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TEACHERS RETIREMENT ASSOCIATION  
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TEACHER'S RETIREMENT ASSOC.

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REPORT OF ACTUARIAL SURVEY AND VALUATION

JUNE 30, 1973

*Rec'd from  
Peter Watson*

DEC 11 1974

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Brown and Flott

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State of Minnesota

As requested by the Board of Trustees of the Fund, we have made an actuarial survey and valuation of the Fund as of June 30, 1973, in accordance with the provisions of Minnesota Statutes, Section 356.21. The results of our analysis are presented in the following report.

Required Reserves for Annuities. Table 1 summarizes the census of annuities in force showing for each type of annuitant the number, annual amount and the present value of annuities. The present value was calculated using the 1971 Group Annuity Mortality Table for males set back 6 years with an interest assumption of 5%.

The required reserves for annuities shown in Table 1 are as follows:

Summary of Required Reserves for Annuities

Adjustable Fixed Benefit Fund	\$102,729,638.04
Disability	1,671,769.06
1915 Law Annuities	169,479.76
Survivors Benefit	882,274.86
Total	<u>\$105,453,161.72</u>

Liability for Prior Service. Table 2 summarizes the census of active members and Table 3 the census of inactive members. These are shown separately for the Basic and Coordinated Group with each of these groups separated according to the benefit plan election in effect as of the date of this valuation. For this report it has been assumed that all members who have not made a variable election will receive benefits under the full formula plan. The accrued liability for prior service for each of these groups, exclusive of any participation in the Variable Annuity Fund, has been determined as follows:

Summary of Required Reserves For Prior Service

	<u>Basic</u>	<u>Coordinated</u>
<u>Active Members</u>		
Full Formula	\$245,600,774	\$354,199,115
Partial Formula	12,114,225	33,591,461
Full Variable	-0-	25,743,477
Split Money Purchase	<u>10,652,627</u>	<u>6,228,644</u>
Total	\$268,367,626	\$419,762,697
<u>Inactive Members</u>		
Full Formula	\$ 26,752,710	\$ 36,081,999
Partial Formula	78,286	161,119
Full Variable	-0-	256,379
Split Money Purchase	<u>-0-</u>	<u>20,837</u>
Total	\$ 26,830,996	\$ 36,520,334
Total Accrued prior service liability		\$751,481,653

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For member under a formula plan the accrued prior service liability has been determined using the entry age normal cost method. The assumed rates of death disability and withdrawal are shown in Table 4. It was assumed that individual salaries would increase at the rate of 3.5% each year. An interest assumption of 5% was used.

For members under the full or split variable money purchase plan the accrued prior service liability has been determined to be represented by 180% of the members accumulation at June 30, 1957 plus 220% of the members accumulated fixed deposits with interest to the valuation date plus 300% of any unpaid arrears.

Unfunded Liabilities. The difference between the actuarial liabilities and the assets available for funding these liabilities is the actuarial deficit or unfunded liability. The following table compares these amounts as of June 30, 1972 and June 30, 1973. The liability for benefits payable from the Adjustable Fixed Benefit Fund and the Variable Annuity Fund are for this purpose assumed to be equal to the participation in such fund included with the assets.

	<u>6-30-72</u>	<u>6-30-73</u>
(a) Participation in Adjustable Fixed Benefit Fund	\$ 92,518,304	\$111,344,946
(b) Participation in Variable Annuity Fund	4,201,023	12,184,961
(c) Required Reserve for Other Annuities	2,563,376	2,723,524
(d) Required Reserve for Prior Service	<u>444,412,934</u>	<u>751,481,653</u>
(e) Total Actuarial Liabilities	\$543,695,637	\$877,735,084
(f) Assets in excess of Current Liabilities	\$389,406,363	\$468,337,531
(g) Unfunded Liabilities	\$154,289,274	\$409,397,553
(h) Funding Ratio	71.6%	53.4%

During the year unfunded liabilities increased by \$255,108,279. An analysis of the causes of this increase are presented in the appendix to this report.

