</u>		
Receiving at June 30, 1983	None	
D. <u>Children Receiving a Survivor Benefit</u>		
Receiving at June 30, 1983	None	
E. <u>Deferred Annuitants</u>		
Deferred as of June 30, 1983	None	

Average Age at Retirement of New Service Annuitants

<u>Fiscal Year Ending</u>	<u>Average Retirement Age</u>
6/30/82	---
6/30/83	60.8
All Existing Service Annuitants	62.5

Table 8(a)

MINNESOTA STATE RETIREMENT SYSTEM
STATE EMPLOYEES' RETIREMENT FUND

Covered Correctional Employees' Census Data
as of June 30, 1983

	<u>Number</u>	<u>Annual Payroll</u>
Active at June 30, 1982	1,010	\$19,432,192
New Entrants*	<u>221</u>	
Total	1,231	
Less Separations from Active Service:		
Refund of Contributions*	71	877,619
Separation with a Deferred Annuity	2	31,224
Separation with Neither Refundment nor Right to a Deferred Annuity	5	88,005
Disability	1	37,191
Service Retirement	<u>11</u>	232,378
Total Separations	90	
New Transfers to and from other plans	<u>(17)</u>	
Active at June 30, 1983	1,124	\$21,667,164

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>
6/30/79	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
6/30/83	26.5	28.3	26.7

Average age at entry in State service for all active employees at 6/30/83:

Male: 27.7 Female: 28.8 Total 27.8

* Includes those who entered the plan and terminated during the period from July 1, 1982 to June 30, 1983.

Table 8(b)

MINNESOTA STATE RETIREMENT SYSTEM
STATE EMPLOYEES' RETIREMENT FUND

Correctional Employees' Annuitant Census Data as of June 30, 1983

	<u>Number</u>	<u>Annual Annuity Benefit Payable</u>
A. <u>Service Retirement Annuitants</u>		
Receiving at June 30, 1982	280	1,509,578.16
New	8	67,262.12
Deaths	(6)	(31,347.00)
Adjustments-Net Result	0	(8,739.56)
Receiving at June 30, 1983	282	1,536,753.72
B. <u>Disabled Employees</u>		
Receiving at June 30, 1982	10	45,859.92
New	0	0.00
Deaths	0	0.00
Adjustments-Net Result	0	1,825.20
Receiving at June 30, 1983	10	47,685.12
C. <u>Widows Receiving an Annuity or Survivor Benefit</u>		
Beneficiaries Receiving an Optional or Reversionary Annuity:		
Receiving at June 30, 1982	3	10,847.64
New	0	0.00
Adjustments-Net Result	0	743.40
Receiving at June 30, 1983	3	11,591.04

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, 1982	10	\$71,803.00
New	2	11,064.00
Began Receiving	0	0.00
Adjustments	0	3,653.00
Deferred as of June 30, 1983	12	86,520.00

Average Age at Retirement of New Service Annuitants

<u>Fiscal Year Ending</u>	<u>Average Retirement Age</u>
6/30/79	57.9
6/30/80	58.4
6/30/81	56.1
6/30/82	56.4
6/30/83	55.6
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	25-29	30&Over	
<u>Male</u>								
0 - 19	84	0	0	0	0	0	0	84
20 - 24	879	8	0	0	0	0	0	887
25 - 29	1957	434	4	0	0	0	0	2395
30 - 34	1747	1547	341	8	0	0	0	3643
35 - 39	1050	1159	927	328	3	0	0	3467
40 - 44	477	589	563	635	210	9	0	2483
45 - 49	372	346	364	395	268	241	16	2002
50 - 54	271	324	293	334	268	305	111	1906
55 - 59	232	333	353	330	175	243	345	2011
60 - 64	124	225	282	282	143	147	267	1470
65 - 69	18	50	63	37	25	19	27	239
70 & over	3	3	1	4	1	1	0	13
Total	7214	5018	3191	2353	1093	965	766	20600
<u>Female</u>								
0 - 19	133	0	0	0	0	0	0	133
20 - 24	2149	48	0	0	0	0	0	2197
25 - 29	3675	1083	29	0	0	0	0	4787
30 - 34	2504	1411	632	43	0	0	0	4590
35 - 39	1369	818	518	272	18	0	0	2995
40 - 44	952	504	260	197	71	20	0	2004
45 - 49	586	462	255	116	79	57	1	1556
50 - 54	450	339	253	173	79	50	39	1383
55 - 59	318	359	349	257	111	75	57	1526
60 - 64	126	289	224	242	116	63	72	1132
65 - 69	19	69	66	59	29	23	10	275
70 & over	1	5	1	1	3	2	0	13
Total	12282	5387	2587	1360	506	290	179	22591

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	84	1003470	11946	133	1619080	12174	217	2622550	12085
20 - 24	887	12706856	14326	2197	30109541	13705	3084	42816397	13883
25 - 29	2395	44193078	18452	4787	77158999	16118	7182	121352077	16897
30 - 34	3643	78302385	21494	4590	80823233	17609	8233	159125618	19328
35 - 39	3467	84631623	24411	2995	55320902	18471	6462	139952525	21658
40 - 44	2483	65048376	26197	2004	36320784	18124	4487	101369160	22592
45 - 49	2002	51957315	25953	1556	27912877	17939	3558	79870192	22448
50 - 54	1906	50144767	26309	1383	24366848	17619	3289	74511615	22655
55 - 59	2011	51463260	25591	1526	27287110	17881	3537	78750370	22265
60 - 64	1470	36516017	24841	1132	20424703	18043	2602	56940720	21883
65 - 69	239	5840836	24439	275	4801184	17459	514	10642020	20704
70 - 74	13	320091	24622	12	252896	21075	25	572987	22919
75 & over	0	0	0	1	2430	2430	1	2430	2430
Total	20600	482128074	23404	22591	386400587	17104	43191	868528661	20109

Distribution of Annual Earnings by Service Groups

Service Group	Male			Female			All		
	No.	Total	Average	No.	Total	Average	No.	Total	Average
0	1337	18814132	14072	2644	32947360	12461	3981	51761492	13002
1	1496	26663389	17823	3259	49034228	15046	4755	75697617	15920
2	1814	35033913	19313	2742	44429925	16203	4556	79463838	17442
3	1622	34983461	21568	2178	36534482	16774	3800	71517943	18821
4	945	20813543	22025	1458	25183524	17273	2403	45997067	19142
0-4	7214	136308438	18895	12281	188129519	15319	19495	324437957	16642
5-9	5018	121706143	24254	5387	99624773	18494	10405	221330916	21272
10-14	3191	82710782	25920	2587	50234995	19418	5778	132945777	23009
15-19	2353	60823524	25849	1360	27581455	20280	3713	88404979	23810
20-24	1093	30400325	27814	507	10523677	20757	1600	40924002	25578
25-29	965	27324680	28316	290	6198928	21376	1255	33523608	26712
30+	766	22854182	29836	179	4107240	22945	945	26961422	28531
Total	20600	482128074	23404	22591	386400587	17104	43191	868528661	20109

Table 9(c)

MINNESOTA STATE RETIREMENT SYSTEM
STATE EMPLOYEES' RETIREMENT FUND

Correctional Employees

Service Groups by Age Groups

Age	Service Group							
Group	0-4	5-9	10-14	15-19	20-24	25-29	30&Over	Total
<u>Male</u>								
0 - 19	2	0	0	0	0	0	0	2
20 - 24	90	0	0	0	0	0	0	90
25 - 29	186	37	0	0	0	0	0	223
30 - 34	116	103	13	0	0	0	0	232
35 - 39	65	57	35	7	0	0	0	164
40 - 44	28	38	13	19	5	0	0	103
45 - 49	10	30	17	14	11	6	0	88
50 - 54	6	9	10	17	7	7	5	61
55 - 59	1	2	8	8	3	6	2	30
60 - 64	0	0	3	2	0	0	1	6
65 - 69	0	0	0	0	0	0	0	0
70 & over	0	0	0	0	0	0	0	0
Total	504	276	99	67	26	19	8	999
<u>Female</u>								
0 - 19	0	0	0	0	0	0	0	0
20 - 24	12	0	0	0	0	0	0	12
25 - 29	31	7	0	0	0	0	0	38
30 - 34	7	6	1	0	0	0	0	14
35 - 39	7	9	4	0	0	0	0	20
40 - 44	2	3	2	1	0	0	0	8
45 - 49	6	1	3	0	0	0	0	10
50 - 54	1	3	6	3	1	0	0	14
55 - 59	1	0	1	1	1	1	1	6
60 - 64	0	0	1	2	0	0	0	3
65 - 69	0	0	0	0	0	0	0	0
70 & over	0	0	0	0	0	0	0	0
Total	67	29	18	7	2	1	1	125

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	2	33908	16954	0	0	0	2	33908	16954
20 - 24	90	1588356	17648	12	216287	18024	102	1804643	17693
25 - 29	223	4359955	19551	38	750231	19743	261	5110186	19579
30 - 34	232	5129893	22112	14	303197	21657	246	5433090	22086
35 - 39	164	3880323	23661	20	459600	22980	184	4339923	23587
40 - 44	103	2594795	25192	8	183216	22902	111	2778011	25027
45 - 49	88	2278408	25891	10	217305	21731	98	2495713	25466
50 - 54	61	1685833	27637	14	336668	24048	75	2022501	26967
55 - 59	30	786667	26222	6	147813	24636	36	934480	25958
60 - 64	6	162347	27058	3	71233	23744	9	233580	25953
65 & over	0	0	0	0	0	0	0	0	0
Total	999	22500485	22523	125	2685550	21484	1124	25186035	22408

Distribution of Annual Earnings by Service Groups

Service Group	Male			Female			All		
	No.	Total	Average	No.	Total	Average	No.	Total	Average
0	148	2343678	15836	18	286900	15939	166	2630578	15847
1	137	2670318	19491	13	247980	19075	150	2918298	19455
2	73	1508526	20665	15	305802	20387	88	1814328	20617
3	80	1744131	21802	8	166863	20858	88	1910994	21716
4	66	1515308	22959	13	263650	20281	79	1778958	22518
0-4	504	9781961	19409	67	1271195	18973	571	11053156	19358
5-9	276	6771750	24535	29	680950	23481	305	7452700	24435
10-14	99	2669771	26967	18	448202	24900	117	3117973	26649
15-19	67	1794379	26782	7	179308	25615	74	1973687	26671
20-24	26	711345	27359	2	59215	29608	28	770560	27520
25-29	19	510809	26885	1	23340	23340	20	534149	26707
30+	8	260470	32559	1	23340	23340	9	283810	31534
Total	999	22500485	22523	125	2685550	21484	1124	25186035	22408

Table 10(a)

