
THE REPORT OF THE
JUNE 30, 2002 ACTUARIAL VALUATION
OF THE
NON-TEACHER SCHOOL EMPLOYEE
RETIREMENT SYSTEM OF MISSOURI

Gabriel, Roeder, Smith & Company



Actuaries & Consultants



GABRIEL, ROEDER, SMITH & COMPANY
Consultants & Actuaries

3017 Douglas Boulevard • Suite 300 • Roseville, CA 95661 • 916-774-7580

October 18, 2002

Board of Trustees
Non-Teacher School Employee Retirement System of Missouri
3210 W. Truman Blvd.
Jefferson City, MO. 65109

Dear Members of the Board:

We are pleased to present the report of the actuarial valuation of the Non-Teacher School Employee Retirement System of Missouri ("NTRS") as of June 30, 2002.

This valuation provides data on the funding status of NTRS. The results of the valuation show that the current contribution level will no longer fund the current benefits of NTRS within the framework of your funding policy.

This valuation is based on the provisions of NTRS in effect as of June 30, 2002, data on the NTRS membership and information on the asset value of the trust fund. All member data and asset information were provided by NTRS staff. While certain checks for reasonableness were performed, the data was used unaudited.

The actuarial assumptions and actuarial cost method used in this valuation are those used in the prior actuarial valuation of NTRS.

To the best of our knowledge, this actuarial statement is complete and accurate, and has been prepared in accordance with generally accepted actuarial principles and practice.

Respectfully submitted,

Gabriel, Roeder, Smith & Company

Norman S. Losk, F.S.A.
Senior Consultant

J. Christian Conradi, A.S.A.
Senior Consultant

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SUMMARY OF THE VALUATION

PURPOSES OF THE ACTUARIAL VALUATION

At your request we have performed the actuarial valuation of the Non-Teacher School Employee Retirement System of Missouri ("NTRS") as of June 30, 2002.

The purposes of an actuarial valuation are as follows:

- To determine the funding status of NTRS as of the valuation date,
- To determine whether a contribution level of 10% of pay will fund the current benefit provisions within the framework of your funding policy, and
- To provide accounting and other data required by NTRS.

REPORT HIGHLIGHTS

The key results of the valuation are summarized in the following table:

	June 30, 2001	June 30, 2002
	(\$ in Millions)	
A. SUMMARY OF RESULTS		
(1) Present Value of Future Benefits for:		
(a) Active Members	\$1,714.7	\$1,913.8
(b) Retired members	565.1	651.3
(c) Inactive Members and Other Liabilities	40.5	61.6
(d) Total	\$2,320.3	\$2,626.7
(2) Present Value of Future Normal Costs	\$ 684.2	\$ 770.7
(3) Actuarial Accrued Liability: (1) – (2)	1,636.1	1,856.0
(4) Actuarial Value of Assets	1,686.3	1,810.6
(5) Unfunded Actuarial Accrued Liability: (3) – (4)	(50.2)	45.4
(6) Total Contribution Rate, Member + Employer	10.00%	10.00%
(7) Normal Cost Rate	10.44%	10.55%
(8) Approximate Rate Available for Unfunded Actuarial Accrued Liability: (6) – (7)	(.44%)	(0.55)%
(9) Number of Years Required to Amortize (5) if Compensation Increases 5.0% per year	NA	Never
(10) 30-Year Contribution Rate (or Statutory Rate if Larger)	10.00%	10.80%

June 30, 2001**June 30, 2002****B. HIGHLIGHTS OF REPORT**

(1) Actuarial Accrued Liability Funding Ratio:		
(a) Actuarial Value of Assets	\$1,686.3	\$1,810.6
(b) Actuarial Accrued Liability	1,395.3	1,856.0
(c) Funding Ratio: (a) / (b)	103.1%	97.6%
(2) Active Members:		
(a) Number:		
Male	11,215	11,529
Female	<u>34,302</u>	<u>35,199</u>
Total	45,517	46,728
(b) Total Compensation for Fiscal Year (for Active Members at end of year):		
Male	250.5	270.5
Female	<u>563.7</u>	<u>624.9</u>
Total	814.2	895.4
(c) Average Age:		
Male	45.0	45.4
Female	<u>44.5</u>	<u>44.6</u>
Total	44.6	44.8
(d) Average Service:		
Male	6.3	6.3
Female	<u>6.3</u>	<u>6.4</u>
Total	6.3	6.4
(e) Average Compensation for Fiscal Year (not in millions):		
Male	\$22,336	\$23,467
Female	<u>16,432</u>	<u>17,752</u>
Total	\$17,887	\$19,162
(f) Average Amount of Assets per Active Member (based on actuarial value, not in millions)	\$23,741	\$23,491
(3) Retired Members and Beneficiaries		
(a) Number Service Retired:		
Life Annuities	10,160	10,381
Options	<u>2,472</u>	<u>2,760</u>
Total	12,632	13,141
(b) Number Disability Retired	378	387
(c) Number Survivors, Beneficiaries	<u>663</u>	<u>742</u>
(d) Total Persons Receiving Benefits	13,673	14,270
(e) Average Monthly Pension Being Paid at Valuation Date for New Service Retired, Including Options (not in millions)	565	661
(f) Average Amount of Assets per Retired Member (based on actuarial value, not in millions)	\$41,332	\$45,641
(g) Average Amount of Assets per New Service Retired (based on actuarial value, not in millions)	\$81,756	\$98,557

MEMBERSHIP CHARACTERISTICS

Active and Inactive Membership

A total of 62,641 active and inactive members of NTRS are included in this 2002 actuarial valuation.

