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**Minneapolis  
Police Relief Association**

**Annual Actuarial Valuation  
December 31, 1998**



**Gabriel, Roeder, Smith & Company**

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**GABRIEL, ROEDER, SMITH & COMPANY**

**Consultants & Actuaries**

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April 28, 1999

Board of Trustees  
Minneapolis Police Relief Association  
Minneapolis, Minnesota

Submitted in this report are the results of the December 31, 1998 actuarial valuation of the assets, actuarial values and contribution requirements associated with the benefits provided by the Minneapolis Police Relief Association.

The valuation results contained in Section A provide the actuarial information needed to determine the employer's "minimum obligation" effective January 1, 2000. 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,

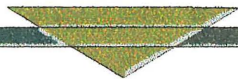
A handwritten signature in dark ink, appearing to read "Norman S. Losk", with a stylized, somewhat abstract flourish at the end.

Norman S. Losk

A handwritten signature in dark ink, appearing to read "Mary Ann Vitale", with a cursive, flowing style.

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.

### **Change in Benefit Provisions**

A new pension payment schedule became effective January 1, 1998 pursuant to Section 23 of Laws, 1997, Chapter 233, Article 4, Sections 4 and 5 which takes effect when the fund is 90% funded. Pension payments were converted under the new schedule which creates a uniform schedule with a maximum of 42 units for all members of the Minneapolis Police Relief Association.

The effect of this change was an increase of \$303,823 in the amortization payment and an increase of \$2,467,404 in the unfunded accrued liabilities.

# CONTRIBUTION RATE TO PROVIDE BENEFITS

## Member portion & Employer portion

Effective January 1, 2000

Contributions for	If Paid Equally Throughout Year		
	Normal Cost % of Active Payroll for 2000	+	UAAL Dollars
Normal cost of annuities			
Age & service	23.14%		
Disability	1.87		
Death before retirement	1.52		
Refunds of member contributions	0.00		
Total Normal Cost	26.53%		
Amortization of unfunded actuarial accrued liabilities (UAAL) (11 year level dollar payment)			
Retired lives			\$ 0
Active members			3,344,809
Total			3,344,809
Total Cost of Benefits	26.53%	+	\$3,344,809
Member contributions	8.00%		
<b>COMPUTED EMPLOYER RATE:</b>			
(a) If Paid Equally Throughout Year	18.53%	+	\$3,344,809
(b) If Paid As Outlined Below	18.78%	+	\$3,390,633

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 \$387 million on December 31, 1998 -- 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 \$387 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>Valuation Assets</u>	<u>Actuarial Accrued Liabilities</u>	<u>Unfunded Actuarial Accrued Liabilities</u>	<u>Percent Funded</u>
Retirants and Beneficiaries				
Retired Members (668)		\$290,153,004		
Surviving Spouses (250)		40,522,824		
Surviving Children (2)		<u>69,708</u>		
Total (920)		\$330,745,536		
Deferred Members (6)		2,499,084		
Active Members (148)		<u>81,449,755</u>		
Total	\$387,530,565	\$414,694,375	\$27,163,810	93.4%

Actuarial accrued liabilities represent the value, computed as of December 31, 1998 of:

- (i) retirement allowances likely to be paid the 920 retirants and beneficiaries; and
- (ii) the contributions assumed to have been made for the 148 active members from entry into the plan until December 31, 1998.

The value of retirement allowances likely to be paid the 920 retirants and beneficiaries, discounted for investment earnings and mortality, was computed to be \$330,745,536 as of December 31, 1998. To put this amount in perspective, the \$330,745,536, together with investment earnings, will just be sufficient to pay the 920 retirants and beneficiaries their allowances for their remaining lifetimes. This assumes the 920 retirants and beneficiaries live and die according to the assumed mortality and the \$330,745,536 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 \$81,449,755 represents the amount that would have been accumulated by December 31, 1998. 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, 1998 for the 148 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 and benefit provisions shown in this report.

