

**THE STATE POLICE RETIREMENT SYSTEM  
OF NEW JERSEY  
ANNUAL REPORT  
OF THE ACTUARY  
PREPARED AS OF JULY 1, 2001**

January 7, 2002

Board of Trustees  
The State Police Retirement System  
of New Jersey  
Trenton, New Jersey 08625

Members of the Board:

The law governing the operation of The State Police Retirement System of New Jersey provides for annual actuarial valuations of the System. The results of the July 1, 2001 valuation are submitted in this report which also includes a comparison with the preceding year's valuation.

The valuation shows the financial condition of the Plan as of July 1, 2001 and gives the basis for determining the required annual contribution for the plan year beginning July 1, 2001.

The valuation was prepared on the basis of the same assumptions as were employed for the previous valuation which include an interest rate of 8.75% per year.

The Table of Contents, which follows, highlights the Sections of the Report.

Respectfully submitted,

(Signed) LISA A. WITLEN

Lisa A. Witlen  
Principal & Consulting Actuary

(Signed) GEORGE M. LOVAGLIO

George M. Lovaglio  
Principal & Consulting Actuary

## TABLE OF CONTENTS

<u>Section</u>	<u>Item</u>	<u>Page No.</u>
I	Summary of Key Results	1
II	Employee Data	6
III	Assets, Liabilities and Contributions	9
	A. Market Value of Assets as of June 30, 2001	
	B. Reconciliation of Market Value of Assets from June 30, 2000 to June 30, 2001	
	C. Development of Actuarial Value of Assets as of July 1, 2001	
	D. Present Value of Projected Benefits as of July 1, 2001	
	E. Development of Excess Valuation Assets	
	F. Development of Normal Cost as of July 1, 2001	
	G. Development of State Contributions	
IV	Comments Concerning the Valuation	13
V	Accounting Information	15
VI	Level of Funding	18
 <u>Appendix</u>		
A	Brief Summary of the Benefit and Contribution Provisions as Interpreted for Valuation Purposes	19
B	Outline of Actuarial Assumptions and Methods	22
C	Tabulations Used as a Basis for the 2001 Valuation	24
	Table 1 – Reconciliation of Data from July 1, 2000 to June 30, 2001	
	Table 2 – Distribution of Active Members by Age and Service	
	Table 3 - Active Members Distributed By Age	
	Table 4 - Active Members Distributed By Service	
	Table 5 - Service Retirements	
	Table 6 - Beneficiaries of Deceased Pensioners	
	Table 7 - Beneficiaries of Deceased Active Employees	
	Table 8 - Children of Deceased Active Employees	
	Table 9 - Disability Retirements	

REPORT ON THE ANNUAL  
VALUATION OF  
THE STATE POLICE RETIREMENT SYSTEM  
OF NEW JERSEY  
PREPARED AS OF JULY 1, 2001

SECTION I - SUMMARY OF KEY RESULTS

The State Police Retirement System of New Jersey became effective July 1, 1965 under terms of Chapter 89 of the Laws of 1965. This report, prepared as of July 1, 2001, presents the results of the annual actuarial valuation of the Fund.

For convenience of reference, the principal results of the valuation and a comparison with the preceding year's results are summarized on the following pages.

Valuation Date	July 1, 2001	July 1, 2000
Number of Members	2,675	2,609
Annual Compensation	\$ 199,727,203	\$ 188,466,237
Number of Pensioners and Beneficiaries	1,906	1,814
Total Annual Allowance	\$ 69,952,007	\$ 63,449,663
<u>Assets</u>		
Total Present Market Value of Assets	\$ 1,761,657,628	\$ 2,009,749,975
Total Valuation Assets	\$ 1,829,414,353	\$ 1,752,423,441
<u>Contribution Amounts</u>		
Normal Contribution	\$ 0*	\$ 0
Accrued Liability Contribution	<u>0</u>	<u>0</u>
Total Contribution	\$ 0	\$ 0

\* Required contributions have been reduced by a portion of excess assets (See Section III G).

The major benefit and contribution provisions of the statute as reflected in the valuation are summarized in Appendix A. There were no changes from the provisions used in the previous valuation.

The actuarial assumptions and methods used for valuing the Fund are summarized in Appendix B. There were no changes in actuarial assumptions and methods since the previous valuation.

The combination of the plan provisions, actuarial assumptions and member and beneficiary data is used to generate the overall required level of employer contributions. These contributions are composed of two separate portions, an “accrued liability contribution” and a “normal contribution”. The required contribution is developed in Section III G.

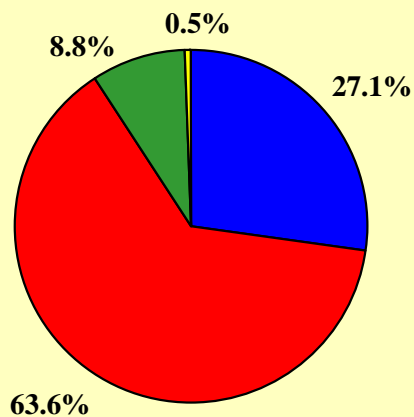
The valuation generates a balance sheet which summarizes in some detail the total present and prospective assets and liabilities of the Fund. A summary comparison of the balance sheets as of July 1, 2000 and July 1, 2001 is set forth in the following table. The allocation of assets among the various investment alternatives is shown in graphic form on page 5.

**TABLE I**  
**COMPARATIVE BALANCE SHEET**

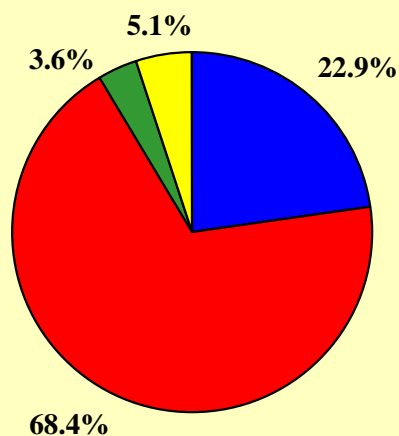
<b><u>ASSETS</u></b>	<b>2001</b>	<b>2000</b>
Actuarial Value of assets of Fund	\$ 1,829,414,353	\$ 1,752,423,441
Unfunded accrued liability/(surplus)	(202,782,697)	(239,513,636)
Total Assets	\$ 1,626,631,656	\$ 1,512,909,805
<b><u>LIABILITIES</u></b>		
Present value of benefits to present beneficiaries payable from the Retirement Reserve Fund	\$ 856,126,296	\$ 779,919,713
Present value of benefits to present active members	770,505,360	732,990,092
Total Liabilities	\$ 1,626,631,656	\$ 1,512,909,805

