



**Cavanaugh Macdonald**

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***BISMARCK FIREFIGHTERS'  
RELIEF ASSOCIATION PENSION FUND***

***January 1, 2010 Actuarial Report***

***DRAFT***

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## SECTION I: EXECUTIVE SUMMARY

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### A. Highlights

Actuarial computations presented in this report are for the purposes of determining the recommended funding amounts for the Fund. Actuarial computations under GASB Statements No. 25 and 27 are for purposes of fulfilling financial accounting requirements. The computations prepared for these two purposes may differ as disclosed in our report. The calculations in the enclosed report have been made on a basis consistent with our understanding of the System's funding requirements and goals, and of GASB Statements No. 25 and 27. Determinations for purposes other than meeting these requirements may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

We respectfully submit the following report, and we look forward to discussing it with you. The undersigned are members of the American Academy of Actuaries and meet the Qualifications Standards of the Academy to render the actuarial opinion contained herein.

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John Garrett, ASA, MAAA, FCA  
Principal and Consulting Actuary

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Todd Green, ASA, MAAA, FCA  
Principal and Senior Actuary

## SECTION I: EXECUTIVE SUMMARY

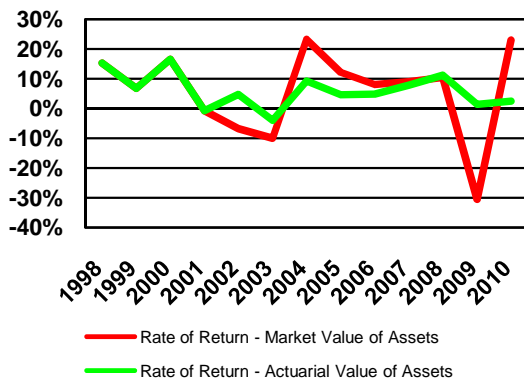
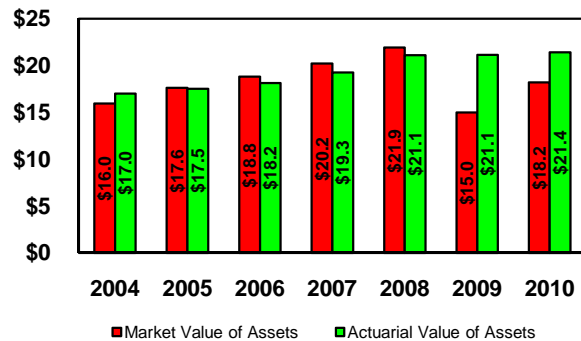
### A. Highlights

#### Assets

There are two different measures of the plan's assets that are used throughout this report. The **Market Value** is a snapshot of the plan's investments as of the valuation date. The **Actuarial Value** is a smoothed asset value intended to dampen the volatility of market value returns.

	<b>Market</b>	<b>Actuarial</b>
Value as of January 1, 2009	\$15,019,766	\$21,145,675
Contributions	854,958	854,958
Investment Income	3,421,196	516,697
Benefits & Expenses	(1,073,768)	(1,073,768)
Value as of January 1, 2010	18,222,152	21,443,562

Historical asset levels (in \$ millions) are shown in the graph to the right. The actuarial value currently exceeds the market value of assets by \$3.22 million. This results from there being less investment gains than losses deferred in the asset smoothing technique.



For the 2009 plan year, the plan's assets earned 22.95% on a Market Value basis and 2.46% on an Actuarial Value basis. The actuarial assumed rate of return is 7.50%; the result is an asset loss of \$1.84 million on a Market Value basis and a loss of \$1.06 million on an Actuarial Value basis. Historical returns are shown in the graph to the left.

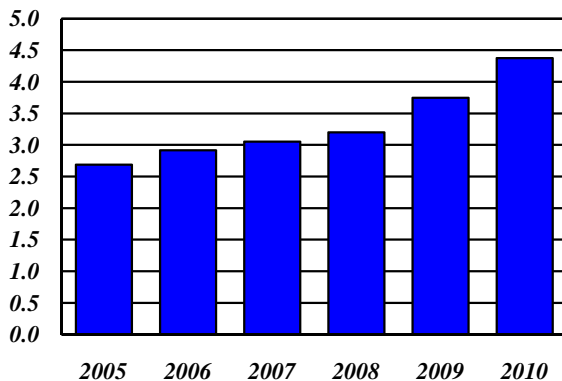
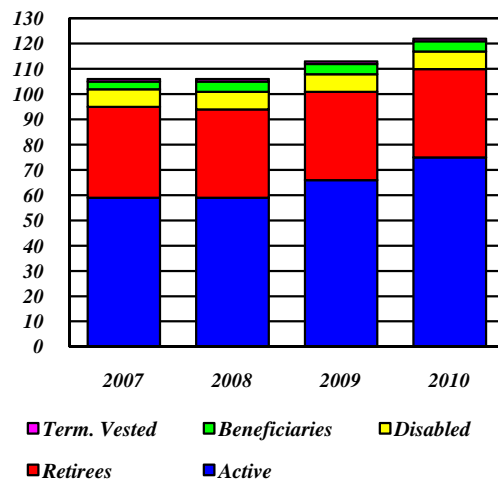
## SECTION I: EXECUTIVE SUMMARY

### A. Highlights

#### Membership

There are three basic categories of plan members included in the actuarial valuation: (1) active employees who have met the eligibility requirements for membership, (2) former employees who have a vested right to benefits but have not yet started collecting, and (3) members who are receiving monthly pension benefits.

