

# Minneapolis Fire Department Relief Association



## Annual Actuarial Valuation December 31, 1997

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1997

Gabriel, Roeder, Smith & Company



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—Minn. Stat. 69.77

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Minneapolis, Minnesota

Submitted in this report are the results of the December 31, 1997 actuarial valuation of the assets, actuarial values and contribution requirements associated with the benefits provided by the Minneapolis Fire Department Relief Association.

The valuation results contained in Section A provide the actuarial information needed to determine the employer's "minimum obligation" effective January 1, 1999. Section A also contains comments regarding the valuation results.

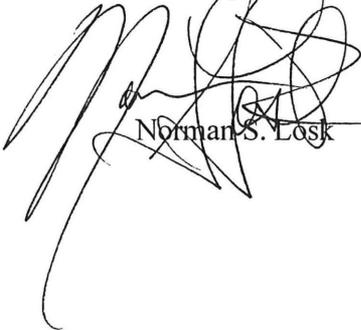
The valuation was based upon information furnished by the Association concerning benefits, financial transactions, active members, terminated members, retirants and beneficiaries. Data was checked for year to year consistency but was not otherwise audited by us. This information is summarized in Section B.

A description of the actuarial funding method and the risk experience assumptions used is contained in Section C. The economic risk experience assumptions, as well as the actuarial funding method to be used, are established by state law.

Information needed to comply with Statement No. 25 of the Governmental Accounting Standards Board is contained in Section D.

The actuarial valuation was prepared using generally accepted actuarial principles and practices based upon the methods, assumptions, summary of plan provisions and the member and financial data described in this report.

Respectfully submitted,

  
Norman S. Losk

  
Mary Ann Vitale

## **Section A**



## **Valuation Results**

## Comments

### **Economic Assumptions and Financing Method**

The economic assumptions of 6% annual investment return and 4% annual salary increases are established by state law. State law also specifies that the annual minimum obligation of the municipality shall be determined by adding (i) the employer normal cost percent times covered payroll to (ii) the level dollar amount required to amortize the unfunded actuarial accrued liability by December 31, 2010.

It is worth noting that when the same assumptions and methods are applied to plans which differ in nature, the valuation results may not be comparable. Caution should be exercised when attempting to assess the financial condition of one Association relative to another on the basis of valuation results produced using the assumptions and methods mandated by state law.

## CONTRIBUTION RATE TO PROVIDE BENEFITS

### Member portion & Employer portion

Effective January 1, 1999

Contributions for	If Paid Equally Throughout Year Normal Cost % of Active Payroll for 1999	+	UAAL Dollars
Normal cost of annuities:			
Age & service: to members	15.78%		
Age & service: to survivors	3.79		
Disability	2.50		
Death before retirement	1.81		
Refunds of member contributions	0.00		
Total Normal Cost	23.88%		
Amortization of unfunded actuarial accrued liabilities (UAAL) (12 year level dollar payment)			
Retired lives			\$ 0
Active members			3,327,287
Total			3,327,287
Total Cost of Benefits	23.88%	+	\$3,327,287
Member contributions	8.00%		
<b>COMPUTED EMPLOYER RATE:</b>			
(a) If Paid Equally Throughout Year	15.88%	+	\$3,327,287
(B) IF PAID AT CALENDAR YEAR END	16.10%	+	\$3,372,871

The amounts in (b) were computed to adjust for interest according to the following payment pattern:

1. The state amortization aid is received in 4 equal installments on 3/15, 7/15, 9/15 and 11/15.
2. The balance of the contribution is received as follows:
  - a. 16.0% of the balance is received from the State on 10/15.
  - b. 35.1% of the balance is received from the City on 7/5 and 12/5.
  - c. 2.3% of the balance is received from the City on 7/15, 8/15, 9/15, 10/15, 11/15 and 12/15.

## Present Actuarial Condition

The actuarial value of the Association's assets (valuation assets) were in excess of \$245.3 million on December 31, 1997 -- a considerable sum of money if unencumbered and allocated among a small group of persons. This is not the case with the Association's assets.

The following schedule puts the \$245.3 million into perspective by showing the relationship between valuation assets, actuarial accrued liabilities, and the number of persons with actual and potential claims on the Association's assets.

	<u>Accrued Actuarial Assets</u>	<u>Actuarial Accrued Liabilities</u>	<u>Unfunded Actuarial Accrued Liabilities</u>	<u>Percent Funded</u>
Retirants and Beneficiaries				
Retired Members (397)		\$153,465,120		
Surviving Spouses (202)		31,271,616		
Surviving Children (4)		<u>118,836</u>		
Total (603)		\$184,855,572		
Deferred Members (3)		1,005,480		
Active Members (198)		<u>88,168,904</u>		
Total	\$245,305,766	\$274,029,956	\$28,724,190	89.5%

Actuarial accrued liabilities represent the value, computed as of December 31, 1997 of:

- (i) retirement allowances likely to be paid the 603 retirants and beneficiaries; and
- (ii) the contributions assumed to have been made for the 198 active members from entry into the plan until December 31, 1997.

