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**MINNEAPOLIS FIREFIGHTER'S  
RELIEF ASSOCIATION**

*December 31, 1998  
Actuarial Valuation*

May, 1999

# MINNEAPOLIS FIREFIGHTER'S RELIEF ASSOCIATION

December 31, 1998 Actuarial Valuation

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# MINNEAPOLIS FIREFIGHTER'S RELIEF ASSOCIATION

*December 31, 1998 Actuarial Valuation*

## Introduction

### Purpose

This report presents the results of the December 31, 1998 valuation for the Minneapolis Firefighter's Relief Association. Its primary purposes are:

- to determine the funded status as of December 31, 1998,
- to determine the normal cost for 1998, and
- to present information required to be disclosed under General Accounting Standards Board Statement No. 25 (GASB 25) as of December 31, 1998.

### Sources of Data

The Relief Association supplied December 31, 1998 data for all active and inactive members, and asset information regarding the special fund. We have relied on this data in preparing this report.

### Changes from the Previous Valuation

The prior actuarial valuation of the plan was prepared as of December 31, 1997 by Gabriel, Roeder, Smith and Company. The actuarial assumptions and methods used to prepare this report are identical to those used in the 1997 report. This valuation recognizes an increase in benefits for active and retired members. Because the actuarial value of assets in the special fund exceeds 92.5% of the actuarial accrued liabilities as of December 31, 1998, active and retired members with 20 or more years of service earn an additional benefit unit, raising the maximum number of units to 42.0.

### Summary of Valuation Results

As of December 31, 1998, the funded status of the plan (actuarial accrued liabilities divided by the actuarial value of assets), after adjustment for the benefit increase, is 105.4% (see page 6). The normal cost for 1998, after adjustment for member contributions, is \$2,142,244 (see page 6).

**MINNEAPOLIS FIREFIGHTER'S RELIEF ASSOCIATION**  
*December 31, 1998 Actuarial Valuation*

**Introduction (continued)**

**Actuarial Certification**

We certify that the actuarial valuation has been prepared in accordance with Minnesota Statutes §§356.20-.23 and §69.77 as they relate to fire department relief associations in cities of the first class in general and the Minneapolis Firefighter's Relief Association in particular.

Respectfully submitted,



Mark D. Meyer, FSA, MAAA  
Consulting Actuary



Paul D. Krueger, JD  
Consultant

December 31, 1998 Actuarial Valuation

***Funding Basis*****Actuarial Value of Assets****A. Average unrealized gain**

Year Ending December 31:	Market Value	Book Value	Unrealized Gain (Market - Book)
1996	\$226,665,205	\$168,086,415	\$58,578,790
1997	267,177,580	184,228,556	82,949,024
1998	310,029,845	231,421,505	78,608,340
		Average:	\$73,378,718

**B. Book value of assets December 31, 1998**

\$231,421,505

**C. Excess investment income**

## 1. Time-weighted rate of return on assets

Fiscal Year	Return
1994	-1.775%
1995	26.598%
1996	14.031%
1997	23.842%
1998	20.735%
Average	16.686%

## 2. Percentage increase in current monthly salary

a. 1997 salary	56,793.60
b. 1998 salary	61,004.57
c. Percentage increase	7.415%
d. Excess of asset return over salary increase	9.272%
e. Excess plus 2%	11.272%

## 3. Excess investment income

(\$4,650,448)

(lesser of 1.5% or 2.e. times market value of assets)

**D. Actuarial value of assets as of December 31, 1998**

\$300,149,775

(A. + B. + C.3.)