## THE STATE POLICE RETIREMENT SYSTEM OF NEW JERSEY

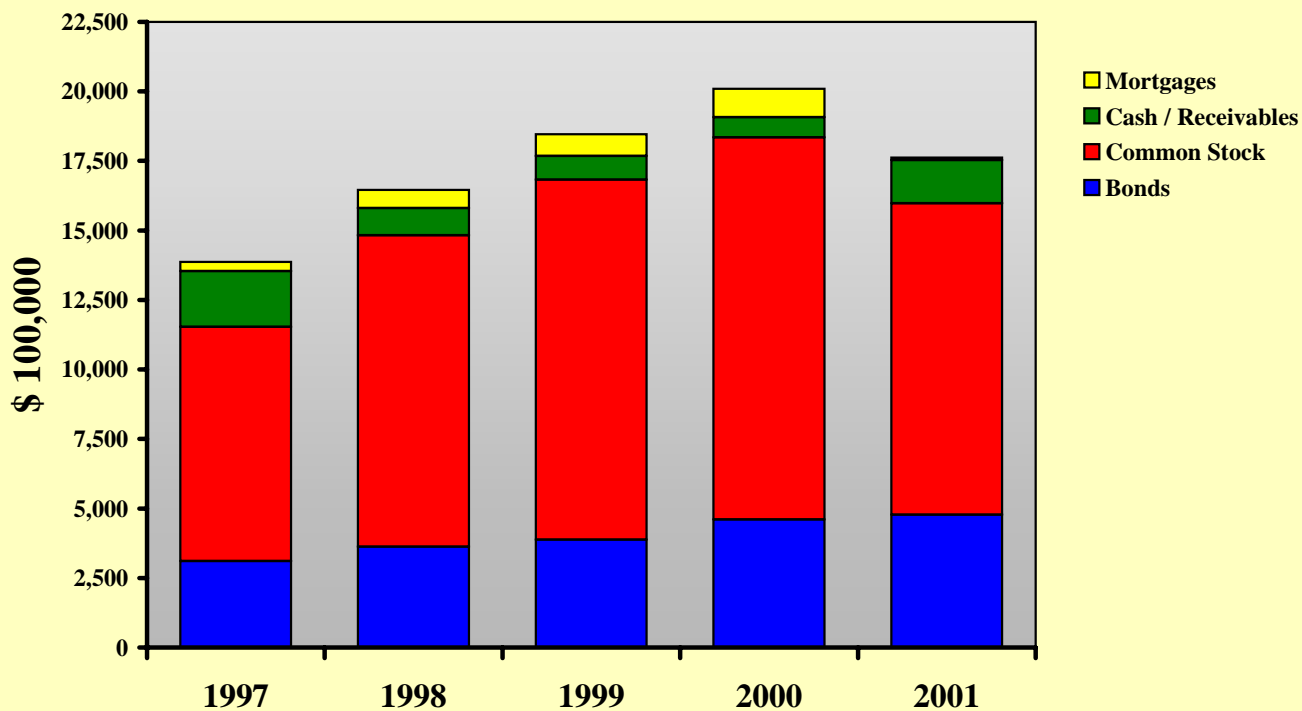
### ASSET ALLOCATION MARKET VALUE



**2001**



**2000**





SECTION II - EMPLOYEE DATA

The data employed for the valuations were furnished to the actuary by the Division of Pensions and Benefits. The following summarizes and compares the Fund membership as of July 1, 2000 and July 1, 2001 by various categories.

**ACTIVE MEMBERSHIP**

<b>Group</b>	<b>2001</b>		<b>2000</b>	
	<b>Number</b>	<b>Annual Compensation</b>	<b>Number</b>	<b>Annual Compensation</b>
Men	2,583	\$ 193,076,929	2,524	\$ 182,537,052
Women	92	\$ 6,650,274	85	\$ 5,929,185

**RETIRED MEMBERS AND BENEFICIARIES**

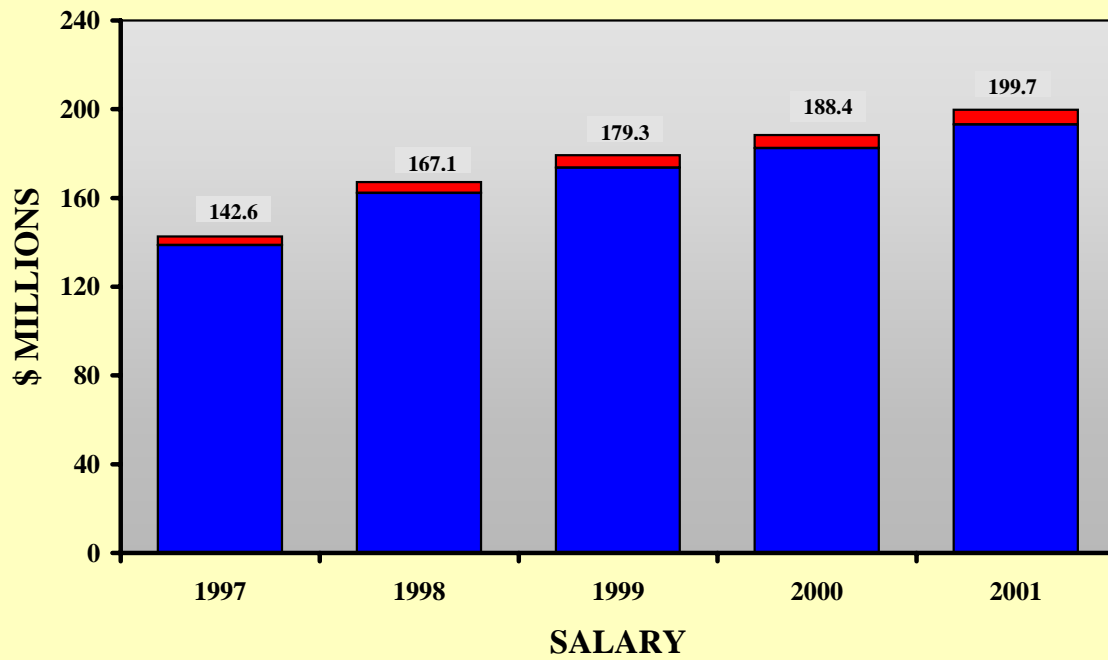
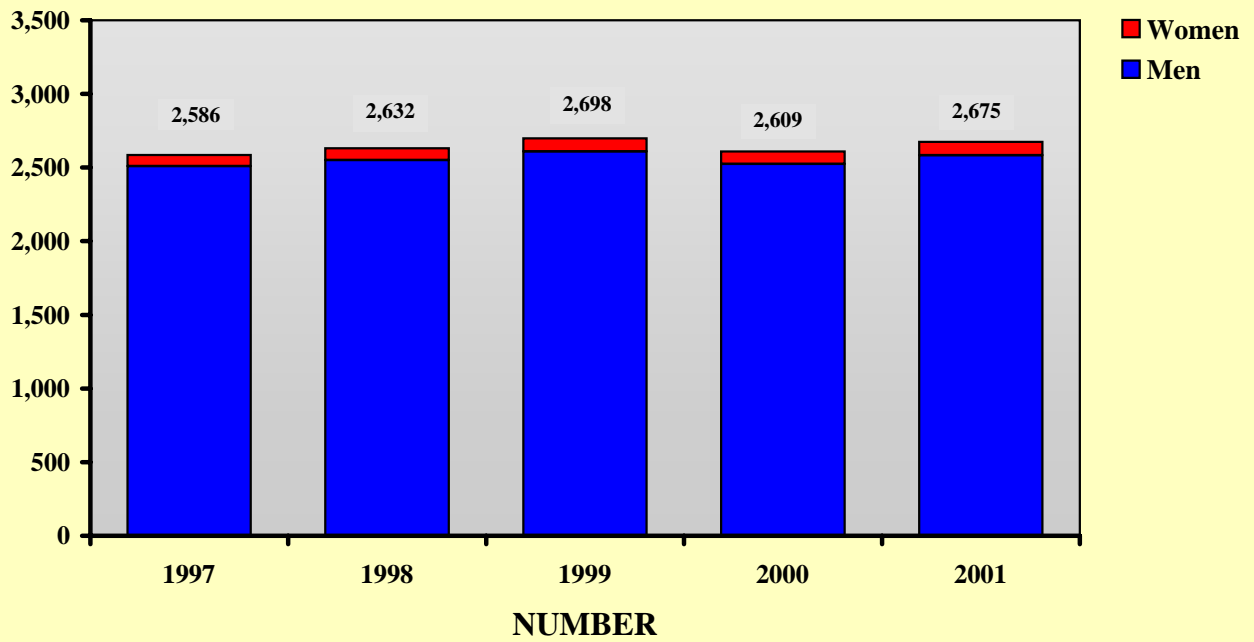
<b>Group</b>	<b>2001</b>		<b>2000</b>	
	<b>Number</b>	<b>Annual Allowances</b>	<b>Number</b>	<b>Annual Allowances</b>
Service Retirements	1,451	\$ 59,219,991	1,380	\$ 53,631,827
Disability Retirements	149	\$ 3,893,063	140	\$ 3,475,856
Beneficiaries of Deceased Pensioners	223	\$ 5,042,785	211	\$ 4,604,187
Beneficiaries of Deceased Active Employees	83	\$ 1,796,168	83	\$ 1,737,793

