REPORT ON

ACTUARIAL VALUATION

MINNESOTA STATE JUDGES'
RETIREMENT FUND

JUNE 30, 1975

October 29, 1975

LITTLE, CHURCH & CHAPIN, INC.

CONSULTING ACTUARIES

EDWARD L. CHAPIN HARRY M. CHURCH ROBERT H. LITTLE

October 29, 1975

301 E. COLORADO BLVD., SUITE 703 PASADENA, CALIFORNIA 91101 (213) 681-4455

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, 1975.

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 Minnesota State Judges' Retirement Fund made as of June 30, 1975 was carried out on the basis of accepted actuarial methods and procedures and in accordance with the provisions of Minnesota Statutes 1974, Chapter 356 as amended by Laws 1975.

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

Very truly yours,

LITTLE, CHURCH & CHAPIN, INC.

Consulting Actuaries

By

Robert H. Little, F.S.A.

REPORT ON

ACTUARIAL VALUATION

OF THE

MINNESOTA STATE JUDGES' RETIREMENT FUND

AS OF

JUNE 30, 1975

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, 1975.

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, 1975. 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:

Rate of separation from active Schedules attached (Same as June 30, 1971 MSRS) service 2. 5% (Same as MSRS) Interest 3. Salary Scale 3-1/2% per annum, compounded annually (Same as MSRS) Mortality After Retirement 1951 G.A. Mortality Table set back one year for males and two years for females. (Same as MSRS) \$341.70 increasing with salary Social Security Monthly 5. Primary Amount scale Level Social Security Con-6. 6.16% tribution Rate 7. Social Security Covered \$1,175 increasing with salary scale Monthly Wages 8. Escalation after Retirement (for 3-1/2% per annum, compounded those entitled to escalation) 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 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 12.61% of salary. We calculate the Judges' share to be equivalent to 4.55% of total salary and the State's share to be 8.06% 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, 1975

ASSETS

	1.	Assets on Hand		\$ 1,970,067
-	2.	Present Value of Judges' Future		
		Contributions		1,951,415
	•			
_	3.	Present Value of State Future Contributions		
		Applicable to:	•	
_		a) Entry Age Normal Cost (8.06%)	\$ 3,458,339	
		b) Unfunded Accrued Liability	12, 267, 394	15, 725, 733
	4	TOTAL ASSETS		\$19 647 215
-	4.	TOTAL ASSETS		\$19,647,215
		LIABILITIES		
	5.	Present Value of Earned and Earnable		
	٥,			
_		Benefits Payable to Presently Active Members:		
			\$16,752,639	
		a) Retirement Benefits		
_	·	b) Disability Benefits	307,569	
		c) Refundments due to death or	221 / 5/	
		withdrawal	331,676	4.0.100.00/
-		d) Surviving Spouse Benefits	791,422	\$18, 183, 306
	6.	Present Value of Benefits Payable to		
		Presently Retired Persons:		
-		a) From Judges' Fund	\$ 516,784	
		b) From MAFB Fund	947,494	1,464,278
-	_	A D 11 C A D D 1 Charle		8,804
	7.	Accounts Payable from Accounting Balance Sheet		0,004
_	8.	MAFBF Annuity Stabilization Account		(9,173)
	9.	TOTAL LIABILITIES		\$19,647,215
_	,.			

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.

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 8.06% of Judges' salaries.
- Item 3(b) The portion attributable to the State's unfunded accrued liability. It will require an initial annual contribution of \$653,908, increasing in accordance with the salary scale, to amortize this liability over the 22 year period ending June 30, 1997. \$653,908 amounts to 11.58% of current annual salary.

Item 5 shows the actuarially computed present value of all benefits earned to June 30, 1975 and earnable after that date that will be paid from the Fund to presently active members.

Item 6 shows the actuarially computed present value of benefits presently being paid to retired persons. The amount of \$947,494 shown for Item 6(b)

represents the present value of benefits payable from the MAFBF and corresponds to the value of \$822,902 shown on the Accounting Balance Sheet.

The difference is due to the 1974-75 experience computed in accordance with the law as follows:

		MAFB Fund
1.	Accounting Balance Sheet	\$822,902
2.	Mortality Loss 1974-75	+ 115,419
3.	Interest Loss 1974-75	+ 9,173
4.	Actuarially Computed Reserve	\$947,494

We would like to note that the foregoing losses determined under the law are not precise values. The following schedule shows our determination of what we consider to be more appropriate gains and losses:

		MAFB Fund
1.	Accounting Balance Sheet	\$822,902
2.	Mortality Gain	- <u>4, 428</u>
3.	MAFBF Participation after transfer of Mortality Gain	\$818,474
4.	Investment Loss	+ 129,020
5.	Actuarially Computed Reserve	\$947,494

The mortality gain of \$4,428 was calculated as the difference between the actuarially computed reserve (\$947,494) and the MAFBF participation that would have resulted if the MAFBF had earned exactly 5% (\$951,922).