# MINNEAPOLIS FIREFIGHTER'S RELIEF ASSOCIATION

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December 31, 1998 Actuarial Valuation

## Summary of Member Data

December 31, 1997    December 31, 1998

### A. Active members

1. Number		
a. Fully vested	198	179
b. Nonvested	0	0
c. Total	198	179
2. Average age	51.4	51.2
3. Average years of service	24.7	24.5
4. Total annual payroll for the year beginning on valuation date	\$12,078,990	\$11,356,611
5. Average annual salary	\$61,005	\$63,445
6. Present value of future salaries		\$66,041,614

### B. Vested terminated members

1. Number	3	2
2. Total annual deferred benefits	\$62,606	\$33,864

### C. Retirees

1. Age & service	384	396
2. Disability	13	10
3. Total	397	406
4. Total annual benefits	\$11,983,774	\$13,158,030
5. Average annual benefit	\$31,208	\$33,227

### D. Beneficiaries

1. Spouses	202	201
2. Children	4	4
3. Total	206	205
4. Total annual benefits	\$3,422,504	\$3,601,807
5. Average annual benefit	\$16,614	\$17,570

### E. Total number of members (A.1. + B.1. + C.3. + D.3.)

791                      792

# MINNEAPOLIS FIREFIGHTER'S RELIEF ASSOCIATION

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December 31, 1998 Actuarial Valuation

## Summary of Changes in Membership

	Actives	Vested Terminees	Retirees	Beneficiaries	Total
<i><u>A. Number of members on December 31, 1997</u></i>	198	3	397	206	804
<i><u>B. Changes in membership</u></i>					
1. Retirements	(19)	(1)	20		0
2. Vested terminations					0
3. Deaths			(8)	(1)	(9)
4. Expiration of surviving child benefits					0
5. Corrections			(3)		(3)
6. Total changes	(19)	(1)	9	(1)	(12)
<i><u>C. Number of members on December 31, 1998</u></i>	179	2	406	205	768 <i>792</i>

December 31, 1998 Actuarial Valuation

**Funding Basis****Actuarial Values Used to Determine Contribution**

December 31, 1997    December 31, 1998

**A. Actuarial present value of projected benefits (the value of all future benefits to be paid to the current group of members)**

1. Active members	\$101,818,446	\$94,717,699
2. Vested terminated members	1,005,480	671,303
3. Retired members	144,631,644	161,559,584
4. Spouses and children receiving benefits	31,390,452	32,267,201
5. Disabled members receiving benefits	8,833,476	6,918,566
6. Total present value of projected benefits	287,679,498	296,134,353

**B. Actuarial accrued liability (the cost allocated to all prior years)**

1. Active members	\$88,168,904	\$83,457,087
2. Vested terminated members	1,005,480	671,303
3. Retired members	144,631,644	161,559,584
4. Spouses and children receiving benefits	31,390,452	32,267,201
5. Disabled members receiving benefits	8,833,476	6,918,566
6. Total actuarial accrued liability	274,029,956	284,873,741

**C. Amortization of unfunded actuarial accrued liability**

1. Total actuarial accrued liability (A.7.)	\$274,029,956	\$284,873,741
2. Actuarial value of assets	245,305,766	300,149,775
3. Unfunded actuarial accrued liability (1. - 2.)	28,724,190	(15,276,034)
4. Funded status (2. / 3.)	89.5%	105.4%
5. Years left in amortization period	12	11
6. Amortization payment	3,232,204	0

**D. Normal cost (the cost allocated to the current year)**

1. Present value of future normal costs	\$13,649,542	\$11,260,612
2. Normal cost as a dollar amount		
a. Total normal cost	2,773,522	2,585,552
b. Expected member contributions	929,153	443,308
c. Employer normal cost (a. - b.)	1,844,369	2,142,244
3. Payroll for year ending on valuation date	11,614,413	10,919,818
4. Normal cost as a percent of active payroll		
a. Total normal cost	23.88%	23.68%
b. Expected member contributions	8.00%	4.06%
c. Employer normal cost (a. - b.)	15.88%	19.62%