From January 1, 2009 to January 1, 2010, the overall membership increased from 113 to 122. Active members increased by 9 while there were no changes to the retiree, terminated vested, beneficiary, or disabled populations.



The graph to the left shows total payroll (in \$ millions) for the current year and past five years. Since the 2005 valuation, overall payroll has grown at an annualized rate of 10.20%. The salary of first class firefighters' grew by 3.39% last year.

## SECTION I: EXECUTIVE SUMMARY

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### A. Highlights

#### *Liabilities - (Gain)/Loss*

##### ***Determination of Liability (Gain)/Loss***

1. Expected Actuarial Liability at 1/1/2010	\$24,374,264
2. Actual Actuarial Liability at 1/1/2010	24,572,488
3. Liability (Gain)/Loss (2) - (1)	<u>\$198,224</u>

For the prior plan year, the Plan experienced a non-investment related loss of \$198,224. This loss was primarily attributable to retirement and mortality experience and was partially offset by smaller than assumed salary increases. The total liability loss represents 0.8% of the accrued liability as of the valuation date.

#### ***Changes in Actuarial Methods***

None.

#### ***Changes in Actuarial Assumptions***

None.

## SECTION I: EXECUTIVE SUMMARY

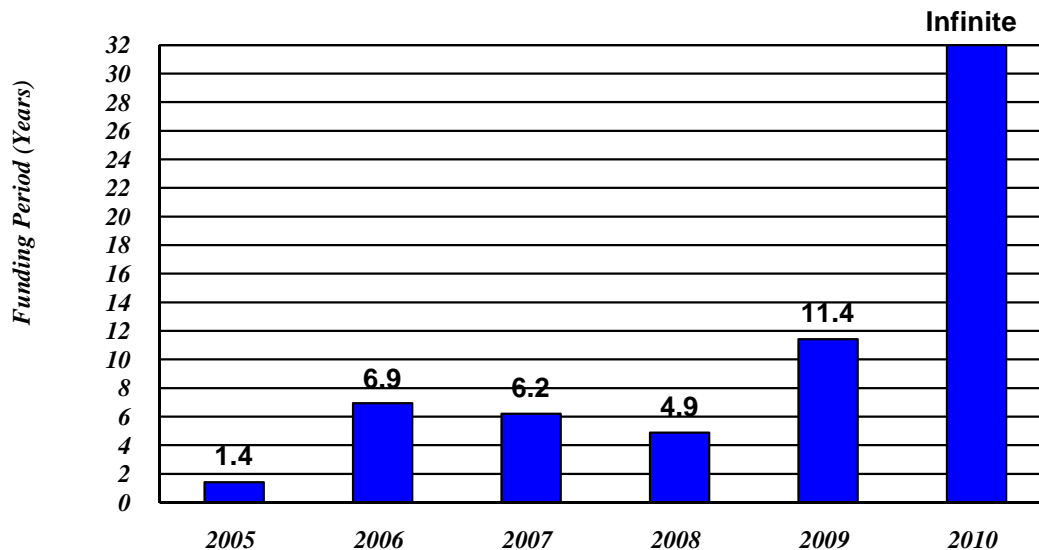
### A. Highlights

#### **Contribution**

The City's contribution consists of 10.1% of total payroll assuming all members are paid at the salary rate of a first class firefighter . The additional \$160,688 City contribution made in each of the five prior years is no longer expected to be contributed. It is important to note that the employer's contribution is not sufficient to meet the GASB minimum annual required contribution.

#### **Funding Period**

The Funding Period is determined by solving for the number of years required to fully amortize the unfunded actuarial liability (UAL) with the amount of contributions in excess of the normal cost. During the 2009 plan year, the UAL increased from \$1,958,198 to \$3,128,926. The increase was due to net actuarial losses. The funding period is affected by both the size of the UAL and the amount of the available amortization payment.



The resulting funding period for this valuation is Infinite. This means the amount of amortization payment does not pay the interest expected to accrue on the UAL. In order to comply with the parameters of GASB Statement Nos. 25 & 27 , the annual required contribution is determined based upon an amortization period not to exceed 30 years. The GASB compliant annual required contribution exceeds the expected City contribution by \$111,833, and will require a Net Pension Obligation to be reported as a liability in the City's annual financial report for FY 2011 if not contributed to the Fund.

