

REPORT ON
ACTUARIAL SURVEY
MINNESOTA STATE RETIREMENT SYSTEM

DECEMBER 31, 1967

May 31, 1968



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COATES, HERFURTH & ENGLAND
CONSULTING ACTUARIES
301 EAST COLORADO BLVD.
PASADENA, CALIFORNIA 91101

TELEPHONE
AREA CODE 213 681-4455

May 31, 1968

Board of Directors
Minnesota State Retirement System
530 North Robert Street
St. Paul, Minnesota 55101

Gentlemen:

We are pleased to transmit herewith our report on the Actuarial Survey (Investigation and Valuation) of your Retirement System made as of December 31, 1967.

Pursuant to Contract No. E-1352, under which this survey was authorized, the actuarial valuation was carried out on the basis of a 3% interest rate assumption and on the bases of the other actuarial assumptions developed during the course of the current actuarial investigation carried out as of December 31, 1967 and covering the experience of the members during the preceding three years. Also, in accordance with the above noted contract, we utilized the entry age normal cost method of funding to determine the unfunded accrued liability of the System.

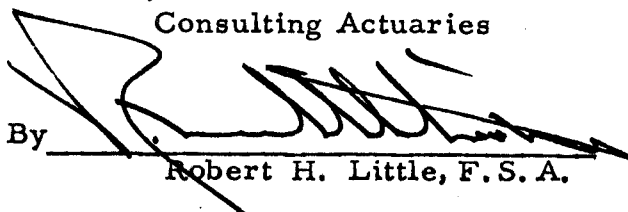
We hereby certify that the actuarial valuation of the Minnesota State Retirement System made as of December 31, 1967 was carried out on the basis of accepted actuarial methods and procedures and in accordance with the provisions of Minnesota Statutes 1965, Chapter 359. The results of that valuation indicate that the contributions required from the employees and from the State under Minnesota Statutes 1966, Chapter 352, as presently constituted are adequate to provide the benefits that will be paid from the System.

We look forward to the opportunity of discussing this report with you at your convenience.

Very truly yours,

COATES, HERFURTH & ENGLAND
Consulting Actuaries

By


Robert H. Little, F.S.A.

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REPORT ON
ACTUARIAL SURVEY
OF THE
MINNESOTA STATE RETIREMENT SYSTEM
AS OF
DECEMBER 31, 1967

SECTION I

INTRODUCTION

Minnesota Statutes 1965, Chapter 359, Section 2, Subdivision 3, requires that an actuarial survey be carried out at the close of the fiscal year ending in 1967 and each fourth year thereafter. This report contains the results of the actuarial survey that was carried out in compliance with this requirement of the State law.

The actuarial survey may, by definition, be divided into the following two principal phases:

1. Phase I - Actuarial Investigation

This phase of the survey consists of an analysis of the experience of the members during the period since the last investigation with respect to rates of separation from active service and salary progression scales for active members and mortality rates among retired members. This analysis permits the actuary to develop

appropriate assumptions with respect to each of these contingencies for use in the valuation phase of the survey. The last such investigation was carried out as of December 31, 1964.

2. Phase II - Actuarial Valuation

This phase of the survey consists of computing the actuarial assets and liabilities of the System on the basis of the actuarial assumptions developed during the course of the investigation together with the specified 3% interest rate assumption.

The Executive Director of the System furnished us with 55,101 IBM punch cards containing detailed employee information on all members who were actively employed as of December 31, 1967 or who had terminated from active employment during the three years under investigation. In addition, the Executive Director furnished us with 4,147 IBM punch cards containing detailed information on all retired members who were receiving benefits as of December 31, 1967 or who had died during the three years under investigation. We were also furnished various listings and tabulations of employee data.

The following schedule shows a summary of the membership of the System as of December 31, 1967. These members entered the valuation of the System as of that date.

SUMMARY OF MEMBERSHIP

DECEMBER 31, 1967

ACTIVE MEMBERS

	<u>Number</u>	<u>Annualized Salary December 31, 1967</u>
Male	17,336	\$ 124,197,506
Female	<u>16,942</u>	<u>82,784,817</u>
Total	34,278	\$ 206,982,323

INACTIVE MEMBERS

	<u>Number</u>	<u>Accumulated Contributions</u>
With Vested Rights	327	\$ 607,674.03
Without Vested Rights	<u>6,211</u>	<u>422,522.88</u>
Total	6,538	\$1,030,196.91

RETIRED MEMBERS

	<u>Number</u>	<u>Annual Allowance</u>
Age and Service Retirement	3,584	\$3,681,844.80
Disability Retirement	146	110,758.56
Survivors	39	34,187.64
Deferred Retirements	<u>3</u>	<u>840.12</u>
Total	3,772	\$3,827,631.12

The Acting Executive Director and his staff are to be complimented on the accuracy and completeness of the aforementioned data.

The following Section II of this report sets forth the results of the actuarial investigation and Section III sets forth the results of the actuarial valuation. The schedules attached at the end of this report set forth in detail the actuarial assumptions developed during the course of the investigation.

SECTION II

RESULTS OF ACTUARIAL INVESTIGATION

In order to carry out an actuarial valuation of the assets and liabilities of your Retirement System the actuary must first adopt assumptions with respect to the following items:

1. Interest earnings that will be realized on the fund over many years in the future.
2. The relative increases in the salary of a member from the date of the valuation to the date of separation from active service.
3. The mortality rates to be experienced among persons retired for age and service.
4. The mortality rates to be experienced among persons retired for disability.
5. The probabilities of members separating from active service on account of:
 - a) Withdrawal without vesting - i. e., withdrawal with refundment and withdrawal prior to completion of ten years of service.
 - b) Death
 - c) Disability
 - d) Age and Service Retirement

We have examined the experience of the members of your Retirement System during the three-year period ending December 31, 1967. We set forth in the following paragraphs of this Section a discussion of the items entering into the investigation.

INTEREST RATE

Your Retirement Law requires that the actuarial valuation be carried out on the basis of a 3% interest rate assumption.

SALARY SCALES

For the purpose of determining the present value of future contributions as well as the present value of future benefits, salary scales are prepared to measure the relative increases in salaries that members will experience as they advance in age toward retirement. These salary scales are based on average salaries developed separately for males and females by age and length of service. From such averages, index numbers are developed which reflect the increases in salary that a member could expect to receive over his future working lifetime. It should be noted that salary scales developed in the manner just described reflect only increases due to merit, promotion and service. They do not reflect across the board increases due to inflationary pressures.

The salary scales developed during the course of the December 31, 1964 actuarial investigation were based upon the salaries actually received by the members during 1964. Accordingly, members who were employed for a fractional part of the year contributed only a fractional part of an annual salary in the salary scale calculations. This procedure developed salary scales which were quite steep at the younger ages reflecting the fact that the majority of new employees, who worked less than a full year, were at the

younger ages. This situation is revealed quite dramatically by the fact that the December 31, 1964 data developed an average salary for male employees under age 25 of \$2,359 and an average salary for employees ages 30 to 34 of \$6,092.

The salary scales developed as of December 31, 1964 were utilized in the actuarial valuations carried out as of December 31, 1965 and 1966 in a manner consistent with their development - i. e., the salary scales were applied against the 1965 and 1966 salaries actually paid which reflected a portion of an annual salary for those employees who were employed less than a full year.

Major salary increases were granted in July, 1967. The average salary actually received in 1967 by members who were actively employed as of December 31, 1967 amounted to \$4,815 which represents a 10% increase in the comparable average salary received in 1966 (\$4,386) even though the increases were granted in July. This major adjustment in the level of salaries, coupled with the amendment to the Retirement Law which removed the \$7,200 salary limitation, led us to conclude that it would be advisable to carry out the December 31, 1967 salary scale calculations, as well as the valuation, on the basis of the "annualized" salary payable as of December 31, 1967. Your Executive Director concurred with us in this matter and the Manager of your Records Division was able to devise procedures to develop the required information.

The salary scales developed by the procedure outlined in the preceding paragraph are significantly "flatter" at the younger ages than the salary

scales developed as of December 31, 1964. Thus, the new male salary scale reflects a 33% increase in salary from age 20 to age 30 whereas the old December 31, 1964 salary scale reflected a 125% increase between those ages.

Since the new salary scales will be applied to the "annualized" salaries in a manner which is consistent with their development, we do not regard the adoption of the new salary scales as a change in actuarial assumptions. That is, the new salary scales applied to annualized earnings should develop substantially the same actuarial results as the old salary scales applied to actual earnings.

The following schedule shows a comparison between the old salary scales developed as of December 31, 1964 and the new salary scales developed during the current investigation:

Age	SALARY SCALES			
	Male		Female	
	Old	New	Old	New
20	.303	.580	.378	.596
30	.681	.774	.646	.775
40	.881	.901	.837	.893
50	.956	.965	.944	.963
60	.990	.994	.991	.993
65	1.000	1.000	1.000	1.000

The new salary scales are set forth in detail in Schedule 1 at the end of this report.

MORTALITY AFTER AGE AND SERVICE RETIREMENT

The following schedule shows a comparison of the deaths which actually occurred among members retired for age or service and the number expected by the mortality table currently in use which is referred to as the 1937 Standard Annuity Mortality Table:

	<u>MORTALITY AFTER AGE AND SERVICE RETIREMENT</u>	
	<u>Actual Deaths</u>	<u>Deaths Expected by 1937 Standard Annuity Mortality Table</u>
Male	358	342
Female	<u>134</u>	<u>150</u>
Total	492	492

The higher than expected mortality of males was exactly offset by the lower than expected mortality of females.

We recommend the continuation of the 1937 Standard Annuity Mortality Table as the basis of the mortality after age and service retirement assumption.

MORTALITY AFTER DISABILITY RETIREMENT

You are currently using the Combined Annuity Mortality Table to reflect rates of mortality after disability retirement. The following table shows a comparison of the actual deaths with those expected by the Combined Annuity Mortality Table:

MORTALITY AFTER DISABILITY RETIREMENT

	<u>Actual Deaths</u>	<u>Expected Deaths Combined Annuity Mortality Table</u>
Male	25	8
Female	<u>9</u>	<u>7</u>
Total	34	15

Although the experience shows that the actual rates of mortality after disability retirement are higher than those which were assumed in the valuation, the difference is not as great as that which was developed by the December 31, 1964 investigation. Also, since there are less than 150 members retired for disability, fluctuations can be expected and we believe that the Combined Annuity Mortality Table should be continued in use.