December 31, 1998 Actuarial Valuation

*Accounting Basis***Statement of Plan Net Assets - Market Value**

	December 31, 1997	December 31, 1998
<b><u>A. Assets</u></b>		
1. Cash	\$124,689	1,349,444
2. Short-term investments*	8,165,896	118,503,207
3. Total	8,290,585	119,852,651
<b><u>B. Receivables</u></b>		
1. Accrued interest	\$1,328,336	\$932,084
2. Accrued contributions	932,084	1,055,075
3. Total	2,260,420	1,987,159
<b><u>C. Accounts payable</u></b>	\$0	\$0
<b><u>D. Investments, at fair value</u></b>		
1. Common stocks	165,305,751	106,796,743
2. Mutual funds	0	3,291,756
3. Mortgages	754,951	0
4. Bonds		
Corporate	28,336,362	37,728,256
U.S. government	48,364,635	28,500,071
U.S. agency	12,500,138	10,955,611
5. Real estate	1,364,738	917,598
6. Total	256,626,575	188,190,035
<b><u>E. Net assets held in trust for pension benefits</u></b>	267,177,580	310,029,845

\*Short term investment position is temporary, a result of a change in investment managers

*December 31, 1998 Actuarial Valuation**Accounting Basis***Statement of Changes in Plan Net Assets**

	<u>December 31, 1997</u>	<u>December 31, 1998</u>
<b><u>A. Additions</u></b>		
1. Contributions		
a. Employer	\$4,844,823	\$3,541,518
b. Plan members	954,265	505,283
c. Total	5,799,088	4,046,801
2. Investment income	51,064,958	57,034,721
3. Total additions	56,864,046	61,081,522
<b><u>B. Deductions</u></b>		
1. Benefits paid	15,841,597	17,184,593
2. Refund of contributions	0	0
3. Expenses	510,074	1,044,664
4. Total deductions	16,351,671	18,229,257
<b><u>C. Net increase</u></b>	40,512,375	42,852,265
<b><u>D. Net assets held in special fund</u></b>		
1. Beginning of year	\$226,665,205	\$267,177,580
2. End of year	\$267,177,580	\$310,029,845

MINNEAPOLIS FIREFIGHTER'S RELIEF ASSOCIATION  
December 31, 1998 Actuarial Valuation

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*Accounting Basis*

**Schedule of Funding Progress**  
*(Dollar amounts in thousands)*

<u>As of December 31:</u>	<u>Actuarial Value of Assets</u>	<u>Actuarial Accrued Liability (AAL)</u>	<u>Unfunded AAL (UAAL)</u>	<u>Funded Ratio</u>	<u>Covered Payroll</u>	<u>UAAL as a % of Covered Payroll</u>
1992	\$156,279	\$211,558	\$55,279	73.9%	\$13,614	406.0%
1993	177,529	223,357	45,828	79.5%	13,395	342.1%
1994	178,003	228,567	50,564	77.9%	13,073	386.8%
1995	194,611	234,386	39,775	83.0%	11,839	336.0%
1996	208,969	252,540	43,571	82.7%	12,298	354.3%
1997	245,306	274,030	28,724	89.5%	12,079	237.8%
1998	300,150	284,874	(15,276)	105.4%	11,357	-134.5%

