

MINNESOTA STATE RETIREMENT SYSTEM
STATE EMPLOYEES RETIREMENT FUND

ACTUARIAL VALUATION AS OF
JUNE 30, 1980

January 16, 1981



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THE *Wyatt* COMPANY

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January 16, 1981

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

Gentlemen:

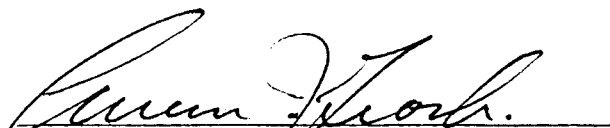
We have prepared an actuarial valuation of the Minnesota State Retirement System, State Employees Retirement Fund as of June 30, 1980.

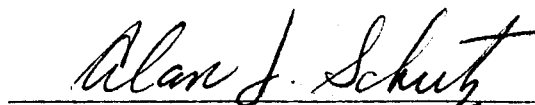
The valuation was performed on the basis of accepted actuarial methods and procedures, in accordance with the applicable provisions set forth in Minnesota Statutes (Chapter 356) and stipulated in the Contract between the State of Minnesota and The Wyatt Company.

We hereby certify that on the basis of our valuation, contributions required from employees and the State under Minnesota Statutes (Chapter 352) are adequate to provide benefits payable from the Fund. Furthermore, the entry age normal cost method was utilized in determining the accrued liability for all benefits payable under the Fund.

Respectfully submitted,

THE WYATT COMPANY


Allan J. Grosh
Fellow, Society of Actuaries


Alan J. Schutz
Associate, Society of Actuaries

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MINNESOTA STATE RETIREMENT SYSTEM
STATE EMPLOYEES RETIREMENT FUND

Actuarial Valuation as of June 30, 1980

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 of the Minnesota Statutes and Chapter 607 of the Minnesota Laws of 1980.

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 3½% 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, 1980 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 607, Article 14, Section 16 of the Minnesota Laws of 1980 (which eventually will be entered as 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

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benefits payable from the MPRI Fund (as of June 30, 1980 and as of January 1, 1981) and the corresponding mortality gain or loss each year, the latter to facilitate an appropriate transfer between the State Employees Fund and the MPRI Fund.

This reporting on the status of the State Employees Retirement Fund as of June 30, 1980, is intended to comply with all of the requirements regarding actuarial reporting that are set forth in Chapter 356 of the Statutes and Chapter 607 of the 1980 Laws. 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 607 respectively.

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Last year we performed an experience study as prescribed by Chapter 356. As a result of the findings in that study the Board adopted revised actuarial assumptions (pertaining to the incidence of mortality and disability, and the level of assumed expenses as a percentage of pay) which are reflected in this valuation. The revision has resulted in increases in all actuarial requirements which have been communicated to the Board during the past year.

In summary, our valuation reveals the following:

1. The Chapter 356 contribution requirement has increased from 8.64% of pay to 8.95% as of June 30, 1980. Without the revisions in actuarial assumptions these requirements would have actually decreased to 8.42%.
2. The prescribed contributions mandated by Chapter 352 of the Minnesota Statutes represent 117.3% of the Chapter 356 requirements.
3. The portion of accrued benefits funded on a plan continuation basis has increased from 85.75% to 87.07%, thereby improving the already extremely attractive funding status of the plan.

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The results of our valuation underlying the above are set forth in greater detail in the following sections of this report.

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CHANGES FROM THE PRIOR YEAR'S REPORTING

In addition to the aforementioned revisions in actuarial assumptions, there have been three other changes reflected in the valuation. Chapter 607 of the Minnesota Laws of 1980 revised the Statutes governing the Minnesota Adjustable Fixed Benefit (MAFB) - first by changing the name of the Fund to the Minnesota Post-Retirement Investment Fund (MPRI Fund), and second by revising the manner in which the post-retirement benefit increases are determined.

The manner in which the deficit in the MPRI Fund (i.e., the counterpart to the prior MAFB Annuity Stabilization Account) is reported has been revised in accordance with our discussions with the Executive Director of MSRS and with the recommendation of the Legislative Auditor. This changes slightly the manner in which the accrued liability and asset items are determined. This change revises certain values reported last year which are used this year for comparative purposes, and is described in detail later in the report.

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Finally, the disability provisions under the Correctional Plan have been improved and now include a more liberal definition of disability, as well as an improved benefit formula and special provisions for Correctional Officers who are disabled in the line of duty.

PRINCIPAL VALUATION RESULTS

The principal results of our valuation are summarized and compared with those of June 30, 1979 in the table on the following page. Two sets of values are set forth for 1980 in order to facilitate a determination of the impact of the revisions in actuarial assumptions.

SUMMARY OF PRINCIPAL VALUATION RESULTS

	Prior Assumptions		Revised Assumptions
	1979	1980	1980
1. Normal Cost*			
a. General Plan	40,642,250 (6.53)	44,977,170 (6.55)	46,831,191 (6.82)
b. Correctional Plan	1,566,455 (10.24)	1,765,244 (10.51)	1,787,079 (10.64)
2. Accrued Liability	675,977,399	739,219,349	767,247,161
3. Valuation Assets	491,342,299	569,165,868	569,165,868
4. Accrued Liability Funding Ratio	72.69%	77.00%	74.18%
5. Unfunded Accrued Liability	184,635,170	170,053,481	198,081,293
6. Chapter 356 Requirement	55,102,118 (8.64)	59,239,930 (8.42)	62,966,897 (8.95)
7. Prescribed Chapter 352 Requirement	66,698,565	73,854,736	73,854,736
8. Plan Continuation Liability	573,007,688	628,721,080	653,668,405
9. Plan Continuation Liability Funding Ratio	85.75%	90.53%	87.07%
* Parentheses indicate item as a percentage of covered payroll.			

The normal cost for General Employees has increased from 6.53% of covered payroll reported in the June 30, 1979 valuation to 6.82% of covered payroll as of June 30, 1980. Chapter 352 of the Minnesota Statutes requires that General Plan Employees and the State each contribute 4% of covered payroll towards normal cost and that the State contribute an "additional contribution" for funding the unfunded accrued liability (as discussed later, MTC/TOD temporarily pays 3.8% of pay in addition to these requirements). Consequently, after

) adjusting by 0.18% of covered payroll for operating expenses, 1.00% (8.00% - 6.82% - 0.18%), in addition to the legislated 2% "additional contribution" is available for amortizing the unfunded accrued liability. The increase in the normal cost requirement for General Employees is due primarily to previously mentioned revisions to the actuarial assumptions.

The normal cost for Correctional Employees has increased from 10.24% to 10.64% of covered payroll. Chapter 352 requires that Correctional Employees pay 6% of pay towards normal cost and that the State contribute 9% of covered payroll towards normal cost as well as a 5% legislated "additonal contribution" by the State for amortizing the unfunded accrued liability. Consequently, after again adjusting by .18% of covered payroll for operating expenses, 4.18% (15.00% - 10.64% - 0.18%) in addition to the legislated 5% "additional contribution" is available for amortizing the unfunded accrued liability. The increase in the normal cost for Correctional Employees is primarily due to (i) the revisions to the actuarial assumptions and (ii) the improvement of the disability provisions.

) While the accrued liability of the plan has increased from \$675,977,399 to \$767,247,161 during the year, the valuation assets of the plan have increased from \$491,342,299 to \$569,165,868 during the same period. Consequently, the unfunded accrued liability has increased from \$184,635,170 on June 30, 1979 to \$198,081,293 on June 30, 1980 while the portion of accrued liability funded has increased from 72.69% to 74.18% during the same period. The Chapter 356 contribution requirements have increased from \$55,102,118 to \$62,966,897.

