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ACTUARIAL VALUATION
OF THE
MINNESOTA STATE JUDGES'
RETIREMENT FUND
JUNE 30, 1976



TOWERS, PERRIN, FORSTER & CROSBY

ONE CENTURY PLAZA LOS ANGELES, CALIFORNIA 90067 (213)553-3470

October 29, 1976

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

Gentlemen:

We are pleased to transmit herewith our report on the actuarial valuation of the Judges' Retirement Fund made as of June 30, 1976.

Pursuant to the Contract under which this valuation was authorized, the actuarial valuation was carried out on the basis of a 5% interest rate assumption, a 3-1/2% salary scale, and on the basis of certain other specified actuarial assumptions. 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 Fund.

We hereby certify that the actuarial valuation of the Minnestoa State Judges' Retirement Fund made as of June 30, 1976 was carried out on the basis of accepted actuarial methods and procedures and in accordance with the provisions of Minnesota Statutes, Chapter 356.

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

Respectully submitted,

TOWERS, PERRIN, FORSTER & CROSBY, INC.

Harry M. Church

ACTUARIAL VALUATION OF THE MINNESOTA STATE JUDGES' RETIREMENT FUND JUNE 30, 1976

SECTION I

INTRODUCTION

In accordance with the Contract between the State of Minnesota and this firm, we have completed the actuarial valuation of the Minnesota State Judges' Retirement Fund as of June 30, 1976.

The Executive Director of the System furnished us with detailed employee information on all active members and retired members of the Fund as of June 30, 1976. The Executive Director and his staff are to be complimented on the accuracy and completeness of the aforementioned data.

The Statement of Assets on hand was accepted and used by us without audit.

The Judges' Plan is somewhat unique and it is necessary to make certain assumptions to reflect its unique provisions. The current valuation is based on the following assumptions:

- 1. Rate of separation from Schedules attached (Same as active service June 30, 1971 MSRS)
- 2. Interest 5% (Same as MSRS)
- 3. Salary Scale 3-1/2% per annum, compounded annually (Same as MSRS)
- 4. Mortality After Retirement 1951 G.A. Mortality Table set back one year for males and two years for females (Same as MSRS)

5.	Social Security Monthly Primary Amount	-	\$379.80 increasing with salary scale
6.	Level Social Security Contribution Rate	-	6.21%
7.	Social Security Covered Monthly Wages	-	\$1,275 increasing with salary scale
8.	Escalation after Retirement (for those entitled to escalation)	-	3-1/2% per annum, compounded annually

The following Section II sets forth the results of the actuarial valuation and Section III contains the exhibits required by Chapter 356 of the Statutes.

SECTION II

RESULTS OF ACTUARIAL VALUATION

The entry age normal cost method of funding, required under the Law, 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 supplemental present value (unfunded accrued liability) is taken as the total liability of the Fund 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.

On the assumption that new Judges will be employed at age 43 with a monthly salary of \$2,292, we calculated the total entry age normal cost rate for Judges to be 12.18% of salary. We calculated the presently active Judges' share to be equivalent to 4.20% of total salary and the State's share to be 7.98% of total salary.

The law requires:

"The balance of all money necessary for administering this act and the judges' retirement fund, including payment of retirement compensation and other benefits under this act, shall be contributed to the fund by the state. The amount required therefore is hereby annually appropriated from the general fund to the judges retirement fund."

The Actuarial Balance Sheet shown on the following page summarizes the results of the valuation.

ACTUARIAL BALANCE SHEET AS OF JUNE 30, 1976

ASSETS

1.	Assets on Hand		\$ 2,341,135
2.	Present Value of Judges' Future Contributions		1,911,720
3.	Present Value of State Future Contributions Applicable to:		
	(a) Entry Age Normal Cost	\$ 3,631,311	
	(b) Unfunded Supplemental Present Value (Unfunded Accrued Liability)	12,770,745	16,402,056
4.	TOTAL ASSETS		\$20,654,911
	LIABILITIES		
5.	Present Value of Earned and Earnable Benefits Payable to Presently Active Members:		
	(a) Retirement Benefits	\$17,540,416	
	(b) Disability Benefits	303,254	
	(c) Refundments due to death or withdrawal	360,117	
	(d) Surviving Spouse Benefits	796,437	\$19,000,224
6.	Present Value of Benefits Payable to Presently Retired Persons:		
	(a) From Judges' Fund	\$ 562,723	
	(b) From MAFB Fund	1,072,592	1,635,315
7.	Present Value of Benefits Payable to Deferred Annuitants		54,052
8.	Accounts Payable from Accounting Balance Sheet		8,936
9.	MAFBF Annuity Stabilization Account		(43,616)
10.	TOTAL LIABILITIES		\$20,654,911

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 from the Accounting Balance Sheet.

