Report of
AN ACTUARIAL VALUATION
December 31, 1979 of the
Minneapolis Police Relief Association
Minneapolis, Minnesota

GABRIEL, ROEDER, SMITH & COMPANY

Minneapolis Police Relief Association

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GABRIEL, ROEDER, SMITH & COMPANY
ACTUARIES & CONSULTANTS
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September 19, 1980

Minneapolis Police Relief Association

City of Minneapolis

Minneapolis, Minnesota

This report, prepared at your request, presents the results of the actuarial valuation of the Minneapolis Police Relief Association as of December 31, 1979.

Purpose

The purpose of the actuarial valuation is to determine the "annual financial requirement" (the annual contribution) of the Relief Association for the fiscal year beginning January 1, 1981.

Basis of Report

Our report is based upon the active employees, the retirants and beneficiaries, and the asset data as of December 31, 1979 furnished by the President of your association.

The financial assumptions utilized are the same except for the assumed retirement age as those used in the last actuarial valuation. The assumed retirement age was lowered from 58 to 56. The economic assumptions relating to investment return and rates of pay increases are established by State Law.

The funding methods utilized are the same as those used in the last actuarial valuation.

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

Sincerely,

Robert M. O'Keefe   Gary W. Findlay

Robert M. O'Keefe   Gary W. Findlay

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Comments

Recent State Legislation

Legislation, recently enacted by the State of Minnesota, has produced significant changes effecting every local police and salaried firefighters relief association in Minnesota. These changes can be briefly summarized as follows:

1. All local relief associations are required to phase out by placing all police and fire employees hired after June 15, 1980 into the Minnesota PERA - Police and Fire Fund unless the respective city elected to retain the local fund.
2. All local relief associations (regardless of whether they phase out or not) must amortize (fund) their unfunded accrued liability by December 31, 2010.
3. All cities with local relief associations which phase out and which comply with the Financial Guidelines Act are entitled to participate in a state amortization aid program.
4. All current active members of local relief associations which phase out are entitled to receive a benefit improvement.
5. Active member contributions are to be increased to 8.0%.

This report reflects the phase out of the Relief Association.

Financing of Unfunded Accrued Liabilities

The phase out legislation requires that the Unfunded Accrued Liability be funded in a level dollar amount by December 31, 2010. (For a description of the Unfunded Accrued Liabilities see Appendix II).

Benefit Improvements

Members who retire on an age and service pension or disability pension after July 1, 1980 will receive a health and welfare benefit of 1/80 of Base Pay.

This additional benefit increased the Unfunded Accrued Liability by approximately $1,775,000 and increased the contribution by 1.0% of Payroll.

Member Contributions

Member Contributions will increase from 6.0% to 8.0% in 1981 and beyond.

Retirement Age

The assumed retirement age was lowered from age 58 to age 56 to reflect the current trend to retire at a lower age than age 58.

This change increased the Unfunded Accrued Liability by $10,257,477 and increased the contribution by 6.35% of Payroll.

SECTION A

RESULTS OF THE VALUATION

Minneapolis Police Relief Association

Summary of Valuation Results

The results of the actuarial valuation and the financial status of the Plan as of December 31, 1979 are summarized as follows:

	1978	1979
A. Membership as of December 31		
Active Members	811	771
Retired Members and Beneficiaries	604	599
Disabled Members and Beneficiaries	26	35
Survivors of Active Members	87	97
Terminated Members with Deferred Benefits	-	1
Totals	1,528	1,503
B. Active Member Payroll	$ 18,394,210	$ 18,661,284
C. Unfunded Accrued Liabilities as of December 31		
Active Members	$ 60,636,012	$ 75,327,861
Retired Members and beneficiaries receiving benefits	57,203,851	58,338,621
Number terminated and entitled to a deferred annuity	206,647	152,870
Totals	$118,046,510	$133,819,352
D. Accrued Assets as of December 31		
Market Value	$ 25,316,792	$ 29,845,812
Actuarial Value	25,316,792	29,845,812
E. Contribution Rate effective for	1980	1981
Normal Cost of annuities as a % of Valuation Payroll	21.21%	23.7~~3%~~5 typo
less Member Contributions	- 6.00	- 8.00
Net Contribution for Current Service	15.21	15.75%
Contribution toward Unfunded Accrued Liability $ amount*	$ 5,760,080	$ 8,494,852

* The contribution computed for 1980 was 5.0% (interest only) of the Unfunded Accrued Liability as of December 31, 1978. The contribution computed for 1981 is computed in order to fund the Unfunded Accrued Liability by December 31, 2010.

