



1921 Gallows Road  
Suite 900  
Vienna, VA 22182-3995  
USA

Tel +1 703-917-0143  
Fax +1 703-827-9266

[www.milliman.com](http://www.milliman.com)

March 7, 2008

Mr. Frank J. Smith  
Secretary  
Bismarck Firefighters' Relief Association Pension Fund  
121 Tucson Avenue  
Bismarck, ND 58504

Re: 2008 Actuarial Valuation Reports

Dear Frank:

We have completed the January 1, 2008 actuarial valuation for the Pension Fund and have enclosed 15 copies of the report. We look forward to presenting the reports at the meeting with the Board.

In the meantime if you have any questions, please call us.

Sincerely,

A handwritten signature in black ink, appearing to read "John J. Garrett", with a horizontal line extending to the right.

John J. Garrett, ASA, MAAA  
Consulting Actuary

Enclosures

**BISMARCK FIREFIGHTERS'  
RELIEF ASSOCIATION PENSION FUND**

***January 1, 2008 Actuarial Report***



***March 2008***

*This work product was prepared solely for the Bismarck Firefighters' Relief Association for the purposes described herein and may not be appropriate to use for other purposes. Milliman does not intend to benefit and assumes no duty or liability to other parties who receive this work.*

## TABLE OF CONTENTS

---

SECTION	PAGE
<b>Letter of Transmittal</b>	
<b>I EXECUTIVE SUMMARY</b>	
A. Highlights	I-3
B. Summary of Principal Results	I-7
<b>II PLAN ASSETS</b>	
A. Reconciliation of Market Value of Assets	II-1
B. Development of Actuarial Value of Assets	II-2
C. Determination of Asset (Gain) / Loss	II-3
<b>III DEVELOPMENT OF FUNDING PERIOD</b>	
A. Actuarial Present Value of Future Benefits	III-1
B. Funding Period Based on Entry Age Funding Method	III-2
C. Changes in Unfunded Actuarial Liability / (Surplus)	III-3
<b>IV ACCOUNTING INFORMATION</b>	
A. Schedule of Funding Progress	IV-1
B. Schedule of Employer Contributions	IV-2
C. Notes to Required Supplementary Information	IV-3
<b>V MEMBERSHIP DATA</b>	
A. Summary of Membership	V-1
B. Reconciliation of Membership to Prior Valuation	V-2
C. Distribution of Active Members - Count	V-3
D. Distribution of Active Members - Average Compensation	V-4
E. Distribution of Inactive Members	V-5
<b>APPENDICES</b>	
A. Actuarial Assumptions and Methods	A-1
B. Summary of Plan Provisions	B-1



**BISMARCK FIREFIGHTERS'**  
RELIEF ASSOCIATION PENSION FUND  
Actuarial Valuation As of January 1, 2008

*This work product was prepared solely for the Bismarck Firefighters' Relief Association for the purposes described herein and may not be appropriate to use for other purposes. Milliman does not intend to benefit and assumes no duty or liability to other parties who receive this work.*

## SECTION I: EXECUTIVE SUMMARY

---

### Certification

In preparing this report, we relied, without audit, on information (some oral and some in writing) supplied by the Relief Association. This information includes, but is not limited to, Plan provisions, employee data, and financial information. In our examination of these data, we have found them to be reasonably consistent and comparable with data used for other purposes. Since the valuation results are dependent on the integrity of the data supplied, the results can be expected to differ if the underlying data is incomplete or missing. It should be noted that if any data or other information is inaccurate or incomplete, our calculations may need to be revised.

On the basis of the foregoing, we hereby certify that, to the best of our knowledge and belief, this report is complete and accurate and has been prepared in accordance with generally recognized and accepted actuarial principles and practices which are consistent with the Actuarial Standards of Practice promulgated by the Actuarial Standards Board and the applicable Guides to Professional Conduct, amplifying Opinions, and supporting Recommendations of the American Academy of Actuaries.

We further certify that all costs, liabilities, rates of interest, and other factors for the System have been determined on the basis of actuarial assumptions and methods which are individually reasonable (taking into account the experience of the System and reasonable expectations); and which, in combination, offer our best estimate of anticipated experience under the System.