) The present value of accrued benefits, determined on a plan continuation basis (applying all ongoing actuarial assumptions including assumed salary increases and turnover) has also increased from \$573,007,688 to \$653,668,405 during the year. Coupled with the increase in plan valuation assets, this results in

) a depth of funding ratio (defined as the valuation assets divided by the present value of accrued benefits) increase from 85.75% as of June 30, 1979 to 87.07% on June 30, 1980.

Table 1(a) summarizes the results of the valuation in detail, including the breakdown between the General and Correctional Plans while Table 1(b) sets forth a more detailed comparison between the June 30, 1979 and June 30, 1980 principal actuarial valuation results.

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 9 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.

) Determined in the manner documented in last year's report, the outstanding additional amount owed by MTC/TOD as of June 30, 1979 was \$6,342,502. Based on the MTC/TOD contributions made during the year for this purpose (reported by the Executive Director to be \$1,551,219.95) and the 6% interest rate prescribed in Chapter 600, we have determined that the additional deficiency is \$5,125,296 as of June 30, 1980.

VALUATION ASSETS

) The Executive Director furnished us with a Financial Report setting forth the assets and liabilities of the Fund as of June 30, 1980. The accounting balance sheet furnished by the Executive Director is set forth in Table 2(a), as adjusted by us to reflect a \$10,771,662 transfer of assets from the State Employees Retirement Fund to the MPRI Fund as a result of (i) the increase in reserve requirements due to the revision in actuarial assumptions, (ii) a decrease for the mortality gain during the year and (iii) a small accrual item for

) payments due the SER Fund from the MPRI Fund.

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, the State Contribution Reserve (see item B.5 under the reserves set forth in Table 2(a)) must be allocated between the General and Correctional Employees' portion of the fund. That is, of the \$569,165,868 of valuation assets in item B.6 only the State Contribution Reserve is not already split into the respective portions for Correctional and General Employee groups. The method used in last year's report (which was a revision to the method used in prior years) has been retained and may be briefly outlined as follows:

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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 reported at the end of the year and including the transfer for reserve strengthening) during 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 1980 base before allocation of investment earnings.
 4. Allocate investment earnings, net of operating expenses in proportion to the new base.

The June 30, 1980 allocation on this revised basis is set forth in Table 2(b) and results in valuation assets as follows:

General Plan	\$546,987,559
Correctional Plan	\$ 22,178,309
Total	\$569,165,868

ACTUARIAL BALANCE SHEETS

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

Table 3(a) sets forth a balance sheet comparing the assets and unfunded accrued liability (the total of the two equaling the accrued liability) to the current liabilities and reserves required under the plan. This table is in the format specifically required by Chapter 356 and is supported by attachments in the form of Tables 3(b), 3(c) and 3(d) which set forth the determination of the unfunded accrued liability and the status of the MPRI Fund as of June 30, 1980.

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.

) Article 14, Section 16 of Chapter 607 of the 1980 Minnesota Laws provides a new 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) 25% of any income in excess of the 5% requirement is credited towards amortizing the deficit, with the remaining 75% 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, 1980

Table 3(c) sets forth the determination of MPRI Fund net assets and reserve requirements as of June 30, 1980. The State Board of Investment reported MPRI Fund net assets of \$187,854,452. The Table sets forth net assets of \$198,626,114 as of June 30, 1980 which reflect the following adjustments:

1. A decrease of \$140,317 representing a transfer to the State Employees Retirement Fund for the mortality gain experienced during the year.
2. An increase of \$10,911,979 for reserve strengthening (\$10,912,032) and an accrual adjustment (minus \$53).

) The required reserves for MPRI Fund benefits were determined to be \$205,104,321 and \$202,018,427 as of June 30, 1980 and January 1, 1981 respectively. The latter represents the base for benefit increases that will go into effect on January 1, 1981. It should be noted that retirees under the Unclassified Plan have been included in the valuation for the first time although assets for these retirees had been transferred to the MAFB Fund in prior years. This resulted in a slight increase (\$44,046) in the MPRI Fund deficit as compared to that reported by the State Board of Investment. This adjustment, plus additional credits towards reducing the MPRI Fund of \$2,442,283 (\$1,900,779 representing 25% of the MPRI Fund investment income in excess of the required 5% and \$541,504 due to other credits per Chapter 607) resulted in a net decrease in the MPRI Fund deficit of \$2,398,237.

) As required by Chapter 607 of the 1980 Laws, Table 3(d) allocates the mortality gain and reserve determinations for January 1, 1981 benefit increase purposes to the eligible and non-eligible groups.

Accounting Treatment of MPRI Fund Deficit

The Legislative Auditor, in his February 4, 1980 memorandum suggested several revisions to the manner in which assets and liabilities pertaining to the MPRI Fund are to be disclosed. These suggestions have been incorporated in this report.

Generally, participation in the MPRI Fund is now defined as the greater of net assets, or required reserves. This suggests that a "surplus" (or assets exceeding required reserves) in addition to being treated as an asset is also treated as "a liability" even though increases have not or possibly will not be granted based on this surplus. Conversely, a deficit (or the amount by which required reserves exceed actual assets) in addition to being treated as a liability, is now being treated as an asset. This latter condition represents the status as of June 30, 1980 which can be depicted as follows:

<u>ACCOUNTING TREATMENT OF MPRI FUND</u>		
<u>ASSETS</u>		
.	Net Assets	198,626,114
.	MPRI Fund Deficit	6,478,207
.	Total	205,104,321
<u>LIABILITIES</u>		
.	Required Reserves	205,104,321
.	MPRI Fund Surplus	0
.	Total	205,104,321

These revisions produce the following changes in disclosure this year:

1. The plan continuation liability funding ratio is slightly higher on this basis since an identical amount (equal to the MPRI Fund deficit) has been included in both the numerator and denominator of the fraction.
2. Table 4 must now include a balancing item representing the change in the MPRI Fund deficit during the year.

) While we feel that the accounting method introduced in our prior year's report represented a more complete disclosure of actual assets and reserve requirements of the State Employees Retirement Fund, we have adopted the Legislative Auditor's recommendation to be consistent with the reporting approach of the other major public retirement plans in Minnesota.

RECONCILIATION OF THE UNFUNDED ACCRUED LIABILITY

Tables 4 and 5 reconcile the change in the unfunded accrued liability during the year. Table 4 sets forth an accounting balance sheet illustrating that the increase in the unfunded accrued liability is equal to the excess of deductions over income during the year.

Table 5 sets forth our analysis of the change in the unfunded accrued liability. As is shown in detail in the table, the unfunded accrued liability increased from \$184,635,170 on June 30, 1979 to \$198,081,293 as of June 30, 1980. This increase has resulted primarily on account of:

1. A reduction due to contributions (employee plus employer) in excess of normal cost, operating expenses and interest on the unfunded accrued liability, in the amount of \$15,723,606.
2. An increase of \$28,027,812 due to the change in the actuarial assumptions, including an increase of \$10,912,032 in MPRI Fund reserve requirements.
3. An increase of \$238,354 due to the improvements in the disability provisions under the Correctional Plan.
4. An increase due to a net actuarial loss of \$903,563. The net actuarial loss reflects the extent to which investment, turnover and mortality gains have been exceeded by the loss attributable to pay increases.

EMPLOYEE DATA

The Executive Director furnished us with employee information pertaining to all active members, inactive members and retired members of the System.

) Tables 6(a) through 6(d) 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. All of the information was extracted from an exhibit prepared by the Executive Director.

