STATE EMPLOYEES RETIREMENT FUND

ACTUARIAL VALUATION REPORT

JULY 1, 1993

MILLIMAN & ROBERTSON, INC.

MILLIMAN & ROBERTSON, INC.
Actuaries and Consultants

Suite 400
15700 Bluemound Road
Brookfield, Wisconsin 53005
Telephone: 414/784-2250
Fax: 414/784-4116

November 16, 1993

Legislative Commission on
Pensions and Retirement
55 State Office Building
St. Paul, Minnesota 55155

RE: State Employees Retirement Fund

Commission Members:

Pursuant to the terms of our Actuarial Services Contract, we have performed an actuarial valuation of the Fund as of July 1, 1993.

The results of our calculations are set forth in the following report, as are the actuarial assumptions upon which our calculations have been made. We have relied on the basic employee data and asset figures as submitted by the Minnesota State Retirement System.

On the basis of the foregoing, we hereby certify that, to the best of our knowledge and belief, this report is complete and accurate and has been prepared in accordance with the requirements of Section 356.215, Minnesota Statutes, and the requirements of the Standards for Actuarial Work, adopted by the Commission on July 8, 1992.

Respectfully submitted,

Thomas K. Custis

Thomas K. Custis, F.S.A., M.A.A.A.
Consulting Actuary

William V. Hogan

William V. Hogan, F.S.A., M.A.A.A.
Actuary

TKC/WVH/bh

STATE EMPLOYEES RETIREMENT FUND

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STATE EMPLOYEES RETIREMENT FUND

REPORT HIGHLIGHTS
(DOLLARS IN THOUSANDS)

	07/01/92 Valuation	07/01/93 Valuation
A. CONTRIBUTIONS (Table 11)		
1. Statutory Contributions - Chapter 352 % of Payroll	8.11%	8.27%
2. Required Contributions - Chapter 356 % of Payroll	8.27%	8.93%
3. Sufficiency (Deficiency): (A.1. - A.2.)	-0.16%	-0.66%
B. FUNDING RATIOS		
1. Accrued Benefit Funding Ratio		
a. Current Assets (Table 1)	$2,613,472	$2,905,578
b. Current Benefit Obligations (Table 8)	$2,744,923	$3,057,914
c. Funding Ratio: (a/b)	95.21%	95.02%
2. Accrued Liability Funding Ratio		
a. Current Assets (Table 1)	$2,613,472	$2,905,578
b. Actuarial Accrued Liability (Table 9)	$3,125,299	$3,563,492
c. Funding Ratio: (a/b)	83.62%	81.54%
3. Projected Benefit Funding Ratio (Table 8)		
a. Current and Expected Future Assets	$3,875,377	$4,349,352
b. Current and Expected Future Benefit Obligations	$3,932,617	$4,579,963
c. Funding Ratio: (a/b)	98.54%	94.96%
C. PLAN PARTICIPANTS		
1. Active Members		
a. Number (Table 3)	49,214	48,830
b. Projected Annual Earnings	$1,658,792	$1,694,520
c. Average Annual Earnings (Actual $)	$33,706	$34,702
d. Average Age	41.6	42.0
e. Average Service	10.2	10.6
2. Others		
a. Service Retirements (Table 4)	12,835	13,171
b. Disability Retirements (Table 5)	743	779
c. Survivors (Table 6)	1,023	1,117
d. Deferred Retirements (Table 7)	2,769	3,839
e. Terminated Other Non-vested (Table 7)	4,256	4,492
f. Total	21,626	23,398

STATE EMPLOYEES RETIREMENT FUND

COMMENTARY

Purpose

The purpose of this valuation is to determine the financial status of the Plan. In order to achieve this purpose, an actuarial valuation is made at the beginning of each fiscal year as required by Section 356.215 of Minnesota Statutes.

Report Highlights

The financial status of the Plan can be measured by three different funding ratios:

- o The Accrued Benefit Funding Ratio is a measure of current funding status and, when viewed over a period of years, presents a view of the funding progress. It is based upon benefits which have been earned by service to the valuation date. This year's ratio is 95.02%. The corresponding ratio for the prior year was 95.21%.

- o The Accrued Liability Funding Ratio is also a measure of funding status and funding progress. It is based on the actuarial cost method that has historically been used by the State. For 1993 the ratio is 81.54%, which is a decrease from the 1992 value of 83.62%.

- o The Projected Benefit Funding Ratio is a measure of the adequacy or deficiency in the contribution level. This year's ratio of 94.96% shows that the current statutory contributions are inadequate.

Asset Information (Tables 1 and 2)

Minnesota Statutes require that the asset value used for actuarial purposes

recognize only a third of the unrealized gains and losses. This requirement exists because market values (which include all unrealized gain and losses) are typically volatile and can produce erratic changes in the contribution requirements from year to year.

The calculation of the Actuarial Value of Assets is shown in Table 1 on lines F1 to F6. It combines the cost value of the Assets Available for Benefits and one-third of the difference between the market value and cost value of those assets.

The term "Actuarial Value of Assets" is used to indicate that the value was determined for use in this actuarial valuation. Since Minnesota Statutes refer to this value as "Current Assets", the latter phrase will be used in the remainder of this report.

This Plan participates in the Minnesota Post Retirement Investment Fund (i.e. MPRIF). After the MPRIF liability has been calculated for each participating Plan, the State Board of Investments, (i.e. SBI), will determine each Plan's portion of the excess earnings for the January benefit increase as well as the Plan's allocated market share of MPRIF.

<u>Actuarial Balance Sheet (Table 8)</u>
An actuarial balance sheet provides a method for evaluating current and future levels of funding.

The Current Benefit Obligation used to measure current funding levels is calculated in accordance with Statement No. 5 of the Governmental Accounting Standards Board (GASB). Those requirements are:

- For Active Members - salary and service are projected to retirement to determine benefits for each member and the ratio of credited service to total service establishes the portion of the projected benefit to be used in calculating the current funding level.

- For Non-active Members - the discounted value of benefits, including augmentation in cases where benefits have not commenced.

GASB Disclosure

The Current Benefit Obligation amounts in Table 8 are required to be disclosed by Statement No. 5 of the Governmental Accounting Standards Board (GASB). However, Statement No. 5 uses the terms "Actuarial Present Value of Credited Projected Benefits" and "Pension Benefit Obligation" rather than "Current Benefit Obligation".

The July 1, 1993 Pension Benefit Obligation reported in Table 8 is reformatted for GASB reporting purposes in the following table:

Retirees and beneficiaries currently receiving benefits and terminated employees not yet receiving benefits	$1,149,575,000
Current Employees	
Accumulated employee contributions including allocated investment income	$736,405,000
Employer-financed vested	998,315,000
Employer-financed nonvested	173,619,000
Total Pension Benefit Obligation	$3,057,914,000
Net Assets Available for Benefits at Cost	$2,846,117,000
Total Benefit Obligation less Assets	$211,797,000
Funded Ratio	93.07%

Actuarial Cost Method (Table 9)

The approach used by the State of Minnesota to determine contribution sufficiency is the Entry Age Normal Actuarial Cost Method. The primary characteristic of this method is that it allocates costs as a level percentage of payroll.

A comparison of this actuarial method (Table 9) to the actuarial balance sheet (Table 8) illustrates the two techniques for allocating liabilities of active Members to past and future. As noted in the prior section, the balance sheet allocates benefits and the corresponding liabilities, on the basis of service. The method used in Table 9 allocates liabilities so that the cost each year will be a constant percentage of payroll. Both approaches, however, calculate the value of all future benefits the same way (see line F of Table 8 and line A6, column 1, of Table 9).

An Unfunded Actuarial Accrued Liability is computed under the Entry Age Normal Actuarial Cost Method by comparing the liabilities allocated to past service (Actuarial Accrued Liability) to the Current Assets. This amount, line B3, is funded over the remaining years to the amortization date by a series of payments that remain a constant percentage of payroll each year.

The payments will increase 6.5% each year because that is the assumed rate of increase in payroll. Although the payment schedule will be adequate to amortize the existing unfunded, the lower payments in the earlier years will not be sufficient to cover the interest on the unfunded liability. After a few years, the annual payment will cover the interest and also repay a portion of the unfunded.

Sources of Actuarial Gains and Losses (Table 10)

The assumptions used in making the calculations using the Entry Age Normal Actuarial Cost Method are based on long-term expectations. Each year the actual experience will deviate from the long-term expectation. For a detailed analysis of the major components, refer to Table 10.

Contribution Sufficiciency (Table 11)

This report determines the adequacy of Statutory Contributions by comparing the Statutory Contributions to the Required Contributions.

The Required Contributions, set forth in Chapter 356, consist of:

- o Normal costs based on the Entry Age Normal Actuarial Cost Method.
- o A Supplemental Contribution for amortizing any Unfunded Actuarial Accrued Liability.
- o An Allowance for Expenses.

Table 11 shows the Plan has a contribution deficiency since the Statutory Contribution Rate is 8.27% compared to the Required Contribution Rate of 8.93%.

Changes in Actuarial Assumptions

The actuarial assumptions listed in Table 12 are the same as those used in the prior valuation, however the allowance for expenses as part of the required contributions of Chapter 356 in Table 11 only reflect administrative expenses and not investment expenses. This reduced the required contribution by approximately .15% of payroll.

Changes in Plan Provisions

The following changes were made which served to increase plan costs:

(1) 100% joint and survivor annuity provided to surviving spouse regardless of age of member at death. May also elect a term certain annuity instead of the 100% joint and survivor annuity. If no surviving spouse, dependent children under age 20 may be eligible for an equivalent benefit.

(2) An early retirement incentive has been offered to state employees who are age 55 with 25 years of combined service credit or are age 65 with one year of combined

service credit and retire between May 16, 1993 and January 31, 1994. An additional .25% for each year of service up to 30 is credited.

The methodology to determine annual postretirement benefit increases was modified to incorporate one layer relating to the Consumer Price Index and a second layer relating to investment performance on a smoothed basis. Over the long term, the new methodology is designed to continue to provide increases based on the excess of fund earnings over the postretirement interest assumption (5.0%). No changes have been incorporated into our valuation methods and assumptions

TABLE 1

STATE EMPLOYEES RETIREMENT FUND

ACCOUNTING BALANCE SHEET
(DOLLARS IN THOUSANDS)

JULY 1, 1993

		Market Value	Cost Value
A.	ASSETS		
	1. Cash, Equivalents, Short-term Securities	$59,022	$59,022
	2. Investments		
	a. Fixed Income	550,125	528,899
	b. Equity	1,272,222	1,103,183
	c. Real Estate	75,119	87,002
	3. Equity in Minnesota Post-Retirement Investment Fund (MPRIF)	1,062,677	1,062,677
	4. Other	5,857	5,857
B.	TOTAL ASSETS	$3,025,022	$2,846,640
C.	AMOUNTS CURRENTLY PAYABLE	$523	$523
D.	ASSETS AVAILABLE FOR BENEFITS		
	1. Member Reserves	$466,594	$466,594
	2. Employer Reserves	1,489,699	1,311,317
	3. MPRIF Reserves	1,062,677	1,062,677
	4. Non-MPRIF Reserves	5,529	5,529
	5. Total Assets Available for Benefits	$3,024,499	$2,846,117
E.	TOTAL AMOUNTS CURRENTLY PAYABLE AND ASSETS AVAILABLE FOR BENEFITS	$3,025,022	$2,846,640

F.	DETERMINATION OF ACTUARIAL VALUE OF ASSETS		
	1. Cost Value of Assets Available for Benefits (D5)		$2,846,117
	2. Market Value (D5)	$3,024,499	
	3. Cost Value (D5)	2,846,117	
	4. Market Over Cost: (F2-F3)	$178,382	
	5. 1/3 of Market Over Cost: (F4)/3		59,461
	6. Actuarial Value of Assets (F1+F5) (Same as "Current Assets")		$2,905,578

STATE EMPLOYEES RETIREMENT FUND

CHANGE IN ASSETS AVAILABLE FOR BENEFITS
(DOLLARS IN THOUSANDS)

YEAR ENDING JUNE 30, 1993

		Market Value	Cost Value
A.	ASSETS AVAILABLE AT BEGINNING OF PERIOD	$2,686,577	$2,576,920
B.	OPERATING REVENUES		
	1. Member Contributions	$59,132	$59,132
	2. Employer Contributions	58,982	58,982
	3. Investment Income	143,531	143,531
	4. MPRIF Income	91,945	91,945
	5. Net Realized Gain (Loss)	33,928	33,928
	6. Other	1,962	1,962
	7. Net Change in Unrealized Gain (Loss)	68,725	0
	8. Total Revenue	$458,205	$389,480
C.	OPERATING EXPENSES		
	1. Service Retirements	$104,362	$104,362
	2. Disability Benefits	0	0
	3. Survivor Benefits	0	0
	4. Refunds	6,480	6,480
	5. Investment Fees	2,416	2,416
	6. Administrative Expenses	1,785	1,785
	7. Other	5,240	5,240
	8. Total Disbursements	$120,283	$120,283
D.	OTHER CHANGES IN RESERVES	0	0
E.	ASSETS AVAILABLE AT END OF PERIOD	$3,024,499	$2,846,117

STATE EMPLOYEES RETIREMENT FUND

ACTIVE MEMBERS AS OF JUNE 30, 1993

	YEARS OF SERVICE								
AGE	≤1	1-4	5-9	10-14	15-19	20-24	25-29	30+	ALL
<25	856	287	43						1,186
25-29	1,319	1,628	1,001	77					4,025
30-34	984	1,939	2,518	1,203	122				6,766
35-39	871	1,644	2,414	2,258	1,385	168			8,740
40-44	693	1,394	2,054	1,937	2,119	1,098	165		9,460
45-49	482	861	1,334	1,225	1,456	1,187	797	91	7,433
50-54	198	511	858	728	863	584	881	404	5,027
55-59	145	259	503	524	597	458	437	530	3,453
60-64	66	118	286	361	383	303	250	266	2,033
65+	39	67	89	144	137	104	53	74	707
ALL	5,653	8,708	11,100	8,457	7,062	3,902	2,583	1,365	48,830

AVERAGE ANNUAL EARNINGS

	YEARS OF SERVICE								
AGE	≤1	1-4	5-9	10-14	15-19	20-24	25-29	30+	ALL
<25	15,826	21,209	18,543						17,227
25-29	20,861	26,573	28,554	26,659					25,196
30-34	21,850	28,535	31,305	30,856	29,557				29,025
35-39	22,836	29,528	32,814	33,887	33,982	34,116			31,689
40-44	23,539	30,778	33,787	35,694	38,104	36,901	35,619		34,344
45-49	24,307	31,498	32,963	35,269	38,565	42,057	41,050	40,177	36,117
50-54	25,078	28,415	32,878	34,696	37,997	40,099	42,532	44,234	36,703
55-59	18,750	29,359	32,181	32,829	35,979	39,046	39,635	45,437	36,049
60-64	11,147	29,410	30,168	32,318	35,772	36,229	38,347	44,201	34,689
65+	9,963	20,737	33,439	30,578	35,013	38,022	35,194	44,808	32,658
ALL	21,102	28,736	32,143	33,885	36,864	39,058	40,587	44,455	32,585

	PRIOR FISCAL YEAR EARNINGS (IN MILLIONS) BY YEARS OF SERVICE								
AGE	≤1	1-4	5-9	10-14	15-19	20-24	25-29	30+	ALL
ALL	119	250	356	286	260	152	104	60	1,591

STATE EMPLOYEES RETIREMENT FUND

SERVICE RETIREMENTS AS OF JUNE 30, 1993

AGE	YEARS RETIRED <1	1-4	5-9	10-14	15-19	20-24	25+	ALL
<50								
50-54	1	3						4
55-59	153	270	5					428
60-64	373	876	254					1,503
65-69	239	1,482	1,296	57				3,074
70-74	34	282	1,745	877	15			2,953
75-79	7	30	261	1,640	457	10		2,405
80-84			7	94	1,333	151	12	1,597
85+				4	223	649	331	1,207
ALL	807	2,943	3,568	2,672	2,028	810	343	13,171

AVERAGE ANNUAL BENEFIT

AGE	YEARS RETIRED <1	1-4	5-9	10-14	15-19	20-24	25+	ALL
<50								
50-54	243	4,665						3,560
55-59	7,788	8,578	7,557					8,284
60-64	8,110	9,067	9,620					8,923
65-69	6,876	7,232	8,555	8,056				7,777
70-74	8,103	6,884	6,896	7,800	8,010			7,183
75-79	8,537	6,769	6,081	6,509	6,438	3,891		6,447
80-84			3,670	6,217	5,124	5,871	4,044	5,245
85+				7,191	6,098	4,889	4,111	4,907
ALL	7,677	7,861	7,628	6,957	5,549	5,060	4,109	6,977

AGE	TOTAL ANNUAL BENEFIT (IN THOUSANDS) BY YEARS RETIRED <1	1-4	5-9	10-14	15-19	20-24	25+	ALL
ALL	6,195	23,134	27,216	18,589	11,253	4,098	1,409	91,894

STATE EMPLOYEES RETIREMENT FUND

SURVIVORS AS OF JUNE 30, 1993

	YEARS SINCE DEATH							
AGE	<1	1-4	5-9	10-14	15-19	20-24	25+	ALL
<50	4	17	14	1				36
50-54	13	14	8	2			1	38
55-59	11	35	14	3				63
60-64	20	59	39	12		1	1	132
65-69	18	58	65	44	5	2	2	194
70-74	24	73	38	68	29	1	2	235
75-79	18	51	17	40	36	10	6	178
80-84	7	21	5	12	52	25	15	137
85+	3	11	3		8	24	55	104
ALL	118	339	203	182	130	63	82	1,117

AVERAGE ANNUAL BENEFIT

	YEARS SINCE DEATH							
AGE	<1	1-4	5-9	10-14	15-19	20-24	25+	ALL
<50	2,386	3,985	3,708	3,110				3,675
50-54	5,212	6,957	4,703	6,455			3,533	5,769
55-59	7,608	6,657	5,238	4,426				6,402
60-64	7,914	6,763	4,996	3,911		2,198	4,458	6,104
65-69	7,185	7,447	7,001	6,092	3,934	3,842	1,784	6,780
70-74	4,772	5,693	7,541	6,423	4,336	2,516	8,073	5,948
75-79	7,997	6,436	5,840	6,449	6,109	4,450	2,982	6,246
80-84	5,333	4,548	6,000	4,679	6,140	4,888	3,247	5,176
85+	4,746	6,726	3,126		6,131	4,844	3,772	4,523
ALL	6,429	6,320	6,099	6,017	5,644	4,688	3,680	5,877

	TOTAL ANNUAL BENEFIT (IN THOUSANDS) BY YEARS SINCE DEATH							
AGE	<1	1-4	5-9	10-14	15-19	20-24	25+	ALL
ALL	758	2,142	1,238	1,095	733	295	301	6,564

STATE EMPLOYEES RETIREMENT FUND

DISABILITY RETIREMENTS AS OF JUNE 30, 1993

AGE	YEARS DISABLED <1	1-4	5-9	10-14	15-19	20-24	25+	ALL
<50	24	43	10	4	1			82
50-54	20	27	7	5				59
55-59	18	33	13	5	3	1		73
60-64	17	59	32	18	1			127
65-69		30	43	33	16	4	1	127
70-74			23	75	37	11	4	150
75-79				21	73	9	2	105
80-84				1	20	11	6	38
85+						8	10	18
ALL	79	192	128	162	151	44	23	779

AVERAGE ANNUAL BENEFIT

AGE	YEARS DISABLED <1	1-4	5-9	10-14	15-19	20-24	25+	ALL
<50	3,758	4,327	3,426	4,783	3,414			4,062
50-54	5,878	6,684	5,224	5,130				6,106
55-59	7,003	6,233	6,483	3,239	2,964	1,685		6,066
60-64	5,278	5,705	5,532	5,274	2,560			5,518
65-69		4,744	4,160	6,028	4,216	3,784	5,086	4,786
70-74			4,734	5,583	3,900	4,598	4,048	4,925
75-79				4,713	4,672	4,110	3,882	4,617
80-84				3,574	4,721	3,781	5,515	4,544
85+						4,031	3,475	3,722
ALL	5,361	5,475	4,843	5,408	4,385	4,051	4,212	5,017

AGE	TOTAL ANNUAL BENEFIT (IN THOUSANDS) BY YEARS DISABLED <1	1-4	5-9	10-14	15-19	20-24	25+	ALL
ALL	423	1,051	619	876	662	178	96	3,908

TABLE 7

STATE EMPLOYEES RETIREMENT FUND

RECONCILIATION OF MEMBERS

			Terminated	
		Actives	Deferred Retirement	Other Non-Vested
A.	ON JUNE 30, 1992	49,214	2,769	4,256
B.	ADDITIONS	4,111	1,406	1,499
C.	DELETIONS			
	1. Service Retirement	(648)	(115)	(2)
	2. Disability	(61)	(13)	(2)
	3. Death	(81)	(13)	(5)
	4. Terminated - Deferred	(1,022)	0	(18)
	5. Terminated - Refund	(1,744)	(97)	(442)
	6. Terminated - Other Non-Vested	(1,252)	0	0
	7. Returned as Active	0	(97)	(170)
	8. Transferred to Other Fund	0	0	(589)
D.	DATA ADJUSTMENTS	313	(1)	(35)
	Vested	37,899		
	Non-Vested	10,931		
E.	TOTAL ON JUNE 30, 1993	48,830	3,839	4,492

		Recipients		
		Retirement Annuitants	Disabled	Survivors
A.	ON JUNE 30, 1992	12,835	743	1,023
B.	ADDITIONS	819	87	126
C.	DELETIONS			
	1. Service Retirement	0	0	0
	2. Death	(479)	(47)	(23)
	3. Annuity Expired	0	0	0
	4. Returned as Active	0	0	0
D.	DATA ADJUSTMENTS	(4)	(4)	(9)
E.	TOTAL ON JUNE 30, 1993	13,171	779	1,117

STATE EMPLOYEES RETIREMENT FUND

ACTUARIAL BALANCE SHEET
(DOLLARS IN THOUSANDS)

JULY 1, 1993

		Non-Vested	Vested	Total
A.	CURRENT ASSETS (TABLE 1, F6)			$2,905,578
B.	EXPECTED FUTURE ASSETS			
	1. Present Value of Expected Future Statutory Supplemental Contributions			$427,303
	2. Present Value of Future Normal Costs			1,016,471
	3. Total Expected Future Assets			$1,443,774
C.	TOTAL CURRENT AND EXPECTED FUTURE ASSETS			$4,349,352
D.	CURRENT BENEFIT OBLIGATIONS			
	1. Benefit Recipients			
	a. Retirement Annuities		$960,855	$960,855
	b. Disability Benefits		38,412	38,412
	c. Surviving Spouse and Child Benefits		68,939	68,939
	2. Deferred Retirements With Future Augmentation		78,982	78,982
	3. Former Members Without Vested Rights		2,387	2,387
	4. Active Members			
	a. Retirement Annuities	11,589	1,423,330	1,434,919
	b. Disability Benefits	66,415	0	66,415
	c. Survivor's Benefits	90,369	0	90,369
	d. Deferred Retirements	5,246	268,907	274,153
	e. Refund Liability Due to Death or Withdrawal	0	42,483	42,483
	5. Total Current Benefit Obligations	$173,619	$2,884,295	$3,057,914
E.	EXPECTED FUTURE BENEFIT OBLIGATIONS			$1,522,049
F.	TOTAL CURRENT AND EXPECTED FUTURE BENEFIT OBLIGATIONS			$4,579,963
G.	CURRENT UNFUNDED ACTUARIAL LIABILITY (D5-A)			$152,336
H.	CURRENT AND FUTURE UNFUNDED ACTUARIAL LIABILITY (F-C)			$230,611

TABLE 9

STATE EMPLOYEES RETIREMENT FUND

DETERMINATION OF UNFUNDED ACTUARIAL ACCRUED LIABILITY (UAAL) AND SUPPLEMENTAL CONTRIBUTION RATE (DOLLARS IN THOUSANDS)

JULY 1, 1993

	Actuarial Present Value of Projected Benefits (1)	Actuarial Present Value of Future Normal Costs (2)	Actuarial Accrued Liability (3)=(1)-(2)
A. DETERMINATION OF ACTUARIAL ACCRUED LIABILITY (AAL)			
1. Active Members			
a. Retirement Annuities	$2,656,634	$632,932	$2,023,702
b. Disability Benefits	123,240	41,155	82,085
c. Survivor's Benefit	157,353	52,464	104,889
d. Deferred Retirements	423,464	164,979	258,485
e. Refunds Due to Death or Withdrawal	69,697	124,941	(55,244)
f. Total	$3,430,388	$1,016,471	$2,413,917
2. Deferred Retirements With Future Augmentation	78,982		78,982
3. Former Members Without Vested Rights	2,387		2,387
4. Annuitants in MPRIF	1,062,677		1,062,677
5. Recipients Not in MPRIF	5,529		5,529
6. Total	$4,579,963	$1,016,471	$3,563,492

B. DETERMINATION OF UNFUNDED ACTUARIAL ACCRUED LIABILITY (UAAL)	
1. AAL (A6)	$3,563,492
2. Current Assets (Table 1, F6)	2,905,578
3. UAAL (B1-B2)	$657,914
C. DETERMINATION OF SUPPLEMENTAL CONTRIBUTION RATE	
1. Present Value of Future Payrolls Through the Amortization Date of July 1, 2020	$34,740,102
2. Supplemental Contribution Rate (B3/C1)	1.89%

TABLE 10

STATE EMPLOYEES RETIREMENT FUND

CHANGES IN UNFUNDED ACTUARIAL ACCRUED LIABILITY (UAAL)
(DOLLARS IN THOUSANDS)

YEAR ENDING JUNE 30, 1993

A.	UAAL AT BEGINNING OF YEAR	$511,827
B.	CHANGE DUE TO INTEREST REQUIREMENTS AND CURRENT RATE OF FUNDING	
	1. Normal Cost and Expenses	$113,163
	2. Contribution	(118,114)
	3. Interest on A, B1 and B2	43,295
	4. Total (B1+B2+B3)	$38,344
C.	EXPECTED UAAL AT END OF YEAR (A+B4)	$550,171
D.	INCREASE (DECREASE) DUE TO ACTUARIAL LOSSES (GAINS) BECAUSE OF EXPERIENCE DEVIATIONS FROM EXPECTED	
	1. Salary Increases	($79,606)
	2. Investment Return	(58,680)
	3. MPRIF Mortality	(403)
	4. Mortality of Other Benefit Recipients	(156)
	5. Other Items	228,143
	6. Total	$89,298
E.	UAAL AT END OF YEAR BEFORE PLAN AMENDMENTS AND CHANGES IN ACTUARIAL ASSUMPTION (C+D5)	$639,469
F.	CHANGE IN ACTUARIAL ACCRUED LIABILITY DUE TO PLAN AMENDMENTS	18,445
G.	CHANGE IN ACTUARIAL ACCRUED LIABILITY DUE TO CHANGES IN ACTUARIAL ASSUMPTIONS	0
H.	UAAL AT END OF YEAR (E+F+G)	$657,914

TABLE 11

STATE EMPLOYEES RETIREMENT FUND

DETERMINATION OF CONTRIBUTION SUFFICIENCY (DOLLARS IN THOUSANDS)

JULY 1, 1993

			Percent of Payroll	Dollar Amount
A.	STATUTORY CONTRIBUTIONS - CHAPTER 352			
	1.	Employee Contributions	4.07%	$68,967
	2.	Employer Contributions	4.20%	71,170
	3.	Total	8.27%	$140,137
B.	REQUIRED CONTRIBUTIONS - CHAPTER 356			
	1.	Normal Cost		
		a. Retirement Benefits	4.32%	$73,176
		b. Disability benefits	0.27%	4,579
		c. Survivors	0.34%	5,778
		d. Deferred Retirement Benefits	1.10%	18,639
		e. Refunds Due to Death or Withdrawal	0.90%	15,295
		f. Total	6.93%	$117,467
	2.	Supplemental Contribution Amortization by July 1, 2020 of UAAL	1.89%	32,026
	3.	Allowance for Expenses	0.11%	1,864
	4.	Total	8.93%	$151,357
C.	CONTRIBUTION SUFFICIENCY (DEFICIENCY) [A3-B4]		-0.66%	($11,220)

Note: Projected Annual Payroll for Fiscal Year Beginning on July 1, 1993 is $1,694,520.