Nevertheless, the emerging costs will vary from those presented in this report to the extent actual experience differs from that projected by the actuarial assumptions. The Relief Association has the final decision regarding the appropriateness of the assumptions.

Actuarial computations presented in this report are for the purposes of determining the recommended funding amounts for the System. 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.



## SECTION I: EXECUTIVE SUMMARY

---

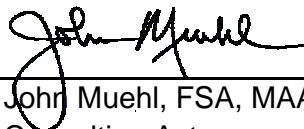
### Certification

Milliman's work product was prepared exclusively for the Bismarck Firefighters' Relief Association for a specific and limited purpose. It is a complex, technical analysis that assumes a high level of knowledge concerning the Association's operations, and uses the Association's data, which Milliman has not audited. It is not for the use or benefit of any third party for any purpose. Any third party recipient of Milliman's work product who desires professional guidance should not rely upon Milliman's work product, but should engage qualified professionals for advice appropriate to its own specific needs.

We respectfully submit the following report, and we look forward to discussing it with you. I, John Garrett, am a consulting actuary for Milliman, Inc. I am a member of the American Academy of Actuaries and meet the Qualifications Standards of the American Academy of Actuaries to render the actuarial opinion contained herein.



John Garrett, ASA, MAAA  
Consulting Actuary



John Muehl, FSA, MAAA  
Consulting Actuary



## SECTION I: EXECUTIVE SUMMARY

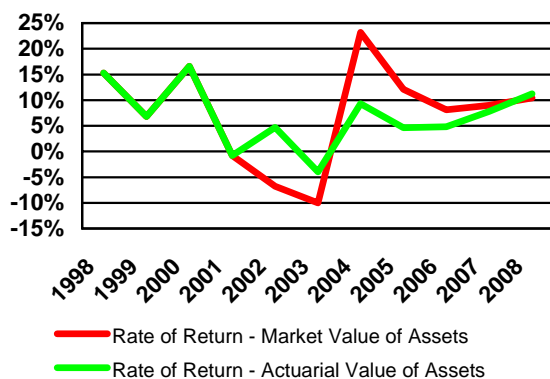
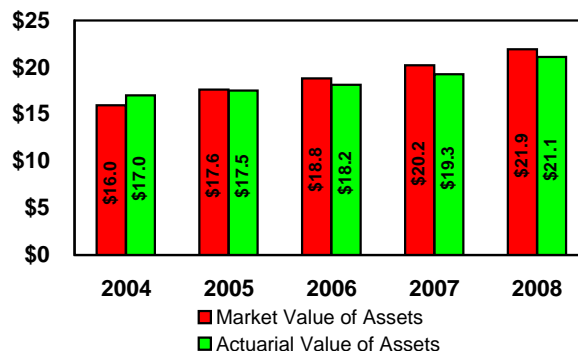
### A. Highlights

#### 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, 2007	\$20,216,547	\$19,258,217
Contributions	769,302	769,302
Investment Income	2,076,167	2,232,432
Benefits & Expenses	(1,133,484)	(1,133,484)
Value as of January 1, 2008	21,928,532	21,126,467

Historical asset levels (in \$ millions) are shown in the graph to the right. The market value currently exceeds the actuarial value of assets by \$802 thousand. This results from there being more investment gains than losses deferred in the asset smoothing technique.



For the 2007 plan year, the plan's assets earned 10.36% on a Market Value basis and 11.24% on an Actuarial Value basis. The actuarial assumed rate of return is 7.50%; the result is an asset gain of \$642 thousand on a Market Value basis and a gain of \$715 thousand on an Actuarial Value basis. Historical returns are shown in the graph to the left.