The data reported as of June 30, 1980 reflects covered payrolls of \$654,775,846 and \$16,157,502 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:

1. Based on salary information submitted by the Executive Director, an across the board increase of .31 cents per hour became effective on July 1, 1980, for Correctional and General Employees, excluding those employed with MTC/TOD. Accordingly, we increased reported salaries by \$644.80 per year, based on an assumed 2080 hours per year.
2. Based on our discussions with the Executive Director and his staff, it was estimated that pay increases during the coming year under the current MTC contract would be approximately 8.3%. Since our actuarial valuation automatically assumes an increase of 3½% per year, we have reflected an additional 4.6% (which when compounded with the assumed 3½% results in a projected annual increase of approximately 8.3%).

PLAN VALUED

) The provisions of the Minnesota State Retirement System, State Employees Retirement Fund are governed principally by Chapter 352 of the Minnesota Statutes. Table 7 sets forth a summary of the principal plan provisions as of June 30, 1980. The summary reflects the previously discussed improvement of the disability provisions under the Correctional Plan.

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. Several versions of this method are being used today which represent modifications of the "textbook" approach. One such modification has been used in the past and we have continued this practice.

Under the method, the entry age normal cost percentage is determined as (a) divided by (b) where:

- (a) equals the sum of the present value of benefits payable for all active members, determined at each member's entry age; and
- (b) equals the sum of the present value of compensation for all active members, determined at each member's entry age.

The normal cost for the year is then determined by applying the normal cost percentage to covered payroll. The accrued liability is, by definition, equal to the present value of all benefits payable under the plan less the present value of all future normal costs. The unfunded accrued liability is the net of the accrued liability and current valuation assets on hand.

The use of this method was discussed in detail in our prior year's report. To summarize, the impact of the method on this group has been to produce a higher normal cost and lower unfunded accrued liability than would have otherwise resulted under the more standard approach.

Actuarial Assumptions

As recommended in our June 30, 1979 experience study, the Board adopted the following revisions in actuarial assumptions, all of which have been incorporated in this valuation:

1. The pre and post-retirement mortality assumptions have been revised to the 1971 Group Mortality Table (with ages set back eight years for females).
2. The current assumed rates of disability at young ages have been retained. Rates for ages 40 and higher have been gradually increased, so that they are 100% higher at ages 50 and thereafter.
3. The expense provision has been increased from .14% to .18% of covered payroll.

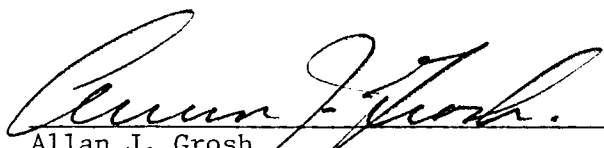
Tables 8(a) through 8(e) summarize the actuarial assumptions used.

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If, in connection with this valuation of the Fund, additional investigations are indicated, we will be happy to undertake any further computations that may be desired.

Respectfully submitted,

THE WYATT COMPANY


Allan J. Grosh
Fellow, Society of Actuaries

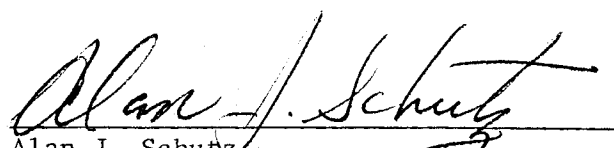

Alan J. Schutz
Associate, Society of Actuaries

Table 1(a)

MINNESOTA STATE RETIREMENT SYSTEM
STATE EMPLOYEES RETIREMENT FUND

Summary of Actuarial Valuation as of June 30, 1980

	<u>General Plan</u>	<u>Correctional Plan</u>	<u>Total</u>
A. BASIC DATA			
1. Active Members			
a. Number	46,242	990	47,232
b. Covered payroll	686,674,348	16,795,854	703,470,202
2. Retired Members/Beneficiaries			
a. Number	9,247 <u>1/</u>	257	9,504 <u>1/</u>
b. Average annual benefit payable	2,272	4,757	2,339
3. Deferred Annuityants			
a. Number	765	7	772
b. Average annual vested benefit	2,627	6,714	2,664
4. Former Members Without Vested Rights			
a. Number	3,516	15	3,531
b. Average employee contributions	257	1,054	260
B. BASIC FINANCIAL RESULTS			
1. Normal Cost	46,831,191	1,787,079	48,618,270
2. Accrued Liability	737,996,071	29,251,090	767,247,161
3. Valuation Assets	546,987,559	22,178,309	569,165,868
4. Portion of Accrued Liability Funded	74.12%	75.82%	74.18%
5. Unfunded Accrued Liability [2 - 3]	191,008,512	7,072,781	198,081,293
C. DETERMINATION OF ANNUAL REQUIREMENT IN ACCORDANCE WITH CHAPTER 356 <u>2/</u>			
1. Normal Cost	46,831,191	1,787,079	48,618,270
	(6.82)	(10.64)	(6.91)
2. Assumed Operating Expenses	1,236,013	30,233	1,266,246
	(0.18)	(0.18)	(0.18)
3. Amortization of the unfunded Accrued Liability by June 30, 2009	12,615,256	467,125	13,082,381
	(1.84)	(2.78)	(1.86)
4. Total Chapter 356 Requirement [1 + 2 + 3]	60,682,460	2,284,437	62,966,897
	(8.84)	(13.60)	(8.95)

	<u>General Plan</u>	<u>Correctional Plan</u>	<u>Total</u>
D. <u>DETERMINATION OF CONTRIBUTION SUFFICIENCY</u> <u>3/</u>			
1. Actual Prescribed Contributions (Chapter 352)			
a. Employee contributions	27,466,974 (4.00)	1,007,751 (6.00)	28,474,725
b. Employer "matching" contribution	27,466,974 (4.00)	1,511,627 (9.00)	28,978,601
c. Employer "additional" contribution <u>4/</u>	15,561,617 (2.00)	839,793 (5.00)	16,401,410
d. Total of (a) through (c)	70,495,565 (10.00)	3,359,171 (20.00)	73,854,736
2. Chapter 356 Requirements [Per item C.4.]	60,682,460	2,284,437	62,966,897
3. Sufficiency [1.(d) + 2]	1.162	1.470	1.173
E. <u>DEPTH OF FUNDING - PLAN CONTINUATION BASIS</u>			
1. Present Value of Accrued Benefits			
a. Active members	418,133,373	16,600,012	434,733,385
b. Deferred annuitants	10,951,928	418,288	11,370,216
c. Former members without vested rights	958,766	16,117	974,883
d. Survivors	228,240	Nil	228,240
e. Participation in MPRI Fund	194,786,211	10,318,110	205,104,321
f. Balance of 1979 two year increase	1,257,360	Nil	1,257,360
g. Total present value of accrued benefits	626,315,878	27,352,527	653,668,405
2. Valuation Assets	546,987,559	22,178,309	569,165,868
3. Portion of Accrued Benefits Funded [2 + 1(g)]	87.33%	81.08%	87.07%

1/ Includes four retirees under the unclassified plan.

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

3/ Estimated July 1, 1980 - June 30, 1981 contributions on an accrual basis. Parentheses indicate statutory annual contribution levels as a percentage of salary, as set forth in Chapter 352 of the Minnesota Statutes.

4/ Dollar requirements include the additional 3.8% requirement for MTC employees.