Normal Support Rate. Current statutes provide after July 1, 1975 for equal employer and employee contributions of 8% of salary for the Basic Group and 4% for the Coordinated Group. Prior to July 1, 1975 employer contributions are 7% and 3.5%. For members under a formula plan the aggregate entry age normal cost to provide retirement benefits was determined as follows:

	<u>Employer</u>	<u>Employee</u>	<u>Total</u>
Basic - Full Formula	7.90%	8.00%	15.90%
Partial Formula	7.05	8.00	15.05
Coordinated - Full Formula	4.26	4.00	8.26
Partial Formula	3.82	4.00	7.82

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These entry age normal cost rates were used in the determination of the accrued liability for members under a formula plan.

Additional Support Rate. An additional contribution of 2% of salary is provided by statute to amortize the actuarial deficit. After July 1, 1975 this additional contribution increases to 2.5% of salary. The following table shows for this year and last year the computations of the additional support rate required to amortize the actuarial deficit by June 30, 1997.

	<u>6-30-72</u>	<u>6-30-73</u>
(a) Unfunded Liability	\$154,289,274	\$409,397,553
(b) Annual Cost to Amortize by 1997	9,361,352	29,669,409
(c) Current Annual Payroll	549,393,938	583,341,059
(d) Additional Support Rate (b)/(c)	1.70%	5.09%

Interest at the rate of 5% on the current unfunded liability amounts to \$20,469,878 or 3.51% of the current annual payroll.

The assumptions used in calculating the accrued prior service liability at June 30, 1973 are being used for the first time. We suggest that no change be made in the additional support rate until sufficient experience has been developed to verify these assumptions.

Income From Investments. Income from investments earned during the year, and not allocated to the Adjustable Fixed Benefit Fund or Variable Annuity Fund, amounted to \$17,950,309. This represents a return of 5.79% on the mean assets in excess of current liabilities excluding participation in the Variable Fund and the Adjustable Fixed Benefit Fund. This includes recognized unrealized appreciation on stocks in the amount of \$3,695,090 of which \$1,213,328 is attributable to the 1971 - 72 fiscal year. Interest at the rate of 4.75% was credited to members accumulated deposits.

Administrative Expense. The cost of administration of the Fund during the year amounted to \$553,151. This represents 0.09% of the current annual payroll.

Respectfully submitted,

Brown and Flott

  
Robert F. Flott

November 26, 1973

Brown and Flott

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TABLE 1

SUMMARY OF CENSUS OF ANNUITANTS

<u>Type of Annuity</u>	<u>Number</u>	<u>Annual Amount</u>	<u>Present Value</u>
<u>Annuities Payable from Adjustable Fixed Benefit Fund</u>			
<u>1. Service Retirement Annuitants</u>			
as of 6-30-72	4414	\$6,791,982.09	\$76,480,994.91
net adjustments made in 6-30-72 balance --		+4,279.46	
granted during year	585	1,091,464.90	
terminated by death	118	207,854.72	
expired	14	17,167.44	
as of 6-30-73	4867	\$7,662,704.29	\$79,277,962.06
<u>2. Beneficiaries of Deceased Members</u>			
as of 6-30-72	110	\$ 167,652.58	\$ 1,290,637.84
granted during year	6	13,378.32	
expired	12	10,244.64	
terminated by death	1	1,289.52	
as of 6-30-73	103	\$ 169,496.74	\$ 1,268,806.51
<u>3. Beneficiaries of Deceased Annuitants</u>			
as of 6-30-72	206	\$ 265,393.20	\$ 1,436,685.07
transfer from type 1	36	46,552.68	
expired	11	17,232.60	
as of 6-30-73	231	\$ 294,713.28	\$ 1,432,489.64
<u>4. Section 136.82 Supplemental Annuities</u>			
as of 6-30-72	44	\$ 9,894.30	\$ 124,583.47
net adjustments made in 6-30-72 balance --		(.30)	
granted during year	16	7,295.40	
as of 6-30-73	60	\$ 17,189.40	\$ 199,847.88
<u>5. Section 354.59 Allowances and 354.581 Increases</u>			
as of 6-30-72		\$ 717,716.28	\$ 6,504,251.29
expired		43,913.76	
as of 6-30-73		\$ 673,802.52	\$ 5,506,951.65
<u>6. Sections 11.25, Subd. 12 and 354.55, Subd. 14 Increases</u>			
as of 6-30-72		\$ 141,427.56	\$ 1,402,963.83
as of 6-30-73		\$1,553,141.52	\$15,043,580.30
 Total 6-30-72 MAFBF	 4774	 \$8,094,066.01	 \$87,240,116.41
Total 6-30-73 MAFBF	5261	\$10,371,047.75	\$102,729,638.04