STATE EMPLOYEES RETIREMENT FUND

SUMMARY OF ACTUARIAL ASSUMPTIONS AND METHODS

Interest:	**Pre-Retirement:** 8.5% per annum **Post-Retirement:** 5.0% per annum
Salary Increases:	Reported salary at valuation date increased 6.5% to current fiscal year and 6.5% annually for each future year. Prior fiscal year salary is annualized for new Members.
Mortality:	**Pre-Retirement:** Male - 1971 Group Annuity Mortality Table Female - 1971 Group Annuity Mortality Table male rates set back eight years **Post-Retirement:** Male - Same as above Female - Same as above **Post-Disability:** Male - Combined Annuity Mortality Table Female - Combined Annuity Mortality Table
Retirement Age:	Graded rates beginning at age 58 as shown in rate table. Members who have attained the highest assumed retirement age will retire in one year. In addition, 25% of Members are assumed to retire each year that they are eligible for the Rule of 90.
Separation:	Graded rates based on actual experience developed by the June 30, 1971 experience analysis. Rates are shown in rate table.
Disability:	Rates adopted by MSRS as shown in rate table.
Expenses:	Prior year administration expenses expressed as a percentage of prior year payroll.
Return of Contributions:	All employees withdrawing after becoming eligible for a deferred benefit take the larger of their contributions accumulated with interest or the value of their deferred benefit.

STATE EMPLOYEES RETIREMENT FUND

SUMMARY OF ACTUARIAL ASSUMPTIONS AND METHODS

Family Composition:	85% of Members are assumed to be married. Female is three years younger than male.
Social Security:	N/A
Benefit Increases After Retirement:	Payment of earnings on retired reserves in excess of 5% accounted for by 5% post-retirement assumptions.
Special Consideration:	Married Members assumed to elect subsidized joint and survivor form of annuity as follows: Males - 25% elect 50% J&S option 45% elect 100% J&S option Females - 5% elect 50% J&S option 5% elect 100% J&S option
Actuarial Cost Method:	Entry Age Normal Actuarial Cost Method with normal costs expressed as a level percentage of earnings. Under this method, Actuarial Gains (Losses) reduce (increase) the Unfunded Actuarial Accrued Liability.
Asset Valuation Method:	Cost Value plus one-third Unrealized Gains or Losses.
Payment on the Unfunded Actuarial Accrued Liability:	A level percentage of payroll each year to the statutory amortization date assuming payroll increases of 6.5% per annum.

STATE EMPLOYEES RETIREMENT FUND

SUMMARY OF ACTUARIAL ASSUMPTIONS AND METHODS

Separation Expressed as Number of Occurrences Per 10,000:

Age	Death Male	Death Female	Withdrawal Male	Withdrawal Female	Disability Male	Disability Female	Retirement Male	Retirement Female
20	5	4	2,400	3,700	0	0	0	0
21	5	4	2,250	3,550	0	0	0	0
22	5	4	2,080	3,390	0	0	0	0
23	6	4	1,920	3,230	0	0	0	0
24	6	4	1,760	3,070	0	0	0	0
25	6	5	1,600	2,910	0	0	0	0
26	7	5	1,470	2,750	0	0	0	0
27	7	5	1,340	2,600	0	0	0	0
28	7	5	1,230	2,430	0	0	0	0
29	8	5	1,130	2,270	0	0	0	0
30	8	5	1,040	2,120	2	0	0	0
31	9	6	950	1,970	2	0	0	0
32	9	6	890	1,820	2	0	0	0
33	10	6	830	1,680	2	0	0	0
34	10	7	770	1,540	2	0	0	0
35	11	7	720	1,410	2	1	0	0
36	12	7	680	1,300	2	1	0	0
37	13	8	640	1,190	2	1	0	0
38	14	8	600	1,090	2	1	0	0
39	15	9	560	1,000	2	2	0	0
40	16	9	530	920	2	2	0	0
41	18	10	500	850	2	2	0	0
42	20	10	480	780	2	4	0	0
43	23	11	460	720	3	4	0	0
44	26	12	430	680	3	4	0	0
45	29	13	410	630	3	5	0	0
46	33	14	390	590	5	6	0	0
47	38	15	370	560	7	7	0	0
48	42	16	350	530	9	7	0	0
49	47	18	340	500	11	10	0	0

TABLE 12
(Continued)

STATE EMPLOYEES RETIREMENT FUND

SUMMARY OF ACTUARIAL ASSUMPTIONS AND METHODS

Separation Expressed as Number of Occurrences Per 10,000:

	Death		Withdrawal		Disability		Retirement	
Age	Male	Female	Male	Female	Male	Female	Male	Female
50	53	20	320	470	14	10	0	0
51	59	23	300	440	16	12	0	0
52	65	26	280	410	20	14	0	0
53	71	29	260	390	24	16	0	0
54	78	33	240	360	28	20	0	0
55	85	38	210	330	34	24	0	0
56	93	42	170	290	40	30	0	0
57	100	47	140	230	46	36	0	0
58	109	53	90	170	56	44	50	50
59	119	59	40	90	66	52	50	50
60	131	65	0	0	76	62	150	150
61	144	71	0	0	90	74	150	150
62	159	78	0	0	110	88	500	200
63	174	85	0	0	136	104	350	350
64	192	93	0	0	174	122	1,100	1,100
65	213	100	0	0	0	0	10,000	10,000
66	236	109	0	0	0	0	0	0
67	263	119	0	0	0	0	0	0
68	292	131	0	0	0	0	0	0
69	324	144	0	0	0	0	0	0
70	361	159	0	0	0	0	0	0

TABLE 13

STATE EMPLOYEES RETIREMENT FUND

SUMMARY OF PLAN PROVISIONS

Eligibility:	State employees, non-academic staff of the University of Minnesota and employees of certain Metro level governmental units, unless excluded by law.
Contributions	
Member:	4.07% of salary unless there is a deficiency. (Amended 1992)
Employer:	4.20% of salary unless there is a deficiency. (Amended 1992)
Allowable Service:	Service during which Member contributions were made. May also include certain leaves of absence, military service and periods while temporary Worker's Compensation is paid.
Salary:	Includes wages, allowances and fees. Excludes lump-sum payments at separation.
Average Salary:	Average of the five highest successive years (60 successive months) of salary. Average salary is based on all Allowable Service if less than five years.

RETIREMENT

Normal Retirement Benefit

Eligibility:	**First hired before July 1, 1989**: Age 65 and three years of Allowable Service. Proportionate Retirement Annuity is available at age 65 and one year of Allowable Service. **First hired after June 30, 1989**: The greater of age 65 or the age eligible for full Social Security retirement benefits and three years of Allowable Service. Proportionate Retirement Annuity is available at normal retirement age and one year of Allowable Service.
Amount:	1.5% of average salary for each year of Allowable Service.

TABLE 13
(Continued)

STATE EMPLOYEES RETIREMENT FUND

SUMMARY OF PLAN PROVISIONS

Early Retirement Benefit

Eligibility:	**First hired before July 1, 1989**: Age 55 and three years of Allowable Service. Any age with 30 years of Allowable Service. Rule of 90: Age plus Allowable Service totals 90. **First hired after June 30, 1989**: Age 55 with three years of Allowable Service.
Amount:	**First hired before July 1, 1989**: The greater of 1% of average salary for each of the first 10 years of Allowable Service and 1.5% of average salary for each subsequent year with reduction of 0.25% for each month the Member is under age 65 at time of retirement or age 62 if 30 years of Allowable Service. No reduction if age plus years of Allowable Service totals 90; **OR** 1.5% of average salary for each year of Allowable Service assuming augmentation to age 65 at 3% per year and actuarial reduction for each month the Member is under age 65. **First hired after June 30, 1989**: 1.5% of average salary for each year of Allowable Service assuming augmentation to the age eligible for full Social Security retirement benefit at 3% per year and actuarial reduction for each month the Member is under the Social Security retirement age.
Form of Payment:	Life annuity with return on death of any balance of contributions over aggregate monthly payments. Actuarially equivalent options are: 50% or 100% joint and survivor with bounce back feature without additional reduction. 15 year certain and life thereafter.

STATE EMPLOYEES RETIREMENT FUND

SUMMARY OF PLAN PROVISIONS

Benefit Increases:

Benefits may be increased each January 1 depending on the investment performance of the Minnesota Post Retirement Investment Fund (MPRIF). A benefit recipient who has been receiving a benefit for at least 12 full months as of June 30 will receive a full increase. Benefit recipients receiving benefits for at least one full month but less than 12 full months will receive a partial increase.

Members retired under laws in effect before July 1, 1973 receive an additional lump-sum payment each year. In 1989, this lump-sum payment is the greater of $25 times each full year of Allowable Service or $400 per full year of service less any Social Security benefits received or annuity from a Minnesota public employee pension plan. In each following year, the lump-sum payment will increase by the same percentage increase that is applied to regular annuities paid from MPRIF.

DISABILITY

Disability Benefit

Eligibility:

Total and permanent disability before normal retirement age with three years of Allowable Service.

Amount:

Normal Retirement Benefit based on Allowable Service and average salary at disability without reduction for commencement before normal retirement age.

Payments stop if disability ceases or death occurs. Payments revert to a retirement annuity at normal retirement age. Benefits may be reduced on resumption of partial employment.

STATE EMPLOYEES RETIREMENT FUND

SUMMARY OF PLAN PROVISIONS

Form of Payment:	Same as for retirement.
Benefit Increases:	Same as for retirement.
Retirement After Disability	
Eligibility:	Normal retirement age with continued disability.
Amount:	Any optional annuity continues. Otherwise, a normal retirement benefit equal to the disability benefit paid before normal retirement age, or an actuarially equivalent optional annuity.
Benefit Increases:	Same as for retirement.

DEATH

Surviving Spouse Optional Benefit	
Eligibility:	Member at any age or former Member if age 50 who dies before retirement or disability benefits commence with three years of Allowable Service. If a former Member dies before age 55 and has less than 30 years of Allowable Service, benefits commence when the former Member would have been age 55. If an active Member dies, benefits may commence immediately, regardless of age.
Amount:	Surviving spouse receives the 100% joint and survivor benefit the Member could have elected if terminated. If commencement is prior to age 55, the appropriate early retirement formula described above applies except that one-half the monthly reduction factor is used from age 55 to the commencment age and the Rule of 90 does not apply. In lieu of this benefit, the surviving spouse may elect a refund of contributions with interest or an actuarially equivalent term certain annuity.
Benefit Increases:	Same as for retirement.

STATE EMPLOYEES RETIREMENT FUND

SUMMARY OF PLAN PROVISIONS

Surviving Dependent Children's Benefit

Eligibility:	If no surviving spouse, all dependent children (biological or adopted) below age 20 who are dependent for more than half of their support on deceased Member.
Amounts:	Actuarially equivalent to surviving spouse 100% joint and survivor annuity payable to the later of age 20 or five years. The amount is to be proportionally divided among surviving children.

Refund of Contributions

Eligibility:	Active employee dies and survivor benefits are not payable, or a former employee dies before annuity begins, or a former employee who is not entitled to an annuity dies.
Amount:	The Member's contributions with 5% interest if death occurred before May 16, 1989, and 6% interest if death occurred on or after May 16, 1989.
Eligibility:	Retired or disabled annuitant who did not select an optional annuity dies, or the remaining recipient of an option dies.
Amount:	The excess of the Member's contributions over all benefits paid.

TERMINATION

Refund of Contributions

Eligibility:	Termination of state service.
Amount:	Member's contributions with 5% interest compounded annually if termination occurred before May 16, 1989 and 6% interest compounded annually if termination occurred on or after May 16, 1989. A deferred annuity may be elected in lieu of a refund.

STATE EMPLOYEES RETIREMENT FUND

SUMMARY OF PLAN PROVISIONS

Deferred Benefit

Eligibility:	Three years of Allowable Service.
Amount:	Benefit computed under law in effect at termination and increased by the following annual percentage: 0% before 7/1/71; 5% from 7/1/71 to 1/1/81; and 3% thereafter until January 1 of the year following attainment of age 55 and 5% thereafter until the annuity begins. Amount is payable as a normal or early retirement.

SIGNIFICANT CHANGES

100% joint and survivor annuity provided to surviving spouse regardless of age of Member at death. May also elect a term certain annuity insteads of the 100% joint and survivor annuity. If no surviving spouse, dependent children under age 20 may be eligible for an equivalent benefit.

An early retirement incentive has been offered to state employees who meet the following criteria:

1. Have 25 years of combined service credit or are age 65 with one year of combined service credit.
2. Are immediately eligible to retire.
3. Are at least age 55.
4. Retire after May 16, 1993 and before January 31, 1994.

A Member who chooses to retire under this incentive may choose to receive an additional pension of .25% times years of Allowable Service (maximum 30 years) <u>or</u> receive employer-paid hospital, medical and dental insurance under conditions and limitations as specified by law.

TABLE 14

STATE EMPLOYEES RETIREMENT FUND

MILITARY AFFAIRS CALCULATION

Section 352.85 of Chapter 352 of Minnesota Statutes provides that certain military affairs personnel may retire, with an unreduced benefit, at age 60. In addition, they may receive disability benefits upon being found disqualified for retention in active military duty. To fund these special benefits, employees and employer contribute an extra 1.6% of payroll.

To recognize the effect of the unreduced early retirement benefit available at age 60, we have assumed that all military affairs personnel will retire at age 60 or, if over age 60, one year from the valuation date.

The results of our calculations are as follows:

1.	Number of Active Members		3
2.	Projected Annual Earnings		$112,431
3.	Normal Cost		
	a.	Dollar Amount	$ 12,748
	b.	Percent of Payroll	11.34%

TABLE 15

STATE EMPLOYEES RETIREMENT FUND

PILOTS CALCULATION

Section 352.86 of chapter 352 of Minnesota Statutes provides that certain transportation department pilots may retire, with an unreduced benefit, at age 62. In addition, they may receive disability benefits upon being found disqualified for retention as pilots. To fund these special benefits, employees and employer contribute an extra 1.6% of payroll.

To recognize the effect of the unreduced early retirement benefit available at age 62, we have assumed that all pilots will retire at age 62 or, if over age 62, one year from the valuation date.

The results of our calculations are as follows:

1.	Number of Active Members	4
2.	Projected Annual Earnings	$236,994
3.	Normal Cost	
	a. Dollar Amount	$ 25,793
	b. Percent of Payroll	10.88%

STATE PATROL RETIREMENT FUND

ACTUARIAL VALUATION REPORT

JULY 1, 1993

MILLIMAN & ROBERTSON, INC.

MILLIMAN & ROBERTSON, INC.

Actuaries and Consultants

Suite 400
15700 Bluemound Road
Brookfield, Wisconsin 53005-6069
Telephone: 414/784-2250
Fax: 414/784-4116

November 16, 1993

Legislative Commission on
Pensions and Retirement
55 State Office Building
St. Paul, Minnesota 55155

RE: State Patrol Retirement Fund

Commission Members:

Pursuant to the terms of our Actuarial Services Contract, we have performed an actuarial valuation of the Fund as of July 1, 1993.

The results of our calculations are set forth in the following report, as are the actuarial assumptions upon which our calculations have been made. We have relied on the basic employee data and asset figures as submitted by the Minnesota State Retirement System.

On the basis of the foregoing, we hereby certify that, to the best of our knowledge and belief, this report is complete and accurate and has been prepared in accordance with the requirements of Section 356.215, Minnesota Statutes, and the requirements of the Standards for Actuarial Work, adopted by the Commission on July 8, 1992.

Respectfully submitted,

Thomas K. Custis

Thomas K. Custis, F.S.A., M.A.A.A.
Consulting Actuary

William V. Hogan

William V. Hogan, F.S.A., M.A.A.A.
Actuary

TKC/WVH/bh

STATE PATROL RETIREMENT FUND

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STATE PATROL RETIREMENT FUND

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STATE PATROL RETIREMENT FUND

REPORT HIGHLIGHTS
(DOLLARS IN THOUSANDS)

	07/01/92 Valuation	07/01/93 Valuation
A. CONTRIBUTIONS (Table 11)		
1. Statutory Contributions - Chapter 352B % of Payroll	23.38%	23.38%
2. Required Contributions - Chapter 356 % of Payroll	22.27%	21.94%
3. Sufficiency (Deficiency): (A.1. - A.2.)	1.11%	1.44%
B. FUNDING RATIOS		
1. Accrued Benefit Funding Ratio		
a. Current Assets (Table 1)	$222,314	$244,352
b. Current Benefit Obligations (Table 8)	$224,479	$247,633
c. Funding Ratio: (a/b)	99.04%	98.68%
2. Accrued Liability Funding Ratio		
a. Current Assets (Table 1)	$222,314	$244,352
b. Actuarial Accrued Liability (Table 9)	$233,656	$258,202
c. Funding Ratio: (a/b)	95.15%	94.64%
3. Projected Benefit Funding Ratio (Table 8)		
a. Current and Expected Future Assets	$326,142	$359,240
b. Current and Expected Future Benefit Obligations	$317,456	$347,253
c. Funding Ratio: (a/b)	102.74%	103.45%
C. PLAN PARTICIPANTS		
1. Active Members		
a. Number (Table 3)	795	781
b. Projected Annual Earnings	$37,113	$40,654
c. Average Annual Earnings (Actual $)	$46,683	$52,054
d. Average Age	41.4	41.8
e. Average Service	14.0	14.8
2. Others		
a. Service Retirements (Table 4)	373	377
b. Disability Retirements (Table 5)	15	15
c. Survivors (Table 6)	109	119
d. Deferred Retirements (Table 7)	19	18
e. Terminated Other Non-vested (Table 7)	3	3
f. Total	519	532

STATE PATROL RETIREMENT FUND

COMMENTARY

Purpose

The purpose of this valuation is to determine the financial status of the Plan. In order to achieve this purpose, an actuarial valuation is made at the beginning of each fiscal year as required by Section 356.215 of Minnesota Statutes.

Report Highlights

The financial status of the Plan can be measured by three different funding ratios:

- The Accrued Benefit Funding Ratio is a measure of current funding status and, when viewed over a period of years, presents a view of the funding progress. It is based upon benefits which have been earned by service to the valuation date. This year's ratio is 98.68%. The corresponding ratio for the prior year was 99.04%.

- The Accrued Liability Funding Ratio is also a measure of funding status and funding progress. It is based on the actuarial cost method that has historically been used by the State. For 1993 the ratio is 94.64%, which is a decrease from the 1992 value of 95.15%.

- The Projected Benefit Funding Ratio is a measure of the adequacy or deficiency in the contribution level. This year's ratio of 103.45% verifies that the current statutory contributions are sufficient.

Asset Information (Tables 1 and 2)

Minnesota Statutes require that the asset value used for actuarial purposes

recognize only a third of the unrealized gains and losses. This requirement exists because market values (which include all unrealized gain and losses) are typically volatile and can produce erratic changes in the contribution requirements from year to year.

The calculation of the Actuarial Value of Assets is shown in Table 1 on lines F1 to F6. It combines the cost value of the Assets Available for Benefits and one-third of the difference between the market value and cost value of those assets.

The term "Actuarial Value of Assets" is used to indicate that the value was determined for use in this actuarial valuation. Since Minnesota Statutes refer to this value as "Current Assets", the latter phrase will be used in the remainder of this report.

This Plan participates in the Minnesota Post Retirement Investment Fund (i.e. MPRIF). After the MPRIF liability has been calculated for each participating Plan, the State Board of Investments, (i.e. SBI), will determine each Plan's portion of the excess earnings for the January benefit increase as well as the Plan's allocated market share of MPRIF.

<u>Actuarial Balance Sheet (Table 8)</u>

An actuarial balance sheet provides a method for evaluating current and future levels of funding.

The Current Benefit Obligation used to measure current funding levels is calculated in accordance with Statement No. 5 of the Governmental Accounting Standards Board (GASB). Those requirements are:

- For Active Members - salary and service are projected to retirement to determine benefits for each member and the ratio of credited service to total service establishes the portion of the projected benefit to be used in calculating the current funding level.

o For Non-active Members - the discounted value of benefits, including augmentation in cases where benefits have not commenced.

GASB Disclosure

The Current Benefit Obligation amounts in Table 8 are required to be disclosed by Statement No. 5 of the Governmental Accounting Standards Board (GASB). However, Statement No. 5 uses the terms "Actuarial Present Value of Credited Projected Benefits" and "Pension Benefit Obligation" rather than "Current Benefit Obligation".

The July 1, 1993 Pension Benefit Obligation reported in Table 8 is reformatted for GASB reporting purposes in the following table:

Retirees and beneficiaries currently receiving benefits and terminated employees not yet receiving benefits	$117,805,000
Current Employees	
Accumulated employee contributions including allocated investment income	$46,302,000
Employer-financed vested	61,591,000
Employer-financed nonvested	21,935,000

Total Pension Benefit Obligation	$247,633,000
Net Assets Available for Benefits at Cost	$240,075,000
Total Benefit Obligation less Assets	$7,558,000
Funded Ratio	96.95%

Actuarial Cost Method (Table 9)

The approach used by the State of Minnesota to determine contribution sufficiency is the Entry Age Normal Actuarial Cost Method. The primary characteristic of this method is that it allocates costs as a level percentage of payroll.

A comparison of this actuarial method (Table 9) to the actuarial balance sheet (Table 8) illustrates the two techniques for allocating liabilities of active Members to past and future. As noted in the prior section, the balance sheet allocates benefits and the corresponding liabilities, on the basis of service. The method used in Table 9 allocates liabilities so that the cost each year will be a constant percentage of payroll. Both approaches, however, calculate the value of all future benefits the same way (see line F of Table 8 and line A6, column 1, of Table 9).

An Unfunded Actuarial Accrued Liability is computed under the Entry Age Normal Actuarial Cost Method by comparing the liabilities allocated to past service (Actuarial Accrued Liability) to the Current Assets. This amount, line B3, is funded over the remaining years to the amortization date by a series of payments that remain a constant percentage of payroll each year.

The payments will increase 6.5% each year because that is the assumed rate of increase in payroll. Although the payment schedule will be adequate to amortize the existing unfunded, the lower payments in the earlier years will not be sufficient to cover the interest on the unfunded liability. After a few years, the annual payment will cover the interest and also repay a portion of the unfunded.

Sources of Actuarial Gains and Losses (Table 10)

The assumptions used in making the calculations using the Entry Age Normal Actuarial Cost Method are based on long-term expectations. Each year the actual experience will deviate from the long-term expectation. For a detailed analysis of the major components, refer to Table 10.

Contribution Sufficiciency (Table 11)

This report determines the adequacy of Statutory Contributions by comparing the Statutory Contributions to the Required Contributions.

The Required Contributions, set forth in Chapter 356, consist of:

- o Normal costs based on the Entry Age Normal Actuarial Cost Method.
- o A Supplemental Contribution for amortizing any Unfunded Actuarial Accrued Liability.
- o An Allowance for Expenses.

Table 11 shows the Plan has a contribution sufficiency since the Statutory Contribution Rate is 23.38% compared to the Required Contribution Rate of 21.94%.

Changes in Actuarial Assumptions

The actuarial assumptions listed in Table 12 are the same as those used in the prior valuation, however the allowance for expenses as part of the required contributions of Chapter 356 in Table 11 only reflect administrative expenses and not investment expenses. This reduced the required contribution by approximately .48% of payroll.

Changes in Plan Provisions

Two changes were made which resulted in minor cost increases. These were:

(1) Cap at age 60 on allowable service was removed with a retroactive adjustment for retired members since 12/31/87.

(2) Removed the restrictions of being under age 55 to be eligible for duty and non-duty disability benefits.