Item 2 shows the present value of Judges' future contributions required by law.

Item 3 shows the present value of the State's future contributions to the Fund. 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 7.98% of Judges' salaries.

Item 3(b). The portion attributable to the State's unfunded supplemental present value (unfunded accrued liability). It will require an initial annual contribution of \$708,146, increasing in accordance with the salary scale, to amortize this liability over the 21 year period ending June 30, 1997. \$708,146 amounts to 11.69% of current annual salary.

Items 5 through 7 show the actuarially computed present value of all benefits earned to June 30, 1976 and earnable after that date that will be paid from the Fund to presently active members, retired members, and deferred annuitants.

Item 8 was taken from the Accounting Balance Sheet.

Item 9 shows the investment loss sustained by the MAFB Fund calculated in accordance with the Law.

CONCLUSIONS

The results of the current valuation show that the benefits to be provided under the Fund can be financed by the Judges' contributions and the following State contributions:

		Recommended State Contribution 1975-76	s —
(a)	Entry Age Normal Cost	7.98%	
(b)	Unfunded Supplemental Present Value (Unfunded Accrued Liability)	11.69%	
(c)	Expenses	14%	
(d)	Total	19.81%	

It is to be noted that State contributions for 1975-76 recommended in our report on the June 30, 1975 valuation amounted to approximately \$1.1 million whereas the State contribution actually made during 1975-76 amounted to approximately \$263,000.

SECTION III

REQUIRED EXHIBITS

Minnesota Statutes, Chapter 356, requires, in Section 356.20, Subdivision 4(1), that the actuary of the Fund prepare an exhibit setting forth certain specified information with regard to the Fund as of the valuation date, including "Reserves Required" under the Fund. 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 Fund which is applicable to the specified benefit.

The exhibit required by Section 356.20, Subdivision 4(1) of Minnesota Statutes, Chapter 356, 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.

EXHIBIT REQUIRED BY MINNESOTA STATUES, CHAPTER 356, SECTION 356.20, SUBDIVISION 4(1) AS OF JUNE 30, 1976

ASSETS AND UNFUNDED SUPPLEMENTAL PRESENT VALUE

Assets

1. 2. 3. 4. 5. 6.	Cash Short term investments (at cost) Accounts receivable Participation in the MAFB Fund Accrued Interest on Investments Investment in equities at cost Investment in debt securities at amortized cost	\$ 20,559.13 138,021.24 26,488.11 1,013,034.10 26,585.65 116,914.36 999,532.66
8.	Total Assets	\$ 2,341,135.25
9.	Unfunded Supplemental Present Value (Unfunded Accrued Liability)	12,770,745.23
10.	TOTAL ASSETS AND UNFUNDED SUPPLEMENTAL PRESENT VALUE	\$15,111,880.48

CURRENT LIABILITIES AND RESERVES REQUIRED

Current Liabilities

11. Accounts payable:

• •	
(a) Accrued Expenses(b) Due SER Fund	\$ 36.48 8,900.00
12. MAFBF Annuity Stabilization Account	(43,616.00)
13. Total Current Liabilities	\$ (34,679.52)
Reserves Required	
14. Total Reserves Required per attached schedule	\$15,146,560.00
15. TOTAL CURRENT LIABILITIES AND RESERVES REQUIRED	\$15,111,880.48

NOTE: Accumulated contributions, without interest, of Judges not yet retired amounted to \$726,518.02 as of June 30, 1976.