The value of retirement allowances likely to be paid the 603 retirants and beneficiaries, discounted for investment earnings and mortality, was computed to be \$184,855,572 as of December 31, 1997. To put this amount in perspective, the \$184,855,572, together with investment earnings, will just be sufficient to pay the 603 retirants and beneficiaries their allowances for their remaining lifetimes. This assumes the 603 retirants and beneficiaries live and die according to the assumed mortality and the \$184,855,572 is invested to yield an average annual return of 6.0% over the remaining lifetimes of the retirants and beneficiaries and the benefit payments increase according to the actuarial assumptions and benefit provisions shown in this report.

With respect to the active members, the actuarial accrued liability of \$88,168,904 represents the amount that would have been accumulated by December 31, 1997. This assumes the normal cost (which is expressed as a level percentage of pay) had been contributed from the date of hire until December 31, 1997 for the 198 actives, and that these amounts had earned 6.0% interest. It also assumes that the members in the past have lived, died, withdrawn, retired and received salary increases according to the actuarial assumptions shown in this report.

### Historical Funding Ratio Schedule (\$ in thousands)

Valuation Date December 31	Actuarial Accrued Liabilities	Accrued Actuarial Assets	Percent Funded
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

# After change in actuarial assumptions.

\* After change in benefit provisions.

## Computed Contributions - Comparative Schedule

Year Ended December 31		Total Normal Cost as a Percent of Valuation Payroll*	Contribution For Unfunded Actuarial Accrued Liabilities
Valuation	Fiscal		
1988	1990 **#	23.37%	\$7,793,970
1989	1991	23.33	6,957,374
1990	1992 #	23.95	6,687,685
1991	1993	23.85	5,538,556
1992	1994 #	23.90	5,123,898
1993	1995 #	23.98	4,403,949
1994	1996	23.99	5,056,000
1995	1997	23.94	4,155,683
1996	1998	23.91	4,779,811
1997	1999	23.88	3,327,287

\* *Includes employee contributions.*

\*\* *After change in actuarial assumptions.*

# *After change in benefit provisions.*

## Contribution for Calendar Year Effective January 1, 1999

For any period of time the percent-of-payroll contribution rate is converted to dollars. The amount of dollars for any calendar year depends upon the results of the last actuarial valuation, and the timing of contributions within the year. The later the contribution date, the greater the dollar amount will be.

The municipality's dollar contribution for the year may be determined as follows:

(1) Estimated covered payroll for 1999	\$ _____	
(2) Employer normal cost % from page A-2	15.88%	
(3) Employer normal cost (Line 1 times line 2)		\$ _____
(4) Amortization payment on UAAL from page A-2		3,327,287
(5) Total contributions required (Line 3 plus line 4)		_____
(6) (a) State amortization aid based on 12/31/78 UAAL of \$98,227,435	\$705,696*	
(b) State amortization aid based on 1984 legislation	<u>210,424</u>	
(c) Total State amortization aid	916,120	
(7) Estimated insurance premium aid	_____	
(8) Estimated total contributions from other sources (Line 6 plus line 7)		_____
(9) Employer's Minimum Obligation if payment is made in equal installments throughout the year (Line 5 minus line 8)		\$ _____
(10) EMPLOYER'S MINIMUM OBLIGATION IF PAYMENT IS MADE AT YEAR END (LINE 9 TIMES 1.0137)		\$ _____

\* State amortization aid reduced by Fire Relief Association pro-rata share of \$1,520,000 reduction in amortization aid called for by the 13th check legislation. The potential additional reduction which would result from "excess" investment income during 1998 was not considered.