MINNESOTA STATE RETIREMENT SYSTEM
STATE EMPLOYEES' RETIREMENT FUND

Retired General Annuitants in MPRIF*

Distribution of Years Retired by Age Groups

Age	Years Retired							Total
Group	0-4	5-9	10-14	15-19	20-24	25-29	30&Over	
<u>Male</u>								
Under 40	0	1	0	0	0	0	0	1
40 - 44	0	0	0	0	0	0	0	0
45 - 49	0	0	0	0	0	0	0	0
50 - 54	1	0	0	0	0	0	0	1
55 - 59	17	0	0	0	0	0	0	17
60 - 64	501	9	0	0	0	0	0	510
65 - 69	1171	250	3	0	0	0	0	1424
70 - 74	141	1018	68	8	0	0	0	1235
75 - 79	4	363	477	49	14	0	0	907
80 - 84	1	18	229	244	33	16	0	541
85 & over	0	1	11	132	148	64	11	367
Total	1836	1660	788	433	195	80	11	5003
<u>Female</u>								
Under 40	0	0	0	0	0	0	0	0
40 - 44	0	0	0	1	0	0	0	1
45 - 49	1	0	0	0	0	0	0	1
50 - 54	3	0	1	0	0	0	0	4
55 - 59	33	4	0	1	0	0	0	38
60 - 64	383	12	3	0	0	0	0	398
65 - 69	921	319	7	1	1	1	0	1250
70 - 74	134	1055	76	17	3	0	0	1285
75 - 79	3	328	462	64	16	3	0	876
80 - 84	0	15	231	247	40	9	1	543
85 & over	0	0	9	130	163	80	9	391
Total	1478	1733	789	461	223	93	10	4787

* includes widows

Table 10(b)

MINNESOTA STATE RETIREMENT SYSTEM
STATE EMPLOYEES' RETIREMENT FUND

Retired General Annuitants in MPRIF

Distribution of Annual Benefits by Age Groups

Age Group	Male			Female			All		
	No.	Total	Average	No.	Total	Average	No.	Total	Average
0 - 19	0	0	0	0	0	0	0	0	0
20 - 24	0	0	0	0	0	0	0	0	0
25 - 29	0	0	0	0	0	0	0	0	0
30 - 34	1	1609	1609	0	0	0	1	1609	1609
35 - 39	0	0	0	0	0	0	0	0	0
40 - 44	0	0	0	1	1398	1398	1	1398	1398
45 - 49	0	0	0	1	4076	4076	1	4076	4076
50 - 54	1	632	632	4	5614	1404	5	6246	1249
55 - 59	17	74083	4358	38	139399	3668	55	213482	3881
60 - 64	510	2848621	5586	398	1199093	3013	908	4047714	4458
65 - 69	1424	6332364	4447	1250	3405448	2724	2674	9737812	3642
70 - 74	1235	4263011	3452	1285	2991811	2328	2520	7254822	2879
75 - 79	907	2785980	3072	876	1822946	2081	1783	4608926	2585
80 - 84	541	1297321	2398	543	892097	1643	1084	2189418	2020
85+	367	887239	2418	391	608712	1557	758	1495951	1974
Total	5003	18490860	3696	4787	11070594	2313	9790	29561454	3020

Distribution of Annual Benefits by Service Groups

Service Group	Male			Female			All		
	No.	Total	Average	No.	Total	Average	No.	Total	Average
0	293	1338041	4567	222	719159	3239	515	2057200	3995
1	520	2645962	5088	362	1157943	3199	882	3803905	4313
2	412	1769923	4296	358	979052	2735	770	2748975	3570
3	300	1501829	5006	273	762364	2793	573	2264193	3951
4	311	1269073	4081	263	723943	2753	574	1993016	3472
0-4	1836	8524828	4643	1478	4342461	2938	3314	12867289	3883
5-9	1660	6365821	3835	1733	4204632	2426	3393	10570453	3115
10-14	788	1934988	2456	789	1359913	1724	1577	3294901	2089
15-19	433	1008826	2330	461	656315	1424	894	1665141	1863
20-24	195	407892	2092	223	299395	1343	418	707287	1692
25-29	80	220920	2762	93	190480	2048	173	411400	2378
30+	11	27585	2508	10	17398	1740	21	44983	2142
Total	5003	18490860	3696	4787	11070594	2313	9790	29561454	3020

Table 10(c)

MINNESOTA STATE RETIREMENT SYSTEM
STATE EMPLOYEES' RETIREMENT FUND

Disabled General Annuitants in MPRIF*

Distribution of Years Retired by Age Groups

Age	Years Retired							
Group	0-4	5-9	10-14	15-19	20-24	25-29	30&Over	Total
Male								
Under 40	3	0	0	0	0	0	0	3
40 - 44	2	0	0	0	0	0	0	2
45 - 49	6	2	0	0	0	0	0	8
50 - 54	14	3	1	0	0	0	0	18
55 - 59	40	17	3	3	0	0	0	63
60 - 64	69	38	10	4	1	0	0	122
65 - 69	37	76	13	4	0	0	0	130
70 - 74	0	29	16	6	1	1	0	53
75 - 79	0	0	14	10	0	1	0	25
80 - 84	0	0	0	3	4	2	1	10
85 & over	0	0	0	0	3	4	2	9
Total	171	165	57	30	9	8	3	443
Female								
Under 40	2	0	0	0	0	0	0	2
40 - 44	1	0	0	0	0	0	0	1
45 - 49	2	2	0	0	0	0	0	4
50 - 54	10	0	0	1	0	0	0	11
55 - 59	7	3	1	0	0	0	0	11
60 - 64	39	11	3	1	0	0	0	54
65 - 69	24	47	9	1	0	0	0	81
70 - 74	0	17	11	3	0	1	0	32
75 - 79	0	0	12	9	2	1	0	24
80 - 84	0	0	0	4	5	0	0	9
85 & over	0	0	0	0	1	2	1	4
Total	85	80	36	19	8	4	1	233

* 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	3	8319	2773	2	3560	1780	5	11879	2376
40 - 44	2	6255	3128	1	3302	3302	3	9557	3186
45 - 49	8	27790	3474	4	6756	1689	12	34546	2879
50 - 54	18	57295	3183	11	27457	2496	29	84752	2922
55 - 59	63	212944	3380	11	31277	2843	74	244221	3300
60 - 64	122	398334	3265	54	120532	2232	176	518866	2948
65 - 69	130	347355	2672	81	152320	1880	211	499675	2368
70 - 74	53	115525	2180	32	52636	1645	85	168161	1978
75 - 79	25	51338	2054	24	32581	1358	49	83919	1713
80 - 84	10	18666	1867	9	13781	1531	19	32447	1708
85+	9	20595	2288	4	8715	2179	13	29310	2255
Total	443	1264416	2854	233	452917	1944	676	1717333	2540

Distribution of Annual Benefits by Service Groups

Service Group	Male			Female			All		
	No.	Total	Average	No.	Total	Average	No.	Total	Average
0	19	61904	3258	14	35770	2555	33	97674	2960
1	36	146096	4058	18	38007	2112	54	184103	3409
2	32	115947	3623	13	29770	2290	45	145717	3238
3	38	160358	4220	17	37914	2230	55	198272	3605
4	46	140864	3062	23	59566	2590	69	200430	2905
0-4	171	625169	3656	85	201027	2365	256	826196	3227
5-9	165	419247	2541	80	156323	1954	245	575570	2349
10-14	57	121807	2137	36	48507	1347	93	170314	1831
15-19	30	55073	1836	19	24179	1273	49	79252	1617
20-24	9	16788	1865	8	12521	1565	17	29309	1724
25-29	8	19211	2401	4	8156	2039	12	27367	2281
30+	3	7121	2374	1	2204	2204	4	9325	2331
Total	443	1264416	2854	233	452917	1944	676	1717333	2540

Table 10(e)

MINNESOTA STATE RETIREMENT SYSTEM
STATE EMPLOYEES' RETIREMENT FUND

Correctional Annuitants in MPRIF
(Includes Retired and Disabled)

Distribution of Years Retired by Age Groups*

Age Group	Years Retired						Total
	0-4	5-9	10-14	15-19	20-24	25 & over	
<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	2	0	0	0	0	0	2
55 - 59	54	2	0	0	0	0	56
60 - 64	23	53	0	0	0	0	76
65 - 69	16	62	0	0	0	0	78
70 - 74	0	47	0	0	0	0	47
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	96	164	0	0	0	0	260
<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	6	0	0	0	0	0	6
60 - 64	1	3	0	0	0	0	4
65 - 69	1	16	0	0	0	0	17
70 - 74	0	8	0	0	0	0	8
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	8	27	0	0	0	0	35

* Includes years since January 1, 1974.

Table 10(f)

MINNESOTA STATE RETIREMENT SYSTEM
STATE EMPLOYEES' RETIREMENT FUND

Correctional Annuitants in MPRIF

Distribution of Annual Benefits by Age Groups*

Age Group	Male			Female			All		
	No.	Total	Average	No.	Total	Average	No.	Total	Average
0 - 19	0	0	0	0	0	0	0	0	0
20 - 24	0	0	0	0	0	0	0	0	0
25 - 29	0	0	0	0	0	0	0	0	0
30 - 34	0	0	0	0	0	0	0	0	0
35 - 39	0	0	0	0	0	0	0	0	0
40 - 44	1	4954	4954	0	0	0	1	4954	4954
45 - 49	0	0	0	0	0	0	0	0	0
50 - 54	2	9539	4770	0	0	0	2	9539	4770
55 - 59	56	519022	9268	6	33140	5523	62	552162	8906
60 - 64	76	517365	6807	4	12915	3229	80	530280	6629
65 - 69	78	298747	3830	17	29382	1728	95	328129	3454
70 - 74	47	152408	3243	8	18559	2320	55	170967	3108
75 & over	0	0	0	0	0	0	0	0	0
Total	260	1502035	5777	35	93996	2686	295	1596031	5410

Distribution of Annual Benefits by Service Groups

Service Group	Male			Female			All		
	No.	Total	Average	No.	Total	Average	No.	Total	Average
0	7	60373	8625	1	6894	6894	8	67267	8408
1	20	197919	9896	1	6147	6147	21	204066	9717
2	23	165490	7195	2	10300	5150	25	175790	7032
3	27	229766	8510	2	13150	6575	29	242916	8376
4	19	145210	7643	2	7316	3658	21	152526	7263
0-4	96	798758	8320	8	43807	5476	104	842565	8102
5-9	164	703277	4288	27	50189	1859	191	753466	3945
10+	0	0	0	0	0	0	0	0	0
Total	260	1502035	5777	35	93996	2686	295	1596031	5410

* Includes years since January 1, 1974.

Table 11

MINNESOTA STATE RETIREMENT SYSTEM
STATE EMPLOYEES' RETIREMENT FUNDSummary of Principal Plan Provisions as of June 30, 1983A. General Employees

1. Coverage: From first date of employment.
2. Service Credit: Service is credited from date of coverage.
3. Contributions:
 - a. Employee: 3.73% of salary.
 - b. State of Minnesota 5.6% 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: 4.89% of salary.
- b. State of Minnesota: 11.42% 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.

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 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 contributions in lieu of a deferred benefit.

Table 12(b)

MINNESOTA STATE RETIREMENT SYSTEM
STATE EMPLOYEES' RETIREMENT FUND

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

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

Table 12(b) (continued)

)	<u>Age</u>	<u>Withdrawal</u>	<u>Death</u>	<u>Disability</u>	<u>Age and Service Retirement</u>
	55	210	85	34	
	56	170	93	40	
	57	140	100	46	
	58	90	109	56	30
	59	40	119	66	30
	60		131	76	40
	61		144	90	150
	62		159	110	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

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, 1983.