DETERMINATION OF RESERVES REQUIRED AS OF JUNE 30, 1976

Ben	efits For:	(1) Present Value of Benefits	(2) Present Value of Applicable Portion of Normal Cost Contribution	(3) Reserves Required (1) - (2)
1.	Active Members:			
	(a) Retirement Benefits	\$17,540,416	\$4,805,848	\$12,734,568
	(b) Disability Benefits	303,254	131,965	171,289
	(c) Refundments due to death or withdrawal	360,117	318,536	41,581
	(d) Surviving Spouse Benefits	796,437	286,682	509,755
2.	Deferred Annuitants	54,052		54,052
3.	Former Members Without Vested Rights	-0-		-0-
4.	Retired Persons	1,635,315		1,635,315
5.	Total	\$20,689,591	\$5,543,031	\$15,146,560

Minnesota Statutes, Chapter 356, requires, in Section 356.20, 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 356.20, 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 Supplemental Present Value (Unfunded Accrued Liability) of the System over the period covered by the analysis, we have confirmed that fact it Item 16 of the exhibit.

EXHIBIT REQUIRED BY MINNESOTA STATUES, CHAPTER 356, SECTION 356.20, SUBDIVISION 4(2) AND (3) FISCAL YEAR ENDING JUNE 30, 1976

ANALYSIS OF INCOME AND DEDUCTIONS FROM INCOME

INCO	<u>DME</u>		
1.	Judges' Contributions		\$ 291,329.04
2.	Transfer from Old Survivor Account		6,103.39
3.	Transfer from State General Fund		263,173.28
4.	Interest and Dividends on Investments		92,238.07
5.	Income from MAFB Fund:		
		,778.13 ,680.93)	(4,902.80)
6.	TOTAL INCOME		\$ 647,940.98
DEDU	JCTIONS FROM INCOME		
7.	Increase in MAFBF Annuity Stabili- zation Account		\$ (34,443.00)
8.	Retirement Annuities		201,852.39
9.	Surviving Spouse Benefits		58,850.72
10.	Refundments		5,478.12
11.	Retroactive Social Security Transfer		1,597.05
12.	Administrative Expenses		9,227.27
13.	Increase in Total Reserve Required:		
	(a) Reserves Required 6-30-75 \$14,237 (b) Reserves Required 6-30-76 15,146	,830.00 ,560.00	908,730.00
14.	TOTAL DEDUCTIONS FROM INCOME		\$1,151,292.55
15.	EXCESS OF INCOME OVER DEDUCTIONS FROM INCOME		\$ (503,351.57)
16.	REDUCTION IN UNFUNDED SUPPLEMENTAL PRESENT VALUE	E:	
	(a) Unfunded Supplemental Present Value 6-30-75 \$12,267 (b) Unfunded Supplemental Present	,393.66	
		,745.23	\$ (503,351.57)

Minnesota Statutes, Chapter 356, requires, in Section 356.20, Subdivision 4(4), that there be submitted annually an analysis of changes in the membership of the Fund. Section 356.215, Subdivisions 4 and 5, requires information with respect to the annual payroll and annual annuities of the members of the Fund as well as certain information with respect to average ages. The exhibit required by Section 356.20, Subdivision 4 and Section 356.215, Subdivisions 4 and 5 is presented on the following page of this Section III.

EXHIBIT REQUIRED BY MINNESOTA STATUES, CHAPTER 356, SECTION 356.20, SUBDIVISION 4(4) AND SECTION 325.215, SUBDIVISIONS 4 AND 5 (FISCAL YEAR ENDING JUNE 30, 1976)

ACTIVE MEMBERS As of 6-30-75 New Entrants Total	COVERED EMPLOYEE STATEMENT	Number 193 20 213	Annual Salary \$5,645,172 553,080 \$6,198,252
Less Separations from Acti Refunds Deferred Annuities Inactive Disability Death-Spouses Receiving Be Service Annuity Total Separations As of 6-30-76		1 2 0 0 0 2 5 208	\$ 33,504 46,500 59,508 \$6,058,740
7- 1	-76 -75 - 6-30-76 -74 - 6-30-75 -74 - 6-30-74	42 years, 47 years,	10 months 1 month 8 months 9 months
ANNUITANTS Service Annuitants As of 6-30-75 New Deaths As of 6-30-76		Number 15 2 0 17	Annual Benefit Payable \$185,860.44 23,209.80 .00 \$209,070.24
<u>Widows</u> As of 6-30-75 New Deaths Adjustment As of 6-30-76 Orphans		7 0 0 - 7 None	\$ 38,303.88 .00 .00 1,872.12 \$ 40,176.00
Deferred Annuitants As of 6-30-75 New Deaths As of 6-30-76		0 2 0 2	\$.00 12,699.12 .00 12,699.12
		71 years,	11 months 5 months 5 months 3 months

Section 356.215, Subdivision 4 of the Minnesota Statutes, requires an analysis of the increase or decrease in the unfunded liability that occurred since the last valuation. This schedule is shown on the following page.