CONCLUSIONS

The results of the current valuation, based upon the MAFBF loss as required by law, show that the benefits to be provided under the Fund can be financed by the Judges' contributions and the following State contributions:

	I	Recommended State Contributions 1975-76
a)	Entry Age Normal Cost	8.06%
b)	Unfunded Accrued Liability (22 ye	ears) 11.58%
c)	Expenses	. 14%
d)	Total	19.78%

SECTION III

REQUIRED EXHIBITS

Minnesota Statutes 1974, Chapter 356 as amended by Laws 1975, 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 1974, Chapter 356 as amended by Laws 1975, 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 STATUTES 1974, CHAPTER 356, SECTION 356.20, SUBDIVISION 4(1) AS AMENDED BY LAWS 1975

AS OF JUNE 30, 1975

ASSETS AND UNFUNDED ACCRUED LIABILITY

Assets	Α	s	s	e	ts
--------	---	---	---	---	----

1.	Cash	\$	39,555.21
2.	Short term investments (at cost)		566, 346. 76
3.	Accounts receivable, Judges! Buybacks		42, 078.46
4.	Participation in the MAFB Fund		938,320.99
5.	Accrued Interest on Investments		11,049.24
6.	Investment in equities at cost		18,535.03
7.	Investment in debt securities at amortized cost		354, 181. 63
8.	Total Assets	\$ 1,	970,067.32
9.	Unfunded Accrued Liability	12,	267, 393. 66
10.	TOTAL ASSETS AND UNFUNDED ACCRUED LIABILITY	<u>\$14,</u>	237, 460. 98

CURRENT LIABILITIES AND RESERVES REQUIRED

Current Liabilities

15.

11.	Accounts payable: a) Accrued Expenses b) Due SER Fund	\$ 42.98 8,761.00
12.	MAFBF Annuity Stabilization Account	(9,173.00)
13.	Total Current Liabilities	\$ (369.02)
Re	serves Required	
14.	Total Reserves Required per attached schedule	14, 237, 830. 00

\$14, 237, 460. 98

Note: Accumulated contributions, without interest, of Judges not yet retired amounted to \$398,945.65 as of June 30, 1975.

TOTAL CURRENT LIABILITIES AND RESERVES REQUIRED

DETERMINATION OF RESERVES REQUIRED AS OF JUNE 30, 1975

		(1)	(2)	(3)
Be	nefits For:	Present Value of Benefits	Present Value of Applicable Portion of Normal Cost Contribution	Reserves Required (1) - (2)
1.	Active Members: a) Retirement Benefits b) Disability Benefits c) Refundments due to death or withdrawal d) Surviving Spouse Benefit	\$16,752,639 307,569 331,676 5 791,422	\$4,667,456 133,013 313,224 296,061	\$12,085,183 174,556 18,452 495,361
2.	Deferred Annuitants	-0-	• •	-0-
3.	Former Members Without Vested Rights	-0-	- -	-0-
4.	Retired Persons	1,464,278		1,464,278
5.	Total	\$19,647,584	\$5,409,754	\$14,237,830

Minnesota Statutes 1974, Chapter 356 as amended by Laws 1975, 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 Accrued Liability of the System over the period covered by the analysis, we have confirmed that fact in Item 15 of the exhibit.

EXHIBIT REQUIRED BY MINNESOTA STATUTES 1974, CHAPTER 356, SECTION 356.20, SUBDIVISION 4(2) AND (3) AS AMENDED BY LAWS 1975 FISCAL YEAR ENDING JUNE 30, 1975

