

**South Carolina Police Officers
Retirement System (PORS)**

ACTUARIAL VALUATION

July 1, 2001

March 26, 2002

State Budget and Control Board
South Carolina Retirement System
P.O. Box 11960
Columbia, SC 29211-1960

Subject: July 1, 2001 Actuarial Valuation for PORS

This is the July 1, 2001 actuarial valuation for the South Carolina Police Officers Retirement System (PORS).

Basic Contribution Requirements

Our valuation finds the PORS in good actuarial condition. The current plan benefits are adequately funded by the current contribution levels which consist of employee contributions of 6.5% and employer contributions of 10.30% for Class II members.

The 10.30% employer contribution rate is the sum of an 8.43% rate for the employer's share of the normal cost contributions, and a 1.87% rate used to amortize the unfunded liability. (These are the rates for Class II members.) The calculated funding period is now 10 years. This is the theoretical length of time that will be required to amortize the unfunded liability, based on the current amortization rate and the current benefit structure. Based on the previous actuarial valuation, the funded liability was expected to be eliminated in 7 years. Most of this difference is due to the 3.4% cost-of-living adjustment made effective July 1, 2001.

We have also determined that the Group Life Insurance employer contribution of 0.20% and the accidental death benefit employer contribution of 0.20% are both reasonable and will adequately fund the expected benefit payments. The separate funds for these benefits have built sufficient reserves.

Changes in System Benefits, Actuarial Assumptions and Methods

This actuarial valuation reflects the current provisions of the System as outlined on Table X. The provisions have remained the same since the last actuarial valuation.

The actuarial assumptions and methods are outlined in Table IX. These assumption and methods have remained the same as those used in the July 1, 2000 valuation.

Valuation Data

This valuation was based on 24,821 active members with a payroll of \$757.3 million. This represents an increase in the number of active members of about 0.2% and an increase of 5.7% in covered payroll since the previous year's valuation.

The number of people receiving benefits increased since the last valuation by 10.2%. The annual benefits being paid increased by about 14.9%. This takes into account the 3.4% COLA that was effective July 1, 2001.

Valuation Assets

The market value of the PORS assets as of July 1, 2001 was \$2.20 billion. The comparable figure one year before was \$2.01 billion. The market value rate of investment return on assets for the 2000-2001 year was 7.2%.

For purposes of the actuarial valuation, we are using an actuarial value of assets that phases in investment return different than the assumed 7.25% rate over a 5-year period. This actuarial value as of July 1, 2001 was \$2.20 billion as compared to \$2.01 billion the previous year. The estimated rate of return on an actuarial value basis was 7.3%.

Unfunded Liability and Experience Factors

After recognizing the actuarial value of assets, the unfunded liability as of July 1, 2001 was \$126.3 million. There was an increase in unfunded liability of \$38.8 million. The factors causing the increase (in millions) are:

Required amortization payment	\$ (7.9)
3.4% COLA	32.1
Asset experience	(0.0)
Salary experience	5.3
Other experience	<u>9.3</u>
Net change	\$ 38.8

Governmental Accounting Standards Board (GASB) Calculations

Our report includes information that is required by GASB. As of the last valuation the funded ratio was 95.8%. The current value is 94.6%. In addition, the unfunded liability as a percentage of covered payroll has increased from 12.2% to 16.7%. Both of these effects were principally due to the 3.4% cost-of-living adjustment, effective as of July 1, 2001.

Census Data and System Assets

The Retirement System staff provided the asset information and the member data for retired, active and inactive participants as of June 30, 2001. We have not subjected this data to any auditing procedures, but have examined the data for reasonableness and consistency with the prior year's data.

Conclusions

In our opinion, the information contained in this actuarial report fairly represents the actuarial condition of the South Carolina Police Officers Retirement System.

We look forward to reviewing this report with the State Budget and Control Board and the Director and staff of the Retirement System.

Sincerely,

Gabriel, Roeder, Smith & Company

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Senior Consultant

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Enclosure

	<u>Page No.</u>	
Table I	Summary of Actuarial Valuation Results	1
Table II	Determination and Amortization of Unfunded Liability	2
Table III	Development of Actuarial Value of Assets	3
Table IV	Accounting Information	4
Table V	Valuation Balance Sheet	5
Table VI	Number and Annual Retirement Allowances of Benefit Recipients	6
Table VII	Distribution of Active Members by Attained Age Groups And Service Groups	7
Table VIII	Distribution of Participants Receiving Benefits	8
Table IX	Summary of Actuarial Assumptions and Methods	9
Table X	Summary of Principal Plan Provisions	12