### HISTORICAL FUNDING RATIO SCHEDULE (\$ IN THOUSANDS)

Valuation Date December 31	Actuarial Accrued Liabilities	Valuation Assets	Percent Funded
1989	\$290,537	\$211,081	72.7%
1990#	299,151	223,919	74.9
1991	309,429	238,975	77.2
1992#	325,891	265,307	81.4
1993#	347,879	288,942	83.1
1994#	344,087	280,772	81.6
1995	358,657	294,692	82.2
1996	382,957	320,686	83.7
1997	398,728	362,683	91.0
1998#	414,694	387,531	93.4

# 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		
1989	1991	24.53%	\$6,727,495
1990	1992#	25.61	6,547,850
1991	1993	25.58	6,319,193
1992	1994#	25.62	5,615,587
1993	1995#	25.57	5,663,676
1994	1996#	25.43	6,331,000
1995	1997	24.91	6,683,106
1996	1998	24.83	6,831,165
1997	1999	24.66	4,175,261
1998	2000#	26.53	3,344,809

\* Includes employee contributions.

# After change in benefit provisions.



## CONTRIBUTION FOR CALENDAR YEAR EFFECTIVE JANUARY 1, 2000

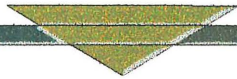
For any period of time the percent-of-payroll contribution rate is converted to dollars. The amount of dollars for any calendar year depends upon the results of the last actuarial valuation, and the timing of contributions within the year. The later the contribution date, the greater the dollar amount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

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

(1)	Estimated total covered payroll for 2000		\$ _____
(2)	Employer normal cost % from page A-2		18.53%
(3)	Employer normal cost \$ (Line 1 times line 2)		\$ _____
(4)	Amortization payment on UAAL from page A-2		3,344,809
(5)	Total employer contributions required (Line 3 plus line 4)		_____
(6)	(a) State amortization aid based on 12/31/78 UAAL of \$118,046,510	\$1,029,537*	
	(b) State amortization aid based on 1984 legislation	<u>250,998</u>	
	(c) Total State amortization aid		\$1,280,535
(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 Police 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 1999 was not considered.

## **Section B**

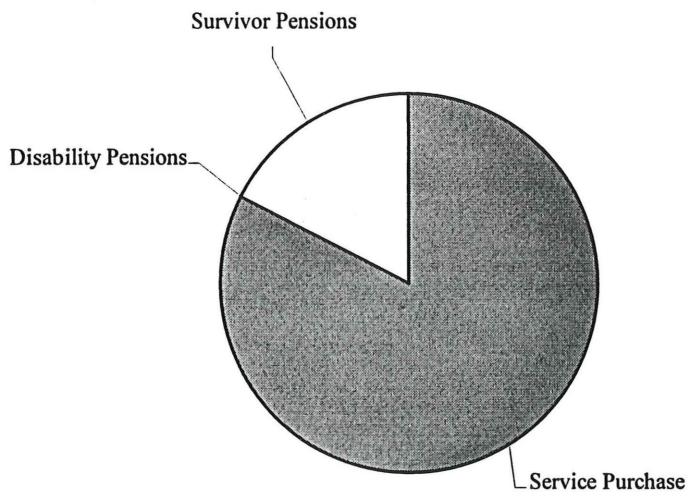


# **Valuation Data and Summary of Benefit Provisions**

**RETIRANTS AND BENEFICIARIES DECEMBER 31, 1998**  
**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	666	\$1,648,977.03	\$289,045,908
Disability	<u>2</u>	<u>4,020.63</u>	<u>1,107,096</u>
Totals	668	1,652,997.66	290,153,004
Beneficiaries receiving			
Spouse	250	345,692.19	40,522,824
Child	<u>2</u>	<u>2,992.10</u>	<u>69,708</u>
Totals	<u>252</u>	<u>348,684.29</u>	<u>40,592,532</u>
Totals	920	\$2,001,681.95	\$330,745,536

**Monthly Amount Paid by Benefit**





**INACTIVE MEMBERS ELIGIBLE FOR DEFERRED BENEFITS**  
**DECEMBER 31, 1998**

<b>No.</b>	<b>Monthly Amount</b>	<b>Computed Actuarial Accrued Liabilities</b>
6	\$11,943.46	\$2,499,084