RATES OF SEPARATION FROM ACTIVE SERVICE

The results of the investigation with respect to rates of separation from active service are summarized in the following table. The "Old Expected Separations" are based on the rates developed as of December 31, 1964 which were used in the valuations of your Retirement System as of December 31, 1965 and December 31, 1966. The "New Expected Separations" are based on the rates developed by the current investigation covering the experience of your members from January 1, 1965 through December 31, 1967.

SUMMARY OF ACTUARIAL INVESTIGATION
WITH RESPECT TO RATES OF SEPARATION
FROM ACTIVE SERVICE

	<u>Actual Separations</u>	<u>"Old" Expected Separations</u>	<u>"New" Expected Separations</u>
<u>Withdrawal Without Vesting*</u>			
Male	2,268	1,393	1,709
Female	<u>2,695</u>	<u>1,881</u>	<u>2,129</u>
Total	4,963	3,274	3,838
<u>Death</u>			
Male	282	311	311
Female	<u>80</u>	<u>107</u>	<u>107</u>
Total	362	418	418
<u>Disability Retirement</u>			
Male	57	43	49
Female	<u>32</u>	<u>26</u>	<u>30</u>
Total	89	69	79
<u>Age and Service Retirement</u>			
Male	553	548	548
Female	<u>344</u>	<u>370</u>	<u>370</u>
Total	897	918	918

*Based on experience of members after completing 3 years of service.

WITHDRAWAL WITHOUT VESTING

We received information on those employees who terminated service and received a refundment, those that terminated employment with less than ten years of service but who have not yet received a refundment, and those who terminated service with more than ten years of service and who have not yet received a refundment. Since members must complete ten years of service before acquiring a vested right in their benefits, we combined the terminations with refundment and the terminations with less than ten years of service without refundments for the purpose of developing withdrawal rates.

The withdrawal of members with less than three years of service has a relatively minor financial effect on the fund and, also, the experience of members prior to completion of three years of service is not representative of the experience of members that will ultimately receive disability and service retirement benefits from the System. We, therefore, developed withdrawal rates on the basis of the experience of members after completion of three years of service.

The withdrawal rates developed by the current investigation expect more withdrawals among both male and female members than the old withdrawal rates. The greatest change occurred at the younger ages.

DEATH

The results of the investigation show that the old probabilities of death in active service for both male and female members expected more deaths

than actually occurred. However, when viewed in connection with the results of the December 31, 1964 investigation, we believe the old rates are appropriate for continued use.

DISABILITY

The results of the investigation relating to rates of disability show a continuation of the trend that was disclosed by the December 31, 1964 investigation which developed rates of disability almost three times higher than those previously used. The rates of disability used for the current valuation are almost 15% higher, for both male and female members, than the old rates and are still lower than the actual experience during the past three years would justify.

AGE AND SERVICE RETIREMENT

Rates of age and service retirement are probably the most important single element developed during the course of an actuarial investigation. The liability for age and service retirement benefits depends to a large extent on the ages at which such benefits commence.

The results of the investigation indicate that the rates of age and service retirement developed by the December 31, 1964 investigation are appropriate for continued use.

RECOMMENDATIONS ON ACTUARIAL ASSUMPTIONS

Based upon our study and analysis of the information developed by the actuarial investigation of the actual experience of your members during the period January 1, 1965 to December 31, 1967, we respectfully make the following recommendations with respect to the actuarial assumptions to be used for the actuarial valuations to be carried out commencing with the current valuation carried out as of December 31, 1967 which is discussed in the following Section III of this report:

1. In order to comply with your Retirement Law, the actuarial valuations should be carried out on the basis of a 3% interest rate assumption.
2. We recommend the continuation of the 1937 Standard Annuity Mortality Table for the mortality after age and service retirement assumption.
3. We recommend the continuation of the Combined Annuity Mortality Table as the basis of the assumption for mortality after disability retirement.
4. We recommend the adoption of the salary scales developed by the current investigation which are set forth in the attached Schedule 1.
5. We recommend the adoption of the rates of separation from active service developed by the current investigation. These rates of separation from active service are set forth in the attached Schedules 2 and 3 and reflect increases in the rates of separation due to withdrawal without vesting and disability retirement and no change in

the rates of separation due to death and age and service retirement.

Minnesota Statutes 1965, Chapter 359 require an analysis of the effect of the changes in actuarial assumptions. For convenience, this information appears in Section III of this report which deals with the results of the valuation.

SECTION III

RESULTS OF ACTUARIAL VALUATION

The contract under which this valuation was authorized specifies that the actuarial valuation be carried out on the basis of a 3% interest rate assumption and upon the actuarial assumptions developed during the course of the actuarial investigation carried out as of December 31, 1967 and summarized in Section II of this report. We were also instructed to carry out the actuarial valuation on the basis of an entry age normal cost method of funding. The current valuation was carried out in accordance with the stipulations contained in the aforementioned contract.

Section 352.04, Subdivision 2, of the Minnesota Statutes 1965 was amended during the 1967 session of the Legislature to remove the \$7,200 maximum on the annual salary subject to employee contributions and future benefits. This amendment was, of course, reflected in the current valuation.

The Acting Executive Director furnished us with a financial report setting forth the assets and liabilities of the fund as of December 31, 1967. No physical audit of these assets was made by us and our calculations are based upon the financial report as submitted.

The entry age normal cost method of funding requires the determination of the level contribution rate which, if contributed on behalf of all new employees from the dates of employment to the dates of separation from service, will be adequate to provide all of their benefits. Under this funding method,

the unfunded accrued liability is taken as the total liability of the System for benefits earned in the past as well as those earnable in the future, less the assets on hand, less the present value of future employee contributions and less the present value of future State entry age normal cost contributions.

In order to develop the entry age normal cost contribution rate for new employees, we carried out a complete valuation of active members as of December 31, 1967 who were employed during the preceding five-year period. The results of these calculations indicate that the total entry age normal cost rate amounts to 5.44% of salary. This represents a 6% increase over the 5.11% entry age normal cost rate that was developed during the course of the December 31, 1965 valuation. This increase can be attributed to the difference in composition of the members entering into the calculations as well as a refinement in computing the present value of future participating salary that was permitted by the removal of the \$7,200 salary limitation.

Employees are required by law to contribute 3% and, accordingly, the State's share of the entry age normal cost contribution rate amounts to 2.44%. We expect the entry age normal cost rate to remain fairly stable unless there is a change in employment practices or in the Retirement Law.

The law requires that the State make the following contributions to the Fund with respect to members contributing at a 3% rate:

- (1) A "matching" contribution equal to 3% of the members' participating salaries, and
- (2) An "additional" contribution equal to two-thirds of members' contributions, or 2% of participating salary.

In the case of members contributing at a 6% rate, the required contributions by the State are:

- (1) A "matching" contribution equal to 6% of the members' participating salaries, and
- (2) An "additional" contribution equal to one-sixth of members' contributions, or 1% of participating salary.

We have been advised that it is the intent of the Minnesota Legislature to pay the "additional" contributions referred to above for a limited time only. Inasmuch as there were only 33 active employees who were contributing at the 6% level as of December 31, 1967, we will hereinafter refer only to the State's contribution totaling 5% of salary which applies to members contributing at the 3% rate.

The Accounting Balance Sheet shown on the following page was furnished by the Acting Executive Director. The Reserves for benefits already granted in the amount of \$34,977,860.00 reflects the balances shown on the System records before making the adjustments which will result from the current valuation.

The Actuarial Balance Sheet shown on the page following the Accounting Balance Sheet summarizes the results of the valuation. In the current valuation we have made provision for administrative expenses which for 1967 amounted to approximately .19% of 1967 salaries.

MINNESOTA STATE RETIREMENT SYSTEM

ACCOUNTING BALANCE SHEET
AS OF
DECEMBER 31, 1967

ASSETS

Cash in Office	\$ 42.52
Deposits in banks	334,913.59
Short term investments	1,489,061.57
Accounts receivable:	
(a) Accrued Employee Contributions	123,409.49
(b) Accrued Employer Contributions	193,286.68
(c) Past Due Employer Contributions	1,040,742.65
(d) Employee back payments	13,760.87
(e) Investment maturities and sales	14,000.00
(f) Other	18,444.99
Accrued Interest on Investments	921,085.07
Dividends on Stocks declared but not yet received	23,240.30
Investment in bonds at amortized cost	74,126,134.67
Investment in stocks at cost	27,858,645.65
Equipment at cost, less depreciation	9,301.37
Prepaid postage	1,000.00
Total Assets	<u>\$106,167,069.42</u>

LIABILITIES AND RESERVES

LIABILITIES

Accounts Payable:	
(a) Annuities	\$ 3,827.92
(b) Survivor Benefits	2,978.97
(c) Annuitant deposits	14,498.19
(d) Accrued expenses	24,464.38
Suspense Items:	
(a) Unredeemed 6-year old warrants (canceled by State Auditor)	2,696.31
Total current liabilities	<u>\$ 48,465.77</u>

RESERVES

Employee contributions reserve	\$ 34,361,928.36
Retirement and disability reserve	34,578,783.00
Survivor benefit reserve	399,077.00
State contribution reserve	36,778,815.29
Total reserves	<u>\$106,118,603.65</u>
Total liabilities and reserves	<u>\$106,167,069.42</u>

MINNESOTA STATE RETIREMENT SYSTEM

ACTUARIAL BALANCE SHEET
AS OF
DECEMBER 31, 1967

ASSETS

1.	Assets on Hand from Accounting Balance Sheet		\$106,167,069.42
2.	Present Value of Employees' Future Contributions (3% of Participating Salary)		50,802,121.00
3.	Present Value of State Future Contributions Applicable to:		
	(a) Entry Age Normal Cost (2.44% of Participating Salary)	\$41,319,058.00	
	(b) Unfunded Accrued Liability (Balance of 3% "Matching" Con- tribution less .19% for Operating Expenses or .37% of Participating Salary)	6,265,595.00	
	(c) Unfunded Accrued Liability (Portion to be funded by 2% "Addi- tional" Contribution)	<u>21,767,259.35</u>	<u>69,351,912.35</u>
4.	TOTAL ASSETS		<u><u>\$226,321,102.77</u></u>