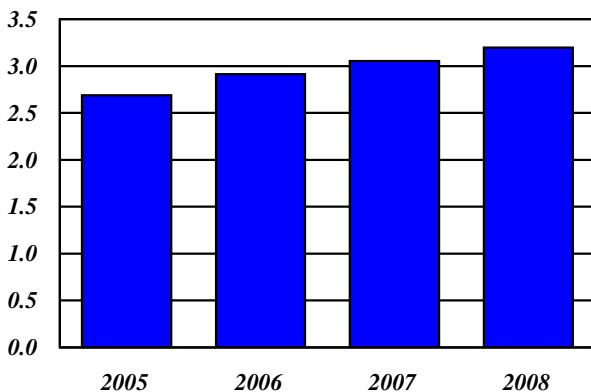
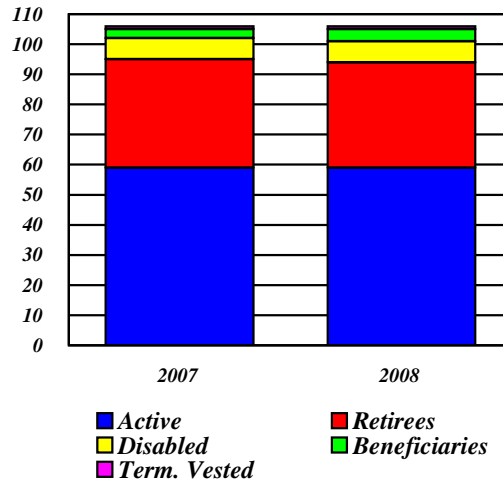
## SECTION I: EXECUTIVE SUMMARY

### 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, 2007 to January 1, 2008, the overall membership remained at 106. There were no changes to the active, terminated vested, beneficiary, or disabled populations. However, we did correct data for one participant. Last year, this participant was valued as a retiree. We valued her as a beneficiary for the 2008 valuation. The graph to the right shows how the membership has changed over the past year.



The graph to the left shows total payroll (in \$ millions) for the current year and past three years. Since the 2005 valuation, overall payroll has grown at an annualized rate of 4.40%. The salary of first class firefighters' grew by 4.7% last year.

## SECTION I: EXECUTIVE SUMMARY

---

### A. Highlights

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

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

1. Expected Actuarial Liability at 1/1/2008	\$21,558,605
2. Actual Actuarial Liability at 1/1/2008	\$21,724,200
3. Liability (Gain)/Loss (2) - (1)	\$165,595

For the prior plan year, the Plan experienced a non-investment related loss of \$165,595. This loss was primarily attributable to larger than assumed salary increases and was partially offset by gains from retirement experience. The total liability loss represents 0.8% of the accrued liability as of the valuation date.

#### **Gain Share Plan**

This valuation is used as the basis to implement a gain share plan. The gain share plan takes a portion of an annual gain and distributes it into a reserve account, an active benefit account and a retiree benefit account.

1. Total Actuarial Gain for Year	\$549,641
2. Shareable Portion of Gain	80.07%
3. Shareable Gain (Removed from Assets)	\$440,124
4. Reserve Account Gain Share (50% * (3))	\$220,062
5. Remaining Shareable Gain	\$220,062
6. Active Members Share (56.23% of (5))	\$123,748
7. Retired Members Share (43.77% of (5))	\$96,314
8. Less Retiree Benefit Distribution	(\$83,361)
9. Retired Members Gain Share Balance	\$12,953
10. Total Gain Share Balance at 1/1/2008 (4+6+9)	\$356,763

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

None.

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

None.



## SECTION I: EXECUTIVE SUMMARY

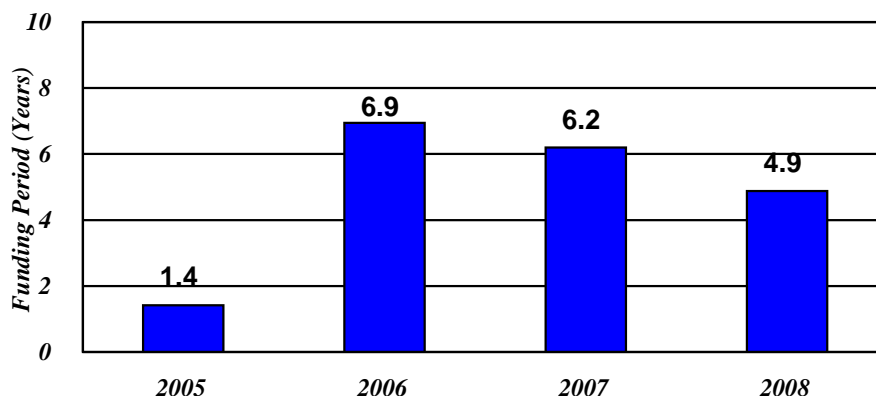
### A. Highlights

#### **Contribution**

The City's contribution consists of two pieces: 10.1% of total payroll assuming all members are paid at the salary rate of a first class firefighter and an annual payment for five years (beginning January 1, 2005) of \$160,688. This amount is the annual required contribution for the purpose of GASB Statement Nos. 25 & 27 as long as the funding period is equal to or less than 30 years.