The methodology to determine annual postretirement benefit increases was modified to incorporate one layer relating to the Consumer Price Index and a second layer relating to investment performance on a smoothed basis. Over the long term, the new methodology is designed to continue to provide increases based on the excess of fund earnings over the postretirement interest assumption (5.0%). No changes have been incorporated into our valuation methods and assumptions

TABLE 1

STATE PATROL RETIREMENT FUND

ACCOUNTING BALANCE SHEET
(DOLLARS IN THOUSANDS)

JULY 1, 1993

	Market Value	Cost Value
A. ASSETS		
1. Cash, Equivalents, Short-term Securities	$4,453	$4,453
2. Investments		
a. Fixed Income	40,724	39,232
b. Equity	94,179	82,197
c. Real Estate	5,561	6,203
3. Equity in Minnesota Post-Retirement Investment Fund (MPRIF)	108,664	108,664
4. Other	360	360
B. TOTAL ASSETS	$253,941	$241,109
C. AMOUNTS CURRENTLY PAYABLE	$1,034	$1,034
D. ASSETS AVAILABLE FOR BENEFITS		
1. Member Reserves	$27,006	$27,006
2. Employer Reserves	110,544	97,712
3. MPRIF Reserves	108,664	108,664
4. Non-MPRIF Reserves	6,693	6,693
5. Total Assets Available for Benefits	$252,907	$240,075
E. TOTAL AMOUNTS CURRENTLY PAYABLE AND ASSETS AVAILABLE FOR BENEFITS	$253,941	$241,109

F. DETERMINATION OF ACTUARIAL VALUE OF ASSETS

1. Cost Value of Assets Available for Benefits (D5)		$240,075
2. Market Value (D5)	$252,907	
3. Cost Value (D5)	240,075	
4. Market Over Cost: (F2-F3)	$12,832	
5. 1/3 of Market Over Cost: (F4)/3		4,277
6. Actuarial Value of Assets (F1+F5) (Same as "Current Assets")		$244,352

TABLE 2

STATE PATROL RETIREMENT FUND

CHANGE IN ASSETS AVAILABLE FOR BENEFITS
(DOLLARS IN THOUSANDS)

YEAR ENDING JUNE 30, 1993

		Market Value	Cost Value
A.	ASSETS AVAILABLE AT BEGINNING OF PERIOD	$227,414	$219,764
B.	OPERATING REVENUES		
	1. Member Contributions	$3,040	$3,040
	2. Employer Contributions	5,288	5,288
	3. Investment Income	10,673	10,673
	4. MPRIF Income	9,476	9,476
	5. Net Realized Gain (Loss)	2,447	2,447
	6. Other	0	0
	7. Net Change in Unrealized Gain (Loss)	5,182	0
	8. Total Revenue	$36,106	$30,924
C.	OPERATING EXPENSES		
	1. Service Retirements	$10,253	$10,253
	2. Disability Benefits	0	0
	3. Survivor Benefits	0	0
	4. Refunds	23	23
	5. Investment Fees	177	177
	6. Administrative Expenses	61	61
	7. Other	99	99
	8. Total Disbursements	$10,613	$10,613
D.	OTHER CHANGES IN RESERVES	0	0
E.	ASSETS AVAILABLE AT END OF PERIOD	$252,907	$240,075

STATE PATROL RETIREMENT FUND

ACTIVE MEMBERS AS OF JUNE 30, 1993

AGE	YEARS OF SERVICE <1	1-4	5-9	10-14	15-19	20-24	25-29	30+	ALL
<25		2							2
25-29		40	27						67
30-34		22	67	18					107
35-39		21	37	70	20				148
40-44	1	11	15	33	51	23			134
45-49		6	4	12	36	74	28		160
50-54		1	1	2	8	31	69	9	121
55-59		2			2	5	13	12	34
60-64								3	3
65+								5	5
ALL	1	105	151	135	117	133	110	29	781

AVERAGE ANNUAL EARNINGS

AGE	YEARS OF SERVICE <1	1-4	5-9	10-14	15-19	20-24	25-29	30+	ALL
<25		37,941							37,941
25-29		39,906	44,715						41,844
30-34		40,051	46,087	48,348					45,226
35-39		44,196	45,395	49,647	47,961				47,583
40-44	999	51,092	47,372	48,525	51,384	53,197			50,142
45-49		47,216	51,403	50,640	52,535	52,570	47,083		51,227
50-54		45,876	56,043	51,850	55,198	51,890	51,345	49,260	51,586
55-59		49,864			56,083	50,429	57,737	54,217	54,860
60-64								49,187	49,187
65+								48,429	48,429
ALL	999	42,593	46,007	49,320	51,494	52,439	51,016	51,160	48,877

PRIOR FISCAL YEAR EARNINGS (IN THOUSANDS) BY YEARS OF SERVICE

AGE	<1	1-4	5-9	10-14	15-19	20-24	25-29	30+	ALL
ALL		4,472	6,947	6,658	6,024	6,974	5,611	1,483	38,172

STATE PATROL RETIREMENT FUND

SERVICE RETIREMENTS AS OF JUNE 30, 1993

AGE	YEARS RETIRED <1	1-4	5-9	10-14	15-19	20-24	25+	ALL
<50								
50-54		2						2
55-59	11	43						54
60-64	4	17	69					90
65-69		4	31	67				102
70-74		2	4	40	22			68
75-79			1	9	15	10		35
80-84					2	6	9	17
85+						1	8	9
ALL	15	68	105	116	39	17	17	377

AVERAGE ANNUAL BENEFIT

AGE	YEARS RETIRED <1	1-4	5-9	10-14	15-19	20-24	25+	ALL
<50								
50-54		22,479						22,479
55-59	23,925	25,941						25,530
60-64	32,461	30,146	23,785					25,372
65-69		17,171	26,487	23,967				24,466
70-74		21,720	23,910	24,651	19,046			22,708
75-79			21,775	18,165	18,851	16,258		18,017
80-84					19,194	25,100	13,687	18,363
85+						12,206	16,595	16,107
ALL	26,201	26,250	24,568	23,753	18,979	19,140	15,056	23,434

TOTAL ANNUAL BENEFIT (IN THOUSANDS) BY YEARS RETIRED

AGE	<1	1-4	5-9	10-14	15-19	20-24	25+	ALL
ALL	393	1,785	2,579	2,755	740	325	255	8,834

STATE PATROL RETIREMENT FUND

SURVIVORS AS OF JUNE 30, 1993

	YEARS SINCE DEATH							
AGE	≤1	1-4	5-9	10-14	15-19	20-24	25+	ALL
<50			1		1			2
50-54								
55-59	2	3	1					6
60-64	2	2		5	2	2	2	15
65-69	2	4	1	4	4	1		16
70-74	5	4	1	2	5	2	3	22
75-79	2	3	1		2	3	5	16
80-84		2	2		2	2	13	21
85+	1	4			1	2	13	21
ALL	14	22	7	11	17	12	36	119

AVERAGE ANNUAL BENEFIT

	YEARS SINCE DEATH							
AGE	≤1	1-4	5-9	10-14	15-19	20-24	25+	ALL
<50			11,745		4,623			8,184
50-54								
55-59	20,032	6,281	15,150					12,343
60-64	7,712	10,708		21,423	9,880	10,470	8,022	13,380
65-69	15,496	11,104	21,921	23,905	16,283	12,291		16,898
70-74	7,976	14,165	17,234	22,328	11,752	12,265	8,940	12,206
75-79	15,206	12,616	8,181		9,878	14,159	9,117	11,516
80-84		10,019	13,362		13,153	15,185	10,778	11,598
85+	2,192	10,349			7,638	10,928	10,560	10,017
ALL	11,355	10,937	14,422	22,490	11,881	12,705	10,162	12,338

	TOTAL ANNUAL BENEFIT (IN THOUSANDS) BY YEARS SINCE DEATH							
AGE	≤1	1-4	5-9	10-14	15-19	20-24	25+	ALL
ALL	158	240	100	247	201	152	365	1,468

STATE PATROL RETIREMENT FUND

DISABILITY RETIREMENTS AS OF JUNE 30, 1993

AGE	YEARS DISABLED ≤1	1-4	5-9	10-14	15-19	20-24	25+	ALL
<50	1	1						2
50-54		1	1	1				3
55-59		2						2
60-64			1	1	1			3
65-69					3	1		4
70-74						1		1
75-79								
80-84								
85+								
ALL	1	4	2	2	4	2		15

AVERAGE ANNUAL BENEFIT

AGE	YEARS DISABLED ≤1	1-4	5-9	10-14	15-19	20-24	25+	ALL
<50	19,102	15,407						17,255
50-54		5,225	19,282	12,069				12,192
55-59		23,508						23,508
60-64			26,745	17,764	14,108			19,539
65-69					20,611	19,284		20,279
70-74						9,519		9,519
75-79								
80-84								
85+								
ALL	19,102	16,912	23,014	14,917	18,985	14,402		17,824

AGE	TOTAL ANNUAL BENEFIT (ACTUAL DOLLARS) BY YEARS DISABLED ≤1	1-4	5-9	10-14	15-19	20-24	25+	ALL
ALL	19,102	67,648	46,028	29,834	75,940	28,804		267,360

STATE PATROL RETIREMENT FUND

RECONCILIATION OF MEMBERS

		Actives	Terminated: Deferred Retirement	Terminated: Other Non-Vested
A.	ON JUNE 30, 1992	795	19	3
B.	ADDITIONS	2	2	0
C.	DELETIONS			
	1. Service Retirement	(14)	(1)	0
	2. Disability	(1)	0	0
	3. Death	0	0	0
	4. Terminated - Deferred	(1)	0	0
	5. Terminated - Refund	0	(1)	0
	6. Terminated - Other Non-Vested	0	0	0
	7. Returned as Active	0	(1)	0
	8. Transferred to Other Fund	0	0	0
D.	DATA ADJUSTMENTS	0	0	0
	Vested	726		
	Non-Vested	55		
E.	TOTAL ON JUNE 30, 1993	781	18	3

		Recipients: Retirement Annuitants	Recipients: Disabled	Recipients: Survivors
A.	ON JUNE 30, 1992	373	15	109
B.	ADDITIONS	15	1	15
C.	DELETIONS			
	1. Service Retirement	0	0	0
	2. Death	(11)	(1)	(4)
	3. Annuity Expired	0	0	0
	4. Returned as Active	0	0	0
D.	DATA ADJUSTMENTS	0	0	(1)
E.	TOTAL ON JUNE 30, 1993	377	15	119

TABLE 8

STATE PATROL RETIREMENT FUND

ACTUARIAL BALANCE SHEET
(DOLLARS IN THOUSANDS)

JULY 1, 1993

		Non-Vested	Vested	Total
A.	CURRENT ASSETS (TABLE 1, F6)			$244,352
B.	EXPECTED FUTURE ASSETS			
	1. Present Value of Expected Future Statutory Supplemental Contributions			$25,837
	2. Present Value of Future Normal Costs			89,051
	3. Total Expected Future Assets			$114,888
C.	TOTAL CURRENT AND EXPECTED FUTURE ASSETS			$359,240
D.	CURRENT BENEFIT OBLIGATIONS			
	1. Benefit Recipients			
	a. Retirement Annuities		$96,247	$96,247
	b. Disability Benefits		3,293	3,293
	c. Surviving Spouse and Child Benefits		15,816	15,816
	2. Deferred Retirements With Future Augmentation		2,338	2,338
	3. Former Members Without Vested Rights		111	111
	4. Active Members			
	a. Retirement Annuities	611	99,158	99,769
	b. Disability Benefits	10,858	0	10,858
	c. Survivor's Benefits	10,375	0	10,375
	d. Deferred Retirements	91	8,387	8,478
	e. Refund Liability Due to Death or Withdrawal	0	348	348
	5. Total Current Benefit Obligations	$21,935	$225,698	$247,633
E.	EXPECTED FUTURE BENEFIT OBLIGATIONS			$99,620
F.	TOTAL CURRENT AND EXPECTED FUTURE BENEFIT OBLIGATIONS			$347,253
G.	CURRENT UNFUNDED ACTUARIAL LIABILITY (D5-A)			$3,281
H.	CURRENT AND FUTURE UNFUNDED ACTUARIAL LIABILITY (F-C)			($11,987)

TABLE 9
(Continued)

STATE PATROL RETIREMENT FUND

DETERMINATION OF UNFUNDED ACTUARIAL ACCRUED LIABILITY (UAAL) AND SUPPLEMENTAL CONTRIBUTION RATE (DOLLARS IN THOUSANDS)

JULY 1, 1993

D. BREAKDOWN OF PRESENT VALUE OF BENEFITS FOR RECIPIENTS NOT IN MPRIF

1.	Disabilities	$ 142
2.	6% Payments (Pre-73)	5,763
3.	Lump Sum (Pre-73)	788
4.	Total	$6,693

Percent of Future Payroll Through July 1, 2020 Necessary to Support 6% Payments (D2/C1) .69%

STATE PATROL RETIREMENT FUND

DETERMINATION OF UNFUNDED ACTUARIAL ACCRUED LIABILITY (UAAL) AND SUPPLEMENTAL CONTRIBUTION RATE (DOLLARS IN THOUSANDS)

JULY 1, 1993

	Actuarial Present Value of Projected Benefits (1)	Actuarial Present Value of Future Normal Costs (2)	Actuarial Accrued Liability (3)=(1)-(2)
A. DETERMINATION OF ACTUARIAL ACCRUED LIABILITY (AAL)			
1. Active Members			
a. Retirement Annuities	$178,834	$60,718	$118,116
b. Disability Benefits	18,438	9,926	8,512
c. Survivor's Benefit	17,459	10,221	7,238
d. Deferred Retirements	14,167	6,817	7,350
e. Refunds Due to Death or Withdrawal	549	1,369	(820)
f. Total	$229,447	$89,051	$140,396
2. Deferred Retirements With Future Augmentation	2,338		2,338
3. Former Members Without Vested Rights	111		111
4. Annuitants in MPRIF	108,664		108,664
5. Recipients Not in MPRIF	6,693		6,693
6. Total	$347,253	$89,051	$258,202
B. DETERMINATION OF UNFUNDED ACTUARIAL ACCRUED LIABILITY (UAAL)			
1. AAL (A6)			$258,202
2. Current Assets (Table 1, F6)			244,352
3. UAAL (B1-B2)			$13,850
C. DETERMINATION OF SUPPLEMENTAL CONTRIBUTION RATE			
1. Present Value of Future Payrolls Through the Amortization Date of July 1, 2020			$833,463
2. Supplemental Contribution Rate (B3/C1)			1.66%

TABLE 10

STATE PATROL RETIREMENT FUND

CHANGES IN UNFUNDED ACTUARIAL ACCRUED LIABILITY (UAAL)
(DOLLARS IN THOUSANDS)

YEAR ENDING JUNE 30, 1993

A.	UAAL AT BEGINNING OF YEAR	$11,342
B.	CHANGE DUE TO INTEREST REQUIREMENTS AND CURRENT RATE OF FUNDING	
	1. Normal Cost and Expenses	$7,726
	2. Contribution	(8,328)
	3. Interest on A, B1 and B2	938
	4. Total (B1+B2+B3)	$336
C.	EXPECTED UAAL AT END OF YEAR (A+B4)	$11,678
D.	INCREASE (DECREASE) DUE TO ACTUARIAL LOSSES (GAINS) BECAUSE OF EXPERIENCE DEVIATIONS FROM EXPECTED	
	1. Salary Increases	$6,698
	2. Investment Return	(4,353)
	3. MPRIF Mortality	937
	4. Mortality of Other Benefit Recipients	(952)
	5. Other Items	(974)
	6. Total	$1,356
E.	UAAL AT END OF YEAR BEFORE PLAN AMENDMENTS AND CHANGES IN ACTUARIAL ASSUMPTION (C+D5)	$13,034
F.	CHANGE IN ACTUARIAL ACCRUED LIABILITY DUE TO PLAN AMENDMENTS	816
G.	CHANGE IN ACTUARIAL ACCRUED LIABILITY DUE TO CHANGES IN ACTUARIAL ASSUMPTIONS	0
H.	UAAL AT END OF YEAR (E+F+G)	$13,850

STATE PATROL RETIREMENT FUND

DETERMINATION OF CONTRIBUTION SUFFICIENCY
(DOLLARS IN THOUSANDS)

JULY 1, 1993

			Percent of Payroll	Dollar Amount
A.	STATUTORY CONTRIBUTIONS - CHAPTER 352B			
	1.	Employee Contributions	8.50%	$3,456
	2.	Employer Contributions	14.88%	6,049
	3.	Total	23.38%	$9,505
B.	REQUIRED CONTRIBUTIONS - CHAPTER 356			
	1.	Normal Cost		
		a. Retirement Benefits	13.69%	$5,564
		b. Disability benefits	2.27%	924
		c. Survivors	2.38%	967
		d. Deferred Retirement Benefits	1.53%	622
		e. Refunds Due to Death or Withdrawal	0.25%	103
		f. Total	20.12%	$8,180
	2.	Supplemental Contribution Amortization by July 1, 2020 of UAAL	1.66%	675
	3.	Allowance for Expenses	0.16%	65
	4.	Total	21.94%	$8,920
C.	CONTRIBUTION SUFFICIENCY (DEFICIENCY) [A3-B4]		1.44%	$585

Note: Projected Annual Payroll for Fiscal Year Beginning on July 1, 1993 is $40,654.

STATE PATROL RETIREMENT FUND

SUMMARY OF ACTUARIAL ASSUMPTIONS AND METHODS

Interest:	**Pre-Retirement:** 8.5% per annum **Post-Retirement:** 5.0% per annum
Salary Increases:	Reported salary at Valuation Date increased 6.5% to current fiscal year and 6.5% annually for each future year.
Mortality:	**Pre-Retirement:** Male - 1971 Group Annuity Mortality Table Female - 1971 Group Annuity Mortality Table male rates set back eight years **Post-Retirement:** Male - Same as above Female - Same as above **Post-Disability:** Male - Same as above Female - Same as above
Retirement Age:	Age 58 for State Troopers and for State Police Officers hired after June 30, 1961 or age 63 for State Police Officers hired before July 1, 1961. If over assumed retirement age, one year from the valuation date.
Separation:	Graded rates starting at .03 at age 20 and decreasing to .005 at age 45-49 and .02 for ages 50-54. Adopted 1984.
Disability:	Rates adopted by MSRS as shown in rate table.
Administrative and Investment Expenses:	Prior year expenses expressed as percentage of prior year payroll.
Return of Contributions:	All employees withdrawing after becoming eligible for a deferred benefit take the larger of their contributions accumulated with interest or the value of their deferred benefit.

STATE PATROL RETIREMENT FUND

SUMMARY OF ACTUARIAL ASSUMPTIONS AND METHODS

Family Composition:	100% of Members are married. Female is three years younger than male. Each Member is assumed to have two children whose ages are dependent upon the Member's age. Assumed first child is born at Member's age 28 and second child is born at Member's age 31.
Social Security:	N/A
Benefit Increases After Retirement:	Payment of earnings on retired reserves in excess of 5% accounted for by 5% post-retirement assumptions.
Special Consideration:	Married Members assumed to elect subsidized joint and survivor form of annuity as follows: Males - 25% elect 50% J&S option 25% elect 100% J&S option Females - 5% elect 50% J&S option 5% elect 100% J&S option
Actuarial Cost Method:	Entry Age Normal Actuarial Cost Method based on earnings and the date the employee entered the plan is applied to all plan benefits. Under this method, Actuarial Gains (Losses) reduce (increase) the Unfunded Actuarial Accrued Liability.
Asset Valuation Method:	Cost Value plus one-third Unrealized Gains or Losses.
Payment on the Unfunded Actuarial Accrued Liability:	A level percentage of payroll each year to the statutory amortization date assuming payroll increases of 6.5% per annum.

STATE PATROL RETIREMENT FUND

SUMMARY ACTUARIAL ASSUMPTIONS AND METHODS

Separation Expressed as Number of Occurrences Per 10,000:

	Death		Withdrawal		Disability		Retirement	
Age	Male	Female	Male	Female	Male	Female	Male	Female
20	5	4	300	300	4	4	0	0
21	5	4	290	290	4	4	0	0
22	5	4	280	280	5	5	0	0
23	6	4	270	270	5	5	0	0
24	6	4	260	260	6	6	0	0
25	6	5	250	250	6	6	0	0
26	7	5	240	240	6	6	0	0
27	7	5	230	230	7	7	0	0
28	7	5	220	220	7	7	0	0
29	8	5	210	210	8	8	0	0
30	8	5	200	200	8	8	0	0
31	9	6	190	190	9	9	0	0
32	9	6	180	180	9	9	0	0
33	10	6	170	170	10	10	0	0
34	10	7	160	160	10	10	0	0
35	11	7	150	150	11	11	0	0
36	12	7	140	140	12	12	0	0
37	13	8	130	130	13	13	0	0
38	14	8	120	120	15	15	0	0
39	15	9	110	110	16	16	0	0
40	16	9	100	100	18	18	0	0
41	18	10	90	90	20	20	0	0
42	20	10	80	80	22	22	0	0
43	23	11	70	70	24	24	0	0
44	26	12	60	60	26	26	0	0
45	29	13	50	50	29	29	0	0
46	33	14	50	50	32	32	0	0
47	38	15	50	50	36	36	0	0
48	42	16	50	50	41	41	0	0
49	47	18	50	50	46	46	0	0

TABLE 12
(Continued)

STATE PATROL RETIREMENT FUND

SUMMARY ACTUARIAL ASSUMPTIONS AND METHODS

Separation Expressed as Number of Occurrences Per 10,000:

	Death		Withdrawal		Disability		Retirement	
Age	Male	Female	Male	Female	Male	Female	Male	Female
50	53	20	200	200	50	50	0	0
51	59	23	200	200	57	57	0	0
52	65	26	200	200	64	64	0	0
53	71	29	200	200	72	72	0	0
54	78	33	200	200	80	80	0	0
55	85	38	0	0	88	88	0	0
56	93	42	0	0	98	98	0	0
57	100	47	0	0	108	108	0	0
58	109	53	0	0	118	118	10,000	10,000
59	119	59	0	0	129	129	0	0
60	131	65	0	0	141	141	0	0
61	144	71	0	0	154	154	0	0
62	159	78	0	0	167	167	0	0
63	174	85	0	0	0	0	0	0
64	192	93	0	0	0	0	0	0
65	213	100	0	0	0	0	0	0
66	236	109	0	0	0	0	0	0
67	163	119	0	0	0	0	0	0
68	292	131	0	0	0	0	0	0
69	324	144	0	0	0	0	0	0
70	361	159	0	0	0	0	0	0

TABLE 13

STATE PATROL RETIREMENT FUND

SUMMARY OF PLAN PROVISIONS

Eligibility:	State trooper, conservation officers and certain crime bureau officers.
Contributions	
Member:	8.50% of salary.
Employer:	14.88% of salary. (Amended 1990)
Allowable Service:	Service during which Member contributions were deducted. Includes period receiving temporary Workers' Compensation.
Salary:	Salaries excluding lump-sum payments at separation.
Average Salary:	Average of the five highest successive years of salary. Average Salary is based on all Allowable Service if less than five years.

RETIREMENT

Normal Retirement Benefit	
Eligibility:	Age 55 and three years of Allowable Service.
Amount:	2.5% of Average Salary for each year of Allowable Service.
Early Retirement Benefit	
Eligibility:	Age 50 and three years of Allowable Service.
Amount:	Normal Retirement Benefit based on Allowable Service and Average Salary at retirement reduced to the actuarial equivalent of the benefit that would be payable if the Member deferred the benefit until age 55.

STATE PATROL RETIREMENT FUND

SUMMARY OF PLAN PROVISIONS

Form of Payment: Life annuity.

Actuarially equivalent options are:

50% or 100% joint and survivor with bounce back feature without additional reduction.

Benefit Increases: Benefits may be increased each January 1 depending on the investment performance of the Minnesota Post Retirement Investment Fund (MPRIF). A benefit recipient who has been receiving a benefit for at least 12 full months as of June 30 will receive a full increase. Benefit recipients receiving benefits for at least one full month but less than 12 full months will receive a partial increase.

Members retired under laws in effect before June 1, 1973 receive an additional 6% supplement. Each year the supplement increases by 6% of the total annuity which includes both MPRIF and supplemental amounts.

Members retired under law in effect before June 1, 1973 receive an additional lump-sum payment each year. In 1989, this lump-sum payment is $25 times each full year of Allowable Service or $400 per year of service less any Social Security benefits received or annuity from a Minnesota public employee pension plan. In each following year, the lump-sum payment will increase by the same percentage increase that is applied to regular annuities paid from MPRIF.

DISABILITY

Occupational Disability Benefit

Eligibility: Member who cannot perform his duties because of a disability directly resulting from an act of duty.

STATE PATROL RETIREMENT FUND

SUMMARY OF PLAN PROVISIONS

Amount:	Normal Retirement Benefit based on Allowable Service (minimum of 20 years) and Average Salary at disability without reduction for commencement before age 55. Payments cease at age 55 or earlier if disability ceases or death occurs. Benefits may be paid upon re-employment but salary plus benefit cannot exceed current salary of position held at time of disability.

Non-Duty Disability Benefit

Eligibility:	At least one year of Allowable Service and disability not related to covered employment.
Amount:	Normal Retirement Benefit based on Allowable Service (minimum of 15 years) and Average Salary at disability without reduction for commencement before age 55. Payments cease at age 55 or earlier if disability ceases or death occurs. Benefits may be paid upon re-employment but salary plus benefit cannot exceed current salary of position held at time of disability.
Form of Payment:	Same as for retirement.
Benefit Increases:	Adjusted by MSRS to provide same increase as MPRIF.

Retirement After Disability

Eligibility:	Age 55 with continued disability.
Amount:	Optional annuity continues. Otherwise, a normal retirement annuity equal to disability benefit paid, or an actuarially equivalent option.
Form of Payment:	Same as for retirement.
Benefit Increases:	Same as for retirement.

STATE PATROL RETIREMENT FUND

SUMMARY OF PLAN PROVISIONS

DEATH

Surviving Spouse Benefit

Eligibility:	Member who is active or receiving a disability benefit.
Amount:	50% of Annual Salary if member was active or occupational disability and either had less than three years of Allowable Service or was under age 55. Payment for life. Surviving spouse receives the 100% joint and survivor benefit commencing on the Member's 55th birthday if Member was active or a disability with three years of Allowable Service. A spouse who had been receiving the 50% benefit shall be entitled to the larger of the two. Payment for life.
Benefit Increases:	Adjusted by MSRS to provide same increase as MPRIF.

Surviving Dependent Children's Benefit

Eligibility:	Member who is active or receiving a disability benefit. Child must be unmarried, under age 18 (or 23 if full-time student) and dependent upon the Member.
Amount:	10% of Average Salary for each child and $20 per month prorated among all dependent children. Benefit must not be less than 50% nor exceed 70% of Average Salary.

Refund of Contributions

Eligibility:	Member dies before receiving any retirement benefits and survivor benefits are not payable.

STATE PATROL RETIREMENT FUND

SUMMARY OF PLAN PROVISIONS

Amount:	Member's contributions with 5% interest if death occurred before May 16, 1989 and 6% interest if death occurred on or after May 16, 1989.

TERMINATION

Refund of Contributions

Eligibility:	Termination of state service.
Amount:	Member's contributions with 5% interest compounded annually if termination occurred before May 16, 1989 and 6% interest if termination occurred on or after May 16, 1989.

Deferred Benefit

Eligibility:	Three years of Allowable Service.
Amount:	Benefit computed under law in effect at termination and increased by the following annual percentage: 0% before 7/1/71; 5% from 7/1/71 to 1/1/81; and 3% thereafter until the annuity begins. Amount is payable as a normal or early retirement.

SIGNIFICANT CHANGES

Cap at age 60 on Allowable Service was removed with a retroactive adjustment for retired Members since 12/31/87.

Removed the restriction of being under age 55 to be eligible for duty and non-duty disability benefits.

CORRECTIONAL EMPLOYEES RETIREMENT FUND

ACTUARIAL VALUATION REPORT

JULY 1, 1993

MILLIMAN & ROBERTSON, INC.

MILLIMAN & ROBERTSON, INC.

Actuaries and Consultants

Suite 400
15700 Bluemound Road
Brookfield, Wisconsin 53005-6069
Telephone: 414/784-2250
Fax: 414/784-4116

November 16, 1993

Legislative Commission on
Pensions and Retirement
55 State Office Building
St. Paul, Minnesota 55155

RE: Correctional Employees Retirement Fund

Commission Members:

Pursuant to the terms of our Actuarial Services Contract, we have performed an actuarial valuation of the Fund as of July 1, 1993.