## SECTION I: EXECUTIVE SUMMARY

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### B. Summary of Principal Results

	<u>1/1/2010</u>	<u>1/1/2009</u>
<b>Membership</b>		
Active Members	75	66
Terminated Vested Members	1	1
Members in Pay Status	46	46
Total Compensation	\$4,373,048	\$3,744,354
Average Compensation	56,085	54,246
<b>Assets and Liabilities</b>		
Market Value of Assets	\$18,222,152	\$15,019,766
Actuarial Value of Assets	21,443,562	21,145,675
Accrued Liability for Active Members	\$13,326,076	\$11,769,496
Accrued Liability for Terminated Vested Members	103,307	123,626
Accrued Liability for Members in Pay Status	<u>11,143,105</u>	<u>11,210,751</u>
Total Accrued Liability	\$24,572,488	\$23,103,873
Unfunded Accrued Liability	\$3,128,926	\$1,958,198
Expected City Contribution	\$424,841	\$522,292
<b>Development of the Funding Period</b>		
City Normal Cost (includes Expenses)	\$ 465,315	\$419,343
Excess of City Contribution over Normal Cost	(40,473)	102,949
Expected Insurance Rebate	<u>116,658</u>	<u>117,071</u>
Expected Amortization Payment	\$ 76,184	\$220,020
Funding Period (years)	Infinite	11.4
<b>Annual Required Contribution (ARC)</b>		
GASB Compliant Amortization Payment	\$ 188,017	
Expected Amortization Payment	<u>76,184</u>	
Additional Contribution to Satisfy GASB ARC	\$ 111,833	

## SECTION II: PLAN ASSETS

### A. Reconciliation of Market Value of Assets

	<u>2009</u>	<u>2008</u>
1. Market Value of Assets as of January 1	\$15,019,766	\$21,928,532
2. Income During Year		
a. City Contributions	458,408	446,548
b. Member Contributions	268,535	236,084
c. Insurance Rebate	116,658	117,071
d. Other	11,358	205
e. Dividends and Interest	459,462 *	583,180
f. Realized Gains	<u>426,852</u>	<u>(583,810)</u>
g. Total	\$1,741,273	\$799,277
3. Disbursements During Year		
a. Benefit Payments and Refunds	(1,032,503)	(1,023,733)
b. Investment Expenses	(81,770)	(112,333)
c. Administrative Expenses	<u>(41,265)</u>	<u>(33,183)</u>
d. Total	(\$1,155,538)	(\$1,169,249)
4. Unrealized Gains (Losses)	\$2,616,651	(\$6,538,794)
5. Net Change in Plan Assets (2) + (3) + (4)	\$3,202,386	(\$6,908,766)
6. Market Value of Assets as of December 31	\$18,222,152	\$15,019,766

\* Includes accrued interest of \$11,781

## SECTION II: PLAN ASSETS

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### B. Development of Actuarial Value of Assets

In order to minimize the impact of market fluctuations on the contribution level, we use an Actuarial Value of Assets that recognizes gains and losses over a five year period. The Actuarial Value of Assets as of January 1, 2010 is determined below.

1. Actuarial Value of Assets as of January 1, 2009	\$21,145,675																																
2. Market Value of Assets as of January 1, 2009	\$15,019,766																																
3. Market Value of Assets as of January 1, 2010	\$18,222,152																																
4. Non-Investment Net Cash Flow (Total Contributions - Total Deductions)	(\$218,810)																																
5. 2009 Market Gain/(Loss)																																	
a. Investment Income on Market Value: (3) - (2) - (4)	\$3,421,196																																
b. Expected Investment Return Based on 7.50% Interest	\$1,577,720																																
c. Market Gain/(Loss): (5a) - (5b)	\$1,843,476																																
6. Delayed Recognition of Market Gains/(Losses):																																	
<table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;"><u>Plan Year End</u></th> <th style="text-align: right;"><u>Gain/(Loss)</u></th> <th style="text-align: center;"><u>Percent</u></th> <th style="text-align: right;"><u>Amount</u></th> </tr> <tr> <th></th> <th></th> <th style="text-align: center;"><u>Recognized</u></th> <th style="text-align: right;"><u>Recognized</u></th> </tr> </thead> <tbody> <tr> <td>12/31/2009</td> <td style="text-align: right;">\$1,843,476</td> <td style="text-align: center;">20%</td> <td style="text-align: right;">\$368,695</td> </tr> <tr> <td>12/31/2008</td> <td style="text-align: right;">(8,226,605)</td> <td style="text-align: center;">20%</td> <td style="text-align: right;">(1,645,321)</td> </tr> <tr> <td>12/31/2007</td> <td style="text-align: right;">642,332</td> <td style="text-align: center;">20%</td> <td style="text-align: right;">128,466</td> </tr> <tr> <td>12/31/2006</td> <td style="text-align: right;">330,984</td> <td style="text-align: center;">20%</td> <td style="text-align: right;">66,197</td> </tr> <tr> <td>12/31/2005</td> <td style="text-align: right;">104,702</td> <td style="text-align: center;">20%</td> <td style="text-align: right;"><u>20,940</u></td> </tr> <tr> <td style="text-align: center;">Total</td> <td></td> <td></td> <td style="text-align: right;">(\$1,061,023)</td> </tr> </tbody> </table>	<u>Plan Year End</u>	<u>Gain/(Loss)</u>	<u>Percent</u>	<u>Amount</u>			<u>Recognized</u>	<u>Recognized</u>	12/31/2009	\$1,843,476	20%	\$368,695	12/31/2008	(8,226,605)	20%	(1,645,321)	12/31/2007	642,332	20%	128,466	12/31/2006	330,984	20%	66,197	12/31/2005	104,702	20%	<u>20,940</u>	Total			(\$1,061,023)	
<u>Plan Year End</u>	<u>Gain/(Loss)</u>	<u>Percent</u>	<u>Amount</u>																														
		<u>Recognized</u>	<u>Recognized</u>																														
12/31/2009	\$1,843,476	20%	\$368,695																														
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12/31/2006	330,984	20%	66,197																														
12/31/2005	104,702	20%	<u>20,940</u>																														
Total			(\$1,061,023)																														
7. Actuarial Value of Assets as of January 1, 2010: (1)+(4)+(5b)+(6)	\$21,443,562																																