EXHIBIT REQUIRED BY MINNESOTA STATUES, CHAPTER 356, SECTION 356.215, SUBDIVISION 4 FISCAL YEAR ENDING JUNE 30, 1976

1.	Unfunded Supplemental Present Value (Unfunded Accrued Liability) June 30, 197	\$12,267,394	
2.	Change due to current rate of funding and interest requirement:		
	(a) 1975-76 Contribution for Unfunded Supplemental Present Value	\$ (e Notes
	(b) 5% interest requirement +	613,370	
	(c) Shortage of State Normal Contribution +	199,731	+ 813,101
3.	Change due to actuarial gains (-) or losses (+) because of 1975-76		
	experience deviations from expected		- 205,969
4.	Change due to increase in OASDI Benefits		- 103,781
5.	Unfunded Supplemental Present Value (Unfunded Accrued Liability) June 30, 197	6	\$12,770,745

SCHEDULE 1

MALE JUDGES

PROBABILITIES OF SEPARATION FROM ACTIVE SERVICE
(Number Separating at Each Age Per 10,000 Working at That Age)

Age	Withdrawal	Death	Disability	Age and Service Retirement
20	2,400	6		
21	2,250	6		
22	2,080	7		
23	1,920	7		
24	1,760	7		
24	1,700	,		
25	1,600	7		
26	1,470	7		
27	1,340	7		
28	1,230	8		
29	1,130	8 8		
		-		
30	1,040	8	2	
31	950	9	2 2	
32	980	10	2	
33	830	11	2	
34	770	12	2 2	
35	720	13	2	
36	680	15	2	
37	640	16	2 2 2 2 2	
38	600	18	2	
39	560	20	2	
40	530	22	2	
41	500	25	2	
42	480	27	2	
43	460	29	2	
44	430	32	2	
45	410	35	2	
46	390	38	3	
47	370	41	4 5	
48	350	44	5	
49	340	48	6	

				Age and Service
Age	Withdrawal	Death	Disability	Retirement
50	320	52	7	
51	300	57	8	
52	280	63	10	
53	260	70	12	
54	240	77	14	
55	210	85	17	
56	170	93	20	
57	140	102	23	
58	90	111	28	30
59	40	120	33	30
60		130	38	40
61		140	45	150
62		150	55	150
63		160	68	250
64		170	87	1,350
65				10,000

SCHEDULE 2

FEMALE JUDGES

$\frac{\text{PROBABILITIES OF SEPARATION FROM ACTIVE SERVICE}}{\text{(Number Separating at Each Age Per 10,000 Working at That Age)}}$

<u>Age</u>	Withdrawal	<u>Death</u>	Disability	Age and Service Retirement
20 21 22 23 24	3,700 3,550 3,390 3,230 3,070	1 2 2 2 2 3		
25 26 27 28 29	2,910 2,750 2,600 2,430 2,270	3 4 4 4 4		
30 31 32 33 34	2,120 1,970 1,820 1,680 1,540	1 4 4 4		
35	1,410	4	1	
36	1,300	5	1	
37	1,190	5	1	
38	1,090	6	1	
39	1,000	7	2	
40	920	8	2	
41	850	8	2	
42	780	9	3	
43	720	11	3	
44	680	13	3	
45	630	15	3	
46	590	17	4	
47	560	19	4	
48	530	21	4	
49	500	23	5	
50	470	25	5	
51	440	27	6	
52	410	30	7	
53	390	33	8	
54	360	36	10	

	******	Doort	Dd a a b d 1 d mar	Age and Service Retirement
Age	<u>Withdrawal</u>	<u>Death</u>	Disability	Rettrement
55	330	39	12	
56	290	43	15	
57	230	47	18	
58	170	51	22	50
59	90	56	26	50
60		61	31	150
61		66	37	150
62		72	44	200
63		78	52	350
64		83	61	1,100
65				10,000

MINNESOTA STATE JUDGES' RETIREMENT FUND ACTUARIAL VALUATION AS OF JUNE 30, 1976

The purpose of this memorandum is to discuss the report of the valuation of the Minnesota State Judges' Retirement Fund as of June 30, 1976. This valuation was submitted to the Commission in accordance with Chapter 356 of Minnesota Laws 1974. The entry age normal cost method was used with a 5% interest assumption. The report was prepared by Harry M. Church of Towers, Perrin, Forster and Crosby.