LIABILITIES

5.	Current Liabilities from Accounting Balance Sheet		\$ 48,465.77
6.	Present Value of Earned and Earnable Benefits Payable to Presently Active Members:		
	(a) Retirement Benefits	\$145,635,416.00	
	(b) Disability Benefits	14,129,967.00	
	(c) Refundments due to death or withdrawal	<u>29,142,748.00</u>	<u>188,908,131.00</u>
7.	Present Value of Benefits for Deferred Annuitants:		
	(a) Retirement Benefits	\$ 1,852,303.00	
	(b) Refundments due to death or withdrawal	96,351.00	
	(c) Benefits already authorized	<u>11,527.00</u>	<u>1,960,181.00</u>
8.	Present Value of Refundments to former members without vested rights		422,523.00
9.	Present Value of Benefits Payable to Annuitants:		
	(a) Retirement Benefits	\$ 33,334,827.00	
	(b) Disability Benefits	1,233,597.00	
	(c) Survivors' Benefits	<u>413,378.00</u>	<u>34,981,802.00</u>
10.	TOTAL LIABILITIES		<u><u>\$226,321,102.77</u></u>

The Actuarial Balance Sheet is a convenient device to present the results of an actuarial valuation. The following comments are intended to assist you in your understanding of the items contained in the Actuarial Balance Sheet.

Item 1 shows the assets on hand and was taken directly from the Accounting Balance Sheet.

Item 2 shows the present value of members' future contributions required by law equal to 3% of the members' salaries.

Item 3 shows the present value of State future contributions to the System. We have divided the present value applicable to the State's contributions as follows:

Item 3(a) The portion attributable to the State's share of the total entry age normal cost contribution of 5.44% of members' salaries. After deducting the members' share of 3%, the State's share of the entry age normal cost contribution amounts to 2.44% of members' salaries.

Item 3(b) The portion attributable to the balance of the State's "matching" 3% contribution (.56% of members' salaries less .19% which is allocated for operating expenses) which is being used to pay a portion of the State's share of the cost.

Item 3(c) The portion attributable to the State's "additional" 2% contribution. On the basis of the annualized salaries

payable as of December 31, 1967, this 2% "additional" contribution amounts to approximately \$4,140,000.00 per year and the full amount of the contribution will amortize the \$21,767,259.35 shown in Item 3(c) in about 6 years. The level annual contribution required to amortize \$21,767,259.35 over the 30-year period ending on December 31, 1997 is \$1,094,217.00.

Item 5 shows the current liabilities and was taken directly from the Accounting Balance Sheet.

Item 6 shows the actuarially computed present value of all benefits earned to December 31, 1967 and earnable after that date that will be paid from the System to presently active members.

Item 7 shows the actuarially computed present value of all benefits payable from the System to members who have terminated service with vested benefits.

Item 8 shows the actuarially computed present value of refundments that will be paid from the System to members who have terminated service without vested benefits.

Item 9 shows the actuarially computed present value of all benefits payable from the System with respect to members who have retired. The System's "Retirement and Disability Reserve" and "Survivor Benefit Reserve" should be adjusted as of January 1, 1968 to \$34,579,951.00 (Item 7(c) plus Items 9(a) and (b)) and \$413,378.00 (Item 9(c)), respectively.

CONCLUSIONS

In a Retirement System such as yours where both the benefits and contributions are specified in the Retirement Law, the major purpose of an actuarial valuation is to determine whether or not the prescribed contributions are adequate to provide the benefits that will ultimately be paid under the System. The results of the current valuation show that the benefits to be provided under the System can be financed by the 3% members' contributions and the State's "matching" 3% contributions plus the State's "additional" 2% contribution for approximately 6 years.

REQUIRED EXHIBITS

Minnesota Statutes 1965, Chapter 359, requires, in Section 1, Subdivision 4(1), that the actuary of the System prepare an exhibit setting forth certain specified information with regard to the System as of the valuation date, including "Reserves Required" under the System. In an earlier conference with representatives of the State's Employee Retirement System's Interim Commission, we were advised that "Reserve Required", as contemplated in the aforementioned statute, may be defined as the actuarially computed present value applicable to a specified benefit reduced by the actuarially computed present value of any portion of the total entry age normal cost contribution under the System which is applicable to the specified benefit.

The exhibit required by Section 1, Subdivision 4(1) of Minnesota Statutes 1965, Chapter 359, is presented on the following pages of this Section III and we hereby certify that the Reserves Required set forth therein have been computed in accordance with the Entry Age Normal Cost (level Normal Cost) basis in the manner outlined in the definition referred to above.

MINNESOTA STATE RETIREMENT SYSTEM

EXHIBIT REQUIRED BY MINNESOTA STATUTES 1965, CHAPTER 359,
SECTION 1, SUBDIVISION 4(1)

AS OF
DECEMBER 31, 1967

ASSETS AND UNFUNDED ACCRUED LIABILITY

Assets

1.	Cash in Office		\$	42.52
2.	Deposits in Banks			334,913.59
3.	Short Term Investments			1,489,061.57
4.	Accounts Receivable:			
	(a) Members' Contributions	\$	123,409.49	
	(b) Employer Contributions		1,234,029.33	
	(c) Other		46,205.86	1,403,644.68
5.	Accrued Interest on Investments			921,085.07
6.	Dividends declared but not received			23,240.30
7.	Bonds at Amortized Cost			74,126,134.67
8.	Stocks at Cost (Market Value 12/31/67 - \$30,406,503.00)			27,858,645.65
9.	Equipment at Cost, less depreciation			9,301.37
10.	Other - Prepaid Postage			1,000.00
11.	TOTAL ASSETS			\$106,167,069.42

Unfunded Accrued Liability

12.	Unfunded Accrued Liability to be funded by portion of State's 3% "Matching Contribu- tion" in excess of State's share of entry age normal cost contribution and Operating Expenses		\$	6,265,595.00
13.	Unfunded Accrued Liability to be funded by State's 2% "Additional" contribution			21,767,259.35
14.	Total Unfunded Accrued Liability		\$	28,032,854.35
15.	TOTAL ASSETS AND UNFUNDED ACCRUED LIABILITY			\$134,199,923.77

CURRENT LIABILITIES AND RESERVES REQUIRED

Current Liabilities

16.	Accounts Payable:			
	(a) Annuity Payments	\$	3,827.92	
	(b) Survivor Payments		2,978.97	
	(c) Refunds to members		14,498.19	
	(d) Accrued expenses		24,464.38	\$ 45,769.46
17.	Suspense items			2,696.31
18.	Total Current Liabilities			\$ 48,465.77

Reserves Required

19.	Total Reserves Required per attached schedule			134,151,458.00
20.	TOTAL CURRENT LIABILITIES AND RESERVES REQUIRED			\$134,199,923.77

Note: Accumulated contributions, without interest, of members not yet retired amounted to \$34,361,928.36 as of December 31, 1967.

MINNESOTA STATE RETIREMENT SYSTEM

DETERMINATION OF RESERVES REQUIRED
AS OF
DECEMBER 31, 1967

	(1)	(2)	(3)
<u>Benefits For:</u>	<u>Present Value of Benefits</u>	<u>Present Value of Applicable Portion of Normal Cost Contribution</u>	<u>Reserves Required (1) - (2)</u>
1. Active Members:			
(a) Retirement Benefits	\$145,635,416.00	\$58,761,120.00	\$ 86,874,296.00
(b) Disability Benefits	14,129,967.00	8,975,041.00	5,154,926.00
(c) Refundments due to death or withdrawal	29,142,748.00	24,385,018.00	4,757,730.00
2. Deferred Annuitants	1,960,181.00	-	1,960,181.00
3. Former Members Without Vested Rights	422,523.00	-	422,523.00
4. Annuitants:			
(a) Retirement Benefits	33,334,827.00	-	33,334,827.00
(b) Disability Benefits	1,233,597.00	-	1,233,597.00
(c) Survivors' Benefits	413,378.00	-	413,378.00
5. TOTAL	\$226,272,637.00	\$92,121,179.00	\$134,151,458.00

Minnesota Statutes 1965, Chapter 359, requires, in Section 1, Subdivision 4(2) and (3), that there be submitted annually an analysis of the System's income and deductions from income with increases in total reserves required being specifically referred to as a deduction from income. The exhibit required by Section 1, Subdivision 4(2) and (3) is presented on the following page of this Section III. Items of income and deductions from income with the exception of increases in total reserves required were taken directly from statements prepared by the Executive Director.

Inasmuch as any excess of "income" over "deductions from income" must be equal to the reduction in the Unfunded Accrued Liability of the System over the period covered by the analysis, we have confirmed that fact in Item 13 of the exhibit.