As of January 1, 2010 the Actuarial Value of Assets is 117.7% of Market Value.

## SECTION II: PLAN ASSETS

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### C. Determination of Asset (Gain) / Loss

The asset (gain) / loss is the difference between the expected and actual values of the Actuarial Value of Assets. An asset gain is 'negative' since it represents a decrease in the otherwise expected Unfunded Accrued Liability / (Surplus). The asset (gain) / loss for the fiscal year ending December 31, 2009 is determined below.

1. Actuarial Value of Assets as of January 1, 2009	\$21,145,675
2. Contributions	
a. Employer	\$458,408
b. Member	268,535
c. Insurance Rebate	116,658
d. Other	11,358
e. Total	<u>\$854,958</u>
3. Deductions	
a. Benefit Payments	(\$1,032,503)
b. Administrative Expenses	(41,265)
c. Total	<u>(\$1,073,768)</u>
4. Expected Investment Return Based on 7.50% Interest	\$1,577,720
5. Expected Actuarial Value of Assets as of January 1, 2010	\$22,504,585
6. Actuarial Value of Assets as of January 1, 2010 net of Gain Shares	\$21,443,562
7. Net Return on Investment	\$516,697
8. Approximate Net Rate of Return	2.46%
9. Asset (Gain)/ Loss (5) - (6)	\$1,061,023

## SECTION III: DEVELOPMENT OF FUNDING PERIOD

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### A. Actuarial Present Value of Future Benefits

The present value of future benefits is calculated by applying the assumptions and plan provisions to the membership data. The result is the value of all benefits expected to be paid from the Plan and takes into account all past and future years of service, projected salaries, probabilities of termination, death, disability, and retirement, and the benefit provisions of the Plan. If the assets of the plan are in excess of the present value of future benefits there would be no contributions required from any source.

	<i>January 1,</i>	
	<u>2010</u>	<u>2009</u>
1. Active Members Attributable to:		
Retirement	\$18,529,448	\$16,122,182
Withdrawal	293,098	237,518
Death	474,894	419,412
Disability	864,404	762,370
Total Active Present Value of Future Benefits	<u>20,161,843</u>	<u>17,541,484</u>
2. Terminated Vested Members	103,307	123,626
3. Retired Members in Pay Status	8,972,363	9,007,709
4. Disabled Members In Pay Status	1,666,716	1,669,131
5. Beneficiaries of Former Members In Pay Status	<u>504,026</u>	<u>533,911</u>
6. Total Present Value of Future Benefits (1) + (2) + (3) + (4) + (5) =	\$31,408,255	\$28,875,861

## SECTION III: DEVELOPMENT OF FUNDING PERIOD

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### B. Funding Period Based on Entry Age Funding Method

Under the entry age normal actuarial cost method the actuarial present value of the projected benefits of each individual included in the valuation is allocated as a level percentage of the individual's projected compensation between entry age and the assumed exit from the plan. The portion of this actuarial present value allocated to the current and future years of service is called the present value of future normal costs. The normal cost is the portion of the actuarial present value for the current year only. The portion of this actuarial present value allocated to the years of service up to the valuation date is the actuarial liability. An unfunded actuarial liability/(surplus) exists to the extent the actuarial value of assets differs from the actuarial liability. The unfunded actuarial liability is amortized as a level percentage of payroll. The amortization amount is the City's annual required contribution in excess of the City's normal cost plus the State Insurance Rebate contribution. The number of years to fully amortize the unfunded actuarial liability/(surplus) is the funding period. The calculation of the funding period is shown below.

