
**THE REPORT OF THE
June 30, 2004 ACTUARIAL VALUATION
OF THE
NON-TEACHER SCHOOL EMPLOYEE
RETIREMENT SYSTEM OF MISSOURI**

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October 25, 2004

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, 2004.

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, 2004, 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

Handwritten signature of Norman S. Losk in black ink.

Norman S. Losk, F.S.A
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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, 2004.

The purposes of an actuarial valuation are as follows:

- To determine the funding status of NTRS as of the valuation date,
- To determine the contribution rate which would provide for the normal cost of the system plus an amount which will amortize the unfunded actuarial accrued liability over 30 years, and if different, the contribution for the fiscal year ending June 30, 2006 under the statute. and
- To provide accounting and other data required by NTRS.

REPORT HIGHLIGHTS

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

	<u>June 30, 2003</u>	<u>June 30, 2004</u>
	<u>(\$ in Millions)</u>	
A. Summary of Results		
(1) Present Value of Future Benefits for:		
(a) Active Members	\$2,082.4	\$2,164.6
(b) Retired members	\$731.1	\$804.9
(c) Inactive Members and Other Liabilities	<u>\$71.0</u>	<u>\$87.4</u>
(d) Total	\$2,884.5	\$3,056.9
(2) Present Value of Future Normal Costs	\$834.8	\$835.6
(3) Actuarial Accrued Liability: (1) – (2)	\$2,049.7	\$2,221.3
(4) Actuarial Value of Assets	\$1,677.8	\$1,837.3
(5) Unfunded Actuarial Accrued Liability: (3) – (4)	\$371.9	\$384.0
(6) Total Contribution Rate, Member + Employer	10.00%	10.50%
(7) Normal Cost Rate	10.58%	10.64%
(8) Approximate Rate Available for Unfunded Actuarial Accrued Liability: (6) – (7)	-0.58%	-0.14%
(9) 30-Year Contribution Rate	12.47%	12.56%

B. Highlights of Report

(1) Actuarial Accrued Liability Funding Ratio:		
(a) Actuarial Value of Assets	\$1,677.8	\$1,837.3
(b) Actuarial Accrued Liability	2,049.7	2,221.3
(c) Funding Ratio: (a) / (b)	81.9%	82.7%
(2) Active Members:		
(a) Number:		
Male	11,564	11,346
Female	<u>35,299</u>	<u>34,534</u>
Total	46,863	45,880
(b) Total Compensation for Fiscal Year (for Active Members at end of year):		
Male	293.5	298.0
Female	<u>677.6</u>	<u>686.9</u>
Total	971.1	984.9
(c) Average Age:		
Male	45.8	46.9
Female	<u>45.1</u>	<u>46.0</u>
Total	45.3	46.2
(d) Average Service:		
Male	6.5	6.8
Female	<u>6.6</u>	<u>7.0</u>
Total	6.6	7.0
(e) Average Compensation for Fiscal Year (not in millions):		
Male	\$25,384	\$26,265
Female	<u>19,197</u>	<u>19,889</u>
Total	\$20,724	\$21,466
(f) Average Amount of Assets per Active Member (based on actuarial value, not in millions)	\$18,686	\$20,597
(3) Retired Members and Beneficiaries		
(a) Number Service Retired:		
Life Annuities	10,582	10,829
Options	<u>3,037</u>	<u>3,330</u>
Total	13,619	14,159
(b) Number Disability Retired	405	431
(c) Number Survivors, Beneficiaries	<u>813</u>	<u>855</u>
(d) Total Persons Receiving Benefits	14,837	15,445
(e) Average Monthly Pension Being Paid at Valuation for New Service Retired, Including Options (not in millions)	676	666
(f) Average Amount of Assets per Retired Member (based on actuarial value, not in millions)	\$49,273	\$52,112
(g) Average Amount of Assets per New Service Retired (based on actuarial value, not in millions)	\$103,944	\$99,471

MEMBERSHIP CHARACTERISTICS

Active and Inactive Membership

A total of 64,717 active and inactive members of NTRS are included in this 2004 actuarial valuation.