*Accounting Basis*

**Schedule of Employer Contributions**

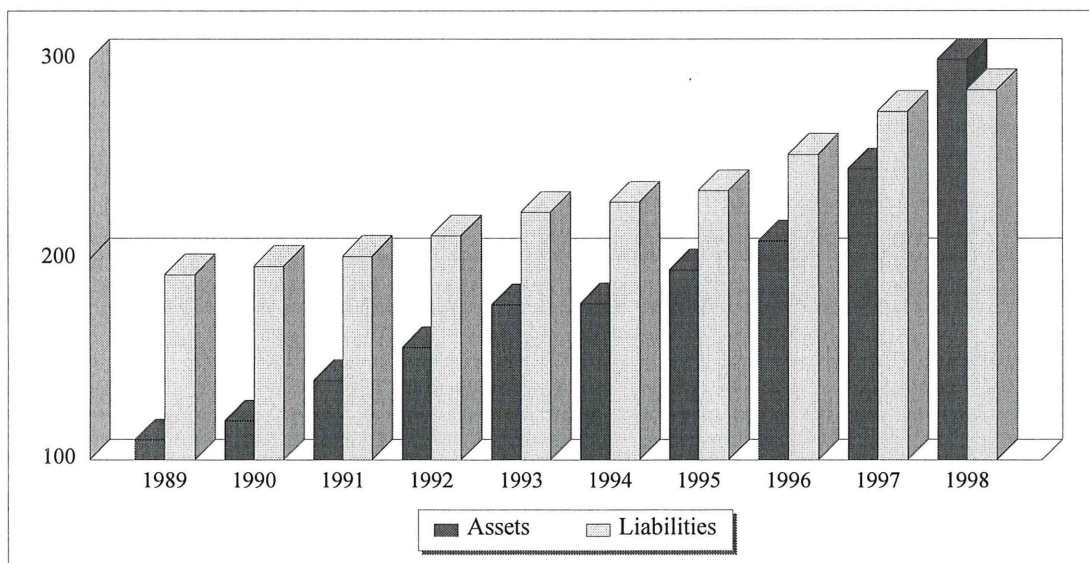
<u>Year Ended December 31:</u>	<u>Annual Employer Contributions</u>
1992	\$7,667,121
1993	6,871,984
1994	6,878,398
1995	7,405,980
1996	6,328,580
1997	4,844,823
1998	3,541,518

*December 31, 1998 Actuarial Valuation****Historical Tables*****Historical Funding Ratio Schedule***(Dollar amounts in thousands)*

<u>As of December 31:</u>	<u>Actuarial Accrued Liability</u>	<u>Actuarial Value of Assets</u>	<u>Percent Funded</u>
1988*#	\$188,014	\$93,601	49.8%
1989	192,264	110,092	57.3%
1990#	196,491	119,652	60.9%
1991	201,461	139,891	69.4%
1992#	211,558	156,279	73.9%
1993#	223,357	177,529	79.5%
1994	228,567	178,003	77.9%
1995	234,386	194,611	83.0%
1996	252,540	208,969	82.7%
1997	274,030	245,306	89.5%
1998	284,874	300,150	105.4%

#After change in actuarial assumptions

\*After change in benefit provisions



*Historical Tables*

**History of Employer Contributions**

Valuation December 31:	Normal Cost as a Percent of Payroll*	Amortization of Unfunded Actuarial Liability
1988	23.37%	\$7,793,970
1989	23.33%	6,957,374
1990	23.95%	6,687,685
1991	23.85%	5,538,556
1992	23.90%	5,123,898
1993	23.98%	4,403,949
1994	23.99%	5,056,000
1995	23.94%	4,155,683
1996	23.91%	4,779,811
1997	23.88%	3,327,287
1998	23.66%	0

*Historical Tables*

**Comparative Schedule of Active Members**

Valuation December 31:	Number of Active Members	Valuation Payroll	Age	Averages Service	Pay	% Increase
1988	364	\$14,045,668	46.7	19.4	\$38,587	4.0%
1989	351	14,067,027	47.4	20.0	40,077	3.9%
1990	337	13,854,744	48.0	20.8	41,112	2.6%
1991	321	13,664,649	48.6	21.5	42,569	3.5%
1992	309	13,614,231	49.2	22.2	44,059	3.5%
1993	285	13,395,285	49.5	22.6	47,001	6.7%
1994	267	13,073,121	50.2	23.2	48,963	4.2%
1995	236	11,838,704	50.3	23.5	50,164*	2.5%
1996	220	12,297,560	50.8	24.1	55,898	11.4%
1997	198	12,078,990	51.4	24.7	61,005	9.1%
1998	179	11,356,611**	51.2	24.5	63,445**	4.0%**