#### **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 2007 plan year, the UAL decreased from \$1,285,609 to \$1,037,857. The decrease was \$109,517 larger than expected due to net actuarial gains. The funding period is affected by both the size of the UAL and the amount of the available amortization payment. Therefore, funding period is expected to decrease by one year in each future valuation that actual experience matches expected experience and the expected amounts of contributions are received.



If the market value of assets were used in determining the funding period, the result as of 1/1/2008 would be 2.3 years. This is due to the asset smoothing technique that is now deferring the recognition of more investment gains than losses. The net deferred gain will be recognized over the next four years and will reduce the unfunded actuarial liability.



## SECTION I: EXECUTIVE SUMMARY

### B. Summary of Principal Results

	<u>1/1/2008</u>	<u>1/1/2007</u>
<b>Membership</b>		
Active Members	59	59
Terminated Vested Members	1	1
Members in Pay Status	46	46
Total Compensation	\$3,197,801	\$3,054,625
Average Compensation	54,200	51,773
<b>Assets and Liabilities</b>		
Market Value of Assets	\$21,928,532	\$20,216,547
Actuarial Value of Assets (after Gain Share)	20,686,343	19,258,217
Accrued Liability for Active Members	\$10,176,979	\$8,951,804
Accrued Liability for Terminated Vested Members	117,362	109,027
Accrued Liability for Members in Pay Status	<u>11,429,859</u>	<u>11,482,995</u>
Total Accrued Liability	\$21,724,200	\$20,543,826
Unfunded Accrued Liability	\$1,037,857	\$1,285,609
<b>Annual Required Contribution</b>		
Annual Required Contribution	\$468,201	\$454,496
<b>Development of the Funding Period</b>		
Normal Cost (includes Expenses)	\$341,013	\$329,303
Excess of Contribution over Normal Cost	127,188	125,193
Expected Insurance Rebate	<u>111,890</u>	<u>114,410</u>
Expected Amortization Payment	\$239,078	\$239,603
Funding Period (years)	4.9	6.2



## SECTION II: PLAN ASSETS

### A. Reconciliation of Market Value of Assets

	2007	2006
1. Market Value of Assets as of January 1	\$20,216,547	\$18,831,558
2. Income During Year		
a. City Contributions	442,696	426,491
b. Member Contributions	213,806	203,005
c. Insurance Rebate	111,890	114,410
d. Other	910	0
e. Dividends and Interest	608,116 *	586,422
f. Realized Gains	<u>468,595</u>	<u>173,879</u>
g. Total	\$1,846,013	\$1,504,207
3. Disbursements During Year		
a. Benefit Payments and Refunds	(1,082,811)	(987,291)
b. Investment Expenses	(122,600)	(154,246)
c. Administrative Expenses	<u>(50,673)</u>	<u>(53,307)</u>
d. Total	(\$1,256,084)	(\$1,194,844)
4. Unrealized Gains (Losses)	\$1,122,057	\$1,075,626
5. Net Change in Plan Assets (2) + (3) + (4)	\$1,711,985	\$1,384,989
6. Market Value of Assets as of December 31	\$21,928,532	\$20,216,547

\* Includes accrued interest of \$27,380.32.