The results of our calculations are set forth in the following report, as are the actuarial assumptions upon which our calculations have been made. We have relied on the basic employee data and asset figures as submitted by the Minnesota State Retirement System.

On the basis of the foregoing, we hereby certify that, to the best of our knowledge and belief, this report is complete and accurate and has been prepared in accordance with the requirements of Section 356.215, Minnesota Statutes, and the requirements of the Standards for Actuarial Work, adopted by the Commission on July 8, 1992.

Respectfully submitted,

Thomas K. Custis

Thomas K. Custis, F.S.A., M.A.A.A.
Consulting Actuary

William V. Hogan

William V. Hogan, F.S.A., M.A.A.A.
Actuary

TKC/WVH/bh

CORRECTIONAL EMPLOYEES RETIREMENT FUND

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CORRECTIONAL EMPLOYEES RETIREMENT FUND

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CORRECTIONAL EMPLOYEES RETIREMENT FUND

REPORT HIGHLIGHTS
(DOLLARS IN THOUSANDS)

	07/01/92 Valuation	07/01/93 Valuation
A. CONTRIBUTIONS (Table 11)		
1. Statutory Contributions - Chapter 352 % of Payroll	11.17%	11.17%
2. Required Contributions - Chapter 356 % of Payroll	11.41%	10.97%
3. Sufficiency (Deficiency): (A.1. - A.2.)	-0.24%	0.20%
B. FUNDING RATIOS		
1. Accrued Benefit Funding Ratio		
a. Current Assets (Table 1)	$121,051	$135,939
b. Current Benefit Obligations (Table 8)	$105,605	$115,888
c. Funding Ratio: (a/b)	114.63%	117.30%
2. Accrued Liability Funding Ratio		
a. Current Assets (Table 1)	$121,051	$135,939
b. Actuarial Accrued Liability (Table 9)	$123,515	$134,280
c. Funding Ratio: (a/b)	98.01%	101.24%
3. Projected Benefit Funding Ratio (Table 8)		
a. Current and Expected Future Assets	$170,534	$191,688
b. Current and Expected Future Benefit Obligations	$172,998	$187,555
c. Funding Ratio: (a/b)	98.58%	102.20%
C. PLAN PARTICIPANTS		
1. Active Members		
a. Number (Table 3)	1,573	1,618
b. Projected Annual Earnings	$56,044	$60,330
c. Average Annual Earnings (Actual $)	$35,629	$37,287
d. Average Age	38.2	38.5
e. Average Service	8.1	8.3
2. Others		
a. Service Retirements (Table 4)	363	374
b. Disability Retirements (Table 5)	17	20
c. Survivors (Table 6)	14	15
d. Deferred Retirements (Table 7)	181	225
e. Terminated Other Non-vested (Table 7)	44	51
f. Total	619	685

CORRECTIONAL EMPLOYEES RETIREMENT FUND

COMMENTARY

Purpose

The purpose of this valuation is to determine the financial status of the Plan. In order to achieve this purpose, an actuarial valuation is made at the beginning of each fiscal year as required by Section 356.215 of Minnesota Statutes.

Report Highlights

The financial status of the Plan can be measured by three different funding ratios:

- The Accrued Benefit Funding Ratio is a measure of current funding status and, when viewed over a period of years, presents a view of the funding progress. It is based upon benefits which have been earned by service to the valuation date. This year's ratio is 117.30%. The corresponding ratio for the prior year was 114.63%.

- The Accrued Liability Funding Ratio is also a measure of funding status and funding progress. It is based on the actuarial cost method that has historically been used by the State. For 1993 the ratio is 101.24%, which is an increase from the 1992 value of 98.01%.

- The Projected Benefit Funding Ratio is a measure of the adequacy or deficiency in the contribution level. This year's ratio of 102.20% verifies that the current statutory contributions are sufficient.

Asset Information (Tables 1 and 2)

Minnesota Statutes require that the asset value used for actuarial purposes

recognize only a third of the unrealized gains and losses. This requirement exists because market values (which include all unrealized gain and losses) are typically volatile and can produce erratic changes in the contribution requirements from year to year.

The calculation of the Actuarial Value of Assets is shown in Table 1 on lines F1 to F6. It combines the cost value of the Assets Available for Benefits and one-third of the difference between the market value and cost value of those assets.

The term "Actuarial Value of Assets" is used to indicate that the value was determined for use in this actuarial valuation. Since Minnesota Statutes refer to this value as "Current Assets", the latter phrase will be used in the remainder of this report.

This Plan participates in the Minnesota Post Retirement Investment Fund (i.e. MPRIF). After the MPRIF liability has been calculated for each participating Plan, the State Board of Investments, (i.e. SBI), will determine each Plan's portion of the excess earnings for the January benefit increase as well as the Plan's allocated market share of MPRIF.

Actuarial Balance Sheet (Table 8)

An actuarial balance sheet provides a method for evaluating current and future levels of funding.

The Current Benefit Obligation used to measure current funding levels is calculated in accordance with Statement No. 5 of the Governmental Accounting Standards Board (GASB). Those requirements are:

- For Active Members - salary and service are projected to retirement to determine benefits for each member and the ratio of credited service to total service establishes the portion of the projected benefit to be used in calculating the current funding level.

- For Non-active Members - the discounted value of benefits, including augmentation in cases where benefits have not commenced.

GASB Disclosure

The Current Benefit Obligation amounts in Table 8 are required to be disclosed by Statement No. 5 of the Governmental Accounting Standards Board (GASB). However, Statement No. 5 uses the terms "Actuarial Present Value of Credited Projected Benefits" and "Pension Benefit Obligation" rather than "Current Benefit Obligation".

The July 1, 1993 Pension Benefit Obligation reported in Table 8 is reformatted for GASB reporting purposes in the following table:

Retirees and beneficiaries currently receiving benefits and terminated employees not yet receiving benefits	$48,440,000
Current Employees	
Accumulated employee contributions including allocated investment income	$24,848,000
Employer-financed vested	36,858,000
Employer-financed nonvested	5,742,000
Total Pension Benefit Obligation	$115,888,000
Net Assets Available for Benefits at Cost	$132,825,000
Total Benefit Obligation less Assets	($16,937,000)
Funded Ratio	114.61%

Actuarial Cost Method (Table 9)

The approach used by the State of Minnesota to determine contribution sufficiency is the Entry Age Normal Actuarial Cost Method. The primary characteristic of this method is that it allocates costs as a level percentage of payroll.

A comparison of this actuarial method (Table 9) to the actuarial balance sheet (Table 8) illustrates the two techniques for allocating liabilities of active Members to past and future. As noted in the prior section, the balance sheet allocates benefits and the corresponding liabilities, on the basis of service. The method used in Table 9 allocates liabilities so that the cost each year will be a constant percentage of payroll. Both approaches, however, calculate the value of all future benefits the same way (see line F of Table 8 and line A6, column 1, of Table 9).

An Unfunded Actuarial Accrued Liability is computed under the Entry Age Normal Actuarial Cost Method by comparing the liabilities allocated to past service (Actuarial Accrued Liability) to the Current Assets. This amount, line B3, is funded over the remaining years to the amortization date by a series of payments that remain a constant percentage of payroll each year.

The payments will increase 6.5% each year because that is the assumed rate of increase in payroll. Although the payment schedule will be adequate to amortize the existing unfunded, the lower payments in the earlier years will not be sufficient to cover the interest on the unfunded liability. After a few years, the annual payment will cover the interest and also repay a portion of the unfunded.

Sources of Actuarial Gains and Losses (Table 10)

The assumptions used in making the calculations using the Entry Age Normal Actuarial Cost Method are based on long-term expectations. Each year the actual experience will deviate from the long-term expectation. For a detailed analysis of the major components, refer to Table 10.

Contribution Sufficiciency (Table 11)

This report determines the adequacy of Statutory Contributions by comparing the Statutory Contributions to the Required Contributions.

The Required Contributions, set forth in Chapter 356, consist of:

- o Normal costs based on the Entry Age Normal Actuarial Cost Method.
- o A Supplemental Contribution for amortizing any Unfunded Actuarial Accrued Liability.
- o An Allowance for Expenses.

Table 11 shows the Plan has a contribution sufficiency since the Statutory Contribution Rate is 11.17% compared to the Required Contribution Rate of 10.97%.

Changes in Actuarial Assumptions

The actuarial assumptions listed in Table 12 are the same as those used in the prior valuation, however the allowance for expenses as part of the required contributions of Chapter 356 in Table 11 only reflect administrative expenses and not investment expenses. This reduced the required contribution by approximately .22% of payroll.

Changes in Plan Provisions

One significant change was made to the death benefits. A 100% joint and survivor annuity is provided to the surviving spouse regardless of the age of the member at death using the general state employees formula. The surviving spouse may elect to receive an actuarially equivalent benefit term certain annuity. If there is no surviving spouse, dependent children under age 20 may be eligible.

Another less significant change is the extension of eligibility for disability benefits after age 55.

The methodology to determine annual postretirement benefit increases was modified to incorporate one layer relating to the Consumer Price Index and a second layer relating to investment performance on a smoothed basis. Over the long term, the new methodology is designed to continue to provide increases based on the excess of fund earnings over the postretirement interest assumption (5.0%). No changes have been incorporated into our valuation methods and assumptions

TABLE 1

CORRECTIONAL EMPLOYEES RETIREMENT FUND

ACCOUNTING BALANCE SHEET
(DOLLARS IN THOUSANDS)

JULY 1, 1993

			Market Value	Cost Value
A.	ASSETS			
	1.	Cash, Equivalents, Short-term Securities	$3,670	$3,670
	2.	Investments		
		a. Fixed Income	28,613	27,511
		b. Equity	66,171	57,578
		c. Real Estate	3,907	4,261
	3.	Equity in Minnesota Post-Retirement Investment Fund (MPRIF)	40,027	40,027
	4.	Other	273	273
B.	TOTAL ASSETS		$142,661	$133,320
C.	AMOUNTS CURRENTLY PAYABLE		$495	$495
D.	ASSETS AVAILABLE FOR BENEFITS			
	1.	Member Reserves	$18,537	$18,537
	2.	Employer Reserves	83,602	74,261
	3.	MPRIF Reserves	40,027	40,027
	4.	Non-MPRIF Reserves	0	0
	5.	Total Assets Available for Benefits	$142,166	$132,825
E.	TOTAL AMOUNTS CURRENTLY PAYABLE AND ASSETS AVAILABLE FOR BENEFITS		$142,661	$133,320

F.	DETERMINATION OF ACTUARIAL VALUE OF ASSETS			
	1.	Cost Value of Assets Available for Benefits (D5)		$132,825
	2.	Market Value (D5)	$142,166	
	3.	Cost Value (D5)	132,825	
	4.	Market Over Cost: (F2-F3)	$9,341	
	5.	1/3 of Market Over Cost: (F4)/3		3,114
	6.	Actuarial Value of Assets (F1+F5) (Same as "Current Assets")		$135,939

TABLE 2

CORRECTIONAL EMPLOYEES RETIREMENT FUND

CHANGE IN ASSETS AVAILABLE FOR BENEFITS
(DOLLARS IN THOUSANDS)

YEAR ENDING JUNE 30, 1993

		Market Value	Cost Value
A.	ASSETS AVAILABLE AT BEGINNING OF PERIOD	$124,910	$119,122
B.	OPERATING REVENUES		
	1. Member Contributions	$2,554	$2,554
	2. Employer Contributions	3,217	3,217
	3. Investment Income	7,474	7,474
	4. MPRIF Income	3,439	3,439
	5. Net Realized Gain (Loss)	1,767	1,767
	6. Other	(39)	(39)
	7. Net Change in Unrealized Gain (Loss)	3,553	0
	8. Total Revenue	$21,965	$18,412
C.	OPERATING EXPENSES		
	1. Service Retirements	$4,150	$4,150
	2. Disability Benefits	0	0
	3. Survivor Benefits	0	0
	4. Refunds	236	236
	5. Investment Fees	126	126
	6. Administrative Expenses	87	87
	7. Other	110	110
	8. Total Disbursements	$4,709	$4,709
D.	OTHER CHANGES IN RESERVES	0	0
E.	ASSETS AVAILABLE AT END OF PERIOD	$142,166	$132,825

CORRECTIONAL EMPLOYEES RETIREMENT FUND

ACTIVE MEMBERS AS OF JUNE 30, 1993

AGE	YEARS OF SERVICE <1	1-4	5-9	10-14	15-19	20-24	25-29	30+	ALL
<25	11	20							31
25-29	26	150	49	3					228
30-34	24	133	116	53	1				327
35-39	21	81	72	109	42				325
40-44	11	67	47	67	90	21			303
45-49	9	35	41	47	52	42	7		233
50-54	3	14	12	25	30	9	16	4	113
55-59		7	8	8	17	9	3		52
60-64			1	1	2		1		5
65+								1	1
ALL	105	507	346	313	234	81	27	5	1,618

AVERAGE ANNUAL EARNINGS

AGE	YEARS OF SERVICE <1	1-4	5-9	10-14	15-19	20-24	25-29	30+	ALL
<25	27,012	28,610							28,043
25-29	27,192	30,162	32,535	35,960					30,410
30-34	29,544	31,162	33,442	36,613	35,190				32,748
35-39	28,164	32,260	33,760	37,190	40,171				35,003
40-44	29,543	33,005	34,770	37,149	39,975	39,701			36,604
45-49	30,686	29,605	37,663	36,732	40,244	42,955	43,198		37,692
50-54	30,141	35,683	39,031	38,183	41,486	44,907	43,788	37,078	39,917
55-59		35,057	44,398	41,551	42,031	43,735	31,229		41,054
60-64			38,439	37,021	40,201		59,347		43,042
65+								27,434	27,434
ALL	28,535	31,256	34,522	37,193	40,395	42,415	42,816	35,149	35,011

PRIOR FISCAL YEAR EARNINGS (IN THOUSANDS) BY YEARS OF SERVICE

AGE	<1	1-4	5-9	10-14	15-19	20-24	25-29	30+	ALL
ALL	2,996	15,846	11,944	11,641	9,452	3,435	1,156	175	56,647

TABLE 4

CORRECTIONAL EMPLOYEES RETIREMENT FUND

SERVICE RETIREMENTS AS OF JUNE 30, 1993

AGE	YEARS RETIRED <1	1-4	5-9	10-14	15-19	20-24	25+	ALL
<50								
50-54	2							2
55-59	12	45						57
60-64	3	18	56					77
65-69		6	13	62				81
70-74			1	25	41			67
75-79				7	54	1		62
80-84					24	4		28
85+								
ALL	17	69	70	94	119	5		374

AVERAGE ANNUAL BENEFIT

AGE	YEARS RETIRED <1	1-4	5-9	10-14	15-19	20-24	25+	ALL
<50								
50-54	11,676							11,676
55-59	18,248	15,823						16,334
60-64	18,715	12,949	13,605					13,651
65-69		7,113	9,996	10,724				10,340
70-74			1,531	8,195	8,170			8,080
75-79				9,201	5,616	6,329		6,032
80-84					5,097	8,353		5,562
85+								
ALL	17,557	14,316	12,762	9,938	6,391	7,948		10,466

TOTAL ANNUAL BENEFIT (IN THOUSANDS) BY YEARS RETIRED

AGE	<1	1-4	5-9	10-14	15-19	20-24	25+	ALL
ALL	298	987	893	934	760	39		3,914

CORRECTIONAL EMPLOYEES RETIREMENT FUND

SURVIVORS AS OF JUNE 30, 1993

AGE	YEARS SINCE DEATH <1	1-4	5-9	10-14	15-19	20-24	25+	ALL
<50		1	1					2
50-54	1		1					2
55-59	1	1		1				3
60-64		1		2				3
65-69		1						1
70-74					2			2
75-79					1			1
80-84		1						1
85+								
ALL	2	5	2	3	3			15

AVERAGE ANNUAL BENEFIT

AGE	YEARS SINCE DEATH <1	1-4	5-9	10-14	15-19	20-24	25+	ALL
<50		5,967	11,060					8,514
50-54	5,077		6,612					5,845
55-59	4,414	10,641		16,623				10,559
60-64		4,940		4,528				4,665
65-69		3,301						3,301
70-74					5,497			5,497
75-79					4,252			4,252
80-84		332						332
85+								
ALL	4,746	5,036	8,836	8,560	5,082			6,218

AGE	TOTAL ANNUAL BENEFIT (ACTUAL DOLLARS) BY YEARS SINCE DEATH <1	1-4	5-9	10-14	15-19	20-24	25+	ALL
ALL	9,492	25,180	17,672	25,680	15,246			93,270

CORRECTIONAL EMPLOYEES RETIREMENT FUND

DISABILITY RETIREMENTS AS OF JUNE 30, 1993

	YEARS DISABLED							
AGE	≤1	1-4	5-9	10-14	15-19	20-24	25+	ALL
<50	2	6	1					9
50-54	1	1		1				3
55-59	1	1	1	1				4
60-64				1				1
65-69				1				1
70-74					2			2
75-79								
80-84								
85+								
ALL	4	8	2	4	2			20

AVERAGE ANNUAL BENEFIT

	YEARS DISABLED							
AGE	≤1	1-4	5-9	10-14	15-19	20-24	25+	ALL
<50	12,564	11,120	10,291					11,349
50-54	12,696	12,738		9,289				11,574
55-59	12,538	8,434	15,196	8,509				11,169
60-64				12,765				12,765
65-69				15,180				15,180
70-74					2,882			2,882
75-79								
80-84								
85+								
ALL	12,591	10,987	12,744	11,436	2,882			10,762

	TOTAL ANNUAL BENEFIT (ACTUAL DOLLARS) BY YEARS DISABLED							
AGE	≤1	1-4	5-9	10-14	15-19	20-24	25+	ALL
ALL	50,364	87,896	25,488	45,744	5,764			215,240

TABLE 7

CORRECTIONAL EMPLOYEES RETIREMENT FUND

RECONCILIATION OF MEMBERS

		Actives	Terminated: Deferred Retirement	Terminated: Other Non-Vested
A.	ON JUNE 30, 1992	1,573	181	44
B.	ADDITIONS	164	55	18
C.	DELETIONS			
	1. Service Retirement	(17)	0	0
	2. Disability	(4)	0	0
	3. Death	(1)	0	0
	4. Terminated - Deferred	(47)	0	(4)
	5. Terminated - Refund	(33)	(6)	(6)
	6. Terminated - Other Non-Vested	(17)	0	0
	7. Returned as Active	0	(4)	(1)
	8. Transferred to Other Fund	0	(1)	0
D.	DATA ADJUSTMENTS	0	0	0
	Vested	1,175		
	Non-Vested	443		
E.	TOTAL ON JUNE 30, 1993	1,618	225	51

		Recipients: Retirement Annuitants	Recipients: Disabled	Recipients: Survivors
A.	ON JUNE 30, 1992	363	17	14
B.	ADDITIONS	17	4	2
C.	DELETIONS			
	1. Service Retirement	0	(1)	(1)
	2. Death	(6)	0	0
	3. Annuity Expired	0	0	0
	4. Returned as Active	0	0	0
D.	DATA ADJUSTMENTS	0	0	0
E.	TOTAL ON JUNE 30, 1993	374	20	15

CORRECTIONAL EMPLOYEES RETIREMENT FUND

ACTUARIAL BALANCE SHEET
(DOLLARS IN THOUSANDS)

JULY 1, 1993

A.	CURRENT ASSETS (TABLE 1, F6)			$135,939
B.	EXPECTED FUTURE ASSETS			
	1. Present Value of Expected Future Statutory Supplemental Contributions			$2,474
	2. Present Value of Future Normal Costs			53,275
	3. Total Expected Future Assets			$55,749
C.	TOTAL CURRENT AND EXPECTED FUTURE ASSETS			$191,688
D.	CURRENT BENEFIT OBLIGATIONS	Non-Vested	Vested	Total
	1. Benefit Recipients			
	a. Retirement Annuities		$36,279	$36,279
	b. Disability Benefits		2,507	2,507
	c. Surviving Spouse and Child Benefits		1,240	1,240
	2. Deferred Retirements With Future Augmentation		8,305	8,305
	3. Former Members Without Vested Rights		109	109
	4. Active Members			
	a. Retirement Annuities	881	45,774	46,655
	b. Disability Benefits	1,353	0	1,353
	c. Survivor's Benefits	3,058	0	3,058
	d. Deferred Retirements	450	13,893	14,343
	e. Refund Liability Due to Death or Withdrawal	0	2,039	2,039
	5. Total Current Benefit Obligations	$5,742	$110,146	$115,888
E.	EXPECTED FUTURE BENEFIT OBLIGATIONS			$71,667
F.	TOTAL CURRENT AND EXPECTED FUTURE BENEFIT OBLIGATIONS			$187,555
G.	CURRENT UNFUNDED ACTUARIAL LIABILITY (D5-A)			($20,051)
H.	CURRENT AND FUTURE UNFUNDED ACTUARIAL LIABILITY (F-C)			($4,133)

CORRECTIONAL EMPLOYEES RETIREMENT FUND

DETERMINATION OF UNFUNDED ACTUARIAL ACCRUED LIABILITY (UAAL) AND SUPPLEMENTAL CONTRIBUTION RATE (DOLLARS IN THOUSANDS)

JULY 1, 1993

	Actuarial Present Value of Projected Benefits (1)	Actuarial Present Value of Future Normal Costs (2)	Actuarial Accrued Liability (3)=(1)-(2)
A. DETERMINATION OF ACTUARIAL ACCRUED LIABILITY (AAL)			
1. Active Members			
a. Retirement Annuities	$100,328	$32,909	$67,419
b. Disability Benefits	2,652	1,106	1,546
c. Survivor's Benefit	5,739	2,299	3,440
d. Deferred Retirements	26,926	11,389	15,537
e. Refunds Due to Death or Withdrawal	3,469	5,572	(2,103)
f. Total	$139,114	$53,275	$85,839
2. Deferred Retirements With Future Augmentation	8,305		8,305
3. Former Members Without Vested Rights	109		109
4. Annuitants in MPRIF	40,027		40,027
5. Recipients Not in MPRIF	0		0
6. Total	$187,555	$53,275	$134,280

B. DETERMINATION OF UNFUNDED ACTUARIAL ACCRUED LIABILITY (UAAL)	
1. AAL (A6)	$134,280
2. Current Assets (Table 1, F6)	135,939
3. UAAL (B1-B2)	($1,659)
C. DETERMINATION OF SUPPLEMENTAL CONTRIBUTION RATE	
1. Present Value of Future Payrolls Through the Amortization Date of July 1, 2020	$1,236,851
2. Supplemental Contribution Rate (B3/C1)	0.00%

TABLE 10

CORRECTIONAL EMPLOYEES RETIREMENT FUND

CHANGES IN UNFUNDED ACTUARIAL ACCRUED LIABILITY (UAAL)
(DOLLARS IN THOUSANDS)

YEAR ENDING JUNE 30, 1993

A.	UAAL AT BEGINNING OF YEAR	$2,464
B.	CHANGE DUE TO INTEREST REQUIREMENTS AND CURRENT RATE OF FUNDING	
	1. Normal Cost and Expenses	$6,279
	2. Contribution	(5,771)
	3. Interest on A, B1 and B2	231
	4. Total (B1+B2+B3)	$739
C.	EXPECTED UAAL AT END OF YEAR (A+B4)	$3,203
D.	INCREASE (DECREASE) DUE TO ACTUARIAL LOSSES (GAINS) BECAUSE OF EXPERIENCE DEVIATIONS FROM EXPECTED	
	1. Salary Increases	($1,618)
	2. Investment Return	(3,061)
	3. MPRIF Mortality	382
	4. Mortality of Other Benefit Recipients	0
	5. Other Items	(1,482)
	6. Total	($5,779)
E.	UAAL AT END OF YEAR BEFORE PLAN AMENDMENTS AND CHANGES IN ACTUARIAL ASSUMPTION (C+D5)	($2,576)
F.	CHANGE IN ACTUARIAL ACCRUED LIABILITY DUE TO PLAN AMENDMENTS	917
G.	CHANGE IN ACTUARIAL ACCRUED LIABILITY DUE TO CHANGES IN ACTUARIAL ASSUMPTIONS	0
H.	UAAL AT END OF YEAR (E+F+G)	($1,659)

TABLE 11

CORRECTIONAL EMPLOYEES RETIREMENT FUND

DETERMINATION OF CONTRIBUTION SUFFICIENCY
(DOLLARS IN THOUSANDS)

JULY 1, 1993

			Percent of Payroll	Dollar Amount
A.	STATUTORY CONTRIBUTIONS - CHAPTER 352			
	1.	Employee Contributions	4.90%	$2,956
	2.	Employer Contributions	6.27%	3,783
	3.	Total	11.17%	$6,739
B.	REQUIRED CONTRIBUTIONS - CHAPTER 356			
	1.	Normal Cost		
		a. Retirement Benefits	6.79%	$4,095
		b. Disability benefits	0.23%	141
		c. Survivors	0.45%	269
		d. Deferred Retirement Benefits	2.25%	1,358
		e. Refunds Due to Death or Withdrawal	1.10%	665
		f. Total	10.82%	$6,528
	2.	Supplemental Contribution Amortization by July 1, 2020 of UAAL	0.00%	0
	3.	Allowance for Expenses	0.15%	90
	4.	Total	10.97%	$6,618
C.	CONTRIBUTION SUFFICIENCY (DEFICIENCY) [A3-B4]		0.20%	$121

Note: Projected Annual Payroll for Fiscal Year Beginning on July 1, 1993 is $60,330.

TABLE 12

CORRECTIONAL EMPLOYEES RETIREMENT FUND

SUMMARY OF ACTUARIAL ASSUMPTIONS AND METHODS

Interest:	**Pre-Retirement:** 8.5% per annum **Post-Retirement:** 5.0% per annum
Salary Increases:	Reported salary at valuation date increased 6.5% to current fiscal year and 6.5% annually for each future year. Prior fiscal year salary is annualized for new Members.
Mortality:	**Pre-Retirement:** Male - 1971 Group Annuity Mortality Table Female - 1971 Group Annuity Mortality Table male rates set back 8 years **Post-Retirement:** Male - Same as above Female - Same as above **Post-Disability:** Male - Combined Annuity Mortality Table Female - Combined Annuity Mortality Table
Retirement Age:	Age 58 or if over age 58, one year from valuation date.
Separation:	Graded rates based on actual experience developed by the June 30, 1971 experience analysis. Rates are shown in rate table.
Disability:	Rates adopted by MSRS as shown in rate table.
Administrative and Investment Expenses:	Prior year adminstration expenses expressed as percentage of prior year payroll.
Return of Contributions:	All employees withdrawing after becoming eligible for a deferred benefit take the larger of their contributions accumulated with interest or the value of their deferred benefit.