Appendix C provides a detailed distribution between groups.

Graphic presentations of the statistical data on membership for the five preceding years are shown on the following pages.

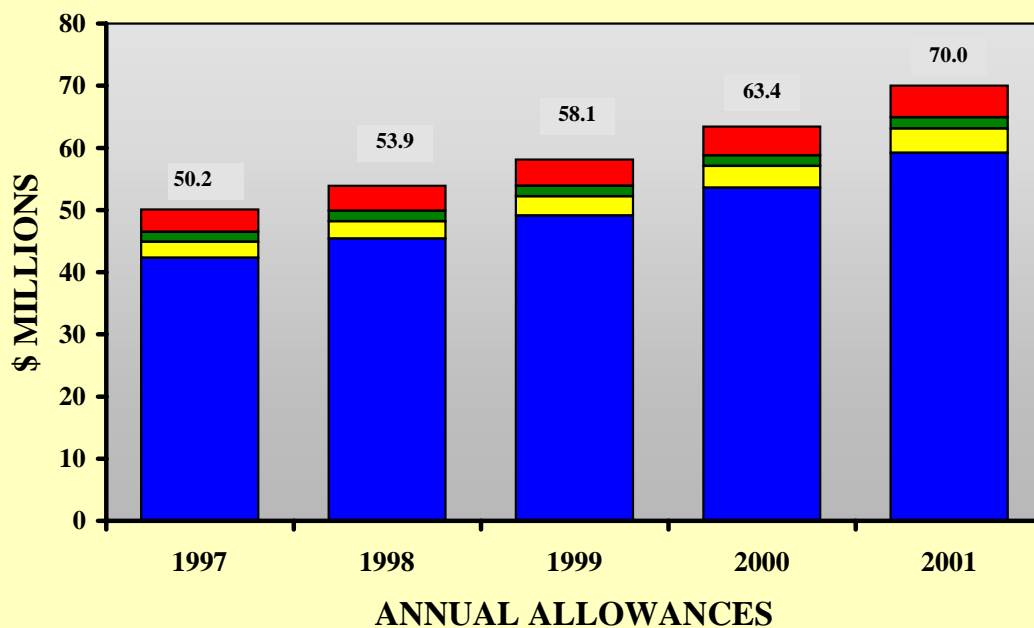
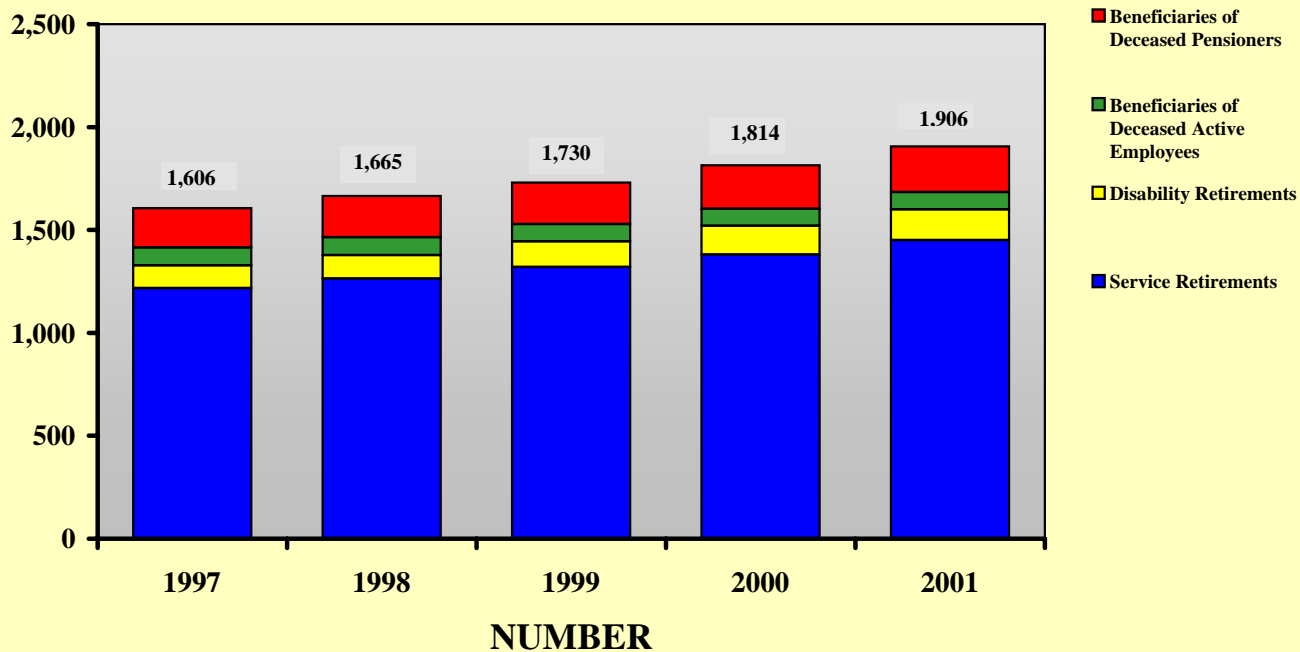
# THE STATE POLICE RETIREMENT SYSTEM OF NEW JERSEY

## SUMMARY OF ACTIVE PARTICIPATION



# THE STATE POLICE RETIREMENT SYSTEM OF NEW JERSEY

## SUMMARY OF RETIRED PARTICIPATION



SECTION III - ASSETS, LIABILITIES AND CONTRIBUTIONS

**A. Market Value of Assets as of June 30, 2001**

1.	Assets		
	a.	Cash	\$ 5,032,249
	b.	Investment Holdings	1,719,176,013
	c.	Accrued Interest on Investments	7,958,517
	d.	Employers' Contributions Receivable	0
	e.	Members' Contributions Receivable	1,146,014
	f.	Loans Receivable	31,957,911
	g.	Dividends Receivable	2,301,191
	h.	Accounts Receivable - Other	<u>1,133</u>
	i.	Total	\$ 1,767,573,028
2.	Liabilities		
	a.	Pension Payroll Payable	\$ 5,846,446
	b.	Accounts Payable and Accrued Expense	<u>68,954</u>
	c.	Total	\$ 5,915,400
3.	Market Value of Assets as of June 30, 2001: 1(i) - 2(c)		\$ 1,761,657,628