	<u><b>January 1, 2010</b></u>
1. Actuarial Present Value of Future Benefits (See Section III A)	\$31,408,255
2. Present Value of Future Normal Costs	6,835,767
3. Total Actuarial Liability: (1) - (2)	24,572,488
4. Actuarial Value of Assets (see Section II B)	21,443,562
5. Unfunded Actuarial Liability / (Surplus): (3) - (4)	3,128,926
6. Calculation of Funding Period	
A. Total Expense Loaded Normal Cost for 2010	771,428
B. Expected Member Contribution	306,113
C. City Normal Cost for 2010 (A) - (B)	465,315
D. City Annual Required Contribution*	424,841
E. Expected State Insurance Rebate	116,658
Contributions Available to Amortize UAL (D) - (C) + (E)	76,184
Funding Period	Infinite

\*Based upon expected payroll

## SECTION III: DEVELOPMENT OF FUNDING PERIOD

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### ***C. Changes in Unfunded Accrued Liability / (Surplus)***

1. Unfunded Accrued Liability as of January 1, 2009	\$1,958,198
2. Total Normal Cost as of January 1, 2009	586,817
3. Interest on (1) + (2) *	168,870
4. Contributions for the 2009 Fiscal Year	854,958
5. Interest on (4) *	32,061
6. Expected UAL as of December 31, 2009: (1) + (2) + (3) - (4) - (5)	1,869,679
7. Asset (Gain)/Loss (see Section II C)	1,061,023
8. Liability (Gain)/Loss (see Section I A )	198,224
9. Other change in Unfunded Accrued Liability / (Surplus)	0
10. Actual Unfunded Accrued Liability / (Surplus) as of January 1, 2010 (6) + (7) + (8) + (9)	3,128,926

\* Assumes mid-year payment of normal cost and contributions.

## SECTION IV: ACCOUNTING INFORMATION

### A. Schedule of Funding Progress

<i>Actuarial Valuation Date</i>	<i>For Fiscal Year Ending</i>	<i>(1) Actuarial Value of Assets</i>	<i>(2) Actuarial Accrued Liability (AAL)</i>	<i>(3) Unfunded AAL (UAAL) (2) - (1)</i>	<i>(4) Funded Ratio (1) / (2)</i>	<i>(5) Covered Payroll</i>	<i>(6) UAAL as a Percentage of Covered Payroll (3) / (5)</i>
1/1/1998	12/31/1998	\$12,706,700	\$11,879,900	(\$826,800)	107.0%	\$2,265,218	0.0%
1/1/2000	12/31/2000	15,938,785	13,450,232	(2,488,553)	118.5%	2,471,818	0.0%
1/1/2002	12/31/2002	16,497,550	16,023,443	(474,107)	103.0%	2,488,124	0.0%
1/1/2003	12/31/2003	15,705,316	16,881,672	1,176,356	93.0%	2,555,299	46.0%
1/1/2004	12/31/2004	17,010,385	16,853,048	(157,337)	100.9%	2,692,120	0.0%
1/1/2005	12/31/2005	17,521,450	17,800,722	279,272	98.4%	2,689,777	10.4%
1/1/2006	12/31/2006	18,157,634	19,596,973	1,439,339	92.7%	2,913,896	49.4%
1/1/2007	12/31/2007	19,258,217	20,543,826	1,285,609	93.7%	3,054,625	42.1%
1/1/2008	12/31/2008	20,686,343	21,724,200	1,037,857	95.2%	3,197,801	32.5%
1/1/2009	12/31/2009	21,145,675	23,103,873	1,958,198	91.5%	3,744,354	52.3%
1/1/2010	12/31/2010	21,443,562	24,572,488	3,128,926	87.3%	4,373,048	71.6%

## SECTION IV: ACCOUNTING INFORMATION

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### B. Schedule of Employer Contributions

<u><i>Fiscal Year Ending December 31,</i></u>	<u><i>Annual Required Contribution</i></u>	<u><i>Percent Funded</i></u>
2002	\$141,877	279%
2003	\$293,561	132%
2004	\$401,393	99%
2005	\$285,326	109%
2006	\$425,581	100%
2007	\$426,491	100%
2008	\$468,201	100%
2009	\$522,292 *	100%
2010	\$536,674 **	TBD

\* The Annual Required Contribution for Fiscal Year Ending December 31, 2009 is adjusted to reflect actual covered payroll.

\*\* The Annual Required Contribution for Fiscal Year Ending December 31, 2010 is based upon expected covered payroll.