MINNESOTA STATE RETIREMENT SYSTEM

EXHIBIT REQUIRED BY MINNESOTA STATUTES 1965, CHAPTER 359,
SECTION 1, SUBDIVISION 4(2) and (3)
FISCAL YEAR ENDING DECEMBER 31, 1967

ANALYSIS OF INCOME AND DEDUCTIONS FROM INCOME

INCOME

1.	From Members:		
	(a) Employee Contributions		\$ 4,875,087.35
	(b) Employee Accrued Contributions Receivable		123,409.49
	(c) Employee Contributions Applied to Past Due Payments		15,963.74
2.	From Employers:		
	(a) Employer Contributions		4,840,926.56
	(b) Employer Additional Contributions		3,142,061.38
	(c) Employer Accrued Contributions Receivable		193,286.68
	(d) Employer Past Due Contributions Receivable		147,328.94
3.	From Investments:		
	(a) Interest on Bonds and Notes (Net)		3,187,944.97
	(b) Dividends on Corporate Stock		907,346.50
	(c) Premiums on Bonds Called		3,568.19
4.	Other Revenues:		
	(a) Interest on Back Payments by Members		4,813.64
	(b) Employer Penalty		71.57
	(c) Adjustment in Prior Year Benefit Payment		2,184.04
	(d) Unclaimed Contributions and Benefits Canceled		209.81
5.	Net Gain on Sale of Investments		<u>107,676.53</u>
6.	TOTAL INCOME		\$17,551,879.39

DEDUCTIONS FROM INCOME

7.	Benefits:		
	(a) Annuities, Disability and Retirement Allowances		\$ 3,725,898.47
	(b) Survivor Benefits		35,116.51
	(c) Interest Paid on Deposits of Deceased Members		45,116.02
8.	Refundments:		
	(a) Left Service		1,483,236.97
	(b) Members of Other Retirement Systems		33,966.89
	(c) Member Deaths		211,486.37
	(d) Annuitant Deaths		56,059.11
	(e) Erroneous Deductions		10,825.39
9.	Operating Expenses		<u>314,186.29</u>
10.	Increase in Total Reserves Required:		
	(a) Reserves Required 12-31-66	\$123,252,075.00	
	(b) Reserves Required 12-31-67	<u>134,151,458.00</u>	<u>10,899,383.00</u>
11.	TOTAL DEDUCTIONS FROM INCOME		\$16,815,275.02
12.	EXCESS OF INCOME OVER DEDUCTIONS FROM INCOME		\$ 736,604.37
13.	REDUCTION IN UNFUNDED ACCRUED LIABILITY:		
	(a) Unfunded Accrued Liability 12-31-66	\$ 28,769,458.72	
	(b) Unfunded Accrued Liability 12-31-67	<u>28,032,854.35</u>	
			\$ 736,604.37

Minnesota Statutes 1965, Chapter 359, requires, in Section 1, Subdivision 4(4), that there be submitted annually an analysis of changes in the membership of the System. Section 2, Subdivisions 4 and 5, were amended in 1967 to require additional information with respect to the annual payroll and annual annuities of the members of the System as well as certain information with respect to average ages. The exhibit required by Section 1, Subdivision 4(4), Section 2, Subdivision 4(6), and Section 2, Subdivision 5(9) and (10) is presented on the following pages of this Section III. All of the information was taken directly from an exhibit prepared by the Acting Executive Director.

MINNESOTA STATE RETIREMENT SYSTEM

EXHIBIT REQUIRED BY MINNESOTA STATUTES 1965, CHAPTER 359,
SECTION 1, SUBDIVISION 4(4), SECTION 2, SUBDIVISION 4(6) AND
SECTION 2, SUBDIVISION 5(9) AND (10)
FISCAL YEAR ENDING DECEMBER 31, 1967

COVERED EMPLOYEE STATEMENT

ACTIVE EMPLOYEES:	Annual Payroll		
	<u>Number</u>	<u>Covered</u>	<u>Total</u>
Active at January 1, 1967	33,006	\$135,032,583.48	\$144,610,869.15
New Entrants, 1967:	<u>9,238</u>	15,201,090.00	15,286,311.85
	42,244		
Less Separations From Active, 1967:			
Refundment:	5,545	5,249,512.22	5,428,657.93
*Separation with a Vested Right to a deferred annuity:	50		
*Separation with neither Refund- ment nor Vested Right:	1,967		
Disability	33	37,871.43	38,922.33
Death	123	302,384.24	310,775.17
Service Retirement	<u>248</u>	772,158.79	793,585.60
NET INCREASE	1,272		
Active at December 31, 1967	<u>34,278</u>	<u>\$159,568,900.00</u>	<u>\$165,053,984.40</u>

*Employees in this group do not have earning or deductions in 1967.

Average Entry Age of New Employees

<u>For the Year</u>	<u>Male</u>	<u>Female</u>	<u>Average of Total</u>
1963	32.7	28.4	30.3
1964	31.2	27.6	29.1
1965	31.4	26.1	28.4
1966	31.4	26.1	28.2
1967	32.0	28.1	29.5

Average age at entry into state service for all active employees at December 31, 1967:

Average Male	33.3
Average Female	31.9
Total Average	32.6

ANNUITANT STATEMENT

(1) SERVICE RETIREMENT ANNUITANTS:

	<u>Number</u>	<u>Annual Annuity Benefit Payable</u>
Receiving at January 1,	2,944	\$3,217,362.40
New Retirements:	248	294,048.96
TOTAL:	3,192	\$3,511,411.36
Reductions:		
Deaths	<u>163</u>	<u>195,854.20</u>
Receiving at December 31, 1967	3,029	\$3,315,557.16

(2) DISABLED EMPLOYEES:

	<u>Number</u>	<u>Annual Disability Benefit Payable</u>
Receiving at January 1,	130	\$ 102,128.60
New Disabilities	33	24,829.56
TOTAL:	163	126,958.16
Reductions:		
Deaths	16	15,895.76
Recovered from Disability	<u>1</u>	<u>303.84</u>
Receiving at December 31, 1967	146	\$ 110,758.56

(3) WIDOWS RECEIVING AN ANNUITY OR SURVIVOR BENEFIT

A. Beneficiaries of Retired Employees Receiving an optional or reversionary annuity:

	<u>Number</u>	<u>Annual Annuity Benefit Payable</u>
Receiving at January 1,	101	\$ 76,145.28
New Beneficiaries Receiving	12	8,827.08
TOTAL:	113	\$ 84,972.36
Reductions:		
Deaths	<u>1</u>	<u>913.80</u>
Receiving at December 31, 1967	112	\$ 84,058.56

ANNUITANT STATEMENT (Continued)

(3) WIDOWS RECEIVING AN ANNUITY OR SURVIVOR BENEFIT (Continued)

B. Spouses Receiving a Survivor Benefit

	<u>Number</u>	<u>Annual Survivor Benefit Payable</u>
Receiving at January 1,	37	\$ 32,867.64
<u>Note</u> there were no changes in 1967		
Receiving at December 31, 1967	37	\$ 32,867.64

(4) CHILDREN RECEIVING A SURVIVOR BENEFIT

	<u>Number</u>	<u>Annual Survivor Benefit Payable</u>
Receiving at January 1,	4	\$ 2,640.00
<u>Note</u> No new benefits in 1967.		
Reductions:		
Reached 18 years of Age	<u>2</u>	<u>1,320.00</u>
Receiving at December 31, 1967	2	\$ 1,320.00

(5) DEFERRED ANNUITANTS (left state service before reaching retirement age):

	<u>Number</u>	<u>Annual Annuity Benefit Payable</u>
Receiving at January 1,	410	\$ 262,945.32
New Retirements	44	26,456.52
TOTAL:	454	\$ 289,401.84
Reductions:		
Deaths	<u>11</u>	<u>7,172.76</u>
Receiving at December 31, 1967	443	\$ 282,229.08

Average Age at Retirement of New Service Annuitants:

<u>Year</u>	<u>Average Retirement Age</u>
1963	66 yrs. 3 mos
1964	67 yrs.
1965	66 yrs. 4 mos
1966	66 yrs. 2 mos
1967	66 yrs.

Average age at retirement of all existing service annuitants: 66 yrs. 5 mos.

Section 2, Subdivision 4 of the Minnesota Statutes 1965 was amended in 1967 to require an analysis of the increase or decrease in the unfunded liability that occurred since the last valuation. The exhibit shown on the following pages of this Section III contains the information required by Section 2, Subdivision 4(1), (2), (3), (4) and (5).

MINNESOTA STATE RETIREMENT SYSTEM

EXHIBIT REQUIRED BY MINNESOTA STATUTES 1965, CHAPTER 359
SECTION 2, SUBDIVISION 4(1), (2), (3), (4) and (5)
FISCAL YEAR ENDING DECEMBER 31, 1967

1.	Unfunded Accrued Liability December 31, 1966		\$28,769,459
2.	Change due to current rate of funding and interest requirement (Subdivision 4(4):		
	(a) 1967 Past Service Contribution	-\$4,415,188	
	(b) 3% interest requirement	+ <u>863,084</u>	- 3,552,104
3.	Change due to actuarial gains (-) or losses (+) because of 1967 experience deviations from expected (Subdivision 4(3))		
	(a) Excess interest earnings	-\$1,196,313	
	(b) Withdrawals	- 134,339	
	(c) Age and Service retirements	- <u>171,167</u>	
	(d) Total Gains	-\$1,501,819	
	(e) Mortality on retired lives	+\$ 15,469	
	(f) Disability retirements	+ 25,330	
	(g) Deaths in active service	+ 104,159	
	(h) Salary increases and change from actual earnings to annualized earnings	+ <u>3,174,701</u>	
	(i) Total Losses	+ <u>\$3,319,659</u>	+\$ 1,817,840
4.	Change due to 1967 entrants (Subdivision 4(5))		+ 288,605
5.	Unfunded Accrued Liability December 31, 1967 computed on the basis of the old plan and old actuarial assumptions (Item 1 plus Item 2 plus Item 3 plus Item 4)		27,323,800

6.	Change due to 1967 Plan Amendment removing \$7,200 salary limitation (Subdivision 4(1))			+\$ 4,592,008
7.	Unfunded Accrued Liability December 31, 1967 computed on the basis of the amended Plan and old actuarial assumptions (Item 5 plus Item 6)			31,915,808
8.	Change due to new actuarial assumptions (Subdivision 4(2))			
	(a) Withdrawal rates	+\$2,015,276		
	(b) Disability rates	- 224,696	+	1,790,580
9.	Change due to composition of members entering entry age normal rate calculations and refinement of calculation of present value of future salaries due to 1967 amendment removing \$7,200 salary limitation			- 5,673,534
10.	Unfunded Accrued Liability December 31, 1967 calculated on basis of amended Plan and new actuarial assumptions (Item 7 plus Item 8 plus Item 9)			28,032,854

SCHEDULE 1

SALARY SCALES

<u>Age</u>	<u>Male</u>	<u>Female</u>
20	.580	.596
21	.597	.615
22	.614	.633
23	.634	.651
24	.654	.669
25	.674	.687
26	.694	.705
27	.714	.723
28	.734	.741
29	.754	.759
30	.774	.775
31	.793	.790
32	.810	.803
33	.826	.816
34	.840	.829
35	.851	.841
36	.863	.853
37	.874	.864
38	.883	.874
39	.892	.884
40	.901	.893
41	.909	.902
42	.917	.911
43	.924	.919
44	.931	.926
45	.938	.933
46	.942	.939
47	.948	.945
48	.956	.951
49	.960	.957
50	.965	.963
51	.970	.968
52	.974	.973
53	.978	.977
54	.981	.981

