

**REPORT ON THE ACTUARIAL VALUATION OF  
THE NORTH CAROLINA FIREMEN'S AND  
RESCUE SQUAD WORKERS' PENSION FUND  
PREPARED AS OF JUNE 30, 2010**

December 16, 2010

Board of Trustees  
North Carolina Firemen's and Rescue  
Squad Workers' Pension Fund  
Raleigh, North Carolina

**Members of the Board:**

The North Carolina Firemen's and Rescue Squad Workers' Pension Fund became effective as of January 1, 1982. It is a continuation of the North Carolina Firemen's Pension Fund which became effective July 1, 1959. Contributions to provide the benefits under the Fund are made jointly by the members and by the State. The members' rate of contribution is fixed at \$10 per month, while the State's rate of contribution is to be determined annually on the basis of actuarial valuations, so that the total contributions of the members and the State, together with the interest earned on the investments of the Fund, will be sufficient to provide all benefits payable from the Fund.

An actuarial valuation of the Fund, prepared as of June 30, 2010, has now been completed and the results are presented in this report, together with our recommendations regarding contributions payable by the State.

An investigation of the demographic, economic and other assumptions was made during 2010. As a result of this investigation, we are recommending changes to the turnover, retirement and mortality assumptions. This valuation reflects these proposed assumption changes.

An audit of the "Report on the North Carolina Firemen's and Rescue Squad Workers' Pension Fund prepared as of June 30, 2008" was completed during 2010. Buck reviewed the findings of the audit report with the Retirement Systems Division and agreed to make certain changes to the valuation report. These changes have been included in this valuation.

The annual required contribution for the fiscal year ending June 30, 2012 is \$15,870,645. The current appropriation of \$10,079,671 must be increased by \$5,790,974 to meet the required contribution.

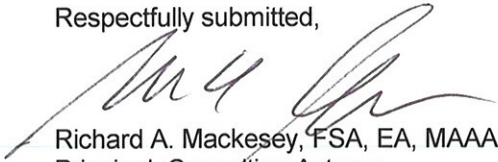
The valuation has been prepared in accordance with the parameters of Statement Nos. 25 and 27 of the Governmental Accounting Standards Board (GASB). The annual required contribution (ARC) under GASB for the 2012 fiscal year is \$15,870,645 based on a nine-year liquidation period of the unfunded accrued liability. The Fund has a Net Pension Obligation (NPO) of \$429,444.

The plan sponsor selected the assumptions used for the results in this report. I believe that these assumptions are reasonable and comply with the requirements of GASB Nos. 25 and 27. I prepared this report in accordance with the requirements of these standards.

I am an Enrolled Actuary, a Fellow of the Society of Actuaries and a Member of the American Academy of Actuaries. I meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions contained in this report. This report has been prepared in accordance with all applicable Actuarial Standards of Practice, and I am available to answer questions about it.

The Table of Contents, which immediately follows, outlines the material contained in the report.

Respectfully submitted,

A handwritten signature in dark ink, appearing to read 'M4' followed by a stylized flourish.

Richard A. Mackesey, FSA, EA, MAAA  
Principal, Consulting Actuary

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**REPORT ON THE ACTUARIAL VALUATION OF THE  
NORTH CAROLINA FIREMEN'S AND  
RESCUE SQUAD WORKERS' PENSION FUND  
PREPARED AS OF JUNE 30, 2010**

**SECTION I - SUMMARY OF PRINCIPAL RESULTS**

1. This report, prepared as of June 30, 2010, presents the results of the actuarial valuation of the Fund. The principal results of the valuation and a comparison with previous year's results are summarized below.

**TABLE I  
SUMMARY OF PRINCIPAL RESULTS**

VALUATION DATE	6/30/2010	6/30/2009
<b>FIREMEN</b>		
Number of active members included in valuation	35,216	34,110
Retired membership		
Number	10,216	9,860
Annual pensions	\$ 20,840,640	\$ 20,114,400
Number of deferred disabled members	113	129
Assets		
Market related value	\$ 283,783,155	\$ 281,776,229
Market value	253,037,000	235,515,469
Unfunded accrued liability	\$ 50,635,822	\$ 33,914,273
Employer contributions		
Normal	\$ 6,884,024	\$ 6,143,894
Accrued liability	<u>8,134,525</u>	<u>5,260,877</u>
Total	\$ 15,018,549	\$ 11,404,771
<b>RESCUE SQUAD WORKERS</b>		
Number of active members included in valuation	3,268	3,178
Retired membership		
Number	1,082	1,051
Annual pensions	\$ 2,207,280	\$ 2,144,040
Number of deferred disabled members	8	11
Assets		
Market related value	\$ 34,489,461	\$ 33,921,030
Market value	30,769,405	28,346,675
Unfunded accrued liability	\$ 1,327,549	\$ 1,713,054
Employer contributions		
Normal	\$ 638,828	\$ 572,421
Accrued liability	<u>213,268</u>	<u>265,734</u>
Total	\$ 852,096	\$ 838,155

TABLE I (continued)