SUMMARY OF ACTUARIAL VALUATION RESULTS

	<u>July 1, 2001</u>	<u>July 1, 2000</u>
1. <u>Number of Active Members and Compensation</u>		
a. Total number of active members	24,821	24,782
b. Total compensation	\$ 757,335	\$ 716,749
2. <u>Number of Persons Receiving Benefits and Benefits</u>		
a. Total number receiving benefits	6,970	6,322
b. Total amount of benefits	\$ 102,395	\$ 89,146
3. <u>Trust Fund Assets</u>		
a. Market value	\$ 2,197,795	\$ 2,009,860
b. Actuarial value	\$ 2,197,982	\$ 2,008,554
4. <u>Unfunded Actuarial Accrued Liability (UAAL)</u>	\$ 126,275	\$ 87,437
5. <u>Remaining Liquidation Period (Years)</u>	10	7
6. <u>Required Contribution as a Percent of Compensation CLASS II)</u>		
a. Normal cost contribution	8.43%	8.43%
b. UAAL contribution	1.87%	1.87%
c. Pre-retirement death contribution	0.20%	0.20%
d. Accidental death contribution	<u>0.20%</u>	<u>0.20%</u>
e. Total	10.70%	10.70%

All dollar amounts in thousands

DETERMINATION AND AMORTIZATION OF UNFUNDED LIABILITY

	<u>July 1, 2001</u>	<u>July 1, 2000</u>
1. <u>Actuarial Present Value of Future Benefits</u>		
a. Present retired members and beneficiaries	\$ 977,769	\$ 844,631
b. Present active and inactive members	<u>2,368,561</u>	<u>2,226,228</u>
c. Total Actuarial Present Value	\$ 3,346,330	\$ 3,070,859
2. <u>Present Value of Future Normal Contributions</u>		
a. Employee at 6.50%	\$ 444,975	\$ 424,423
b. Employer at 8.43%	<u>577,098</u>	<u>550,445</u>
c. Total Future Normal Contributions	\$ 1,022,073	\$ 974,868
3. <u>Actuarial Accrued Liability = 1.c. – 2.c.</u>	\$ 2,324,257	\$ 2,095,991
4. <u>Current Actuarial Value of Assets</u>	\$ 2,197,982	\$ 2,008,554
5. <u>Unfunded Actuarial Accrued Liability = 3. – 4.</u>	\$ 126,275	\$ 87,437
6. <u>Unfunded Accrued Liability Rates (Class II)</u>	1.87%	1.87%
7. <u>Unfunded Accrued Liability Liquidation Period</u>	10 years	7 years

All dollar amounts in thousands

DEVELOPMENT OF ACTUARIAL VALUE OF ASSETS

	<u>July 1, 2001</u>
1. <u>Actuarial Value of Assets on July 1, 2000</u>	\$ 2,008,554
2. <u>2000/2001 Net Cash Flow</u>	
a. Contributions	148,376
b. Disbursements	<u>(106,055)</u>
c. Net Cash Flow	\$ 42,321
3. <u>Expected Investment Return</u> [1. x .0725] + [2.c. x .03625]	\$ 147,154
4. <u>Expected Actuarial Value of Assets on July 1, 2001</u> (1. + 2.c. + 3.)	\$ 2,198,029
5. <u>Market Value of Assets on July 1, 2001</u>	\$ 2,197,795
6. <u>Excess of Market Value over Expected Actuarial Value</u> (5. – 4.)	\$ (234)
7. <u>20% Adjustment towards Market</u> (.20 x 6.)	\$ (47)
8. <u>Actuarial Value of Assets on July 1, 2001</u> (4. + 7.)	<u>\$ 2,197,982</u>

All dollar amounts in thousands

Asset figures exclude amounts held for Group Life Insurance Fund and Accidental Death Fund

ACCOUNTING INFORMATION

1. **Number of Active and Retired Members as of July 1, 2001**

<u>Group</u>	<u>Number</u>
Retiree and Beneficiaries Currently Receiving Benefits	6,970
Terminated Employees Entitled to Benefits But not yet Receiving Benefits	7,980
Active Members	<u>24,821</u>
Total	<u>39,771</u>

2. **Schedule of Funding Progress**

Actuarial Valuation Date	Actuarial Value of Assets	Actuarial Accrued Liability (AAL)	Unfunded AAL (UAAL) (b - a)	Funded Ratio (a / b)	Covered Payroll (e)	UAAL as a % of Covered Payroll (c / e)
	(a)	(b)	(c)	(d)	(e)	(f)
7/1/01	\$2,197,982	\$2,324,257	\$126,275	94.6%	\$757,335	16.7%
7/1/00	2,008,554	2,095,991	87,437	95.8%	716,749	12.2%
7/1/99	1,844,517	1,898,237	53,720	97.2%	638,086	8.4%
7/1/98	1,684,641	1,733,578	48,937	97.2%	606,426	8.1%
7/1/97	1,512,390	1,570,816	58,426	96.3%	562,553	10.4%
7/1/96	1,367,549	1,427,785	60,236	95.8%	505,516	11.9%