TABLE 12
(Continued)

CORRECTIONAL EMPLOYEES RETIREMENT FUND

SUMMARY OF ACTUARIAL ASSUMPTIONS AND METHODS

Family Composition:	85% of Members are assumed to be married. Female is three years younger than male.
Social Security:	Based on the present law and 6.5% salary scale. Only earnings history while in state service is used. Future Social Security benefits replace the same proportion of salary as at present.
Benefit Increases After Retirement:	Payment of earnings on retired reserves in excess of 5% accounted for by 5% post-retirement assumptions.
Special Consideration:	Married Members assumed to elect subsidized joint and survivor form of annuity as follows: Males - 25% elect 50% J&S option 25% elect 100% J&S option Females - 5% elect 50% J&S option 5% elect 100% J&S option
Actuarial Cost Method:	Entry Age Normal Actuarial Cost Method with normal costs expressed as a level percentage of earnings. Under this method, Actuarial Gains (Losses) reduce (increase) the Unfunded Actuarial Accrued Liability.
Asset Valuation Method:	Cost Value plus one-third Unrealized Gains or Losses.
Payment on the Unfunded Actuarial Accrued Liability:	A level percentage of payroll each year to the statutory amortization date assuming payroll increases of 6.5% per annum.

CORRECTIONAL EMPLOYEES RETIREMENT FUND

SUMMARY OF ACTUARIAL ASSUMPTIONS AND METHODS

Separation Expressed as Number of Occurrences Per 10,000:

	Death		Withdrawal		Disability		Retirement	
Age	Male	Female	Male	Female	Male	Female	Male	Female
20	5	4	2,400	3,700	0	0	0	0
21	5	4	2,250	3,550	0	0	0	0
22	5	4	2,080	3,390	0	0	0	0
23	6	4	1,920	3,230	0	0	0	0
24	6	4	1,760	3,070	0	0	0	0
25	6	5	1,600	2,910	0	0	0	0
26	7	5	1,470	2,750	0	0	0	0
27	7	5	1,340	2,600	0	0	0	0
28	7	5	1,230	2,430	0	0	0	0
29	8	5	1,130	2,270	0	0	0	0
30	8	5	1,040	2,120	2	0	0	0
31	9	6	950	1,970	2	0	0	0
32	9	6	890	1,820	2	0	0	0
33	10	6	830	1,680	2	0	0	0
34	10	7	770	1,540	2	0	0	0
35	11	7	720	1,410	2	1	0	0
36	12	7	680	1,300	2	1	0	0
37	13	8	640	1,190	2	1	0	0
38	14	9	600	1,090	2	1	0	0
39	15	9	560	1,000	2	2	0	0
40	16	9	530	920	2	2	0	0
41	18	10	500	850	2	2	0	0
42	20	10	480	780	2	4	0	0
43	23	11	460	720	3	4	0	0
44	26	12	430	680	3	4	0	0
45	29	13	410	630	3	5	0	0
46	33	14	390	590	5	6	0	0
47	38	15	370	560	7	7	0	0
48	42	16	350	530	9	7	0	0
49	47	18	340	500	11	10	0	0

CORRECTIONAL EMPLOYEES RETIREMENT FUND

SUMMARY OF ACTUARIAL ASSUMPTIONS AND METHODS

Separation Expressed as Number of Occurrences Per 10,000:

	Death		Withdrawal		Disability		Retirement	
Age	Male	Female	Male	Female	Male	Female	Male	Female
50	53	20	320	470	14	10	0	0
51	59	23	300	440	16	12	0	0
52	65	26	280	410	20	14	0	0
53	71	29	260	390	24	16	0	0
54	78	33	240	360	28	20	0	0
55	85	38	210	330	34	24	0	0
56	93	42	170	290	40	30	0	0
57	100	47	140	230	46	36	0	0
58	109	53	90	170	56	44	10,000	10,000
59	119	59	40	90	66	52	0	0
60	131	65	0	0	76	62	0	0
61	144	71	0	0	90	74	0	0
62	159	78	0	0	110	88	0	0
63	174	85	0	0	136	104	0	0
64	192	93	0	0	174	122	0	0
65	213	100	0	0	0	0	0	0
66	236	109	0	0	0	0	0	0
67	263	119	0	0	0	0	0	0
68	292	131	0	0	0	0	0	0
69	324	144	0	0	0	0	0	0
70	361	159	0	0	0	0	0	0

TABLE 13

CORRECTIONAL EMPLOYEES RETIREMENT FUND

SUMMARY OF PLAN PROVISIONS

Eligibility:	State employees in covered correctional service.
Contributions	
Member:	4.90% of salary.
Employer:	6.27% of salary. (Amended 1990)
Allowable Service:	Service during which Member contributions were made. May also include certain leaves of absence, military service and periods while temporary Worker's Compensation is paid.
Salary:	Includes wages, allowances and fees. Excludes lump-sum payments at separation and reduced salary while receiving Worker's Compensation benefits.
Average Salary:	Average of the five highest successive years of salary. Average Salary is based on all Allowable Service if less than five years.

RETIREMENT

Normal Retirement Benefit

Eligibility:	Age 55 and three years of Allowable Service under the Correctional and General Plans. Proportionate Retirement Annuity is available at age 65 and one year of Allowable Service.
Amount:	2.5% of average salary for each year of Allowable Service, pro rata for completed months. Maximum of 75% of Average Salary. After 84 months or normal retirement age if earlier, benefit changes to unreduced General Plan benefit. For Members hired prior to July 1, 1989, normal retirement age is 65; for Members hired after June 30, 1989, normal retirement age is the age first eligible for nonreduced Social Security benefits. If combined General Plan benefit and Social security (based on State service) are less than the Correctional benefit, an additional benefit will be paid to prevent a decrease.

CORRECTIONAL EMPLOYEES RETIREMENT FUND

SUMMARY OF PLAN PROVISIONS

Early Retirement Benefit

Eligibility:	Age 50 and three years of Allowable Service.
Amount:	Normal Retirement Benefit based on Allowable Service and Average Salary at retirement date reduced to the actuarial equivalent of the benefit that would be payable if the Member deferred the benefit until age 55.
Form of Payment:	Life annuity with return on death of any balance of contributions over aggregate monthly payments. Actuarially equivalent options are: 50% or 100% joint and survivor with bounce back feature without additional reduction. 15 year certain and life benefits.
Benefit Increases:	Benefits may be increased each January 1 depending on the investment performance of the Minnesota Post Retirement Investment Fund (MPRIF). A benefit recipient who has been receiving a benefit for at least 12 full months as of June 30 will receive a full increase. Members receiving benefits for at least one full month but less than 12 full months will receive a partial increase.

DISABILITY

Occupational Disability

Eligibility:	Member who cannot perform his duties as a direct result of a disability related to an act of duty.

CORRECTIONAL EMPLOYEES RETIREMENT FUND

SUMMARY OF PLAN PROVISIONS

Amount:	50% of Average Salary plus 2.5% of Average Salary for each year in excess of 20 years of Allowable Service pro rata for completed months. Maximum of 75% of Average Salary. Payment begins at disability and stops at age 62 or earlier if disability ceases or death occurs. Benefits may be paid upon re-employment but salary plus benefit cannot exceed current salary of position held at time of disability.
Non-Occupational Disability	
Eligibility:	At least one year of Correctional service and disability not related to covered employment.
Amount:	Normal Retirement Benefit based on Allowable Service (minimum of 15 years) and average salary at disability. Payment begins at disability and ends at age 62 or earlier if disability ceases or death occurs. Benefits may be paid upon re-employment but salary plus benefit cannot exceed current salary of position held at time of disability.
Form of Payment:	Same as for retirement.
Benefit Increases:	Adjusted by MSRS to provide same increase as MPRIF.
Retirement Benefits	
Eligibility:	Age 62 with continued disability.
Amount:	Benefit computed as a normal retirement benefit under General Plan based on same Allowable Service and without reduction for age.
Form of Payment:	Same as for retirement.
Benefit Increases:	Same as for retirement.

CORRECTIONAL EMPLOYEES RETIREMENT FUND

SUMMARY OF PLAN PROVISIONS

DEATH

Surviving Spouse Benefit

Eligibility: Member at any age or former Member age 50 or older who dies before retirement or disability benefits commence with three years of Allowable Service. If a former Member dies before age 55 and has less than 30 years of Allowable Service, benefits commence when the former Member would have been age 55. If an active member dies, benefits may commence immediately, regardless of age.

Amount: Surviving spouse receives the 100% joint and survivor benefit using general state employees formula. If commencement is prior to age 55, the appropriate early retirement formula described above applies except that one-half the monthly reduction factor is used from age 55 to the commencement age and the Rule of 90 does not apply. In lieu of this benefit, the surviving spouse may elect a refund of contributions with interest or an actuarially equivalent term certain annuity.

Benefit Increases: Adjusted by MSRS to provide same income as MPRIF.

Surviving Dependent Children's Benefit

Eligibility: If no surviving spouse, all dependent children (biological or adopted) below age 20 who are dependent for more than half of their support on deceased Member.

Amount: Actuarially equivalent to surviving spouse 100% joint and survivor annuity payable to the later of age 20 or five years. The amount is to be proportionally divided among surviving children.

TABLE 13
(Continued)

CORRECTIONAL EMPLOYEES RETIREMENT FUND

SUMMARY OF PLAN PROVISIONS

Refund of Contributions With Interest

Eligibility:	Active employee dies and survivor benefits are not payable or a former employee dies before annuity begins.
Amount:	The Member's contributions with 5% interest if death occurred before May 16, 1989 and 6% interest if death occurred on or after May 16, 1989.

TERMINATION

Refund of Contributions

Eligibility:	Termination of state service.
Amount:	Member's contributions with 5% interest compounded annually if termination occurred before May 16, 1989 and 6% interest if termination occurred on or after May 16, 1989. A deferred annuity may be elected in lieu of a refund if three or more years of Allowable Service.

Deferred Annuity

Eligibility:	Three years of Correctional and General Service.
Amount:	Benefit computed under law in effect at termination.

CORRECTIONAL EMPLOYEES RETIREMENT FUND

SUMMARY OF PLAN PROVISIONS

SIGNIFICANT CHANGES

Disability benefits eligibility no longer requires the Member to be under age 55 at the time of disability.

100% joint and survivor annuity provided to surviving spouse regardless of age of Member at death using general state employees formula. May also elect a term certain annuity instead of the 100% joint and survivor annuity. If no surviving spouse, dependent children under age 20 may be eligible for an equivalent benefit.

LEGISLATORS RETIREMENT PLAN

ACTUARIAL VALUATION REPORT

JULY 1, 1993

MILLIMAN & ROBERTSON, INC.

MILLIMAN & ROBERTSON, INC.
Actuaries and Consultants

Suite 400
15700 Bluemound Road
Brookfield, Wisconsin 53005-6069
Telephone: 414/784-2250
Fax: 414/784-4116

November 16, 1993

Legislative Commission on
Pensions and Retirement
55 State Office Building
St. Paul, Minnesota 55155

RE: <u>Legislators Retirement Plan</u>

Commission Members:

Pursuant to the terms of our Actuarial Services Contract, we have performed an actuarial valuation of the Fund as of July 1, 1993.

The results of our calculations are set forth in the following report, as are the actuarial assumptions upon which our calculations have been made. We have relied on the basic employee data and asset figures as submitted by the Minnesota State Retirement System.

On the basis of the foregoing, we hereby certify that, to the best of our knowledge and belief, this report is complete and accurate and has been prepared in accordance with the requirements of Section 356.215, Minnesota Statutes, and the requirements of the Standards for Actuarial Work, adopted by the Commission on July 8, 1992.

Respectfully submitted,

Thomas K. Custis

Thomas K. Custis, F.S.A., M.A.A.A.
Consulting Actuary

William V. Hogan

William V. Hogan, F.S.A., M.A.A.A.
Actuary

TKC/WVH/bh

LEGISLATORS RETIREMENT PLAN

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LEGISLATORS RETIREMENT PLAN

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LEGISLATORS RETIREMENT FUND

REPORT HIGHLIGHTS
(DOLLARS IN THOUSANDS)

	07/01/92 Valuation	07/01/93 Valuation
A. CONTRIBUTIONS (Table 11)		
1. Statutory Contributions - Chapter 3A % of Payroll	9.00%	9.00%
2. Required Contributions - Chapter 356 % of Payroll	30.49%	31.12%
3. Sufficiency (Deficiency): (A.1. - A.2.)	-21.49%	-22.12%
B. FUNDING RATIOS		
1. Accrued Benefit Funding Ratio		
a. Current Assets (Table 1)	$15,160	$17,169
b. Current Benefit Obligations (Table 8)	$32,272	$34,994
c. Funding Ratio: (a/b)	46.98%	49.06%
2. Accrued Liability Funding Ratio		
a. Current Assets (Table 1)	$15,160	$17,169
b. Actuarial Accrued Liability (Table 9)	$33,224	$36,801
c. Funding Ratio: (a/b)	45.63%	46.65%
3. Projected Benefit Funding Ratio (Table 8)		
a. Current and Expected Future Assets	$23,427	$26,248
b. Current and Expected Future Benefit Obligations	$41,491	$45,881
c. Funding Ratio: (a/b)	56.46%	57.21%
C. PLAN PARTICIPANTS		
1. Active Members		
a. Number (Table 3)	200	200
b. Projected Annual Earnings	$6,753	$6,891
c. Average Annual Earnings (Actual $)	$33,765	$34,457
d. Average Age	50.1	48.6
e. Average Service	8.6	7.9
2. Others		
a. Service Retirements (Table 4)	132	147
b. Disability Retirements (Table 5)	NA	NA
c. Survivors (Table 6)	46	53
d. Deferred Retirements (Table 7)	120	137
e. Terminated Other Non-vested (Table 7)	2	6
f. Total	300	343

LEGISLATORS RETIREMENT FUND

COMMENTARY

Purpose

The purpose of this valuation is to determine the financial status of the Plan. In order to achieve this purpose, an actuarial valuation is made at the beginning of each fiscal year as required by Section 356.215 of Minnesota Statutes.

Report Highlights

The financial status of the Plan can be measured by three different funding ratios:

- The Accrued Benefit Funding Ratio is a measure of current funding status and, when viewed over a period of years, presents a view of the funding progress. It is based upon benefits which have been earned by service to the valuation date. This year's ratio is 49.06%. The corresponding ratio for the prior year was 46.98%.

- The Accrued Liability Funding Ratio is also a measure of funding status and funding progress. It is based on the actuarial cost method that has historically been used by the State. For 1993 the ratio is 46.65%, which is an increase from the 1992 value of 45.63%.

- The Projected Benefit Funding Ratio is a measure of the adequacy or deficiency in the contribution level. This year's ratio of 57.21% shows that the current statutory contributions are inadequate.

Under current law, the state is required to fund the remaining full liability for retirements as they occur. The funding ratios shown here do not reflect the anicipated contributions arising from this requirement.

Asset Information (Tables 1 and 2)

Minnesota Statutes require that the asset value used for actuarial purposes recognize only a third of the unrealized gains and losses. This requirement exists because market values (which include all unrealized gain and losses) are typically volatile and can produce erratic changes in the contribution requirements from year to year.

The calculation of the Actuarial Value of Assets is shown in Table 1 on lines F1 to F6. It combines the cost value of the Assets Available for Benefits and one-third of the difference between the market value and cost value of those assets. Both the market value and cost value of assets shown in Tables 1 and 2 include the value of member deposits with accumulated interest. Since these "Other Assets" are not separately held apart from the State's general fund it may be argued that these amounts are not assets.

The term "Actuarial Value of Assets" is used to indicate that the value was determined for use in this actuarial valuation. Since Minnesota Statutes refer to this value as "Current Assets", the latter phrase will be used in the remainder of this report.

This Plan participates in the Minnesota Post Retirement Investment Fund (i.e. MPRIF). After the MPRIF liability has been calculated for each participating Plan, the State Board of Investments, (i.e. SBI), will determine each Plan's portion of the excess earnings for the January benefit increase as well as the Plan's allocated market share of MPRIF.

Actuarial Balance Sheet (Table 8)

An actuarial balance sheet provides a method for evaluating current and future levels of funding.

The Current Benefit Obligation used to measure current funding levels is calculated in accordance with Statement No. 5 of the Governmental Accounting Standards Board (GASB). Those requirements are:

- For Active Members - salary and service are projected to retirement to determine benefits for each member and the ratio of credited service to total service establishes the portion of the projected benefit to be used in calculating the current funding level.

- For Non-active Members - the discounted value of benefits, including augmentation in cases where benefits have not commenced.

GASB Disclosure

The Current Benefit Obligation amounts in Table 8 are required to be disclosed by Statement No. 5 of the Governmental Accounting Standards Board (GASB). However, Statement No. 5 uses the terms "Actuarial Present Value of Credited Projected Benefits" and "Pension Benefit Obligation" rather than "Current Benefit Obligation".

The July 1, 1993 Pension Benefit Obligation reported in Table 8 is reformatted for GASB reporting purposes in the following table:

Retirees and beneficiaries currently receiving benefits and terminated employees not yet receiving benefits	$24,283,000
Current Employees	
Accumulated employee contributions including allocated investment income	$4,104,000
Employer-financed vested	5,549,000
Employer-financed nonvested	1,058,000
Total Pension Benefit Obligation	$34,994,000
Net Assets Available for Benefits at Cost	$17,168,000
Total Benefit Obligation less Assets	$17,826,000
Funded Ratio	49.06%

Actuarial Cost Method (Table 9)

The approach used by the State of Minnesota to determine contribution sufficiency is the Entry Age Normal Actuarial Cost Method. The primary characteristic of this method is that it allocates costs as a level percentage of payroll.

A comparison of this actuarial method (Table 9) to the actuarial balance sheet (Table 8) illustrates the two techniques for allocating liabilities of active Members to past and future. As noted in the prior section, the balance sheet allocates benefits and the corresponding liabilities, on the basis of service. The method used in Table 9 allocates liabilities so that the cost each year will be a constant percentage of payroll. Both approaches, however, calculate the value of all future benefits the same way (see line F of Table 8 and line A6, column 1, of Table 9).

An Unfunded Actuarial Accrued Liability is computed under the Entry Age Normal Actuarial Cost Method by comparing the liabilities allocated to past service (Actuarial Accrued Liability) to the Current Assets. This amount, line B3, is funded over the remaining years to the amortization date by a series of payments that remain a constant percentage of payroll each year.

The payments will increase 6.5% each year because that is the assumed rate of increase in payroll. Although the payment schedule will be adequate to amortize the existing unfunded, the lower payments in the earlier years will not be sufficient to cover the interest on the unfunded liability. After a few years, the annual payment will cover the interest and also repay a portion of the unfunded.

Sources of Actuarial Gains and Losses (Table 10)

The assumptions used in making the calculations using the Entry Age Normal Actuarial Cost Method are based on long-term expectations. Each year the actual experience will deviate from the long-term expectation. For a detailed analysis of the major components, refer to Table 10.

Contribution Sufficiciency (Table 11)

This report determines the adequacy of Statutory Contributions by comparing the Statutory Contributions to the Required Contributions.

The Required Contributions, set forth in Chapter 356, consist of:

- Normal costs based on the Entry Age Normal Actuarial Cost Method.
- A Supplemental Contribution for amortizing any Unfunded Actuarial Accrued Liability.
- An Allowance for Expenses.

Table 11 shows the Plan has a contribution deficiency since the Statutory Contribution Rate is 9.00% compared to the Required Contribution Rate of 31.12%. Under current law, the state is required to fund the remaining full liability for retirements as they occur. Therefore, this deficiency is theoretical only; technically, no deficiency exists under a terminal funding structure as long as current requirements are met.

It should be noted that if the "Other Assets" of Tables 1 and 2 are excluded from the Actuarial Value of Assets, the contribution deficiency would be larger.

Changes in Actuarial Assumptions

The actuarial assumptions listed in Table 12 are the same as those used in the prior valuation, however the allowance for expenses as part of the required contributions of Chapter 356 in Table 11 only reflect administrative expenses and not investment expenses. This did not reduce the required contribution.

Changes in Plan Provisions

The methodology to determine annual postretirement benefit increases was modified to incorporate one layer relating to the Consumer Price Index and a second layer relating to investment performance on a smoothed basis. Over the long term, the new methodology is designed to continue to provide increases based on the excess of fund earnings over the postretirement interest assumption (5.0%). No changes have been incorporated into our valuation methods and assumptions

TABLE 1

LEGISLATORS RETIREMENT FUND

ACCOUNTING BALANCE SHEET
(DOLLARS IN THOUSANDS)

JULY 1, 1993

			Market Value	Cost Value
A.	ASSETS			
	1.	Cash, Equivalents, Short-term Securities	$0	$0
	2.	Investments		
		a. Fixed Income	0	0
		b. Equity	0	0
		c. Real Estate	0	0
	3.	Equity in Minnesota Post-Retirement Investment Fund (MPRIF)	12,454	12,454
	4.	Other *	5,148	5,148
B.	TOTAL ASSETS		$17,602	$17,602
C.	AMOUNTS CURRENTLY PAYABLE		$434	$434
D.	ASSETS AVAILABLE FOR BENEFITS			
	1.	Member Reserves *	$5,123	$5,123
	2.	Employer Reserves	(3,108)	(3,108)
	3.	MPRIF Reserves	12,454	12,454
	4.	Non-MPRIF Reserves	2,699	2,699
	5.	Total Assets Available for Benefits	$17,168	$17,168
E.	TOTAL AMOUNTS CURRENTLY PAYABLE AND ASSETS AVAILABLE FOR BENEFITS		$17,602	$17,602

F.	DETERMINATION OF ACTUARIAL VALUE OF ASSETS			
	1.	Cost Value of Assets Available for Benefits (D5)		$17,168
	2.	Market Value (D5)	$17,168	
	3.	Cost Value (D5)	17,168	
	4.	Market Over Cost: (F2-F3)	$0	
	5.	1/3 of Market Over Cost: (F4)/3		0
	6.	Actuarial Value of Assets (F1+F5) (Same as "Current Assets")		$17,168

* Includes $5,123 of Member Reserves not segregated from general funds.

LEGISLATORS RETIREMENT FUND

CHANGE IN ASSETS AVAILABLE FOR BENEFITS
(DOLLARS IN THOUSANDS)

YEAR ENDING JUNE 30, 1993

		Market Value	Cost Value
A.	ASSETS AVAILABLE AT BEGINNING OF PERIOD	$15,160	$15,160
B.	OPERATING REVENUES		
	1. Member Contributions	$659	$659
	2. Employer Contributions	0	0
	3. Investment Income	0	0
	4. MPRIF Income	974	974
	5. Net Realized Gain (Loss)	0	0
	6. Other	2,284	2,284
	7. Net Change in Unrealized Gain (Loss)	0	0
	8. Total Revenue	$3,917	$3,917
C.	OPERATING EXPENSES		
	1. Service Retirements	$1,697	$1,697
	2. Disability Benefits	0	0
	3. Survivor Benefits	0	0
	4. Refunds	138	138
	5. Investment Fees	0	0
	6. Administrative Expenses	25	25
	7. Other	49	49
	8. Total Disbursements	$1,909	$1,909
D.	OTHER CHANGES IN RESERVES	0	0
E.	ASSETS AVAILABLE AT END OF PERIOD	$17,168	$17,168

LEGISLATORS RETIREMENT PLAN

ACTIVE MEMBERS AS OF JUNE 30, 1993

AGE	YEARS OF SERVICE <1	1-4	5-9	10-14	15-19	20-24	25-29	30+	ALL
<25									
25-29	4								4
30-34	5	3	2	1					11
35-39	5	3	7	2	1				18
40-44	12	4	15	5	3				39
45-49	8	6	13	5	6	4			42
50-54	3	7	9	4	4	3			30
55-59	5	2	3	5	6	3			24
60-64	4	2	4	4	5	3			22
65+	1		3	1	2	3			10
ALL	47	27	56	27	27	16			200

AVERAGE ANNUAL EARNINGS

AGE	YEARS OF SERVICE <1	1-4	5-9	10-14	15-19	20-24	25-29	30+	ALL
<25									
25-29	34,458								34,458
30-34	34,458	34,458	34,458	34,458					34,458
35-39	34,458	34,458	34,458	34,458	34,458				34,458
40-44	34,458	34,458	34,458	34,458	34,458				34,458
45-49	34,458	34,458	34,458	34,458	34,458	34,458			34,458
50-54	34,458	34,458	34,458	34,458	34,458	34,458			34,458
55-59	34,458	34,458	34,458	34,458	34,458	34,458			34,458
60-64	34,458	34,458	34,458	34,458	34,458	34,458			34,458
65+	34,458		34,458	34,458	34,458	34,458			34,458
ALL	34,458	34,458	34,458	34,458	34,458	34,458			34,458

PRIOR FISCAL YEAR EARNINGS (IN THOUSANDS) BY YEARS OF SERVICE

AGE	<1	1-4	5-9	10-14	15-19	20-24	25-29	30+	ALL
ALL	1,620	930	1,930	930	930	551			6,892

TABLE 4

LEGISTATORS RETIREMENT PLAN

SERVICE RETIREMENTS AS OF JUNE 30, 1993

	YEARS RETIRED							
AGE	<1	1-4	5-9	10-14	15-19	20-24	25+	ALL
<50								
50-54								
55-59								
60-64	9	17						26
65-69	9	6	27					42
70-74		4	6	29				39
75-79		1	2	7	8			18
80-84					9	4		13
85+					1	7	1	9
ALL	18	28	35	36	18	11	1	147

AVERAGE ANNUAL BENEFIT

	YEARS RETIRED							
AGE	<1	1-4	5-9	10-14	15-19	20-24	25+	ALL
<50								
50-54								
55-59								
60-64	9,990	10,122						10,076
65-69	11,172	8,013	8,252					8,844
70-74		10,574	9,982	11,133				10,899
75-79		5,615	16,528	21,037	8,088			13,924
80-84					9,309	8,395		9,028
85+					20,379	9,189	7,239	10,216
ALL	10,581	9,574	9,022	13,059	9,381	8,900	7,239	10,329

	TOTAL ANNUAL BENEFIT (IN THOUSANDS) BY YEARS RETIRED							
AGE	<1	1-4	5-9	10-14	15-19	20-24	25+	ALL
ALL	190	268	315	470	168	97	7	1,518

TABLE 5

LEGISTATORS RETIREMENT PLAN

SURVIVORS AS OF JUNE 30, 1993

AGE	YEARS SINCE DEATH <1	1-4	5-9	10-14	15-19	20-24	25+	ALL
<50								
50-54	2	1	1	3				7
55-59			1					1
60-64	2	1	1		1	1		6
65-69		2		1				3
70-74		2	4		3			9
75-79	1	5	3			3		12
80-84		2		1	3	3		9
85+	1	3				2		6
ALL	6	16	10	5	7	9		53