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<u>Type of Annuity</u>	<u>Number</u>	<u>Annual Amount</u>	<u>Present Value</u>
<u>Annuities Payable from Variable Annuity Fund</u>			
7. <u>Service Retirement Annuitants</u>			
as of 6-30-72	11	\$ 19.32	\$ 317.60
terminated by death	1	19.32	
as of 6-30-73	0	\$ 0	\$ 0
 <u>Other Annuities and Benefits</u>			
8. <u>Disability Annuitants</u>			
as of 6-30-72	69	\$ 92,746.16	\$ 1,367,732.23
granted during year	23	53,421.24	
terminated by death	4	7,003.92	
transfer to type 1	14	15,422.76	
as of 6-30-73	74	\$ 123,740.72	\$1,671,769.06
9. <u>Survivors Benefits</u>			
as of 6-30-72	163	\$ 113,700.00	\$ 959,184.96
granted during year	17	11,160.00	
terminated	18	12,240.00	
as of 6-30-73	162	\$ 112,620.00	\$ 882,274.86
10. <u>1915 Law Retirement Annuitants</u>			
as of 6-30-72	61	\$ 43,860.00	\$ 236,459.08
terminated by death	11	8,065.44	
as of 6-30-73	50	\$ 35,794.56	\$ 169,479.76
11. <u>Section 354.44, Subd. 5 Increases</u>			
as of 6-30-72	--	\$ 14,640.00	\$ 79,292.64
terminated by death	--	2,640.00	
as of 6-30-73	--	\$ 12,000.00	\$ 57,106.08

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TABLE 2

SUMMARY OF CENSUS OF ACTIVE MEMBERS

	<u>Basic Group</u>		<u>Coordinated Group</u>	
	<u>Number</u>	<u>Annual Payroll</u>	<u>Number</u>	<u>Annual Payroll</u>
<u>Money Purchase - Full Fixed</u>				
At 6-30-72	2,150	\$24,614,512	13,871	\$113,905,600
Program Transfers	<u>-2,150</u>	<u>                    </u>	<u>-13,871</u>	<u>                    </u>
At 6-30-73	-0-	-0-	-0-	-0-
<u>Money Purchase - Full Variable</u>				
At 6-30-72			7,201	\$ 76,708,292
New Entrants			465	
Program Transfers			11	
To Inactive			174	
Separated with Refund			100	
Deaths			3	
Service Retirement			<u>1</u>	<u>                    </u>
At 6-30-73			7,399	\$ 84,447,081
<u>Money Purchase - Split</u>				
At 6-30-72	442	\$ 6,529,710	1,070	\$ 12,185,363
Program Transfer	<u>442</u>	<u>                    </u>	<u>1,070</u>	<u>                    </u>
at 6-30-73	-0-	-0-	-0-	-0-

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TABLE 2 (Continued)