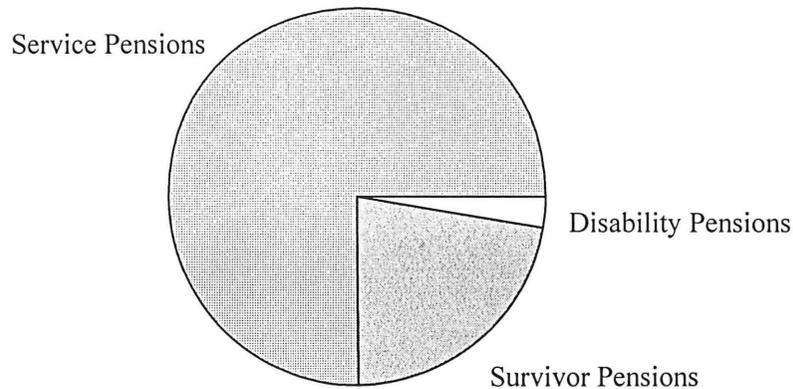
## **Section B**



# **Valuation Data and Summary of Benefit Provisions**

**Retirants and Beneficiaries December 31, 1997**  
**By Type of Annuity Being Paid**

<u>Type of Annuity Being Paid</u>	<u>No.</u>	<u>Monthly Amounts</u>	<u>Computed Actuarial Accrued Liabilities</u>
Retirants receiving:			
Age & service	384	\$ 964,777.30	\$144,631,644
Disability	<u>13</u>	<u>33,870.50</u>	<u>8,833,476</u>
Totals	397	998,647.80	153,465,120
Beneficiaries receiving:			
Spouse	202	283,175.15	31,271,616
Child	<u>4</u>	<u>2,033.50</u>	<u>118,836</u>
Totals	<u>206</u>	<u>285,208.65</u>	<u>31,390,452</u>
Totals	603	\$1,283,856.45	\$184,855,572



**Monthly Amount Paid by Benefit**

**Inactive Members Eligible For Deferred Benefits**  
**December 31, 1997**

No.	Monthly Amount	Computed Actuarial Accrued Liabilities
3	\$5,217.20	\$1,005,480

**Retirants and Beneficiaries December 31, 1997**  
**By Attained Ages**

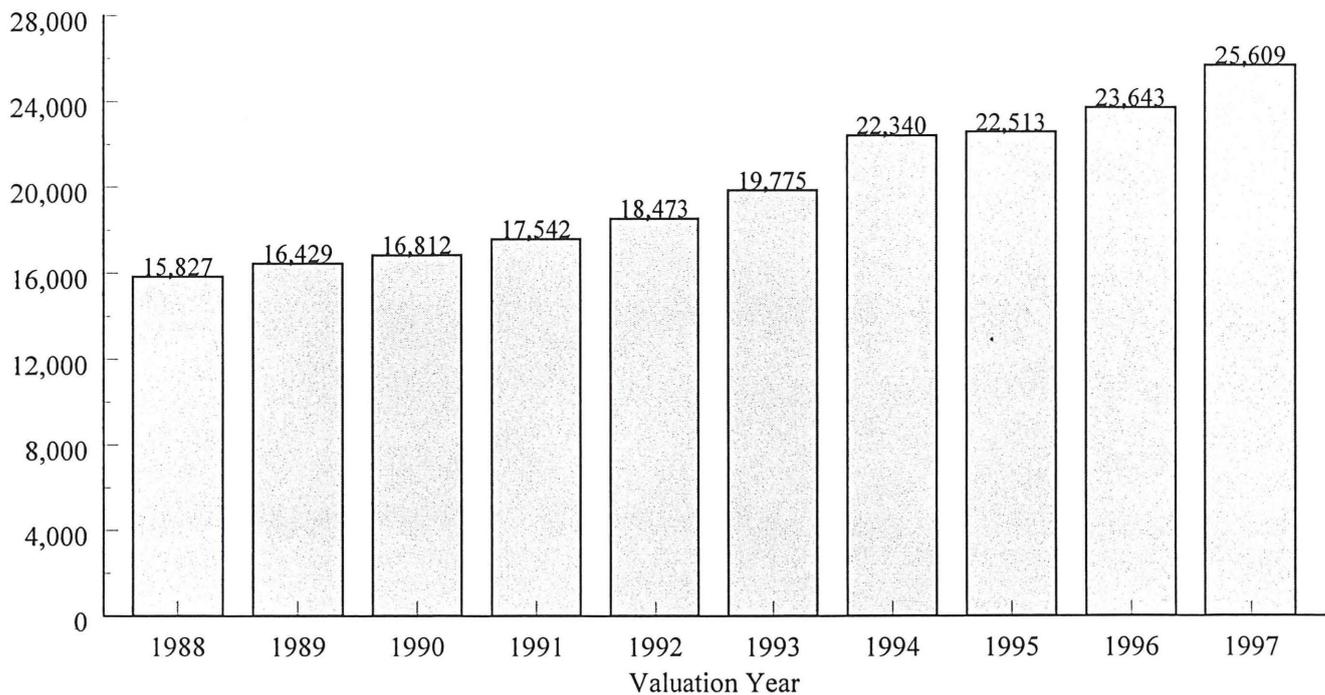
Attained Ages	Number		
	Age & Service	Disability	Death Before Retirement
Under 20			4
35-39	1		
40-44		1	
45-49		8	3
50-54	21	5	4
55-59	42	1	3
60-64	56	1	6
65-69	111	2	3
70-74	98	4	4
75-79	61	4	1
80-84	75	12	7
85-89	36	11	
90-94	10	4	1
95-99	2	1	
<b>Totals</b>	<b>513</b>	<b>54</b>	<b>36</b>