Active members	45,880
Inactive members	<u>18,837</u>
Total active and inactive members	64,717

Between the 2003 and 2004 actuarial valuations, the number of active employees decreased by 983 or 2.10%. The average annual salaries of employees increased by 3.6% to \$21,466.

Summary of Changes in Membership

	<u>Male</u>	<u>Female</u>	<u>Total</u>
Active and Inactive Members 7/1/2003	15,913	48,601	64,514
New Membership 7/1/2003 to 6/30/2004	<u>2,124</u>	<u>5,020</u>	<u>7,144</u>
Total Membership Before Decreases	18,037	53,621	71,658
Decreases:			
Service Retirements	289	781	1,070
Disability Retirements	19	24	43
Withdrawals	1,429	3,394	4,823
Deaths	34	41	75
Other Terminations	247	576	823
Previous Memberships Voided	35	71	106
Reciprocity	<u>0</u>	<u>1</u>	<u>1</u>
Subtotal	2,053	4,888	6,941
Net membership 6/30/2004 (includes Inactive Members)	15,984	48,733	64,717

Benefit Recipients

On June 30, 2004, NTRS was paying benefits to a total of 15,445 retired members, beneficiaries and survivors. The total number of benefit recipients increased 4.1% from 14,837 on June 30, 2003. The benefit recipients were comprised of 14,159 service retirees, 431 disability retirees, 855 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 2003-2004 year were as follows:

	Service Retirements	Disability Retirements	Beneficiaries	Total
Retired Members, July 1, 2003	13,619	405	813	14,837
Added During Year	1,075	43	86	1,204
Died During Year	(524)	(17)	(44)	(585)
Resumed Retirement During Year	6	1	0	7
Resumed Employment During Year	<u>(17)</u>	<u>(1)</u>	<u>0</u>	<u>(18)</u>
Retired Members, June 30, 2004	14,159	431	855	15,445

As of June 30, 2004, the average monthly benefit payable to new service retirees was \$666 compared to \$676 as of June 30, 2003. These average benefit amounts and the amounts shown in the tables that follow include all post-retirement benefit increases.

ACTUARIAL ASSUMPTIONS AND METHODS

The actuarial assumptions used in this valuation are the same as those disclosed in the actuarial valuation report as of June 30, 2002. This set of assumptions and methods is described in Appendix E. The actuarial value of assets has been marked to the market value effective as of June 30, 2003.

EXPERIENCE DURING FY 2004

Overall the system experienced a net actuarial gain of about 14.3 million.

The net gain is determined as follows:

	<u>(\$ in Millions)</u>
1. Actuarial (Gain) or Loss on Assets (at actuarial value)	(12.7)
2. Actuarial (Gain) or Loss on Liabilities	<u>(1.6)</u>
3. Total Actuarial (Gain) or Loss (1+2)	(14.3)

The NTRS investment return (measured on market value, all income sources combined) in FY 2004 was about \$198 million, compared with an expected return on actuarial value of \$135 million resulting in a total gain of over \$63 million. The use of the five year smoothing method to determine the actuarial value of assets would only have recognized 20% of this gain. Thus, the actuarial gain on investments was \$12.7 million as shown above.

NTRS BENEFITS

A summary of the current benefit provisions appears in Appendix F. There were no changes to the benefit provisions of NTRS during the 2004 session of the Legislature.

ASSET INFORMATION

The market value of the assets of the fund, which are available for benefits, has been increased from \$1.678 billion as of June 30, 2003 to \$1.888 billion as of June 30, 2004. The actuarial value of assets increased from \$1.678 billion to as of June 30, 2003 to \$1.837 billion as of June 30, 2004.

Based on the actuarial value, the assets of the fund returned about 8.8%.

The detailed determinations of asset values utilized in this valuation and asset growth in the last year are set forth 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 increased from 81.9% at June 30, 2003 to 82.7% as of June 30, 2004.

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.