VALUATION DATE	6/30/2010	6/30/2009
	<b>TOTAL</b>	
Number of active members included in valuation	38,484	37,288
Retired membership		
Number	11,298	10,911
Annual pensions	\$ 23,047,920	\$ 22,258,440
Number of deferred disabled members	121	140
Assets		
Market related value	\$ 318,272,616	\$ 315,697,259
Market value	283,806,405	263,862,144
Unfunded accrued liability	\$ 51,963,371	\$ 35,627,327
<b>CONTRIBUTIONS FOR FISCAL YEAR ENDING</b>	<b>JUNE 30, 2012</b>	<b>JUNE 30, 2011</b>
<u>Recommended Employer contributions</u>		
Normal	\$ 7,522,852	\$ 6,716,315
Accrued liability	<u>8,347,793</u>	<u>5,526,611</u>
Total	\$ 15,870,645	\$ 12,242,926
<u>GASB 25/27</u>		
Annual required contribution (ARC) of employer		
Normal	\$ 7,522,852	\$ 6,716,315
Accrued liability	<u>8,347,793</u>	<u>5,526,611</u>
Total	\$ 15,870,645	\$ 12,242,926

2. The following table shows a reconciliation of the change in the annual required contribution computed to be \$12,242,926 based on the June 30, 2009 valuation and \$15,870,645 based on the June 30, 2010 valuation.

**TABLE II**  
**RECONCILIATION OF CHANGE IN ANNUAL REQUIRED CONTRIBUTION**

Prior Year's Preliminary ARC (based on 6/30/09 valuation)	\$ 12,242,926
Impact of Legislative Changes	<u>0</u>
Prior Year's Final ARC	12,242,926
Impact of Resetting Amortization Period to 9 Years	(456,624)
Change Due to Demographic Gain/Loss	(206,955)
Change Due to Investment Gain/Loss	1,336,624
Change Due to Contributions Less Than ARC	347,522
Assumption Changes and Method Changes	<u>2,607,152</u>
Current Year's Preliminary ARC (based on 6/30/10 valuation)	\$ 15,870,645

3. Tables summarizing the membership of the Fund as of the valuation date are shown in Section II.
4. The valuation balance sheet showing the assets and liabilities of the current and previous valuation dates is provided in Section III.
5. An allocation of investments by category is provided in Section IV.
6. Contributions payable by the State are provided in Section V.
7. Comments on experience and actuarial gains during the valuation year are provided in Section VI.
8. Accounting information to be disclosed in the financial statements of the Fund and the employer is provided in Section VII.
9. Schedule A of this report presents the development of the actuarial value of assets.
10. Schedule B of this report presents the development of the amortization of the unfunded accrued liability.
11. Schedule C of this report outlines the full set of actuarial assumptions and methods employed.
12. Schedule D gives a summary of the benefit and contribution provisions of the Fund.
13. Schedule E provides detailed tabulations of the membership of the Fund as of the valuation date.

## **SECTION II - MEMBERSHIP DATA**

Data regarding the membership of the Fund for use as a basis for the valuation were furnished by the Retirement Fund office. The following table summarizes the membership of the Fund as of June 30, 2010 upon which the valuation was based. Detailed tabulations of the data are given in Schedule E.

**TABLE III**  
**THE NUMBER OF ACTIVE MEMBERS**  
**AS OF JUNE 30, 2010**

<b>GROUP</b>	<b>NUMBER</b>	<b>AVERAGE AGE</b>	<b>AVERAGE SERVICE</b>
Firemen	21,092	39.1	9.3
Volunteer Firemen	14,124	39.3	8.2
Rescue Squad Workers	<u>3,268</u>	<u>42.4</u>	<u>9.7</u>
Total	38,484	39.5	8.9

TABLE IV

**THE NUMBER AND ANNUAL PENSIONS  
OF RETIRED MEMBERS AS OF JUNE 30, 2010**

<b>GROUP</b>	<b>NUMBER</b>	<b>AVERAGE AGE</b>	<b>ANNUAL PENSIONS</b>
Firemen	10,216	68.7	\$ 20,840,640
Rescue Squad Workers	<u>1,082</u>	<u>68.9</u>	<u>2,207,280</u>
Total	11,298	68.7	\$ 23,047,920

TABLE V

**THE NUMBER AND ANNUAL PENSIONS OF DISABLED MEMBERS  
ELIGIBLE FOR DEFERRED PENSION AS OF JUNE 30, 2010**

<b>GROUP</b>	<b>NUMBER</b>	<b>AVERAGE AGE</b>	<b>ANNUAL PENSIONS</b>
Firemen	113	48.9	\$ 230,520
Rescue Squad Workers	<u>8</u>	<u>52.5</u>	<u>16,320</u>
Total	121	49.1	\$ 246,840

**SECTION III - VALUATION BALANCE SHEET**

The following valuation balance sheets show the assets and liabilities of the Pension Fund as of the current valuation date of June 30, 2010 and, for comparison purposes, as of the previous valuation date of June 30, 2009. The development of the actuarial value of assets is presented in Schedule A.