## Retirants and Beneficiaries Added to and Removed from Rolls

### Comparative Statement

Valuation Date December 31	No. Added to Rolls	No. Removed from Rolls	Rolls End of Year		Discounted Value of Total Allowances
			No.	Annual Allowances	
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

### Average Annual Allowances



**Active Members December 31, 1997**  
**By Attained Age and Years of Service**

Attained Age	Years of Service to Valuation Date							Totals	
	0-4	5-9	10-14	15-19	20-24	25-29	30 Plus	No.	Valuation Payroll
35-39				1				1	\$ 61,005
40-44				11	2			13	793,065
45-49				17	33	8		58	3,538,290
50-54				8	32	30	4	74	4,514,370
55-59					8	17	16	41	2,501,205
60						1	4	5	305,025
61							2	2	122,010
62						1	2	3	183,015
63							1	1	61,005
<b>Totals</b>				<b>37</b>	<b>75</b>	<b>57</b>	<b>29</b>	<b>198</b>	<b>\$12,078,990</b>

*While not used in the financial computations, the following group averages are computed and shown because of their general interest.*

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**Group Averages:**

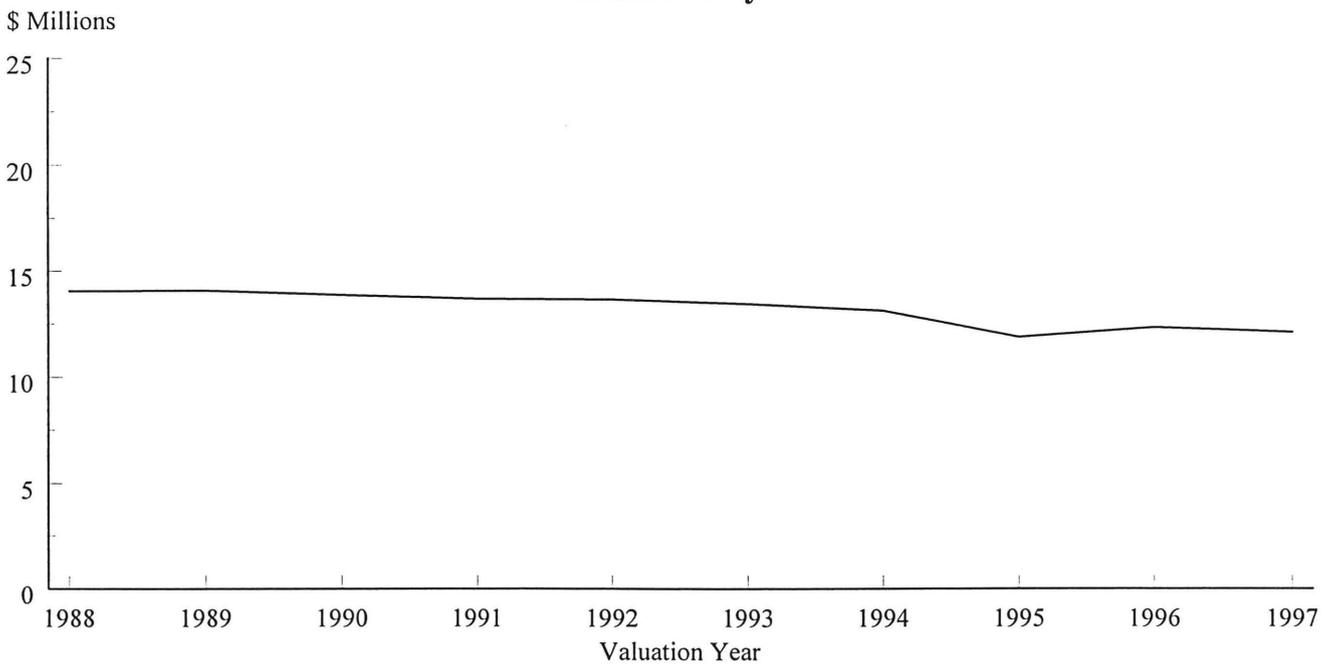
Age: 51.4 years  
Service: 24.7 years  
Annual Pay: \$61,005

## Comparative Schedule Of Active Members

Valuation Date December 31	Active Member	Valuation Payroll	Average			% Incr.
			Age	Service	Pay	
1988	364	\$14,045,668	46.7 yrs.	19.4 yrs.	\$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

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

### Valuation Payroll



## Brief Summary (12/31/97) of Benefit Provisions Evaluated and/or Considered

### AGE & SERVICE RETIREMENT

*Eligibility.* 5 years of service and 50 years of age.