Active members	46,728
Inactive members	<u>15,913</u>
Total active and inactive members	62,641

Between the 2001 and 2002 actuarial valuations, the number of active employees increased by 1,211 or 2.7%. The average annual salaries of employees increased by 7.1% to \$19,162.

Summary of Changes in Membership

	Male	Female	Total
Active and Inactive Members 7/1/01	14,725	44,783	59,508
New Membership 7/1/01 to 6/30/02	<u>2,584</u>	<u>6,786</u>	<u>9,370</u>
Total Membership Before Decreases	17,309	51,569	68,878
Decreases:			
Service Retirements	256	702	958
Disability Retirements	12	18	30
Withdrawals	1,237	2,968	4,205
Deaths	36	52	88
Other Terminations	215	409	624
Previous Memberships Voided	95	236	331
Reciprocity	<u>1</u>	<u>0</u>	<u>1</u>
Subtotal	1,852	4,385	6,237
Net membership 6/30/02 (includes Inactive Members)	15,457	47,184	62,641

Benefit Recipients

On June 30, 2002, NTRS was paying benefits to a total of 14,270 retired members, beneficiaries and survivors. The total number of benefit recipients increased 4.4% from 13,673 on June 30, 2001. The benefit recipients were comprised of 13,141 service retirees, 387 disability retirees, 742 beneficiaries and survivors.

There are two classes of retired members – members retired because of service and members retired because of disability.

The changes among the retired group of members during the 2001-02 year were as follows:

	<u>Service Retirements</u>	<u>Disability Retirements</u>	<u>Beneficiaries</u>	<u>Total</u>
Retired Members, July 1, 2001	12,632	378	663	13,673
Added During Year	966	30	97	1,093
Died During Year	(461)	(21)	(18)	(500)
Resumed Retirement During Year	14	0	0	14
Resumed Employment During Year	<u>(10)</u>	<u>0</u>	<u>0</u>	<u>(10)</u>
Retired Members, June 30, 2002	13,141	387	742	14,270

As of June 30, 2002, the average monthly benefit payable to new service retirees was \$661 compared to \$565 as of June 30, 2001. These average benefit amounts and the amounts shown in the tables that follow include all post-retirement benefit increases.

ACTUARIAL ASSUMPTIONS

The actuarial assumptions used in this valuation are those used in the 2001 valuation. This set of assumptions is described in Appendix E.

EXPERIENCE DURING FY 2002

Overall the system experienced a net actuarial loss of about \$111.6 million.

The net loss is determined as follows:

	<u>(\$ in Millions)</u>
1. Actuarial Loss on Assets (at actuarial value)	33.1
2. Actuarial Loss on Liabilities	<u>78.5</u>
3. Total Actuarial (Gain) or Loss (1+2)	111.6

The NTRS investment loss (measured on market value, all income sources combined) in FY 2002 was about \$47 million, compared with an expected return on actuarial value of \$136 million for a total loss of over \$183 million. However, because the actuarial value only recognizes 20% of this loss (and 40% of the FY 2000 loss), the actuarial loss on investments was only \$33.1 million as shown above.

Unless the investment markets make a heroic turnaround, however, further losses over the next several years can be expected, as more of the deferred losses are recognized.

NTRS BENEFITS

A summary of the current benefit provisions appears in Appendix F. No changes to the benefit or contribution provisions were adopted since the last actuarial valuation.

ASSET INFORMATION

The market value of the assets of the fund, which are available for benefits, has been reduced from \$1.610 billion as of June 30, 2001 to \$1.585 billion as of June 30, 2002. Due to the smoothing inherent in the determination of the actuarial value of assets, there was an increase in the actuarial value of assets from \$1.686 billion to \$1.811 billion.

Based on the actuarial value, the assets of the fund returned about 5.9%.

The detailed determinations of asset values utilized in this valuation and asset growth in the last year are set out in Appendix B.

FUNDING STATUS

The funding status of NTRS is measured by the Funding Ratio. The Funding Ratio is the ratio of the assets available for benefits to a benefit liability measure for the System. While there are several such measures that could be appropriately used, the measure that ties most closely to your funding plan is the Actuarial Accrued Liability ("AAL").

The NTRS actuarial accrued liability funding ratio dropped from 103.1% at June 30, 2001 to 97.6%.

GASB DISCLOSURE

NTRS produces its accounting statements under the terms of GASB Statement Number 25. In Table 16, you will find Required Supplemental Information mandated by that statement.

APPENDICES

APPENDIX A
MEMBERSHIP DATA

Table 1**Number, Average Age-Service-Salary, and Total Payroll
of Active Members Included in Actuarial Valuations****MALE**

Item	Actuarial Valuation as of June 30				
	1998	1999	2000	2001	2002
Number	9,864	10,479	10,837	11,215	11,529
Average Age	43.7	44.7	44.8	45.0	45.4
Average Years of Service	6.5	6.4	6.3	6.3	6.3
Average Annual Salary	\$ 19,997	\$ 20,564	\$ 21,081	\$ 22,336	\$ 23,467
Total Payroll (000's)	\$197,253	\$215,488	\$228,453	\$250,497	\$270,555

FEMALE

Item	Actuarial Valuation as of June 30				
	1998	1999	2000	2001	2002
Number	28,808	31,120	32,696	34,302	35,199
Average Age	43.8	44.5	44.4	44.5	44.6
Average Years of Service	6.8	6.6	6.4	6.3	6.4
Average Annual Salary	\$ 14,546	\$ 5,096	\$ 15,505	\$ 16,432	\$ 17,752
Total Payroll (000's)	\$419,050	\$469,784	\$506,948	\$563,661	\$624,865