Table 1(b)

MINNESOTA STATE RETIREMENT SYSTEM
STATE EMPLOYEES RETIREMENT FUND

Comparison of 1979 and 1980 Actuarial Valuation Results

	Prior Assumptions		Revised Assumptions
	<u>1979</u>	<u>1980</u>	<u>1980</u>
1. Active Members			
a. Number	45,566	47,232	47,232
b. Covered payroll	637,592,557	703,470,202	703,470,202
2. Retired Members/ Beneficiaries			
a. Number	9,191	9,504	9,504
b. Average annual benefit payable	2,245	2,339	2,339
3. Deferred Annuitants			
a. Number	706	722	722
b. Average annual vested benefit	2,534	2,664	2,664
4. Former Members Without Vested Rights			
a. Number	3,327	3,531	3,531
b. Average employee contributions	241	260	260
5. Normal Cost <u>1/</u>			
a. General plan	40,642,250 (6.53)	44,977,170 (6.55)	46,831,191 (6.82)
b. Correctional plan	1,566,455 (10.24)	1,765,244 (10.51)	1,787,079 (10.64)
6. Accrued Liability	675,977,399 <u>2/</u>	739,219,349	767,247,161
7. Valuation Assets	491,342,229 <u>2/</u>	569,165,868	569,165,868
8. Unfunded Accrued Liability	184,635,170	170,053,481	198,081,293
9. Accrued Liability Funding Ratio [7 ÷ 6]	72.69%	77.00%	74.18%

	Prior Assumptions		Revised Assumptions
	<u>1979</u>	<u>1980</u>	<u>1980</u>
10. Chapter 356 Requirement (Normal Cost Plus Amortization by 2009). <u>3/</u>	55,102,118 (8.64)	59,239,930 (8.42)	62,966,897 (8.95)
11. Present Value of Accrued Benefits Plan Continu- ation Basis <u>2/</u>	573,007,688	628,721,080	653,668,405
12. Depth of Funding <u>7 ÷ 11</u>	85.75%	90.53%	87.07%

1/ Parentheses indicate contribution levels as a percentage of salary.

2/ 1979 report disclosure adjusted to reflect revised accounting treatment of MPRI Fund participation.

3/ Including assumed operating expenses. Parentheses indicate contribution levels as a percentage of salary.

Table 2(a)

MINNESOTA STATE RETIREMENT SYSTEM
STATE EMPLOYEES RETIREMENT FUND

Accounting Balance Sheet as of June 30, 1980

A. ASSETS

1. Cash in State Treasury		(3,586.40)
2. Cash in Bank (Imprest Cash)		200.00
3. Short Term Investments (at Cost)		61,820,857.78
4. Accounts Receivable:		
a. Accrued employee contributions	854,747.34	
b. Accrued employer contributions	1,357,145.38	
c. Employee buy-backs	210,612.91	
d. Due from other plans	56,894.94	
e. Other	<u>2,526.40</u>	
5. Accrued Interest on Investments		2,481,926.97
6. Dividends Declared and Payable, but Not Yet Received		4,296,131.69
7. Investment in Debt Securities at Amortized Cost		799,008.24
8. Investment in G.N.M.A.'s at Amortized Cost		144,824,652.50
9. Investment in Equities at Cost <u>1/</u>		20,936,277.50
10. Equipment at Depreciated Cost		139,620,478.79
11. Deferred Yield Adjustment Account		30,954.62
12. Participation in MPRI Fund <u>2/</u>		3,527,951.07
		<u>205,104,321.00</u>
13. TOTAL ASSETS		<u>583,439,173.76</u>

B. LIABILITIES AND RESERVES

Liabilities

1. Accounts Payable		
a. Security purchases	3,224,061.71	
b. Annuities	1,805.40	
c. Annuitant deposits	6,387.28	
d. Accrued expenses	96,087.81	
e. Overpaid dividends	1,785.00	
f. Transfer to unclassified retirement	162,192.16	
g. Due MPRI Fund	<u>10,771,661.53</u>	
		14,263,980.89
2. Suspense Item: Unredeemed 6 Year Old Warrants		9,325.19
3. Total Liabilities		<u>14,273,306.08</u>

Reserves

1. Participation in MPRI Fund	205,104,321.00
2. Balance of 1979 Two Year Increase	1,257,360.00
3. Survivor Benefit Reserve	228,240.00
4. Employee Contribution Reserve	136,370,227.75
5. State Contribution Reserve	226,205,718.93
6. Total Reserves (Valuation Assets) <u>3/</u>	<u>569,165,867.68</u>
7. TOTAL LIABILITIES AND RESERVES	<u>583,439,173.76</u>

1/ Market value as of June 30, 1980 is \$153,175,726.

2/ Equal to greater of Net Assets (\$198,626,114) or Required Reserves (\$205,104,321) as of June 30, 1980, excluding January 1, 1981 benefit increase.

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

Table 2(b)

MINNESOTA STATE RETIREMENT SYSTEM
STATE EMPLOYEES RETIREMENT FUND

Allocation of June 30, 1980 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, 1979	301,997,839	10,029,401	312,027,240
2. Allocated Contributions During the Year	65,509,102	3,128,977	68,638,079
3. Transfers of Assets to MPRI Fund During the Year, Including 10,912,032 for Reserve Strengthening	36,781,948	1,983,402	38,765,350
4. Refunds Allocable During the Year	5,387,859	212,885	5,600,744
5. Estimated Base as of June 30, 1980, Before Allocation of Investment Earnings and Expenses [1 + 2 - 3 - 4]	325,337,134	10,962,091	336,299,225
6. Employee Contribution Reserve as of June 30, 1980	132,241,481	4,128,747	136,370,228
7. Estimated State Contribution Reserve as of June 30, 1980 [5 - 6]	193,095,653	6,833,344	199,928,997
8. Actual State Contribution Reserve, Including Investment Earnings During the Year and Expenses Allocated According to Item 7.	218,474,267	7,731,452	226,205,719
9. Total Valuation Assets <u>1/</u>	546,987,559	22,178,309	569,165,868

1/ Includes Employee and State Contribution Reserves, MPRI Fund Participation, Survivor Benefit Reserve, and Reserve for Balance of 1979 Two Year Increase.

Table 2(c)

MINNESOTA STATE RETIREMENT SYSTEM
STATE EMPLOYEES RETIREMENT FUND

Actuarial Balance Sheet as of June 30, 1980

A. ASSETS

1. Assets on Hand from Accounting Balance Sheet:		
a. Reserves for MPRI Fund Benefits	205,104,321	
b. All other assets	<u>378,334,853</u>	583,439,174
2. Present Value of Employee's Future Contributions		250,660,412
3. Present Value of State Future Contributions Applicable to:		
a. Entry age normal cost	177,581,107	
b. Unfunded accrued liability (Balance of "matching" contribution less .18% for operating expense)	66,410,706	
c. Unfunded accrued liability (Portion to be funded by "additional" contribution)	<u>131,670,587</u>	<u>375,662,400</u>
4. TOTAL ASSETS		1,209,761,986

B. LIABILITIES

1. Current Liabilities from Accounting Balance Sheet		14,273,306
2. Present Value of Earned and Earnable Benefits Payable to Presently Active Members:		
a. Retirement benefits	744,220,868	
b. Disability benefits	67,608,081	
c. Refundments due to death or withdrawal	136,917,306	
d. Surviving spouse benefits	<u>27,807,405</u>	976,553,660
3. Present Value of Benefits for Deferred Annuitants:		
a. Retirement benefits	11,234,426	
b. Refundments due to death	<u>135,790</u>	<u>11,370,216</u>
4. Present Value of Refundments to Former Members Without Vested Rights		974,883
5. Present Value of Survivor Benefits		228,240
6. Present Value of Benefits Payable from MPRI Fund		205,104,321
7. Balance of 1979 Two Year Increase		<u>1,257,360</u>
8. TOTAL LIABILITIES		1,209,761,986