**RETIRANTS AND BENEFICIARIES DECEMBER 31, 1998**  
**BY ATTAINED AGES**

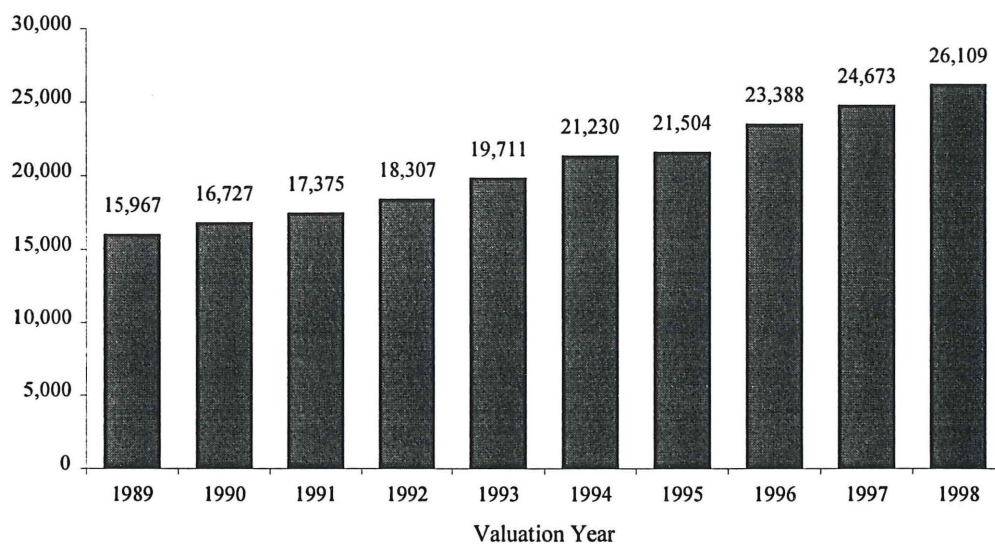
Attained Ages	Number		
	Age & Service	Disability	Death Before Retirement
Under 20			1
20-24			1
40-44			2
45-49	2	2	1
50-54	124	1	2
55-59	135		3
60-64	131		4
65-69	99		4
70-74	130		8
75-79	96		7
80-84	102		2
85-89	37		3
90-94	17		
95-99	5		
100 & Over		1	
<b>Totals</b>	<b>878</b>	<b>4</b>	<b>38</b>

# 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	
1989	40	31	752	\$12,007,149	\$163,236,324
1990	33	33	752	12,579,039	169,649,676
1991	30	25	757	13,152,752	175,237,680
1992	55	28	784	14,352,332	192,504,840
1993	45	33	796	15,690,269	212,051,856
1994	56	40	812	17,238,698	226,104,506
1995	35	39	808	17,375,347	235,698,327
1996	51	28	831	19,435,342	263,685,600
1997	82	35	878	21,662,581	298,497,984
1998	65	23	920	24,020,183	330,745,536

**Average Annual Allowances**



**ACTIVE MEMBERS DECEMBER 31, 1998**  
**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
45-49					25	23		48	\$2,872,416
50-54					18	43	8	69	4,129,098
55-59					3	4	18	25	1,496,050
60							2	2	119,684
61							2	2	119,684
62						1		1	59,842
63						1		1	59,842
<b>Totals</b>					<b>46</b>	<b>72</b>	<b>30</b>	<b>148</b>	<b>\$8,856,616</b>