SUMMARY OF CENSUS OF ACTIVE MEMBERS

	<u>Basic Group</u>		<u>Coordinated Group</u>	
	<u>Number</u>	<u>Annual Payroll</u>	<u>Number</u>	<u>Annual Payroll</u>
<u>Full Formula</u>				
At 6-30-72	2,537	\$32,766,817	25,426	\$222,689,486
Adjustments	-0-		-0-	
New Entrants	58		6,992	
Program Transfers	2,187		15,524	
To Inactive	127		4,516	
Separation with Refund	99		2,492	
Deaths	32		77	
Disability Retirement	6		17	
Service Retirement	165		421	
At 6-30-73	4,237	\$54,633,746	40,419	\$358,280,418
<u>Partial Formula</u>				
At 6-30-72	267	\$ 3,914,853	5,228	\$ 56,079,505
New Entrants	-0-		430	
Program Transfers	473		1,098	
To Inactive	2		46	
Separation with Refund	-0-		217	
Service Retirement	-0-		-0-	
At 6-30-73	738	11,294,019	6,493	\$ 74,685,795
Total at 6-30-72	5,396	\$67,825,892	52,796	\$481,568,046
Total at 6-30-73	4,975	\$65,927,765	54,311	\$517,413,294



TABLE 3

SUMMARY OF CENSUS OF INACTIVE MEMBERS

	<u>Basic Group</u>	<u>Coordinated Group</u>
<u>Money Purchase - Full Fixed</u>		
At 6-30-72	1,007	9,482
Program Transfers	<u>-1,007</u>	<u>-9,482</u>
At 6-30-73	-0-	-0-
<u>Money Purchase - Full Variable</u>		
At 6-30-72		71
From Active		174
Separated with Refund		<u>0</u>
At 6-30-73		245
<u>Money Purchase - Split</u>		
At 6-30-72	1	8
Program Transfer	<u>1</u>	<u>8</u>
At 6-30-73	-0-	-0-
<u>Full Formula</u>		
At 6-30-72	12	2,441
From Active	127	4,516
Program Transfers	1,007	9,482
Separation with Refund		1,237
Death		0
Service Retirement		<u>0</u>
At 6-30-73	1,146	15,202
<u>Partial Formula</u>		
At 6-30-72	1	66
From Active	2	46
Program Transfer	<u>1</u>	<u>8</u>
At 6-30-73	4	120
Total at 6-30-72	1,021	12,068
Total at 6-30-73	1,150	15,567

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TABLE 4

ASSUMED RATES OF DECREMENT USED IN  
VALUATION OF FORMULA PLAN BENEFITS

<u>Age</u>	<u>Death</u>	<u>Disability</u>	<u>Withdrawal</u>
20	.000530	.00076	.203
25	.000616	.00100	.168
30	.000758	.00112	.133
35	.000991	.00129	.098
40	.001374	.00164	.063
45	.002000	.00221	.028
50	.003580	.00347	.000
55	.006475	.00712	.000
60	.010436	.01264	.000

Assumed age at retirement - 62

Post Retirement Mortality - 1971 Group Annuity Mortality Table for  
males set back 6 years.

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APPENDIX TO VALUATION REPORT

ACTUARIAL ANALYSIS OF CHANGE IN UNFUNDED LIABILITIES

As indicated in the report of actuarial valuation, during the current year the unfunded liabilities of the Fund increased by \$255,108,279. Table 5 attached to this Appendix presents our determination of the required interest and difference between tabular and actual reserves released prepared for the following categories:

Employer Prior Service Liability  
Disability Benefits  
Widow's Benefits  
Surviving Children's Benefits  
1915 Law Annuities