**TABLE VI**  
**VALUATION BALANCE SHEET**  
**SHOWING THE ASSETS AND LIABILITIES OF THE**  
**NORTH CAROLINA FIREMEN'S AND**  
**RESCUE SQUAD WORKERS' PENSION FUND**  
**FIREMEN**

	June 30, 2010	June 30, 2009
<b>ASSETS</b>		
Current assets:		
Annuity Savings Fund	\$ 33,510,022	\$ 32,756,008
Pension Accumulation Fund	<u>250,273,133</u>	<u>249,020,221</u>
Total current assets	\$ 283,783,155	\$ 281,776,229
Future member contributions to Annuity Savings Fund	\$ 25,463,756	\$ 22,998,916
Prospective contributions to Pension Accumulation Fund:		
Normal contributions	\$ 47,561,837	\$ 39,538,456
Accrued liability contributions	<u>50,635,822</u>	<u>33,914,273</u>
Total prospective contributions	<u>\$ 98,197,659</u>	<u>\$ 73,452,729</u>
Total Assets	<u>\$ 407,444,570</u>	<u>\$ 378,227,874</u>
<b>LIABILITIES</b>		
Annuity Savings Fund:		
Past member contributions	\$ 33,510,022	\$ 32,756,008
Future member contributions	<u>25,463,756</u>	<u>22,998,916</u>
Total contributions to Annuity Savings Fund	\$ 58,973,778	\$ 55,754,924
Pension Accumulation Fund:		
Benefits currently in payment	\$ 174,957,949	\$ 165,944,329
Benefits to be paid to current active members	<u>173,512,843</u>	<u>156,528,621</u>
Total benefits payable from Pension Accumulation Fund	<u>\$ 348,470,792</u>	<u>\$ 322,472,950</u>
Total Liabilities	<u>\$ 407,444,570</u>	<u>\$ 378,227,874</u>

**TABLE VI (continued)**  
**VALUATION BALANCE SHEET**  
**SHOWING THE ASSETS AND LIABILITIES OF THE**  
**NORTH CAROLINA FIREMEN'S AND**  
**RESCUE SQUAD WORKERS' PENSION FUND**  
**RESCUE SQUAD WORKERS**

	June 30, 2010	June 30, 2009
<b>ASSETS</b>		
Current assets:		
Annuity Savings Fund	\$ 3,137,794	\$ 3,078,114
Pension Accumulation Fund	<u>31,351,667</u>	<u>30,842,916</u>
Total current assets	\$ 34,489,461	\$ 33,921,030
Future member contributions to Annuity Savings Fund	\$ 2,166,323	\$ 2,077,753
Prospective contributions to Pension Accumulation Fund:		
Normal contributions	\$ 3,962,381	\$ 3,493,955
Accrued liability contributions	<u>1,327,549</u>	<u>1,713,054</u>
Total prospective contributions	<u>\$ 5,289,930</u>	<u>\$ 5,207,009</u>
Total Assets	<u>\$ 41,945,714</u>	<u>\$ 41,205,792</u>
<b>LIABILITIES</b>		
Annuity Savings Fund:		
Past member contributions	\$ 3,137,794	\$ 3,078,114
Future member contributions	<u>2,166,323</u>	<u>2,077,753</u>
Total contributions to Annuity Savings Fund	\$ 5,304,117	\$ 5,155,867
Pension Accumulation Fund:		
Benefits currently in payment	\$ 18,509,893	\$ 17,925,939
Benefits to be paid to current active members	<u>18,131,704</u>	<u>18,123,986</u>
Total benefits payable from Pension Accumulation Fund	<u>\$ 36,641,597</u>	<u>\$ 36,049,925</u>
Total Liabilities	<u>\$ 41,945,714</u>	<u>\$ 41,205,792</u>



**TABLE VI (continued)**

**VALUATION BALANCE SHEET**  
**SHOWING THE ASSETS AND LIABILITIES OF THE**  
**NORTH CAROLINA FIREMEN'S AND**  
**RESCUE SQUAD WORKERS' PENSION FUND**

**TOTAL**

	June 30, 2010	June 30, 2009
<b>ASSETS</b>		
Current assets:		
Annuity Savings Fund	\$ 36,647,816	\$ 35,834,122
Pension Accumulation Fund	<u>281,624,800</u>	<u>279,863,137</u>
Total current assets	\$ 318,272,616	\$ 315,697,259
Future member contributions to Annuity Savings Fund	\$ 27,630,079	\$ 25,076,669
Prospective contributions to Pension Accumulation Fund:		
Normal contributions	\$ 51,524,218	\$ 43,032,411
Accrued liability contributions	<u>51,963,371</u>	<u>35,627,327</u>
Total prospective contributions	<u>\$ 103,487,589</u>	<u>\$ 78,659,738</u>
Total Assets	<u>\$ 449,390,284</u>	<u>\$ 419,433,666</u>
<b>LIABILITIES</b>		
Annuity Savings Fund:		
Past member contributions	\$ 36,647,816	\$ 35,834,122
Future member contributions	<u>27,630,079</u>	<u>25,076,669</u>
Total contributions to Annuity Savings Fund	\$ 64,277,895	\$ 60,910,791
Pension Accumulation Fund:		
Benefits currently in payment	\$ 193,467,842	\$ 183,870,268
Benefits to be paid to current active members	<u>191,644,547</u>	<u>174,652,607</u>
Total benefits payable from Pension Accumulation Fund	<u>\$ 385,112,389</u>	<u>\$ 358,522,875</u>
Total Liabilities	<u>\$ 449,390,284</u>	<u>\$ 419,433,666</u>

The valuation balance sheet gives the following information with respect to the funds of the system as of June 30, 2010.

**Annuity Savings Fund**

The Annuity Savings Fund is the fund to which are credited contributions made by members. When a member retires, the amount of his accumulated contributions is transferred from the Annuity Savings Fund to the Pension Accumulation Fund.

The assets credited to the Annuity Savings Fund on account of Firemen on June 30, 2010, which represent the accumulated contributions of members to that date, amounted to \$33,510,022. The balance sheet also shows that the future contributions by members have a present value of \$25,463,756. The present value of both past and future contributions of members is therefore equal to \$58,973,778. The liabilities of this fund are also shown to be equal to \$58,973,778.