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

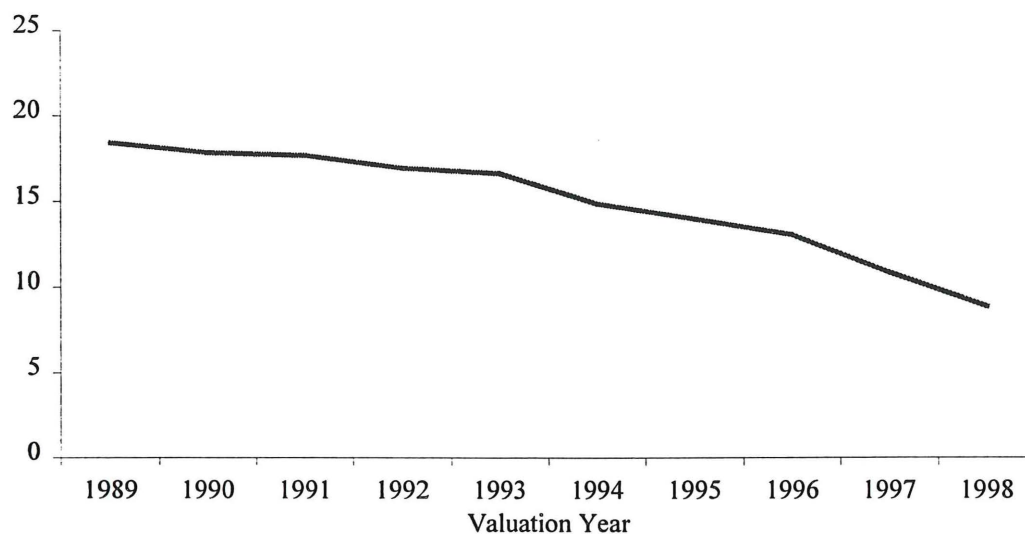
**Group Averages:**

Age: 51.5 years  
Service: 26.8 years  
Annual Pay: \$59,842

## COMPARATIVE SCHEDULE OF ACTIVE MEMBERS

Valuation Date December 31	Active Members	Valuation Payroll	Age	Service	Average Pay	% Incr.
1989	460	\$18,421,160	46.6 yrs.	21.0 yrs.	\$40,046	3.7%
1990	433	17,859,951	47.3	21.8	41,247	3.0
1991	410	17,658,290	48.0	22.5	43,069	4.4
1992	381	16,913,352	48.5	23.2	44,392	3.1
1993	349	16,576,802	49.2	24.0	47,498	7.0
1994	307	14,799,242	49.8	24.6	48,206	1.5
1995	278	13,937,530	50.3	25.3	50,135	4.0
1996	239	13,002,556	50.9	25.9	54,404	8.5
1997	188	10,817,520	51.1	26.3	57,540	5.8
1998	148	8,856,616	51.5	26.8	59,842	4.0

### Valuation Payroll



## **BRIEF SUMMARY (12/31/98) OF BENEFIT PROVISIONS EVALUATED AND/OR CONSIDERED**

### **AGE & SERVICE RETIREMENT**

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

*Amount.* For first 19 years of service, 30.40/80 of base pay and 3.60/80 is added for the 20th year of service. For years in excess of 20 years, an additional 1.6/80 is provided for each year to a maximum of 42/80 of base pay for 25 years of service.

**PAY USED FOR PLAN PURPOSES.** "Base pay" means the salary of a top grade patrol officer.

### **DISABILITY RETIREMENT**

*Eligibility.*

*Non-duty.* No minimum required.

*Duty.* No minimum service required. (In either case, disabled to the extent that no longer able to perform duties of a police officer including limited duty.)

*Amount.*

*Non-duty.* 34/80 of base pay. (Prior to 7/80 non-duty disability benefits ranged from 13/80 to 33/80.)

*Duty.* 34/80 of base pay. (Prior to 7/80 the amount was 33/80.)

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

*Eligibility.*

*Spouse.* Legally married to member one year prior to separation from service and residing with member at time of death payable for life.

*Child.* Younger than age 18 or, if in school, younger than age 22.



***Amount.***

***Spouse.*** 22/80 of base pay.

***Child.*** 8/80 of base pay per child. Children's maximum is 18/80 if spouse is receiving or 40/80 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 simultaneously changed by the same percent that base pay is changed.

**MEMBER CONTRIBUTIONS.** 8% of base pay. After 25 years of service, member contributions are paid into a separate health insurance account. Member contributions are refundable including 5% interest from the month the contribution is made in the event of a member's death without a survivor benefit payable. If a member terminates after 5 years of service but before being eligible for an immediate or deferred benefit, a lump sum refund of \$500 plus \$100 for each full year over 5 is paid.