All dollar amounts in thousands

3. **Assumptions and Methods**

Valuation date	July 1, 2001
Actuarial cost method	Entry Age Normal
Amortization method	Level percent open
Remaining amortization period	10 years
Asset valuation method	5 year smoothed market
Actuarial assumptions	
Investment rate of return*	7.25%
Projected salary increases*	5.25% - 9.00%
*Including inflation at	3.75%
Cost-of-living adjustments	None

VALUATION BALANCE SHEET

	<u>July 1, 2001</u>	<u>July 1, 2000</u>
1. <u>Assets</u>		
a. <u>Current Assets (Actuarial Value)</u>		
i) Employee Annuity Savings Fund	\$ 464,217	\$ 427,449
ii) Employer Annuity Accumulation Fund	<u>1,733,765</u>	<u>1,581,105</u>
iii) Total Current Assets	\$ 2,197,982	\$ 2,008,554
b. <u>Future Member Contributions to Employee Annuity Savings Fund</u>	\$ 444,975	\$ 424,423
c. <u>Prospective Contributions to Employer Annuity Accumulation Fund</u>		
i) Normal Contributions	\$ 577,098	\$ 550,445
ii) Accrued Liability Contributions	<u>126,275</u>	<u>87,437</u>
iii) Total Prospective Employer Contributions	\$ 703,373	\$ 637,882
d. <u>Total Assets</u>	<u>\$ 3,346,330</u>	<u>\$ 3,070,859</u>
2. <u>Liabilities</u>		
a. <u>Employee Annuity Savings Fund</u>		
i) Past Member Contributions	\$ 464,217	\$ 427,449
ii) Future Member Contributions	<u>444,975</u>	<u>424,423</u>
iii) Total Contributions to Employee Annuity Savings Fund	\$ 909,192	\$ 851,872
b. <u>Employer Annuity Accumulation Fund</u>		
i) Benefits Currently in Payment	\$ 977,769	\$ 844,631
ii) Benefits to be Paid to Current Active Members	<u>1,459,369</u>	<u>1,374,356</u>
iii) Total Benefits Payable from Employer Annuity Accumulation Fund	\$ 2,437,138	\$ 2,218,987
c. <u>Total Liabilities</u>	<u>\$ 3,346,330</u>	<u>\$ 3,070,859</u>

All dollar amounts in thousands

NUMBER AND ANNUAL RETIREMENT ALLOWANCES OF
 BENEFIT RECIPIENTS AS OF JULY 1, 2001

	<u>Number</u>	<u>Annual Retirement Allowances</u>
1. <u>Service Retirement</u>		
Life Annuity	2,264	\$29,050,428
100% J & S	277	3,405,264
100 % Pop-Up	302	3,856,764
50% J & S	249	4,864,932
50% Pop-Up	458	8,935,644
Level Off	<u>1,469</u>	<u>28,324,056</u>
	5,019	\$78,437,088
2. <u>Disability Retirement</u>		
Life Annuity	862	\$13,184,232
100% J & S	85	844,949
100 % Pop-Up	45	517,786
50% J & S	51	666,802
50% Pop-Up	<u>64</u>	<u>1,114,166</u>
	1,107	\$16,327,935
3. <u>Beneficiaries of Deceased Retired Members and Active Members</u>		
Total	844	\$7,629,576
4. <u>Grand Total</u>		
	6,970	\$102,394,599

DISTRIBUTION OF ACTIVE MEMBERS BY AGE GROUPS AND SERVICE GROUPS AS OF JULY 1, 2001

Age Group	<u>Years of Service</u>							Total
	0 – 4	5 – 9	10- 14	15 – 19	20 – 24	25 – 29	30 & Over	
Under 25	1,445	9	-	-	-	-	-	1,454
25 – 29	3,096	793	11	-	-	-	-	3,900
30 – 34	2,145	1,826	642	14	-	-	-	4,627
35 – 39	1,276	1,000	1,214	541	13	-	-	4,044
40 – 44	1,097	670	701	737	297	23	-	3,525
45 – 49	837	591	493	423	427	215	6	2,992
50 – 54	582	451	460	309	231	242	74	2,349
55 – 59	342	258	258	183	94	106	61	1,302
60 – 64	106	111	92	88	55	23	26	501
65 & Up	<u>30</u>	<u>34</u>	<u>21</u>	<u>17</u>	<u>15</u>	<u>6</u>	<u>4</u>	<u>127</u>
Total	10,956	5,743	3,892	2,312	1,132	615	171	24,821