*Amount.* 1.6/80 of base pay for each of the first 19 years of service and 2.6/80 is added for the 20th year of service. For service in excess of 20 years, an additional 1.6/80 is provided for each year to a maximum of 41/80 of base pay for 25 or more years of service.

**PAY USED FOR PLAN PURPOSES.** "Base pay" means the maximum monthly salary of a first grade firefighter.

### DISABILITY RETIREMENT

*Eligibility.*

**First Class Disability.** Disabled to the extent that no longer able to perform the duties of a firefighter.

*Amount.*

**First Class Disability.** 41/80 of base pay.

### MEMBER'S DEATH WHILE ACTIVE, OR IN DEFERRED STATUS, OR RETIRED

*Eligibility.*

*Spouse.* Married to member at separation from service and residing with member at time of death payable for life. (For service or deferred retirement, must have been married at least one year before separation from service.)

*Child.* Younger than age 18, or if full-time student, younger than age 22.

*Amount.*

*Spouse.* 22/80 of base pay.

*Child.* 8/80 of base pay per child. Children's maximum is 19/80 if spouse is receiving or 41/80 if no spouse is receiving.

**VESTED DEFERRED.** 5 years of service. Payment beginning is deferred to attainment of age 50.

**POST-RETIREMENT ADJUSTMENTS ("ESCALATOR").** Each time base pay is changed, payments to all benefit recipients are changed simultaneously by the same percent that base pay is changed.

**MEMBER CONTRIBUTIONS.** 8% of base pay. After 25 years of service, member contributions are paid to a separate health insurance account. Member contributions are non-refundable.

## Derivation of Valuation Assets

Valuation Date December 31	(a) Market Value	(b) Book Value	(c) Market-Book
1995	\$206,201,131	\$160,541,565	\$45,659,566
1996	226,665,205	168,086,415	58,578,790
1997	267,177,580	184,228,556	82,949,024
(d) Average Unrealized Gain			\$62,395,793
(e) Excess Investment Income*			1,318,583
(f) Assets 12/31/97 (Book Value 12/31/97 + (d) - (e))			\$245,305,766#

\* *Excess investment income was reported by Minneapolis Fire Department Relief Association.*

# *Does not include contributions made by members who have 25 or more years of service.*

## **Section C**



# **Valuation Methods and Assumptions**

## Valuation Methods and Assumptions

The Entry Age Normal Cost method was used to determine the normal cost of all benefits. The rate of investment return (interest) as required by state law used in making the valuation was 6.0 percent per annum, compounded annually. Age & service retirement was assumed to occur at age 57, attained age if older. It was further assumed that 85% of the members would have eligible beneficiaries.

### Mortality Table\*

Sample Ages	Single Life Values: Present Value of \$1 Monthly				Future Life Expectancy (Years)	
	Level For Life		Increasing 4.0% Yearly			
	Men	Women	Men	Women	Men	Women
45	\$159.22	\$168.84	\$261.90	\$291.24	29.50	34.00
50	147.95	159.22	231.75	261.90	25.20	29.50
55	135.09	147.95	201.37	231.75	21.16	25.20
60	120.76	135.09	171.29	201.37	17.42	21.16
65	105.49	120.76	142.51	171.29	14.05	17.42
70	89.88	105.49	115.81	142.51	11.09	14.05
75	74.14	89.88	91.34	115.81	8.52	11.09
80	59.37	74.14	70.19	91.34	6.39	8.52

\* UP-1984 Table set forward 2 years for males and set back 3 years for females.

### Sample Rates of Separating from Active Employment Before Retirement, Death or Disability

Sample Ages	% of Active Members Separating within Next Year
20	6.00%
25	5.00
30	4.00
35	3.00
40	2.00
45	1.00
50+	0.00

## Pay Adjustment Factor Used To Project Current Pays

Sample Ages	Present Pay Resulting in Pay of \$1,000 at Age 60	Present Increase in Pay During Next Year
20	\$ 208	4.0%
25	253	4.0
30	308	4.0
35	375	4.0
40	456	4.0
45	555	4.0
50	676	4.0
55	822	4.0
60	1,000	4.0

Use of the pay adjustment factor illustrated above is required by state law.