## Derivation of Valuation Assets

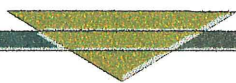
Valuation Date December 31	(a) Market Value	(b) Book Value	(c) Market-Book
1996	\$339,635,650	\$294,194,436	\$ 45,441,214
1997	373,947,481	318,412,495	55,534,986
1998	395,747,319	335,906,708	59,840,611
(d) Average Unrealized Gain			\$ 53,605,604
(e) Excess Investment Income*			1,981,747
(f) Assets 12/31/98			<hr/>
(Book Value 12/31/98 + (d) - (e))			<u><u>\$387,530,565#</u></u>

\* *Excess investment income was reported by Minneapolis Police 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 54, attained age if older.

### 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

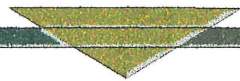
Sample Ages	Present Pay Resulting in Pay of \$1,000 at Age 60	Present Increase in Pay During Next Year
20	\$ 208	4.0%
25	253	4.0
30	308	4.0
35	375	4.0
40	456	4.0
45	555	4.0
50	676	4.0
55	822	4.0
60	1,000	4.0

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, 1997 AND 1998**

	<u>1998</u>	<u>1997</u>
Assets:		
Cash and short-term investments	\$123,935,549	\$ 8,146,219
Receivables:		
Additional State Aid	-	-
Accounts Payable:	-	-
Investments, at fair value:		
Common Stocks	170,843,027	251,371,150
Mutual Funds	-	-
Mortgages	1,043,276	3,414,331
Bonds	99,925,467	111,015,781
Real Estate	<u>-</u>	<u>-</u>
Total	\$271,811,770	\$365,801,262
Net assets held in trust for pension benefits*	\$395,747,319	\$373,947,481

\* 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, 1997 AND DECEMBER 31, 1998**

	<u>December 31, 1998</u>	<u>December 31, 1997</u>
Additions:		
Contributions		
Employer	\$ 6,207,956	\$ 7,298,118
Plan members	<u>387,703</u>	<u>971,632</u>
Total	6,595,659	8,269,750
Investment Income	<u>42,114,093</u>	<u>50,141,265</u>
Total Additions	\$ 48,709,752	\$ 58,411,015
Deductions:		
Benefits Paid	24,267,929	22,316,684
Refund of Contributions	-	-
Expenses	<u>2,641,985</u>	<u>1,782,500</u>
Total Deductions	\$ 26,909,914	\$ 24,099,184
Net Increase	\$ 21,799,838	\$ 34,311,831
Net assets held in Trust Fund:		
Beginning of year	\$373,947,481	\$339,635,650
End of year	<u>\$395,747,319</u>	<u>\$373,947,481</u>

**Plan Description.** The Minneapolis Police Relief Association is a single-employer defined benefit pension plan that covers the police 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, 1998 actuarial valuation, the employer rates were determined to be as follows:

Contributions for	
Normal Cost as a Percent of Active Member Payroll	Unfunded Actuarial Accrued Liabilities
18.53%	\$3,344,809



# 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*	\$265,307	\$325,891	\$60,584	81.4%	\$16,913	358.2%
12/31/93*	288,942	347,879	58,937	83.1	16,577	355.5
12/31/94*	280,772	344,087	63,315	81.6	14,799	427.8
12/31/95	294,692	358,657	63,965	82.2	13,938	458.9
12/31/96	320,686	382,957	62,271	83.7	13,003	478.9
12/31/97	362,683	398,728	36,045	91.0	10,818	333.2
12/31/98*	387,530	414,694	27,164	93.4	8,857	306.7

\* After change in benefit provisions.



## SCHEDULE OF EMPLOYER CONTRIBUTIONS

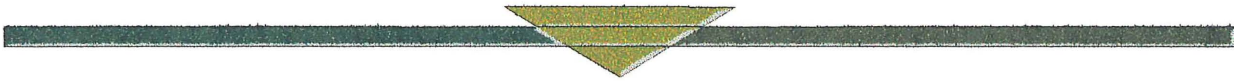
<b>Year Ended December 31</b>	<b>Annual Employer Contributions</b>
1992	\$8,281,262
1993	8,859,961
1994	6,239,591
1995	8,359,115
1996	5,544,721
1997	7,298,118
1998	6,207,956