AVERAGE ANNUAL BENEFIT

AGE	YEARS SINCE DEATH <1	1-4	5-9	10-14	15-19	20-24	25+	ALL
<50								
50-54	11,087	3,535	20,717	5,824				9,128
55-59			4,959					4,959
60-64	2,288	7,888	2,798		5,337	2,662		3,877
65-69		1,964		1,629				1,852
70-74		1,440	5,178		3,139			3,668
75-79	2,068	7,856	4,269			4,056		5,527
80-84		5,328		8,490	5,828	4,307		5,506
85+	3,916	5,617				2,999		4,461
ALL	5,456	5,314	6,199	5,518	4,605	3,750		5,157

AGE	TOTAL ANNUAL BENEFIT (ACTUAL DOLLARS) BY YEARS SINCE DEATH <1	1-4	5-9	10-14	15-19	20-24	25+	ALL
ALL	32,736	85,024	61,990	27,590	32,235	33,750		273,321

TABLE 7

LEGISLATORS RETIREMENT FUND

RECONCILIATION OF MEMBERS

		Actives	Terminated: Deferred Retirement	Terminated: Other Non-Vested
A.	ON JUNE 30, 1992	200	120	2
B.	ADDITIONS	47	22	5
C.	DELETIONS			
	1. Service Retirement	(11)	(7)	(1)
	2. Disability	0	0	0
	3. Death	(1)	0	0
	4. Terminated - Deferred	(21)	0	0
	5. Terminated - Refund	(9)	0	0
	6. Terminated - Other Non-Vested	(5)	0	0
	7. Returned as Active	0	0	0
	8. Transferred to Other Fund	0	0	0
D.	DATA ADJUSTMENTS	0	2	0
	Vested	111		
	Non-Vested	89		
E.	TOTAL ON JUNE 30, 1993	200	137	6

		Recipients: Retirement Annuitants	Recipients: Disabled	Recipients: Survivors
A.	ON JUNE 30, 1992	132	NA	46
B.	ADDITIONS	18	0	6
C.	DELETIONS			
	1. Service Retirement	0	0	0
	2. Death	(3)	0	(1)
	3. Annuity Expired	0	0	0
	4. Returned as Active	0	0	0
D.	DATA ADJUSTMENTS	0	0	2
E.	TOTAL ON JUNE 30, 1993	147	NA	53

LEGISLATORS RETIREMENT FUND

ACTUARIAL BALANCE SHEET
(DOLLARS IN THOUSANDS)

JULY 1, 1993

		Non-Vested	Vested	Total
A.	CURRENT ASSETS (TABLE 1, F6)			$17,168
B.	EXPECTED FUTURE ASSETS			
	1. Present Value of Expected Future Statutory Supplemental Contributions (See Table 11)			$0
	2. Present Value of Future Normal Costs			9,080
	3. Total Expected Future Assets			$9,080
C.	TOTAL CURRENT AND EXPECTED FUTURE ASSETS			$26,248
D.	CURRENT BENEFIT OBLIGATIONS	Non-Vested	Vested	Total
	1. Benefit Recipients			
	a. Retirement Annuities		$12,284	$12,284
	b. Disability Benefits		0	0
	c. Surviving Spouse and Child Benefits		2,869	2,869
	2. Deferred Retirements With Future Augmentation		9,088	9,088
	3. Former Members Without Vested Rights		42	42
	4. Active Members			
	a. Retirement Annuities	550	8,289	8,839
	b. Disability Benefits	0	0	0
	c. Survivor's Benefits	351	0	351
	d. Deferred Retirements	157	1,269	1,426
	e. Refund Liability Due to Death or Withdrawal	0	95	95
	5. Total Current Benefit Obligations	$1,058	$33,936	$34,994
E.	EXPECTED FUTURE BENEFIT OBLIGATIONS			$10,887
F.	TOTAL CURRENT AND EXPECTED FUTURE BENEFIT OBLIGATIONS			$45,881
G.	CURRENT UNFUNDED ACTUARIAL LIABILITY (D5-A)			$17,826
H.	CURRENT AND FUTURE UNFUNDED ACTUARIAL LIABILITY (F-C)			$19,633

TABLE 9

LEGISLATORS RETIREMENT FUND

DETERMINATION OF UNFUNDED ACTUARIAL ACCRUED LIABILITY (UAAL) AND SUPPLEMENTAL CONTRIBUTION RATE (DOLLARS IN THOUSANDS)

JULY 1, 1993

	Actuarial Present Value of Projected Benefits (1)	Actuarial Present Value of Future Normal Costs (2)	Actuarial Accrued Liability (3)=(1)-(2)
A. DETERMINATION OF ACTUARIAL ACCRUED LIABILITY (AAL)			
1. Active Members			
a. Retirement Annuities	$17,757	$6,587	$11,170
b. Disability Benefits	0	0	0
c. Survivor's Benefit	694	402	292
d. Deferred Retirements	2,874	1,650	1,224
e. Refunds Due to Death or Withdrawal	273	441	(168)
f. Total	$21,598	$9,080	$12,518
2. Deferred Retirements With Future Augmentation	9,088		9,088
3. Former Members Without Vested Rights	42		42
4. Annuitants in MPRIF	12,454		12,454
5. Recipients Not in MPRIF	2,699		2,699
6. Total	$45,881	$9,080	$36,801

B. DETERMINATION OF UNFUNDED ACTUARIAL ACCRUED LIABILITY (UAAL)	
1. AAL (A6)	$36,801
2. Current Assets (Table 1, F6)	17,168
3. UAAL (B1-B2)	$19,633
C. DETERMINATION OF SUPPLEMENTAL CONTRIBUTION RATE	
1. Present Value of Future Payrolls Through the Amortization Date of July 1, 2020	$150,467
2. Supplemental Contribution Rate (B3/C1)	13.05%

Note: If non-segregated member reserves were not counted as assets, the UAAL would be $24,756, resulting in a Supplemental Contribution Rate of 16.45%.

LEGISLATORS RETIREMENT FUND

CHANGES IN UNFUNDED ACTUARIAL ACCRUED LIABILITY (UAAL)
(DOLLARS IN THOUSANDS)

YEAR ENDING JUNE 30, 1993

A.	UAAL AT BEGINNING OF YEAR	$18,064
B.	CHANGE DUE TO INTEREST REQUIREMENTS AND CURRENT RATE OF FUNDING	
	1. Normal Cost and Expenses	$1,230
	2. Contribution	(659)
	3. Interest on A, B1 and B2	1,560
	4. Total (B1+B2+B3)	$2,131
C.	EXPECTED UAAL AT END OF YEAR (A+B4)	$20,195
D.	INCREASE (DECREASE) DUE TO ACTUARIAL LOSSES (GAINS) BECAUSE OF EXPERIENCE DEVIATIONS FROM EXPECTED	
	1. Salary Increases	($129)
	2. Investment Return	424
	3. MPRIF Mortality	409
	4. Mortality of Other Benefit Recipients	208
	5. Other Items	(1,474)
	6. Total	($562)
E.	UAAL AT END OF YEAR BEFORE PLAN AMENDMENTS AND CHANGES IN ACTUARIAL ASSUMPTION (C+D5)	$19,633
F.	CHANGE IN ACTUARIAL ACCRUED LIABILITY DUE TO PLAN AMENDMENTS	0
G.	CHANGE IN ACTUARIAL ACCRUED LIABILITY DUE TO CHANGES IN ACTUARIAL ASSUMPTIONS	0
H.	UAAL AT END OF YEAR (E+F+G)	$19,633

TABLE 11

LEGISLATORS RETIREMENT FUND

DETERMINATION OF CONTRIBUTION SUFFICIENCY (DOLLARS IN THOUSANDS)

JULY 1, 1993

			Percent of Payroll	Dollar Amount
A.	STATUTORY CONTRIBUTIONS - CHAPTER 3A			
	1.	Employee Contributions	9.00%	$620
	2.	Employer Contributions	0.00%*	0 *
	3.	Total	9.00%	$620

* Employer contributions are required to cover the portion of the benefit liabilities which are not funded by the member's accumulated contribution at the time of benefit commencement.

			Percent of Payroll	Dollar Amount
B.	REQUIRED CONTRIBUTIONS - CHAPTER 356			
	1.	Normal Cost		
		a. Retirement Benefits	13.57%	$935
		b. Disability benefits	0.00%	0
		c. Survivors	0.75%	52
		d. Deferred Retirement Benefits	2.64%	182
		e. Refunds Due to Death or Withdrawal	0.75%	52
		f. Total	17.71%	$1,221
	2.	Supplemental Contribution Amortization by July 1, 2020 of UAAL	13.05%	899
	3.	Allowance for Expenses	0.36%	25
	4.	Total	31.12%	$2,145
C.	CONTRIBUTION SUFFICIENCY (DEFICIENCY) [A3-B4]		-22.12%	($1,525)

Note: Projected Annual Payroll for Fiscal Year Beginning on July 1, 1993 is $5,931 in salaries and $960 in per diem payments.

The deficiency amount shown above is calculated based on reported assets which include a receivable of $5,123 for member contributions that are held in the State's general fund. If this amount was not considered as an asset of the fund in these calculations, the deficiency would be 25.52%.

LEGISLATORS RETIREMENT PLAN

SUMMARY OF ACTUARIAL ASSUMPTIONS AND METHODS

Interest:

Pre-Retirement: 8.5% per annum

Post-Retirement: 5.0% per annum

Salary Increases:

The statutory salary rate as prescribed in Chapter 345, Article I, Sec. 28, with a 3% increase for the 1992-93 fiscal year and 6.5% per year thereafter. Per diem payments were assumed to remain constant each year in the future.

Mortality:

Pre-Retirement:
Male - 1971 Group Annuity Mortality Table
Female - 1971 Group Annuity Mortality Table male rates set back eight years

Post-Retirement:
Male - Same as above
Female - Same as above

Post-Disability:
Male - N/A
Female - N/A

Retirement Age:

Age 62 or if over age 62, one year from valuation date.

Separation:

Rates based on years of service.

Year	House	Senate
1	0%	0%
2	30	0
3	0	0
4	20	25
5	0	0
6	10	0
7	0	0
8	5	10

Disability:

None

Expenses:

Prior year administration expenses expressed as percentage of prior year payroll.

TABLE 12
(Continued)

LEGISLATORS RETIREMENT PLAN

SUMMARY OF ACTUARIAL ASSUMPTIONS AND METHODS

Return of Contributions:	All employees withdrawing after becoming eligible for a deferred benefit were assumed to take the larger of their contributions accumulated with interest or the value of their deferred benefit.
Family Composition:	85% of Members are assumed to be married. Female is three years younger than male. Each Member may have up to two dependent children depending on Member's age. Assumed first child born at Member's age 28 and second child born at member's age 31.
Social Security:	N/A
Benefit Increases After Retirement:	Payment of earnings on retired reserves in excess of 5% accounted for by 5% post-retirement assumptions.
Special Consideration:	Per diem payments for regular and special sessions were included in salary. The annual amount of per diem that is recognized in this valuation is $4,800 per Member. This is based on $48 per day times an average session of 100 days.
Actuarial Cost Method:	Entry Age Normal Actuarial Cost Method based on earnings and the date the employee entered the plan is applied to all plan benefits. Under this method, actuarial Gains (Losses) reduce (increase) the Unfunded Actuarial Accrued Liability.
Asset Valuation Method:	Cost Value plus one-third Unrealized Gains or Losses.
Payment on the Unfunded Actuarial Accrued Liability:	A level percentage of payroll each year to the statutory amortization date assuming payroll increases of 6.5% per annum.

TABLE 13

LEGISLATORS RETIREMENT PLAN

SUMMARY OF PLAN PROVISIONS

Eligibility:	Members of the State Legislature. A Member of PERA who is elected to the Legislature may elect to remain a Member of PERA and receive credit under PERA for service as a legislator.
Contributions	
Member:	9% of salary.
Employer:	No specified statutory contribution rate. State must contribute an amount equal to the full annuity value at benefit commencement less accumulated member contributions.
Service:	Granted for the full term unless termination occurs before the end of the term. Service during all or part of four regular legislative sessions is deemed to be eight years of service.
Salary:	Compensation received for service as a Member of the legislature. Salary includes the monthly compensation paid to a legislator and the per diem payments paid during a regular or special session. Salary does not include additional compensation attributable to a leadership position.
Average Salary:	Average of the five highest successive years of salary.

RETIREMENT

Normal Retirement Benefit

Eligibility:	Age 62 and either six full years of service or service during all or part of four regular legislative sessions. For eligibility purposes, service does not include credit for time not served when a Member does not serve a full term of office.
Amount:	A percentage of Average Salary for each year of service as follows:

Prior to 1/1/79	- 5% for the first eight years
	- 2.5% for subsequent years
After 12/31/78	- 2.5%

LEGISLATORS RETIREMENT PLAN

SUMMARY OF PLAN PROVISIONS

Early Retirement Benefit

Eligibility:	Age 60 and either six full years of Service or Service during all or part of four regular legislative sessions.
Amount:	Normal Retirement Benefit based on service and Average Salary at retirement date assuming augmentation to age 62 at 3% per year and actuarial reduction for each month the Member is under age 62.
Form of Payment:	Paid as a joint and survivor annuity to Member, spouse and dependent children. Combined service annuitants with less than six years of Legislator service may elect 100% joint and survivor bounceback annuity or a term certain and life annuity on an actuarially equivalent basis.
Benefit Increases:	Benefits may be increased each January 1 depending on the investment performance of the Minnesota Post Retirement Investment Fund (MPRIF).

DISABILITY

None

DEATH BENEFITS

Surviving Spouse Benefit

Eligibility:	Death while active, or after termination if service requirements for a Normal Retirement Benefit are met but payments have not begun.
Amount:	Survivor's payments of 50% of the retirement benefit of the Member assuming the Member had attained normal retirement age and had a minimum of eight years of service. Benefit is paid for life. A former Member's benefit is augmented as a Deferred Annuity to date of death before determining the portion payable to the spouse.

LEGISLATORS RETIREMENT PLAN

SUMMARY OF PLAN PROVISIONS

Surviving Dependent Children's Benefit	
Eligibility:	Same as spouse's benefit.
Amount:	Benefit for first child is 25% of the retirement benefit (computed as for surviving spouse) with 12.5% for each additional child. Maximum payable (including spouse) is 100% of the retirement benefit. Benefits cease when a child marries or attains age 18 (22 if a full-time student).
Benefit Increases:	Adjusted by MSRS to provide same increase as MPRIF.
Refund of Contributions	
Eligibility:	Member dies before receiving any retirement benefits and survivor benefits are not payable.
Amount:	Member's contributions without interest.

TERMINATION

Refund of Contributions	
Eligibility:	Termination of service.
Amount:	Member's contributions with 5% interest compounded annually if termination occurred before May 16, 1989 and 6% interest if termination occurred on or after May 16, 1989. A deferred annuity may be elected in lieu of a refund.
Deferred Benefit	
Eligibility:	Same service requirement as for Normal Retirement.

LEGISLATORS RETIREMENT PLAN

SUMMARY OF PLAN PROVISIONS

Amount: Benefit computed under law in effect at termination and increased by the following annual percentage: 0% before 7/1/73; 5% from 7/1/73 to 1/1/81; and 5% thereafter until the annuity begins. Amount is payable as a normal or early retirement.

SIGNIFICANT CHANGES

Combined service annuitants with less than six years of Legislator service may elect actuarially equivalent optional annuities (100% joint and survivor bounceback and term certain and life annuities).

ELECTIVE STATE OFFICERS RETIREMENT PLAN

ACTUARIAL VALUATION REPORT

JULY 1, 1993

MILLIMAN & ROBERTSON, INC.

MILLIMAN & ROBERTSON, INC.

Actuaries and Consultants

Suite 400
15700 Bluemound Road
Brookfield, Wisconsin 53005-6069
Telephone: 414/784-2250
Fax: 414/784-4116

November 16, 1993

Legislative Commission on
Pensions and Retirement
55 State Office Building
St. Paul, Minnesota 55155

RE: Elective State Officers Retirement Plan

Commission Members:

Pursuant to the terms of our Actuarial Services Contract, we have performed an actuarial valuation of the Fund as of July 1, 1993.

The results of our calculations are set forth in the following report, as are the actuarial assumptions upon which our calculations have been made. We have relied on the basic employee data and asset figures as submitted by the Minnesota State Retirement System.

On the basis of the foregoing, we hereby certify that, to the best of our knowledge and belief, this report is complete and accurate and has been prepared in accordance with the requirements of Section 356.215, Minnesota Statutes, and the requirements of the Standards for Actuarial Work, adopted by the Commission on July 8, 1992.

Respectfully submitted,

Thomas K. Custis

Thomas K. Custis, F.S.A., M.A.A.A.
Consulting Actuary

William V. Hogan

William V. Hogan, F.S.A., M.A.A.A.
Actuary

TKC/WVH/bh

ELECTIVE STATE OFFICERS RETIREMENT PLAN

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ELECTIVE STATE OFFICERS RETIREMENT PLAN

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ELECTIVE STATE OFFICERS RETIREMENT FUND

REPORT HIGHLIGHTS
(DOLLARS IN THOUSANDS)

	07/01/92 Valuation	07/01/93 Valuation
A. CONTRIBUTIONS (Table 11)		
1. Statutory Contributions - Chapter 352C % of Payroll	9.00%	9.00%
2. Required Contributions - Chapter 356 % of Payroll	36.23%	38.64%
3. Sufficiency (Deficiency): (A.1. - A.2.)	-27.23%	-29.64%
B. FUNDING RATIOS		
1. Accrued Benefit Funding Ratio		
a. Current Assets (Table 1)	$334	$322
b. Current Benefit Obligations (Table 8)	$2,269	$2,548
c. Funding Ratio: (a/b)	14.72%	12.64%
2. Accrued Liability Funding Ratio		
a. Current Assets (Table 1)	$334	$322
b. Actuarial Accrued Liability (Table 9)	$2,380	$2,689
c. Funding Ratio: (a/b)	14.03%	11.97%
3. Projected Benefit Funding Ratio (Table 8)		
a. Current and Expected Future Assets	$675	$572
b. Current and Expected Future Benefit Obligations	$2,721	$2,939
c. Funding Ratio: (a/b)	24.81%	19.46%
C. PLAN PARTICIPANTS		
1. Active Members		
a. Number (Table 3)	6	6
b. Projected Annual Earnings	$451	$462
c. Average Annual Earnings (Actual $)	$75,167	$76,935
d. Average Age	51.7	52.7
e. Average Service	8.0	9.7
2. Others		
a. Service Retirements (Table 4)	4	6
b. Disability Retirements (Table 5)	NA	NA
c. Survivors (Table 6)	4	4
d. Deferred Retirements (Table 7)	6	4
e. Terminated Other Non-vested (Table 7)	0	0
f. Total	14	14

ELECTIVE STATE OFFICERS RETIREMENT FUND

COMMENTARY

Purpose

The purpose of this valuation is to determine the financial status of the Plan. In order to achieve this purpose, an actuarial valuation is made at the beginning of each fiscal year as required by Section 356.215 of Minnesota Statutes.

Report Highlights

The financial status of the Plan can be measured by three different funding ratios:

- The Accrued Benefit Funding Ratio is a measure of current funding status and, when viewed over a period of years, presents a view of the funding progress. It is based upon benefits which have been earned by service to the valuation date. This year's ratio is 12.64%. The corresponding ratio for the prior year was 14.72%.

- The Accrued Liability Funding Ratio is also a measure of funding status and funding progress. It is based on the actuarial cost method that has historically been used by the State. For 1993 the ratio is 11.97%, which is a decrease from the 1992 value of 14.03%.

- The Projected Benefit Funding Ratio is a measure of the adequacy or deficiency in the contribution level. This year's ratio of 19.46% shows that the current statutory contributions are inadequate.

Under current law, the state is required to fund the remaining full liability for retirements as they occur. The funding ratios shown here do not reflect the anicipated contributions arising from this requirement.

Asset Information (Tables 1 and 2)

Minnesota Statutes require that the asset value used for actuarial purposes recognize only a third of the unrealized gains and losses. This requirement exists because market values (which include all unrealized gain and losses) are typically volatile and can produce erratic changes in the contribution requirements from year to year.

The calculation of the Actuarial Value of Assets is shown in Table 1 on lines F1 to F6. It combines the cost value of the Assets Available for Benefits and one-third of the difference between the market value and cost value of those assets. Both the market value and cost value of assets shown in Tables 1 and 2 include the value of member deposits with accumulated interest. Since these "Other Assets" are not separately held apart from the State's general fund it may be argued that these amounts are not assets.

The term "Actuarial Value of Assets" is used to indicate that the value was determined for use in this actuarial valuation. Since Minnesota Statutes refer to this value as "Current Assets", the latter phrase will be used in the remainder of this report.

This Plan participates in the Minnesota Post Retirement Investment Fund (i.e. MPRIF). After the MPRIF liability has been calculated for each participating Plan, the State Board of Investments, (i.e. SBI), will determine each Plan's portion of the excess earnings for the January benefit increase as well as the Plan's allocated market share of MPRIF.

Actuarial Balance Sheet (Table 8)

An actuarial balance sheet provides a method for evaluating current and future levels of funding.

The Current Benefit Obligation used to measure current funding levels is calculated in accordance with Statement No. 5 of the Governmental Accounting Standards Board (GASB). Those requirements are:

- For Active Members - salary and service are projected to retirement to determine benefits for each member and the ratio of credited service to total service establishes the portion of the projected benefit to be used in calculating the current funding level.

- For Non-active Members - the discounted value of benefits, including augmentation in cases where benefits have not commenced.

GASB Disclosure

The Current Benefit Obligation amounts in Table 8 are required to be disclosed by Statement No. 5 of the Governmental Accounting Standards Board (GASB). However, Statement No. 5 uses the terms "Actuarial Present Value of Credited Projected Benefits" and "Pension Benefit Obligation" rather than "Current Benefit Obligation".

The July 1, 1993 Pension Benefit Obligation reported in Table 8 is reformatted for GASB reporting purposes in the following table:

Retirees and beneficiaries currently receiving benefits and terminated employees not yet receiving benefits	$1,611,000
Current Employees	
Accumulated employee contributions including allocated investment income	$401,000
Employer-financed vested	429,000
Employer-financed nonvested	107,000

Total Pension Benefit Obligation	$2,548,000
Net Assets Available for Benefits at Cost	$322,000
Total Benefit Obligation less Assets	$2,226,000
Funded Ratio	12.64%

Actuarial Cost Method (Table 9)

The approach used by the State of Minnesota to determine contribution sufficiency is the Entry Age Normal Actuarial Cost Method. The primary characteristic of this method is that it allocates costs as a level percentage of payroll.

A comparison of this actuarial method (Table 9) to the actuarial balance sheet (Table 8) illustrates the two techniques for allocating liabilities of active Members to past and future. As noted in the prior section, the balance sheet allocates benefits and the corresponding liabilities, on the basis of service. The method used in Table 9 allocates liabilities so that the cost each year will be a constant percentage of payroll. Both approaches, however, calculate the value of all future benefits the same way (see line F of Table 8 and line A6, column 1, of Table 9).

An Unfunded Actuarial Accrued Liability is computed under the Entry Age Normal Actuarial Cost Method by comparing the liabilities allocated to past service (Actuarial Accrued Liability) to the Current Assets. This amount, line B3, is funded over the remaining years to the amortization date by a series of payments that remain a constant percentage of payroll each year.

The payments will increase 6.5% each year because that is the assumed rate of increase in payroll. Although the payment schedule will be adequate to amortize the existing unfunded, the lower payments in the earlier years will not be sufficient to cover the interest on the unfunded liability. After a few years, the annual payment will cover the interest and also repay a portion of the unfunded.

Sources of Actuarial Gains and Losses (Table 10)

The assumptions used in making the calculations using the Entry Age Normal Actuarial Cost Method are based on long-term expectations. Each year the actual experience will deviate from the long-term expectation. For a detailed analysis of the major components, refer to Table 10.

Contribution Sufficiciency (Table 11)

This report determines the adequacy of Statutory Contributions by comparing the Statutory Contributions to the Required Contributions.

The Required Contributions, set forth in Chapter 356, consist of:

- Normal costs based on the Entry Age Normal Actuarial Cost Method.
- A Supplemental Contribution for amortizing any Unfunded Actuarial Accrued Liability.
- An Allowance for Expenses.

Table 11 shows the Plan has a contribution deficiency since the Statutory Contribution Rate is 9.00% compared to the Required Contribution Rate of 38.64%. Under current law, the state is required to fund the remaining full liability for retirements as they occur. Therefore, this deficiency is theoretical only; technically, no deficiency exists under a terminal funding structure as long as current requirements are met.

It should be noted that if the "Other Assets" of Tables 1 and 2 are excluded from the Actuarial Value of Assets, the contribution deficiency would be larger.

Changes in Actuarial Assumptions

The actuarial assumptions listed in Table 12 are the same as those used in the prior valuation, however the allowance for expenses as part of the required contributions of Chapter 356 in Table 11 only reflect administrative expenses and not investment expenses. This did not reduce the required contribution.

Changes in Plan Provisions

There were no changes in plan provisions since the prior valuation which impacted funding costs.

TABLE 1

ELECTIVE STATE OFFICERS RETIREMENT FUND

ACCOUNTING BALANCE SHEET
(DOLLARS IN THOUSANDS)

JULY 1, 1993

			Market Value	Cost Value
A.	ASSETS			
	1.	Cash, Equivalents, Short-term Securities	$0	$0
	2.	Investments		
		a. Fixed Income	0	0
		b. Equity	0	0
		c. Real Estate	0	0
	3.	Equity in Minnesota Post-Retirement Investment Fund (MPRIF)	0	0
	4.	Other *	324	324
B.	TOTAL ASSETS		$324	$324
C.	AMOUNTS CURRENTLY PAYABLE		$2	$2
D.	ASSETS AVAILABLE FOR BENEFITS			
	1.	Member Reserves *	$322	$322
	2.	Employer Reserves	(1,373)	(1,373)
	3.	MPRIF Reserves	0	0
	4.	Non-MPRIF Reserves	1,373	1,373
	5.	Total Assets Available for Benefits	$322	$322
E.	TOTAL AMOUNTS CURRENTLY PAYABLE AND ASSETS AVAILABLE FOR BENEFITS		$324	$324

F.	DETERMINATION OF ACTUARIAL VALUE OF ASSETS			
	1.	Cost Value of Assets Available for Benefits (D5)		$322
	2.	Market Value (D5)	$322	
	3.	Cost Value (D5)	322	
	4.	Market Over Cost: (F2-F3)	$0	
	5.	1/3 of Market Over Cost: (F4)/3		0
	6.	Actuarial Value of Assets (F1+F5) (Same as "Current Assets")		$322

* Includes $322 of Member Reserves not segregated from general funds.