## Anticipated Disability Retirements

Sample Ages	% of Active Members Becoming Disabled within Next Year
20	0.08%
25	0.08
30	0.08
35	0.08
40	0.20
45	0.26
50	0.49
55	0.89

## **Section D**



# **Financial Reporting**

**Statement Of Plan Net Assets**  
**Market Value**  
**As Of December 31, 1996 And 1997**

	<u>1997</u>	<u>1996</u>
Assets:		
Cash and short-term investments	\$8,290,585	\$ 9,801,096
Receivables:		
Accrued interest	2,260,420	2,228,224
Accounts Payable:	-	-
Investments, at fair value:		
Common Stocks	165,305,751	137,755,264
Mutual Funds	-	-
Mortgages	754,951	757,266
Bonds	89,201,135	69,175,538
Real Estate	<u>1,364,738</u>	<u>6,947,817</u>
Total	\$256,626,575	\$214,635,885
Net assets held in trust for pension benefits*	\$267,177,580	\$226,665,205

\* A schedule of funding progress for the plan is presented on page D-4.

## Statement Of Changes In Plan Net Assets

For The Fiscal Years Ended December 31, 1996 and December 31, 1997

	<u>December 31, 1997</u>	<u>December 31, 1996</u>
Additions:		
Contributions		
Employer	\$ 4,844,823	\$ 6,328,580
Plan members	<u>954,265</u>	<u>910,775</u>
Total	5,799,088	7,239,355
Investment Income	<u>51,064,958</u>	<u>29,154,934</u>
Total Additions	\$ 56,864,046	\$ 36,394,289
Deductions:		
Benefits Paid	15,841,597	14,726,882
Refund of Contributions	-	-
Expenses	<u>510,074</u>	<u>1,203,333</u>
Total Deductions	\$ 16,351,671	\$ 15,930,215
Net Increase	\$ 40,512,375	\$ 20,464,074
Net assets held in Trust Fund:		
Beginning of year	\$226,665,205	\$206,201,131
End of year	<u>\$267,177,580</u>	<u>\$226,665,205</u>

**Plan Description.** The Minneapolis Fire Department Relief Association is a single-employer defined benefit pension plan that covers the fire department employees of the City of Minneapolis.

The plan provides retirement, disability, and death benefits to plan members and their beneficiaries.

**Contributions.** Plan members contributions as specified on page B-8.

The employer's funding policy provides for periodic employer contributions based upon a *fundamental financial objective of having rates of contribution which remain relatively level from generation to generation of the City of Minneapolis citizens.* To determine the employer contribution rates and to assess the extent to which the fundamental financial objective is being achieved, the System has actuarial valuations prepared annually. In preparing those valuations, the entry age actuarial cost method is used to determine normal cost and actuarial accrued liabilities.

Unfunded actuarial accrued liabilities (full funding credit) are amortized by level percent-of-payroll contributions over a period of future years as outlined on page A-2.

On the basis of the December 31, 1997 actuarial valuation, the employer rates were determined to be as follows:

<b>Contributions for</b>	
<b>Normal Cost as a Percent of Active Member Payroll</b>	<b>Unfunded Actuarial Accrued Liabilities</b>
15.88%	\$3,327,287

**Required Supplementary Information**  
**Schedule of Funding Progress**  
**(Dollar amounts in thousands)**

Actuarial Valuation Date	(a) Actuarial Value of Assets	(b) Entry Age Actuarial Accrued Liability (AAL)	(b)-(a) Unfunded AAL (UAAL)	(a)/(b) Funded Ratio	(c) Covered Payroll	[(b-a)/c] UAAL as a Percent of Covered Payroll
12/31/92#	\$156,279	\$211,558	\$55,279	73.9%	\$13,614	406.0%
12/31/93#	177,529	223,357	45,828	79.5	13,395	342.1
12/31/94	178,003	228,567	50,564	77.9	13,073	386.8
12/31/95	194,611	234,386	39,775	83.0	11,839	336.0
12/31/96	208,969	252,540	43,571	82.7	12,298	354.3
12/31/97	245,306	274,030	28,724	89.5	12,079	237.8

# After change in actuarial assumptions.

## 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

## Summary of Actuarial Methods and Assumptions

The information presented in the required supplementary schedules was determined as part of the actuarial valuations at the dates indicated. Additional information as of the latest actuarial valuation follows:

Valuation date	December 31, 1997
Actuarial cost method	Entry age actuarial cost method
Amortization method	Level percent of payroll
Remaining amortization period	See page A-2
Asset valuation method	See page B-9
Actuarial assumptions:	
Investment rate of return (net)	6.0%
Projected salary increases	4.0%
Assumed rate of payroll growth	4.0%
Assumed rate of membership growth	0%
Cost-of-living adjustments	4.0%

# Appendices



## Appendix I

### Financial Principles and Operational Techniques

*Promises Made, and Eventually Paid.* As each year is completed, the plan in effect hands an “IOU” to each member then acquiring a year of service credit -- the “IOU” says: “The Pension Plan owes you a portion of your retirement benefits, payments to be made in cash, commencing when you qualify for retirement.”