## 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, 1998
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.

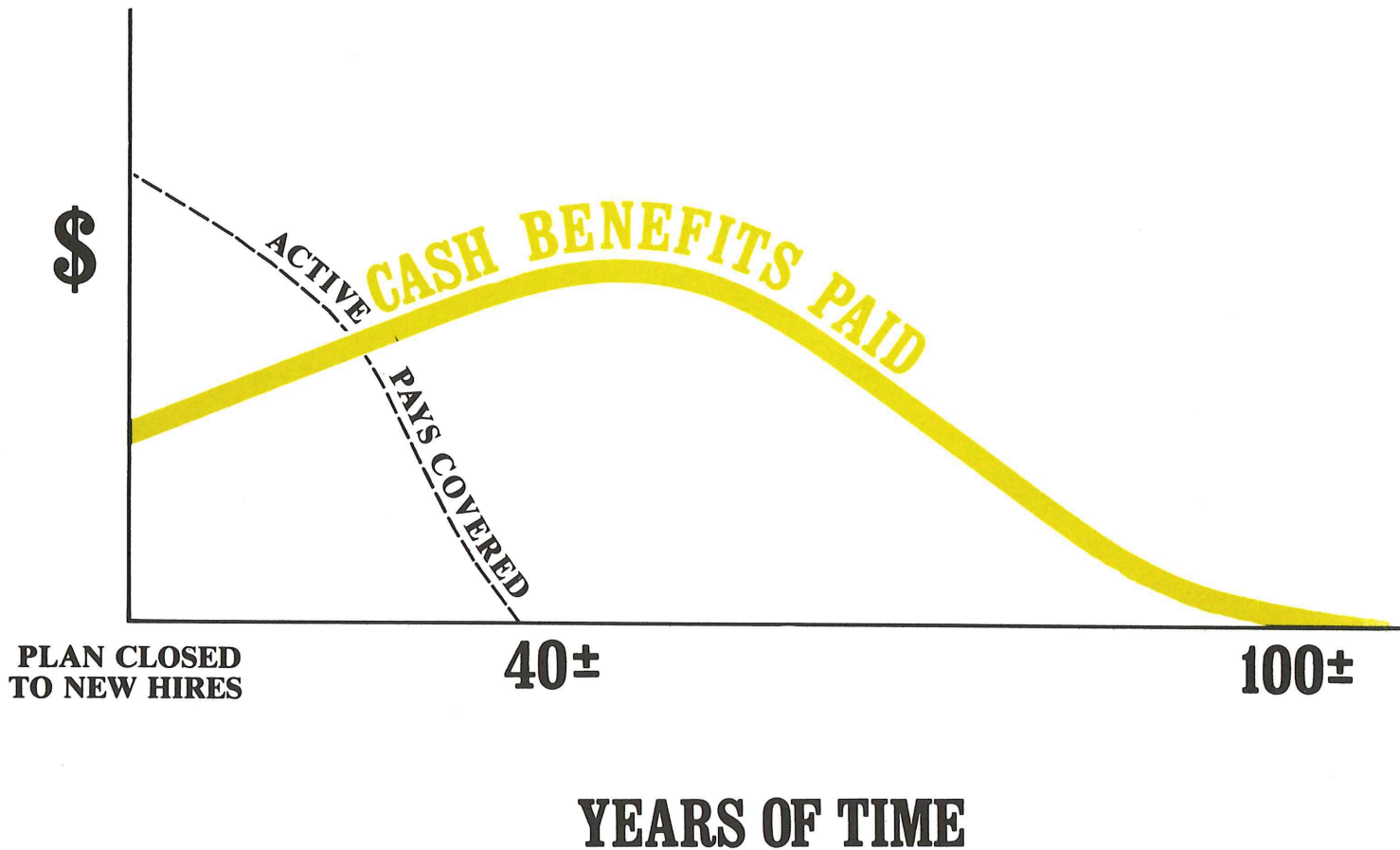
***Computing Contributions To Support Plan Benefits.*** From a given schedule of benefits and from the employee data and asset data furnished him, the actuary determines the contribution rates to support the benefits by means of an actuarial valuation and a funding method.

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.