TABLE 2

ELECTIVE STATE OFFICERS RETIREMENT FUND

CHANGE IN ASSETS AVAILABLE FOR BENEFITS
(DOLLARS IN THOUSANDS)

YEAR ENDING JUNE 30, 1993

		Market Value	Cost Value
A.	ASSETS AVAILABLE AT BEGINNING OF PERIOD	$334	$334
B.	OPERATING REVENUES		
	1. Member Contributions	$45	$45
	2. Employer Contributions	0	0
	3. Investment Income	0	0
	4. MPRIF Income	0	0
	5. Net Realized Gain (Loss)	0	0
	6. Other	88	88
	7. Net Change in Unrealized Gain (Loss)	0	0
	8. Total Revenue	$133	$133
C.	OPERATING EXPENSES		
	1. Service Retirements	$143	$143
	2. Disability Benefits	0	0
	3. Survivor Benefits	0	0
	4. Refunds	0	0
	5. Investment Fees	0	0
	6. Administrative Expenses	2	2
	7. Other	0	0
	8. Total Disbursements	$145	$145
D.	OTHER CHANGES IN RESERVES	0	0
E.	ASSETS AVAILABLE AT END OF PERIOD	$322	$322

ELECTIVE STATE OFFICERS RETIREMENT PLAN

ACTIVE MEMBERS AS OF JUNE 30, 1993

AGE	YEARS OF SERVICE <1	1-4	5-9	10-14	15-19	20-24	25-29	30+	ALL
<25									
25-29									
30-34									
35-39									
40-44									
45-49		1							1
50-54		1	1	1					3
55-59					2				2
60-64									
65+									
ALL		2	1	1	2				6

AVERAGE ANNUAL EARNINGS

AGE	YEARS OF SERVICE <1	1-4	5-9	10-14	15-19	20-24	25-29	30+	ALL
<25									
25-29									
30-34									
35-39									
40-44									
45-49		68,710							68,710
50-54		62,981	62,981	89,455					71,806
55-59					88,744				88,744
60-64									
65+									
ALL		65,846	62,981	89,455	88,744				76,936

PRIOR FISCAL YEAR EARNINGS (ACTUAL DOLLARS) BY YEARS OF SERVICE

AGE	<1	1-4	5-9	10-14	15-19	20-24	25-29	30+	ALL
ALL		131,692	62,981	89,455	177,488				461,616

TABLE 4

ELECTIVE STATE OFFICERS RETIREMENT PLAN

SERVICE RETIREMENTS AS OF JUNE 30, 1993

	YEARS RETIRED							
AGE	<1	1-4	5-9	10-14	15-19	20-24	25+	ALL
<50								
50-54								
55-59								
60-64	2	1						3
65-69		1						1
70-74								
75-79				1				1
80-84					1			1
85+								
ALL	2	2		1	1			6

AVERAGE ANNUAL BENEFIT

	YEARS RETIRED							
AGE	<1	1-4	5-9	10-14	15-19	20-24	25+	ALL
<50								
50-54								
55-59								
60-64	18,085	2,605						12,925
65-69		40,572						40,572
70-74								
75-79				19,602				19,602
80-84					16,229			16,229
85+								
ALL	18,085	21,589		19,602	16,229			19,196

	TOTAL ANNUAL BENEFIT (ACTUAL DOLLARS) BY YEARS RETIRED							
AGE	<1	1-4	5-9	10-14	15-19	20-24	25+	ALL
ALL	36,170	43,178		19,602	16,229			115,176

ELECTIVE STATE OFFICERS RETIREMENT PLAN

SURVIVORS AS OF JUNE 30, 1993

AGE	YEARS SINCE DEATH <1	1-4	5-9	10-14	15-19	20-24	25+	ALL
<50								
50-54								
55-59								
60-64								
65-69								
70-74								
75-79		1			2			3
80-84								
85+							1	1
ALL		1			2		1	4

AVERAGE ANNUAL BENEFIT

AGE	YEARS SINCE DEATH <1	1-4	5-9	10-14	15-19	20-24	25+	ALL
<50								
50-54								
55-59								
60-64								
65-69								
70-74								
75-79		18,201			10,053			12,769
80-84								
85+							8,856	8,856
ALL		18,201			10,053		8,856	11,791

AGE	TOTAL ANNUAL BENEFIT (ACTUAL DOLLARS) BY YEARS SINCE DEATH <1	1-4	5-9	10-14	15-19	20-24	25+	ALL
ALL		18,201			20,106		8,856	47,164

ELECTIVE STATE OFFICERS RETIREMENT FUND

RECONCILIATION OF MEMBERS

		Actives	Terminated Deferred Retirement	Terminated Other Non-Vested
A.	ON JUNE 30, 1992	6	6	0
B.	ADDITIONS	0	0	0
C.	DELETIONS			
	1. Service Retirement	0	(2)	0
	2. Disability	0	0	0
	3. Death	0	0	0
	4. Terminated - Deferred	0	0	0
	5. Terminated - Refund	0	0	0
	6. Terminated - Other Non-Vested	0	0	0
	7. Returned as Active	0	0	0
	8. Transferred to Other Fund	0	0	0
D.	DATA ADJUSTMENTS	0	0	0
	Vested	3		
	Non-Vested	3		
E.	TOTAL ON JUNE 30, 1993	6	4	0

		Recipients Retirement Annuitants	Recipients Disabled	Recipients Survivors
A.	ON JUNE 30, 1992	4	NA	4
B.	ADDITIONS	2	0	0
C.	DELETIONS			
	1. Service Retirement	0	0	0
	2. Death	0	0	0
	3. Annuity Expired	0	0	0
	4. Returned as Active	0	0	0
D.	DATA ADJUSTMENTS	0	0	0
E.	TOTAL ON JUNE 30, 1993	6	NA	4

TABLE 8

ELECTIVE STATE OFFICERS RETIREMENT FUND

ACTUARIAL BALANCE SHEET
(DOLLARS IN THOUSANDS)

JULY 1, 1993

		Non-Vested	Vested	Total
A.	CURRENT ASSETS (TABLE 1, F6)			$322
B.	EXPECTED FUTURE ASSETS			
	1. Present Value of Expected Future Statutory Supplemental Contributions (See Table 11)			$0
	2. Present Value of Future Normal Costs			250
	3. Total Expected Future Assets			$250
C.	TOTAL CURRENT AND EXPECTED FUTURE ASSETS			$572
D.	CURRENT BENEFIT OBLIGATIONS	Non-Vested	Vested	Total
	1. Benefit Recipients			
	a. Retirement Annuities		$1,025	$1,025
	b. Disability Benefits		0	0
	c. Surviving Spouse and Child Benefits		347	347
	2. Deferred Retirements With Future Augmentation		239	239
	3. Former Members Without Vested Rights		0	0
	4. Active Members			
	a. Retirement Annuities	29	579	608
	b. Disability Benefits	0	0	0
	c. Survivor's Benefits	16	0	16
	d. Deferred Retirements	62	237	299
	e. Refund Liability Due to Death or Withdrawal	0	14	14
	5. Total Current Benefit Obligations	$107	$2,441	$2,548
E.	EXPECTED FUTURE BENEFIT OBLIGATIONS			$391
F.	TOTAL CURRENT AND EXPECTED FUTURE BENEFIT OBLIGATIONS			$2,939
G.	CURRENT UNFUNDED ACTUARIAL LIABILITY (D5-A)			$2,226
H.	CURRENT AND FUTURE UNFUNDED ACTUARIAL LIABILITY (F-C)			$2,367

ELECTIVE STATE OFFICERS RETIREMENT FUND

DETERMINATION OF UNFUNDED ACTUARIAL ACCRUED LIABILITY (UAAL) AND SUPPLEMENTAL CONTRIBUTION RATE (DOLLARS IN THOUSANDS)

JULY 1, 1993

	Actuarial Present Value of Projected Benefits (1)	Actuarial Present Value of Future Normal Costs (2)	Actuarial Accrued Liability (3)=(1)-(2)
A. DETERMINATION OF ACTUARIAL ACCRUED LIABILITY (AAL)			
1. Active Members			
a. Retirement Annuities	$861	$79	$782
b. Disability Benefits	0	0	0
c. Survivor's Benefit	23	9	14
d. Deferred Retirements	418	120	298
e. Refunds Due to Death or Withdrawal	25	42	(17)
f. Total	$1,327	$250	$1,077
2. Deferred Retirements With Future Augmentation	239		239
3. Former Members Without Vested Rights	0		0
4. Annuitants in MPRIF	0		0
5. Recipients Not in MPRIF	1,373		1,373
6. Total	$2,939	$250	$2,689

B. DETERMINATION OF UNFUNDED ACTUARIAL ACCRUED LIABILITY (UAAL)	
1. AAL (A6)	$2,689
2. Current Assets (Table 1, F6)	322
3. UAAL (B1-B2)	$2,367
C. DETERMINATION OF SUPPLEMENTAL CONTRIBUTION RATE	
1. Present Value of Future Payrolls Through the Amortization Date of July 1, 2020	$10,079
2. Supplemental Contribution Rate (B3/C1)	23.48%

Note: If non-segregated member reserves were not counted as assets, the UAAL would be $2,689, resulting in a Supplemental Contribution Rate of 26.68%.

TABLE 10

ELECTIVE STATE OFFICERS RETIREMENT FUND

CHANGES IN UNFUNDED ACTUARIAL ACCRUED LIABILITY (UAAL)
(DOLLARS IN THOUSANDS)

YEAR ENDING JUNE 30, 1993

A.	UAAL AT BEGINNING OF YEAR		$2,046
B.	CHANGE DUE TO INTEREST REQUIREMENTS AND CURRENT RATE OF FUNDING		
	1.	Normal Cost and Expenses	$70
	2.	Contribution	(45)
	3.	Interest on A, B1 and B2	175
	4.	Total (B1+B2+B3)	$200
C.	EXPECTED UAAL AT END OF YEAR (A+B4)		$2,246
D.	INCREASE (DECREASE) DUE TO ACTUARIAL LOSSES (GAINS) BECAUSE OF EXPERIENCE DEVIATIONS FROM EXPECTED		
	1.	Salary Increases	($1)
	2.	Investment Return	28
	3.	MPRIF Mortality	0
	4.	Mortality of Other Benefit Recipients	16
	5.	Other Items	78
	6.	Total	$121
E.	UAAL AT END OF YEAR BEFORE PLAN AMENDMENTS AND CHANGES IN ACTUARIAL ASSUMPTION (C+D5)		$2,367
F.	CHANGE IN ACTUARIAL ACCRUED LIABILITY DUE TO PLAN AMENDMENTS		0
G.	CHANGE IN ACTUARIAL ACCRUED LIABILITY DUE TO CHANGES IN ACTUARIAL ASSUMPTIONS		0
H.	UAAL AT END OF YEAR (E+F+G)		$2,367

TABLE 11

ELECTIVE STATE OFFICERS RETIREMENT FUND

DETERMINATION OF CONTRIBUTION SUFFICIENCY
(DOLLARS IN THOUSANDS)

JULY 1, 1993

		Percent of Payroll	Dollar Amount
A.	STATUTORY CONTRIBUTIONS - CHAPTER 352C		
	1. Employee Contributions	9.00%	$42
	2. Employer Contributions	0.00%*	0 *
	3. Total	9.00%	$42

* Employer contributions are required to cover the portion of the benefit liabilities which are not funded by the member's accumulated contribution at the time of benefit commencement.

		Percent of Payroll	Dollar Amount
B.	REQUIRED CONTRIBUTIONS - CHAPTER 356		
	1. Normal Cost		
	a. Retirement Benefits	4.55%	$21
	b. Disability benefits	0.00%	0
	c. Survivors	0.65%	3
	d. Deferred Retirement Benefits	7.15%	33
	e. Refunds Due to Death or Withdrawal	2.38%	11
	f. Total	14.73%	$68
	2. Supplemental Contribution Amortization by July 1, 2020 of UAAL	23.48%	108
	3. Allowance for Expenses	0.43%	2
	4. Total	38.64%	$178
C.	CONTRIBUTION SUFFICIENCY (DEFICIENCY) [A3-B4]	-29.64%	($136)

Note: Projected Annual Payroll for Fiscal Year Beginning on July 1, 1993 is $462.

The deficiency amount shown above is calculated based on reported assets which include a receivable of $322 for member contributions that are held in the State's general fund. If this amount was not considered as an asset of the fund in these calculations, the deficiency would be 32.84%.

ELECTIVE STATE OFFICERS RETIREMENT PLAN

SUMMARY OF ACTUARIAL ASSUMPTIONS AND METHODS

Interest:

Pre-Retirement: 8.5% per annum

Post-Retirement: 5.0% per annum

Salary Increases: The statutory salary rate as prescribed in Chapter 345, Article I, Sec. 28, with a 2.5% increase for the 1992-93 fiscal year and 6.5% per year thereafter.

Mortality:

Pre-Retirement:
Male - 1971 Group Annuity Mortality Table
Female - 1971 Group Annuity Mortality Table male rates set back 8 years

Post-Retirement:
Male - Same as above
Female - Same as above

Post-Disability:
Male - N/A
Female - N/A

Retirement Age: Age 62 or if over age 62, one year from valuation date.

Separation: Rates based on years of service:

Year	Rate
1	0%
2	0
3	0
4	50
5	0
6	0
7	0
8	50

Disability: None

Expenses: Prior year administration expenses expressed as percentage of prior year payroll.

Return of Contributions: All employees withdrawing after eight years of service were assumed to leave their contributions on deposit and receive a deferred annuitant benefit.

ELECTIVE STATE OFFICERS RETIREMENT PLAN

SUMMARY OF ACTUARIAL ASSUMPTIONS AND METHODS

Family Composition:	85% of Members are assumed to be married. Female is three years younger than male. Each Member may have up to two dependent children depending on the Member's age. Assume first child born at Member's age 28 and second child born at Member's age 31.
Social Security:	N/A
Benefit Increases After Retirement:	Payment of earnings on retired reserves in excess of 5% accounted for by 5% post-retirement assumptions.
Actuarial Cost Method:	Entry Age Normal Actuarial Cost Method based on earnings and the date the employee entered the plan is applied to all plan benefits. Under this method, Actuarial Gains (Losses) reduce (increase) the Unfunded Actuarial Accrued Liability.
Asset Valuation Method:	Cost Value plus one-third Unrealized Gains or Losses.
Payment on the Unfunded Actuarial Accrued Liability:	A level percentage of payroll each year to the statutory amortization date assuming payroll increases of 6.5% per annum.

TABLE 13

ELECTIVE STATE OFFICERS RETIREMENT PLAN

SUMMARY OF PLAN PROVISIONS

Eligibility:	Employment as a "Constitutional Officer".
Contributions	
Member:	9% of salary.
Employer:	No specified statutory contribution rate. State must contribute an amount equal to the full annuity value at benefit commencement less accumulated member contributions.
Allowable Service:	Service while in an eligible position.
Salary:	Salary upon which Elective State Officers Retirement Plan contributions have been made.
Average Salary:	Average of the five highest successive years of salary.

RETIREMENT

Normal Retirement Benefit	
Eligibility:	Age 62 and eight years of Allowable Service.
Amount:	2.5% of Average Salary for each year of Allowable Service.
Early Retirement Benefit	
Eligibility:	Age 60 and eight years of Allowable Service.
Amount:	Normal Retirement Benefit based on Allowable Service and Average Salary at retirement date with reduction of 0.5% for each month the Member is under age 62 at time of retirement.
Form of Payment:	Life annuity
Benefit Increases:	Adjusted by MSRS to provide same increase as MPRIF.

ELECTIVE STATE OFFICERS RETIREMENT PLAN

SUMMARY OF PLAN PROVISIONS

DISABILITY	None
DEATH	
Surviving Spouse Benefit	
Eligibility:	Death while active or after retirement or with at least eight years of Allowable Service.
Amount:	Survivor's payment of 50% of the retirement benefit of the Member assuming the Member had attained age 62 and had a minimum of eight years of Allowable Service. Benefit is paid for life. A former Member's benefit is augmented the same as a Deferred Annuity to date of death before determining the portion payable to the spouse.
Surviving Dependent Child Benefit	
Eligibility:	Same as spouse's benefit.
Amount:	Benefit for first child is 25% of the retirement benefit (computed as for surviving spouse) with 12.5% for each additional child. Maximum payable (including spouse) is 100% of the retirement benefit. Benefits cease when a child marries or attains age 18 (22 if a full-time student).
Benefit Increases:	Adjusted by MSRS to provide same increase as MPRIF.
TERMINATION	
Refund of Contributions	
Eligibility:	Termination of service.
Amount:	Member's contributions with 5% interest compounded annually if termination occurred before May 16, 1989 and 6% interest compounded annually if termination occurred on or after May 16, 1989. A deferred annuity may be elected in lieu of a refund.

ELECTIVE STATE OFFICERS RETIREMENT PLAN

SUMMARY OF PLAN PROVISIONS

Deferred Benefit

Eligibility:	Eight years of Allowable Service.
Amount:	Benefit computed under law in effect at termination and increased by the following annual percentage: 0% before 7/1/79; 5% from 7/1/79 to 1/1/81; and 3% until age 55; and 5% thereafter until the annuity begins. Amount is payable as a normal or early retirement.

JUDGES RETIREMENT FUND

ACTUARIAL VALUATION REPORT

JULY 1, 1993

MILLIMAN & ROBERTSON, INC.

MILLIMAN & ROBERTSON, INC.
Actuaries and Consultants

Suite 400
15700 Bluemound Road
Brookfield, Wisconsin 53005
Telephone: 414/784-2250
Fax: 414/784-4116

November 16, 1993

Legislative Commission on
Pensions and Retirement
55 State Office Building
St. Paul, Minnesota 55155

RE: Judges Retirement Fund

Commission Members:

Pursuant to the terms of our Actuarial Services Contract, we have performed an actuarial valuation of the Fund as of July 1, 1993.

The results of our calculations are set forth in the following report, as are the actuarial assumptions upon which our calculations have been made. We have relied on the basic employee data and asset figures as submitted by the Minnesota State Retirement System.

On the basis of the foregoing, we hereby certify that, to the best of our knowledge and belief, this report is complete and accurate and has been prepared in accordance with the requirements of Section 356.215, Minnesota Statutes, and the requirements of the Standards for Actuarial Work, adopted by the Commission on July 8, 1992.

Respectfully submitted,

Thomas K. Custis

Thomas K. Custis, F.S.A., M.A.A.A.
Consulting Actuary

William V. Hogan

William V. Hogan, F.S.A., M.A.A.A.
Actuary

TKC/WVH/bh

JUDGES RETIREMENT FUND

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JUDGES RETIREMENT FUND

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JUDGES RETIREMENT FUND

REPORT HIGHLIGHTS
(DOLLARS IN THOUSANDS)

	07/01/92 Valuation	07/01/93 Valuation
A. CONTRIBUTIONS (Table 11)		
1. Statutory Contributions - Chapter 490 % of Payroll	28.38%	28.36%
2. Required Contributions - Chapter 356 % of Payroll	26.59%	26.29%
3. Sufficiency (Deficiency): (A.1. - A.2.)	1.79%	2.07%
B. FUNDING RATIOS		
1. Accrued Benefit Funding Ratio		
a. Current Assets (Table 1)	$37,768	$44,156
b. Current Benefit Obligations (Table 8)	$81,153	$87,432
c. Funding Ratio: (a/b)	46.54%	50.50%
2. Accrued Liability Funding Ratio		
a. Current Assets (Table 1)	$37,768	$44,156
b. Actuarial Accrued Liability (Table 9)	$83,969	$90,509
c. Funding Ratio: (a/b)	44.98%	48.79%
3. Projected Benefit Funding Ratio (Table 8)		
a. Current and Expected Future Assets	$131,573	$140,830
b. Current and Expected Future Benefit Obligations	$122,899	$130,668
c. Funding Ratio: (a/b)	107.06%	107.78%
C. PLAN PARTICIPANTS		
1. Active Members		
a. Number (Table 3)	271	267
b. Projected Annual Earnings	$22,181	$22,469
c. Average Annual Earnings (Actual $)	$81,849	$84,153
d. Average Age	53.4	53.1
e. Average Service	10.6	10.6
2. Others		
a. Service Retirements (Table 4)	111	123
b. Disability Retirements (Table 5)	9	8
c. Survivors (Table 6)	66	69
d. Deferred Retirements (Table 7)	4	6
e. Terminated Other Non-vested (Table 7)	0	0
f. Total	190	206

JUDGES RETIREMENT FUND

COMMENTARY

Purpose

The purpose of this valuation is to determine the financial status of the Plan. In order to achieve this purpose, an actuarial valuation is made at the beginning of each fiscal year as required by Section 356.215 of Minnesota Statutes.

Report Highlights

The financial status of the Plan can be measured by three different funding ratios:

- The Accrued Benefit Funding Ratio is a measure of current funding status and, when viewed over a period of years, presents a view of the funding progress. It is based upon benefits which have been earned by service to the valuation date. This year's ratio is 50.50%. The corresponding ratio for the prior year was 46.54%.

- The Accrued Liability Funding Ratio is also a measure of funding status and funding progress. It is based on the actuarial cost method that has historically been used by the State. For 1993 the ratio is 48.79%, which is an increase from the 1992 value of 44.98%.

- The Projected Benefit Funding Ratio is a measure of the adequacy or deficiency in the contribution level. This year's ratio of 107.78% verifies that the current statutory contributions are sufficient.

Asset Information (Tables 1 and 2)

Minnesota Statutes require that the asset value used for actuarial purposes

recognize only a third of the unrealized gains and losses. This requirement exists because market values (which include all unrealized gain and losses) are typically volatile and can produce erratic changes in the contribution requirements from year to year.

The calculation of the Actuarial Value of Assets is shown in Table 1 on lines F1 to F6. It combines the cost value of the Assets Available for Benefits and one-third of the difference between the market value and cost value of those assets.

The term "Actuarial Value of Assets" is used to indicate that the value was determined for use in this actuarial valuation. Since Minnesota Statutes refer to this value as "Current Assets", the latter phrase will be used in the remainder of this report.

This Plan participates in the Minnesota Post Retirement Investment Fund (i.e. MPRIF). After the MPRIF liability has been calculated for each participating Plan, the State Board of Investments, (i.e. SBI), will determine each Plan's portion of the excess earnings for the January benefit increase as well as the Plan's allocated market share of MPRIF.

Actuarial Balance Sheet (Table 8)

An actuarial balance sheet provides a method for evaluating current and future levels of funding.

The Current Benefit Obligation used to measure current funding levels is calculated in accordance with Statement No. 5 of the Governmental Accounting Standards Board (GASB). Those requirements are:

- For Active Members - salary and service are projected to retirement to determine benefits for each member and the ratio of credited service to total service establishes the portion of the projected benefit to be used in calculating the current funding level.

o For Non-active Members - the discounted value of benefits, including augmentation in cases where benefits have not commenced.

GASB Disclosure

The Current Benefit Obligation amounts in Table 8 are required to be disclosed by Statement No. 5 of the Governmental Accounting Standards Board (GASB). However, Statement No. 5 uses the terms "Actuarial Present Value of Credited Projected Benefits" and "Pension Benefit Obligation" rather than "Current Benefit Obligation".

The July 1, 1993 Pension Benefit Obligation reported in Table 8 is reformatted for GASB reporting purposes in the following table:

Retirees and beneficiaries currently receiving benefits and terminated employees not yet receiving benefits	$49,473,000
Current Employees	
Accumulated employee contributions including allocated investment income	$14,887,000
Employer-financed vested	14,608,000
Employer-financed nonvested	8,464,000
Total Pension Benefit Obligation	$87,432,000
Net Assets Available for Benefits at Cost	$44,106,000
Total Benefit Obligation less Assets	$43,326,000
Funded Ratio	50.45%

Actuarial Cost Method (Table 9)

The approach used by the State of Minnesota to determine contribution sufficiency is the Entry Age Normal Actuarial Cost Method. The primary characteristic of this method is that it allocates costs as a level percentage of payroll.

A comparison of this actuarial method (Table 9) to the actuarial balance sheet (Table 8) illustrates the two techniques for allocating liabilities of active Members to past and future. As noted in the prior section, the balance sheet allocates benefits and the corresponding liabilities, on the basis of service. The method used in Table 9 allocates liabilities so that the cost each year will be a constant percentage of payroll. Both approaches, however, calculate the value of all future benefits the same way (see line F of Table 8 and line A6, column 1, of Table 9).

An Unfunded Actuarial Accrued Liability is computed under the Entry Age Normal Actuarial Cost Method by comparing the liabilities allocated to past service (Actuarial Accrued Liability) to the Current Assets. This amount, line B3, is funded over the remaining years to the amortization date by a series of payments that remain a constant percentage of payroll each year.

The payments will increase 6.5% each year because that is the assumed rate of increase in payroll. Although the payment schedule will be adequate to amortize the existing unfunded, the lower payments in the earlier years will not be sufficient to cover the interest on the unfunded liability. After a few years, the annual payment will cover the interest and also repay a portion of the unfunded.

Sources of Actuarial Gains and Losses (Table 10)

The assumptions used in making the calculations using the Entry Age Normal Actuarial Cost Method are based on long-term expectations. Each year the actual experience will deviate from the long-term expectation. For a detailed analysis of the major components, refer to Table 10.

Contribution Sufficiciency (Table 11)

This report determines the adequacy of Statutory Contributions by comparing the Statutory Contributions to the Required Contributions.

The Required Contributions, set forth in Chapter 356, consist of:

- o Normal costs based on the Entry Age Normal Actuarial Cost Method.
- o A Supplemental Contribution for amortizing any Unfunded Actuarial Accrued Liability.
- o An Allowance for Expenses.

Table 11 shows the Plan has a contribution sufficiency since the Statutory Contribution Rate is 28.36% compared to the Required Contribution Rate of 26.29%.

Changes in Actuarial Assumptions

The actuarial assumptions listed in Table 12 are the same as those used in the prior valuation, however the allowance for expenses as part of the required contributions of Chapter 356 in Table 11 only reflect administrative expenses and not investment expenses. This reduced the required contribution by approximately .05% of payroll.

Changes in Plan Provisions

Basic retirement annuity will commence one year after disability rather than two years after disability.