FUNDING PROCESS

In the 2003 session of the Legislature the funding provisions of NTRS were amended. The following changes were adopted:

1. The limitation on the total contribution rate (10% of pay) was eliminated.
2. Contribution rates will now be established by actuarial valuation.
3. The annual increase in the total contribution rate may not exceed 0.5% of pay.

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					
	1999	2000	2001	2002	2003	2004
Number	10,479	10,837	11,215	11,529	11,564	11,346
Average Age	44.7	44.8	45.0	45.4	45.8	46.9
Average Years of Service	6.4	6.3	6.3	6.3	6.5	6.8
Average Annual Salary	\$20,564	\$21,081	\$22,336	\$23,467	\$25,384	\$26,265
Total Payroll (000's)	\$215,488	\$228,453	\$250,497	\$270,555	\$293,537	\$298,006

Female

Item	Actuarial Valuation as of June 30					
	1999	2000	2001	2002	2003	2004
Number	31,120	32,696	34,302	35,199	35,299	34,534
Average Age	44.5	44.4	44.5	44.6	45.1	46.0
Average Years of Service	6.6	6.4	6.3	6.4	6.6	7.0
Average Annual Salary	\$5,096	\$15,505	\$16,432	\$17,752	\$19,197	\$19,889
Total Payroll (000's)	\$469,784	\$506,948	\$563,661	\$624,865	\$677,640	\$686,860

Total

Item	Actuarial Valuation as of June 30					
	1999	2000	2001	2002	2003	2004
Number	41,599	43,533	45,517	46,728	46,863	45,880
Average Age	44.6	44.5	44.6	44.8	45.3	46.2
Average Years of Service	6.5	6.4	6.3	6.4	6.6	7.0
Average Annual Salary	\$16,473	\$16,893	\$17,887	\$19,162	\$20,724	\$21,466
Total Payroll (000's)	\$685,272	\$735,400	\$814,158	\$895,420	\$971,177	\$984,866

Table 2**Employee Distribution by Age and Years of Service
June 30, 2004**

Age	Years of Service							Total
	0-4	5-9	10-14	15-19	20-24	25-29	30 & Over	
Under 20	200	0	0	0	0	0	0	200
20-24	1,703	24	0	0	0	0	0	1,727
25-29	2,387	300	2	0	0	0	0	2,689
30-34	2,415	676	103	6	0	0	0	3,200
35-39	3,094	1,223	283	113	4	0	0	4,717
40-44	3,852	2,225	697	308	152	19	0	7,253
45-49	3,290	2,622	1,123	495	246	130	9	7,915
50-54	2,329	1,827	1,234	805	342	165	66	6,768
55-59	1,763	1,295	884	800	491	232	74	5,539
60-64	1,178	802	456	470	327	247	99	3,579
65 & Over	986	492	272	186	103	142	112	2,293
Unknown	0	0	0	0	0	0	0	0
Total	23,197	11,486	5,054	3,183	1,665	935	360	45,880

Table 3

**Salary Distribution
Employees in Active Service
on June 30, 2004**

Annual Salary	Number	Percent
Under \$10,000	7,342	16.0%
\$10,000 - 12,499	3,697	8.1%
\$12,500 - 14,999	4,744	10.3%
\$15,000 - 17,499	4,550	9.9%
\$17,500 - 19,999	4,079	8.9%
\$20,000 - 22,499	3,703	8.1%
\$22,500 - 24,999	3,205	7.0%
\$25,000 - 27,499	2,879	6.3%
\$27,500 - 29,999	2,356	5.1%
\$30,000 & Over	<u>9,325</u>	<u>20.3%</u>
Total	45,880	100.0%

Based on compensation actually paid during the plan year.