Table 3(a)

MINNESOTA STATE RETIREMENT SYSTEM
STATE EMPLOYEES RETIREMENT FUND

Chapter 356 Balance Sheet as of June 30, 1980

ASSETS AND UNFUNDED ACCRUED LIABILITY

A. ASSETS 1/

1. Cash in State Treasury		(3,586.40)
2. Cash in Bank (Imprest Cash)		200.00
3. Short Term Investments (at Cost)		61,820,857.78
4. Accounts Receivable:		
a. Accrued employee contributions	854,747.34	
b. Accrued employer contributions	1,357,145.38	
c. Employee buy-backs	210,612.91	
d. Due from other plans	56,894.94	
e. Other	<u>2,526.40</u>	
5. Accrued Interest on Investments		2,481,926.97
6. Dividends Declared and Payable, but Not Yet Received		4,296,131.69
7. Investment in Debt Securities at Amortized Cost		799,008.24
8. Investment in G.N.M.A.'s at Amortized Cost		144,824,652.50
9. Investment in Equities at Cost		20,936,277.50
10. Equipment at Depreciated Cost		139,620,478.79
11. Deferred Yield Adjustment Account		30,954.62
12. Participation in MPRI Fund 2/		3,527,951.07
13. Total Assets		<u>205,104,321.00</u>
		<u>583,439,173.76</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	66,410,706.00
2. Unfunded Accrued Liability to be Funded by State's "Additional" Contribution	<u>131,670,587.32</u>
3. Total Unfunded Accrued Liability	<u>198,081,293.32</u>
4. TOTAL ASSETS AND UNFUNDED ACCRUED LIABILITY	<u>781,520,467.08</u>

CURRENT LIABILITIES AND RESERVES REQUIRED

C. LIABILITIES

1. Accounts Payable:		
a. Security purchases	3,224,061.71	
b. Annuities	1,805.40	
c. Annuitant deposits	6,387.28	
d. Accrued expenses	96,087.81	
e. Overpaid dividends	1,785.00	
f. Transfer to unclassified retirement	162,192.16	
g. Due MPRI Fund	<u>10,771,661.53</u>	
2. Suspense Item: Unredeemed 6 Year Old Warrants		14,263,980.89
3. Total Liabilities		<u>9,325.19</u>
		<u>14,273,306.08</u>

D. RESERVES REQUIRED

1. Total Reserves Required per Attached Table 3(b)	<u>767,247,161.00</u>
2. TOTAL CURRENT LIABILITIES AND RESERVES REQUIRED	<u>781,520,467.08</u>

- 1/ Accumulated contributions, without interest, of members not yet retired amounted to \$136,370,227.75 as of June 30, 1980 (includes accrued but unpaid contributions)
- 2/ Equal to greater of Net Assets (\$198,626,114) or Required Reserves (\$205,104,321) as of June 30, 1980, excluding January 1, 1981 benefit increase.

Table 3(b)

MINNESOTA STATE RETIREMENT SYSTEM
STATE EMPLOYEES RETIREMENT FUND

Determination of Accrued Liability and
Unfunded Accrued Liability as of June 30, 1980

	(1)	(2)	(3)
	Present Value of Benefits	Present Value of Applicable Portion of Normal Cost Contribution	Accrued Liability Equals Reserves Required (1)-(2)
A. <u>DETERMINATION OF ACCRUED LIABILITY</u>			
1. Active Members			
a. Retirement benefits	744,220,868	278,546,641	465,674,227
b. Disability benefits	67,608,081	31,944,176	35,663,905
c. Refundments due to death or withdrawal	136,917,306	107,478,164	29,439,142
d. Surviving spouse benefits	27,807,405	10,272,538	17,534,867
2. Deferred Annuitants	11,370,216	---	11,370,216
3. Former Members Without Vested Rights	974,883	---	974,883
4. Survivors	228,240	---	228,240
5. Participation in MPRI Fund	205,104,321	---	205,104,321
6. Balance of 1979 Two Year Increase	<u>1,257,360</u>	<u>---</u>	<u>1,257,360</u>
7. Total	1,195,488,680	428,241,519	767,247,161
B. <u>DETERMINATION OF UNFUNDED ACCRUED LIABILITY</u>			
1. Accrued Liability	---	---	767,247,161
2. Valuation Assets	---	---	569,165,868
3. Unfunded Accrued Liability [1 - 2]	---	---	198,081,293

Table 3(c)

MINNESOTA STATE RETIREMENT SYSTEM
STATE EMPLOYEES RETIREMENT FUND

Determination of MPRI Fund Participation and Reserves
as of June 30, 1980 1/

1.	Unadjusted MPRI Fund Net Assets as of June 30, 1980	187,854,452
2.	Transfer to State Employees Retirement Fund from MPRI Fund for 1980 Mortality Gain	140,317
3.	Amount Transferable to MPRI Fund for Reserve Strengthening (Actuarial Assumption Revision) and Accrual Adjustment	10,911,979 <u>2/</u>
4.	Net Amount Transferable [3 - 2]	10,771,662
5.	Net assets as of June 30, 1980 [1 + 4]	198,626,114
6.	Required Reserves as of June 30, 1980	205,104,321
7.	Required Reserves as of January 1, 1981	202,018,427

1/ Does not reflect impact of benefit revisions to be effective
January 1, 1981.

2/ \$9,978,285 as of June 30, 1979; \$10,911,979 as of June 30, 1980
(includes adjustment for those retiring in year ending on
June 30, 1980 and accrual adjustment of minus \$53).

Table 3(d)

MINNESOTA STATE RETIREMENT SYSTEM
STATE EMPLOYEES RETIREMENT FUND

Allocation of MPRI Fund Reserves According to
Eligibility for January 1, 1981 Increase 1/

	<u>Total</u>	<u>Total Allocated to</u>	
		<u>Members Eligible for Increase</u>	<u>Members Not Eligible for Increase</u>
1. Reserves as of June 30, 1980	205,104,321	179,916,971	25,187,350
2. Reserves as of January 1, 1981	202,018,427	177,151,051	24,867,376
3. Mortality Gain (Loss) During the Year Ended June 30, 1980	140,317	(1,703)	142,020

1/ Does not reflect impact of benefit increases to be effective January 1, 1981.

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. From Employees		
a. Employee contributions	25,612,675.32	
b. Employee accrued contributions receivable	854,747.34	
c. Employee contributions, accounts receivable	53,152.60	26,520,575.26
2. From Employers		
a. Employer contributions	26,148,884.62	
b. Employer additional contributions	14,611,474.03	
c. Employer accrued contributions receivable	1,357,145.38	42,117,504.03
3. From Investments		
a. Interest on securities	17,481,714.08	
b. Dividends on corporate stock	8,232,253.01	
c. Gain on sale of securities	5,452,425.17	
d. Interest on back payments by employees	151,256.78	31,317,649.04
4. From MPRI Fund Participation		
a. Participation on MPRI Fund Income		11,504,890.13
5. Other Revenues		
a. Miscellaneous	11,155.81	
b. General fund appropriations	2,630,745.00	2,641,900.81
6. TOTAL INCOME		<u>114,102,519.27</u>
B. DEDUCTIONS FROM INCOME		
1. Benefits		
a. Service retirement annuities	20,440,425.36	
b. Disability retirement benefits	1,286,140.58	
c. Survivor benefits (spouses)	26,883.78	
d. Lump sum annuity payments	1,330,155.00	23,083,605.22
2. Refundments (Employee Contributions)		
a. Left service	6,409,056.37	
b. Employee deaths	375,953.92	
c. Annuitant deposits	75,375.47	
d. Erroneous deductions	36,895.86	
e. Interest on Refundments	265,783.12	7,163,064.74
3. Transfer of Unclassified Employee Retirement		2,550,578.28
4. Operating Expenses		
a. Administrative expenses ^{1/}	1,063,439.61	
b. Loss on disposition of assets	2,186.67	
c. Write off uncollectible accounts	65.29	
d. Interest expense on mortality adjustment	17,354.83	
e. Miscellaneous	524.50	1,083,570.90
5. Increase in Total Reserves Required		
a. Reserves required 6/30/79	675,977,399.00	
b. Reserves required 6/30/80	767,247,161.00	91,269,762.00
6. Decrease in MPRI Fund Deficit ^{2/}		2,398,061.37
7. TOTAL DEDUCTIONS FROM INCOME		<u>127,548,642.51</u>
8. EXCESS OF DEDUCTIONS OVER INCOME		<u>13,446,123.24</u>
C. INCREASE IN UNFUNDED ACCRUED LIABILITY		
1. Unfunded Accrued Liability 6/30/79		184,635,170.08
2. Unfunded Accrued Liability 6/30/80		198,081,293.32
3. INCREASE IN UNFUNDED ACCRUED LIABILITY		<u>13,446,123.24</u>