The assets credited to the Annuity Savings Fund on account of Rescue Squad Workers on June 30, 2010 amounted to \$3,137,794. The balance sheet also shows that the future contributions by members have a present value of \$2,166,323. The present value of both past and future contributions of members is therefore equal to \$5,304,117. The liabilities of this fund are also shown to be equal to \$5,304,117.

#### Pension Accumulation Fund

The Pension Accumulation Fund is the fund to which the contributions made by the State are credited and from which are paid all benefits on account of pensioners.

The current assets creditable to the Pension Accumulation Fund on account of Firemen on June 30, 2010 amounted to \$250,273,133. The liabilities on account of active members amounted to \$173,512,843. In addition, the balance sheet indicates liabilities of \$174,957,949 on account of all benefits payable to pensioners as of June 30, 2010. The total liabilities of the Pension Accumulation Fund for Firemen, therefore, amounted to \$348,470,792. The difference between these liabilities and the current assets credited to this Fund is \$98,197,659 which represents the present value of future contributions to be made by the State. Of this amount, \$47,561,837 represents the present value of prospective normal contributions by the State, and the balance of \$50,635,822 represents the present value of prospective accrued liability contributions.

The current assets creditable to the Pension Accumulation Fund on account of Rescue Squad Workers on June 30, 2010 amounted to \$31,351,667. The liabilities on account of active members amounted to \$18,131,704. In addition, the balance sheet indicates liabilities of \$18,509,893 on account of all benefits payable to pensioners as of June 30, 2010. The total liabilities of the Pension Accumulation Fund for Rescue Squad Workers, therefore, amounted to \$36,641,597. The difference between these liabilities and the current assets credited to this Fund is \$5,289,930 which represents the present value of future contributions to be made by the State. Of this amount, \$3,962,381 represents the present value of prospective normal contributions by the State, and the balance of \$1,327,549 represents the present value of prospective accrued liability contributions.

#### **SECTION IV – ASSET ALLOCATION**

The following table shows an allocation of investments by category for the Annuity Savings Fund and Pension Accumulation Fund as of June 30, 2010.

**TABLE VII**  
**ALLOCATION OF INVESTMENTS BY CATEGORY**  
**FOR THE ANNUITY SAVINGS FUND AND**  
**PENSION ACCUMULATION FUND AS OF JUNE 30, 2010**

Cash and Receivables	0.1%
Fixed Income (LTIF)	40.1
Public Equity	47.8
Other*	<u>12.0</u>
Total	100.0%

\* Real Estate, Alternatives, Inflation and Credit.

#### **SECTION V - CONTRIBUTIONS PAYABLE BY THE STATE**

The normal contribution covers the State's share of the cost of benefits based on current service. The valuation indicates that the annual normal contribution payable by the State is equal to \$195.48 multiplied by the number of active members. Based on 35,216 active members included in the valuation, the normal contribution for Firemen is \$6,884,024. Based on 3,268 active members included in the valuation, the normal contribution for Rescue Squad Workers is \$638,828. The valuation also indicated that the annual accrued liability contribution per active member is \$216.92.

The accrued liability is amortized over a period of years through an annual accrued liability contribution. Based on the amortization schedule for the unfunded actuarial accrued liability shown in Schedule B, the annual accrued liability contributions are \$8,134,525 for Firemen and \$213,268 for Rescue Squad Workers. The total contributions on this basis are \$15,018,549 for Firemen and \$852,096 for Rescue Squad Workers. The following table shows the annual contributions payable by the State.



**TABLE VIII**  
**ANNUAL CONTRIBUTIONS PAYABLE BY THE STATE**

CONTRIBUTION	FIREMEN	RESCUE SQUAD WORKERS	TOTAL
Normal	\$ 6,884,024	\$ 638,828	\$ 7,522,852
Accrued Liability	<u>8,134,525</u>	<u>213,268</u>	<u>8,347,793</u>
Total	\$ 15,018,549	\$ 852,096	\$ 15,870,645

The annual required contribution for the fiscal year ending June 30, 2012 is \$15,870,645. The current appropriation of \$10,079,671 must be increased by \$5,790,974 to meet the required contribution.

The following table shows the annual contribution payable per active member.

**TABLE IX**  
**ANNUAL CONTRIBUTION PAYABLE PER ACTIVE MEMBER**

CONTRIBUTION	RATE
State	
Normal	\$ 195.48
Accrued Liability	<u>216.92</u>
Total	\$ 412.40
Member*	<u>120.00</u>
Grand Total	\$ 532.40

\* Member rate is payable until member has contributed for 20 years.

## **SECTION VI - COMMENTS ON EXPERIENCE AND GAINS**

The following table shows a detailed reconciliation of the change in unfunded accrued liability since the prior valuation.