SCHEDULE 1

SALARY SCALES

(Continued)

<u>Age</u>	<u>Male</u>	<u>Female</u>
55	.984	.984
56	.987	.987
57	.989	.988
58	.991	.990
59	.993	.991
60	.994	.993
61	.995	.994
62	.997	.996
63	.998	.997
64	.999	.999
65	1.000	1.000
66	1.000	1.000
67	1.000	1.000
68	1.000	1.000
69	1.000	1.000
70	1.000	1.000

SCHEDULE 2

Male 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	6		
21	2,250	6		
22	2,080	7		
23	1,920	7		
24	1,760	7		
25	1,600	8		
26	1,470	8		
27	1,340	8		
28	1,230	9		
29	1,130	9		
30	1,040	10	2	
31	950	10	2	
32	890	11	2	
33	830	12	2	
34	770	13	2	
35	720	15	2	
36	680	16	2	
37	640	18	2	
38	600	20	2	
39	560	22	2	
40	530	25	2	
41	500	28	2	
42	480	30	2	
43	460	33	2	
44	430	37	2	
45	410	41	2	
46	390	46	3	
47	370	51	4	
48	350	57	5	
49	340	63	6	

SCHEDULE 2

Male Members

(Continued)

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>
50	320	70	7	
51	300	77	8	
52	280	85	10	
53	260	93	12	
54	240	102	14	
55	210	111	17	
56	170	120	20	
57	140	129	23	
58	90	139	28	280
59	40	148	33	30
60		157	38	100
61		166	45	100
62		175	55	140
63		184	68	180
64		194	87	870
65		204		2,200
66		214		950
67		224		1,250
68		234		1,700
69		244		2,150
70				10,000

SCHEDULE 3

Female 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	5		
21	3,550	6		
22	3,390	6		
23	3,230	6		
24	3,070	6		
25	2,910	6		
26	2,750	6		
27	2,600	6		
28	2,430	6		
29	2,270	6		
30	2,120	6		
31	1,970	7		
32	1,820	7		
33	1,680	7		
34	1,540	7		
35	1,410	8	1	
36	1,300	8	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	11	3	
43	720	12	3	
44	680	13	3	
45	630	14	3	
46	590	15	4	
47	560	16	4	
48	530	17	4	
49	500	18	5	

SCHEDULE 3

Female Members

(Continued)

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>
50	470	19	5	
51	440	20	6	
52	410	22	7	
53	390	24	8	
54	360	26	10	
55	330	32	12	
56	290	39	15	
57	230	45	18	
58	170	53	22	200
59	90	61	26	50
60		80	31	100
61		83	37	50
62		86	44	150
63		96	52	200
64		105	61	600
65		114		2,150
66		124		1,200
67		133		1,400
68		144		2,500
69		154		3,550
70				10,000

MSRS VALUATION AS OF DECEMBER 31, 1967

The purpose of this memorandum is to discuss the valuation report of the Minnesota State Retirement System, dated May 31, 1968, which was submitted to the Commission in accordance with Chapter 249 of Minnesota Laws 1967. The valuation was made using the entry age normal cost method and assuming 3% interest. All valuation reports mentioned in this memorandum were prepared by Coates, Herfurth and England, Consulting Actuaries.

This memo contains the following:

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

1. Statistical and Valuation Data

Results of the valuation reports as of December 31, 1966 and December 31, 1967 are shown for comparative purposes. Figures are rounded where necessary for simplicity of presentation.

	<u>As of</u> <u>December 31, 1966</u>	<u>As of</u> <u>December 31, 1967</u>
(1) <u>Membership</u>		
Active Members	33,006	34,278
Inactive Members	5,680	6,538
Retired Members	3,461	3,587
Disabled Members	130	146
Survivors of Deceased Members	41	39

(2) Payroll and Annuities Payable

Total Payroll	\$ 144.6 Million	\$ 207.0 Million *
Covered Payroll		
(\$7,200 limit in 1966)	139.7 Million	207.0 Million *
Annuities (annual)	3.7 Million	3.8 Million

*In 1967, all salaries have been annualized.

(3) Valuation Balance Sheet

Accrued Liability	\$ 123.3 Million	\$ 134.2 Million
Assets	<u>94.5</u> Million	<u>106.1</u> Million
Unfunded Accrued Liability (Deficit)	\$ 28.8 Million	\$ 28.1 Million
Funding Ratio (Ratio of Assets to Accrued Liability)	76.6%	79.1%

	As of <u>December 31, 1966</u>	As of <u>December 31, 1967</u>
(4) <u>Normal Cost and Funding Costs</u>		
	<u>Percent of Covered Payroll</u>	<u>Percent of Covered Payroll</u>
Normal Cost	5.11%	5.44%
Normal Cost	5.11%	5.44%
Interest on Deficit	0.62	0.41
Expenses	<u>0.19</u>	<u>0.19</u>
Total ("Minimum Contribution")	5.92%	6.04%
Normal Cost	5.11%	5.44%
Amortization by 1997	1.00	0.67
Expenses	<u>0.19</u>	<u>0.19</u>
Total ("Required Contribution")	6.30%	6.30%
(5) <u>Statutory Contributions</u>		
Employee	3.0%	3.0%
Employer Regular	3.0	3.0
Employer Additional	<u>2.0</u>	<u>2.0</u>
Total Contributions	8.0%	8.0%
(6) <u>Investment Yield (A)</u>	4.07%	4.17%

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

2. Discussion of Valuation Results

(1) Discussion of Normal Cost

The normal cost as a percentage of participating payroll turned out to be 5.44% which compares with 5.11% in 1966.

In the SERA valuation, normal cost as a percentage of payroll is obtained from a valuation of presently active members who were hired during the preceding five-year period rather than from a valuation of the entire membership. Therefore, the normal cost is more sensitive to changes in the composition of the group of new employees than it would otherwise be. The new employees during 1967 had a slightly higher average age than those of other recent years, and the group contained a larger proportion of females. These facts contributed to the small increase in the normal cost as a percentage of payroll.

(2) Change in Deficit

The deficit decreased from \$28.8 million on December 31, 1966 to \$28.1 million on December 31, 1967, a decrease of \$0.7 million. As of December 31, 1966, we estimated that the anticipated contribution toward the deficit would retire the deficit in about eight to nine years. The corresponding estimate at the present time is six to seven years. Thus, the retiring of the deficit is proceeding in a satisfactory manner.

A breakdown of the change in the unfunded accrued liability into the separate elements is complicated this year because (a) the \$7,200 ceiling on covered salary was removed as of July 1, 1967, (b) a substantial across-the-board increase in salaries became effective on July 1, 1967, (c) the composition of the new entrants, as noted above, has shifted a greater portion of the cost toward the normal cost and away from the accrued liability, (d) annualized salary rates were used for the first time, and (e) changes in the actuarial assumptions were made. A breakdown follows:

Decreases:		
Amortization Contribution	\$ 3,552,104	
Shift from Accrued Liability to Normal Cost	<u>5,384,929</u>	\$ 8,937,033
Increases:		
Removal of Ceiling	\$ 4,592,008	
Net Actuarial Losses	1,817,840	
Changes in Actuarial Assumptions	<u>1,790,580</u>	<u>8,200,428</u>
Net Decrease		\$ 736,605

3. Survey of Experience

The MSRS Report also contains a review of actual experience over a three-year period compared with the actuarial assumptions. As a result of this study, changes were made in some of the assumptions.

Since the number of actual deaths among members retired for age and service was equal to the number expected, no change was recommended in the mortality table.

An investigation of the disability experience revealed that disablements are occurring with greater frequency than has been assumed, particularly among male lives. Therefore, the assumed rates were increased. A comparison at specimen ages follows:

Disablements per 10,000

<u>Age</u>	<u>Male</u>		<u>Female</u>	
	<u>Old</u>	<u>New</u>	<u>Old</u>	<u>New</u>
30	1	2	0	0
35	1	2	1	1
40	2	2	2	2
45	2	2	3	3
50	4	7	5	5
55	15	17	12	12
60	38	38	27	31

Among lives retired for disability, the mortality has been much greater than expected. However, since the number of such persons is small, the results are not significant, and it was recommended that no change in the assumed death rates be made.

Since the number of withdrawals from active service has exceeded the number predicted by the actuarial assumptions, these assumptions were changed. The new assumed rates are still conservative as they predict a number of terminations which is about 77% of the actual number. A comparison of the old and new rates at specimen ages follows:

Terminations per 10,000

<u>Age</u>	<u>Male</u>		<u>Female</u>	
	<u>Old</u>	<u>New</u>	<u>Old</u>	<u>New</u>
25	1,250	1,600	2,650	2,910
30	800	1,040	1,900	2,120
35	550	720	1,230	1,410
40	420	530	840	920
45	360	410	560	630
50	310	320	400	470
55	220	210	260	330

The MSRS Actuary reviewed the previous method of applying the salary scale factors and decided that it would be advisable to change to the practice of using annualized salaries as of the valuation date. This change plus a study of the pattern of salary increases led to a revision of the assumed salary scale. The new salary scale assumes a slower rate of increase at the younger ages. Rates of increase at specimen ages follow:

<u>Age</u>	<u>Male</u>		<u>Female</u>	
	<u>Old</u>	<u>New</u>	<u>Old</u>	<u>New</u>
25	7.5%	3.0%	5.0%	2.6%
30	4.4	2.5	3.7	1.9
35	2.1	1.4	2.2	1.4
40	1.2	1.0	1.8	1.0
45	0.9	0.4	1.2	0.6
50	0.5	0.5	0.7	0.6
55	0.3	0.3	0.4	0.3

4. Conclusion

The 1967 Valuation Report filed by MSRS conforms with the requirements of Chapter 249. Furthermore, this is an excellent Report containing much useful information and much pertinent discussion.

On page 23 of the Report, the MSRS Actuary concludes: "The results of the current valuation show that the benefits to be provided under the System can be financed by the 3% members' contributions and the State's "matching" 3% contributions plus the State's "additional" 2% contribution for approximately 6 years." In our opinion, this conclusion is correct.