ANALYSIS OF INCOME AND DEDUCTIONS FROM INCOME

	INC	OME		•
	1.	Judges' Contributions		\$ 269,970.26
•	2.	Interest on Past Due Contributions		3,287.43
	3.	Transfer from State General Fund		1,143,059.10
	4.	Interest and Dividends on Investments		37,237.37
	5.	Income from MAFB Fund: a) Realized b) Statutory Valuation Adjustment	\$ 48,406.59 (127,638.42)	(79,231,83)
	6.	TOTAL INCOME		\$1,374,322.33
	DE	DUCTIONS FROM INCOME	•	
	7.	Increase in MAFBF Annuity Stabilization		
		Account		\$ (9,173.00)
	8.	Prior Year Adjustment		16,049.76
	9.	Retirement Annuities		142,090.42
	10.	Surviving Spouse Benefits		18,667.06
	11.	Refundments - Erroneous Deductions		1,093.29
	12.	Retroactive Social Security Transfer		6,177.60
	13.	Administrative Expenses		9,601.18
	14.	Increase in Total Reserve Required:	•	
		Reserves Required 6-30-74	\$14,562,972.00	
	•	Reserves Required 6-30-75	14, 237, 830. 00	(325,142.00)
	15.	TOTAL DEDUCTIONS FROM INCOME		\$ (140,635.69)
	16.	EXCESS OF INCOME OVER DEDUCTIONS F	ROM INCOME	1,514,958.02
	17.	REDUCTION IN UNFUNDED ACCRUED LIA		
		Unfunded Accrued Liability 6-30-74	\$13, 782, 351. 68	
		Unfunded Accrued Liability 6-30-75	12, 267, 393. 66	\$1,514,958.02

Minnesota Statutes 1974, Chapter 356 as amended by laws 1975, 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 pages of this Section III.

EXHIBIT REQUIRED BY MINNESOTA STATUTES 1974, CHAPTER 356, SECTION 356.20, SUBDIVISION 4(4) AND SECTION 356.215, SUBDIVISIONS 4 AND 5 AS AMENDED BY LAWS 1975 (FISCAL YEAR ENDING JUNE 30, 1975)

. COVERED EMPLOYEE STATEMENT

_	ACTIVE MEMBERS	Number	Annual Salary
-	As of 6/30/74 New Entrants Total	203* 7 210	\$5,940,432 207,288
	Less Separations from Active Service		
_	Refunds - Deductions in Error Deferred Annuities Inactive Disability Death - Spouses Receiving Benefits (there were also two additional spouses for whom benefits were provided by laws 1975)	2 0 0 0 4	55,008 - - - 114,516
	Service Annuity Total Separations As of 6/30/75	11 17 193	301,020 \$5,645,172
_	Average Entry Age		
_	All active members at 6/30/75 New members 7/1/74 - 6/30/75 1/1/74 - 6/30/74	53 years, 47 years, 41 years,	8 months
_	ANNUITANTS Service Annuitants As of 6/30/74 New	Number 4 11	Annual Benefit Payable \$ 58,500.24 127,360.20
	Deaths As of 6/30/75	0 15	.00 \$185,860.44
_	Disabled Annuitants Widows	none	
_	As of 6/30/74 New Deaths As of 6/30/75	1 6 0 7	\$ 6,127.80 32,176.08 .00 \$ 38,303.88
_	Orphans	none	
_	Deferred Annuitants	none	
~	Average Age at Retirement - Service Annuitants All service annuitants at 6/30/75 New service annuitants 7/1/74 - 6/30/75 1/1/74 - 6/30/75	70 years, 71 years, 69 years,	

^{- *}One additional person was reported at 6/30/74 who was not eligible and by whom no contributions were made. -14-

Section 356.215, Subdivision 4 of the Minnesota Statutes 1974 as amended by Laws 1975 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 STATUTES 1974, CHAPTER 356, SECTION 356.215, SUBDIVISION 4 AS AMENDED BY LAWS 1975 FISCAL YEAR ENDING JUNE 30, 1975

1.	Unfunded Accrued Liability June 30, 1974	\$13,782,352
2.	Change due to current rate of funding and interest requirement:	
	(a) 1974-75 Past Service Contribution - \$535,178	**************************************
-	(b) 5% interest requirement + <u>689,118</u>	+ 153,940
3.	Change due to actuarial gains (-) or losses (+) because of 1974-75 experience deviations from expected	- 812,235
4.	Change due to increase in OASDI Benefits	- 98,262
5.	Change due to erroneous valuation of retired lives June 30, 1974	- 210,889
6.	Change due to elimination of escalation for certain employees	- 547,512
7.	Unfunded Accrued Liability June 30, 1975	\$12, 267, 394