**TABLE X**

### **RECONCILIATION OF CHANGE IN UNFUNDED ACCRUED LIABILITY SINCE THE PRIOR VALUATION (IN MILLIONS)**

Unfunded accrued liability as of 6/30/09	\$ 35.6
Normal cost	9.4
Reduction due to actual contributions	(12.7)
Interest on unfunded accrued liability, normal cost and contributions	2.8
Asset (gain)/loss	8.6
Accrued liability (gain)/loss	(1.5)
Change in economic, demographic and other assumptions	<u>9.8</u>
Unfunded accrued liability as of 6/30/10	\$ 52.0

## **SECTION VII - ACCOUNTING INFORMATION**

- Statement Nos. 25 and 27 of the Governmental Accounting Standards Board (GASB) set forth certain items of information to be disclosed in the financial statements of the Fund and the employer. One such item is a distribution of the number of employees by type of membership, as follows:

### **NUMBER OF ACTIVE AND RETIRED PARTICIPANTS AS OF JUNE 30, 2010**

GROUP	NUMBER
Retired participants and beneficiaries currently receiving benefits	11,298
Terminated participants and beneficiaries entitled to benefits but not yet receiving benefits	121
Active Participants	<u>38,484</u>
Total	49,903

2. Another such item is the schedule of funding progress as shown below.

**SCHEDULE OF FUNDING PROGRESS**

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 )
6/30/05	\$274,265,041	\$285,355,936	\$11,090,895	96.1%	N/A	N/A
6/30/06	287,933,056	304,339,206	16,406,150	94.6	N/A	N/A
6/30/07	305,869,434	322,453,973	16,584,539	94.9	N/A	N/A
6/30/08	316,973,296	339,022,147	22,048,851	93.5	N/A	N/A
6/30/09	315,697,259	351,324,586	35,627,327	89.9	N/A	N/A
6/30/10	318,272,616	370,235,987	51,963,371	86.0	N/A	N/A

3. Following is a reconciliation of the preliminary employer annual required contribution rate to the final employer annual required contribution for fiscal year ending June 30, 2010.

	Fiscal Year Ending June 30, 2010
Preliminary Annual Required Contribution	
Normal	\$ 6,654,164
Accrued Liability	3,420,280
Total	\$ 10,074,444
Impact of Legislative Changes	0
Final Annual Required Contribution	\$ 10,074,444



4. Following is the calculation of the annual pension cost and net pension obligation for the fiscal year ending June 30, 2010.

**Annual Pension Cost and Net Pension Obligation for Fiscal Year Ending 6/30/2010**

(a)	Employer annual required contribution	\$ 10,074,444
(b)	Interest on net pension obligation	34,352
(c)	Adjustment to annual required contribution	(73,500)
(d)	Annual pension cost: (a) + (b) + (c)	\$ 10,035,296
(e)	Employer contributions made for fiscal year ending 6/30/2010	10,079,671
(f)	Increase (decrease) in net pension obligation: (d) – (e)	\$ (44,375)
(g)	Net pension obligation beginning of fiscal year	473,819
(h)	Net pension obligation end of fiscal year: (f) + (g)	\$ 429,444

**TREND INFORMATION**

<u>Year Ending</u>	<u>Annual Pension Cost (APC)</u>	<u>Percentage of APC Contributed</u>	<u>Net Pension Obligation</u>
June 30, 2009	\$8,686,923	101%	\$522,191
June 30, 2010	9,713,436	100	473,819
June 30, 2011	10,035,296	100	429,444

5. The annual required contribution (ARC) of the employer, determined in accordance with the parameters of GASB 25/27, is shown below. The accrued liability rate is based on amortization of the unfunded actuarial accrued liability of \$51,963,371 over a nine-year period from July 1, 2011.

**2011/2012 FISCAL YEAR  
ANNUAL REQUIRED CONTRIBUTION (ARC)  
BASED ON THE VALUATION AS OF JUNE 30, 2010**

<u>ANNUAL REQUIRED CONTRIBUTION (ARC)</u>	<u>AMOUNT</u>
Normal	\$ 7,522,852
Accrued liability	8,347,793
Total	\$ 15,870,645

6. Additional information as of June 30, 2010 follows.

Valuation date	6/30/2010
Actuarial cost method	Entry age
Amortization method	Level dollar closed
Amortization period	9 years
Asset valuation method	20% of market value plus 80% of expected actuarial value (not greater than 120% of market value and not less than 80% of market value)
Actuarial assumptions:	
Investment rate of return*	7.25%
Projected salary increases	N/A
*Includes inflation at	3.50%
Cost-of-living adjustments	N/A

**SCHEDULE A****DEVELOPMENT OF ACTUARIAL VALUE OF ASSETS  
FOR THE YEAR ENDING JUNE 30, 2010**

	<b><u>Firemen</u></b>	<b><u>Rescue Squad Workers</u></b>	<b><u>Total</u></b>
1. Actuarial Value of Assets as of June 30, 2009:	\$ 281,776,229	\$ 33,921,030	\$ 315,697,259
2. 2009/2010 Net Cash Flow			
a. Contributions	11,344,119	1,389,214	12,733,333
b. Disbursements	<u>21,703,889</u>	<u>2,316,432</u>	<u>24,020,321</u>
c. Net Cash Flow: (a) - (b)	(10,359,770)	(927,218)	(11,286,988)
3. Expected Investment Return: [(1) x .0725] + [(2)c x .03625]	20,053,235	2,425,663	22,478,898
4. Expected Actuarial Value of Assets as of June 30, 2010: (1) + (2)c + (3)	291,469,694	35,419,475	326,889,169
5. Market Value of Assets as of June 30, 2010:	253,037,000	30,769,405	283,806,405
6. Excess of Market Value over Expected Actuarial Value of Assets: (5) - (4)	(38,432,694)	(4,650,070)	(43,082,764)
7. 20% Adjustment towards Market Value: (6) * .20	(7,686,539)	(930,014)	(8,616,553)
8. Preliminary Actuarial Value of Assets as of June 30, 2010: (4) + (7)	\$ 283,783,155	\$ 34,489,461	\$ 318,272,616
9. Final Actuarial Value of Assets as of June 30, 2010: [(8) not less than 80% of (5) and not greater than (5)]	\$ 283,783,155	\$ 34,489,461	\$ 318,272,616
10. Rate of investment return on actuarial value	4.47%	4.47%	4.47%
11. Rate of investment return on market value	12.10%	12.01%	12.09%