Franklin C. Smith
Associate, Society of Actuaries
GEORGE V. STENNES AND ASSOCIATES
Commission Actuaries

MINNESOTA STATE RETIREMENT SYSTEM

STATISTICAL REPORT

As of December 31, 1967

TO THE BOARD OF DIRECTORS:

This report includes the statistical tabulations and actuarial balance sheet to which reference is made in the opening paragraph of our letter of transmittal submitting the annual report for calendar year 1967.

ACTIVE EMPLOYEES

	<u>1967</u>	<u>1966</u>
Covered employees at January 1,	33,006	31,396
<u>Increased By:</u>		
New employees	7,842	7,897
Former employees returned after refundment	1,161	951
Restored from inactive status	180	132
Restored after transfer of accounts to retirement fund	55	66
<u>Decreased By:</u>		
Refundments: Termination of Service	5,379	5,114
Deductions taken in error	179	166
Less: Accounts in which a small balance remained	(13)	(16)
Deaths	123	109
Employess who retired	248	343
Employees who became disabled	33	28
Transferred to inactive status	2,017	1,692
NET INCREASE	1,272	1,610
Covered employees at December 31,	34,278	33,006
Separation Rate	23.7%	23.1%

The following tables present comparisons on the Average Active Employee.

Average as used in this report is defined as the arithmetic mean.

Male Active Employees:

<u>YEAR</u>	<u>AVERAGE AGE</u>	<u>AVERAGE SERVICE CREDIT</u>	<u>AVERAGE ACCUMULATED CONTRIBUTIONS</u>
1965	41.6 yrs.	8.6 yrs.	\$ 1,206.00
1966	41.7 yrs.	8.6 yrs.	\$ 1,234.17
1967	41.9 yrs.	8.8 yrs.	\$ 1,307.68

Female Active Employees:

<u>YEAR</u>	<u>AVERAGE AGE</u>	<u>AVERAGE SERVICE CREDIT</u>	<u>AVERAGE ACCUMULATED CONTRIBUTIONS</u>
1965	37.7 yrs.	5.6 yrs.	\$ 642.00
1966	37.2 yrs.	5.3 yrs.	\$ 617.10
1967	36.9 yrs.	5.2 yrs.	\$ 622.01

The median (midpoint) age for the 1967 male active employees is 42 years of age. The median age for females is 34 years of age. The active employees range in age from 15 to 88 years of age.

35.7% of male active employees and 17.7% of females, for a total of 9,187 employees have acquired ten or more years service credit. This is compared to 8,768 in 1966.

Those age 65 and older show:

	<u>1967</u>	<u>1966</u>
Active membership age 65 or older	1,031	989
Age 65 and over with at least 10 years service	739	692

2.2% of Active Employees are eligible to retire.

New Employees:

New employees in 1967 ranged in age from 15 to 80 years of age. The average and median entry ages were:

	<u>Male</u>	<u>Female</u>
Average entry age:	32.0	28.1
Median entry age:	27	22

Employee Salary Data:

	<u>1967</u>	<u>1966</u>
Gross salary received by employees considered active at year end	\$ 165,053,984.40	\$ 144,610,869.15
Participating salary	\$ 159,568,900.00	\$ 135,032,583.48
Salary in excess of participating salary	\$ 5,485,084.40	\$ 9,578,285.67
Percent of total salary	3.3%	6.6%

EMPLOYEES WHO TOOK REFUNDMENTS IN 1967

AVERAGE AGE OF
THOSE TAKING REFUNDMENT

<u>YEAR</u>	<u>MALE</u>	<u>FEMALE</u>
1965	36.2	29.7
1966	34.4	29.8
1967	34.5	28.1

AVERAGE SERVICE FORFEITED
BY THOSE TAKING REFUNDMENT

<u>YEAR</u>	<u>MALE</u>	<u>FEMALE</u>
1965	2.8 yrs.	2 yrs.
1966	2.8 yrs.	2 yrs.
1967	2.4 yrs.	2 yrs.

Refundments where ten or more years of Service Credit was forfeited:

<u>YEAR</u>	<u>TOTAL NUMBER</u>	<u>AS A PERCENT OF TOTAL REFUNDMENTS</u>	<u>NUMBER WHO WERE 65 OR MORE YEARS OF AGE AT REFUNDMENT</u>
1965	142	3%	19
1966	249	4.5%	15
1967	170	3%	11

INACTIVE EMPLOYEES

	<u>1967</u>	<u>1966</u>
Balance at January 1,	5,680	5,065
Increased by:		
Accounts transferred from active to inactive status	2,017	1,692
Accounts transferred from suspense account to inactive status	1	46
Refundment repaid-account placed in inactive status	1	
Decreased by:		
Returned to Active employment	180	132
Refunds	322	314
Deaths transferred to Retirement Fund	3	5
Became annuitants	44	32
Transferred to Retirement Fund	612	640
NET INCREASE	858	615
Balance at December 31,	6,538	5,680

Male Inactives with sufficient service credit to entitle them to a deferred annuity beginning at age 65:

<u>Year</u>	<u>Number</u>	<u>Average Age</u>	<u>Average Deferred Annuity</u>
1965	170	55	\$ 57.73
1966	182	54	\$ 56.36
1967	182	55	\$ 57.59

Female Inactives with sufficient service credit to entitle them to a deferred annuity beginning at age 65:

<u>Year</u>	<u>Number</u>	<u>Average Age</u>	<u>Average Deferred Annuity</u>
1965	152	55	\$ 48.90
1966	153	55	\$ 50.15
1967	145	55	\$ 49.71

ANNUITANTS

	<u>1967</u>	<u>1966</u>	<u>1965</u>
Balance at January 1,	3,591	3,359	3,130
Retired during the year:			
Service	248	329	298
Deferred	41	46	41
Disability	33	28	29
Beneficiaries of Reversionary and optional annuities who began receiving	12	14	14
Decreased by:			
Deaths	191	184	152
Disability who recovered	1	1	1
NET INCREASE	<u>142</u>	<u>232</u>	<u>229</u>
Balance at December 31,	3,733	3,591	3,359

Note: The total number of annuitants includes 3 "Deferred" annuities that have been approved by the board but have not yet begun to receive payment. Three of this type began receiving an annuity in 1967.

Average Entry and Attained Age of Service Annuitants:

<u>YEAR</u>	<u>AVERAGE AGE AT ENTRY INTO STATE SERVICE</u>	<u>AVERAGE ATTAINED AGE</u>
1965	39.5	72.3
1966	39.2	72.4
1967	39.1	72.6

Average MSRS Monthly Annuity:

<u>Year</u>	<u>Average MSRS Monthly Annuity</u>	<u>Median Annuity</u>	<u>Modal Benefit</u>
1965	\$ 85.03	\$ 71.28	\$ 26.30
1966	\$ 85.79	\$ 71.29	\$ 26.62
1967	\$ 86.35	\$ 71.29	\$ 44.47

Average Entry and Attained Age of Disabled Employees:

<u>YEAR</u>	<u>AVERAGE AGE AT ENTRY INTO STATE SERVICE</u>	<u>AVERAGE ATTAINED AGE</u>
1965	35	61.8
1966	35.8	62
1967	36.2	62.5

Average MSRS Disability Benefit:

<u>YEAR</u>	<u>AVERAGE BENEFIT</u>	<u>MEDIAN BENEFIT</u>	<u>MODAL BENEFIT</u>
1965	\$ 64.47	\$ 54.30	\$ 34.69
1966	\$ 63.19	\$ 55.05	\$ 52.92
1967	\$ 63.22	\$ 53.19	\$ 52.19

Supplemental Benefit: Laws 1967, Chapter 514

At December 31, 1967, 654 annuitants are receiving a \$10 monthly supplemental amount. 610 annuitants are receiving the \$ 18 monthly supplement.

Total Benefit:

The average monthly benefit amounts stated below are based on the combined amount an annuitant receives from his MSRS annuity, supplemental benefit under Laws 1967, Chapter 514, and his estimated Social Security Benefit. The estimated Social Security benefit for retired employees and disabilities is based on their service as a state employee.

TOTAL BENEFIT		
	<u>Average</u>	<u>Median</u>
Retired, receiving Social Security	\$214.99	\$202.80
Retired, <u>not</u> receiving Social Security	108.14	102.31
Disability, receiving Social Security	\$183.41	\$176.33
Disability, <u>not</u> receiving Social Security	80.39	81.06

NEW ANNUITANTS AND DISABILITIES

The average MSRS benefit authorized in 1967 and the average service and salaries upon which the annuities were based was:

<u>TYPE OF ANNUITY</u>	<u>AGE OF RETIREMENT</u>	<u>SALARY BEFORE 7-1-57</u>	<u>SALARY AFTER 7-1-57</u>	<u>LENGTH OF SERVICE</u>	<u>AVERAGE BENEFIT</u>	<u>MEDIAN BENEFIT</u>
Service	66 yrs.	\$276.08	\$380.11	22 yrs. 10 mos.	\$91.47	\$69.51
Disability	59 yrs. 5 mos.	\$258.88	\$361.27	18 yrs. 2 mos.	\$62.70	\$48.91

The average service benefit authorized in 1967 was \$1.96 more than the average benefit granted in 1966. The increase is due to the higher salary after July 1, 1957, despite a lower average salary before July 1, 1957 and a decrease in length of service credit for new annuitants.

Average for new Service Annuitants for Years 1965 thru 1967:

<u>YEAR</u>	<u>AGE AT RETIREMENT</u>	<u>SALARY BEFORE July 1, 1957</u>	<u>SALARY AFTER July 1, 1957</u>	<u>LENGTH OF SERVICE</u>	<u>AVERAGE BENEFIT</u>
1965	66 yrs. 4 mos.	\$284.89	\$360.85	23 yrs. 9 mos.	\$91.80
1966	66 yrs. 2 mos.	\$279.27	\$367.54	23 yrs. 4 mos.	\$89.51
1967	66 yrs.	\$276.08	\$380.11	22 yrs. 10 mos.	\$91.47

The average salary before July 1, 1957 continues to appear as a declining figure as it has over the past seven years.