**B. Reconciliation of Market Value of Assets from June 30, 2000 to June 30, 2001**

1.	Market Value of Assets as of June 30, 2000		\$ 2,009,749,975
2.	Increases		
	a.	Members' Contributions	\$ 12,796,153
	b.	State Appropriations	0
	c.	Employers' Contributions - Transfer from Other Systems	99,201
	d.	Other	109
	e.	Investment Income	<u>(191,175,500)</u>
	f.	Total	\$ (178,280,037)
3.	Decreases		
	a.	Withdrawal of Members	\$ 89,544
	b.	NCGI Premium Expense	820,454
	c.	Administrative Expenses	248,458
	d.	Benefit Payments	57,124,125
	e.	COLA Benefit Payments	11,323,669
	f.	Transfer Withdrawal Employer Benefit	<u>206,060</u>
	g.	Total	\$ 69,812,310
4.	Market Value of Assets as of June 30, 2001 = 1. + 2.(f) - 3.(g)		\$ 1,761,657,628

**C. Development of Actuarial Value of Assets as of July 1, 2001**

Chapter 115 P.L. 1997 revalued the actuarial value of plan assets to market for the July 1, 1996 valuation. Beginning with the July 1, 1997 valuation, the five-year average market value with write up was used. The following summary shows the development of the actuarial value of plan assets for the current valuation:

1.	Actuarial Value of Assets as of July 1, 2000	\$	1,752,423,441
2.	Net Cash Flow (excluding investment income)		(56,916,846)
3.	Receivable Employer Contributions		0
4.	Expected Investment Income at 8.75%		
	a. Interest on assets as of July 1, 2000	\$	153,337,051
	b. Interest on Net Cash Flow		(2,490,112)
	c. Total\$		<u>150,846,939</u>
5.	Expected Actuarial Value of Assets as of July 1, 2001:		
	1. + 2. + 3. + 4.(c)	\$	1,846,353,534
6.	20% of Difference from Market Value of Assets		<u>(16,939,181)</u>
7.	Actuarial Value of Assets as of July 1, 2001 = 5. + 6.	\$	<u>1,829,414,353</u>

**D. Present Value of Projected Benefits as of July 1, 2001**

1.	Retirees and Beneficiaries		
	a. Service Retirements	\$	730,753,907
	b. Disability Retirements		52,718,474
	c. Beneficiaries		62,380,352
	d. Death Benefits		<u>10,273,563</u>
	e. Total	\$	<u>856,126,296</u>
2.	Terminated Vested Members	\$	0
3.	Contributing Active Participants		
	a. Service Retirement	\$	708,747,128
	b. Ordinary Disability		10,677,052
	c. Accidental Disability		16,552,766
	d. Ordinary Death		12,919,568
	e. Accidental Death		6,440,337
	f. Vested Termination		4,112,483
	g. Withdrawal Benefits		201,383
	h. Lump Sum Death Benefits*		<u>6,694,522</u>
	i. Total	\$	<u>766,345,239</u>
4.	Non-Contributing Active Participants	\$	4,160,121
5.	Total Present Value of Benefits = 1.(e) + 2. + 3.(i) + 4.	\$	<u>1,626,631,656</u>

\*Excludes lump sum death benefits payable during active service.

**E. Development of Excess Valuation Assets**

Chapter 115, P.L. 1997 prescribes a procedure for determining the value of excess valuation assets. This law provides for a reduction in the normal contributions for the valuation periods ending June 30, 1996 and June 30, 1997 to the extent possible by the excess valuation assets and permitted the State Treasurer to reduce the normal contribution payable by the State for valuations after June 30, 1997 up to a specified portion of excess valuation assets. The development of excess valuation assets is developed below:

1.	Valuation Assets	\$	1,829,414,353
2.	Actuarial Accrued Liability		1,626,631,656
3.	Excess Valuation Assets = 1. - 2.	\$	<u>202,782,697</u>

**F. Development of Normal Cost as of July 1, 2001**

1.	Service Retirement	\$	41,277,128
2.	Ordinary Disability		1,124,002
3.	Accidental Disability		1,199,359
4.	Ordinary Death		1,146,708
5.	Accidental Death		639,226
6.	Vested Termination		386,916
7.	Withdrawal Benefits		61,991
8.	Lump Sum Death Benefits*		411,185
9.	Term Cost for Lump Sum Death Benefit During Active Service		<u>698,621</u>
10.	Total	\$	46,945,136

\*Excludes lump sum death benefits payable during active service.

**G. Development of State Contributions**

1.	Present Value of Benefits	\$	1,626,631,656
2.	Actuarial Value of Assets		<u>1,829,414,353</u>
3.	Unfunded Actuarial Accrued Liability/(Surplus) = 1. - 2.	\$	(202,782,697)
4.	Amortization Period		31
5.	Amortization of Unfunded Actuarial Accrued Liability payable July 1, 2002	\$	0
6. (a)	Gross Normal Cost	\$	46,945,136
	(b) Expected Member Contributions		<u>12,628,890</u>
	(c) State Normal Cost = (a) - (b)	\$	34,316,246
	(d) State Normal Cost payable July 1, 2002 = (c) * 1.0875	\$	37,318,918
	(e) Excess Valuation Assets*		<u>37,318,918</u>
	(f) State Net Normal Cost payable July 1, 2002 = (d) - (e)	\$	0
7.	Total Required Contribution as of July 1, 2002 = 5. + 6.(f)	\$	0

\*Excess Valuation Assets are allocated as follows:

1.	Excess Valuation Assets (from Section E)	\$	202,782,697
2.	Excess Valuation Assets as of July 1, 2002 = 1. * 1.0875	\$	220,526,183
3.	Reduction Due to Normal Contribution for the Valuation Period ending June 30, 2001 payable July 1, 2002		<u>37,318,918</u>
4.	Net Excess Valuation Assets After Reductions as of July 1, 2002 = 2. - 3.	\$	183,207,265

SECTION IV - COMMENTS CONCERNING THE VALUATION

The variation in liabilities and contributions reflects the System's actual experience during the year. The System experienced a net actuarial loss during the year that ended June 30, 2001.

The loss is primarily due to an actual return on Fund assets less than that expected. For valuation purposes, an 8.75% per annum rate of return was assumed. The actual return on the Fund's actuarial value of assets was approximately 7.77% for the period from July 1, 2000 through June 30, 2001. There was also a net loss due to experience among the active and the retired participants.