This memorandum contains the following:

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

1. Statistical and Valuation Data

(1)	Membership	June 30, 1975	June 30, 1976
	Active Members	193	208
	Retired Members	15	17
	Survivors	7	7
	Deferred Annuitants	0	2
(2)	Payroll and Annuities Payable		
	Total Annual Payroll	\$ 5,645,172	\$ 6,058,740
	Annuities (annual)	224, 164	249, 246
(3)	Valuation Balance Sheet		
	Actuarial Liabilities		
	Annuities in Force	\$ 1,464,278	\$ 1,635,315
	Deferred Annuities	0	54,052
	Active Members	12,773,552	13,457,193
	Total	\$14,237,830	\$15,146,560
	Assets	1,970,436	2,375,815
	Unfunded Accrued Liability	\$12,267,394	\$12,770,745
	Funding Ratio	13.84%	15.69%

(4) 'Normal Cost and Funding Costs

	June 30, 1975	June 30, 1976
Normal Cost	12.61%	12.18%
Expenses	0.14	0.14
Interest on Deficit	10.87	10.54
Minimum Contribution	23.62%	22.86%
Normal Cost plus Expenses	12.75%	12.32%
Amortization by 1997	11.58*	11.69*
Required Contribution	24.33%	24.01%

^{*}Based on assumption that payroll will increase 3 1/2% each year.

(5) Actual Support

Judges' Contributions	4.78%
Transfer from State General Fund	20.25
Total	25.03%

4.98% 4.50 9.48%

2. Discussion of Valuation Results

As indicated above, the normal cost turned out to be 12.18% of payroll. Since the benefit in this plan in most cases involves a Social Security offset, the judges' share of the normal cost is determined by the Actuary using a formula which takes into account the employee Social Security tax. This resulted in the following division of the normal cost:

	June 30, 1975	June 30, 1976
Judges' Share State's Share Total	4.55% 8.06 12.61%	$\frac{4.20\%}{7.98}$ $\frac{12.18\%}{}$

With this division of the normal cost, the State's share of the 24.01% required contribution becomes 19.81%.

It should be noted that the amortization contribution shown above is a level percentage of a total payroll which is assumed to increase 3 1/2% per year. Since the cost calculations assume that the amount of the retirement benefit will escalate at this same rate, we feel that it is reasonable to base the amortization requirement on the same assumption. In other words, the escalation will not occur unless the payroll increases. However, for purposes of comparison, we point out that the amortization contribution based on a level payroll would be 15.66%.

prestation practice parties

Although the valuation report shows financing requirements in the same format as that for the other funds, the State does not contribute a regular amount each year. The State's contribution in a given year is based upon the reserve for the benefits of those judges who retire during the year. This accounts for the fact that the State's contribution was only 4.50% of payroll during the 1975-76 year in contrast to 20.25% during the prior year. Only 2 retirements occurred during the past year compared with 11 during the prior year.

This also accounts for the increase of \$503,351 in the unfunded accrued liability as shown in the following summary:

Increases:

Deficiency in Contribution

\$813,101

Decreases:

Increases in Social Security Benefits	\$103,781	
Net Actuarial Gains	205, 969	
Total Decreases		309,750
Net Increase		\$503,351

We point out again that the valuation of this plan during the first few years has to be based upon numerous untested assumptions. For the most part, the assumptions used for valuations of MSRS have been followed. We feel that the termination rates may prove to be too high and that judges will probably retire at later ages than other State employees. In addition, an average entry age of 43 has been assumed.

We also point out that it is necessary to make assumptions about the future level of Social Security benefits and contributions, and these are rather unpredictable items.

3. Conclusion

The report complies with the requirements of the statutes.

As long as the State's present contribution practice is continued, the valuation results will fluctuate rather widely from year to year.

Franklin C. Smith Associate, Society of Actuaries Stennes & Associates, Inc. Commission Actuaries