TOTAL

Item	Actuarial Valuation as of June 30				
	1998	1999	2000	2001	2002
Number	38,672	41,599	43,533	45,517	46,728
Average Age	43.8	44.6	44.5	44.6	44.8
Average Years of Service	6.7	6.5	6.4	6.3	6.4
Average Annual Salary	\$ 15,937	\$ 16,473	\$ 16,893	\$ 17,887	\$ 19,162
Total Payroll (000's)	\$616,303	\$685,272	\$735,400	\$814,158	\$895,420

Table 2

Employee Distribution by Age and Years of Service
June 30, 2002

Age	Years of Service							Total
	0-4	5-9	10-14	15-19	20-24	25-29	30 & Over	
Under 20	351	-	-	-	-	-	-	351
20-24	2,062	18	-	-	-	-	-	2,080
25-29	2,639	203	3	-	-	-	-	2,845
30-34	3,009	565	106	2	-	-	-	3,682
35-39	4,480	1,104	303	135	13	-	-	6,035
40-44	4,524	2,007	628	290	189	9	-	7,647
45-49	3,534	2,139	1,073	439	249	83	8	7,525
50-54	2,447	1,539	1,128	679	339	167	53	6,352
55-59	1,719	1,079	785	700	562	207	61	5,113
60-64	1,047	656	421	435	332	204	103	3,198
65 & Over	673	404	225	157	141	126	107	1,833
Unknown	60	4	2	-	1	-	-	67
Total	26,545	9,718	4,674	2,837	1,826	796	332	46,728

Table 3

**Salary Distribution
Employees in Active Service
on June 30, 2002**

Annual Salary	Number	Percent
Under \$10,000	9,135	19.6%
\$10,000 - 12,499	4,843	10.4%
\$12,500 - 14,999	5,395	11.5%
\$15,000 - 17,499	4,622	9.9%
\$17,500 - 19,999	3,958	8.5%
\$20,000 - 22,499	3,558	7.6%
\$22,500 - 24,999	3,049	6.5%
\$25,000 - 27,499	2,728	5.8%
\$27,500 - 29,999	2,222	4.8%
\$30,000 & Over	<u>7,218</u>	<u>15.4%</u>
Total	46,728	100.0%

Based on compensation actually paid during the plan year.

Table 4

**Salary Increase Rates by Service Group
Employees in Both 2001 & 2002 Actuarial Valuations**

Service in 2000	Number	Percent Increase In Average Salary	
		Actual	Expected
1-4	15,960	6.9%	6.6%
5-9	7,871	6.2%	5.0%
10-14	4,412	6.1%	5.0%
15-19	2,523	5.6%	5.0%
20 & Over	<u>2,553</u>	<u>5.5%</u>	<u>5.0%</u>
Total	33,319	6.3%	5.7%

Table 5

**Pensions in Force on June 30, 2002
by Type and Monthly Amount**

Monthly Amount	Service	Disability	Beneficiary	Total
Less than \$100	2,094	53	165	2,312
\$100 - 199	3,238	114	205	3,557
\$200 - 299	2,203	79	143	2,425
\$300 - 399	1,486	42	89	1,617
\$400 - 499	1,080	44	52	1,176
\$500 - 999	2,283	51	72	2,406
\$1,000 - 1,499	557	4	14	575
\$1,500 & Over	<u>200</u>	<u>-</u>	<u>2</u>	<u>202</u>
Total	13,141	387	742	14,270

Table 6

**Pensions in Force on June 30, 2002
by Type and Age**

Age	Service	Disability	Beneficiary	Total
Under 55	62	92	39	193
55-59	473	102	20	595
60-64	1,811	85	63	1,959
65-69	2,750	60	96	2,906
70-74	2,775	24	136	2,935
75-79	2,256	15	175	2,446
80-84	1,635	5	150	1,790
85-89	948	4	44	996
90 & Over	<u>431</u>	<u>-</u>	<u>19</u>	<u>450</u>
Total	13,141	387	742	14,270

Table 7
Cost of Living Increases to Retired Members
June 30, 2002

Retirement In	First Increase Effective Date	Percentage Increase	Total Increases Through January 2002	January 2003 Increase	Total Increases Through January 2003	Number of Retired Members at 6/30/02
1979&Earlier	Jan.1982	4.0%	75.00%	0.0%	80.00%	837
1980	Jan.1984	2.6	69.69	1.1%	77.22%	188
1981	Jan.1985	4.0	66.13	1.1%	73.50%	255
1982	Jan.1986	3.7	60.64	1.1%	67.77%	286
1983	Jan.1987	1.7	55.56	1.1%	62.46%	246
1984	Jan.1988	3.7	53.23	1.1%	60.03%	289
1985	Jan.1989	4.0	48.16	1.1%	54.73%	396
1986	Jan.1990	4.0	42.67	1.1%	49.00%	414
1987	Jan.1991	4.0	37.17	1.1%	43.26%	391
1988	Jan.1992	4.0	31.91	1.1%	37.76%	492
1989	Jan.1993	3.1	26.83	1.1%	32.46%	511
1990	Jan.1994	3.0	23.02	1.1%	28.48%	585
1991	Jan.1995	2.5	19.44	1.1%	24.74%	556
1992	Jan.1996	3.0	16.52	1.1%	21.69%	627
1993	Jan.1997	2.8	13.13	1.1%	18.15%	589
1994	Jan.1998	2.3	10.05	1.1%	14.93%	680
1995	Jan.1999	1.7	7.57	1.1%	12.34%	728
1996	Jan.2000	2.0	5.77	1.1%	10.46%	744
1997	Jan.2001	3.7	3.70	1.1%	8.30%	814
1998	Jan.2002	3.3	3.30	1.1%	4.44%	823
1999	Jan. 2003	1.1		1.1%	1.10%	920
2000						981
2001						936
2002						240
Total						13,528