The following shows the development of the actuarial experience and identifies the major experience components:

**A. Calculation of Actuarial Experience for the Year Ended June 30, 2001**

1.	Unfunded Accrued Liability/(Surplus) as of July 1, 2000	\$ (239,513,636)
2.	Gross Normal Cost as of July 1, 2000	43,963,023
3.	Interest on (1) and (2)	(17,110,679)
4.	Actual Members' Contributions Received	12,796,153
5.	Employers' Contributions (including receivable and transfers from other Funds)	99,201
6.	Interest on Contributions	<u>564,172</u>
7.	Expected Unfunded Accrued Liability/(Surplus) as of July 1, 2001 = (1) + (2) + (3) - (4) - (5) - (6)	\$ (226,120,818)
8.	Actual Unfunded Accrued Liability as of July 1, 2001	<u>(202,782,697)</u>
9.	Actuarial (Gain)/Loss = (8) - (7)	\$ 23,338,121



**B. Components of Actuarial Experience**

1.	Investment (Gain)/Loss	\$	16,939,181
2.	Other (Gain)/Loss, including mortality, changes in employee data		<u>6,398,940</u>
3.	Total Actuarial (Gain)/Loss	\$	23,338,121

SECTION V - ACCOUNTING INFORMATION

Statement No. 5 of the Governmental Accounting Standards Board, issued November 1986, established standards of disclosure of pension information by public retirement systems. Statement No. 25 of the Governmental Accounting Standards Board, issued November 1994, established financial reporting standards for defined benefit pension plans and for the notes to the financial statements of defined contribution plans of state and local governmental liabilities and superseded Statement No. 5 effective for periods beginning after June 15, 1996. Statement No. 27, Accounting for Pensions by State and Local Governmental Employers superseded Statement 5 for employers participating in pension plans and is effective for periods beginning after June 15, 1997.

The information required by Statement No. 25 is presented in the following tables. These include the development of the Annual Required Contribution (ARC), the development of the Net Pension Obligation (NPO), the Schedule of Funding Progress and the Schedule of Employer Contributions.

(A) **Development of the Annual Required Contribution (ARC) as of June 30, 2003:**

1.	Actuarial Value of Plan Assets as of June 30, 2001	
	(a) Valuation Assets as of June 30, 2001	\$ 1,829,414,353
	(b) Adjustment for Receivable Contributions included in (a)	0
	(c) Valuation Assets as of June 30, 2001 for GASB Disclosure = (a) - (b)	\$ 1,829,414,353

2.	Actuarial Accrued Liability as of June 30, 2001	\$	1,626,631,656
3.	Unfunded Actuarial Accrued Liability/(Surplus) as of June 30, 2001= 2. - 1.	\$	(202,782,697)
4.	Amortization of Unfunded Actuarial Accrued Liability/(Surplus) over 31 years	\$	(9,415,381)
5.	(a) Gross Normal Cost as of June 30, 2001	\$	46,945,136
	(b) Expected Members' Contributions		<u>12,628,890</u>
	(c) Net Normal Cost as of June 30, 2001 = (a) - (b)	\$	34,316,246
6.	Annual Required Contribution as of June 30, 2003		
	(a) Annual Required Contribution as of June 30, 2001 = 4. + 5.(c)	\$	24,900,865
	(b) Interest Adjustment to June 30, 2003		<u>4,548,299</u>
	(c) Annual Required Contribution as of June 30, 2003 = (a) + (b)	\$	29,449,164

**(B) Development of the Net Pension Obligation (NPO) as of June 30, 2003:**

1.	Annual Required Contribution as of June 30, 2003	\$	29,449,164
2.	Interest on Net Pension Obligation		7,143,719
3.	Adjustment to Annual Required Contribution		<u>(4,038,884)</u>
4.	Annual Pension Cost = 1. + 2. + 3.	\$	32,553,999
5.	Expected Employer Contributions for Fiscal Year 2003	\$	0
6.	Net Pension Obligation at June 30, 2002	\$	81,642,507
7.	Increase in Net Pension Obligation = 4. - 5.	\$	<u>32,553,999</u>
8.	Net Pension Obligation at June 30, 2003 = 6. + 7.	\$	114,196,506

**(C) Schedule of Funding Progress**

<b>Actuarial Valuation Date</b>	<b>Actuarial Value of Assets (a)</b>	<b>Actuarial Accrued Liability (b)</b>	<b>Unfunded Actuarial Accrued Liability (b-a)</b>	<b>Funded Ratio (a/b)</b>	<b>Covered Payroll (c)</b>	<b>Unfunded Actuarial Accrued Liability as a Percentage of Covered Payroll <u>(b-a)</u> c</b>
6/30/96	\$ 1,219,615,207	\$ 1,187,387,033	\$ (32,228,174)	102.7%	\$ 142,390,519	(22.6)%
6/30/97	\$ 1,322,406,703	\$ 1,272,242,451	\$ (50,164,252)	103.9%	\$ 142,636,260	(35.2)%
6/30/98	\$ 1,458,600,992	\$ 1,369,277,968	\$ (89,323,024)	106.5%	\$ 167,145,161	(53.4)%
6/30/99	\$ 1,600,165,104	\$ 1,469,144,146	\$ (131,020,958)	108.9%	\$ 178,203,420	(73.5)%
6/30/00	\$ 1,752,423,441	\$ 1,512,909,805	\$ (239,513,636)	115.8%	\$ 188,466,237	(127.1)%
6/30/01	\$ 1,829,414,353	\$ 1,626,631,656	\$ (202,782,697)	112.5%	\$ 199,727,203	(101.5)%

**(D) Schedule of Employer Contributions**

<b>Fiscal Year</b>	<b>Annual Required Contribution</b>	<b>Employer Contribution</b>	<b>Percentage Contributed</b>
1998	\$ 33,317,314	\$ 0	0.0%
1999	\$ 33,116,255	\$ 0	0.0%
2000	\$ 33,598,843	\$ 0	0.0%
2001	\$ 35,341,259	\$ 0	0.0%
2002	\$ 24,990,652	\$ 0	0.0%
2003	\$ 29,449,164	\$ 0	0.0%

(E) The information presented in the required supplementary schedules were determined as part of the actuarial valuation. Additional information follows:

Valuation Date	June 30, 2001
Actuarial Cost Method	Projected Unit Credit
Amortization Method	Level Dollar, closed
Remaining Amortization Period	31 years
Asset Valuation Method	Five Year Average of Market Value
Actuarial Assumptions:	
Investment Rate of Return	8.75%
Projected Salary Increase	5.95%
Cost of Living Adjustments	60% of the maximum of the CPI increase and 4.0%

SECTION VI - LEVEL OF FUNDING

Although the value of accrued benefits and the funding ratios shown in the previous section are required for the State's financial statements, it is instructive to also look at these values under an alternative approach. For this purpose, we are presenting liabilities determined on a Financial Accounting Standards Board Statement No. 87 Accumulated Benefit Obligation (ABO) basis. This is the same approach as GASB Statement No. 25 except that no assumption is made as to future salary increases.

<u>FASB 87 ABO Funded Ratios</u>		
Actuarial present value of accumulated benefits:		
	<u>June 30, 2001</u>	<u>June 30, 2000</u>
Vested benefits		
Participants currently receiving payments	\$ 856,126,296	\$ 779,919,713
Other participants	371,481,371	373,689,459
	\$ 1,227,607,667	\$ 1,153,609,172
Non-vested benefits	375,171,557	340,944,591
Total	\$ 1,602,779,224	\$ 1,494,553,763
Assets at market value	\$ 1,761,657,628	\$ 2,009,749,975
Ratio of Assets to Total Present Value	109.9%	134.5%

As in the case of the Governmental Accounting Standard Board Statement No. 25, the actuarial present value of vested and non-vested accrued benefits was based on an interest rate of 8.75% for both 2000 and 2001.