1967 ANNUITY AND DISABILITY DEATHS

Of service annuitants who died in 1967, 77% received annuity payments greater than their accumulated employee contributions. The average service annuitant received in annuity payments 4.0 times the amount he had contributed. The average age at death and period retired for annuitants who died in 1967 were:

	<u>Service Annuitants</u>		<u>Disability Annuitants</u>	
	<u>Male</u>	<u>Female</u>	<u>Male</u>	<u>Female</u>
Age at death	76.5	77.4	61.9	61.5
Length of Retirement	9 yrs.	10.3 yrs.	3.3 yrs.	2.3 yrs.

SURVIVOR BENEFITS

Deputy Registrars of Motor Vehicles were covered by retirement in 1957 when the plan was coordinated with Social Security, but under federal law they were not eligible for social security coverage. The Deputy Registrars who were members on the date of coordination continued as MSRS members. New appointees after June 30, 1959 were no longer eligible for retirement coverage. The employees not covered by social security contribute 6% of pay to MSRS compared to the 3% for employees covered by social security. Those contributing 6% retained the survivor benefit provisions of the law which was in effect for all members from July 1, 1957 to December 31, 1957. Employees contributing at the 6% rate are steadily decreasing from the total of 191 at the time of coordination. Figures for the last three years show:

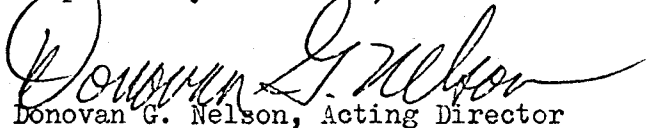
	<u>1967</u>	<u>1966</u>	<u>1965</u>
Male members	22	23	25
Female members	<u>11</u>	<u>12</u>	<u>13</u>
Total contributing at 6%	33	35	38

Beneficiaries of deceased employees, who contributed at the 6% rate, have remained relatively constant since 1957. The figures for the last three years are as follows:

	<u>1967</u>	<u>1966</u>	<u>1965</u>
<u>Benefits Paid</u>			
Spouse	\$32,868	\$33,646	\$33,978
Children	2,248	3,590	3,660
<u>Number Receiving</u>			
Spouse	37	37	37
Children	2	4	5

The comments of the actuary regarding progress made on the actuarial condition of the fund are contained in his valuation report as of December 31, 1967.

Respectfully submitted,


Donovan G. Nelson, Acting Director

MINNESOTA STATE RETIREMENT SYSTEM

ACTUARIAL BALANCE SHEET
AS OF
DECEMBER 31, 1967

ASSETS

1.	Assets on Hand from Accounting Balance Sheet		\$106,167,069.42
2.	Present Value of Employees' Future Contributions (3% of Participating Salary)		50,802,121.00
3.	Present Value of State Future Contributions Applicable to:		
	(a) Entry Age Normal Cost (2.44% of Participating Salary)	\$41,319,058.00	
	(b) Unfunded Accrued Liability (Balance of 3% "Matching" Con- tribution less .19% for Operating Expenses or .37% of Participating Salary)	6,265,595.00	
	(c) Unfunded Accrued Liability (Portion to be funded by 2% "Addi- tional" Contribution)	<u>21,767,259.35</u>	<u>69,351,912.35</u>
4.	TOTAL ASSETS		<u>\$226,321,102.77</u>

LIABILITIES

5.	Current Liabilities from Accounting Balance Sheet		\$ 48,465.77
6.	Present Value of Earned and Earnable Benefits Payable to Presently Active Members:		
	(a) Retirement Benefits	\$145,635,416.00	
	(b) Disability Benefits	14,129,967.00	
	(c) Refundments due to death or withdrawal	<u>29,142,748.00</u>	<u>188,908,131.00</u>
7.	Present Value of Benefits for Deferred Annuitants:		
	(a) Retirement Benefits	\$ 1,852,303.00	
	(b) Refundments due to death or withdrawal	96,351.00	
	(c) Benefits already authorized	<u>11,527.00</u>	<u>1,960,181.00</u>
8.	Present Value of Refundments to former members without vested rights		422,523.00
9.	Present Value of Benefits Payable to Annuitants:		
	(a) Retirement Benefits	\$ 33,334,827.00	
	(b) Disability Benefits	1,233,597.00	
	(c) Survivors' Benefits	<u>413,378.00</u>	<u>34,981,802.00</u>
10.	TOTAL LIABILITIES		<u>\$226,321,102.77</u>

RE: Points Relative to MSRS Actuarial Survey

Letter of transmittal from the actuary fails to mention Chapter 249, Laws 1967, which amended Chapter 359, Laws 1965, to require a more detailed analysis of the changes in the finances of the fund.

However, on page 32, the actuary mentions the requirements of Chapter 249 without the citation, and on page 33 and 34 it appears to give a breakdown in accordance with the 1967 amendment.

QUESTION (page 6) Salary assumptions include only increases due to merit, promotion and service. Wouldn't this indicate that liabilities would tend to be understated if there is a general pay raise?

(Pages 7 and 8) Pay raise and findings of the actuary may prove interesting.

(Pages 11 and 12) Relative to the increase in turnover rate expected. The assumption of turnover gain is increased although the turnover expected from deaths is reduced and the actual experience on death turnover is an actuarial loss. Disability deaths represent a small actuarial gain.

(Page 13) Retirements appear to be less than expected.

QUESTION (Page 12) Throughout the survey termination with less than ten years service without refundment is treated as carrying no liability except the actual accumulated deductions of the terminating employees.

Question is, how many of the 6,211 inactive members (p. 3) without vested rights actually do have vested rights because of service credit under TRA or PERA?

The valuation sheet (page 20, item 8) provides no reserve for the contingency that some of the 6,211 inactive members may have pension rights. Further, some of such persons may have left their money with the fund in the expectation of resuming state service in the future. Should any provision be made for this contingency?

(Page 13) Note that rate of disability still exceeds the assumption which was raised 15% in 1964.

NOTE: (Page 31) There was only a slight decrease in average retirement for 1967, notwithstanding the 1967 legislation making mandatory retirement at age 70.

REPORT ON
ACTUARIAL VALUATION
OF THE
MINNESOTA STATE RETIREMENT SYSTEM
DECEMBER 31, 1967
3-1/2% INTEREST RATE ASSUMPTION

June 17, 1968



FILE COPY

COATES, HERFURTH & ENGLAND

OFFICES IN
SAN FRANCISCO
DENVER
PASADENA

CONSULTING ACTUARIES
301 EAST COLORADO BLVD.
PASADENA, CALIFORNIA 91101

TELEPHONE
AREA CODE 213 681-4455

June 17, 1968

Board of Trustees
Minnesota State Retirement System
530 North Robert Street
St. Paul, Minnesota 55101

Gentlemen:

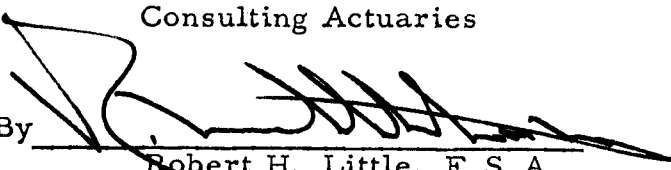
We are pleased to transmit herewith our report on the actuarial valuation of your Retirement System made as of December 31, 1967 on the basis of a 3-1/2% interest rate assumption.

We look forward to the opportunity of discussing this report with you at your convenience.

Very truly yours,

COATES, HERFURTH & ENGLAND
Consulting Actuaries

By



Robert H. Little, F.S.A.

RHL:th

REPORT ON
ACTUARIAL VALUATION
OF THE
MINNESOTA STATE RETIREMENT SYSTEM
AS OF
DECEMBER 31, 1967
ON THE BASIS OF 3-1/2% INTEREST RATE ASSUMPTION

The supplemental contract under which this valuation was authorized specified that the actuarial valuation be carried out on the basis of a 3-1/2% interest rate assumption and upon the actuarial assumptions developed during the course of the December 31, 1967 actuarial investigation. Section 352.04, Subdivision 2, of the Minnesota Statutes 1965 was amended during the 1967 session of the Legislature to remove the \$7,200 maximum on the annual salary subject to employee contributions and future benefits. This amendment was, of course, reflected in the current valuation.

In order to develop the entry age normal cost contribution rate for new employees, we carried out a complete valuation as of December 31, 1967 of active members who were employed during the preceding five-year period. The results of these calculations indicate that the total entry age normal cost rate amounts to 5.01% of salary. This rate compares with a 5.44% rate developed on the basis of a 3% interest assumption.

Employees are required by law to contribute 3% and, accordingly, the State's share of the entry age normal cost contribution rate amounts to 2.01%. We expect the entry age normal cost rate to remain fairly stable unless there is a change in employment practices or in the Retirement Law.

The law requires that the State make the following contributions to the Fund with respect to members contributing at a 3% rate:

- (1) A "matching" contribution equal to 3% of the members' participating salaries, and
- (2) An "additional" contribution equal to two-thirds of members' contributions, or 2% of participating salaries.

In the case of members contributing at a 6% rate, the required contributions by the State are:

- (1) A "matching" contribution equal to 6% of the members' participating salaries, and
- (2) An "additional" contribution equal to one-sixth of members' contributions, or 1% of participating salaries.

We have been advised that it is the intent of the Minnesota Legislature to pay the "additional" contributions referred to above for a limited time only. Inasmuch as there were only 33 active employees who were contributing at the 6% level as of December 31, 1967, we will hereinafter refer only to the State's contribution totaling 5% of salary which applies to members contributing at the 3% rate.

The Actuarial Balance Sheet shown on the following page summarizes the results of the valuation. An Accounting Balance Sheet has not been included in this report because it would duplicate the Accounting Balance Sheet included in our report on the 3% valuation required by law.