^{1/} Represents .16% of average covered payroll for the period from July 1, 1979 to June 30, 1980.

^{2/} Includes a minus \$175.63 adjustment for accrual due MPRI Fund on June 30, 1979.

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, 1980

1.	Unfunded Accrued Liability as of June 30, 1979		184,635,170
2.	Change Due to Current Rate of Funding and Interest Requirements		
a.	1979 - 80 past service contribution	(24,955,365)	
b.	5% interest requirement	<u>9,231,759</u>	(15,723,606)
3.	Increase Due to Change in Actuarial Assumptions		
a.	Increase in MPRI Fund requirements	10,912,032	
b.	Other increases	<u>17,115,780</u>	28,027,812
4.	Change Due to the Revision of Disability Benefits Under the Correctional Plan		238,354
5.	Change Due to Actuarial Gains (Indicated by Parentheses) or Losses (no Parentheses) Because of 1979-80 Experience Deviations From Expected:		
a.	Mortality of MPRI Fund members	(140,317)	
b.	Salary increases	15,564,648	
c.	Asset gains	(14,364,968)	
d.	Withdrawals, deaths and disability (balancing item)	<u>(155,800)</u>	<u>903,563</u>
6.	Unfunded Accrued Liability as of June 30, 1980		<u>198,081,293</u>

Table 6(a)

MINNESOTA STATE RETIREMENT SYSTEM
STATE EMPLOYEES RETIREMENT FUND

Covered General Employee Census Data as of June 30, 1980

	<u>Number</u>	<u>Annualized Payroll</u>
Active at June 30, 1979	44,602	592,411,825
New Entrants <u>1/</u>	<u>9,610</u>	
Total	54,212	
Less Separations from Active Service:		
Refund of Contributions <u>1/</u>	5,730	51,810,085
Separation with Deferred Annuity	99	909,607
Separation with Neither Refundment or Right to a Deferred Annuity	1,478	8,832,261
Disability	78	1,047,423
Death, No Spouse's Benefits <u>1/</u>	97	1,422,023
Service Retirement	525	7,874,814
Death, Spouse's Benefits Payable	<u>0</u>	0
Total Separations	8,007	
Net Transfers To and From Other Plans	37	
Active at June 30, 1980	46,242	654,775,846

AVERAGE ENTRY AGE OF NEW EMPLOYEES

<u>For the Fiscal Year Ending</u>	<u>Male</u>	<u>Female</u>	<u>Average of Total</u>
6/30/76	30.0	28.4	29.0
6/30/77	29.6	28.6	29.3
6/30/78	30.7	29.1	29.5
6/30/79	30.7	28.9	29.4
6/30/80	31.4	29.9	30.5

Average age at entry in State service for all active employees at 6/30/80

Male	29.6
Female	28.2
Total	28.9

1/ Includes those who entered the plan and terminated during the period from July 1, 1979 to June 30, 1980.

Table 6(b)

MINNESOTA STATE RETIREMENT SYSTEM
STATE EMPLOYEES RETIREMENT FUND

General Plan Annuitant Census Data as of June 30, 1980

	<u>Number</u>	<u>Annual Annuity Benefit Payable</u>
A. <u>SERVICE RETIREMENT ANNUITANTS</u>		
Receiving at June 30, 1979	8,032	17,873,496.96
New	587	1,991,472.24
Deaths	353	733,599.48
Adjustments-Net Result <u>1/</u>	14	24,713.16
Receiving at June 30, 1980	8,280	19,156,082.88
B. <u>DISABLED EMPLOYEES</u>		
Receiving at June 30, 1979	608	1,170,113.04
New	77	248,212.32
Deaths	50	119,771.40
Disability Rescinded	0	0
Adjustments-Net Result	(9)	(23,576.04)
Receiving at June 30, 1980	626	1,274,977.92
C. <u>WIDOWS RECEIVING AN ANNUITY OR SURVIVOR BENEFIT</u>		
1. Beneficiaries Receiving an Optional or Reversionary Annuity		
Receiving at June 30, 1979	297	477,824.28
New	38	90,253.44
Deaths	16	21,396.60
Adjustments-Net Result	2	6,814.08
Receiving at June 30, 1980	321	553,495.20

	<u>Number</u>	<u>Annual Annuity Benefit Payable</u>
2. Spouse Receiving a Survivor Benefit		
Receiving at June 30, 1979	22	27,347.64
Deaths	2	2,236.32
Receiving at June 30, 1980	20	25,111.32
D. <u>CHILDREN RECEIVING A SURVIVOR BENEFIT</u>		
Receiving at June 30, 1980	None	
E. <u>DEFERRED ANNUITANTS</u>		
Deferred as of June 30, 1979	699	1,745,587.89
New	102	364,152.00
Began Receiving	38	57,768.24
Adjustments-Net Result	2	42,245.61
Deferred as of June 30, 1980	765	2,009,726.04

AVERAGE AGE AT RETIREMENT OF NEW SERVICE ANNUITANTS

<u>Fiscal Year Ending</u>	<u>Average Retirement Age</u>
6/30/75	65.2
6/30/76	64.9
6/30/77	64.1
6/30/78	64.0
6/30/79	63.9
6/30/80	64.1
<u>All Existing Service Annuitants</u>	64.4

1/ Includes four annuitants under the Unclassified Plan.

Table 6(c)

MINNESOTA STATE RETIREMENT SYSTEM
STATE EMPLOYEE RETIREMENT FUND

Covered Correctional Employee Census Data as of June 30, 1980

	<u>Number</u>	<u>Annualized Payroll</u>
Active at June 30, 1979	964	14,452,567
New Entrants <u>1/</u>	<u>177</u>	
Total	1,141	
Less Separations from Active Service:		
Refund of Contributions <u>1/</u>	142	1,359,373
Separation with Deferred Annuity	2	15,850
Separation with Neither Refundment or Right to a Deferred Annuity	12	108,767
Disability	2	31,221
Death, No Spouse's Benefits	2	29,494
Service Retirement	<u>23</u>	399,799
Total Separations	183	
Net Transfers To and From Other Plans	32	
Active at June 30, 1980	990	16,157,502

AVERAGE ENTRY AGE OF NEW EMPLOYEES

<u>For the Fiscal Year Ending</u>	<u>Male</u>	<u>Female</u>	<u>Average of Total</u>
6/30/77	29.2	28.5	27.4
6/30/78	29.1	30.0	29.2
6/30/79	28.5	31.0	28.9
6/30/80	30.1	32.8	30.7

Average age at entry in State service for all active employees at 6/30/80

Male	28.1
Female	29.4
Total	28.2

1/ Includes those who entered the plan and terminated during the period from July 1, 1979 to June 30, 1980.