1. As discussed in the valuation report income from investments not allocated to the Adjustable Fixed Benefit Fund or the Variable Annuity Fund amounted to \$17,950,309. Of this amount \$6,955,944 was allocated to members accounts leaving a balance of \$10,994,365. The amount of interest required as shown in Table 5 amounts to \$10,686,448. The actuarial deficit or unfunded liability was decreased by the difference of \$307,917.
2. For purposes of this analysis all employer contributions not allocated to the Variable Annuity Fund are considered to be available for funding the employer prior service liability. As shown in Table 5 an actuarial loss of \$590,131 was sustained on account of those benefits not paid from the Adjustable Fixed Benefit Fund. These were offset in part by \$262,182 interest forfeited when members received a refund of their deposits and by \$238,136 due to the change in the valuation basis. The unfunded liability increased by the difference of \$89,813.
3. Administrative expenses not allocated to the Adjustable Fixed Benefit Fund or the Variable Annuity Fund amounted to \$528,628. The unfunded liability increased by this amount.
4. As indicated in Table 5 an actuarial loss of \$254,797,756 resulted in the employer prior service liability. Unfunded liabilities increased by this amount. This actuarial loss was a result of the following:
  - (a) Employer Additional Deposits of 2% of payroll decreased the unfunded liability by \$11,785,797.
  - (b) It is assumed that salaries increase at the rate of 3.5%. From the census of active members it appears that the average salary increased from \$9,441.06 at June 30, 1972 to \$9,839.44 at June 30, 1973. This represents an increase of 4.22%. This factor increased the unfunded liability by \$4,325,571.

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- (c) Changes in assumptions used in determining prior service liability decrease such liability by \$127,476,845.
- (d) Changes in formula benefits and making these benefits available to all members who have not made a variable plan election increased the unfunded liability by \$389,734,827.

5. Adjustable Fixed Benefit Fund

During the year the excess of participation over required reserves in this fund increased by \$3,337,119.84 from \$5,278,188.03 to \$8,615,307.87. The causes of this increase have been determined as follows:

a. Excess investment earnings	\$ 9,704,595.02
b. Change in valuation basis (interest)	11,970,375.58
c. Change in valuation basis (mortality)	-3,210,260.68
d. Value of 4.5% increase at 1-1-73	-3,088,774.80
e. Value of 12.07% increase at 7-1-73	-12,007,507.08
f. Mortality loss	- 21,308.20
g. Administrative expenses	<u>- 10,000.00</u>

Net increase	\$ 3,337,119.84
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Investment earnings averaged 13.53% on the mean participation. A return of 3.5% was assumed during the year. As of June 30, 1973 the valuation interest basis was increased to 5%.

During the year 118 annuitants died whereas 140 deaths were expected according to the valuation mortality basis assumed during the year. As of June 30, 1973 the valuation mortality basis was changed to a different table. According to the new table 112 deaths would have been expected.

In accordance with Section 11.25, annuities in effect on June 30, 1973 will be increased by 12.93% effective January 1, 1974. We estimate the cost of this increase will be \$13,000,000. As of January 1, 1974 the Fund will transfer to the Adjustable Fixed Benefit Fund such amount as may be necessary to increase the participation to equal the value of benefits in effect including the 12.93% increase.

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TABLE 5

CALCULATION OF REQUIRED INTEREST AND DIFFERENCE BETWEEN TABULAR  
AND ACTUAL RESERVES RELEASED

	<u>Employer Prior Service</u>	<u>1915 Law Retirement Annuities</u>	<u>Disability Annuities</u>	<u>Widow's Annuities</u>	<u>Surviving Children's Annuities</u>
(1) Liability 6-30-73	\$578,585,369	\$169,480	\$1,671,769	\$676,526	\$205,749
(2) Change in Valuation Basis		16,694	119,755	93,135	8,552
(3) Payments Incurred	10,495,281	51,215	122,108	47,998	68,308
(4) Liability 6-30-72	292,618,055	236,459	1,367,732	728,713	230,472
(5) Credit Applied	<u>31,063,267</u>	<u>12,906</u>	<u>-0-</u>	<u>-0-</u>	<u>-0-</u>
T-A+I (1)+(2)+(3)-(4)-(5)	265,399,328	(-)11,976	545,900	88,946	52,137
(7) Required Interest .0175 ((1)+(2)+(4)-(6))	<u>10,601,572</u>	<u>7,606</u>	<u>45,734</u>	<u>24,665</u>	<u>6,871</u>
(8) Tabular Less Actual Reserves Released (6)-(7)	254,797,756	(-)19,582	500,166	64,281	45,266