	<u>Prior Year</u>	<u>Current Year</u>
Average Age	38.45 years	38.67 years
Average Service	7.45 years	7.68 years
Average Pay	\$28,922	\$30,512
Percent Female	25.6%	26.0%

DISTRIBUTION OF PARTICIPANTS RECEIVING BENEFITS

1. Service Retirement

Current Age Group	Number	Total Annual Benefit	Average Annual Benefit
(1)	(2)	(3)	(4)
Under 50	209	\$ 4,000,812	\$19,143
50 – 54	552	12,599,088	22,824
55 – 59	853	16,300,584	19,110
60 – 64	964	14,226,408	14,758
65 – 69	1,001	12,798,684	12,786
70 – 74	723	9,309,960	12,877
75 – 79	388	5,371,764	13,845
80 & Over	<u>329</u>	<u>3,829,788</u>	<u>11,641</u>
Total	5,019	\$78,437,088	\$15,628

2. Disability Retirement

Current Age Group	Number	Total Annual Benefit	Average Annual Benefit
(1)	(2)	(3)	(4)
Under 50	450	\$ 7,466,595	\$16,592
50 – 54	234	3,438,567	14,695
55 – 59	207	2,722,803	13,154
60 – 64	89	1,110,037	12,472
65 – 69	60	849,971	14,166
70 – 74	33	380,823	11,540
75 – 79	21	238,803	11,372
80 & Over	<u>13</u>	<u>120,336</u>	<u>9,257</u>
Total	1,107	\$16,327,935	\$14,750

3. Beneficiaries

Current Age Group	Number	Total Annual Benefit	Average Annual Benefit
(1)	(2)	(3)	(4)
Under 50	102	\$ 906,624	\$ 8,888
50 – 54	64	545,616	8,525
55 – 59	72	733,596	10,189
60 – 64	90	903,900	10,043
65 – 69	101	1,055,088	10,446
70 – 74	127	1,220,904	9,613
75 – 79	110	890,436	8,095
80 & Over	<u>178</u>	<u>1,373,412</u>	<u>7,716</u>
Total	844	\$7,629,576	\$ 9,040

SUMMARY OF ACTUARIAL ASSUMPTIONS AND METHODS

1. Interest to be Earned by Fund

7.25% per annum, compounded annually, composed of an assumed 3.75% inflation rate and a 3.50% real rate of return.

2. Salary Increases

Salary increases are assumed in accordance with the following representative rates:

<u>Age</u>	<u>Annual Increases</u>	<u>Age</u>	<u>Annual Increases</u>
20	9.00%	45	5.25%
25	8.00%	50	5.25%
30	6.85%	55	5.25%
35	6.10%	60 & Up	5.25%
40	5.75%		

3. Decrement Rates

The following are representative values of the assumed annual rates of withdrawal, inservice mortality, disability and service retirement

<u>Age</u>	<u>Annual Rate of</u>				
	<u>Service Retirement *</u>	<u>Mortality</u>	<u>Disability</u>	<u>Withdrawal</u>	
				<u>Years of Service</u>	
				<u>0 – 4</u>	<u>5 or More</u>
20		0.05%	0.10%	13.00%	7.00%
25		0.07%	0.12%	12.00%	7.00%
30		0.08%	0.16%	11.00%	4.25%
35		0.10%	0.30%	10.00%	4.00%
40		0.14%	0.40%	9.50%	2.90%
45	10.00%	0.20%	0.60%	9.00%	2.80%
50	10.00%	0.32%	0.75%	8.00%	2.00%
55	10.00%	0.50%			
60	15.00%	0.71%			
64	25.00%	1.02%			

*Plus an additional 15% in year when first become eligible for unreduced service retirement.

In addition, 25% of disabilities are assumed to be duty related, and 5% of pre-retirement deaths are assumed to be accidental.

4. Mortality After Retirement

For healthy retirees and beneficiaries, the 1983 Group Annuity Mortality Table rates set forward two years. A separate table of mortality rates is used for disabled retirees. The following are sample rates for the retirees and beneficiaries:

Age	Healthy		Disabled	
	Male	Female	Male	Female
50	0.48%	0.19%	2.46%	2.46%
55	0.71%	0.31%	2.80%	2.80%
60	1.11%	0.52%	3.32%	3.32%
65	1.98%	0.87%	4.17%	4.17%
70	3.34%	1.62%	5.48%	5.48%
75	5.48%	3.07%	7.52%	7.52%
80	8.93%	5.27%	10.65%	10.65%
85	13.39%	8.39%	15.36%	15.36%

5. Marriage Assumption

100% of all active members are assumed to be married, with female spouses being 4 years younger.