## SECTION II: PLAN ASSETS

### 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, 2008 is determined below.

1. Actuarial Value of Assets as of January 1, 2007	\$19,258,217																																
2. Market Value of Assets as of January 1, 2007	\$20,216,547																																
3. Market Value of Assets as of January 1, 2008 (Before Gain Share)	\$22,011,893																																
4. Non-Investment Net Cash Flow (Total Contributions - Total Deductions)	(\$280,821)																																
5. 2007 Market Gain/(Loss)																																	
a. Investment Income on Market Value: (3) - (2) - (4)	\$2,076,167																																
b. Expected Investment Return Based on 7.50% Interest	\$1,433,835																																
c. Market Gain/(Loss): (5a) - (5b)	\$642,332																																
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>12/31/2007</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;">20,940</td> </tr> <tr> <td>12/31/2004</td> <td style="text-align: right;">655,437</td> <td style="text-align: center;">20%</td> <td style="text-align: right;">131,087</td> </tr> <tr> <td>12/31/2003</td> <td style="text-align: right;">1,842,730</td> <td style="text-align: center;">20%</td> <td style="text-align: right;"><u>368,546</u></td> </tr> <tr> <td style="text-align: center;">Total</td> <td></td> <td></td> <td style="text-align: right;">\$715,236</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>	12/31/2007	\$642,332	20%	\$128,466	12/31/2006	330,984	20%	66,197	12/31/2005	104,702	20%	20,940	12/31/2004	655,437	20%	131,087	12/31/2003	1,842,730	20%	<u>368,546</u>	Total			\$715,236	
<u>Plan Year End</u>	<u>Gain/(Loss)</u>	<u>Percent</u>	<u>Amount</u>																														
		<u>Recognized</u>	<u>Recognized</u>																														
12/31/2007	\$642,332	20%	\$128,466																														
12/31/2006	330,984	20%	66,197																														
12/31/2005	104,702	20%	20,940																														
12/31/2004	655,437	20%	131,087																														
12/31/2003	1,842,730	20%	<u>368,546</u>																														
Total			\$715,236																														
7. Preliminary Actuarial Value of Assets: (1) + (4) + (5b) + (6)	\$21,126,467																																
8. Corridor Limit: 80% of (2)	\$17,542,826																																
120% of (2)	\$26,314,239																																
9. <b>Actuarial Value of Assets as of January 1, 2008</b> (Before Gain Share)	<b>\$21,126,467</b>																																

## SECTION II: PLAN ASSETS

---

### 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, 2007 is determined below.

---

1. Actuarial Value of Assets as of January 1, 2007	\$19,258,217
2. Contributions	
a. Employer	\$442,696
b. Member	\$213,806
c. Insurance Rebate	\$111,890
d. Other	<u>\$910</u>
e. Total	\$769,302
3. Deductions	
a. Benefit Payments (before Gain Share)	(\$999,450)
b. Administrative Expenses	<u>(\$50,673)</u>
c. Total	(\$1,050,123)
4. Expected Investment Return Based on 7.50% Interest	\$1,433,835
5. Expected Actuarial Value of Assets as of January 1, 2008	\$20,411,231
6. Actual Actuarial Value of Assets as of January 1, 2008	\$21,126,467
7. Net Return on Investment	\$2,149,071
8. Approximate Net Rate of Return	11.24%
9. Asset (Gain)/ Loss (5) - (6)	(\$715,236)
10. Gain Distributed to Gain Share Plan	(\$440,124)
11. Net Asset (Gain) (9) - (10)	(\$275,112)

---



## SECTION III: DEVELOPMENT OF FUNDING PERIOD

### 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.

	January 1, 2008	2007
1. Active Members Attributable to:		
Retirement	\$13,657,392	\$12,474,015
Withdrawal	217,282	221,356
Death	334,780	325,940
Disability	626,745	609,697
Total Active Present Value of Future Benefits	<u>14,836,199</u>	<u>13,631,008</u>
2. Terminated Vested Members*	117,362	109,027
3. Retired Members in Pay Status	9,186,268	9,407,239
4. Disabled Members In Pay Status	1,711,767	1,712,904
5. Beneficiaries of Former Members In Pay Status	<u>531,824</u>	<u>362,852</u>
6. Total Present Value of Future Benefits (1) + (2) + (3) + (4) + (5) =	\$26,383,420	\$25,223,030

\* Includes reserve established for 1 firefighter on active duty military.