**SCHEDULE B****AMORTIZATION SCHEDULE FOR  
UNFUNDED ACTUARIAL ACCRUED LIABILITY****FIREMEN**

<b>DATE ESTABLISHED</b>	<b>OUTSTANDING BALANCES</b>		<b>ANNUAL PAYMENT</b>
	<b>INCEPTION</b>	<b>JUNE 30, 2010</b>	
June 30, 2010	\$ 50,635,822	\$ <u>50,635,822</u>	\$ <u>8,134,525</u>
Total		\$ 50,635,822	\$ 8,134,525

**RESCUE SQUAD WORKERS**

<b>DATE ESTABLISHED</b>	<b>OUTSTANDING BALANCES</b>		<b>ANNUAL PAYMENT</b>
	<b>INCEPTION</b>	<b>JUNE 30, 2010</b>	
June 30, 2010	\$ 1,327,549	\$ <u>1,327,549</u>	\$ <u>213,268</u>
Total		\$ 1,327,549	\$ 213,268

**TOTAL**

<b>DATE ESTABLISHED</b>	<b>OUTSTANDING BALANCES</b>		<b>ANNUAL PAYMENT</b>
	<b>INCEPTION</b>	<b>JUNE 30, 2010</b>	
June 30, 2010	\$ 51,963,371	\$ <u>51,963,371</u>	\$ <u>8,347,793</u>
Total		\$ 51,963,371	\$ 8,347,793

**SCHEDULE C****OUTLINE OF ACTUARIAL ASSUMPTIONS AND METHODS**

INTEREST RATE: 7.25% per annum, compounded annually.

SEPARATIONS FROM ACTIVE SERVICE: Representative values of the assumed annual rates of withdrawal and vesting, retirement, death and disability are as follows:

<b>ANNUAL RATES OF</b>					
<u>Service</u>	<u>Withdrawal</u>		<u>Age</u>	<u>Retirement*</u>	
	<u>Firefighters</u>	<u>Rescue Squad Workers</u>		<u>Firefighters and Rescue Squad Workers</u>	<u>Volunteer Firefighters</u>
0	.030	.05	25		
1	.030	.05	30		
2	.030	.05	35		
3	.030	.05	40		
4	.030	.05	45		
5+	.015	.02	50		
			55	0.75	1.00
			60	0.75	1.00
			65	1.00	1.00
			69	1.00	1.00

\* These rates apply only after 20 years of membership in the system.

<b>ANNUAL RATES OF</b>					
<u>Age</u>	<u>Base Mortality*</u>		<u>Disability</u>		
	<u>Male</u>	<u>Female</u>	<u>Male</u>	<u>Female</u>	
25	.0004	.0002	.0016	.0016	
30	.0006	.0004	.0030	.0030	
35	.0009	.0006	.0050	.0050	
40	.0012	.0009	.0068	.0068	
45	.0017	.0013	.0083	.0083	
50	.0024	.0020	.0120	.0120	
55	.0036	.0030	.0150	.0150	
60	.0059	.0047	.0200	.0200	
65	.0086	.0066			
69	.0109	.0083			

\* Base mortality rates as of December 31, 2003.



Representative values of the assumed post-retirement mortality rates as of December 31, 2003 prior to any mortality improvements are as follows:

Annual Rate of Death after Retirement

<u>Age</u>	<u>Male Healthy Retirees</u>	<u>Female Healthy Retirees</u>	<u>Male Beneficiaries of Deceased Members</u>	<u>Female Beneficiaries of Deceased Members</u>	<u>Male Disabled Retirees</u>	<u>Female Disabled Retirees</u>
55	.0064	.0044	.0061	.0044	.0277	.0176
60	.0099	.0077	.0090	.0077	.0342	.0229
65	.0165	.0125	.0149	.0125	.0407	.0296
70	.0273	.0207	.0246	.0207	.0483	.0401
75	.0469	.0341	.0422	.0341	.0596	.0558
80	.0805	.0563	.0720	.0563	.0775	.0771

**MORTALITY IMPROVEMENTS:** Representative values of the assumed mortality improvement rates (applied to pre-retirement mortality rates for active members and post-retirement mortality rates for healthy retirees and beneficiaries of deceased members after such tables have been set back or set forward) are as follows:

<u>Age</u>	<u>Male Projection Scale</u>	<u>Female Projection Scale</u>
25	0.010	0.014
30	0.005	0.010
35	0.005	0.011
40	0.008	0.015
45	0.013	0.016
50	0.018	0.017
55	0.019	0.008
60	0.016	0.005
65	0.014	0.005
70	0.015	0.005
75	0.014	0.008
80	0.010	0.007

**DEATHS AFTER RETIREMENT (NON-DISABLED):** According to the RP-2000 Mortality tables for retirees. These tables are set forward two years for all employees. These tables are also set forward one year for male beneficiaries of deceased members and set forward two years for female beneficiaries of deceased members. The base retiree RP-2000 tables have no rates prior to age 50. The active employee rates of RP-2000 are used for ages less than 50 prior to any adjustments for setbacks.