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	3
2. Annual Payroll	\$ 83,947
Extra normal cost for special military affairs benefits:	
3. - amount	2,227
4. - percentage of pay	2.653%
Sufficiency of extra 3.2% contribution 3.2% / (4)	120.62%

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

MEMORANDUM TO: Legislative Commission on Pensions and Retirement

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

RE: June 30, 1983 Actuarial Valuation of Minnesota State Retirement System - State Employees' Retirement Fund

DATE: January 16, 1984

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

The actuarial valuation is conducted according to a stated actuarial cost method, Entry Age Normal Cost, and stated actuarial assumptions. The interest assumption of 5% and the salary scale assumption of 3½% are prescribed in Chapter 356, Subdivision 4(4).

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

A summary of key actuarial results is shown below based on the combined results for General Employees and Correctional Employees.

<u>SUMMARY OF KEY ACTUARIAL RESULTS</u>	<u>6-30-83</u>	<u>6-30-82</u>
Total Membership	60,997	61,031
Active Membership	44,315	44,637
Payroll	\$ 893,430,208	\$ 830,395,472
Accrued Liability	1,167,124,433	1,038,907,353
Assets	902,506,393	783,649,606
Unfunded Accrued Liability	264,618,040	255,257,747
Funding Ratio - Total	77.3%	75.4%
Prospective	69.0	66.3
Actuarial Losses	\$ 10,083,927	\$ 15,685,625
Contribution Requirement:		
Amortization by June 30, 2010	9.24%	9.17%
Total Support Rate	9.52%	8.60%

COMMENT SUMMARY

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

The total support rate was increased from 8.5% to 9.33% for the General Employees and from 12.57% to 16.31% for the Correctional Employees on January 1, 1983. These support rates are shown below:

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

2. Both total membership and active membership remained fairly stable compared to a year ago. There are 1,458 total members and 1,124 active members in the Correctional Employees group.

Total payroll increased by 7.6% from a year ago. Average salary for active members increased by 8.4% for General Employees and by 7.9% for Correctional Employees.

3. The unfunded accrued liability increased by \$9,360,293 from a year ago. The elements making up this increase were:

Actuarial Losses	\$10,083,937
Member Contribution Rates	(3,269,067)
Contribution Deficiency	2,545,423
	<hr/>
	\$ 9,360,293

The increase in the unfunded accrued liability for General Employees was \$9,997,020 and the decrease in unfunded liability for Correctional Employees was \$636,727.

With the funding method utilized, an increase in the member contribution rates will decrease the unfunded accrued liability.

A contribution deficiency results if the contributions are less than the amount required to keep the unfunded accrued liability from increasing.

4. Both the total funding ratio and the prospective funding ratio increased from a year ago. Assets increased faster than accrued liabilities.

The total funding ratio is the ratio of assets to accrued liabilities. The prospective funding ratio is the ratio of assets less accrued liabilities for members in a payment status to accrued liabilities for members not in a payment status.

COMMENT SUMMARY

5. Actuarial losses of \$10,083,937 for the year ended June 30, 1983 were due to salary losses in excess of all other actuarial gains. There were actuarial gains from interest, mortality on retired members, and from all other sources. Other sources are from pre-retirement terminations.

It is expected that actuarial losses will continue because the other actuarial assumptions (other than interest and salary scale) can never be implicit enough. There is no excess interest on reserves for retired members to offset salary losses.

6. The Chapter 356 standard of payment of the normal cost, expenses, and amortization of the unfunded accrued liability by June 30, 2010 is 9.24% of payroll compared to the total support rate of 9.52% of payroll

If the General Employees and Correctional Employees are looked at separately, the contribution standard and support rates as of June 30, 1983 are:

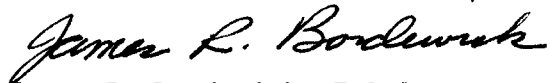
	<u>General</u>	<u>Correctional</u>
Chapter 356 Standard	9.17%	11.75%
Support Rate	9.33%	16.31%

The contribution to keep the unfunded from increasing on June 30, 1983 is 8.66% of payroll for the General Employees and 11.51% of payroll for the Correctional Employees

7. The plan is in a strong funded position.

CONCLUSIONS

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


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

MINNESOTA STATE RETIREMENT SYSTEM

STATE PATROL RETIREMENT FUND

ACTUARIAL VALUATION AS OF

JUNE 30, 1983

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

Ladies and Gentlemen:

We have performed an actuarial valuation of the Minnesota State Retirement System State Patrol Retirement Fund as of June 30, 1983.

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 85.2% 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.



James M. Magalska, F.S.A.

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REPORT HIGHLIGHTS

	<u>6/30/83</u>	<u>6/30/82</u>
A. Financial and Actuarial Status		
1. Valuation Assets	78,774,772	68,183,407
2. Accrued Liability	132,174,955	111,455,693
3. Unfunded Accrued Liability	53,400,183	43,272,286
4. Accrued Liability Funding Ratio (A1/A2)	59.60%	61.18%
5. Normal Cost	3,805,348 (17.65)*	3,323,371 (16.96)*
B. Contributions		
1. Chapter 356 Requirement	7,469,382 (34.64)*	6,242,579 (31.85)*
2. Actual Prescribed Contribution (Chapter 352)	6,360,927 (29.50)*	5,488,273 (28.00)*
3. Sufficiency (2 / 1)	85.2%	87.9%
C. Depth of Funding - Plan Continuation Basis		
1. Present Value of Accrued Benefits	120,160,775	101,966,601
2. Depth of Funding (A1 / C1)	65.56%	66.87%

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

REPORT HIGHLIGHTS (continued)

	<u>6/30/83</u>	<u>6/30/82</u>
D. Plan Participants		
1. Active Members		
a. Number	774	763
b. Covered payroll under assumed retirement age	21,562,464	19,600,976
c. Total Payroll for all members	23,066,558	20,922,575
2. Retired Members/Beneficiaries		
a. Number	359	339
b. Average annual benefit payable	7,736	6,614
3. Deferred Annuitants		
a. Number	22	28
b. Average annual vested benefit	8,858	8,636
4. Former Members Without Vested Rights		
a. Number	10	10
b. Average employee contributions	568	1,246

MINNESOTA STATE RETIREMENT SYSTEM
STATE PATROL RETIREMENT FUNDACTUARIAL VALUATION AS OF JUNE 30, 1983PURPOSE AND SUMMARY

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

Chapter 356 of the Minnesota Statutes sets forth the annual reporting requirements which govern the public employee retirement systems in Minnesota. The principal requirement (in addition to the experience study required every fourth year) is that an actuarial valuation be performed each year and that the valuation specifically set forth the following items based on an assumed 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, 1983 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, 1983 and as of January 1, 1984), and the corresponding mortality gain or loss each year, the latter to facilitate an appropriate transfer between the State Patrol Retirement Fund and the MPRI Fund.

This reporting on the status of the State Patrol Retirement Fund as of June 30, 1983, 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, 1983. 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)	\$46,975,825
2. Present value of future employee contributions (A2)	\$23,392,391
3. <u>Item A3a</u> = (1) - (2)	\$23,583,434
4. Present value of future employer matching contribution (12% of pay)	\$33,024,552
5. Amount for expenses (.18% of pay)	\$ 495,368
6. <u>Item A3b</u> = (4) - (3) - (5)	\$ 8,945,750
7. <u>Unfunded Accrued Liability</u> (Table 3b)	\$53,400,183
8. <u>Item A3c</u> = (7) - (6)	\$44,454,433

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, 1983.

MINNESOTA STATE RETIREMENT SYSTEM
STATE PATROL RETIREMENT FUND

Summary of Actuarial Valuation as of June 30, 1983

A. BASIC DATA

1. Active members	
a. Number	774
b. Covered payroll under assumed retirement age	21,562,464
c. Total payroll for all members	23,066,558
2. Retired members/beneficiaries	
a. Number	359
b. Average annual benefit payable	7,736
3. Deferred annuitants	
a. Number	22
b. Average annual vested benefit	8,858
4. Former members without vested rights	
a. Number	10
b. Average employee contributions	568

B. BASIC FINANCIAL RESULTS

1. Normal cost	3,805,348
2. Accrued liability	132,174,955
3. Valuation assets	78,774,772
4. Portion of accrued liability funded	59.60%
5. Unfunded accrued liability (2 - 3)	53,400,183

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

1. Normal cost	3,805,348
	(17.65)
2. Assumed operating expenses	38,812
	(0.18)
3. Amortization of the unfunded accrued liability by June 30, 2009	3,625,222
	(16.81)
4. Total Chapter 356 requirement (1 + 2 + 3)	7,469,382
	(34.64)

D. DETERMINATION OF CONTRIBUTION SUFFICIENCY**

1. Actual prescribed contributions (Chapter 352B)	
a. Employee contributions	1,832,809
	(8.50)
b. Employer "matching" contribution	2,587,496
	(12.00)
c. Employer "additional" contribution	1,940,622
	(9.00)
d. Total of (a) through (c)	6,360,927
	(29.50)

(con't.)

2. Chapter 356 requirements (Per Item C4)	7,469,382
3. Sufficiency (1(d) / 2)	85.2%

E. DEPTH OF FUNDING - PLAN CONTINUATION BASIS

1. Present value of accrued benefits	
a. Active members	81,916,408
b. Deferred annuitants	2,126,914
c. Former members without vested rights	5,680
d. Survivors - children	122,712
e. Disabled members	547,131
f. Participation in MPRI Fund	31,322,399
g. 6% Increase for Pre-73 Retirees	4,119,531
h. Total present value of accrued benefits	120,160,775
2. Valuation assets	78,774,772
3. Portion of accrued benefits funded (2 / 1(h))	65.56%

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

** Estimated July 1, 1983 - June 30, 1984 contributions on an accrual basis. Parentheses indicate statutory annual contribution levels as a percentage of salary for Troopers under assumed retirement age, as set forth in Chapter 352B of the Minnesota Statutes.

Table 2(a)

MINNESOTA STATE RETIREMENT SYSTEM
STATE PATROL RETIREMENT FUND

Accounting Balance Sheet as of June 30, 1983

A. ASSETS

1. Cash		\$ 12,333
2. Short term investments (at cost)		5,790,000
3. Accounts receivable:		
a. Accrued employee contributions	99,250	
b. Accrued employer contributions	176,679	
c. Security sales	<u>90,050</u>	365,979
4. Due from other funds		95,746
5. Accrued interest on investments		338,261
6. Dividends declared and payable, but not yet received		74,586
7. Investment in debt securities at amortized cost		14,011,969
8. Investment in equities at cost*		17,895,079
9. Deferred yield adjustment account		824,745
10. Participation in MPRI Fund**		31,322,399
11. Pooled investments (at cost)*		<u>8,273,554</u>
12. TOTAL ASSETS		<u><u>79,004,651</u></u>

B. LIABILITIES AND RESERVES

Liabilities

1. Accounts payable - security purchases	188,411
2. Due state employees retirement fund	<u>41,468</u>
3. Total liabilities	<u><u>229,879</u></u>

Reserves

1. MPRI Fund Reserve**	31,322,399
2. Disability benefit reserve	547,131
3. Survivor benefit reserve - children	122,712
4. Employee contribution reserve	12,172,335
5. State contribution reserve	<u>34,610,195</u>
6. TOTAL REQUIRED RESERVES (VALUATION ASSETS)***	<u><u>78,774,772</u></u>
7. TOTAL LIABILITIES AND RESERVES	<u><u>\$79,004,651</u></u>

* Market values as of June 30, 1983 are \$21,876,051 for equities, and \$9,057,926 for pooled investments.