## SECTION III: DEVELOPMENT OF FUNDING PERIOD

### 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.

---

	<i>January 1, 2008</i>
1. Actuarial Present Value of Future Benefits (See Section III A)	\$26,383,420
2. Present Value of Future Normal Costs	4,659,220
3. Total Actuarial Liability: (1) - (2)	21,724,200
4. Actuarial Value of Assets	
a. Before Gain Share (see Section II B)	21,126,467
b. Less Amounts In Gain Share Accounts	(440,124)
c. Final Actuarial Value of Assets	20,686,343
5. Unfunded Actuarial Liability / (Surplus): (3) - (4c)	1,037,857
6. Calculation of Funding Period	
a. Total Expense Loaded Normal Cost for 2008	564,859
b. Expected Member Contribution	223,846
c. City Normal Cost for 2008 (A) - (B)	341,013
d. City Annual Required Contribution*	468,201
e. Expected State Insurance Rebate	111,890
Contributions Available to Amortize UAAL (d) - (c) + (e)	239,078
Funding Period	4.9 Years

\*Based upon expected payroll

---



## SECTION III: DEVELOPMENT OF FUNDING PERIOD

---

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

---

---

1. Unfunded Accrued Liability as of January 1, 2007	\$1,285,609
2. Total Normal Cost as of January 1, 2007	543,127
3. Interest on (1) + (2) *	116,788
4. Contributions for the 2007 Fiscal Year	769,302
5. Interest on (4) *	28,849
6. Expected UAL as of December 31, 2007: (1) + (2) + (3) - (4) - (5)	1,147,373
7. Asset (Gain)/Loss (see Section II C)	(275,112)
8. Liability (Gain)/Loss (see Section I A )	165,595
9. Actual Unfunded Accrued Liability / (Surplus) as of January 1, 2008 (6) + (7) + (8)	1,037,857

---

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



**BISMARCK FIREFIGHTERS'**  
RELIEF ASSOCIATION PENSION FUND  
Actuarial Valuation As of January 1, 2008

III-3

*This work product was prepared solely for the Bismarck Firefighters' Relief Association for the purposes described herein and may not be appropriate to use for other purposes. Milliman does not intend to benefit and assumes no duty or liability to other parties who receive this work.*

## 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%



## SECTION IV: ACCOUNTING INFORMATION

---

### B. Schedule of Employer Contributions

<i>Fiscal Year Ending December 31,</i>	<i>Annual Required Contribution</i>	<i>Percent Funded</i>
2001	\$141,877	279%
2002	\$293,561	132%
2003	\$401,393	99%
2004	\$285,326	109%
2005	\$425,581	100%
2006	\$426,491	100%
2007	\$442,696 *	100%
2008	\$468,201 **	TBD

---

\* The Annual Required Contribution for Fiscal Year Ending December 31, 2007 is adjusted to reflect actual covered payroll.

\*\* The Annual Required Contribution for Fiscal Year Ending December 31, 2008 is based upon expected covered payroll.



## SECTION IV: ACCOUNTING INFORMATION

---

### 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:

---

---

Valuation Date	January 1, 2008
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

---

### A. Summary of Membership

	<i>January 1, 2008</i>	<i>January 1, 2007</i>
<b>Active Members</b>		
Number	59	59
Total Annual Compensation	\$3,197,801	\$3,054,625
Average Compensation	54,200	51,773
Average Age	40.7	39.7
Average Service	13.5	12.5
<b>Terminated Vested Members*</b>		
Number	1	1
Total Annual Benefit	\$11,807	\$11,807
Average Annual Benefit	11,807	11,807
Average Age	44.0	43.0
<b>Retired Members</b>		
Number	35	36
Total Annual Benefit	\$837,220	\$841,123
Average Annual Benefit	23,921	23,365
Average Age	67.1	66.2
<b>Disabled Members</b>		
Number	7	7
Total Annual Benefit	\$128,132	\$128,132
Average Annual Benefit	18,305	18,305
Average Age	56.1	55.1
<b>Beneficiaries of Deceased Members</b>		
Number	4	3
Total Annual Benefit	\$58,841	\$41,890
Average Annual Benefit	14,710	13,963
Average Age	75.5	76.7

\* Does not include 1 firefighter on active duty military.