**DEATH AFTER DISABILITY:** According to the RP-2000 Mortality tables for disabled annuitants set back six years for males and set forward one year for females.

**DEATHS PRIOR TO RETIREMENT:** According to the RP-2000 Mortality tables for active employees. These tables are set forward two years for all employees. The base RP-2000 tables for active employees have no rates after age 70. A blend of active rates and retired rates are used from ages 70 to 80 prior to any set back and adjustments.

**MORTALITY PROJECTION (NON-DISABLED):** All mortality rates are projected from December 31, 2003 using Scale AA.



**TIMING OF ASSUMPTIONS:** All withdrawals, deaths, disabilities, retirements and salary increases are assumed to occur January 1 of each year.

**FUTURE EXPENSES:** Equal to prior year actual administrative expenses.

**VALUATION METHOD:** Entry age normal cost method. Entry age is established on an individual basis. Gains and losses are reflected in the unfunded accrued liability.

**ASSET VALUATION METHOD:** Actuarial value, as developed in Schedule A. The 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 valuation rate of return. The amount recognized each year is 20% of the difference between market value and expected actuarial value. The actuarial value of assets is not allowed to be greater than 120% of the market value of assets or less than 80% of the market value of assets.

**SCHEDULE D****SUMMARY OF BENEFIT AND CONTRIBUTION PROVISIONS**

All regular and volunteer firemen of the State of North Carolina whose qualifications are certified by their respective Boards of County Commissioners are eligible to be members of the Fund. All rescue squad workers who are eligible for membership in the North Carolina Association of Rescue Squads, Inc. are eligible to be members of the Fund. Credit for prior service (that is, service rendered prior to July 1, 1959) is granted to firemen who were eligible on July 1, 1959 and became members on or before June 30, 1961. Credit may also be given for certain special purchased service.

**BENEFITS****Service Retirement Pension****Condition for Pension**

A member who retires after he has attained age 55 and has credit for 20 years of service as a fireman or rescue squad worker in North Carolina is entitled to a monthly pension.

**Amount of Pension**

The amount of the pension is equal to \$170 per month.

**Deferred Early Retirement Pension****Condition for Pension**

A member whose service is terminated after he has credit for 20 years of service as a fireman or rescue squad worker in North Carolina but before he has attained age 55 is eligible to receive a deferred retirement pension, starting at age 55, provided he continues to make regular contributions until age 55 or until he has contributed for a total of 20 years, whichever event occurs earlier. Any member who is totally and permanently disabled while in the discharge of his official duties and leaves service as a result of such disability is eligible for a deferred retirement pension commencing at age 55 without continuing to make contributions. Any member who becomes totally and permanently disabled for any cause, other than line of duty, after 10 years of credited service under the Pension Fund may continue to make monthly contributions until he has paid \$2,400 into the Fund and receive a pension upon attainment of age 55.

Amount of Pension

The deferred pension is \$170 per month.

Return of Contributions

Upon the death or withdrawal of a member prior to retirement, his aggregate contributions are refunded in a lump sum.

Upon the death of a retired member, the excess, if any, of his aggregate contributions over the total of the pension payments he has received is refunded.

## CONTRIBUTIONS

By Members

Each member contributes \$10 per month until retirement or until he has contributed for a total of 20 years, whichever event occurs earlier.

By State

The State makes annual contributions sufficient, with the members' contributions, to meet the cost of the benefits under the Fund.

**SCHEDULE D****TABLE 1**

**THE NUMBER OF ACTIVE MEMBERS  
DISTRIBUTED BY AGE AND SERVICE  
AS OF JUNE 30, 2010**

AGE	YEARS OF SERVICE										Total
	Under 1	1 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 & up	
Under 25	1,170	2,409	200	0	0	0	0	0	0	0	3,779
25 to 29	586	2,418	1,499	120	0	0	0	0	0	0	4,623
30 to 34	473	2,079	1,663	977	113	0	0	0	0	0	5,305
35 to 39	345	1,793	1,490	1,219	815	103	0	0	0	0	5,765
40 to 44	241	1,371	1,285	1,046	1,016	832	54	0	0	0	5,845
45 to 49	158	938	896	869	834	1,128	443	31	0	0	5,297
50 to 54	82	554	581	515	652	1,202	721	273	22	0	4,602
55 to 59	48	303	325	304	407	287	163	77	21	0	1,935
60 to 64	29	156	168	153	198	55	27	11	7	1	805
65 to 69	20	75	79	57	64	18	3	4	0	3	323
70 & up	12	49	54	52	30	4	1	3	0	0	205
Total	3,164	12,145	8,240	5,312	4,129	3,629	1,412	399	50	4	38,484

**SCHEDULE D****TABLE 2**

**THE NUMBER OF ACTIVE MEMBERS  
DISTRIBUTED BY AGE  
AS OF JUNE 30, 2010**

Age	Firemen	Rescue Squad Workers
16	14	
17	42	1
18	94	1
19	267	6
20	388	23
21	597	28
22	711	29
23	732	32
24	769	45
25	810	55
26	815	54
27	879	64
28	900	69
29	918	59
30	1,117	67
31	946	69
32	923	74
33	956	85
34	969	99
35	951	95
36	1,045	91
37	1,068	92
38	1,064	109
39	1,132	118
40	1,175	84
41	1,089	108
42	1,068	108
43	1,021	98
44	1,007	87
45	962	91
46	1,026	100
47	947	88
48	965	83
49	930	105
50	868	106
51	862	90
52	830	80
53	774	117
54	777	98
55	605	87