\* Labor agreement settled in late 1996 with the 1996 single salary of \$53,175

\*\* Labor agreement not settled as of valuation date, pay for valuation based on previous year

*Historical Tables*

**Comparative Schedule of Inactive Members**

As of December 31:	Number of Retirees and Beneficiaries			Annual Benefits	Present Value of Benefits
	Added to Rolls	Removed from Rolls	On Valuation Date		
1987	25	29	555	\$8,337,959	\$110,331,396
1988	32	25	562	8,894,721	111,904,800
1989	18	25	555	9,118,089	113,227,692
1990	24	22	557	9,364,461	115,174,188
1991	19	22	554	9,717,991	117,998,856
1992	34	24	564	10,418,854	125,708,460
1993	32	22	574	11,350,689	135,712,458
1994	32	31	575	12,845,678	143,862,253
1995	39	18	596	13,417,874	153,032,140
1996	27	27	596	14,091,016	166,750,488
1997	41	34	603	15,441,956	184,855,572
1998	20	12	611	16,759,837	200,745,351

**MINNEAPOLIS FIREFIGHTER'S RELIEF ASSOCIATION***December 31, 1998 Actuarial Valuation***Summary of Plan Provisions**

- |                                 |   |
|---------------------------------|---|
| 1. Normal Retirement Benefit    | Annual benefit of $1\frac{6}{80}$ of base pay for each year of service up to 25 years. An additional 2 units are awarded for the 20th year of service, for a maximum of 42 units. "Base pay" for this purpose means the maximum monthly salary of a first grade firefighter. Members must be at least age 50 with 5 years of service to receive this benefit. |
| 2. Deferred Vested Benefit      | Annual benefit equal to the accrued normal retirement benefit, deferred to age 50 for members with at least 5 years of service.   |
| 3. Disability Benefit           | Annual benefit of $4\frac{1}{80}$ of base pay for members no longer able to perform the duties of a firefighter due to disability.  |
| 4. Surviving Spouse's Benefit   | Annual benefit of $2\frac{2}{80}$ of base pay for the surviving spouse of an active or retired member. Members on retirement may choose an alternate form of payment that provides 50%, 75% or 100% of their benefit to their spouse after their death.   |
| 5. Surviving Children's Benefit | Annual benefit of $\frac{8}{80}$ of base pay for each surviving child of an active or retired member. Benefits continue to age 18 or if the child is a full-time student, to age 22. The total benefit for surviving children and spouse combined is limited to $4\frac{1}{80}$ of base pay.  |
| 6. Member Contributions         | Members are required to contribute 8% of base pay. After 25 years of service, member contributions are paid to a separate health insurance account. Member contributions are non-refundable.  |

# MINNEAPOLIS FIREFIGHTER'S RELIEF ASSOCIATION

*December 31, 1998 Actuarial Valuation*

## Actuarial Methods and Assumptions

1. Mortality                      The UP-1984 Mortality Table set forward 2 years for males and set back 3 years for females.
  
2. Withdrawal                    The rate of withdrawal is 6% at age 20 decreasing uniformly to zero at age 50 with no withdrawal after that age.
  
3. Disability                      Rates varying by age. Sample disability rates are as follows:
 

<u>Age</u>	<u>Rate</u>
25	0.08%
30	0.08
35	0.08
40	0.20
45	0.26
50	0.49
55	0.89
  
4. Retirement Age                Members are assumed to retire at age 57, or attained age if older.
  
5. Interest Rate                   6% compounded annually.
  
6. Salary Scale                   4% annually. Inactive benefits are assumed to increase at the same rate.
  
7. Actuarial Cost Method        The Entry Age Normal Cost Method. Under this method, the normal cost for an individual member is the level annual dollar amount required, beginning on the date of joining the association, to accumulate the funds needed to pay the member's accrued benefits by their assumed retirement age. The actuarial accrued liability is the accumulated value of these annual normal costs on a given date. The normal cost and accrued liability for the plan is the total of these values for all members.