Table 8

**Analysis of Retired Membership by Type of Benefit
(Dollar Amounts in Millions)
June 30, 2002**

Type of Benefit	Number	Annual Benefit	Total Liability
Service Retirees			
Option 1 (Life Only)	10,381	41.5	421.4
Option 2 (100% J&S with Pop-Up)	1,366	6.9	85.7
Option 3 (75% J&S with Pop-Up)	139	1.1	13.8
Option 4 (50% J&S with Pop-Up)	342	2.6	30.4
Option 5 (10 Years Certain & Life)	234	1.2	14.2
Option 6 (5 Years Certain & Life)	61	0.4	5.1
Option 7 (100% J&S)	345	1.2	8.9
Option 8 (75% J&S)	1	0.0	0.0
Option 9 (50% J&S)	46	0.2	1.5
Accelerated Payment	<u>226</u>	<u>2.7</u>	<u>33.2</u>
Total	13,141	\$57.7	\$614.2
Disability Retirees	387	\$1.3	\$13.5
Beneficiaries of Retiree Deaths	742	\$2.4	\$22.1

Note: Excludes retirees returned to work.

APPENDIX B
ASSET INFORMATION

Table 9

**Market Value of Assets
Balance Sheet**

	<u>June 30, 2001</u>	<u>June 30, 2002</u>
ASSETS:		
Cash	\$ 16,845,042	\$ 16,772,268
Contribution Receivable	7,607,027	9,542,047
Accrued Interest and Dividends	6,325,405	7,298,706
Investments	1,613,032,996	1,604,443,653
Securities Lending Collateral	129,926,251	206,253,796
Investment Sales – Receivable	40,053,421	34,332,954
Other Assets	3,953	1,930
Prepaid Expenses	<u>4,027</u>	<u>0</u>
Total	\$1,813,798,152	\$1,878,645,354
LIABILITIES:		
Accounts Payable	440,991	497,309
Securities Lending Collateral	129,926,251	206,253,796
Investment Purchases – Payable	73,286,180	86,757,917
Other Liabilities	<u>99,565</u>	<u>119,110</u>
Total	\$ 203,752,987	\$ 293,628,132
NET ASSETS	\$1,610,045,165	\$1,585,017,222

Table 10

**Statement of Revenue and Expenses
Market Value Reconciliation For Fiscal Year Ended June 30, 2002**

OPERATING REVENUES	<u>Amount</u>
<i>Contributions:</i>	
Employers	\$ 45,773,119
Members	<u>46,217,131</u>
Total Contributions	91,990,250
<i>Net Investment Income:</i>	
Interest	28,583,447
Dividends	7,875,917
Net Income from Security Lending Activities	<u>1,402,110</u>
Total Investment Income	37,861,474
Net Capital Appreciation (Depreciation)	(82,618,361)
Less: Investment Expenses	<u>(1,975,791)</u>
Total Investment Return	(46,732,678)
<i>Other Income</i>	<u>26,070</u>
Total Operating Revenues	<u>45,283,642</u>
OPERATING EXPENSES	
Benefit Payments	59,871,346
Refunds to Members	7,865,945
Administrative Expenses	2,574,150
Other Expense	<u>144</u>
Total Operating Expenses	<u>70,311,585</u>
EXCESS OF REVENUES OVER EXPENSES	(25,027,943)
FUND BALANCE, JUNE 30, 2001	\$1,610,045,165
FUND BALANCE, JUNE 30, 2002	<u>\$1,585,017,222</u>

Table 11
Growth of Cash Flow
(In Thousands)

Year Ending June 30	Contributions for the Year	Payments During the Year			External Cash Flow for the Year	Covered Payroll	Payments as Percent of Covered Payroll
		Benefit Payments and Refund of Contributions	Expenses	Total			
1985	\$18,956	\$(7,333)	\$(424)	\$(7,757)	\$11,199	\$228,781	3.4%
1986	20,140	(8,974)	(411)	(9,385)	10,755	245,407	3.8
1987	21,986	(9,641)	(500)	(10,141)	11,845	268,173	3.8
1988	23,927	(10,886)	(538)	(11,424)	12,503	304,029	3.8
1989	26,110	(12,567)	(585)	(13,152)	12,958	331,352	4.0
1990	28,176	(14,643)	(712)	(15,355)	12,821	359,577	4.3
1991	30,505	(16,634)	(721)	(17,355)	13,150	389,080	4.5
1992	31,470	(18,858)	(813)	(19,671)	11,799	398,147	4.9
1993	32,640	(21,025)	(821)	(21,846)	10,794	415,672	5.3
1994	35,298	(23,772)	(901)	(24,673)	10,625	452,339	5.5
1995	38,706	(27,067)	(905)	(27,972)	10,734	495,449	5.6
1996	42,122	(30,338)	(1,233)	(31,571)	10,551	538,022	5.9
1997	49,009	(34,425)	(1,950)	(36,375)	12,634	556,534	6.5
1998	54,844	(38,460)	(2,652)	(41,112)	13,732	616,303	6.7
1999	60,385	(41,813)	(1,604)	(43,417)	16,967	685,272	6.3
2000	68,684	(51,432)	(1,920)	(53,352)	15,332	735,362	7.3
2001	75,434	(58,239)	(2,246)	(60,485)	14,949	814,158	7.4
2002	91,990	(67,737)	(2,574)	(70,311)	21,679	895,420	7.8