APPENDIX A

BRIEF SUMMARY OF THE BENEFIT AND  
CONTRIBUTION PROVISIONS AS INTERPRETED  
FOR VALUATION PURPOSES

Eligibility for Membership

All members of the former State Police and Benevolent Fund: full-time commissioned officers, non-commissioned officers or troopers of the Division of State Police. Membership is a condition of employment.

1. Definitions

Plan Year	The 12-month period beginning on July 1 and ending on June 30.
Service	Service rendered while a member as described above.
Credited Service	A year is credited for each year of service as an officer or trooper in the State Police. Service with other State Retirement Systems is included in the calculation of the retirement benefit at the rate of 1% of final compensation for each year of service credit.
Compensation	Based on contractual salary, including maintenance allowance, received by the member in the last 12 months of credited service preceding retirement, termination or death. Compensation does not include individual salary adjustments granted primarily in anticipation of the retirement or for temporary or extracurricular duties beyond the ordinary work day. (Effective June 30, 1996, Chapter 113, P.L. 1997 provided that the amount of compensation used for employer and member contributions and benefits under the program cannot exceed the compensation limitation of Section 401(a)(17) of the Internal Revenue Code.)
Final Compensation	Average compensation received by member in last 12 months of credited service preceding retirement or death. Such term includes the value of the member's maintenance allowance for the same period.
Aggregate Contributions	The sum of all amounts deducted from the compensation of a member or contributed by him or on his behalf. For contribution purposes, compensation does not include overtime, bonuses, maintenance or any adjustments before retirement.

2. Benefits

Service Retirement	<p>Mandatory retirement at age 55. Voluntary retirement prior to age 55 with 20 years of credited service. Benefit is an annual retirement allowance equal to the greater of (a), (b), or (c), as follows:</p> <ul style="list-style-type: none"> <li>(a) 50% of final compensation;</li> <li>(b) For members retiring with 25 or more years of service, 65% of final compensation, <u>plus</u> 1% for each year of service in excess of 25 years, to a maximum of 70% of final compensation.</li> <li>(c) For members as of August 29, 1985 who would not have 20 years of service by age 55, benefit as defined in (a) above. For members as of August 29, 1985 who would have 20 years of service but would not have 25 years of service at age 55, benefit as defined in (a) above plus 3% for each year of service in excess of 20 years.</li> </ul>
Vested Termination	<p>Termination of service prior to age 55. Benefit for 10 to 20 years of Service - Refund of aggregate contributions, or a deferred life annuity beginning at age 55 equal to 2% of final compensation for each year of service up to 20 years.</p>
Death Benefits	
Before Retirement	<p>Death of an active member of the plan. Benefit is equal to:</p> <ul style="list-style-type: none"> <li>(a) Lump sum payment equal to 3-1/2 times final compensation, plus</li> <li>(b) Spousal life annuity of 50% of final compensation payable until spouse's death or remarriage. If there is no surviving spouse, or upon death or remarriage, a total of 20%, 35% or 50% of final compensation payable to one, two or three dependent children. If there is no surviving spouse (or dependent children), 25% or 40% of final compensation to one or two dependent parents.</li> </ul> <p>Minimum benefit: Aggregate contributions.</p>

After Retirement

Death of a retired member of the plan. The benefit is equal to:

- (a) Lump sum of 50% of final compensation, plus
- (b) Spousal life annuity of 50% of final compensation payable until spouse's death or remarriage. If there is no surviving spouse, or upon death or remarriage, a total of 20%, 35% or 50% of final compensation payable to one, two or three dependent children, respectively.

Ordinary Disability Retirement

Mentally or physically incapacitated for the performance of his usual duty and of any other available duty in the Division of State Police and such incapacity is likely to be permanent.

- (a) The benefit for members with less than four years of service is a refund of the member's aggregate contributions.
- (b) For members with at least four years of service, the benefit is an immediate life annuity equal to 40% of final compensation plus 1-1/2% of final compensation for years of creditable service in excess of 26-2/3.
- (c) For members who are forced to retire with 20 but less than 25 years of service, the benefit is 50% of the member's final compensation plus 3% of final compensation for each year of service in excess of 20 years, to a maximum of 65% of final compensation.

For death following disability retirement, a lump sum equal to 3-1/2 times final compensation if death occurs prior to age 55 or 1/2 of final compensation after age 55.

Accidental Disability Retirement

Totally and permanently disabled as a direct result of a traumatic event occurring during and as a result of his regular or assigned duties. Benefit is an immediate life annuity equal to 2/3 of final compensation. Upon death after disability retirement, lump sum benefit of 3-1/2 times final compensation if death occurs before 55 and 1/2 times final compensation if death occurs after 55.

Loan Provision

Eligible if an active member of the State Police Retirement System with at least 3 years of contributory service. If eligible, a member may borrow an amount which is greater than \$50, but not more than 50% of aggregate contributions. The loan accrues interest at 4% per annum.



APPENDIX B

## OUTLINE OF ACTUARIAL ASSUMPTIONS AND METHODS

VALUATION INTEREST RATE: 8.75% per annum, compounded annually.

COLA: 4.0% per annum, compounded annually. The COLA is 60% of the cumulative increase.

SALARY INCREASES: Salaries are assumed to increase by 5.95% per year.

TERMINATION: Withdrawal rates vary by length of service. Illustrative rates are shown below:

<u>Age</u>	<u>Lives per Thousand</u>	
	<u>Less Than 5 Years of Service</u>	<u>Five to Nineteen Years of Service</u>
25	8.3	4.0
30	11.0	4.0
35	11.0	4.0
40	11.0	4.0
45	11.0	4.0
50	11.0	4.0

SEPARATIONS FROM SERVICE: Representative mortality, disability and retirement rates are as follows:

<u>Age</u>	<u>Annual Rates of *</u>			
	<u>Ordinary Death</u>	<u>Accidental Death</u>	<u>Ordinary Disability</u>	<u>Accidental Disability</u>
25	0.6	0.4	0.6	0.3
30	0.7	0.5	0.9	0.4
35	1.0	0.5	1.2	0.5
40	1.4	0.5	1.8	0.7
45	1.8	0.6	3.1	1.3
50	2.5	0.9	5.4	2.2

\*Per one thousand lives.

MARRIAGE: Husbands are assumed to be 3 years older than wives. Among the active population, 83.3% of participants are assumed married. No children are assumed. Neither the percentage married or number of children assumptions are individually explicit but they are considered as a single combined assumption.

VALUATION METHOD: Projected Unit Credit Method. This method essentially funds the System's benefits accrued to the valuation date. Experience gains and losses are recognized in future accrued liability contributions.

ASSET VALUATION METHOD: A five year average of market values with write-up. (This method takes into account appreciation (depreciation) in investments in order to smooth asset values by averaging the excess of the actual over the expected income, on a market value basis, over a five year period).

HEALTH INSURANCE BENEFITS: Retiree Health Insurance benefits are funded by the State on a pay-as-you-go basis and are not included in the actuarial valuation.