Male Judges

Probabilities of Separation from Active Service

	A	317 143 3	D 41	Disability	Age and Service Retirement
	Age	Withdrawal	<u>Death</u>	Disability	Retirement
	20	2,400	6		
_	21	2,250	6		
	22	2,080	7		
	23	1,920	7		
	24	1,760	7		
		1,100			
_	25	1,600	7		
	26	1,470	7		•
	27	1,340	7		
_	28	1,230	8		
	29	1,130	8		
		2,230			
:	30	1,040	8	2	
	31	950	9	2	
	32	890	10	2	
	33	830	11	2	
	34	770	12	2	
		\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \		•	
-	35	720	13	2	
	36	680	15	2	
	37	640	16	2	
_	38	600	18	2	
	39	560	20	2	
-	40	530	22	2	
	41	500	25	2 2	• •
	42	480	27	2	
_	43	460	29	2	
	44	430	32	2	
•	45	410	35	2 3	
	46	390	38		
_	47	370	41	4	
	48	350	44	5	
	49	340	48	6	

Male Judges (Continued)

Probabilities of Separation from Active Service

	Age	Withdrawal	Death	Disability	Age and Service Retirement
-	50	220	E 2	7	
		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

Female Judges

Probabilities of Separation from Active Service

_	Age	Withdrawal	Death	Disability	Age and Service Retirement
	20	3,700	1		
	21	3,550	2		
_	22	3,390	2		
	23	3,230			
	24	3,070	2 3		
_					• ,
	25	2,910	3		
	26	2,750	4	,	
_	27	2,600	4		
	28	2,430	4		
	29	2,270	4		
	20	2 120	4		
	30	2,120	4		
_	31	1,970	4		
	32	1,820	4		
	33	1,680	4		
_	34	1,540	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	
_				3	• 9
	44	680	13	3	
	4 5	630	15	3	
_	46	590	17	4	
	47	560	19	4	
	4 8	530	21	4 5	
_	49	500	23	5	

Female Judges (Continued)

Probabilities of Separation from Active Service

_	Age	Withdrawal	Death	Disability	Age and Service Retirement
_	50	470	25	5	
	51	440	27	6	
	52	410	30	7	
_	53	390	33	8	,
	54	360	36	10	
_	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, 1975

The purpose of this memorandum is to discuss the report of the valuation of the Minnesota State Judges' Retirement Fund as of June 30, 1975. 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 Robert H. Little of Little, Church and Chapin.

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, 1974	June 30, 1975
	Active Members	204	193
	Retired Members	4	15
	Survivors	. 1	7
(2)	Payroll and Annuities Payable		
	Total Annual Payroll	\$ 5,940,432	\$ 5,645,172
	Annuities (annual)	64,628	224, 164
(3)	Valuation Balance Sheet		
	Actuarial Liabilities		
	Annuities in Force	\$ 679,945	\$ 1,464,278
	Active Members	13,883,027	12,773,552
	Total	\$ 14,562,972	\$ 14,237,830
	Assets	780,620	1,970,436
	Unfunded Accrued Liability	\$ 13,782,352	\$ 12,267,394
	Funding Ratio	5.36%	13.84%

(4) Normal Cost and Funding Costs

	June 30, 1974	June 30, 1975
Normal Cost	12.99%	12.61%
Expenses	. 14	. 14
Interest on Deficit	11.60	10.87
Minimum Contribution	24.73%	23.62%
Normal Cost plus Expenses	13.13%	12.75%
Amortization by 1997	11.91 *	11.58*
Required Contribution	25. 04%	24. 33%

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

(5) Actual Support

Judges' Contributions	3.89%	4.78%
Transfer from State General Fund	8.22	20.25
Total	12.11%	25.03%

2. Discussion of Valuation Results

As indicated above, the normal cost turned out to be 12.61% 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, 1974	June 30, 1975
Judges' Share	4.84%	4.55%
State's Share	8.15	8.06
Total	12.99%	12.61%

With this division of the normal cost, the State's share of the 24.33% required contribution becomes 19.78%. Thus, the financing during the second year caught up with the required amounts.

It should be noted that the amoritzation 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 15.72%.

Attention is also directed to the fact that the total payroll decreased during the year rather than increasing at the assumed rate of 3 1/2%. On the other hand, the average salary per member increased only a small amount which would retard the projected escalation of those whose benefits will be subject to escalation.

The unfunded accrued liability decreased by \$1,514,958 during the year. The Actuary presented the following analysis of this decrease:

Decreases:

Increases in OASDI Benefits	\$ 98,262	
Correction in 1974 Reserve	210 000	
for Retired Members	210,889	
Elimination of Escalation for		
Certain Members	547,512	
Actuarial Gains	812,235	
Total Decreases		\$1,668,898

Increases:

Deficiency in Amortization Contribution	153,940
Net Decrease	\$1,514,958

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 41 has been assumed. This fitted the group during the first six months of the experience, but the average entry age has been higher since that time.

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.

It appears that the increase in financing during the second year has brought this fund into actuarial balance.

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