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APPENDIX TO SURVEY REPORT

ACTUARIAL ANALYSIS OF CHANGE IN UNFUNDED LIABILITY SINCE JUNE 30, 1969

The following table compares the actuarial balance sheet at the beginning and end of the period covered by this survey report:

	<u>6-30-69</u>	<u>6-30-73</u>	<u>Increase</u>
Accrued Liability	\$347,707,452	\$877,735,084	\$530,027,632
Assets	<u>224,941,093</u>	<u>468,337,531</u>	<u>243,396,438</u>
Unfunded Liability	\$122,766,359	\$409,397,553	\$286,631,194
Funding Ratio	64.7%	53.4%	

In the valuation report for each of the past four years the causes of the increase in the unfunded liability, or the deficit, are discussed. These may be summarized as follows:

**Increases:**

Legislative benefit changes	\$412,647,125
Actuarial losses - prior service	31,587,700
Interest on unfunded liability	9,172,768
Cost of administration	1,900,358
Disability and survivors benefits	<u>1,383,049</u>

Total Increases \$456,691,000

**Decreases:**

Employer amortization contribution	\$ 42,344,825
Change in valuation basis	<u>127,714,981</u>

Total Decreases \$170,059,806

Net Increase \$286,631,194

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ANALYSIS OF EXPERIENCE

Post-Retirement Mortality. For years prior to 1973 the 1937 Standard Annuity Table of Mortality set back 2 years was prescribed by statute for determining the amount transferred to the Adjustable Fixed Benefit Fund and for determining the value of benefits payable from that fund. For the June 30, 1973 valuation the 1971 Group Annuity Mortality Table for males set back 6 years was used.

The following table compares the actual mortality experience over the past six years with the expected results under the former and the current mortality table:

1. Lives exposed	20,187
2. Actual deaths	541
3. Expected deaths	
Former table	626
Current table	518
4. Ratio: Actual to expected deaths	
Former table	86.4%
Current table	104.4

Rate of Salary Increase. In calculating prior service liabilities it is assumed that salaries increase at the rate of 3.5% a year. At June 30, 1973 the average salary was \$9,839 compared with \$7,703 four years earlier. This represents an average annual increase rate of 6.3%.

Rate of Return on Investments. The rate of investment earnings on the mean assets of the Fund, excluding participation in the Adjustable Fixed Benefit Fund and the Variable Annuity Fund in each of the last four years has been:

<u>1969-70</u>	<u>1970-71</u>	<u>1971-72</u>	<u>1972-73</u>
4.65%	4.60%	4.61%	5.79%

A rate of 3.5% was assumed in calculating prior service liabilities for years prior to 1973. For the June 30, 1973 valuation a rate of 5% was assumed.

Average Age at Entry. The average age at entry for all members currently active under a formula plan is 29.0 years. For those first entering the system in the year ending June 30, 1973 was 28.2.

Average Age at Retirement. The average age at which service retirements have taken place for all current annuitants is 65.4 years. The average in each of the last four years has been:

<u>1969-70</u>	<u>1970-71</u>	<u>1971-72</u>	<u>1972-73</u>
65.1	65.2	65.4	65.0

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Retirement at age 65 was assumed in calculating prior service liabilities for years prior to 1973. For the June 30, 1973 valuation retirement with full benefit at age 62 was assumed.