## SECTION V: MEMBERSHIP DATA

### B. Reconciliation of Membership to Prior Valuation

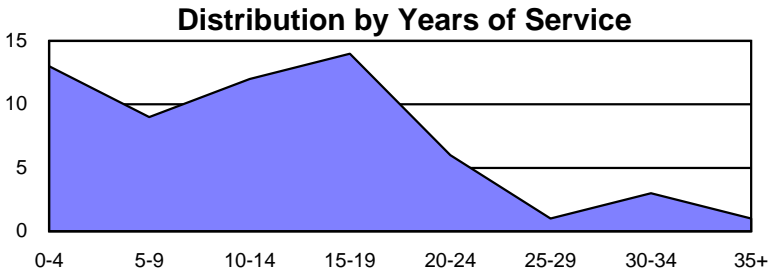
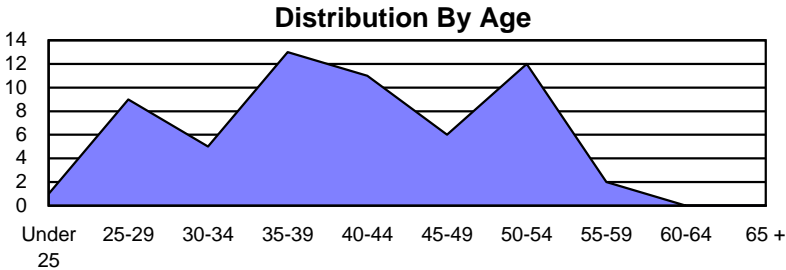
	<i>Active</i>	<i>Terminated Vested</i>	<i>Retired</i>	<i>Disabled</i>	<i>Beneficiary</i>	<i>Total</i>
<b>Count as of January 1, 2007</b>	59	1	36	7	3	106
New Entrants / Rehires						
Terminated Members						
Non-Vested						
Vested						
Deceased Members						
With Survivor Benefits						
With No Survivor Benefits						
Disableds						
Retirements						
Other			(1)		1	0
<b>Count as of January 1, 2008</b>	59	1	35	7	4	106



**SECTION V: MEMBERSHIP DATA**

**C. Distribution of Active Members as of January 1, 2008 - Count**

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



*This work product was prepared solely for the Bismarck Firefighters' Relief Association for the purposes described herein and may not be appropriate to use for other purposes. Milliman does not intend to benefit and assumes no duty or liability to other parties who receive this work.*

## SECTION V: MEMBERSHIP DATA

### D. Distribution of Active Members as of January 1, 2008 - Average Compensation

<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>	51,605	0	0	0	0	0	0	0	51,605
<b>25-29</b>	51,605	51,605	0	0	0	0	0	0	51,605
<b>30-34</b>	51,605	51,605	0	0	0	0	0	0	51,605
<b>35-39</b>	51,605	51,605	51,816	51,605	0	0	0	0	51,719
<b>40-44</b>	0	51,605	52,058	53,151	59,134	0	0	0	52,917
<b>45-49</b>	0	0	0	53,568	0	0	51,605	0	53,241
<b>50-54</b>	0	0	0	56,283	59,315	57,574	74,948	0	59,209
<b>55-59</b>	0	0	0	0	0	0	69,510	69,825	69,668
<b>60-64</b>	0	0	0	0	0	0	0	0	0
<b>65 +</b>	0	0	0	0	0	0	0	0	0
<b>Total</b>	51,605	51,605	51,917	54,308	59,285	57,574	65,354	69,825	54,200



## SECTION V: MEMBERSHIP DATA

### E. Distribution of Inactive Members as of January 1, 2008

<i>Terminated Vested Members</i>			<i>Disabled Members</i>		
<i>Age</i>	<i>Number</i>	<i>Average Annual Benefits</i>	<i>Number</i>	<i>Average Annual Benefits</i>	
< 30	0	0	0	0	0
30 - 34	0	0	0	0	0
35 - 39	0	0	0	0	0
40 - 44	1	11,807	0	0	0
45 - 49	0	0	0	0	0
50 - 54	0	0	2	18,874	
55 - 59	0	0	5	18,077	
60 - 64	0	0	0	0	
65 +	0	0	0	0	
Total	1	11,807	7	18,305	