The methodology to determine annual postretirement benefit increases was modified to incorporate one layer relating to the Consumer Price Index and a second layer relating to investment performance on a smoothed basis. Over the long term, the new methodology is designed to continue to provide increases based on the excess of fund earnings over the postretirement interest assumption (5.0%). No changes have been incorporated into our valuation methods and assumptions

JUDGES RETIREMENT FUND

ACCOUNTING BALANCE SHEET
(DOLLARS IN THOUSANDS)

JULY 1, 1993

			Market Value	Cost Value
A.	ASSETS			
	1.	Cash, Equivalents, Short-term Securities	$1,516	$1,516
	2.	Investments		
		a. Fixed Income	2,066	2,091
		b. Equity	4,778	4,544
		c. Real Estate	283	342
	3.	Equity in Minnesota Post-Retirement Investment Fund (MPRIF)	36,155	36,155
	4.	Other	74	74
B.	TOTAL ASSETS		$44,872	$44,722
C.	AMOUNTS CURRENTLY PAYABLE		$616	$616
D.	ASSETS AVAILABLE FOR BENEFITS			
	1.	Member Reserves	$6,558	$6,558
	2.	Employer Reserves	(11,008)	(11,158)
	3.	MPRIF Reserves	36,155	36,155
	4.	Non-MPRIF Reserves	12,551	12,551
	5.	Total Assets Available for Benefits	$44,256	$44,106
E.	TOTAL AMOUNTS CURRENTLY PAYABLE AND ASSETS AVAILABLE FOR BENEFITS		$44,872	$44,722

F.	DETERMINATION OF ACTUARIAL VALUE OF ASSETS			
	1.	Cost Value of Assets Available for Benefits (D5)		$44,106
	2.	Market Value (D5)	$44,256	
	3.	Cost Value (D5)	44,106	
	4.	Market Over Cost: (F2-F3)	$150	
	5.	1/3 of Market Over Cost: (F4)/3		50
	6.	Actuarial Value of Assets (F1+F5) (Same as "Current Assets")		$44,156

TABLE 2

JUDGES RETIREMENT FUND

CHANGE IN ASSETS AVAILABLE FOR BENEFITS
(DOLLARS IN THOUSANDS)

YEAR ENDING JUNE 30, 1993

		Market Value	Cost Value
A.	ASSETS AVAILABLE AT BEGINNING OF PERIOD	$37,765	$37,769
B.	OPERATING REVENUES		
	1. Member Contributions	$1,409	$1,409
	2. Employer Contributions	4,845	4,845
	3. Investment Income	660	660
	4. MPRIF Income	2,898	2,898
	5. Net Realized Gain (Loss)	295	295
	6. Other	1,444	1,444
	7. Net Change in Unrealized Gain (Loss)	154	0
	8. Total Revenue	$11,705	$11,551
C.	OPERATING EXPENSES		
	1. Service Retirements	$5,144	$5,144
	2. Disability Benefits	0	0
	3. Survivor Benefits	0	0
	4. Refunds	0	0
	5. Investment Fees	11	11
	6. Administrative Expenses	37	37
	7. Other	22	22
	8. Total Disbursements	$5,214	$5,214
D.	OTHER CHANGES IN RESERVES	0	0
E.	ASSETS AVAILABLE AT END OF PERIOD	$44,256	$44,106

JUDGES RETIREMENT FUND

ACTIVE MEMBERS AS OF JUNE 30, 1993

AGE	<1	1-4	5-9	10-14	15-19	20-24	25-29	30+	ALL
	YEARS OF SERVICE								
<25									
25-29									
30-34									
35-39	1	2							3
40-44	4	15	14	4					37
45-49	4	21	21	19	4				69
50-54	2	10	12	16	10	1			51
55-59			9	6	11	11	4	1	42
60-64		4	5	4	6	6	2		27
65+		2	5	7	5	13	4	2	38
ALL	11	54	66	56	36	31	10	3	267

AVERAGE ANNUAL EARNINGS

AGE	<1	1-4	5-9	10-14	15-19	20-24	25-29	30+	ALL
	YEARS OF SERVICE								
<25									
25-29									
30-34									
35-39	83,495	83,495							83,495
40-44	83,495	83,858	84,571	83,495					84,049
45-49	83,495	84,014	83,754	83,495	84,857				83,811
50-54	88,945	83,495	83,495	83,835	84,040	83,495			83,922
55-59			83,495	83,495	84,981	83,874	83,495	83,495	83,984
60-64		84,857	83,495	84,857	85,311	83,495	83,495		84,302
65+		83,495	88,653	86,609	85,675	83,914	83,495	86,220	85,321
ALL	84,486	83,899	84,196	84,079	84,857	83,805	83,495	85,312	84,153

AGE	<1	1-4	5-9	10-14	15-19	20-24	25-29	30+	ALL
	PRIOR FISCAL YEAR EARNINGS (IN THOUSANDS) BY YEARS OF SERVICE								
ALL	929	4,530	5,556	4,708	3,054	2,597	834	255	22,468

JUDGES RETIREMENT FUND

SERVICE RETIREMENTS AS OF JUNE 30, 1993

	YEARS RETIRED							
AGE	<1	1-4	5-9	10-14	15-19	20-24	25+	ALL
<50								
50-54								
55-59								
60-64	3	1						4
65-69	8	16	4					28
70-74	4	18	13	2				37
75-79			15	12	1			28
80-84				9	5			14
85+					9	1	2	12
ALL	15	35	32	23	15	1	2	123

AVERAGE ANNUAL BENEFIT

	YEARS RETIRED							
AGE	<1	1-4	5-9	10-14	15-19	20-24	25+	ALL
<50								
50-54								
55-59								
60-64	24,335	33,336						26,585
65-69	40,088	29,028	25,750					31,720
70-74	36,625	28,696	29,497	22,999				29,527
75-79			32,786	43,522	29,030			37,253
80-84				33,814	24,024			30,318
85+					32,535	23,105	36,968	32,488
ALL	36,014	28,980	30,570	37,939	29,464	23,105	36,968	32,068

	TOTAL ANNUAL BENEFIT (IN THOUSANDS) BY YEARS RETIRED							
AGE	<1	1-4	5-9	10-14	15-19	20-24	25+	ALL
ALL	540	1,014	978	872	441	23	73	3,944

JUDGES RETIREMENT FUND

SURVIVORS AS OF JUNE 30, 1993

AGE	YEARS SINCE DEATH <1	1-4	5-9	10-14	15-19	20-24	25+	ALL
<50			4					4
50-54		1						1
55-59			1					1
60-64		1						1
65-69	1	3	2	1	4		1	12
70-74		1	2	3	1	1	1	9
75-79	1		1	2	3			7
80-84	1	2	1	1	3	4	4	16
85+		1	2		5	3	7	18
ALL	3	9	13	7	16	8	13	69

AVERAGE ANNUAL BENEFIT

AGE	YEARS SINCE DEATH <1	1-4	5-9	10-14	15-19	20-24	25+	ALL
<50			22,783					22,783
50-54		18,204						18,204
55-59			17,278					17,278
60-64		9,017						9,017
65-69	19,596	22,637	16,931	20,580	10,525		18,484	16,878
70-74		29,007	28,077	24,408	6,036	18,484	36,630	24,393
75-79	26,675		8,138	26,993	15,978			19,533
80-84	13,993	12,967	18,484	25,565	10,890	20,345	9,286	14,698
85+		23,328	18,484		18,903	13,237	15,595	16,872
ALL	20,088	19,267	20,155	24,765	13,953	17,447	15,494	17,874

AGE	TOTAL ANNUAL BENEFIT (IN THOUSANDS) BY YEARS SINCE DEATH <1	1-4	5-9	10-14	15-19	20-24	25+	ALL
ALL	60	173	262	173	223	139	201	1,233

TABLE 6

JUDGES RETIREMENT FUND

DISABILITY RETIREMENTS AS OF JUNE 30, 1993

	YEARS DISABLED							
AGE	<1	1-4	5-9	10-14	15-19	20-24	25+	ALL
<50								
50-54								
55-59			1					1
60-64								
65-69		1	1		1			3
70-74			1					1
75-79			2		1			3
80-84								
85+								
ALL		1	5		2			8

AVERAGE ANNUAL BENEFIT

	YEARS DISABLED							
AGE	<1	1-4	5-9	10-14	15-19	20-24	25+	ALL
<50								
50-54								
55-59			20,495					20,495
60-64								
65-69		31,321	38,251		27,110			32,227
70-74			53,348					53,348
75-79			26,357		20,706			24,473
80-84								
85+								
ALL		31,321	32,962		23,908			30,493

	TOTAL ANNUAL BENEFIT (ACTUAL DOLLARS) BY YEARS DISABLED							
AGE	<1	1-4	5-9	10-14	15-19	20-24	25+	ALL
ALL		31,321	164,810		47,816			243,944

JUDGES RETIREMENT FUND

RECONCILIATION OF MEMBERS

		Actives	Terminated: Deferred Retirement	Terminated: Other Non-Vested
A.	ON JUNE 30, 1992	271	4	0
B.	ADDITIONS	13	2	0
C.	DELETIONS			
	1. Service Retirement	(15)	0	0
	2. Disability	0	0	0
	3. Death	0	0	0
	4. Terminated - Deferred	(1)	0	0
	5. Terminated - Refund	0	0	0
	6. Terminated - Other Non-Vested	0	0	0
	7. Returned as Active	0	0	0
	8. Transferred to Other Fund	0	0	0
D.	DATA ADJUSTMENTS	(1)	0	0
	Vested	194		
	Non-Vested	73		
E.	TOTAL ON JUNE 30, 1993	267	6	0

		Recipients: Retirement Annuitants	Recipients: Disabled	Recipients: Survivors
A.	ON JUNE 30, 1992	111	9	66
B.	ADDITIONS	15	0	3
C.	DELETIONS			
	1. Service Retirement	0	0	0
	2. Death	(3)	(1)	(1)
	3. Annuity Expired	0	0	0
	4. Returned as Active	0	0	0
D.	DATA ADJUSTMENTS	0	0	1
E.	TOTAL ON JUNE 30, 1993	123	8	69

JUDGES RETIREMENT FUND

ACTUARIAL BALANCE SHEET
(DOLLARS IN THOUSANDS)

JULY 1, 1993

		Non-Vested	Vested	Total
A.	CURRENT ASSETS (TABLE 1, F6)			$44,156
B.	EXPECTED FUTURE ASSETS			
	1. Present Value of Expected Future Statutory Supplemental Contributions			$56,515
	2. Present Value of Future Normal Costs			40,159
	3. Total Expected Future Assets			$96,674
C.	TOTAL CURRENT AND EXPECTED FUTURE ASSETS			$140,830
D.	CURRENT BENEFIT OBLIGATIONS	Non-Vested	Vested	Total
	1. Benefit Recipients			
	a. Retirement Annuities		$34,783	$34,783
	b. Disability Benefits		2,718	2,718
	c. Surviving Spouse and Child Benefits		11,205	11,205
	2. Deferred Retirements With Future Augmentation		767	767
	3. Former Members Without Vested Rights		0	0
	4. Active Members			
	a. Retirement Annuities	1,875	29,244	31,119
	b. Disability Benefits	2,109	0	2,109
	c. Survivor's Benefits	4,480	0	4,480
	d. Deferred Retirements	0	0	0
	e. Refund Liability Due to Death or Withdrawal	0	251	251
	5. Total Current Benefit Obligations	$8,464	$78,968	$87,432
E.	EXPECTED FUTURE BENEFIT OBLIGATIONS			$43,236
F.	TOTAL CURRENT AND EXPECTED FUTURE BENEFIT OBLIGATIONS			$130,668
G.	CURRENT UNFUNDED ACTUARIAL LIABILITY (D5-A)			$43,276
H.	CURRENT AND FUTURE UNFUNDED ACTUARIAL LIABILITY (F-C)			($10,162)

JUDGES RETIREMENT FUND

DETERMINATION OF UNFUNDED ACTUARIAL ACCRUED LIABILITY (UAAL) AND SUPPLEMENTAL CONTRIBUTION RATE (DOLLARS IN THOUSANDS)

JULY 1, 1993

	Actuarial Present Value of Projected Benefits (1)	Actuarial Present Value of Future Normal Costs (2)	Actuarial Accrued Liability (3)=(1)-(2)
A. DETERMINATION OF ACTUARIAL ACCRUED LIABILITY (AAL)			
1. Active Members			
a. Retirement Annuities	$67,166	$31,526	$35,640
b. Disability Benefits	4,426	2,729	1,697
c. Survivor's Benefit	9,102	5,589	3,513
d. Deferred Retirements	0	0	0
e. Refunds Due to Death or Withdrawal	501	315	186
f. Total	$81,195	$40,159	$41,036
2. Deferred Retirements With Future Augmentation	767		767
3. Former Members Without Vested Rights	0		0
4. Annuitants in MPRIF	36,155		36,155
5. Recipients Not in MPRIF	12,551		12,551
6. Total	$130,668	$40,159	$90,509

B. DETERMINATION OF UNFUNDED ACTUARIAL ACCRUED LIABILITY (UAAL)	
1. AAL (A6)	$90,509
2. Current Assets (Table 1, F6)	44,156
3. UAAL (B1-B2)	$46,353
C. DETERMINATION OF SUPPLEMENTAL CONTRIBUTION RATE	
1. Present Value of Future Payrolls Through the Amortization Date of July 1, 2020	$490,584
2. Supplemental Contribution Rate (B3/C1)	9.45%

TABLE 10

JUDGES RETIREMENT FUND

CHANGES IN UNFUNDED ACTUARIAL ACCRUED LIABILITY (UAAL)
(DOLLARS IN THOUSANDS)

YEAR ENDING JUNE 30, 1993

A.	UAAL AT BEGINNING OF YEAR	$46,201
B.	CHANGE DUE TO INTEREST REQUIREMENTS AND CURRENT RATE OF FUNDING	
	1. Normal Cost and Expenses	$3,779
	2. Contribution	(6,253)
	3. Interest on A, B1 and B2	3,822
	4. Total (B1+B2+B3)	$1,348
C.	EXPECTED UAAL AT END OF YEAR (A+B4)	$47,549
D.	INCREASE (DECREASE) DUE TO ACTUARIAL LOSSES (GAINS) BECAUSE OF EXPERIENCE DEVIATIONS FROM EXPECTED	
	1. Salary Increases	($77)
	2. Investment Return	(383)
	3. MPRIF Mortality	568
	4. Mortality of Other Benefit Recipients	95
	5. Other Items	(1,623)
	6. Total	($1,420)
E.	UAAL AT END OF YEAR BEFORE PLAN AMENDMENTS AND CHANGES IN ACTUARIAL ASSUMPTION (C+D5)	$46,129
F.	CHANGE IN ACTUARIAL ACCRUED LIABILITY DUE TO PLAN AMENDMENTS	224
G.	CHANGE IN ACTUARIAL ACCRUED LIABILITY DUE TO CHANGES IN ACTUARIAL ASSUMPTIONS	0
H.	UAAL AT END OF YEAR (E+F+G)	$46,353

TABLE 11

JUDGES RETIREMENT FUND

DETERMINATION OF CONTRIBUTION SUFFICIENCY
(DOLLARS IN THOUSANDS)

JULY 1, 1993

			Percent of Payroll	Dollar Amount
A.	STATUTORY CONTRIBUTIONS - CHAPTER 490			
	1.	Employee Contributions	6.36%	$1,429
	2.	Employer Contributions	22.00%	4,943
	3.	Total	28.36%	$6,372
B.	REQUIRED CONTRIBUTIONS - CHAPTER 356			
	1.	Normal Cost		
		a. Retirement Benefits	13.18%	$2,962
		b. Disability benefits	1.04%	233
		c. Survivors	2.26%	508
		d. Deferred Retirement Benefits	0.00%	0
		e. Refunds Due to Death or Withdrawal	0.19%	43
		f. Total	16.67%	$3,746
	2.	Supplemental Contribution Amortization by July 1, 2020 of UAAL	9.45%	2,123
	3.	Allowance for Expenses	0.17%	38
	4.	Total	26.29%	$5,907
C.	CONTRIBUTION SUFFICIENCY (DEFICIENCY) [A3-B4]		2.07%	$465

Note: Projected Annual Payroll for Fiscal Year Beginning on July 1, 1993 is $22,469.

JUDGES RETIREMENT FUND

SUMMARY OF ACTUARIAL ASSUMPTIONS AND METHODS

Interest:	**Pre-Retirement:** 8.5% per annum **Post-Retirement:** 5.0% per annum
Salary Increases:	Statutory salary rate as prescribed in Chapter 345, Article I, Sec. 28, with a 3% increase for the 1992-93 fiscal year and 6.5% per year thereafter.
Mortality:	**Pre-Retirement:** Male - 1971 Group Annuity Mortality Table Female - 1971 Group Annuity Mortality Table male rates set back eight years **Post-Retirement:** Male - Same as above Female - Same as above **Post-Disability:** Male - Same as above Female - Same as above
Retirement Age:	Judges: Age 68 or, if over age 68, one year from the valuation date. Supreme Court Justices in Pre-1974 Plan: Latest of age 70, 12 years of service, or one year from valuation date.
Separation:	None
Disability:	Rates adopted by MSRS based on actual experience, most recently adjusted in 1979, as shown in rate table.
Expenses:	Prior year administration expenses expressed as percentage of prior year payroll.
Return of Contributions:	N/A
Family Composition:	Marital status as indicated by data. Female is three years younger than male.

JUDGES RETIREMENT FUND

SUMMARY OF ACTUARIAL ASSUMPTIONS AND METHODS

Social Security:	N/A
Benefit Increases After Retirement:	Payment of earnings on retired reserves in excess of 5% accounted for by 5% post-retirement assumptions.
Actuarial Cost Method:	Entry Age Normal Actuarial Cost Method based on earnings and the date the employee entered the plan is applied to all plan benefits. Under this method, Actuarial Gains (Losses) reduce (increase) the Unfunded Actuarial Accrued Liability.
Asset Valuation Method:	Cost Value plus one-third Unrealized Gains or Losses.
Payment on the Unfunded Actuarial Accrued Liability:	A level percentage of payroll each year to the statutory amortization date assuming payroll increases of 6.5% per annum.

TABLE 12
(Continued)

JUDGES RETIREMENT FUND

SUMMARY OF ACTUARIAL ASSUMPTIONS AND METHODS

Separation Expressed as Number of Occurrences Per 10,000:

	Death		Withdrawal		Disability		Retirement	
Age	Male	Female	Male	Female	Male	Female	Male	Female
20	5	4	0	0	0	0	0	0
21	5	4	0	0	0	0	0	0
22	5	4	0	0	0	0	0	0
23	6	4	0	0	0	0	0	0
24	6	4	0	0	0	0	0	0
25	6	5	0	0	0	0	0	0
26	7	5	0	0	0	0	0	0
27	7	5	0	0	0	0	0	0
28	7	5	0	0	0	0	0	0
29	8	5	0	0	0	0	0	0
30	8	5	0	0	2	0	0	0
31	9	6	0	0	2	0	0	0
32	9	6	0	0	2	0	0	0
33	10	6	0	0	2	0	0	0
34	10	7	0	0	2	0	0	0
35	11	7	0	0	2	1	0	0
36	12	7	0	0	2	1	0	0
37	13	8	0	0	2	1	0	0
38	14	8	0	0	2	1	0	0
39	15	9	0	0	2	2	0	0
40	16	9	0	0	2	2	0	0
41	18	10	0	0	2	2	0	0
42	20	10	0	0	2	4	0	0
43	23	11	0	0	3	4	0	0
44	26	12	0	0	3	4	0	0
45	29	13	0	0	3	5	0	0
46	33	14	0	0	5	6	0	0
47	38	15	0	0	7	7	0	0
48	42	16	0	0	9	7	0	0
49	47	18	0	0	11	10	0	0

JUDGES RETIREMENT FUND

SUMMARY OF ACTUARIAL ASSUMPTIONS AND METHODS

Separation Expressed as Number of Occurrences Per 10,000:

	Death		Withdrawal		Disability		Retirement	
Age	Male	Female	Male	Female	Male	Female	Male	Female
50	53	20	0	0	14	10	0	0
51	59	23	0	0	16	12	0	0
52	65	26	0	0	20	14	0	0
53	71	29	0	0	24	16	0	0
54	78	33	0	0	28	20	0	0
55	85	38	0	0	34	24	0	0
56	93	42	0	0	40	30	0	0
57	100	47	0	0	46	36	0	0
58	109	53	0	0	56	44	0	0
59	119	59	0	0	66	52	0	0
60	131	65	0	0	76	62	0	0
61	144	71	0	0	90	74	0	0
62	159	78	0	0	110	88	0	0
63	174	85	0	0	136	104	0	0
64	192	93	0	0	174	122	0	0
65	213	100	0	0	0	0	0	0
66	236	109	0	0	0	0	0	0
67	263	119	0	0	0	0	0	0
68	292	131	0	0	0	0	10,000	10,000
69	324	144	0	0	0	0	0	0
70	361	159	0	0	0	0	0	0

TABLE 13
BASIC

JUDGES RETIREMENT FUND

SUMMARY OF PLAN PROVISIONS

Eligibility:	A judge or justice of any court who is not covered under the Social Security Act. If the Member was active prior to 1/1/74, benefits may be computed according to provisions of the prior plan.
Contributions	
Member:	8.15% of salary. Members who were active prior to 1/1/74 may contribute 4% to a special survivor retirement account.
Employer:	22% of salary.
Allowable Service:	Service as a judge. Half credit is received for service not compensated at an annual salary or for service while entitled to practice law. Credit may also be earned for uncredited judicial service if the appropriate employee contributions, with interest, are made.
Salary:	Salary set by law.
Average Salary:	Average of the five highest years of salary of the last 10 years prior to retirement.

RETIREMENT

Normal Retirement Benefit	
Eligibility:	Age 65 and five years of Allowable Service. Age 70.
Amount:	2.5% of average salary for each year of Allowable Service prior to 7/1/80 and 3% of Average Salary for each year of Allowable Service after 6/30/80. Maximum benefit of 65% of salary for the 12 months preceding retirement.

JUDGES RETIREMENT FUND

SUMMARY OF PLAN PROVISIONS

Early Retirement Benefit

Eligibility:	Age 62 and five years of Allowable Service.
Amount:	Normal Retirement Benefit based on Allowable Service and Average Salary at retirement date with reduction of 0.5% for each month the Member is under age 65 at time of retirement.

Form of Payment:	Life annuity. Actuarial equivalent options are: - 50% or 100% joint and survivor - 50% or 100% bounce back joint and survivor - 10 or 15 year certain and life
Benefit Increases:	Benefits may be increased each January 1 depending on the investment performance of the Minnesota Post Retirement Investment Fund (MPRIF).

DISABILITY

Disability Benefit

Eligibility:	Permanent inability to perform the functions of judge.
Amount:	No benefit is paid by the Fund. Instead salary is continued for one year but not beyond age 70. Employee contributions continue and Allowable Service is earned.

Retirement After Disability

Eligibility:	Member is still disabled after salary payments cease after one year or at age 70, if earlier.
Amount:	Larger of 25% of Average Salary or the Normal Retirement Benefit, without reduction.
Benefit Increases:	Same as for retirement.

TABLE 13
BASIC
(Continued)

JUDGES RETIREMENT FUND

SUMMARY OF PLAN PROVISIONS

DEATH

Survivor's Benefit

Eligibility:	Active or disabled Member dies before retirement or a former Member eligible for a deferred annuity dies.
Amount:	Larger of 25% of Average Salary or 60% of Normal Retirement Benefit had the Member retired at date of death. Benefit paid to spouse for life. If no spouse, benefit is paid to surviving dependent children until child marries, dies, or attains age 18 (age 22 if full-time student).
Benefit Increases:	Same as for retirement.

Prior Survivors' Benefit

Eligibility:	Retired Member dies who did not elect an optional annuity and such Member retired prior to 1/1/74 or was in office prior to 1/1/74 and continued contributing 4% of pay to provide this post-retirement death benefit.
Amount:	50% of the retired Member's benefit continues to the surviving spouse if married three years. Benefit begins immediately unless spouse is not yet age 40 and continues to death.
Benefit Increases:	Adjusted by MSRS to provide same increase as MPRIF.

Refund of Contributions

Eligibility:	Member dies prior to retirement or former Member eligible for a deferred annuity dies and survivors' benefits are not payable.
Amount:	Member's contributions with 5% interest.

JUDGES RETIREMENT FUND

SUMMARY OF PLAN PROVISIONS

TERMINATION

Refund of Contributions

Eligibility:	Termination of service as a judge.
Amount:	Member's contributions with 5% interest. A deferred annuity may be elected in lieu of a refund.

Deferred Benefit

Eligibility:	Five years of Allowable Service.
Amount:	Benefit computed under law in effect at termination. Amount is payable as a normal or early retirement annuity.

SIGNIFICANT CHANGES:

Basic plan retirement annuity will commence one year after disability rather than two years after disability.

JUDGES RETIREMENT FUND

SUMMARY OF PLAN PROVISIONS

Eligibility:	A judge or justice of any court who is covered under the Social Security Act.
Contributions	
Member:	6.27% of salary. (Amended 1992)
Employer:	22% of salary.
Allowable Service:	Service as a judge. Half credit is received for service not compensated at an annual salary or for service while entitled to practice law. Credit may also be earned for uncredited judicial service if the appropriate employee contributions, with interest, are made.
Salary:	Salary set by law.
Average Salary:	Average of the five highest years of salary of the last 10 years prior to retirement.

RETIREMENT

Normal Retirement Benefit	
Eligibility:	Age 65 and five years of Allowable Service. Age 70.
Amount:	2.5% of average salary for each year of Allowable Service prior to 7/1/80 and 3% of Average Salary for each year of Allowable Service after 6/30/80. Maximum benefit of 65% of salary for the 12 months preceding retirement. (Amended 1992)
Early Retirement Benefit	
Eligibility:	Age 62 and five years of Allowable Service.
Amount:	Normal Retirement Benefit based on Allowable Service and Average Salary at retirement date with reduction of 0.5% for each month the Member is under age 65 at time of retirement.

JUDGES RETIREMENT FUND

SUMMARY OF PLAN PROVISIONS

Form of Payment:	Life annuity: - 50% or 100% joint and survivor - 50% or 100% bounce back joint and survivor - 10 or 15 year certain and life
Benefit Increases:	Benefits may be increased each January 1 depending on the investment performance of the Minnesota Post Retirement Investment Fund (MPRIF).

DISABILITY

Disability Benefit

Eligibility:	Permanent inability to perform the functions of judge.
Amount:	No benefit is paid by the Fund. Instead salary is continued for one year but not beyond age 70. Employee contributions continue and Allowable Service is earned.

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Eligibility:	Member is still disabled after salary payments cease after one year or at age 70, if earlier.
Amount:	Larger of 25% of Average Salary or the Normal Retirement Benefit, without reduction.
Benefit Increases:	Same as for retirement.

JUDGES RETIREMENT FUND

SUMMARY OF PLAN PROVISIONS

DEATH

Survivor's Benefit

Eligibility:	Active or disabled Member dies before retirement or a former Member eligible for a deferred annuity dies.
Amount:	Larger of 25% of Average Salary or 60% of Normal Retirement Benefit had the Member retired at date of death. Benefit paid to spouse for life. If no spouse, benefit is paid to surviving dependent children until child marries, dies, or attains age 18 (age 22 if full-time student).
Benefit Increases:	Same as for retirement.

Refund of Contributions

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Amount:	Member's contributions with 5% interest.

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JUDGES RETIREMENT FUND

SUMMARY OF PLAN PROVISIONS

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Basic plan retirement annuity will commence one year after disability rather than two years after disability.