The related key financial questions are: Which generation of taxpayers contributes the money to cover the IOU? The present taxpayers, who receive the benefit of the member’s present year of service? Or the future taxpayers, who happen to be in town paying taxes at the later time when the IOU becomes a cash demand?

A sound principle of sound retirement plan financing is to have this year’s taxpayers contribute the money to cover the IOUs being handed out this year. By following this principle, THE CONTRIBUTION RATE WILL REMAIN APPROXIMATELY LEVEL FROM GENERATION TO GENERATION -- our children and grandchildren will contribute the same percents of active payroll we contribute now.

### A Pension Plan Becomes Closed

The diagram in this appendix shows two important activities which occur after a plan has been closed to employees hired in the future.

Cash benefits paid continue to increase for decades, while active member payroll begins to decrease to zero.

***Funding Method.*** A funding method is the long-term, planned pattern for employer contributions.

For an open plan (a plan covering future employees), the level-percent-of-active-member payroll funding method is the basic funding method.

The level-percent funding method can also be applied to a closed plan. However, the resulting contribution percent usually jumps to a high rate, because the number of covered active members is decreasing.

A preferred funding method for a closed plan consists of: level-percent funding for normal cost (the cost of members' service now being rendered); plus a level dollar contribution for unfunded actuarial accrued liabilities over a limited period of years. The period of years must be limited so that plan assets don't become zero while benefits are still payable.

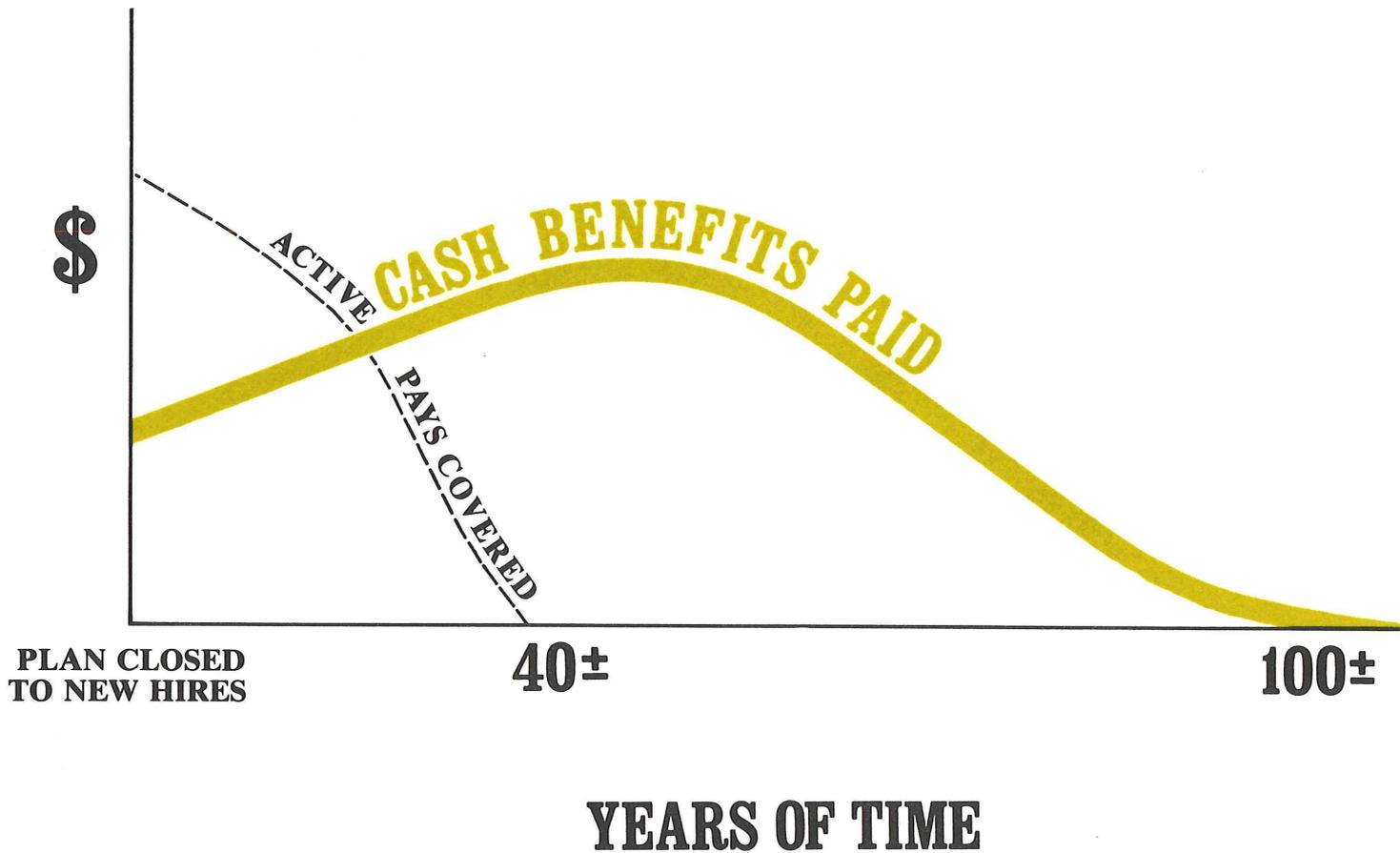
***Computing Contributions To Support Plan Benefits.*** From a given schedule of benefits and from the employee data and asset data furnished him, the actuary determines the contribution rates to support the benefits by means of an actuarial valuation and a funding method.