6. Asset Valuation Method

Actuarial value of assets recognizes a portion of the difference between the market value of assets and the expected actuarial value of assets, based on the assumed investment rate of return. The amount recognized each year is 20% of the difference between market and expected actuarial value. The actuarial value of assets is limited to a range between 80% and 120% of market value.

7. Cost Methods

a. Normal Retirement, Termination, Death and Disability Benefits

Projected benefit with level percentage entry age normal cost and open-end unfunded actuarial accrued liability. Gains and losses are reflected in the period remaining to liquidate the unfunded actuarial accrued liability.

b. Group Life Insurance Benefit and Accidental Death Benefits

One-year term cost method.

8. Additional Assumptions

There are certain other assumptions made that have a relatively minor effect on liabilities. These assumptions are available upon request.

9. Cost-of-Living Increases

None assumed.

10. Payroll Growth Rate

5.25% per annum.

11. Changes from Prior Valuation

None.

SUMMARY OF PRINCIPAL PLAN PROVISIONS

1. Effective Date

July 1, 1962.

2. Eligibility Requirements

All police officers or firefighters who work at least 1,600 hours as a police officer or firefighter and whose compensation is at least \$2,000 during the fiscal year.

3. Creditable Service

Creditable service means service during which contributions have been made. This is counted in years, months, and days.

There are a number of different types of service that may be purchased by an employee under special rules, including educational leave, medical leave, federal service, maternity leave, military leave, municipality service, non-member service, out-of-state service, additional service credit, and others.

4. Average Final Compensation

The total of the highest 12 consecutive quarters of compensation earned divided by 3. Denoted AFC. Compensation generally includes gross salary or wages, overtime, sick pay, wage deferrals, and termination pay for unused annual leave. The unused annual leave is added to the sum of the highest 12 consecutive quarters prior to dividing by 3. For members who joined the system on or after January 1, 1997, compensation for benefit and contribution purposes is limited to \$160,000, subject to annual index.

5. Normal Retirement

a. Eligibility Attainment of age 55 and the completion of 5 years of creditable service or completion of 25 years of creditable service.

b. Benefit 2.14% of AFC times creditable service (Class II).

6. Disability Retirement

a. Eligibility Disability prior to normal retirement age with at least 5 years of creditable service. The service requirement is waived for job related disability.

- b. Benefit Benefit equal to the amount of retirement benefit that would have been payable assuming continued employment at age 55 and AFC at date of disability.

7. Death Benefits

a. Death prior to age 55

- i) Prior to completion of 15 years of creditable service

Refund of employee contributions with interest plus Group Life Insurance in a lump sum equal to annual compensation. Group life Insurance only payable to those with at least 1 year of creditable service, unless death is job related, and employer participates.

- ii) After completion of 15 years of creditable service

Same as above, however, instead of the refund of employee contributions with interest, the beneficiary may elect to receive an annuity equal to the amount that would have been payable had the member retired the day before death under elected payment to commence at age 55 under Option B described below.

b. Death after age 55

Same as Item a(ii) above.

8. Accidental Death Benefit

If death occurs and is duty related, then a monthly annuity equal to 50% of the member's compensation at the time of death is paid to the statutory beneficiary until the beneficiary's death.

9. Member Contribution

6.5% of compensation

10. Vested Benefit Upon Termination

- a. Eligibility 100% vesting upon completion of 5 years of creditable service and refund benefit declined.
- b. Benefit Accrued service retirement benefit as of date of termination payable as of age 55.

11. Refund Benefit

- a. Eligibility All nonvested members, and at members election, vested members.
- b. Benefit Return of employee contributions plus interest.

12. Optional Forms of Retirement Income

- Option A Monthly life annuity with guaranteed return of employee contributions plus interest. (This is the normal form of payment.)
- Option B Monthly life annuity with 100% of reduced benefit continued to beneficiary upon death, with revert to maximum option if beneficiary predeceases retiree.
- Option C Monthly life annuity with 50% of reduced benefit continued to beneficiary upon death, with revert to maximum option if beneficiary predeceases retiree.

Options B and C are actuarially reduced.

13. Cost of Living Adjustment

Granted upon approval of State Budget and Control Board if funding objectives are met. The amount is the increase in the calendar year CPI not in excess of 4%.

14. Changes from Prior Valuation

None.