## SECTION IV: ACCOUNTING INFORMATION

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### C. Notes to Required Supplementary Information

The information presented in Section IV A and Section IV B was determined as part of the actuarial valuations at the dates indicated. Additional information as of the latest actuarial valuation follows:

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Valuation Date:	January 1, 2010
Actuarial Cost Method:	Entry Age Normal
Amortization Method:	Level Percentage of Payroll
Amortization Period:	Variable - Not more than 30 years
Asset Valuation Method:	5-year Smoothed Market Value Method
Actuarial Assumptions:	
Investment Rate of Return	7.50%
Projected Salary Increases	4.50%
Includes Inflation at	3.50%
Payroll Growth	3.00%

## SECTION V: MEMBERSHIP DATA

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### A. Summary of Membership

	<u>January 1, 2010</u>	<u>January 1, 2009</u>
<b>Active Members</b>		
Number	75	66
Total Annual Compensation	\$4,373,048	\$3,343,621
Average Compensation	58,307	50,661
Average Age	39.6	40.1
Average Service	12.5	13.1
<b>Terminated Vested Members</b>		
Number	1	1
Total Annual Benefit	\$11,401	\$11,401
Average Annual Benefit	11,401	11,401
Average Age	46.4	45.4
<b>Retired Members</b>		
Number	35	35
Total Annual Benefit	\$849,295	\$841,510
Average Annual Benefit	24,266	24,043
Average Age	69.1	68.1
<b>Disabled Members</b>		
Number	7	7
Total Annual Benefit	\$128,132	\$128,132
Average Annual Benefit	18,305	18,305
Average Age	58.3	57.3
<b>Beneficiaries of Deceased Members</b>		
Number	4	4
Total Annual Benefit	\$60,018	\$60,018
Average Annual Benefit	15,004	15,005
Average Age	78.2	76.6

**SECTION V: MEMBERSHIP DATA**

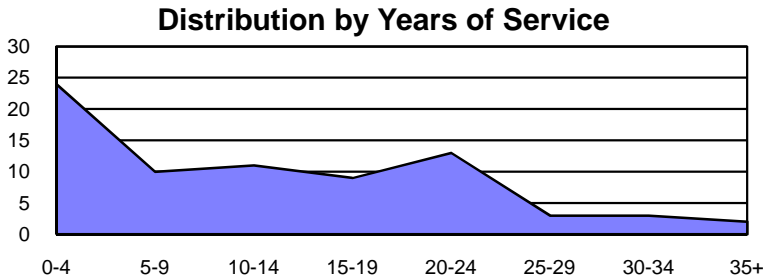
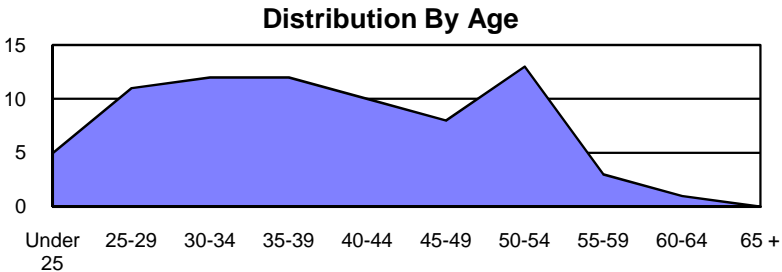
**B. Reconciliation of Membership to Prior Valuation**

	<i>Active</i>	<i>Terminated Vested</i>	<i>Retired</i>	<i>Disabled</i>	<i>Beneficiary</i>	<i>Total</i>
<b>Count as of January 1, 2008</b>	66	1	35	7	4	113
New Entrants / Rehires	9					9
Terminated Members						
Non-Vested	(1)					(1)
Vested						
Deceased Members						
With Survivor Benefits						
With No Survivor Benefits						
Disableds						
Retirements						
Return from Military Service	1					1
<b>Count as of January 1, 2009</b>	75	1	35	7	4	122

**SECTION V: MEMBERSHIP DATA**

**C. Distribution of Active Members as of January 1, 2010 - Count**

<b>Age</b>	<b>Years of Service</b>								<b>Total</b>
	<b>0-4</b>	<b>5-9</b>	<b>10-14</b>	<b>15-19</b>	<b>20-24</b>	<b>25-29</b>	<b>30-34</b>	<b>35+</b>	
<b>Under 25</b>	5	0	0	0	0	0	0	0	5
<b>25-29</b>	11	0	0	0	0	0	0	0	11
<b>30-34</b>	6	5	1	0	0	0	0	0	12
<b>35-39</b>	1	3	5	3	0	0	0	0	12
<b>40-44</b>	1	1	4	3	1	0	0	0	10
<b>45-49</b>	0	1	1	2	4	0	0	0	8
<b>50-54</b>	0	0	0	1	7	3	2	0	13
<b>55-59</b>	0	0	0	0	1	0	1	1	3
<b>60-64</b>	0	0	0	0	0	0	0	1	1
<b>65 +</b>	0	0	0	0	0	0	0	0	0
<b>Total</b>	24	10	11	9	13	3	3	2	75