Table 4

**Salary Increase Rates by Service Group
Employees in Both 2003 & 2004 Actuarial Valuations**

Service in 2003	Number	Percent Increase In Average Salary	
		Actual	Expected
1-4	15,755	5.68%	6.59%
5-9	9,818	3.81%	5.00%
10-14	4,376	3.47%	5.00%
15-19	2,880	3.51%	5.00%
20 & Over	<u>2,511</u>	<u>2.97%</u>	<u>5.00%</u>
Total	35,340	4.53%	5.71%

Table 5

**Pensions in Force on June 30, 2004
by Type and Monthly Amount**

<u>Monthly</u>	<u>Service</u>	<u>Disability</u>	<u>Beneficiary</u>	<u>Total</u>
Less than \$100	1,872	54	170	2,096
\$100 - 199	3,306	123	229	3,658
\$200 - 299	2,317	91	167	2,575
\$300 - 399	1,584	49	100	1,733
\$400 - 499	1,208	47	65	1,320
\$500 - 999	2,752	64	94	2,910
\$1,000 – 1,499	726	3	23	752
\$1,500 & Over	<u>394</u>	<u>0</u>	<u>7</u>	<u>401</u>
Total	14,159	431	855	15,445

Table 6

**Pensions in Force on June 30, 2004
by Type and Age**

Age	Service	Disability	Beneficiary	Total
Under 55	83	103	66	252
55-59	530	93	35	658
60-64	2,091	110	73	2,274
65-69	2,943	66	118	3,127
70-74	2,927	29	168	3,124
75-79	2,337	16	164	2,517
80-84	1,787	10	146	1,943
85-89	996	3	64	1,063
90 & Over	<u>465</u>	<u>1</u>	<u>21</u>	<u>487</u>
Total	14,159	431	855	15,445

Table 7**Cost of Living Increases to Retired Members
June 30, 2004**

Retirement In	First Increase Effective Date	Percentage Increase	Total Increases Through January 2004	January 2005 Increase	Total Increases Through January 2005	Number of Retired Members at 6/30/04
1980&Earlier	Jan. 1984	2.60%	80.00%	0.00%	80.00%	730
1981	Jan. 1985	4.00%	77.14%	1.61%	80.00%	222
1982	Jan. 1986	3.70%	71.29%	3.30%	76.94%	245
1983	Jan. 1987	1.70%	65.87%	3.30%	71.34%	209
1984	Jan. 1988	3.70%	63.39%	3.30%	68.78%	244
1985	Jan. 1989	4.00%	57.98%	3.30%	63.19%	341
1986	Jan. 1990	4.00%	52.13%	3.30%	57.15%	373
1987	Jan. 1991	4.00%	46.27%	3.30%	51.10%	359
1988	Jan. 1992	4.00%	40.65%	3.30%	45.29%	452
1989	Jan. 1993	3.10%	35.24%	3.30%	39.70%	471
1990	Jan. 1994	3.00%	31.18%	3.30%	35.51%	553
1991	Jan. 1995	2.50%	27.36%	3.30%	31.56%	529
1992	Jan. 1996	3.00%	24.25%	3.30%	28.35%	589
1993	Jan. 1997	2.80%	20.63%	3.30%	24.61%	565
1994	Jan. 1998	2.30%	17.34%	3.30%	21.21%	653
1995	Jan. 1999	1.70%	14.70%	3.30%	18.49%	693
1996	Jan. 2000	2.00%	12.78%	3.30%	16.50%	723
1997	Jan. 2001	3.70%	10.57%	3.30%	14.22%	790
1998	Jan. 2002	3.30%	6.63%	3.30%	10.15%	798
1999	Jan. 2003	1.10%	3.22%	3.30%	6.63%	898
2000	Jan. 2004	2.10%	2.10%	3.30%	5.47%	953
2001	Jan. 2005		0.00%	3.30%	3.30%	919
2002						967
2003						1,045
2004						269
Total						14,590