DEATHS AFTER RETIREMENT: For Healthy Inactive Mortality the 1983 Group Annuity Mortality Table for males and females is used. Illustrative rates of mortality for retired members are shown below:

<u>Age</u>	<u>Lives Per Thousand</u> <u>Retired Members</u>		<u>Lives Per Thousand</u> <u>Beneficiaries of</u> <u>Deceased Members</u>		<u>Disabled Males</u> <u>and Females</u>
	<u>Males</u>	<u>Females</u>	<u>Males</u>	<u>Females</u>	
55	6.1	2.5	6.1	2.5	9.6
60	9.2	4.2	9.2	4.2	13.6
65	15.6	7.1	15.6	7.1	19.8
70	27.5	12.4	27.5	12.4	29.5
75	44.6	24.0	44.6	28.8	44.5
80	74.1	42.9	74.1	51.5	67.3
85	114.8	69.9	114.8	83.9	101.1
90	166.3	111.8	166.3	134.1	149.4

RATES OF RETIREMENT: Rates of retirement vary by length of service and age (if more than 25 years of service) with 100% of those remaining at age 55 retiring at age 55. The rates are shown below:

<u>Service</u>	<u>Lives Per 100</u>
20	5
21	1
22	0
23	0
24	0
25	35
greater than 25:	
(a) through age 47	5
(b) ages 48-52	15
(c) ages 53-54	22

**APPENDIX C**

**TABULATIONS USED AS A BASIS FOR THE 2001 VALUATION**

The following tables give a reconciliation of data from July 1, 2000 to June 30, 2001. Tables are also given showing active member number and salaries by age and length of service as of July 1, 2001 and showing the number and retirement allowances of beneficiaries classified by age as of July 1, 2001.

**TABLE 1**

**RECONCILIATION OF DATA FROM JULY 1, 2000 TO JUNE 30, 2001**

	Actives		Deferred Vested	Retirees				Beneficiaries	Dependents	Domestic Relations Beneficiaries		Total
	Contrib.	Noncontrib.		Service	Special	Deferred	Disabled			Retirees	Disabilities	
Members as of July 1, 2000	2,586	23	0	517	823	1	122	287	7	39	18	4,423
Changed to Contributing												
Changed to Noncontributing	(5)	5										
Terminated Vested												
Terminated Non-Vested	(3)	(1)										(4)
Service Retirement	(5)			5								
Special Retirement	(79)				79							
New Disabled	(8)	(1)					9					
New Death	(1)			(11)	(7)		(2)	(7)				(28)
Payments Began												
Payments Ceased				(1)						(2)	(1)	(4)
New Actives	164											164
Rehires												
New Beneficiaries								18	1	9	2	30
Data Corrections				(3)	2		1					
Members as of June 30, 2001	2,649	26	0	507	897	1	130	298	8	46	19	4,581

**TABLE 2****DISTRIBUTION OF ACTIVE MEMBERS BY AGE AND SERVICE**

<b>AGE</b>	<b>SERVICE</b>	<b>1</b>	<b>5</b>	<b>10</b>	<b>15</b>	<b>20</b>	<b>25</b>	<b>30</b>	<b>35</b>	<b>TOTAL</b>
<b>20</b>	Number Salary	3 152,606								<b>3</b> <b>152,606</b>
<b>25</b>	Number Salary	126 6,679,042	6 346,086							<b>132</b> <b>7,025,128</b>
<b>30</b>	Number Salary	120 6,675,861	267 16,975,007	15 1,001,353	5 329,771					<b>407</b> <b>24,981,992</b>
<b>35</b>	Number Salary	27 1,467,212	126 8,169,765	187 13,753,559	406 30,936,652	5 395,128				<b>751</b> <b>54,722,316</b>
<b>40</b>	Number Salary		19 1,250,684	69 5,120,937	382 29,443,626	175 14,349,991	3 243,201			<b>648</b> <b>50,408,439</b>
<b>45</b>	Number Salary			10 723,178	76 5,910,614	241 20,019,604	108 9,517,539			<b>435</b> <b>36,170,935</b>
<b>50</b>	Number Salary			1 34,740	11 763,868	39 3,132,079	133 11,873,222	46 4,425,152	1 79,475	<b>231</b> <b>20,308,536</b>
<b>55</b>	Number Salary				2 126,271	7 513,805	26 2,192,192	33 3,124,983		<b>68</b> <b>5,957,251</b>
<b>TOTAL</b>	Number Salary	<b>276</b> <b>14,974,721</b>	<b>418</b> <b>26,741,542</b>	<b>282</b> <b>20,633,767</b>	<b>882</b> <b>67,510,802</b>	<b>467</b> <b>38,410,607</b>	<b>270</b> <b>23,826,154</b>	<b>79</b> <b>7,550,135</b>	<b>1</b> <b>79,475</b>	<b>2,675</b> <b>199,727,203</b>

TABLE 3

**THE NUMBER AND ANNUAL COMPENSATION OF  
ACTIVE MEMBERS DISTRIBUTED BY AGE  
AS OF JULY 1, 2001**

AGE	MEN		WOMEN	
	NUMBER	AMOUNT	NUMBER	AMOUNT
22	1	\$ 50,869		
23	7	356,080	1	\$ 50,869
24	13	661,291	1	50,869
25	19	974,672	1	50,869
26	29	1,540,547	1	59,039
27	37	2,004,685	1	59,039
28	46	2,583,117	2	111,969
29	65	3,846,157	2	116,040
30	81	4,911,530	6	372,708
31	94	5,805,740	5	317,716
32	81	5,128,438	2	111,969
33	87	5,644,642	1	61,101
34	102	7,068,853	5	307,484
35	146	10,461,295	4	268,673
36	160	11,926,933	7	484,206
37	192	14,408,951	5	372,054
38	175	13,247,037	9	665,444
39	148	11,429,598	6	451,398
40	130	10,061,996	6	472,148
41	83	6,425,335	4	329,356
42	117	9,305,999	6	494,908
43	95	7,646,332	1	87,984
44	102	8,323,861	6	514,067
45	95	7,845,425	2	189,382
46	66	5,479,593	3	240,461
47	85	7,223,600	3	263,820
48	47	4,030,917		
49	59	5,239,763		
50	56	4,673,364		
51	39	3,511,003		
52	45	4,122,344	1	79,475
53	29	2,485,346		
54	37	3,377,504	1	67,234
55	15	1,274,123		
TOTAL	2,583	\$ 193,076,929	92	\$ 6,650,274

Of the 2,675 active members included in the June 30, 2001 valuation data, 1,888 are vested and 787 have not yet completed the vesting service requirement.

TABLE 4

**THE NUMBER AND ANNUAL COMPENSATION OF  
ACTIVE MEMBERS DISTRIBUTED BY SERVICE  
AS OF JULY 1, 2001**

YEARS OF SERVICE	MEN		WOMEN	
	NUMBER	AMOUNT	NUMBER	AMOUNT
0	138	\$ 7,019,853	8	\$ 406,948
1	9	436,938		
2	4	203,474		
3	117	6,907,583	5	295,193
4	103	6,239,974	6	366,603
5	15	891,317		
6	161	10,422,537	11	716,887
7	108	7,228,438	5	336,168
8	89	6,295,654		
9	6	374,745	1	60,761
10	5	309,652	1	51,496
11	7	455,785	1	59,039
12	81	6,133,580	2	154,459
13	212	15,524,671	6	441,532
14	293	22,476,249	4	297,069
15	254	19,739,569	10	770,991
16	120	9,383,925	3	233,934
17	58	4,527,014	3	219,840
18	80	6,333,080		
19	128	10,338,992	3	258,626
20	88	7,130,184	5	403,193
21	7	557,418	15	1,325,413
22	147	12,501,655		
23	100	8,574,281	1	84,669
24	74	6,453,155	1	87,984
25	4	303,595		
26	56	5,077,268		
27	25	2,278,795		
28	47	4,507,057		
29	1	79,475		
30	22	2,080,277		
31	17	1,587,012		
32	7	703,735		
35			1	79,475
TOTAL	2,583	\$ 193,076,929	92	\$ 6,650,274

Of the 2,675 active members included in the June 30, 2001 valuation data, 1,888 are vested and 787 have not yet completed the vesting service requirement.