## SECTION V: MEMBERSHIP DATA

### D. Distribution of Active Members as of January 1, 2010 - Average Compensation

<i>Age</i>	<i>Years of Service</i>								<i>Total</i>
	<i>0-4</i>	<i>5-9</i>	<i>10-14</i>	<i>15-19</i>	<i>20-24</i>	<i>25-29</i>	<i>30-34</i>	<i>35+</i>	
<b><i>Under 25</i></b>	40,182	0	0	0	0	0	0	0	40,182
<b><i>25-29</i></b>	41,202	0	0	0	0	0	0	0	41,202
<b><i>30-34</i></b>	41,652	46,736	46,218	0	0	0	0	0	44,151
<b><i>35-39</i></b>	43,379	46,824	51,206	54,155	0	0	0	0	50,196
<b><i>40-44</i></b>	39,604	45,694	52,247	54,330	59,943	0	0	0	51,722
<b><i>45-49</i></b>	0	46,687	62,065	52,543	58,655	0	0	0	56,057
<b><i>50-54</i></b>	0	0	0	52,667	60,637	61,431	67,707	0	61,295
<b><i>55-59</i></b>	0	0	0	0	67,522	0	60,136	76,589	68,082
<b><i>60-64</i></b>	0	0	0	0	0	0	0	76,259	76,259
<b><i>65 +</i></b>	0	0	0	0	0	0	0	0	0
<b><i>Total</i></b>	41,126	46,654	52,118	53,690	60,503	61,431	65,183	76,424	51,058

## SECTION V: MEMBERSHIP DATA

### E. Distribution of Inactive Members as of January 1, 2010

<b>Age</b>	<b>Terminated Vested Members</b>		<b>Disabled Members</b>	
	<b>Number</b>	<b>Average Annual Benefits</b>	<b>Number</b>	<b>Average Annual Benefits</b>
< 30	0	0	0	0
30 - 34	0	0	0	0
35 - 39	0	0	0	0
40 - 44	0	0	0	0
45 - 49	1	11,401	0	0
50 - 54	0	0	0	0
55 - 59	0	0	5	18,064
60 - 64	0	0	2	18,906
65 +	0	0	0	0
<b>Total</b>	<b>1</b>	<b>11,401</b>	<b>7</b>	<b>18,305</b>

<b>Age</b>	<b>Retired Members</b>		<b>Beneficiaries of Deceased Members</b>	
	<b>Number</b>	<b>Average Annual Benefits</b>	<b>Number</b>	<b>Average Annual Benefits</b>
< 30	0	0	0	0
30 - 39	0	0	0	0
40 - 49	0	0	0	0
50 - 59	9	22,491	0	0
60 - 69	7	29,493	1	16,682
70 - 79	17	23,890	2	14,943
80 - 89	2	17,149	0	0
90 - 99	0	0	1	13,450
100 +	0	0	0	0
<b>Total</b>	<b>35</b>	<b>24,266</b>	<b>4</b>	<b>15,004</b>

## APPENDIX A: ACTUARIAL ASSUMPTIONS & METHODS

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### A. Actuarial Assumptions

#### *Economic Assumptions*

1. Rate of Investment Return: 7.50% per year net of investment related expenses.
2. Rate of Salary Increase  
Across-the-Board: 4.50% per year  
Merit and Longevity: None
3. Payroll Growth Assumption: 3.00% per year
4. Consumer Price Index: 3.50% per year
5. Administrative Expenses: The annual normal cost is increased by \$70,000

#### *Demographic Assumptions*

1. Healthy Mortality: 1983 Group Annuity Mortality Table.
2. Disabled Mortality: 1983 Railroad Retirement Board Disabled Life Mortality.
3. Retirement: 100% upon the earlier of attainment of age 55 with 10 years of service or Rule of 80.
4. Withdrawal Rates before Retirement shown below for selected ages.

Age	Mortality		Disability		Withdrawal	
	Male	Female	Male	Female	Male	Female
20	0.04	0.02	0.06	0.06	5.44	5.44
25	0.05	0.03	0.09	0.09	4.89	4.89
30	0.06	0.03	0.11	0.11	3.70	3.70
35	0.09	0.05	0.15	0.15	2.35	2.35
40	0.12	0.07	0.22	0.22	1.13	1.13
45	0.22	0.10	0.36	0.36	0.27	0.27
50	0.39	0.16	0.61	0.61	0.00	0.00
55	0.61	0.25	1.01	1.01	0.00	0.00
60	0.92	0.42	1.63	1.63	0.00	0.00

5. Duty Related Disabilities: 65% of disabilities are assumed to be in line of duty.
6. Service Connected Pre-Retirement Death: 65% of pre-retirement deaths are assumed to be service connected.
7. Beneficiaries: Spouse Males are assumed to be three years older than females. Spouses are assumed not to remarry.
8. Children: Fifty percent of active participants under age 50 are assumed to have one child whose age is 9.