Table 6(d)

MINNESOTA STATE RETIREMENT SYSTEM
STATE EMPLOYEES RETIREMENT FUND

Correctional Plan Annuitant Census Data as of June 30, 1980

	<u>Number</u>	<u>Annual Annuity Benefit Payable</u>
A. <u>SERVICE RETIREMENT ANNUITANTS</u>		
Receiving at June 30, 1979	225	1,067,810.64
New	25	181,238.76
Deaths	0	0.00
Adjustments-Net Results	(3)	(55,572.48)
Receiving at June 30, 1980	247	1,193,476.92
B. <u>DISABLED EMPLOYEES</u>		
Receiving at June 30, 1979	5	11,477.76
New	2	7,245.24
Deaths	0	0.00
Adjustments-Net Results	0	(477.12)
Receiving at June 30, 1980	7	18,245.88
C. <u>WIDOWS RECEIVING AN ANNUITY OR SURVIVOR BENEFIT</u>		
1. Beneficiaries Receiving an Optional or Reversionary Annuity		
Receiving at June 30, 1979	2	7,062.12
New	1	3,774.84
Receiving at June 30, 1980	3	10,836.96
D. <u>CHILDREN RECEIVING A SURVIVOR BENEFIT</u>	None	

	<u>Number</u>	<u>Annual Annuity Benefit Payable</u>
E. <u>DEFERRED ANNUITANTS</u>		
Deferred as of June 30, 1979	7	43,584.00
New	2	15,420.00
Began Receiving	2	12,004.00
Deferred as of June 30, 1980	7	47,000.00

AVERAGE AGE AT RETIREMENT OF NEW SERVICE ANNUITANTS

<u>Fiscal Year Ending</u>	<u>Average Retirement Age</u>
6/30/77	57.7
6/30/78	56.5
6/30/79	57.9
6/30/80	58.4
<u>All Existing Service Annuitants</u>	58.7

Table 7

MINNESOTA STATE RETIREMENT SYSTEM
STATE EMPLOYEES RETIREMENT FUND

Summary of Principal Plan Provisions as of June 30, 1980

A. GENERAL EMPLOYEES

1. Coverage: From first date of employment.
2. Service Credit: Service is credited from date of coverage subject to a maximum equal to the greater of:
 - . 40 years of service; or
 - . service earned prior to April 30, 1978
3. Contributions:
 - a. Employee: 4% of salary.
 - b. State of Minnesota: 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 who is qualified at that time for early or normal retirement.
- 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. Repayment of Contributions:

- a. Eligible Members: Rehired members who are credited with at least one year of service subsequent to rehire.
- b. Repayment Provision: Such rehired member may repay all refundments made to him, including interest at 6% 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.

B. CORRECTIONAL EMPLOYEES

Same as above except:

1. Contributions:

- a. Employee: 6% of salary.
- b. State of Minnesota: 14% 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 Benefit 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.

Table 8(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 eight years for females.
2. Post-Disablement Mortality: Combined Annuity Mortality Table.
3. Withdrawal: Graded rates based on actual experience developed by the June 30, 1971 experience analysis and set forth in the Separation from Active Service Table.
4. Expenses: .18% of covered payroll.
5. Interest Rate: 5% per annum.
6. Salary Scale: 3-1/2% per annum.
7. Assumed Retirement Age: Graded rates beginning at age 58 set forth in the Separation from Active Service Table.
8. Actuarial Cost Method: Entry age cost method, with normal cost determined as a level percentage of future covered payroll, on an aggregate basis.
9. Social Security: Based on the present law (2nd phase 1980) and 3-1/2% salary scale applicable to current salaries. No wage base increases beyond those specifically prescribed in the Social Security Act of 1977 are projected. No cost of living increases are projected.

Table 8(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	

<u>Age</u>	<u>Withdrawal</u>	<u>Death</u>	<u>Disability</u>	<u>Age and Service Retirement</u>
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	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 8(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	

<u>Age</u>	<u>Withdrawal</u>	<u>Death</u>	<u>Disability</u>	<u>Age and Service Retirement</u>
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	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 8(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	

<u>Age</u>	<u>Withdrawal</u>	<u>Death</u>	<u>Disability</u>	<u>Age and Service Retirement</u>
45	410	29	3	
46	390	33	5	
47	370	38	7	
48	350	42	9	
49	340	47	11	
50	320	53	14	
51	300	59	16	
52	280	65	20	
53	260	71	24	
54	240	78	28	
55	210	85	34	
56	170	93	40	
57	140	100	46	
58				10,000

Table 8(e)

MINNESOTA STATE RETIREMENT SYSTEM
STATE EMPLOYEES RETIREMENT FUND

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

<u>Age</u>	<u>Withdrawal</u>	<u>Death</u>	<u>Disability</u>	<u>Age and Service Retirement</u>
20	3,700	4		
21	3,500	4		
22	3,390	4		
23	3,230	4		
24	3,070	4		
25	2,910	5		
26	2,750	5		
27	2,600	5		
28	2,430	5		
29	2,270	5		
30	2,120	5		
31	1,970	6		
32	1,820	6		
33	1,680	6		
34	1,540	7		
35	1,410	7	1	
36	1,300	7	1	
37	1,190	8	1	
38	1,090	8	1	
39	1,000	9	2	
40	920	9	2	
41	850	10	2	
42	780	10	4	
43	720	11	4	
44	680	12	4	

<u>Age</u>	<u>Withdrawal</u>	<u>Death</u>	<u>Disability</u>	<u>Age and Service Retirement</u>
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

MINNESOTA STATE RETIREMENT SYSTEM STATE EMPLOYEES RETIREMENT FUND

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7	Summary of Principal Plan Provisions	356.215 Subd. 4(12)	45
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1/ Chapter 356 of the Minnesota Statutes;
Chapter 607 of the 1980 Minnesota Laws.

2/ All as of June 30, 1980.

MSRS VALUATION AS OF JUNE 30, 1980

The purpose of this memorandum is to discuss the valuation report of the Minnesota State Retirement System dated January 16, 1981 which was submitted to the Commission in accordance with Minnesota Statutes, Chapter 356. The valuation was made using the entry age normal cost method and assuming 5% interest. The report was prepared by Allan J. Grosch and Alan J. Schutz of the Wyatt Company.

This memo contains the following:

1. Statistical and Valuation Data
2. Discussion of Valuation Results
3. Conclusion

1. Statistical and Valuation Data

Results of the valuation reports as of June 30, 1979 and June 30, 1980 are shown for comparative purposes. Figures are rounded where necessary for simplicity of presentation.

	<u>As of</u> <u>June 30, 1979</u>	<u>As of</u> <u>June 30, 1980</u>
(1) <u>Membership</u>		
Active Members	45,566*	47,232*
Inactive Members	3,327	3,531
Retired Members	8,257	8,527
Disabled Members	613	633
Survivors of Deceased Members	321	344
Deferred Vested	706	772

*Including correctional employees numbering 964 and 990, respectively.