MINNESOTA STATE RETIREMENT SYSTEM

ACTUARIAL BALANCE SHEET
AS OF
DECEMBER 31, 1967

3-1/2% INTEREST RATE ASSUMPTION

ASSETS

1.	Assets on Hand from Accounting Balance Sheet		\$106,167,069.42
2.	Present Value of Employees' Future Contributions (3% of Participating Salary)		48,883,571.00
3.	Present Value of State Future Contributions Applicable to:		
	(a) Entry Age Normal Cost (2.01% of Participating Salary)	\$ 32,751,993.00	
	(b) Unfunded Accrued Liability (Balance of 3% "Matching" Con- tribution less .19% for operating expenses or 0.80% of Participat- ing Salary)	13,035,619.00	
	(c) Unfunded Accrued Liability (Portion to be funded by 2% "Addi- tional" Contribution)	<u>5,753,934.35</u>	<u>51,541,546.35</u>
4.	TOTAL ASSETS		<u>\$206,592,186.77</u>

LIABILITIES

5.	Current Liabilities from Accounting Balance Sheet		\$ 48,465.77
6.	Present Value of Earned and Earnable Benefits Payable to Presently Active Members:		
	(a) Retirement Benefits	\$129,451,917.00	
	(b) Disability Benefits	12,897,145.00	
	(c) Refundments due to death or withdrawal	<u>28,199,862.00</u>	<u>170,548,924.00</u>
7.	Present Value of Benefits for Deferred Annuitants:		
	(a) Retirement Benefits	\$ 1,709,944.00	
	(b) Refundments due to death or withdrawal	96,351.00	
	(c) Benefits already Authorized	<u>10,826.00</u>	<u>1,817,121.00</u>
8.	Present Value of Refundments to former members without vested rights		422,523.00
9.	Present Value of Benefits Payable to Annuitants:		
	(a) Retirement Benefits	\$ 32,167,531.00	
	(b) Disability Benefits	1,182,925.00	
	(c) Survivors' Benefits	<u>404,697.00</u>	<u>33,755,153.00</u>
10.	TOTAL LIABILITIES		<u>\$206,592,186.77</u>

The Actuarial Balance Sheet is a convenient device to present the results of an actuarial valuation. The following comments are intended to assist you in your understanding of the items contained in the Actuarial Balance Sheet.

Item 1 shows the assets on hand and was taken directly from the Accounting Balance Sheet.

Item 2 shows the present value of members' future contributions required by law equal to 3% of the members' participating salaries.

Item 3 shows the present value of State future contributions to the System. We have divided the present value applicable to the State's contributions as follows:

Item 3(a) The portion attributable to the State's share of the total entry age normal cost contribution of 5.01% of members' salaries. After deducting the members' share of 3%, the State's share of the entry age normal cost contribution amounts to 2.01% of members' salaries.

Item 3(b) The portion attributable to the balance of the State's "matching" 3% contribution (.99% of members' salaries less .19% for operating expenses) which is being used to pay a portion of the State's share of the cost.

Item 3(c) The portion attributable to the State's "additional" 2% contribution. On the basis of the annualized salaries payable as of December 31, 1967, this 2% "additional" contribution amounts to approximately \$4,140,000 per year

and the full amount of the contribution will amortize the \$5,753,934.35 shown in Item 3(c) in less than 1-1/2 years.

The level annual contribution required to amortize \$5,753,934.35 over the 30-year period ending December 31, 1997 is \$307,499.00.

Item 5 shows the current liabilities and was taken directly from the Accounting Balance Sheet.

Item 6 shows the actuarially computed present value of all benefits earned to December 31, 1967 and earnable after that date that will be paid from the System to presently active members.

Item 7 shows the actuarially computed present value of all benefits payable from the System to members who have terminated service with vested benefits.

Item 8 shows the actuarially computed present value of refundments that will be paid from the System to members who have terminated service without vested benefits.

Item 9 shows the actuarially computed present value of all benefits payable from the System with respect to members who have retired.

The three exhibits presented on the following pages of this report are those which conform to the requirements of Minnesota Statutes 1965, Chapter 359, Section 1, Subdivisions (1), (2) and (3), except for the fact that they reflect a 3-1/2% interest assumption rather than the 3% assumption required by Chapter 359.

MINNESOTA STATE RETIREMENT SYSTEM

EXHIBIT REQUIRED BY MINNESOTA STATUTES 1965, CHAPTER 359,
SECTION 1, SUBDIVISION 4(1)

AS OF
DECEMBER 31, 1967

ASSETS AND UNFUNDED ACCRUED LIABILITY

3-1/2% INTEREST RATE ASSUMPTION

Assets

1.	Cash in Office		\$	42.52
2.	Deposits in Banks			334,913.59
3.	Short Term Investments			1,489,061.57
4.	Accounts Receivable:			
	(a) Members' Contributions	\$ 123,409.49		
	(b) Employer Contributions	1,234,029.33		
	(c) Other	46,205.86		1,403,644.68
5.	Accrued Interest on Investments			921,085.07
6.	Dividends declared but not received			23,240.30
7.	Bonds at Amortized Cost			74,126,134.67
8.	Stocks at Cost (Market Value 12/31/67 - \$30,406,503.00)			27,858,645.65
9.	Equipment at Cost, less depreciation			9,301.37
10.	Other - Prepaid Postage			1,000.00
11.	TOTAL ASSETS			\$106,167,069.42

Unfunded Accrued Liability

12.	Unfunded Accrued Liability to be funded by portion of State's 3% "Matching Contribu- tion" in excess of State's share of entry age normal cost contribution and Operating Expenses		\$	13,035,619.00
13.	Unfunded Accrued Liability to be funded by State's 2% "Additional" contribution			5,753,934.35
14.	Total Unfunded Accrued Liability			\$ 18,789,553.35
15.	TOTAL ASSETS AND UNFUNDED ACCRUED LIABILITY			<u>\$124,956,622.77</u>

CURRENT LIABILITIES AND RESERVES REQUIRED

Current Liabilities

16.	Accounts Payable:			
	(a) Annuity Payments	\$ 3,827.92		
	(b) Survivor Payments	2,978.97		
	(c) Refunds to members	14,498.19		
	(d) Accrued expenses	24,464.38		45,769.46
17.	Suspense items			2,696.31
18.	Total Current Liabilities			\$ 48,465.77

Reserves Required

19.	Total Reserves Required per attached schedule			124,908,157.00
20.	TOTAL CURRENT LIABILITIES AND RESERVES REQUIRED			<u>\$124,956,622.77</u>

Note: Accumulated contributions, without interest, of members not yet retired amounted to \$34,361,928.36 as of December 31, 1967.

MINNESOTA STATE RETIREMENT SYSTEM

DETERMINATION OF RESERVES REQUIRED
AS OF

DECEMBER 31, 1967

3-1/2% INTEREST RATE ASSUMPTION

<u>Benefits For:</u>	(1)	(2)	(3)
	<u>Present Value of Benefits</u>	<u>Present Value of Applicable Portion of Normal Cost Contribution</u>	<u>Reserves Required (1) - (2)</u>
1. Active Members			
(a) Retirement Benefits	\$129,451,917.00	\$50,187,133.00	\$ 79,264,784.00
(b) Disability Benefits	12,897,145.00	8,147,262.00	4,749,883.00
(c) Refundments due to death or withdrawal	28,199,862.00	23,301,169.00	4,898,693.00
2. Deferred Annuitants	1,817,121.00	-	1,817,121.00
3. Former Members Without Vested Rights	422,523.00	-	422,523.00
4. Annuitants			
(a) Retirement Benefits	32,167,531.00	-	32,167,531.00
(b) Disability Benefits	1,182,925.00	-	1,182,925.00
(c) Survivors' Benefits	404,697.00	-	404,697.00
5. TOTAL	\$206,543,721.00	\$81,635,564.00	\$124,908,157.00

MINNESOTA STATE RETIREMENT SYSTEM

EXHIBIT REQUIRED BY MINNESOTA STATUTES 1965, CHAPTER 359,
SECTION 1, SUBDIVISION 4(2) and (3)
FISCAL YEAR ENDING DECEMBER 31, 1967

ANALYSIS OF INCOME AND DEDUCTIONS FROM INCOME

3-1/2% INTEREST RATE ASSUMPTION

INCOME

1.	From Members:		
	(a) Employee Contributions	\$ 4,875,087.35	
	(b) Employee Accrued Contributions Receivable	123,409.49	
	(c) Employee Contributions Applied to Past Due Payments	15,963.74	
2.	From Employers:		
	(a) Employer Contributions	4,840,926.56	
	(b) Employer Additional Contributions	3,142,061.38	
	(c) Employer Accrued Contributions Receivable	193,286.68	
	(d) Employer Past Due Contributions Receivable	147,328.94	
3.	From Investments:		
	(a) Interest on Bonds and Notes (Net)	3,187,944.97	
	(b) Dividends on Corporate Stock	907,346.50	
	(c) Premiums on Bonds Called	3,568.19	
4.	Other Revenues:		
	(a) Interest on Back Payments by Members	4,813.64	
	(b) Employer Penalty	71.57	
	(c) Adjustment in Prior Year Benefit Payment	2,184.04	
	(d) Unclaimed Contributions and Benefits Canceled	209.81	
5.	Net Gain on Sale of Investments		107,676.53
6.	TOTAL INCOME		\$17,551,879.39

DEDUCTIONS FROM INCOME

7.	Benefits:		
	(a) Annuities, Disability and Retirement Allowances	\$ 3,725,898.47	
	(b) Survivor Benefits	35,116.51	
	(c) Interest Paid on Deposits of Deceased Members	45,116.02	
8.	Refundments:		
	(a) Left Service	1,483,236.97	
	(b) Members of Other Retirement Systems	33,966.89	
	(c) Member Deaths	211,486.37	
	(d) Annuitant Deaths	56,059.11	
	(e) Erroneous Deductions	10,825.39	
9.	Operating Expenses		314,186.29
10.	Increase in Total Reserves Required:		
	(a) Reserves Required 12-31-66	\$115,034,061.00	
	(b) Reserves Required 12-31-67	124,908,157.00	9,874,096.00
11.	TOTAL DEDUCTIONS FROM INCOME		\$15,789,988.02
12.	EXCESS OF INCOME OVER DEDUCTIONS FROM INCOME		\$ 1,761,891.37
13.	REDUCTION IN UNFUNDED ACCRUED LIABILITY:		
	(a) Unfunded Accrued Liability 12-31-66	\$ 20,551,444.72	
	(b) Unfunded Accrued Liability 12-31-67	18,789,553.35	\$ 1,761,891.37