## APPENDIX A: ACTUARIAL ASSUMPTIONS & METHODS

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### B. Actuarial Methods

1. Funding Method: Entry Age Normal Cost  
Entry Age is the age at the time the participant would have commenced participation if the plan had always been in existence. Normal Cost and Actuarial Accrued Liability are calculated on an individual basis with Normal Cost determined as if the current benefit accrual rate had always been in effect.
2. Amortization of Unfunded Actuarial Accrued Liability/Surplus  
The amortization of the UAAL uses a level percent of payroll amortization method over a period not to exceed 30 years.
3. Asset Valuation Method  
The actuarial value of assets is calculated as the market value of assets less unrecognized returns in each of the last five years. Unrecognized return is equal to the difference between the actual market return and the expected return on the actuarial value, and is recognized over a five-year period.

### C. Changes in Assumptions and Methods from Prior Valuation

None.

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## APPENDIX B: SUMMARY OF PLAN PROVISIONS

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### A. Membership

Application for membership for the Association must be made within 90 days of becoming a member of the Bismarck Fire & Inspections Department.

### B. Plan Year

January 1 through December 31

### C. Average Final Compensation (AFC)

The average monthly salary paid over the 36 months of service prior to termination. Salary is defined as the greater of the compensation paid to a member for services rendered on which the member contribution is based or first class firefighter salary. Average first class firefighter salary is the average of the rate of salary for a first class firefighter over the 36 months of service prior to termination.

### D. Normal Retirement Eligibility

Age and Service Requirement:

The attainment of the earlier of age 55 with 10 years of credited service; or Rule of 80 where age plus credited service equal 80. Under Rule of 80 retirement the member must be at least 50 years of age to be eligible.

### E. Normal Retirement Benefit

For credited service through 12/31/2005 - 2% of average first class firefighter salary for each of the first 15 years of service and 3% of first class firefighter salary for each year following.

For credited service beginning 1/1/2006 - 2% of AFC for each of the first 15 years of service and 3% of AFC for each year following.

The maximum benefit is 90% of AFC.

### F. Early Retirement Eligibility

The attainment of age 50 with 10 years of credited service.

### G. Early Retirement Benefit

The amount calculated as for normal retirement and paid to the member at the otherwise normal retirement date or payable immediately and reduced at the rate of 6% per year that the early retirement date precedes the members otherwise normal retirement date.

### H. Normal Form of Benefit Payment

Benefits are payable as a monthly annuity for the life of the member with the first 144 monthly payments guaranteed payable in any event. Other optional forms of payments are available.

## APPENDIX B: SUMMARY OF PLAN PROVISIONS

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### I. Disability

In Line of Duty Service Requirement: None but must meet the criteria for in line of duty disability.

Amount: Greater of the normal retirement benefit or 50% of the AFC determined at the date of disability. Benefit paid as a 75% joint and survivor annuity.

Not In Line of Duty Service Requirement: 10 years of credited service.

Amount: Greater of the normal retirement benefit or 25% of the AFC determined at the date of disability. Benefit paid under the normal form.

### J. Pre-Retirement Death Benefit

Service Connected Service Requirement: None but must meet the criteria for service connected death.

Amount: 75% of the benefit calculated as for normal retirement but not less than 37.5% of AFC. Amount is increased by 50% until all dependent children reach the age of 18 or age 22 if a full time student.

Non-Service Connected Service Requirement: 10 years of Credited Service.

Amount: 50% of the benefit calculated as for normal retirement but not less than 12.5% of AFC.

### K. Vesting

Members are fully vested after completion of 10 years of credited service.

### L. Termination of Employment

Non-Vested:

A member terminating before completion of vesting requirements may elect a refund of member contributions. Alternatively, terminating members may elect to keep their contributions on deposit with the Trust in case of future re-employment.

Vested:

A member terminating after completion of vesting requirements can elect a deferred monthly annuity based upon service and salary at termination or a refund of member contributions.

### M. Employee Contributions

Active participants are assessed, on a monthly basis, an amount equal to 7% of the monthly salary. Salary is the same as defined for AFC.

### N. Funeral Benefit

Must be an active, retired, disabled or terminated vested member of the Association at the time of death. If eligible, the Trust would pay the beneficiary or member's estate a lump sum payment equal to \$5,000.

## **APPENDIX B: SUMMARY OF PLAN PROVISIONS**

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**O. Cost of Living Adjustments**

Beginning the January 1<sup>st</sup> following attainment of age 62, the monthly benefit will be increased by the annual change in the CPI up to 2%.

**P. Changes in Plan Provisions Since Prior Valuation**

None.