Table 8

**Analysis of Retired Membership by Type of Benefit
(Dollar Amounts in Millions)
June 30, 2004**

Type of Benefit	Number	Annual Benefit	Total Liability
Service Retirees			
Options 1 & 10 (Life Only)	10,829	49.1	499.6
Options 2 & 21 (100% J&S with Pop-Up)	1,697	9.8	129.4
Option 3 & 31 (75% J&S with Pop-Up)	196	1.7	22.9
Option 4 & 41(50% J&S with Pop-Up)	426	3.6	44.2
Option 5 (10 Years Certain & Life)	277	1.5	17.9
Option 6 (5 Years Certain & Life)	81	0.6	6.5
Option 20 (100% J & S)	291	1.1	7.4
Option 30 (75% J & S)	1	0.0	0.0
Option 40 (50% J & S)	41	0.2	1.3
Accelerated Payment	<u>320</u>	<u>3.3</u>	<u>28.3</u>
 Total	 14,159	 \$70.7	 \$757.7
 Disability Retirees	 431	 \$1.6	 \$15.5
 Beneficiaries of Retiree Deaths	 855	 \$3.1	 \$30.1

Note: Excludes retirees returned to work.

Appendix B

Asset Information



Table 9**Market Value of Assets
Balance Sheet**

	<u>June 30, 2003</u>	<u>June 30, 2004</u>
Assets:		
Cash	\$24,570,982	\$10,966,140
Contribution Receivable	9,806,091	10,448,208
Accrued Interest and Dividends	6,361,519	6,982,477
Investments	1,711,320,970	1,902,639,908
Investment Sales – Receivable	89,823,942	121,978,719
Other Assets	5,974	16,633
Prepaid Expenses	<u>0</u>	<u>14,666</u>
Total	\$1,841,889,478	\$2,053,046,751
Liabilities:		
Accounts Payable	549,776	770,853
Investment Purchases – Payable	163,224,108	163,506,329
Other Liabilities	<u>345,949</u>	<u>499,655</u>
Total	\$164,119,833	\$164,776,837
Net Assets	\$1,677,769,645	\$1,888,269,914

Table 10**Statement of Revenue and Expenses
Market Value Reconciliation For Fiscal Year Ended June 30, 2004**

Operating Revenues	Amount
<i>Contributions:</i>	
Employers	\$ 49,976,898
Members	<u>50,625,153</u>
Total Contributions	100,602,051
<i>Net Investment Income:</i>	
Interest	23,929,851
Dividends	13,144,066
Net Income from Security Lending Activities	<u>836,023</u>
Total Investment Income	37,909,940
Net Capital Appreciation (Depreciation)	163,386,408
Less: Investment Expenses	<u>(2,907,038)</u>
Total Investment Return	198,389,310
<i>Other Income</i>	<u>9,695</u>
Total Operating Revenues	<u>299,001,056</u>
Operating Expenses	
Benefit Payments	74,870,838
Refunds to Members	10,419,660
Administrative Expenses	3,210,161
Other Expense	<u>128</u>
Total Operating Expenses	<u>88,500,787</u>
Excess of Revenues over Expenses	210,500,269
Fund Balance, June 30, 2003	1,677,769,645
Fund Balance, June 30, 2004	\$ 1,888,269,914

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
2003	97,927	(75,432)	(2,946)	(78,378)	19,549	971,177	8.1
2004	100,602	(85,290)	(3,210)	(88,500)	12,102	984,866	9.0

Table 12

Development of the Actuarial Value of Assets

1. Valuation Assets June 30, 2003		\$1,677,769,645
2. Activity for FY 2004		
a. Contributions	\$100,602,051	
b. Benefits and Expenses	<u>(88,500,787)</u>	
c. Net Cash Flow	12,101,264	
3. Expected Returns	134,696,310	
4. Assets Before Allocation of G/L (1+2+3)		1,824,567,219
5. Actual Returns for 2004	198,399,005	
6. Excess Returns for 2004 (5-3)	63,702,695	
7. Recognized Excess Returns		
2004	12,740,539	
2003	0	
2002	0	
2001	0	
2000	0	
Total		<u>12,740,539</u>
8. Actuarial Value of Assets June 30, 2004		\$1,837,307,758