(2) <u>Payroll and Annuities Payable</u>	(Millions of Dollars)	
Total Annualized Payroll	\$606.9	\$670.9
Annuities (annual)	20.6	27.2
(3) <u>Valuation Balance Sheet</u>	(Millions of Dollars)	
Accrued Liability	\$675.8	\$767.3
Assets	<u>491.2</u>	<u>569.2</u>
Unfunded Accrued Liability	\$184.6*	\$198.1*
(Deficit)		
Funding Ratio (Ratio of Assets to Accrued Liability)	72.7%	74.2%

*\$191.0 million for regular employees and \$7.1 million for correctional employees compared to 1979 figures of \$177.9 million and \$6.7 million, respectively.

		<u>Percent of Covered Payroll</u>			
		<u>As of June 30, 1979</u>		<u>As of June 30, 1980</u>	
		<u>Regular</u>	<u>Correctional</u>	<u>Regular</u>	<u>Correctional</u>
(4)	<u>Normal Cost and Funding Costs</u>				
	Normal Cost	6.53%	10.24%	6.82%	10.64%
	Expenses	0.14	0.14	0.18	0.18
	Normal Cost Plus Expenses	6.67%	10.38%	7.00%	10.82%
	Normal Cost Plus Expenses	6.67%	10.38%	7.00%	10.82%
	Interest on Deficit	1.43	2.20	1.39	2.11
	Total ("Minimum Contribution")	8.10%	12.58%	8.39%	12.93%
	Normal Cost Plus Expenses	6.67%	10.38%	7.00%	10.82%
	Amortization by 2009	1.86	2.86	1.84	2.78
	Total ("Required Contribution")	8.53%	13.24%	8.84%	13.60%
(5)	<u>Statutory Contributions</u>				
	Employee	4.0%	6.0%	4.0%	6.0%
	Employer Regular	4.0	9.0	4.0	9.0
	Employer Additional	2.0	5.0	2.0	5.0
	Total Contributions	10.0%	20.0%	10.0%	20.0%
(6)	<u>Investment Yield (A)</u>	6.95% *		7.95% *	

(A) Ratio of investment income (on an accrual basis) to mean assets.

* Excluding assets in Minnesota Adjustable Fixed Benefit Fund; including change in recognized unrealized appreciation or depreciation.

2. Discussion of Valuation Results

In accordance with the results of the 1979 Experience Study, some of the actuarial assumptions were changed for the 1980 valuation. The mortality assumption for retired lives was strengthened considerably, some additional conservatism was put into the death rates for active lives, and the disability rates were increased in the middle and older age brackets.

These changes account for the increases in the normal cost rates and for a good share of the upward movement of the unfunded accrued liability. In fact, the unfunded would have decreased by about \$14,500,000 if the assumptions had not been strengthened.

One notable feature of the change in the fundings costs is the fact that the increase in the payroll plus the moderate size of the increase in the unfunded have combined to produce a decrease in the amortization and interest figures as a percentage of payroll. This has held down the increase in the total funding figures.

During the year, the unfunded accrued liability increased from \$184,635,170 to \$198,081,293, an increase of \$13,446,123. The Actuary gave the following analysis of this increase:

) Increases:

Change in Actuarial Assumptions	\$28,027,812	sh
Change in Disability Benefit - Correctional Group	238,354	sh
Salary Scale Loss	<u>15,564,648</u>	sh
Total Increases		\$43,830,814

Decreases:

Amortization Contribution	\$15,723,606	sh
Excess Interest	8,912,543	sh
Capital Gain	5,452,425	sh
Mortality Gain - Retireds	140,317	sh
Mortality, Withdrawal and Disability Gain - Actives	<u>155,800</u>	sh
Total Decreases		\$30,384,691
Net Increase		<u>\$13,446,123</u>

3. Conclusion

) The 1980 Valuation filed by MSRS conforms with the requirements of Chapter 356. The results of this valuation indicate that the deficit might be retired in about 12 years with the present level of support. Furthermore, the report contains detailed information about the effect of the revised actuarial assumptions on various cost items.

MSRS VALUATION AS OF JUNE 30, 1980

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Disabled Members	613	633
Survivors of Deceased Members	321	344
Deferred Vested	706	772

*Including correctional employees numbering 964 and 990, respectively.

(2) Payroll and Annuities Payable (Millions of Dollars)

Total Annualized Payroll	\$606.9	\$670.9
Annuities (annual)	20.6	27.2

(3) Valuation Balance Sheet (Millions of Dollars)

Accrued Liability	\$675.8	\$767.3
Assets	491.2	569.2
Unfunded Accrued Liability	\$184.6*	\$198.1*
(Deficit)		
Funding Ratio (Ratio of Assets to Accrued Liability)	72.7%	74.2%

*\$191.0 million for regular employees and \$7.1 million for correctional employees compared to 1979 figures of \$177.9 million and \$6.7 million, respectively.

Percent of Covered Payroll				
	As of June 30, 1979		As of June 30, 1980	
	Regular	Correctional	Regular	Correctional
(4) <u>Normal Cost and Funding Costs</u>				
Normal Cost	6.53%	10.24%	6.82%	10.64%
Expenses	0.14	0.14	0.18	0.18
Normal Cost Plus Expenses	6.67%	10.38%	7.00%	10.82%
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Interest on Deficit	1.43	2.20	1.39	2.11
Total ("Minimum Contribution")	8.10%	12.58%	8.39%	12.93%
Normal Cost Plus Expenses	6.67%	10.38%	7.00%	10.82%
Amortization by 2009	1.86	2.86	1.84	2.78
Total ("Required Contribution")	8.53%	13.24%	8.84%	13.60%
(5) <u>Statutory Contributions</u>				
Employee	4.0%	6.0%	4.0%	6.0%
Employer Regular	4.0	9.0	4.0	9.0
Employer Additional	2.0	5.0	2.0	5.0
Total Contributions	10.0%	20.0%	10.0%	20.0%
(6) <u>Investment Yield</u> (A)	6.95% *		7.95% *	

(A) Ratio of investment income (on an accrual basis) to mean assets.

* Excluding assets in Minnesota Adjustable Fixed Benefit Fund; including change in recognized unrealized appreciation or depreciation.

2. Discussion of Valuation Results

In accordance with the results of the 1979 Experience Study, some of the actuarial assumptions were changed for the 1980 valuation. The mortality assumption for retired lives was strengthened considerably, some additional conservatism was put into the death rates for active lives, and the disability rates were increased in the middle and older age brackets.

These changes account for the increases in the normal cost rates and for a good share of the upward movement of the unfunded accrued liability. In fact, the unfunded would have decreased by about \$14,500,000 if the assumptions had not been strengthened.

One notable feature of the change in the fundings costs is the fact that the increase in the payroll plus the moderate size of the increase in the unfunded have combined to produce a decrease in the amortization and interest figures as a percentage of payroll. This has held down the increase in the total funding figures.

During the year, the unfunded accrued liability increased from \$184,635,170 to \$198,081,293, an increase of \$13,446,123. The Actuary gave the following analysis of this increase:

Increases:

Change in Actuarial Assumptions	\$28,027,812	
Change in Disability Benefit - Correctional Group	238,354	
Salary Scale Loss	<u>15,564,648</u>	
Total Increases		\$43,830,814

Decreases:

Amortization Contribution	\$15,723,606	
Excess Interest	8,912,543	
Capital Gain	5,452,425	
Mortality Gain - Retireds	140,317	
Mortality, Withdrawal and Disability Gain - Actives	<u>155,800</u>	
Total Decreases		<u>\$30,384,691</u>
Net Increase		\$13,446,123

3. Conclusion

The 1980 Valuation filed by MSRS conforms with the requirements of Chapter 356. The results of this valuation indicate that the deficit might be retired in about 12 years with the present level of support. Furthermore, the report contains detailed information about the effect of the revised actuarial assumptions on various cost items.