**SCHEDULE D****TABLE 2**

**THE NUMBER OF ACTIVE MEMBERS  
DISTRIBUTED BY AGE  
AS OF JUNE 30, 2010**

CONTINUED

Age	Firemen	Rescue Squad Workers
56	351	56
57	287	35
58	219	42
59	214	39
60	167	30
61	172	23
62	116	31
63	134	23
64	88	21
65	69	8
66	64	15
67	52	12
68	47	6
69	40	10
70	31	5
71	33	3
72	21	3
73	16	3
74	16	3
75	16	3
76	10	
77	8	
78	9	1
79	7	
80	6	
81	3	
82	4	1
83	2	
84	1	
Total	35,216	3,268



**SCHEDULE D****TABLE 3**

**THE NUMBER OF ACTIVE MEMBERS  
DISTRIBUTED BY SERVICE  
AS OF JUNE 30, 2010**

Years of Service	Firemen	Rescue Squad Workers
0	2,984	180
1	3,279	265
2	3,285	242
3	2,492	213
4	2,146	223
5	1,834	187
6	1,549	171
7	1,447	169
8	1,360	135
9	1,269	116
10	1,174	94
11	1,027	120
12	983	91
13	846	107
14	785	86
15	682	69
16	701	83
17	842	78
18	741	70
19	774	90
20	804	47
21	811	64
22	679	59
23	608	43
24	467	45
25	363	37
26	280	31
27	205	38
28	214	30
29	186	31
30	135	9
31	83	15
32	64	10
33	37	8
34	32	6
35	20	4
36	17	1
37	6	
38	1	
39	1	

**SCHEDULE D****TABLE 3**

**THE NUMBER OF ACTIVE MEMBERS  
DISTRIBUTED BY SERVICE  
AS OF JUNE 30, 2010**

CONTINUED

Years of Service	Firemen	Rescue Squad Workers
40	1	
41		1
42	1	
43	1	
Total	35,216	3,268

**SCHEDULE D****TABLE 4**

**THE NUMBER AND ANNUAL PENSIONS OF  
RETIRED MEMBERS DISTRIBUTED BY AGE  
AS OF JUNE 30, 2010**

Age	Firemen		Rescue Squad Workers	
	Number	Amount	Number	Amount
34	1	\$ 2,040		
46	1	2,040		
49	1	2,040		
51	2	4,080		
55	167	340,680	16	\$ 32,640
56	445	907,800	49	99,960
57	454	926,160	43	87,720
58	503	1,026,120	41	83,640
59	463	944,520	52	106,080
60	461	940,440	47	95,880
61	447	911,880	48	97,920
62	451	920,040	35	71,400
63	917	1,870,680	79	161,160
64	431	879,240	46	93,840
65	385	785,400	32	65,280
66	402	820,080	35	71,400
67	428	873,120	47	95,880
68	394	803,760	47	95,880
69	329	671,160	30	61,200
70	329	671,160	46	93,840
71	320	652,800	43	87,720
72	287	585,480	28	57,120
73	252	514,080	34	69,360
74	257	524,280	36	73,440
75	293	597,720	22	44,880
76	244	497,760	42	85,680
77	223	454,920	24	48,960
78	210	428,400	25	51,000
79	193	393,720	26	53,040
80	172	350,880	20	40,800
81	150	306,000	22	44,880
82	100	204,000	15	30,600
83	106	216,240	7	14,280
84	84	171,360	9	18,360
85	85	173,400	15	30,600
86	65	132,600	6	12,240
87	53	108,120	7	14,280
88	28	57,120	1	2,040
89	33	67,320	3	6,120
90	29	59,160	1	2,040

**SCHEDULE D****TABLE 4****THE NUMBER AND ANNUAL PENSIONS OF  
RETIRED MEMBERS DISTRIBUTED BY AGE  
AS OF JUNE 30, 2010**

CONTINUED

Age	Number	Firemen		Rescue Squad Workers	
			Amount	Number	Amount
91	4	\$	8,160		
92	6		12,240	2	\$ 4,080
93	3		6,120	1	2,040
94	6		12,240		
96	2		4,080		
Total	10,216	\$	20,840,640	1,082	\$ 2,207,280

SCHEDULE D

TABLE 5

**THE NUMBER AND ANNUAL PENSIONS OF  
DISABLED MEMBERS ELIGIBLE FOR DEFERRED PENSION  
DISTRIBUTED BY AGE AS OF JUNE 30, 2010**

Age	Firemen		Amount	Rescue Squad Workers		Amount
	Number			Number		
25	1	\$	2,040			
34	1		2,040			
35	2		4,080			
39	1		2,040			
40	2		4,080			
41	2		4,080			
42	3		6,120			
43	3		6,120			
44	3		6,120			
45	5		10,200			
46	6		12,240			
47	8		16,320			
48	4		8,160	1	\$	2,040
49	8		16,320			
50	11		22,440			
51	15		30,600	2		4,080
52	9		18,360	1		2,040
53	9		18,360	1		2,040
54	12		24,480	1		2,040
55	6		12,240	1		2,040
56	2		4,080	1		2,040
Total	113	\$	230,520	8	\$	16,320