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)**

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Active Members	32,598	34,153	35,982	38,672	41,599	43,533	45,517	46,728	46,863	45,880
Retired Members	10,216	10,643	10,811	11,218	12,461	13,061	13,673	14,270	14,837	15,445
Actuarial Assets	\$778,325	\$876,886	\$1,001,035	\$1,150,311	\$1,335,308	\$1,522,660	\$1,686,242	\$1,810,619	\$1,677,770	\$1,837,308
UAAL	\$8,074	\$2,675	(\$36,823)	(\$113,965)	(\$166,796)	(\$127,360)	(\$50,166)	\$45,363	\$371,946	\$383,902
Benefit And Refunds	\$27,067	\$30,338	\$34,425	\$38,460	\$41,813	\$51,432	\$58,239	\$67,737	\$75,432	\$85,290
Accumulated Members' Contributions	\$169,846	\$185,763	\$204,757	\$225,373	\$250,327	\$274,167	\$301,936	\$354,296	\$394,925	\$444,318
APV of Retirees' Benefits	\$252,034	\$293,937	\$312,390	\$350,860	\$396,846	\$467,653	\$565,126	\$651,295	\$731,059	\$804,864

Table 14

**Determination of Normal Cost
June 30, 2004
For the 2004 - 2005 Plan Year**

	<u>Dollar</u>	<u>Rate</u>
Active Members		
Retirement Benefits	\$82,828,487	8.87%
Termination Benefits	13,332,735	1.43%
Death Benefits	1,843,540	0.20%
Disability Benefits	<u>1,313,685</u>	<u>0.14%</u>
 Total Normal Cost	 \$99,318,447	 10.64%
 Estimated Employee Contributions	 <u>49,023,980</u>	
 Employer Normal Cost	 \$50,294,467	
(Total Normal Cost less Employee Contributions)		

Table 15

**Determination of the Unfunded Actuarial Accrued Liability
June 30, 2004**

Active Members:

Service Retirement	\$1,297,743,836
Death Benefits	24,059,507
Disability Benefits	12,049,670
Termination Benefits	(4,870,536)
Inactives	87,363,224
Total for Active and Inactive Members	1,416,345,701

Pay Status Members:

Service Retirees	759,263,116
Disability Retirees	15,457,131
Survivors	30,143,735
Total for Pay Status Members	804,863,982

Total Actuarial Accrued Liability 2,221,209,683

Actuarial Value of Assets 1,837,307,758

Total Unfunded Actuarial Accrued Liability 383,901,924

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)
6/30/1995	778,325	786,399	8,074	99.0%	495,449	1.6%
6/30/1996	876,886	879,561	2,675	99.7%	538,022	0.5%
6/30/1997	1,001,035	964,212	(36,823)	103.8%	556,534	-6.6%
6/30/1998	1,150,311	1,036,347	(113,964)	111.0%	616,303	-18.5%
6/30/1999	1,335,308	1,168,511	(166,797)	114.3%	685,272	-24.3%
6/30/2000	1,522,660	1,395,300	(127,360)	109.1%	735,400	-17.3%
6/30/2001	1,686,242	1,636,076	(50,166)	103.1%	814,158	-6.2%
6/30/2002	1,810,619	1,855,982	45,363	97.6%	895,420	5.1%
6/30/2003	1,677,770	2,049,716	371,946	81.9%	971,177	38.3%
6/30/2004	1,837,308	2,221,210	383,902	82.7%	984,866	39.0%

Schedule of Employer Contributions

Actuarial Valuation Date	Annual Required Contribution	Percentage Contributed
6/30/1995	19,248,692	100.0%
6/30/1996	20,966,576	100.0%
6/30/1997	24,393,542	100.0%
6/30/1998	27,315,729	100.0%
6/30/1999	30,012,859	100.0%
6/30/2000	34,185,605	100.0%
6/30/2001	37,500,243	100.0%
6/30/2002	45,773,119	100.0%
6/30/2003	48,933,326	92.6%
6/30/2004	49,976,898	80.2%

Notes in Trend Data

Information:

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

Data

6/30/2004
Entry Age Normal
Level Percent, Open
30
5-Year Smoothed Market
Marked to Market as of June 30, 2003