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

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

MINNESOTA STATE RETIREMENT SYSTEM
STATE PATROL RETIREMENT FUND

Actuarial Balance Sheet as of June 30, 1983

A. ASSETS

1. Assets on hand from accounting balance sheet:		
a. Reserves for MPRI Fund benefits	31,322,399	
b. All other assets	<u>47,682,252</u>	79,004,651
2. Present value of employees' future contributions		23,392,391
3. Present value of state future contributions applicable to:		
a. Entry age normal costs	23,583,434	
b. Unfunded accrued liability (Balance of "matching" contribution less .18% for operating expense)	8,945,750	
c. Unfunded accrued liability (Portion to be funded by "additional" contribution)	<u>44,454,433</u>	<u>76,983,617</u>
4. TOTAL ASSETS		<u><u>179,380,659</u></u>

B. LIABILITIES

1. Current liabilities from accounting balance sheet		229,879
2. Present value of earned and earnable benefits payable to presently active members:		
a. Retirement benefits	124,184,848	
b. Disability benefits	8,793,363	
c. Refundments due to death or withdrawal	294,260	
d. Surviving spouse and child benefits	3,978,077	
e. Vested termination benefits	<u>3,655,865</u>	
Total for actives		140,906,413
3. Present value of benefits for deferred annuitants		2,126,914
4. Present value of refundment to former members without vested rights		5,680
5. Present value of survivor benefits - children		122,712
6. Present value of disability benefits		547,131
7. Participation in MPRI Fund		31,322,399
8. 6% increase in retirement benefits for pre-73 retirees		<u>4,119,531</u>
9. TOTAL LIABILITIES		<u><u>179,380,659</u></u>

MINNESOTA STATE RETIREMENT SYSTEM
STATE PATROL RETIREMENT FUND

Chapter 356 Balance Sheet as of June 30, 1983

ASSETS AND UNFUNDED ACCRUED LIABILITY

A. ASSETS(1)

1. Cash		12,333
2. Short term investments (at cost)		5,790,000
3. Accounts receivable:		
a. Accrued employee contributions	99,250	
b. Accrued employer contributions	176,679	
c. Security sales	<u>90,050</u>	365,979
4. Due from other funds		95,746
5. Accrued interest on investments		338,261
6. Dividends declared and payable, but not yet received		74,586
7. Investment in debt securities at amortized cost		14,011,969
8. Investment in equities at cost		17,895,079
9. Deferred yield adjustment account		824,745
10. Participation in MPRI Fund(2)		31,322,399
11. Pooled investments (at cost)		<u>8,273,554</u>
12. TOTAL ASSETS		<u><u>79,004,651</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		8,945,750
2. Unfunded accrued liability to be funded by State's "additional" contribution		<u>44,454,433</u>
3. Total unfunded accrued liability		<u><u>53,400,183</u></u>
4. TOTAL ASSETS AND UNFUNDED ACCRUED LIABILITY		<u><u>132,404,834</u></u>

CURRENT LIABILITIES AND RESERVES REQUIRED

C. LIABILITIES

1. Accounts payable - security purchases	188,411
2. Due state employees retirement fund	<u>41,468</u>
3. Total liabilities	<u><u>229,879</u></u>

D. RESERVES REQUIRED

1. Total reserves required per attached Table 3(b)	<u>132,174,955</u>
2. TOTAL CURRENT LIABILITIES AND RESERVES REQUIRED	<u><u>132,404,834</u></u>

(1) Accumulated contributions, with interest, of Troopers not yet retired amounted to \$12,172,335 as of June 30, 1983 (includes accrued but unpaid contributions).

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

MINNESOTA STATE RETIREMENT SYSTEM
STATE PATROL RETIREMENT FUND

Determination of Accrued Liability and
Unfunded Accrued Liability as of June 30, 1983

Touche Ross & Co

	<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	124,184,848	36,630,064	87,554,784
b. Disability benefits	8,793,363	4,523,831	4,269,532
c. Refundments due to death or withdrawal	294,260	701,772	(407,512)
d. Survivor and childrens' benefits	3,978,077	2,436,372	1,541,705
e. Vested termination benefits	3,655,865	2,683,786	972,079
f. Total active	<u>140,906,413</u>	<u>46,975,825</u>	<u>93,930,588</u>
2. Deferred annuitants	2,126,914	-	2,126,914
3. Former members without vested rights*	5,680	-	5,680
4. Survivors - children	122,712	-	122,712
5. Disabled members	547,131	-	547,131
6. Participation in MPRI Fund	31,322,399	-	31,322,399
7. 6% increase in retirement benefit fund for pre-73 retirees	<u>4,119,531</u>	<u>-</u>	<u>4,119,531</u>
8. Total	<u>179,150,780</u>	<u>46,975,825</u>	<u>132,174,955</u>
B. DETERMINATION OF UNFUNDED ACCRUED LIABILITY			
1. Accrued Liability	-	-	132,174,955
2. Valuation assets	-	-	78,774,772
3. Unfunded accrued liability (1 - 2)	-	-	53,400,183

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 \$21,562,464 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	17.65	\$3,805,348
2. Assumed operating expense	.18	38,812
3. Amortization of the Unfunded Accrued Liability by June 30, 2009	16.81	3,625,222
4. Total Chapter 356 requirement (1 + 2 + 3)	34.64	7,469,382

Actual Contributions:

1. Employee contributions	8.50	1,832,809
2. Employer "matching" contribution	12.00	2,587,496
3. Employer "additional" contribution	9.00	1,940,622
4. Total Chapter 352B prescribed contribution	29.50	6,360,927

Contribution Sufficiency: 85.2%

* Assumed contributed in each payroll period during the year ending June 30, 1984.

The Chapter 356 requirement increased from 31.85% of payroll at June 30, 1982 to 34.64% at June 30, 1983. 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, 1983

Table 4 sets forth the determination of MPRI Fund net assets and reserve requirements as of June 30, 1983.

As required by Chapter 11A, Table 4 allocates the mortality gain and reserve determinations for January 1, 1984 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
STATE PATROL RETIREMENT FUND

Determination of MPRI Fund Participation and Reserves
as of June 30, 1983

	Members Eligible for 1/1/84 Increase	Members Not Eligible for Increase	Total
1. Unadjusted MPRI Fund Participation as of June 30, 1983	--	--	30,636,074
2. Transfer (from) to MPRI Fund for Mortality (Gain) Loss	(25,002)	(70,596)	(95,598)
3. Participation as of June 30, 1983 (1) + (2)	--	--	30,540,476
4. Required Reserves as of June 30, 1983	26,094,041	5,228,358	31,322,399
5. Required Reserves as of January 1, 1984	25,769,093	5,172,920	30,942,013

This exhibit does not reflect benefit increases to become effective on January 1, 1984.

Table 5

MINNESOTA STATE RETIREMENT SYSTEM
STATE PATROL RETIREMENT 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			1,960,988
2. Contributions from employers			3,908,972
3. From investments			
a. Investment income	3,222,500		
b. General fund appropriation	65,484		
c. Gain on sale of stock	<u>1,519,351</u>		4,807,335
4. From MPRI Fund participation			2,842,961
5. Other			<u>4,988</u>
6. TOTAL INCOME			<u><u>13,525,244</u></u>
B. DEDUCTIONS FROM INCOME AND OTHER FINANCING USES			
1. Benefits			
a. Service retirement annuities	2,654,275		
b. Disability retirement benefits & children	37,068		
c. Survivor benefits (spouses & children)	<u>135,058</u>		2,826,401
2. Refundments (employee contributions)			48,677
3. Administrative expenses			41,468
4. Investment fees			17,333
5. Increase in total reserves required			
a. Reserves required 6/30/82	111,455,693		
b. Reserves required 6/30/83	<u>132,174,955</u>		<u>20,719,262</u>
6. TOTAL DEDUCTIONS FROM INCOME			<u><u>23,653,141</u></u>
7. EXCESS OF DEDUCTIONS FROM INCOME OVER INCOME			<u><u>10,127,897</u></u>
C. INCREASE IN UNFUNDED ACCRUED LIABILITY			
1. Unfunded accrued liability 6/30/82			43,272,286
2. Unfunded accrued liability 6/30/83			<u>53,400,183</u>
3. INCREASE IN UNFUNDED ACCRUED LIABILITY			<u><u>10,127,897</u></u>

Table 6

MINNESOTA STATE RETIREMENT SYSTEM
STATE PATROL RETIREMENT FUND

Analysis of Change in the Unfunded Accrued Liability
During the Fiscal Year Ending June 30, 1983

1. Unfunded accrued liability as of June 30, 1982		43,272,286
2. Change due to current rate of funding and interest requirements		
a. 1982-83 past service contribution based on expected State contribution levels	(2,824,487)	
b. 5% interest requirement	2,163,614	
c. Unpaid additional 2% employee contributions in lieu of state contribution	<u>209,020</u>	(451,853)
3. Change due to actuarial gains (indicated by parentheses) or losses (no parentheses) because of experience deviations from expected		
a. Salary increases	5,671,105	
b. Investment income	(1,405,838)	
c. MPRI Fund mortality	(95,598)	
d. Withdrawals, death, disability of active members (balancing item)	<u>(964,005)</u>	3,205,664
4. Increase due to 6% increase in benefits for pre-1973 retirees		4,119,531
5. Increase as a result of allowing a return of contributions to the surviving spouse of a deferred annuitant		55,023
6. Increase due to removal of 20 year service requirement for death benefits for certain disabled annuitants		124,355
7. Increase due to change in retirement benefit		3,182,633
8. Decrease in accrued liability for return of employee contributions due to increase in employee contribution rate from 7% to 8.5%		(107,456)
9. Unfunded accrued liability as of June 30, 1983		<u>53,400,183</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, 1983, reflect an annualized covered payroll of \$21,357,924 which represents total member earnings during the year ended June 30, 1983. 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 1983 increase was approximately 8.0% for all employees. Accordingly, we increased the reported salaries by that percentage. This has resulted in covered payroll of \$23,066,558, of which \$21,562,464 is payroll for participants under the assumed retirement age.

PLAN VALUED

) The provisions of the Minnesota State Retirement System, State Patrol Retirement Fund are governed principally by Chapters 352B and 11A of the Minnesota Statutes pertaining to MPRI Fund Benefits. Table 10 sets forth a summary of the principal provisions as of June 30, 1983.