Table 12

Development of the Actuarial Value of Assets

1. Valuation Assets June 30, 2001		\$1,686,242,427
2. Activity for FY 2002		
a. Contributions	\$ 91,990,250	
b. Benefits and Expenses	<u>(70,311,585)</u>	
c. Net Cash Flow	21,678,665	
3. Expected Returns	135,749,859	
4. Assets Before Allocation of G/L (1+2+3)		1,843,670,951
5. Actual Returns for 2002	(46,706,608)	
6. Excess Returns for 2002 (5-3)	(182,456,467)	
7. Recognized Excess Returns		
2002	(36,491,293)	
2001	(30,409,325)	
2000	1,305,548	
1999	8,893,768	
1998	23,649,056	
Total		<u>(33,052,246)</u>
8. Actuarial Value of Assets June 30, 2002		\$1,810,618,705

Note: Excess returns are total return on assets at market in excess of expected investment return at 8% on actuarial value.

APPENDIX C
ACTUARIAL DETERMINATIONS

Table 13

**Ten Year Historical Summary
(All Dollar Figures in Thousands)**

	<u>1993</u>	<u>1994</u>	<u>1995</u>	<u>1996</u>	<u>1997</u>	<u>1998</u>	<u>1999</u>	<u>2000</u>	<u>2001</u>	<u>2002</u>
Active Members	29,055	0,662	32,598	34,153	35,982	38,672	41,599	43,533	45,517	46,728
Retired Members	9,472	9,792	10,216	10,643	10,811	11,218	12,461	13,061	13,673	14,720
Actuarial Assets	\$583,058	\$698,988	\$778,325	\$876,886	\$1,001,035	\$1,150,311	\$1,335,308	\$1,522,660	\$1,686,242	\$1,810,619
UAAL	\$32,361	(\$12,908)	\$8,074	\$2,675	(\$36,823)	(\$113,965)	(\$166,796)	(127,360)	(50,166)	45,363
Benefit Payments And Refunds	\$21,025	\$23,772	\$27,067	\$30,338	\$34,425	\$38,460	\$41,813	\$51,432	\$58,239	\$67,737
Accumulated Members' Contributions	\$140,790	\$155,238	\$169,846	\$185,763	\$204,757	\$225,373	\$250,327	\$274,167	\$301,936	\$354,296
APV of Retirees' Benefits	\$196,936	\$224,650	\$252,034	\$293,937	\$312,390	\$350,860	\$396,846	\$467,653	\$565,126	\$651,295

Table 14

**Determination of Normal Cost
June 30, 2002
For the 2002-2003 Plan Year**

	Dollar	Rate
Active Members		
Retirement Benefits	\$74,803,636	8.82%
Termination Benefits	11,800,849	1.39%
Death Benefits	1,660,925	0.20%
Disability Benefits	1,204,653	0.14%
Total Normal Cost	\$89,470,063	10.55%
Estimated Employee Contributions	42,406,174	
Employer Normal Cost (Total Normal Cost less Employee Contributions)	\$47,063,889	

Table 15

**Determination of the Unfunded Actuarial Accrued Liability
June 30, 2002**

Actives Members:

Service Retirement	\$1,113,915,625
Death Benefits	21,582,088
Disability Benefits	11,040,588
Termination Benefits	(3,485,030)
Inactives	61,634,019
Total for Active and Inactives Members	<u>1,204,687,290</u>

Pay Status Members:

Service Retirees	615,700,178
Disability Retirees	13,456,992
Survivors	22,137,565
Total for Pay Status Members	<u>651,294,735</u>

Total Actuarial Accrued Liability 1,855,982,025

Actuarial Value of Assets 1,810,618,705

Total Unfunded Actuarial Accrued Liability 45,363,320

Table 16
GASB 25 Exhibits

Schedule of Funding Progress
(In Thousands)

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) Entry Age (b)	Unfunded AAL(UAAL) (b-a)	Funded Ratio (a/b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll ((b-a)/c)
6/30/95	778,325	786,399	8,074	99.0	495,449	1.6
6/30/96	876,886	879,561	2,675	99.7	538,022	0.5
6/30/97	1,001,035	964,212	(36,823)	103.8	556,534	(6.6)
6/30/98	1,150,311	1,036,347	(113,965)	111.0	616,303	(18.5)
6/30/99	1,335,308	1,168,511	(166,796)	114.3	685,272	(24.3)
6/30/00	1,522,660	1,395,300	(127,360)	109.1	735,400	(17.3)
6/30/01	1,686,242	1,636,076	(50,166)	103.1	814,158	(6.2)
6/30/02	1,810,619	1,855,982	45,363	97.6	895,420	5.1

Schedule of Employer Contributions

Actuarial Valuation Date	Annual Required Contribution	Percentage Contributed
6/30/95	19,248,692	100.0
6/30/96	20,966,576	100.0
6/30/97	24,393,542	100.0
6/30/98	27,315,729	100.0
6/30/99	30,012,859	100.0
6/30/00	34,185,605	100.0
6/30/01	37,500,243	100.0
6/30/02	45,773,119	100.0

Notes in Trend Data

Information:

Valuation Date
Actuarial Cost Method
Amortization Method
Remaining Amortization Period (years)
Asset Valuation Method

Data

6/30/02
Entry Age Normal
Level Percent, Open
30
5-Year Smoothed Market

Actuarial Assumptions:

Investment rate of return 8.0%
Projected salary increases 5.0%-10.0%
Cost-of-living adjustments 3.5%

Table 17

**Calculation of Unfunded Actuarial Accrued Liability
June 30, 2002**

	<u>Amount</u>
(1) Present Value of Future Benefits for:	
Active Members	\$1,913,756,462
Service Retirees	615,700,178
Disability Retirees	13,456,992
Survivors	22,137,565
Inactive Members	<u>61,634,019</u>
Total	2,626,685,216
(2) Present Value of Future Normal Costs	<u>770,703,191</u>
(3) Actuarial Accrued Liability ((1)-(2))	1,855,982,025
(4) Actuarial Value of Assets	<u>1,810,618,705</u>
(5) Unfunded Actuarial Accrued Liability ((3)-(4))	\$ 45,363,320

**Required Contribution Rate & Amortization of Unfunded Liability
June 30, 2002**

	<u>Percentage of Payroll</u>
(1) Total Contribution Rate, Member + Employer	10.00%
(2) Normal Cost Rate	10.55%
(3) Approximate Rate Available for Unfunded Actuarial Accrued Liability ((1)-(2))	(0.55)%
(4) Number of Years Required to Amortize Unfunded Actuarial Accrued Liability	Never
(5) Benchmark Contribution Rate for the System to Amortize the Unfunded Actuarial Accrued Liability in 30 Years	10.80%

Table 18

Analysis of Actuarial Gains and Losses

	<u>Amount</u>
1. Unfunded Actuarial Liability as of June 30, 2001	\$ (50,166,463)
2. Normal Cost for 2002 Plan Year	80,938,180 - 80,398,180
3. Contribution Received during Year	(91,990,250)
4. Interest to Year End @ 8.00% on 1., 2., and 3.	(4,468,080)
5. Expected Unfunded Actuarial Liability as of June 30, 2002	(66,226,613)
6. Actuarial (Gain)/Loss During the Year	
a. From Investments	33,052,246
b. From Actuarial Liabilities	78,537,687
c. Total	<u>111,589,933</u>
7. Actual Unfunded Actuarial Liability as of June 30, 2002	45,363,320

APPENDIX D
ADDITIONAL DATA

Table 19

Schedule of Active Member Valuation Data

Actuarial Valuation Date	Number of Members	Covered Annual Payroll (000)	Average Annual Salary	% Increase in Average Salary	Average Attained Age	Average Years of Service
6/30/91	28,554	\$389,080	\$13,626	5.1%	45.5	7.4
6/30/92	28,410	398,147	14,014	2.8	45.7	7.6
6/30/93	29,055	415,672	14,306	2.1	45.7	7.7
6/30/94	30,662	452,339	14,752	3.1	45.5	7.6
6/30/95	32,598	495,449	1,519	3.0	45.3	7.3
6/30/96	34,153	538,022	15,753	3.6	45.2	7.2
6/30/97	35,982	556,534	15,467	(1.8)	45.1	7.1
6/30/98	38,672	616,303	15,937	3.0	44.8	6.7
6/30/99	41,599	685,272	16,473	3.4	44.6	6.5
6/30/00	43,533	735,400	16,893	2.5	44.5	6.4
6/30/01	45,517	814,158	17,887	5.9	44.6	6.3
6/30/02	46,728	895,420	19,162	7.1	44.8	6.4

Table 20

**Solvency Test
(\$ in 000's)**

Actuarial Accrued Liability

Actuarial Valuation Date	Member Contributions (1)	Current Retirees & Beneficiaries (2)	Active & Inactive Members, Employer Financed Portion (3)	Net Assets Available For Benefits	Percentage of Actuarial Liabilities Covered by Net Assets for:		
					(1)	(2)	(3)
6/30/91	\$113,462	\$144,240	\$244,839	\$453,722	100.0%	100.0%	80.1%
6/30/92	127,335	163,586	248,947	513,693	100.0	100.0	89.5
6/30/93	140,790	196,936	277,693	583,058	100.0	100.0	88.3
6/30/94	155,238	224,650	306,192	698,988	100.0	100.0	104.2
6/30/95	169,846	252,034	364,519	778,325	100.0	100.0	97.8
6/30/96	185,763	293,937	399,861	876,886	100.0	100.0	99.3
6/30/97	204,757	312,390	447,065	1,001,035	100.0	100.0	100.0
6/30/98	225,454	350,860	460,033	1,150,311	100.0	100.0	125.8
6/30/99	231,252	396,846	540,413	1,335,308	100.0	100.0	130.9
6/30/00	274,167	467,653	653,480	1,522,660	100.0	100.0	119.5
6/30/01	301,936	565,126	769,014	1,686,242	100.0	100.0	106.5
6/30/02	354,296	651,295	850,391	1,810,619	100.0	100.0	94.7

Table 21

**Schedule of Retirees and Beneficiaries Added to
and Removed From Retirement rolls**

Actuarial Valuation Date	Service Retirees			Disability Retirees			Beneficiaries		
	Added to Rolls	Removed from Rolls	Rolls End of Year	Added to Rolls	Removed from Rolls	Rolls End of Year	Added to Rolls	Removed from Rolls	Rolls End of Year
6/30/89	703	272	7,645	24	14	151	30	1	148
6/30/90	678	253	8,070	23	10	164	29	8	169
6/30/91	712	277	8,505	24	13	175	54	4	219
6/30/92	715	316	8,904	28	7	196	46	5	260
6/30/93	689	336	9,257	26	10	215	40	7	293
6/30/94	658	358	9,557	29	9	235	60	9	344
6/30/95	782	372	9,967	33	19	249	54	12	386
6/30/96	799	390	10,376	26	8	267	47	18	415
6/30/97	823	388	10,811	22	13	276	63	18	460
6/30/98	841	424	11,218	29	17	288	59	22	497
6/30/99	813	431	11,600	35	7	316	67	19	545
6/30/00	945	432	12,113	45	14	347	76	20	601
6/30/01	987	468	12,632	53	22	378	76	14	663
6/30/02	980	471	13,141	30	21	387	97	18	742