Actuarial

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, 2004**

	<u>Amount</u>
(1) Present Value of Future Benefits for:	
Active Members	\$2,164,555,694
Service Retirees	759,263,116
Disability Retirees	15,457,131
Survivors	30,143,735
Inactive Members	87,363,224
Total	<u>3,056,782,900</u>
(2) Present Value of Future Normal Costs	835,573,217
(3) Actuarial Accrued Liability ((1)-(2))	2,221,209,683
(4) Actuarial Value of Assets	1,837,307,758
(5) Unfunded Actuarial Accrued Liability ((3)-(4))	\$383,901,924

**Required Contribution Rate & Amortization of Unfunded Liability
June 30, 2004**

	<u>Percentage of Payroll</u>
(1) Total Contribution Rate, Member + Employer	10.50%
(2) Normal Cost Rate	10.64%
(3) Approximate Rate Available for Unfunded Actuarial Accrued Liability ((1)-(2))	-0.14%
(4) Benchmark Contribution Rate for the System to Amortize the Unfunded Actuarial Accrued Liability in 30 Years	12.56%

Table 18

Analysis of Actuarial Gains and Losses

	<u>Amount</u>
1. Unfunded Actuarial Liability as of July 1, 2003	371,946,071
2. Normal Cost for 2004 Plan Year	97,248,948
3. Contribution Received during Year	(100,602,051)
4. Interest to Year End @ 8.00% on 1., 2., and 3.	29,624,142
5. Expected Unfunded Actuarial Liability as of June 30, 2004	398,217,110
6. Actuarial (Gain)/Loss During the Year	
a. From Investment	(12,740,540)
b. From Actuarial Liabilities	(1,574,646)
c. Total	<u>(14,315,186)</u>
7. Actuarial Unfunded Actuarial Liability as of June 30, 2004	383,901,924

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
6/30/1991	28,554	\$389,080	\$13,626	5.1%	45.5	7.4
6/30/1992	28,410	398,147	14,014	2.8%	45.7	7.6
6/30/1993	29,055	415,672	14,306	2.1%	45.7	7.7
6/30/1994	30,662	452,339	14,752	3.1%	45.5	7.6
6/30/1995	32,598	495,449	15,199	3.0%	45.3	7.3
6/30/1996	34,153	538,022	15,753	3.6%	45.2	7.2
6/30/1997	35,982	556,534	15,467	-1.8%	45.1	7.1
6/30/1998	38,672	616,303	15,937	3.0%	44.8	6.7
6/30/1999	41,599	685,272	16,473	3.4%	44.6	6.5
6/30/2000	43,533	735,400	16,893	2.5%	44.5	6.4
6/30/2001	45,517	814,158	17,887	5.9%	44.6	6.3
6/30/2002	46,728	895,420	19,162	7.1%	44.8	6.4
6/30/2003	46,863	971,177	20,724	8.2%	45.3	6.6
6/30/2004	45,880	984,866	21,466	3.6%	46.2	7.0

Table 20

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

Actuarial Valuation Date	Actuarial Accrued Liability			Net Assets Available for Benefits	Percentage of Actuarial Liabilities Covered by Net Assets for:		
	Member Contributions (1)	Current Retirees & Beneficiaries (2)	Active & Inactive Members. Employer Financed Portion (3)		(1)	(2)	(3)
6/30/1991	\$113,462	\$144,240	\$244,839	\$453,722	100.0%	100.0%	80.1%
6/30/1992	127,335	163,586	248,947	513,693	100.0%	100.0%	89.5%
6/30/1993	140,790	196,936	277,693	583,058	100.0%	100.0%	88.3%
6/30/1994	155,238	224,650	306,192	698,988	100.0%	100.0%	104.2%
6/30/1995	169,846	252,034	364,519	778,325	100.0%	100.0%	97.8%
6/30/1996	185,763	293,937	399,861	876,886	100.0%	100.0%	99.3%
6/30/1997	204,757	312,390	447,065	1,001,035	100.0%	100.0%	108.2%
6/30/1998	225,454	350,860	460,033	1,150,311	100.0%	100.0%	124.8%
6/30/1999	231,252	396,846	540,413	1,335,308	100.0%	100.0%	130.9%
6/30/2000	274,167	467,653	653,480	1,522,660	100.0%	100.0%	119.5%
6/30/2001	301,936	565,126	769,014	1,686,242	100.0%	100.0%	106.5%
6/30/2002	354,296	651,295	850,391	1,810,619	100.0%	100.0%	94.7%
6/30/2003	394,925	731,059	923,732	1,677,770	100.0%	100.0%	59.7%
6/30/2004	444,318	804,864	972,028	1,837,308	100.0%	100.0%	60.5%