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 the June 30, 1982 valuation. Accordingly, the changes were reflected in this valuation, as follows:

1. State Troopers who retired before 1973 will receive a 6% per year increase beginning July 1, 1982 payable from the State Patrol Retirement Fund. The 6% applies to the benefit being received by the retiree on any June 30, and is in addition to any increase payable from the Post Retirement Investment Fund.
2. The surviving spouse of a State Trooper who terminates with a deferred benefit, but who dies before the benefit commences, will now receive the accumulated contributions paid to the Fund by the deceased Trooper.

3. Survivor benefits are now payable to the spouse and children of a former member of the State Patrol who dies while receiving a non-line of duty disability based on from five to twenty years of service. Formerly, this group was excluded from such benefits, while all other disabilities were included.
4. The formula for a State Trooper's retirement benefit was increased from 2.5% per year for the first twenty years and 2% thereafter, to 2.5% per year for the first 25 years and 2% thereafter. The improved formula applies to retirement benefits and non-line of duty disability benefits, but does not apply to disabilities incurred in the line of duty.
5. The contribution rate for members of the State Patrol Retirement Fund was increased as of July 1, 1982 from 7% of salary to 8.5%. There were no changes in employer contributions.

Table 7

MINNESOTA STATE RETIREMENT SYSTEM
STATE PATROL RETIREMENT FUND

Covered State Troopers Census Data as of June 30, 1983

	<u>Number</u>	<u>Annual Payroll</u>
Active at June 30, 1982	763	\$19,372,755
New Entrants*	<u>53</u>	
Total	816	
Less Separations from Active Service:		
Refund of Contributions*	8	136,577
Separation with a Vested Right to a Deferred Annuity	0	0
Separation with Neither Refund or Right to a Deferred Annuity	2	3,969
Death While Eligible, Surviving Spouse Receiving Annuity	0	0
Service Retirement	31	799,820
Death	<u>1</u>	14,795
Total Separations	42	
Active at June 30, 1983	774	\$21,357,924

Average Entry Age of New Employees

<u>For the Fiscal Year Ending</u>	<u>Male</u>	<u>Female</u>	<u>Average of Total</u>
6/30/79	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
6/30/83	26.4	23.0	26.2

Average age at entry in State service for all active employees at 6/30/83:

Male	26.1
Female	24.3
Total	26.0

* Includes those who entered the plan and terminated during the period from July 1, 1982 to June 30, 1983.

Table 8

MINNESOTA STATE RETIREMENT SYSTEM
STATE PATROL RETIREMENT FUND

State Troopers Annuitant Census Data as of June 30, 1983

	<u>Number</u>	<u>Annual Annuity Benefit Payable</u>
A. <u>Service Retirement Annuitants</u>		
Receiving at June 30, 1982	222	1,860,030.76
New	35	485,401.92
Deaths	(11)	(91,102.92)
Adjustments-Net Result	(2)	75,716.96
Receiving at June 30, 1983	244	2,330,046.72
B. <u>Disabled Employees</u>		
Receiving at June 30, 1982	5	38,677.08
New	0	0.00
Deaths	0	0.00
Adjustments-Net Result	0	343.32
Receiving at June 30, 1983	5	39,020.40
C. <u>Widows Receiving an Annuity or Survivor Benefit</u>		
Beneficiaries Receiving an Optional or Reversionary Annuity:		
Receiving at June 30, 1982	91	311,574.84
New	9	54,801.36
Deaths	(4)	(9,043.20)
Adjustments-Net Result	(1)	25,300.56
Receiving at June 30, 1983	95	382,633.56

Table 8 (con't)

	<u>Number</u>	<u>Annual Annuity Benefit Payable</u>
D. <u>Children Receiving a Survivor Benefit</u>		
Receiving at June 30, 1982	21	31,894.80
New	0	0.00
Reinstated	0	0.00
No longer eligible	(6)	(8,262.96)
Adjustments-Net Result	0	1,777.56
Receiving at June 30, 1983	15	25,409.40
E. <u>Deferred Annuitants</u>		
Deferred as of June 30, 1982	28	241,808.40
New	0	0.00
Began Receiving	(4)	(41,493.84)
Adjustments-Net Result	(2)	(5,428.92)
Deferred as of June 30, 1983	22	194,885.64

Average Age at Retirement of New Service Annuitants

<u>Fiscal Year Ending</u>	<u>Average Retirement Age</u>
6/30/79	59.0
6/30/80	57.6
6/30/81	61.4
6/30/82	58.6
6/30/83	59.8
All Existing Service Annuitants	58.6

Table 9(a)

MINNESOTA STATE RETIREMENT SYSTEM
STATE PATROL RETIREMENT 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	19	1						20
25 - 29	76	8						84
30 - 34	40	51	22					113
35 - 39	14	35	82	25				156
40 - 44	3	7	43	65	6			124
45 - 49	1	1	10	25	37	11		85
50 - 54	0	1	4	8	29	52	2	96
55 - 59	0	1	2	2	18	27	10	60
60 - 64	0	0	3	0	2	3	4	12
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	153	105	166	125	92	93	16	750

Female

0 - 19								0
20 - 24	5							5
25 - 29	2	5						7
30 - 34	3	1						4
35 - 39	1	2	3					6
40 - 44	0	1	0					1
45 - 49	0	0	0	0	0	0	0	0
50 - 54	0	0	1	0	0	0	0	1
55 - 59	0	0	0	0	0	0	0	0
60 - 64	0	0	0	0	0	0	0	0
65 - 69	0	0	0	0	0	0	0	0
70 - 74	0	0	0	0	0	0	0	0
75 - 79	0	0	0	0	0	0	0	0
80 - 84	0	0	0	0	0	0	0	0
85+	0	0	0	0	0	0	0	0
Total	11	9	4	0	0	0	0	24

MINNESOTA STATE RETIREMENT SYSTEM
STATE PATROL RETIREMENT FUND

Distribution of Annual Earnings by Age Groups

Age Group	Male			Female			All		
	No.	Total	Average	No.	Total	Average	No.	Total	Average
0 - 19	0	0	0	0	0	0	0	0	0
20 - 24	20	507,326	25,366	5	109,846	21,969	25	617,172	24,687
25 - 29	84	2,112,277	25,146	7	186,661	26,666	91	2,298,938	25,263
30 - 34	113	3,075,121	27,213	4	100,793	25,198	117	3,175,914	27,145
35 - 39	156	4,671,143	29,943	6	167,000	27,833	162	4,838,143	29,865
40 - 44	124	3,922,106	31,630	1	35,808	35,808	125	3,957,914	31,663
45 - 49	85	2,759,138	32,460	0	0	0	85	2,759,138	32,460
50 - 54	96	3,084,546	32,131	1	31,068	31,068	97	3,115,614	32,120
55 - 59	60	1,929,547	32,159	0	0	0	60	1,929,547	32,159
60 - 64	12	374,178	31,182	0	0	0	12	374,178	31,182
65 - 69	0	0	0	0	0	0	0	0	0
70 - 74	0	0	0	0	0	0	0	0	0
75 - 79	0	0	0	0	0	0	0	0	0
80 - 84	0	0	0	0	0	0	0	0	0
85+	0	0	0	0	0	0	0	0	0
Total	750	22,435,382	29,914	24	631,176	26,299	774	23,066,558	29,802

Distribution of Annual Earnings by Service Groups

Service Group	Male			Female			All		
	No.	Total	Average	No.	Total	Average	No.	Total	Average
0	45	911,325	20,252	4	89,291	22,323	49	1,000,616	20,421
1	4	90,642	22,661	0	0	0	4	90,642	22,661
2	24	607,026	25,293	1	27,024	27,024	25	634,050	25,362
3	51	1,335,968	26,195	4	90,267	22,567	55	1,426,235	25,932
4	29	797,161	27,488	2	49,187	24,594	31	846,348	27,302
0-4	153	3,742,122	24,458	11	255,769	23,252	164	3,997,891	24,377
5-9	105	2,995,527	28,529	9	262,366	29,152	114	3,257,893	28,573
10-14	166	5,211,688	31,396	4	113,041	28,260	170	5,324,729	31,322
15-19	125	3,994,242	31,954	0	0	0	125	3,994,242	31,954
20-24	92	2,828,105	30,740	0	0	0	92	2,828,105	30,740
25-29	93	3,111,864	33,461	0	0	0	93	3,111,864	33,461
30+	16	551,834	34,490	0	0	0	16	551,834	34,490
Total	750	22,435,382	29,914	24	631,176	26,299	774	23,066,558	29,802

MINNESOTA STATE RETIREMENT SYSTEM
STATE PATROL RETIREMENT FUND

Retiree Age Distribution

Annuitants in MPRIF

Age Group	Years Retired							
	<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>Total</u>
Male Service Groups								
0 - 19								0
20 - 24								0
25 - 29								0
30 - 34								0
35 - 39								0
40 - 44								0
45 - 49								0
50 - 54								0
55 - 59	46	3	1					50
60 - 64	42	24	0					66
65 - 69	15	27	12					54
70 - 74	0	6	15	12				33
75 - 79	0	2	3	13	10			28
80 - 84	0	1	2	0	3			6
85+	0	0	0	3	2	0	0	5
Total	103	63	33	28	15	0	0	242

Female Service Groups

0 - 19								0
20 - 24								0
25 - 29								0
30 - 34	0	1						1
35 - 39	0	0						0
40 - 44	0	0						0
45 - 49	0	0						0
50 - 54	4	4	0	2				10
55 - 59	2	4	1	0				7
60 - 64	2	3	1	2	1			9
65 - 69	0	3	4	2	4			13
70 - 74	0	3	2	6	4	2		17
75 - 79	0	1	1	0	7	3		12
80 - 84	0	0	0	4	5	3	1	13
85+	0	0	0	1	9	4	1	15
Total	8	19	9	17	30	12	2	97

Table 9(d)

MINNESOTA STATE RETIREMENT SYSTEM
STATE PATROL RETIREMENT FUND

Retiree Benefit Distribution

Annuitants in MPRIF

Age Group	Male			Female			All		
	No.	Total	Average	No.	Total	Average	No.	Total	Average
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	2,412	2,412	1	2,412	2,412
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	0	0	0	0	0	0
50 - 54	0	0	0	10	64,754	6,475	10	64,754	6,475
55 - 59	50	625,004	12,500	7	60,539	8,648	57	685,543	12,027
60 - 64	66	770,163	11,669	9	48,133	5,348	75	818,296	10,911
65 - 69	54	487,087	9,020	13	47,554	3,658	67	534,641	7,980
70 - 74	33	222,921	6,755	17	68,727	4,043	50	291,648	5,833
75 - 79	28	145,824	5,208	12	31,847	2,654	40	177,671	4,442
80 - 84	6	41,889	6,982	13	35,281	2,714	19	77,170	4,062
85+	5	23,454	4,691	15	37,092	2,473	20	60,546	3,027
Total	242	2,316,342	9,572	97	396,339	4,086	339	2,712,681	8,002

Distribution of Annual Benefits by Years of Retirement

0	28	398,397	14,228	1	8,463	8,463	29	406,860	14,030
1	27	353,382	13,088	2	25,743	12,872	29	379,125	13,073
2	22	232,188	10,554	3	24,627	8,209	25	256,815	10,273
3	12	137,341	11,445	1	13,641	13,641	13	150,982	11,614
4	14	151,241	10,803	1	6,493	6,493	15	157,734	10,516
0 - 4	103	1,272,549	12,355	8	78,967	9,871	111	1,351,516	12,176
5 - 9	63	629,482	9,992	19	115,522	6,080	82	745,004	9,085
10 - 14	33	212,893	6,451	9	43,303	4,811	42	256,196	6,100
15 - 19	28	135,259	4,831	17	47,190	2,776	45	182,449	4,054
20 - 24	15	66,159	4,411	30	76,546	2,552	45	142,705	3,171
25 - 29	0	0	0	12	29,810	2,484	12	29,810	2,484
30+	0	0	0	2	5,001	2,501	2	5,001	2,501
Total	242	2,316,342	9,572	97	396,339	4,086	339	2,712,681	8,002

Table 10

MINNESOTA STATE RETIREMENT SYSTEM
STATE PATROL RETIREMENT FUND

Summary of Principal Plan Provisions as of June 30, 1983

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

b. Benefit Amount:

. In line of duty:

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

. Not in line of duty:

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

c. Death benefits:

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

8. Deferred Service Retirement:

a. Eligibility:

Completion of 10 years of service.

b. Benefit Amount:

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

9. Return of Contributions:

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

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.