Table 22

**Schedule of Retirees by Type
(\$ in 000's)**

Actuarial Valuation Date	Service Retirees		Disability Retirees		Beneficiaries	
	Number	Benefits	Number	Benefits	Number	Benefits
6/30/91	8,505	12,616	175	232	219	318
6/30/92	8,904	14,403	196	287	260	414
6/30/93	9,257	16,464	215	347	293	478
6/30/94	9,557	18,534	235	417	344	572
6/30/95	9,967	20,842	249	481	383	699
6/30/96	10,376	23,785	267	550	415	820
6/30/97	10,811	27,250	276	616	460	1,007
6/30/98	11,218	30,240	288	672	497	1,126
6/30/99	11,600	35,395	316	826	545	1,384
6/30/00	12,113	41,091	347	1,002	601	1,653
6/30/01	12,632	50,512	378	1,232	663	2,038
6/30/02	13,141	57,697	387	1,346	742	2,413

Average Retiree Statistics

Actuarial Valuation Date	New Service Retirees	Average New Benefit	% Change From Previous Year
6/30/91	606	228.87	3
6/30/92	609	242.19	6
6/30/93	597	275.23	12
6/30/94	571	306.20	11
6/30/95	679	298.76	(3)
6/30/96	797	330.40	11
6/30/97	823	327.16	(1)
6/30/98	805	324.82	(1)
6/30/99	813	366.42	13
6/30/00	945	431.89	18
6/30/01	987	565.29	31
6/30/02	980	660.51	17

APPENDIX E
ACTUARIAL METHOD AND ASSUMPTIONS

Statement of Funding Policy

In order to establish long-term, consistent methods in the funding of the System, the Board of Trustees has adopted this statement of its funding policy. The funding of the System shall be carried out in such a way that the burden of paying retirement costs shall be shared equitably by present and succeeding generations of members and taxpayers. To this end, the following principles shall apply:

1. The Board of Trustees shall adopt actuarial assumptions, each of which individually represents a reasonable long-term estimate of anticipated experience under the System, derived from experience studies conducted every fifth year.
2. The actuarial funding method used shall be the Entry Age Normal Method with normal costs calculated as a percentage of payroll.
3. It shall be the general objective to maintain an amortization period of 30 years or less in the funding of the Unfunded Actuarial Accrued Liability. Whenever a change is made in the System's benefit and contribution rate structures, the amortization period for the System after this change should not exceed 30 years initially.
4. If an escalation in future payroll is assumed in determining the amortization payments toward the Unfunded Actuarial Accrued Liability, then the annual rate of such escalation shall not exceed the expected rate of expansion in total System payroll based upon the actuarial assumptions.
5. Assets used in the actuarial valuation shall be valued using adjusted market values averaged over a period of five years.
6. Annual actuarial valuations shall be made of the System's assets and liabilities. The contribution rate shall be established based on the results of these valuations.

Actuarial Assumptions

(Adopted for Use with the June 30, 2001 Valuation)

Investment Return

It is assumed that investments of the System will return, on average, a yield of 8% per annum compound, net of system expenses (investment and administrative expenses).

Salary and Payroll Increases

Salaries are assumed to increase each year at the rate of 5%. Longevity adjustments are made for those with less than 5 years of service.

Service	Longevity Adjustment	Total Increase
0	5.00%	10.00%
1	2.50	7.50
2	1.75	6.75
3	1.00	6.00
4	.75	5.75
5 and Over	0.00	5.00

Total covered payroll of the entire membership is assumed to increase 5.0% per year in the future.

Retirement Rates

Retirement rates are only applied to those eligible for retirement. Retirement is assumed in accordance with the following rates per 1,000 eligible members:

For All Members Age 60 With at Least Five Years of Service	
Age	Male and Female
60	100
61	125
62	300
63	250
64	150
65	350
66-74	250
75 and Over	1000

**For Members Who Are Below Age 60 With 30 Years of Service and for
Members Who are Below Age 60 but Meet the Rule of 80**

Service	Males and Females
30 and Over	100

**For Members who have at least 25 years of service and are below age 55,
during the July 1, 1998- July 1, 2003 Period:**

Service	Males and Females
25	45
26	60
27	75
28	90
29	105

**For Members Who are Only Eligible for a Reduced Retirement Benefit
(Age 55 with 5 Years of Service)**

	Males and Females
All Years Eligible	35

Withdrawal Rates

Termination of membership prior to eligibility for retirement from all causes other than death, disability or retirement, whether resulting in a refund or a deferred benefit, is assumed in accordance with the following illustrative rates per 1,000 members:

Service	Rate
0	300.0
1	175.0
2	125.0
3	105.0
4	85.0
5	75.0
10	44.0
15	28.0
20	18.0
25	0.0

Disability Rates

Retirement for disability prior to age 60 is assumed in accordance with the following illustrative rates per 1,000 eligible members:

<u>Age</u>	<u>Male and Female Rates</u>
35	-
40	0.465
45	0.697
50	1.395
55	2.557

Mortality Rates

Mortality Rates for retirees, beneficiaries, and survivors are based on the GAM94 Table with male ages set forward one year. Rates for active members are 70% of retiree rates for males and 64% of retiree rates for females. Illustrative rates per 1,000 for retirees and disabled members at various ages are as follows:

<u>Service Retired Members, Beneficiaries and Survivors</u>		
<u>Age</u>	<u>Male</u>	<u>Female</u>
20	0.530	0.284
30	0.821	0.351
40	1.156	0.709
50	2.872	1.428
60	8.986	4.439
70	25.951	13.730
80	68.615	39.396
90	167.260	116.265
100	333.461	276.427
110	496.356	482.325

<u>Disability Retired Members, Male and Female</u>	
<u>Age</u>	<u>Rate</u>
40	24.075
50	26.175
60	31.500
70	44.625
80	76.650
90	173.276
100	507.128

Cost of Living Adjustments

The cost of living adjustment assumed in the valuation is 3.5% per year. The total lifetime COLA cannot exceed 80% of the original benefit.

Asset Valuation Method

The Actuarial Value of Assets is based on a five-year average of adjusted market value returns. The actuarial value for a year is computed by taking the actuarial value at June 30 of the prior year, subtracting all expenses (including benefit payments), and adding contributions and expected investment return at 8%. The difference between the actual returns at market value for the year and expected returns is determined. Twenty percent (20%) of that difference is added to the actuarial value along with corresponding amounts from each of the prior four years.

Provisions for Expenses

The assumed investment return rate is intended to represent the net rate of return after payment of all investment and administrative expenses.

Beneficiaries

80% of males and females are assumed to be married or to have eligible dependent beneficiaries. Beneficiaries are assumed to be of the opposite sex from the member. Female beneficiaries are assumed to be 3 years younger than the member, and male beneficiaries are assumed to be 3 years older than the member.

Terminations

Half of all active members who terminate for reasons other than death, disability or retirement are assumed to take of refund of their member account balance. The other half are expected to elect a termination benefit deferred to age 60. The same approach is used to value vested, inactive members.

APPENDIX F
SUMMARY OF BENEFIT PROVISIONS OF NTRS

Member Contributions

Half the total NTRS contribution rate. The current NTRS contribution rate is 10.0% of pay.

Normal (Unreduced) Retirement

ELIGIBILITY

Attainment of age 60 with at least five years of Creditable Service, or
Attainment of age 55 with at least 25 years of Creditable Service, or
Completion of 30 years of Creditable Service at any age.
Age plus Creditable Service is at least 80.

BENEFIT

1.61% of Final Average Salary for each year of Membership Service. A year of Prior Service is treated as .6 year of Membership Service. Any person retiring prior to age 62 under the Rule of 80 or with 30 years of creditable service will receive an additional benefit payable to attainment of age 62. This benefit is equal to .8% of Final Average Salary for each year of Membership Service.

FINAL AVERAGE SALARY

Average monthly salary over the Member's three highest consecutive years of service.

MEMBERSHIP SERVICE

Service while a participating member of NTRS. Service is measured each year in relation to minimum salary for 20 hours per week in the position for that year.

Prior Service

Service rendered in a covered position prior to November 1, 1965.

CREDITABLE SERVICE

Membership Service plus any Prior Service.

NORMAL FORM OF BENEFIT

Single Life Annuity

Options available include joint and survivor (50%, 75%, or 100%) and term certain (60 or 120 months) and life thereafter.

Early (Age Reduced) Retirement

Eligibility

Attainment of age 55 and under age 60 with at least five years of creditable service.

Benefit

Normal retirement benefit accrued to the date of early retirement, actuarially reduced from age 60.

Special Normal Retirement – Under Modified Formula

Eligibility

Retirement on or before 7-1-2003 at an age under 55 and with at least 25 years of creditable service but less than 30.

Benefit

Based on a percentage of final average salary per year of creditable service. Percentages are as follows:

<u>Years of Service</u>	<u>Benefit Percentage</u>
25-25.9	1.51%
26-26.9	1.53
27-27.9	1.55
28-28.9	1.57
29-29.9	1.59

COLA Adjustments

In any year in which the Board determines that the CPI has increased, the Board may provide for annual increases in the current benefit of up to 5%. For any member such adjustments commence in the fourth January after commencement of benefits. The total of such increases may not exceed 80% of the original benefit for any member.

Disability Benefits

DEFINITION OF DISABILITY

Incapacity for performance of gainful employment after completion of five years of creditable service and before age 60.

BENEFIT

Lifetime benefit equal to 90% of accrued normal retirement benefit.

FORM OF BENEFIT

If eligible, surviving spouse may elect a survivor benefit. COLA adjustments similar to those provided retirees are provided on this benefit.

Vesting

ELIGIBILITY

Completion of five years of creditable service.

BENEFIT

Accrued normal retirement benefit payable at earliest retirement age based on service at date of termination. Benefit is based on formula in effect at commencement of benefit.

Death / Survivor Benefits

REFUND

Refund of accumulated member contributions with interest

SURVIVOR BENEFITS

If the member has at least 5 years of creditable service at date of death, the spouse may receive a survivor benefit based on 100% J & S equivalent of the benefit accrued to date of death. The benefit may commence:

1. immediately if member is eligible to retire at date of death, or
2. at a future retirement date of the deceased member.

The benefit may be reduced for early commencement if the deceased member would not have been eligible for unreduced retirement at that date based on service to date of death. COLA adjustments similar to those provided retirees are provided on these benefits.