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
6/30/1989	703	272	7,645	24	14	151	30	1	148
6/30/1990	678	253	8,070	23	10	164	29	8	169
6/30/1991	712	277	8,505	24	13	175	54	4	219
6/30/1992	715	316	8,904	28	7	196	46	5	260
6/30/1993	689	336	9,257	26	10	215	40	7	293
6/30/1994	658	358	9,557	29	9	235	60	9	344
6/30/1995	782	372	9,967	33	19	249	54	12	386
6/30/1996	799	390	10,376	26	8	267	47	18	415
6/30/1997	823	388	10,811	22	13	276	63	18	460
6/30/1998	841	424	11,218	29	17	288	59	22	497
6/30/1999	813	431	11,600	35	7	316	67	19	545
6/30/2000	945	432	12,113	45	14	347	76	20	601
6/30/2001	987	468	12,632	53	22	378	76	14	663
6/30/2002	980	471	13,141	30	21	387	97	18	742
6/30/2003	979	501	13,619	31	13	405	96	25	813
6/30/2004	1,081	541	14,159	44	18	431	86	44	855

Table 22**Schedule of Retirees by Type
(\$ in 000's)**

Actuarial Valuation Date	<u>Service Retirees</u>		<u>Disability</u>		<u>Beneficiaries</u>	
	<u>Number</u>	<u>Benefits</u>	<u>Number</u>	<u>Benefits</u>	<u>Number</u>	<u>Benefits</u>
6/30/1991	8,505	12,616	175	232	219	318
6/30/1992	8,904	14,403	196	287	260	414
6/30/1993	9,257	16,464	215	347	293	478
6/30/1994	9,557	18,534	235	417	344	572
6/30/1995	9,967	20,842	249	481	383	699
6/30/1996	10,376	23,785	267	550	415	820
6/30/1997	10,811	27,250	276	616	460	1,007
6/30/1998	11,218	30,240	288	672	497	1,126
6/30/1999	11,600	35,395	316	826	545	1,384
6/30/2000	12,113	41,091	347	1,002	601	1,653
6/30/2001	12,632	50,512	378	1,232	663	2,038
6/30/2002	13,141	57,697	387	1,346	742	2,413
6/30/2003	13,619	63,860	405	1,449	813	2,752
6/30/2004	14,159	70,710	431	1,558	855	3,076

Average New Retiree Statistics

<u>Actuarial Valuation Date</u>	<u>New Service Retirees</u>	<u>Average New Benefit</u>	<u>% Change From Previous Year</u>
6/30/1991	606	228.87	3
6/30/1992	609	242.19	6
6/30/1993	597	275.23	12
6/30/1994	571	306.20	11
6/30/1995	679	298.76	(3)
6/30/1996	797	330.40	11
6/30/1997	823	327.16	(1)
6/30/1998	805	324.82	(1)
6/30/1999	813	366.42	13
6/30/2000	945	431.89	18
6/30/2001	987	565.29	31
6/30/2002	980	660.51	17
6/30/2003	979	676.19	2
6/30/2004	1,081	665.97	(2)

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)**

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

Disability Retired Members, Male and Female

<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. The Actuarial Value of Assets has been marked to the market value as of June 30, 2003.

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 10.5% of pay.

Normal (Unreduced) Retirement

Eligibility

Attainment of age 60 with at least five years of Creditable Service, or
Completion of 30 years of Creditable Service at any age, or
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 0.6 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 0.8% 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 July 1, 2008 at an age under 55 and with at least 25 years of creditable service but not eligible for the Rule of 80.

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.