<i>Retired Members</i>			<i>Beneficiaries of Deceased Members</i>		
<i>Age</i>	<i>Number</i>	<i>Average Annual Benefits</i>	<i>Number</i>	<i>Average Annual Benefits</i>	
< 30	0	0	0	0	0
30 - 39	0	0	0	0	0
40 - 49	0	0	0	0	0
50 - 59	10	23,226	0	0	0
60 - 69	9	28,830	2	16,235	
70 - 79	15	21,802	1	13,186	
80 - 89	1	18,461	1	13,186	
90 - 99	0	0	0	0	
100 +	0	0	0	0	
Total	35	23,921	4	14,710	



## APPENDIX A: ACTUARIAL ASSUMPTIONS & METHODS

### 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 Merit and Longevity	4.50% per year 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. Mortality Healthy Disabled	1983 Group Annuity Mortality Table 1983 Railroad Retirement Board Disabled Life Mortality Table
2. Retirement	100% upon the earlier of attainment of age 55 with 10 years of service or Rule of 80
3. Termination Rates before Retirement	Shown below for selected ages

Mortality		Disability		Withdrawal		
Age	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



## APPENDIX A: ACTUARIAL ASSUMPTIONS & METHODS

---

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

### 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 and are allocated by service, with Normal Cost determined as if the current benefit accrual rate had always been in effect.

#### 2. Amortization of Unfunded Actuarial Accrued Liability/Surplus

Level percent of payroll amortization 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. Finally, an additional adjustment (if necessary) is made so that the final actuarial value of assets is within a 20% corridor of market value.

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

None



## APPENDIX B: SUMMARY OF PLAN PROVISIONS

---

### 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 age 55 with 10 years of credited service.

#### Rule of 80

Age plus credited service equal 80 but member must be at least 50 years of age.

### 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.



## APPENDIX B: SUMMARY OF PLAN PROVISIONS

---

### 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.

### 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.

## APPENDIX B: SUMMARY OF PLAN PROVISIONS

---

### 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**

#### 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.

#### 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.

### **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**

#### Age and Service Requirement

None

#### Other Requirement

Must be an active, retired, disabled or terminated vested member of the Association at the time of death.

#### Amount

Lump sum payment equal to \$5,000.

### **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%.



## APPENDIX B: SUMMARY OF PLAN PROVISIONS

---

### P. Gain Share Plan

The Gain Share Plan provides the Board a prudent mechanism to capture gains and reserve them for providing additional benefits. The Board approved the following methodology for determining the annual gain share.

1. Measure the Fund's gain and determine the shareable portion.

In conjunction with each annual valuation that the resulting funding period is below 20 years, we would determine the Fund's total net actuarial gain and the investment related gain. The lesser of the total net actuarial gain and the investment related gain is used to determine the shareable portion of the gain. The shareable portion is the percentage of the gain represented by the ratio of the lesser of the market value of assets or the actuarial value of assets to the total present value of benefits.

2. Distribute the shareable portion of the gain among the three gain share accounts: the Reserve Account, the Active Member Account and the Retiree Account.

The reserve account is to store a portion of the gain for the purpose of offsetting future negative experience. We recommend that 50% of the shareable gain is added to the reserve account until this account equals the greater of 50% of the unfunded actuarial liability or 25% of the present value of future employer normal cost as determined in the most recent valuation. Once this level is reached, the Board may determine what portion of the shareable gain is added to the reserve account. The remainder of the shareable gain is distributed to the active member account and the retiree account based upon the ratio of the active member's total present value of benefits to the Fund's total present value of benefits and the ratio of the retiree's total present value of benefits to the Fund's total present value of benefits. These accounts represent the gains accumulated for the purpose of providing additional benefits to active and retired members (including beneficiaries).

We recommend the Board consider only benefit improvements in years that can be completely funded by a transfer of the total present value of the additional benefits from the appropriate gain share account.

### Q. Changes in Plan Provisions Since Prior Valuation

The Board added the Gain Share Plan.