Actuarial Assumptions

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

Table 11(a)

MINNESOTA STATE RETIREMENT SYSTEM
STATE PATROL RETIREMENT FUND

Summary of Actuarial Assumptions and Methods

1. Mortality: 1971 Group Annuity Mortality Table with ages set back 8 years for females.
2. Withdrawal: 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 State Troopers 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
STATE PATROL RETIREMENT FUND

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

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

MEMORANDUM TO: Legislative Commission on Pensions and Retirement

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

RE: June 30, 1983 Actuarial Valuation of Minnesota State Retirement System - Highway Patrolmen's Fund

DATE: January 16, 1984

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

The actuarial valuation is conducted according to a stated actuarial cost method, Entry Age Normal Cost, and stated actuarial assumptions. The interest assumption of 5% and the salary scale assumption of 3½% are prescribed in Chapter 356, Subdivision 4(4).

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

<u>SUMMARY OF KEY ACTUARIAL RESULTS</u>	<u>6-30-83</u>	<u>6-30-82</u>
Total Membership	1,155	1,130
Active Membership	774	763
Payroll	\$ 23,066,558	\$ 20,922,575
Accrued Liability	132,174,955	111,455,693
Assets	78,774,772	68,183,407
Unfunded Accrued Liability	53,400,183	43,272,286
Funding Ratio - Total	59.6%	61.2%
Prospective	44.4	49.7
Actuarial Losses	\$ 3,205,664	\$ 1,519,858
Contribution Requirement:		
Amortization by June 30, 2009	34.64%	31.85%
Total Support Rate	29.50%	28.00%

COMMENT SUMMARY

1. There were no changes in the actuarial assumptions or actuarial methods from the previous actuarial valuation.
2. Several changes to the plan, effective July 1, 1982, were included in the actuarial costs this year. These are:
 - a. Members who retired prior to 1973 received a 6% benefit increase.
 - b. Return of contributions to a surviving spouse of a deferred annuitant are allowed.
 - c. The 20 year service requirement of death benefits for non-duty disability was removed.
 - d. The benefit formula was changed so that the 2.5% multiplier applied for the first 25 years. Formerly, it applied for the first 20 years.
 - e. Member contributions were increased from 7.0% to 8.5%.

These changes increased the accrued liability by \$7,374,086.

3. Both total membership and active membership were fairly stable over the last two years.

Total payroll increased by 10.2% from June 30, 1982. Average salary for active members increased from \$27,421 a year ago to \$29,802 this year. This was an 8.7% increase.

4. The unfunded accrued liability increased by \$10,127,897 from a year ago. The elements contributing to this increase were:

Actuarial Losses	\$ 3,205,664
Plan Improvements	7,374,086
Contribution Sufficiency	(451,853)
	<hr/>
	\$10,127,897

A contribution sufficiency is defined as the amount by which the contributions to the fund are in excess of the amount required to keep the unfunded accrued liability from increasing.

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

A decrease in funding ratios means that accrued liabilities increased faster than assets.

COMMENT SUMMARY

6. Actuarial losses of \$3,205,664 for the year ended June 30, 1983 were mainly due to salary losses in excess of all other actuarial gains.

It is expected that actuarial losses will continue because the other actuarial assumptions can never be implicit enough. There is no excess interest on reserves for retired members to offset salary losses.

7. The contribution requirement to provide for complete amortization of the unfunded accrued liability by June 30, 2009 is 34.64% of payroll. The current support rate is 29.50% of payroll which includes 8.5% member contributions.

The difference between the Chapter 356 contribution and the support rate has continually widened in the last three years - from 2% difference two years ago to 5% this year.

The contribution required to keep the unfunded accrued liability from increasing is 30.21% of payroll which is slightly more than the support rate of 29.5%.

CONCLUSIONS

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

The current support rate does not provide for funding in accordance with Chapter 356 standards.

James R. Bordewick

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

MINNESOTA STATE RETIREMENT SYSTEM

JUDGES' RETIREMENT FUND

ACTUARIAL VALUATION AS OF

JUNE 30, 1983

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, 1983.

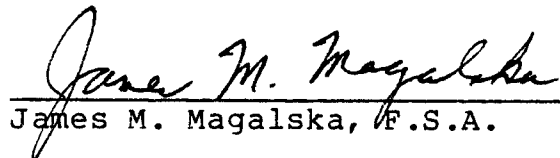
The valuation was performed on the basis of accepted actuarial methods and procedures, in accordance with the applicable provisions set forth in Minnesota Statutes (Chapter 356) and stipulated in the Contract between the State of Minnesota and Touche Ross & Co.

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.



James M. Magalska, F.S.A.

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REPORT HIGHLIGHTS

June 30, 1983 Valuation

	<u>Judges' Plan</u>	<u>Supreme Court Justices*</u>	<u>Total</u>
A. Financial and Actuarial Status			
1. Valuation Assets	\$11,049,076	\$ --	\$11,049,076
2. Accrued Liability	39,905,758	650,552	40,556,310
3. Unfunded Accrued Liability (2 - 1)	28,856,682	650,552	29,507,234
4. Accrued Liability Funding Ratio (1 / 2)	27.69%	0.00%	27.24%
5. Normal Cost*	1,756,148	50,431	1,806,579
B. Contributions			
1. Chapter 356 Requirement**	3,735,666 (31.73)	93,843 (48.12)	3,829,509 (31.99)
2. Actual Prescribed Contribution***	535,641 (4.54)	7,800 (4.00)	543,441 (4.54)
C. Depth of Funding - Plan Continuation Basis			
1. Present Value of Accrued Benefits	44,013,776	771,096	44,784,872
2. Depth of Funding (A1 / C1)	25.10	-	24.67

* 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 (\$11,775,000 for Judges, \$195,000 for Justices.)

*** Includes \$4,400 for Judges and \$7,800 for Supreme Court Justices in nonrefundable contributions to provide certain survivor benefits.

REPORT HIGHLIGHTS

Comparison with Previous Valuation

	<u>6/30/83</u>	<u>6/30/82</u>
A. Financial and Actuarial Status		
1. Valuation Assets	\$11,049,076	\$ 8,740,420
2. Accrued Liability	40,556,310	35,217,146
3. Unfunded Accrued Liability	29,507,234	26,476,726
4. Accrued Liability Funding Ratio (A1/A2)	27.24%	24.82%
5. Normal Cost	1,806,579 (15.09) *	1,537,440 (15.17) *
B. Contributions		
1. Chapter 356 Requirement	3,829,509 (31.99)	3,318,216 (32.74)
2. Actual Prescribed Contribution	543,441 (4.54)	459,834 (4.54)
C. Depth of Funding - Plan Continuation Basis		
1. Present Value of Accrued Benefits	44,784,872	39,685,258
2. Depth of Funding (A1/C1)	24.67%	22.02%

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

REPORT HIGHLIGHTS (continued)

	<u>06/30/83</u>	<u>06/30/82</u>
D. Plan Participants		
1. Active Members		
a. Number	229	220
b. Covered payroll - all	12,685,000	10,616,226
- under assumed retirement age	11,970,000	10,136,226
2. Retired Members/Beneficiaries		
a. Number	135	128
b. Average annual benefit payable	13,906	12,703
3. Deferred Annuitants		
a. Number	5	5
b. Average annual vested benefit	10,105	10,105
4. Former Members Without Vested Rights		
a. Number	0	1
b. Average employee contributions	0	390

MINNESOTA STATE RETIREMENT SYSTEM
JUDGES' RETIREMENT FUND

ACTUARIAL VALUATION AS OF JUNE 30, 1983

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, 1983 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, 1983 and as of January 1, 1984), 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, 1983, 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, 1983. 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, 1983.

MINNESOTA STATE RETIREMENT SYSTEM
JUDGES' RETIREMENT FUND

Accounting Balance Sheet as of June 30, 1983

A. ASSETS

1. Cash	\$ 290
2. Short term investments (at cost)	550,000
3. Accounts receivable	
a) Accrued Judges' contributions	7,203
b) Security Sales	5,849
4. Accrued interest on investments	20,180
5. Dividends declared and payable, but not yet received	6,740
6. Investment in debt securities at amortized cost	899,123
7. Due from MPRI Fund	1,087,900
8. Equities at cost*	1,215,986
9. Deferred yield adjustment account	263,956
10. Participation in MPRI Fund**	6,468,276
11. Pooled investments at cost*	<u>560,815</u>
12. TOTAL ASSETS	<u>\$11,086,318</u>

B. LIABILITIES AND RESERVES

Liabilities

1. Due SER Fund	\$ 26,308
2. Accounts Payable - Security purchases	<u>10,934</u>
3. Total liabilities	37,242

Reserves

1. MPRI Fund Reserve	6,468,276
2. Member contribution reserve	2,857,495
3. Retirement Reserve - "Old Law" Judges	1,388,227
4. Retirement Reserve - Additional Judges and Survivors	9,116,839
5. State contribution reserve	(8,781,761)
6. Unrealized loss on equities	<u>0</u>
7. Total reserves (valuation assets)***	11,049,076
8. TOTAL LIABILITIES AND RESERVES	<u>\$11,086,318</u>

* Market value as of June 30, 1983 are \$1,462,759 for equities, and \$613,983 for pooled investments.