Comparison of Benefits. For the last four years records have been kept of the total amount transferred to the Adjustable Fixed Benefit Fund for annuities granted, and the portion of such amount represented by the members accumulated contributions with interest to date of retirement. The following table shows the percentage of the total cost of annuities granted which was paid for by the members accumulated contributions:

	<u>1970</u>	<u>1971</u>	<u>1972</u>	<u>1973</u>
Basic-Money Purchase	37.3%	39.6%	40.7%	39.6%
Basic-Formula	27.5	28.5	28.3	27.6
Coordinated-Money Purchase	33.9	34.9	36.5	37.5
Coordinated Formula	30.1	30.8	29.6	28.9
Total	31.7	32.3	31.7	30.8

At June 30, 1973 members accumulated contributions funded only 23.0% of the total accrued prior service liability.



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TEACHERS RETIREMENT ASSOCIATION  
JUNE 30, 1973 FINANCIAL REPORT

MINNESOTA STATE  
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A. Assets

Deposits in banks.....	\$ 1,681,967.61
Accounts Receivable:	
Accrued members' contributions.....	2,992,761.66
Accrued employer's contributions.....	7,751,378.66
Employer's social security receivable.....	9,253,499.52
Minnesota Variable Annuity Fund.....	28,553.27
Proceeds from sale of investments.....	420,064.93
Social Security Retirement Division.....	827.85
Interest charges on late remittances.....	2,370.04
Other.....	7,737.80
Accrued interest on investments.....	2,806,434.31
Dividends on stocks, declared but not yet received.....	28,720.56
Investment in bonds at amortized cost.....	148,702,986.63
Investment in preferred and common stocks at cost.....	140,483,062.84
Short term investments.....	25,860,165.38
Deferred Yield Adjustment Account.....	2,163,341.72
Recognized unrealized appreciation in stocks.....	3,695,089.60
Participation in Minnesota Adjustable Fixed Benefit Fund.....	111,344,945.91
Participation in Minnesota Variable Annuity Fund.....	12,184,961.41
Equipment at cost, less depreciation.....	14,072.04
Total Assets.....	<u>\$469,422,941.74</u>

B. Unfunded Accrued Liability..... \$409,397,552.97

C. Accumulated Members' Contributions Without Interest \$

Regular TRA.....	137,011,316.87
Variable Annuity Fund (includes Earnings).....	5,498,354.52
Total.....	<u>\$142,509,671.39</u>

D. Current Liabilities

Accounts Payable:	
Annuity payments.....	\$ 2,824.26
Accrued expenses.....	53,665.49
Purchase of investments in process.....	954,827.95
Minnesota Adjustable Fixed Benefit Fund.....	70,157.39
Other.....	3,935.62
Total Current Liabilities.....	<u>\$ 1,085,410.71</u>

E. Total Reserves Required as Per Attached Schedule..... \$877,735,084.00

Teachers Retirement Association  
State of Minnesota

SCHEDULE OF TOTAL RESERVES REQUIRED

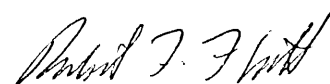
1. <u>For Adjustable Fixed Benefit Fund Participants</u>	\$111,344,945.91
2. <u>For Variable Annuity Fund Participants</u>	12,184,961.41
3. <u>For Active Members</u>	688,130,323.00
4. <u>For Inactive Members</u>	63,351,330.00
5. <u>For Other Annuitants</u>	
a. 1915 Law Retirement Annuities	169,479.76
B. Disability Annuities	1,671,769.06
c. Widow's Annuities	676,525.98
d. Surviving Children's Annuities	<u>205,748.88</u>
Total	<u>\$ 2,723,523.68</u>
Total Required Reserves	\$877,735,084.00

Certification

The above exhibit has been prepared in accordance with the provisions of Section 356.20. The required reserves for formula benefits have been computed in accordance with the Entry Age Normal Cost Basis.

Respectfully submitted,

BROWN AND FLOTT

  
Robert F. Flott

November 26, 1973