TABLE 5

**THE NUMBER AND ANNUAL RETIREMENT  
ALLOWANCES OF RETIRED MEMBERS DISTRIBUTED  
BY AGE AS OF JULY 1, 2001**

**SERVICE RETIREMENTS**

AGE	MEN		WOMEN	
	NUMBER	AMOUNT	NUMBER	AMOUNT
43			1	\$ 44,243
44	1	\$ 40,952		
47	5	251,464		
48	7	408,147	2	25,122
49	6	300,170		
50	17	897,532	1	3,241
51	13	694,337		
52	27	1,352,456	2	14,990
53	41	2,101,600	1	18,000
54	57	2,998,219	4	61,602
55	85	4,469,427	7	113,825
56	77	3,855,895	9	165,880
57	73	3,498,202	1	16,049
58	95	4,543,429	5	49,990
59	90	4,057,780	1	9,735
60	96	4,199,596	3	46,723
61	62	2,733,256	2	26,127
62	49	2,132,631	1	9,388
63	56	2,354,578	2	33,369
64	32	1,341,746		
65	32	1,196,318	1	2,600
66	26	1,044,234	1	2,400
67	22	869,090	2	25,782
68	19	682,073	1	4,872
69	33	1,245,685	1	21,180
70	43	1,570,646		
71	39	1,227,909		
72	38	1,236,347		
73	51	1,765,458		
74	37	1,037,288		
75	32	832,948	1	12,408
76	28	758,198		
77	26	665,615		
78	17	450,114		
79	12	275,763		
80	16	429,275		
81	8	208,363		
82	8	200,023		
83	5	112,438		
84	7	200,215		
85	1	21,278		
86	2	41,102		
87	1	23,737		
88	1	20,536		
89	3	56,478		
90	1	19,923		
91	2	41,757		
93	1	11,691		
95	2	36,545		
<b>TOTAL</b>	<b>1,402</b>	<b>\$ 58,512,466</b>	<b>49</b>	<b>\$ 707,525</b>



TABLE 6

**THE NUMBER AND ANNUAL RETIREMENT  
ALLOWANCES OF BENEFICIARIES DISTRIBUTED  
BY AGE AS OF JULY 1, 2001**

**BENEFICIARIES OF DECEASED PENSIONERS**

AGE	MEN		WOMEN	
	NUMBER	AMOUNT	NUMBER	AMOUNT
9			1	\$ 13,056
46			1	13,689
49			1	18,805
53			1	40,329
54	1	\$ 8,154	3	91,167
55			1	29,483
56			2	60,851
57			1	50,375
58			2	47,848
59	1	35,033	6	241,286
60			2	50,337
61			5	137,995
62			3	101,789
63			4	111,911
64			3	84,432
65			4	115,298
66			3	69,220
67			5	129,218
68			5	159,136
69			13	321,353
70			9	200,688
71			9	225,174
72			9	225,346
73			12	257,048
74			5	123,072
75			8	179,605
76			7	144,344
77			5	120,212
78			7	139,826
79			5	130,466
80			7	146,668
81			8	164,939
82			10	180,718
83			8	150,074
84			5	81,045
85			6	99,076
86	1	15,821	8	127,513
87			7	103,126
88			3	45,823
89			2	25,665
90			2	39,618
91			3	49,344
92			3	50,385
93			1	16,231
94			3	46,471
95			2	23,722
<b>TOTAL</b>	<b>3</b>	<b>\$ 59,008</b>	<b>220</b>	<b>\$ 4,983,777</b>

TABLE 7

**THE NUMBER AND ANNUAL RETIREMENT  
ALLOWANCES OF BENEFICIARIES DISTRIBUTED  
BY AGE AS OF JULY 1, 2001**

**BENEFICIARIES OF DECEASED ACTIVE EMPLOYEES**

AGE	MEN		WOMEN	
	NUMBER	AMOUNT	NUMBER	AMOUNT
35			1	\$ 41,790
36			1	45,189
37			1	32,493
39			1	38,354
42			1	24,441
46			1	34,917
49			1	40,614
50			2	71,718
51			1	22,025
52			3	68,146
54			1	31,320
55			1	43,473
56			2	64,671
57			3	73,073
58			3	93,179
59			4	97,057
60			2	42,360
61			2	34,978
62			1	18,280
63			1	18,684
64			1	34,489
66			2	31,827
67			1	30,702
68			1	27,045
69			2	39,669
71			3	70,113
72			4	70,006
73			1	32,607
74			2	35,537
75			1	26,388
76			3	47,033
77			3	62,107
79			1	27,256
80			4	53,298
81			1	16,445
82			1	14,167
83			1	14,377
84			1	12,769
85			2	24,777
86			2	35,845
87			1	10,838
89			1	16,542
90			1	14,131
93			1	14,743
94			1	10,718
100			1	11,061
103			1	10,317
TOTAL	0	\$ 0	77	\$ 1,731,572

TABLE 8

**THE NUMBER AND ANNUAL RETIREMENT  
ALLOWANCES OF BENEFICIARIES DISTRIBUTED  
BY AGE AS OF JULY 1, 2001**

**CHILDREN OF DECEASED ACTIVE EMPLOYEES**

AGE	MEN		WOMEN	
	NUMBER	AMOUNT	NUMBER	AMOUNT
9			1	\$ 11,269
11	1	\$ 13,210		
13			1	11,269
16	1	13,210	1	11,269
18	1	4,369		
TOTAL	3	\$ 30,789	3	\$ 33,807

TABLE 9

**THE NUMBER AND ANNUAL RETIREMENT  
ALLOWANCES OF RETIRED MEMBERS DISTRIBUTED  
BY AGE AS OF JULY 1, 2001**

**DISABILITY RETIREMENTS**

AGE	MEN		WOMEN	
	NUMBER	AMOUNT	NUMBER	AMOUNT
33	2	\$ 60,327		
34	1	41,876		
35	1	29,508		
36	5	144,585		
37	4	129,394	2	\$ 15,080
38	3	104,335	2	34,119
39	4	169,879		
40	6	207,716	4	56,900
41	1	24,437	2	50,654
42	1	26,604	1	25,033
43	2	82,557	1	26,452
44	3	115,784	1	49,535
45	6	183,268	1	5,418
46			1	1,290
47	1	42,066	1	1,690
48	1	25,264		
49	4	140,089		
50	2	20,200	2	11,261
51	3	103,385	2	62,829
52	1	43,508		
53	1	20,708		
54	7	219,361	2	30,433
55	2	38,589	2	16,560
56	5	166,319	1	17,452
57	5	133,459	2	20,661
58	3	65,176		
59	9	226,575	1	7,280
60	3	54,703		
61	7	166,391		
62	5	151,019		
63	5	117,145		
64	3	73,380		
70	1	23,889		
73	3	45,606		
74	1	17,919		
75	2	49,295		
76	4	93,896		
80	1	27,726		
87	2	53,643		
88			1	20,832
TOTAL	120	\$ 3,439,583	29	\$ 453,480