** 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, 1983

A. ASSETS

1. Assets on hand from accounting balance sheet:		
a. Participation in MPRI Fund	6,468,276	
b. All other assets	<u>4,618,042</u>	11,086,318
2. Present value of employees' future contributions		5,498,391
3. Present value of state future contributions applicable to:		
a. Entry age normal costs	16,092,142	
b. Unfunded accrued liability	<u>29,507,234</u>	<u>45,599,376</u>
4. TOTAL ASSETS		<u>\$62,184,085</u>

B. LIABILITIES

1. Current liabilities from accounting balance sheet		37,242
2. Present value of earned and earnable benefits payable to presently active members:		
a. Retirement benefits	36,109,905	
b. Disability benefits	2,854,809	
c. Refundments due to death or withdrawal	0	
d. Surviving spouse benefits	<u>5,850,859</u>	44,815,573
3. Present value of benefits for deferred annuitants		357,928
4. Present value of refundment to former members without vested rights		0
5. Present value of presently retired persons		
a. Participation in MPRI Fund	6,468,276	
b. From Judges' Fund	<u>10,505,066</u>	<u>16,973,342</u>
6. TOTAL LIABILITIES		<u>\$62,184,085</u>

Table 3(a)

MINNESOTA STATE RETIREMENT SYSTEM
JUDGES' RETIREMENT FUND

Chapter 356 Balance Sheet as of June 30, 1983

ASSETS AND UNFUNDED ACCRUED LIABILITY

A. ASSETS(1)

1. Cash	\$ 290
2. Short term investments (at cost)	550,000
3. Accounts receivable - accrued judges' contributions	7,203
- security sales	5,849
4. Accrued interest on investments	20,180
5. Dividends declared and payable, but not yet received	6,740
6. Investment in debt securities at amortized cost	899,123
7. Due from MPRI Fund	1,087,900
8. Equities at cost	1,215,986
9. Deferred yield adjustment account	263,956
10. Participation in MPRI Fund(2)	6,468,276
11. Pooled investments at cost	560,815
12. TOTAL ASSETS	<u>\$11,086,318</u>

B. UNFUNDED ACCRUED LIABILITY

1. Total unfunded accrued liability	29,507,234
2. TOTAL ASSETS AND UNFUNDED ACCRUED LIABILITY	<u>40,593,552</u>

CURRENT LIABILITIES AND RESERVES REQUIRED

C. LIABILITIES

1. Due SER Fund	26,308
2. Accounts Payable - Security purchases	10,934
3. TOTAL LIABILITIES	<u>37,242</u>

D. RESERVES REQUIRED

1. Total reserves required per attached Table 3(b)	40,556,310
2. TOTAL CURRENT LIABILITIES AND RESERVES REQUIRED	<u>40,593,552</u>

- (1) Accumulated contributions, without interest, of members not yet retired amounted to \$2,857,495 as of June 30, 1983 (includes accrued but unpaid contributions).
- (2) Participation equals Required Reserves for retired lives participating in the MPRI fund as of June 30, 1983, excluding the January 1, 1984 benefit increases.

Table 3(b)

MINNESOTA STATE RETIREMENT SYSTEM
JUDGES' RETIREMENT FUND

Determination of Accrued Liability and
Unfunded Accrued Liability as of June 30, 1983

	<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	36,109,905	15,888,541	20,221,364
b. Disability benefits	2,854,809	1,777,641	1,077,168
c. Refundments due to death or withdrawal	-	-	-
d. Surviving spouse benefit	5,850,859	3,924,351	1,926,508
e. Subtotal	44,815,573	21,590,533	23,225,040
2. Deferred annuitants	357,928	-	357,928
3. Former members without vested rights	0	-	0
4. Retirement and survivors benefits from Judges' Fund	10,505,066	-	10,505,066
5. Participation in MPRI Fund	6,468,276	-	6,468,276
6. Total	62,146,843	21,590,533	40,556,310
B. DETERMINATION OF UNFUNDED ACCRUED LIABILITY			
1. Accrued Liability	-	-	40,556,310
2. Valuation assets	-	-	11,049,076
3. Unfunded accrued liability (1 - 2)	-	-	29,507,234

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	15.09%	\$1,806,579
2. Assumed operating expense	.16	19,152
3. Amortization of the Unfunded Accrued Liability by June 30, 2009	16.74	2,003,778
4. Total Chapter 356 requirement (1 + 2 + 3)	31.99	3,829,509

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	\$27,453,602
2. Deferred annuitants	357,928
3. Former members without vested rights	0
4. Retirement and survivors' benefits not payable from MPRI Fund	10,505,066
5. Participation in MPRI Fund	<u>6,468,276</u>
6. Total present value of accrued benefits	\$44,784,872
7. Valuation assets	\$11,049,076
8. Depth of Funding (7 / 6)	24.67%

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, 1983

Table 4 sets forth the determination of MPRI Fund net assets and reserve requirements as of June 30, 1983.

As required by Chapter 11A, Table 4 allocates the mortality gain and reserve determinations for January 1, 1984 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, 1983

	Members Eligible for 1/1/84 Increase	Members Not Eligible for Increase	Total
1. Unadjusted MPRI Fund Participation as of June 30, 1983	--	--	\$6,746,294
2. Transfer (from) to MPRI Fund for Mortality (Gain) Loss	\$ (338,232)	\$ 13,969	(324,263)
3. Participation as of June 30, 1983 (1) + (2)	--	--	6,422,031
4. Required Reserves as of June 30, 1983	5,174,007	1,294,269	6,468,276
5. Required Reserves as of January 1, 1984	5,086,870	1,273,280	6,360,150

This table does not reflect benefit increases to become effective on January 1, 1984.

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		527,418
2.	From Employer contributions		2,536,737
3.	From investments		
	a. Investment income	245,886	
	b. Gain on sale of stock	<u>106,622</u>	352,508
4.	Participation in MPRI Fund income		623,139
5.	Other Revenues - County reimbursements		<u>87,544</u>
6.	TOTAL INCOME		<u>4,127,346</u>
B. DEDUCTIONS FROM INCOME			
1.	Benefits		
	a. Judges' Plan service retirement annuities	1,355,621	
	b. Judges' Plan disability annuities	16,847	
	c. Judges' Plan survivor benefits (spouses) and other judges	<u>396,348</u>	1,768,816
2.	Refundments (employee contributions)		
	a. Refunds	20,505	
	b. Interest on refunds	<u>2,186</u>	22,691
3.	Administrative expenses		26,008
4.	Investment fees		1,175
5.	Increase in total reserves required		
	a. Reserves required 6/30/82	35,217,146	
	b. Reserves required 6/30/83	<u>40,556,310</u>	<u>5,339,164</u>
6.	TOTAL DEDUCTIONS FROM INCOME		<u>7,157,854</u>
7.	EXCESS OF DEDUCTIONS FROM INCOME OVER INCOME		<u>3,030,508</u>
C. INCREASE IN UNFUNDED ACCRUED LIABILITY			
1.	Unfunded accrued liability 6/30/82		26,476,726
2.	Unfunded accrued liability 6/30/83		<u>29,507,234</u>
3.	INCREASE IN UNFUNDED ACCRUED LIABILITY		<u>3,030,508</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, 1983

1. Unfunded accrued liability as of June 30, 1982		26,476,726
2. Change due to current rate of funding and interest requirements		
a. 5% interest requirement	1,323,836	
b. 1982-83 past service contribution	<u>1,537,489</u>	
c. Net addition: (a) - (b)		(213,653)
3. Change due to actuarial gains (indicated by parentheses) or losses (no parentheses) because of experience deviations from expected		
a. Salary	2,995,786	
b. Investment income	(60,991)	
c. MPRI Fund mortality	(324,263)	
d. Mortality on other retirees	239,915	
e. Social Security	(127,299)	
f. Delayed retirement	104,816	
g. Withdrawals, death, disability of active members (balancing item)	<u>416,197</u>	3,244,161
4. Unfunded accrued liability as of June 30, 1983		<u>29,507,234</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, 1983. No significant changes to Chapter 490 were reported since the last actuarial valuation as of June 30, 1982.

)

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Table 7

MINNESOTA STATE RETIREMENT SYSTEM
JUDGES' RETIREMENT FUND

Covered Judges' Retirement Fund Employee Census Data
as of June 30, 1983

	<u>Number</u>	<u>Annual Payroll</u>
Active at June 30, 1982	216*	\$10,392,230
New Entrants	<u>22</u>	
Total	238	
Less Separations from Active Service:		
Refund of Contributions	3	144,000
Service Retirement	7	336,000
Pre-retirement Surviving Spouse Benefit, Spouse Receiving Annuity	<u>2</u>	96,000
Total Separations	12	
Active at June 30, 1983	226*	12,490,000

Average Entry Age of New Employees

<u>For the Fiscal Year Ending</u>	<u>Average Age at Entry</u>
6/30/79	38.7
6/30/80	46.3
6/30/81	43.8
6/30/82	41.3
6/30/83	41.0

Average age at entry in State service for all active employees at
6/30/83:

41.2

*Not including three Supreme Court Justices.

Table 8

MINNESOTA STATE RETIREMENT SYSTEM
JUDGES' RETIREMENT FUND

Judges' Retirement Fund Annuitant Census Data
as of June 30, 1983

	<u>Number</u>	<u>Annual Annuity Benefit Payable</u>
A. <u>Service Retirement Annuitants</u>		
Receiving at June 30, 1982	77	1,234,685.16
New	8	189,581.52
Deaths	3	70,954.08
Adjustments-Net Result	0	73,216.56
Receiving at June 30, 1983	82	1,426,529.16
B. <u>Disabled Employees</u>		
Receiving at June 30, 1982	3	31,892.52
Deaths	1	8,027.52
Adjustments-Net Result	0	1,635.48
Receiving at June 30, 1983	2	25,500.48
C. <u>Widows Receiving an Annuity or Survivor Benefit</u>		
Receiving at June 30, 1982	48	359,411.64
New	4	46,629.96
Deaths	1	7,623.24
Adjustments-Net Result	0	26,926.92
Receiving at June 30, 1983	51	425,345.28
D. <u>Children Receiving a Survivor Benefit</u>		
Receiving at June 30, 1983	None	

Table 8 (con't)

	<u>Number</u>	<u>Annual Annuity Benefit Payable</u>
E. <u>Deferred Annuitants</u>		
Deferred as of June 30, 1982	5	50,523.12
New	0	0.00
Began Receiving	0	0.00
Deferred as of June 30, 1983	5	50,523.12

Average Age at Retirement of New Service Annuitants*

<u>Fiscal Year Ending</u>	<u>Average Retirement Age</u>
6/30/79	67.5
6/30/80	67.8
6/30/81	67.1
6/30/82	65.2
6/30/83	67.7
All Existing Service Annuitants	68.2

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

Table 9(a)

MINNESOTA STATE RETIREMENT SYSTEM
JUDGES' RETIREMENT FUND
Active Judges

Employee Age and Service Distribution

Age Group	Service Group							Total
	0-4	5-9	10-14	15-19	20-24	25-30	30+	
<u>Male</u>								
0 - 19	0							0
20 - 24	0							0
25 - 29	0							0
30 - 34	1							1
35 - 39	14	2						16
40 - 44	14	10	2					26
45 - 49	6	10	8	6				30
50 - 54	6	12	7	4	1	1		31
55 - 59	2	12	17	9	8	5		53
60 - 64	3	5	6	6	10	3		33
65 - 69	0	3	2	8	6	4	1	24
70 - 74	0	0	1	0	0	0	1	2
75 - 79	0	0	0	0	0	0	0	0
79 - 84	0	0	0	0	0	0	0	0
85+	0	0	0	0	0	0	0	0
TOTAL	46	54	43	33	25	13	2	216