In making an actuarial valuation, assumptions must be made regarding anticipated financial experiences for the next year and for decades in the future. Only the subsequent actual experience of the plan can indicate the degree of accuracy of the assumptions.

***Reconciling Differences Between Assumed Experience and Actual Experience.*** Once actual experience has occurred and been observed, it will not coincide exactly with assumed experience, regardless of the wisdom of the assumptions or the skill of the actuary and the millions of calculations he made. The future can be predicted with considerable but not 100% precision, except for inflation which seems to defy reliable prediction.

A well-managed plan copes with these continually changing differences by having periodic actuarial valuations. Each actuarial valuation is a complete recalculation of assumed future experience, taking into account all past differences between assumed and actual experience. The result is continuing adjustment in financial position.

# A CLOSED PENSION PLAN



A plan becomes closed when no new hires are admitted to active membership. The persons covered by the plan at the time of closing continue their normal activities and continue to be covered by the plan, until the last survivor dies.

**CASH BENEFITS LINE.** After a pension plan becomes closed, the usual pattern is for cash benefits to continue to increase for decades of time. Eventually the cash benefits will peak, and then gradually decrease over more decades of time, ultimately to zero. The last cash benefit is likely to occur a century after the time the plan is closed.

The precise amounts of cash benefits cannot be known now, and must be estimated by assumptions of future experiences in a variety of financial risk areas.

## Appendix II

### Meaning of Unfunded Accrued Liabilities

Almost every pension plan (public or private) has “unfunded accrued liabilities,” so whatever they are, they aren’t rare. Since the term is not part of everyday conversation, it needs some definition.

“Accrued liabilities” are the present value \$ of plan promises to pay benefits in the future based upon service already rendered - - - a liability has been established (“accrued”) because the service has been rendered, but the resulting monthly cash benefit may not be payable until years in the future. Accrued liabilities \$ are the result of complex mathematical calculations, which are made by the plan’s actuary (which is the name given to the specialist who makes such calculations).

If “accrued liabilities” at any time exceed the plan’s accrued assets (cash & investments), the difference is “unfunded accrued liabilities.” This is the common condition. If the plan’s assets equalled the plan’s “accrued liabilities,” the plan would be termed “fully funded.” This is a rare condition.

Each time a plan adds a new benefit which applies to service already rendered, an “accrued liability” is created, which is also an “unfunded accrued liability” because the plan can’t print instant cash to cover the accrued liability. Payment for such unfunded accrued liabilities is spread over a period of years, commonly in the 20-40 year range.

Unfunded accrued liabilities can occur in another way: If actual financial experience is less favorable than assumed financial experience, the difference is added to unfunded accrued liabilities. In plans where plan benefits are directly related to an employee’s pay near time of retirement (a common plan provision) rather than his average pay throughout his working career, unfunded accrued liabilities have been increasing in recent years because unexpected rates of pay increase have created additional accrued liabilities which could not be matched by reasonable investment results. Some of these unexpected pay increases are the direct result of inflation, which is a very destructive force on financial stability.

The existence of unfunded accrued liabilities is not bad, then (any more than a mortgage on your house is “bad”), but the changes from year to year in amount of unfunded accrued liabilities are important - - - “bad” or “good” or somewhere in between.

Nor are unfunded accrued liabilities a bill payable immediately (your food costs are payable immediately), but it is important that policy-makers prevent the amount from becoming unreasonably high and it is vital that your plan have a sound method for making payments toward them so that they are controlled.

The existence of large amounts of unfunded accrued liabilities indicates that total contributions in past years were less than level - - - an almost certain history if retired life liabilities are not fully funded now.