<u>Female</u>								
0 - 19	0							0
20 - 24	0							0
25 - 29	0							0
30 - 34	3							3
35 - 39	1	1						2
40 - 44	1	0						1
45 - 49	0	2						2
50 - 54	1	1	1					3
55 - 59	1	1	0					2
60 - 64	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	7	5	1	0	0	0	0	13

Table 9(b)

MINNESOTA STATE RETIREMENT SYSTEM
JUDGES' RETIREMENT FUND
Active Judges

Employee Salary Distribution

Age Group	Male			Female			All		
	No.	Total	Average	No.	Total	Average	No.	Total	Average
0 - 19	0	0	0	0	0	0	0	0	0
20 - 24	0	0	0	0	0	0	0	0	0
25 - 29	0	0	0	0	0	0	0	0	0
30 - 34	1	55,000	55,000	3	165,000	55,000	4	220,000	55,000
35 - 39	16	880,000	55,000	2	110,000	55,000	18	990,000	55,000
40 - 44	26	1,430,000	55,000	1	55,000	55,000	27	1,485,000	55,000
45 - 49	30	1,650,000	55,000	2	110,000	55,000	32	1,760,000	55,000
50 - 54	31	1,705,000	55,000	3	165,000	55,000	34	1,870,000	55,000
55 - 59	53	2,940,000	55,472	2	130,000	65,000	55	3,070,000	55,818
60 - 64	33	1,850,000	56,061	0	0	0	33	1,850,000	56,061
65 - 69	24	1,330,000	55,417	0	0	0	24	1,330,000	55,417
70 - 74	2	110,000	55,000	0	0	0	2	110,000	55,000
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	216	11,950,000	55,324	13	735,000	56,538	229	12,685,000	55,393

Distribution of Annual Earnings by Service Groups

Service Group	Male			Female			All		
	No.	Total	Average	No.	Total	Average	No.	Total	Average
0	17	935,000	55,000	4	230,000	57,500	21	1,165,000	55,476
1	7	385,000	55,000	1	55,000	55,000	8	440,000	55,000
2	10	560,000	56,000	1	55,000	55,000	11	615,000	55,909
3	7	385,000	55,000	1	55,000	55,000	8	440,000	55,000
4	5	275,000	55,000	0	0	0	5	275,000	55,000
0-4	46	2,540,000	55,217	7	395,000	56,429	53	2,935,000	55,377
5-9	54	2,970,000	55,000	5	285,000	57,000	59	3,255,000	55,169
10-14	43	2,400,000	55,814	1	55,000	55,000	44	2,455,000	55,795
15-19	33	1,825,000	55,303	0	0	0	33	1,825,000	55,303
20-24	25	1,390,000	55,600	0	0	0	25	1,390,000	55,600
25-29	13	715,000	55,000	0	0	0	13	715,000	55,000
30+	2	110,000	55,000	0	0	0	2	110,000	55,000
Total	216	11,950,000	55,324	13	735,000	56,538	229	12,685,000	55,393

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
40 - 44	0							0
45 - 49	0							0
50 - 54	0							0
55 - 59	0							0
60 - 64	2							2
65 - 69	12							12
70 - 74	10	5						15
75 - 79	2	8						10
80 - 84	0	6						6
85 & over	0	1						1
Total	26	20	0	0	0	0	0	46
<u>Female</u>								
Under 40	0							0
40 - 44	0							0
45 - 49	0							0
50 - 54	0							0
55 - 59	0							0
60 - 64	0							0
65 - 69	0							0
70 - 74	0							0
75 - 79	0	1						1
80 - 84	0	0						0
85 & over	0	0						0
Total	0	1	0	0	0	0	0	1

*Only includes Judges retired after January 1, 1974.

Table 10(b)

MINNESOTA STATE RETIREMENT SYSTEM
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	2	35,984	17,992	0	0	0	2	35,984	17,992
65 - 69	12	221,375	18,448	0	0	0	12	221,375	18,448
70 - 74	15	227,966	15,198	0	0	0	15	227,966	15,198
75 - 79	10	141,938	14,194	1	9,960	9,960	11	151,898	13,809
80 - 84	6	94,975	15,829	0	0	0	6	94,975	15,829
85 +	1	8,680	8,680	0	0	0	1	8,680	8,680
Total	46	730,918	15,890	1	9,960	9,960	47	740,878	15,763

Distribution of Annual Benefit by Years Retired

Years Retired	Male			Female			All		
	No.	Total	Average	No.	Total	Average	No.	Total	Average
0	7	133,581	19,083	0	0	0	7	133,581	19,083
1	3	61,428	20,476	0	0	0	3	61,428	20,476
2	6	93,112	15,519	0	0	0	6	93,112	15,519
3	4	80,684	20,171	0	0	0	4	80,684	20,171
4	6	80,719	13,453	0	0	0	6	80,719	13,453
0 - 4	26	449,524	17,289	0	0	0	26	449,524	17,289
5 - 9	20	281,394	14,070	1	9,960	9,960	21	291,354	13,874
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	46	730,918	15,890	1	9,960	9,960	47	740,878	15,763

MINNESOTA STATE RETIREMENT SYSTEM
JUDGES' RETIREMENT FUND

Summary of Principal Plan Provisions as of June 30, 1983

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 form.
- b. Prior Survivor's Benefits: Benefits for Judges who were in office prior to January 1, 1974 and who continue to make additional contributions of 4% of salary receive benefits in the 50% joint and survivor form, with no actuarial reduction.
13. Social Security Offset: For Judges participating in Social Security, Judges' Plan benefits are reduced by 75% of the Social Security primary benefit payable.
-)

Table 11 (con't.)

B. SUPREME COURT JUSTICES' PLAN

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

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 FUNDSummary of Actuarial Assumptions and MethodsA. 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 (\$782.00 per month for 1983), increasing with salary scale. |
| b. Level contribution rate: | 6.99% assumed for all future years. |
| c. Covered annual wages: | Current annual wage base (\$35,700 for 1983), 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 FUND

Male Judges

Probabilities of Separation From Active Service

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

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

Table 12(c)

MINNESOTA STATE RETIREMENT SYSTEM
JUDGES' RETIREMENT FUND

Female Judges

Probabilities of Separation From Active Service

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

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

APPENDIX

MINNESOTA STATE RETIREMENT SYSTEM JUDGES' RETIREMENT FUND

Table References to Chapter 356 and Chapter 11A*

Table Number	Description**	References
1	Accounting Balance Sheet	
2	Actuarial Balance Sheet	
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) 11A.18 Subd. (9), (11)
4	Determination of MPRI Fund Participation and Reserves	
5	Analysis of Income and Deductions From Income and Effect on the Unfunded Accrued Liability	356.20 Subd. 4(2) 356.20 Subd. 4(3) 356.215 Subd. 4(11)
6	Analysis of Change in the Unfunded Accrued Liability During the Fiscal Year Ending June 30, 1982	356.215 Subd. 4(9)
7	Covered Judges' Retirement Fund Employee Census Data	
8	Judges' Retirement Fund Annuitant Census Data	356.20 Subd. 4(4) 356.215 Subd. 4(10)
9(a)	Employee Age and Service Distribution	
9(b)	Employee Salary Distribution	
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) 356.215 Subd. 4(5)
12(c)	Probabilities of Separation from Active Service - Female Judges	

* Chapter 356 and 11A of the Minnesota Statutes.

** All as of June 30, 1983.

MINNESOTA STATE RETIREMENT SYSTEM
LEGISLATORS' RETIREMENT FUND

ACTUARIAL VALUATION AS OF
JUNE 30, 1983

Touche Ross & Co.

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

RE: Legislative Members and Survivors Fund

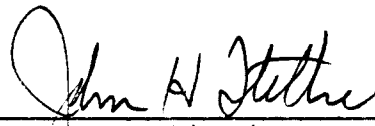
Ladies and Gentlemen:

We have prepared an actuarial valuation of the Minnesota State Retirement System, Legislators' Retirement Fund as of June 30, 1983.

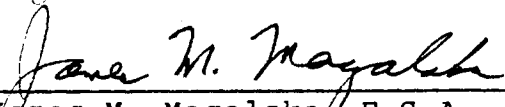
We certify that the valuation was based on the 5% interest assumption mandated by Chapter 356 of the Minnesota Statutes, as well as the 1971 Group Annuity Mortality Table with ages set back eight years for females.

Respectfully submitted,

TOUCHE ROSS & CO.



John H. Flittie, F.S.A.



James M. Magalska, F.S.A.

MINNESOTA STATE RETIREMENT SYSTEM
LEGISLATIVE MEMBERS AND SURVIVORS FUND

Determination of MPRI Fund Participation and Reserves
as of June 30, 1983

	Members Eligible for 1/1/84 Increase	Members Not Eligible for Increase	Total
1. Unadjusted MPRI Fund Participation as of June 30, 1983	--	--	\$4,778,692
2. Transfer (from) to MPRI Fund for Mortality (Gain) Loss	\$ 44,678	\$ 6,952	51,630
3. Participation as of June 30, 1983 (1) + (2)	--	--	4,830,322
4. Required Reserves as of June 30, 1983	4,136,384	791,065	4,927,449
5. Required Reserves as of January 1, 1984	4,064,870	778,870	4,843,740

This exhibit does not reflect benefit increases to become effective on January 1, 1984.

Table 1(a)

MINNESOTA STATE RETIREMENT SYSTEM
LEGISLATORS' RETIREMENT FUND

Retired Annuitants in MPRIF

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	27	159,033	5,890	0	0	0	27	159,033	5,890
65 - 69	25	176,231	7,049	0	0	0	25	176,231	7,049
70 - 74	22	97,536	4,433	1	5,175	5,175	23	102,711	4,466
75 - 79	14	75,094	5,364	0	0	0	14	75,094	5,364
80 - 84	7	34,900	4,986	0	0	0	7	34,900	4,986
85 +	5	26,720	5,344	0	0	0	5	26,720	5,344
Total	100	569,514	5,695	1	5,175	5,175	101	574,689	5,690

Distribution of Annual Earnings by Service Groups

Service Group	Male			Female			All		
	No.	Total	Average	No.	Total	Average	No.	Total	Average
0	12	79,913	6,659	0	0	0	12	79,913	6,659
1	8	46,971	5,871	0	0	0	8	46,971	5,871
2	15	133,870	8,925	0	0	0	15	133,870	8,925
3	3	20,254	6,751	0	0	0	3	20,254	6,751
4	6	32,417	5,403	0	0	0	6	32,417	5,403
0 - 4	44	313,425	7,123	0	0	0	44	313,425	7,123
5 - 9	25	114,413	4,577	1	5,175	5,175	26	119,588	4,600
10 - 14	27	128,118	4,745	0	0	0	27	128,118	4,745
15 - 19	4	13,558	3,390	0	0	0	4	13,558	3,390
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	100	569,514	5,695	1	5,175	5,175	101	574,689	5,690

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	27	0	0	0	0	0	27
65 - 69	13	12	0	0	0	0	25
70 - 74	3	12	7	0	0	0	22
75 - 79	1	1	12	0	0	0	14
80 - 84	0	0	5	2	0	0	7
85 & over	0	0	3	2	0	0	5
Total	44	25	27	4	0	0	100
<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