Minneapolis Police Relief Association

COMPUTED CONTRIBUTION for the Fiscal Year Beginning January 1, 1981

Contributions for	If $ Paid Equally Throughout Year: % of Active Payroll for 1981	+	If $ Paid Equally Throughout Year: U.A.L. Dollars
Normal cost of annuities:			
Age & service: to member	17.15%		
Age & service: to survivors	3.78		
Disability	0.91		
Death before retirement	1.91		
Total Normal Cost	23.75%		
Unfunded accrued liabilities (UAL) (Level Payment to fund the UAL by 2010)			
Retired Lives			$3,713,040
Active members			4,781,812
Total			$8,494,852
Total Annuities	23.75%	+	$8,494,852
Member contributions	8.00		
COMPUTED EMPLOYER RATE %:			
(a) If $ Paid Equally Throughout Year	15.75%	+	$8,494,852
(b) If $ Paid in equal payments in July and December	15.94%		$8,599,763

Minneapolis Police Relief Association

Present Actuarial Condition

The Retirement System accrued actuarial assets totaled 29.8+ million dollars on December 31, 1979 -- a considerable sum of money if unencumbered and allocated among a small group of persons. This is not the case with Retirement System assets.

The following schedule puts the 29.8+ million dollars into perspective by showing the relationship between accrued assets, accrued liabilities, and the number of persons with actual and potential claims on the Retirement System.

	Accrued Actuarial Assets	Accrued Liabilities	Unfunded Accrued Liabilities	% Funded
Retirants and Beneficiaries				
Retired Members (445)		$ 74,231,781		
Surviving Spouse (231)		13,132,256		
Surviving Children (55)		820,396		
Total (731)	$29,845,812	$ 88,184,433	$ 58,338,621	33.8%
Deferred Members (1)	0	152,870	152,870	0
Active Members (771)	0	75,327,861	75,327,861	0
Totals	$29,845,812	$163,665,164	$133,819,352	18.2%

Accrued liabilities represent the value, computed as of December 31, 1979 of:

(i) retirement allowances likely to be paid the 731 retirants and beneficiaries; and

(ii) the contributions assumed to have been made for the 771 from their entry into the plan until December 31, 1979.

To illustrate, the value of retirement allowances likely to be paid the 731 retirants and beneficiaries -- discounted for investment earnings and mortality -- was computed to be $88,184,433 as of December 31, 1979. This means that if the 731 retirants and beneficiaries live and die according to the assumed mortality and if the $88,184,433 can be invested to yield an average annual return of 5.0 percent over the remaining lifetimes of the 731 retirants and beneficiaries, then the $88,184,433 together with investment earnings thereon will just be sufficient to pay the 731 retirants and beneficiaries their allowances for their remaining lifetimes.

With respect to active members, the accrued liability of $75,327,861 represents the amount that would have been accumulated by December 31, 1979 if the normal cost (which is expressed as a level percentage of pay) had been contributed from the date of hire until December 31, 1979 for each of the 771 actives, if these amounts had earned 5.0% interest, and if the members in the past had lived, died, withdrew, retired and received salary increases according to the actuarial assumptions shown in this report.

Minneapolis Police Relief Association

Comparative Schedule ($ in thousands)

Valuation Date December 31	Accrued Liabilities	Accrued Assets	Percent Funded	Unfunded Accrued Liabilities Dollar Amount	Financing Period	% of Member Payroll
1978	$143,363	$25,317	17.7%	$118,047	N/A	642%
1979	163,665	29,846	18.2	133,819	30 years	717

While no one or two numeric indices can fully describe the financial condition of a retirement system, the ratio of unfunded accrued liabilities to active member payroll is significant.

Unfunded accrued liabilities represent retirement system obligations, while active member payroll is a measure of the system's capacity to service the obligations (contributions are based on payroll) -- thus the ratio is a relative index of condition. If the index is decreasing, financial strengthening is indicated -- and vice-versa.

Looking only at dollar indices can be misleading in an inflationary environment; $1 today is very different from $1 twenty years ago or $1 twenty years from now. The relative index neutralizes the inflation distortion of a dollar index since inflation is reflected in both parts of the ratio.

SECTION B

SUMMARY OF BENEFIT PROVISIONS

AND

VALUATION DATA

Minneapolis Police Relief Association

Brief Summary (12-31-79) of Benefit Provisions Evaluated and/or Considered

Age & Service Retirement

Eligibility. 20 years of service and 50 years of age.

Amount. For first 20 years of service, 34/80 of base pay. For service in excess of 20 years, an additional 1/80 is provided for each of the first 4 years and 4/80 is added for the 25th year to a maximum of 42/80 of base pay for 25 or more years of service.

Pay Used for Plan Purposes. "Base pay" means the salary of a first class patrolman.

Disability Retirement.

Eligibility.

Non-Duty. 10 years of service.

Duty. No minimum service required.

In either case, disabled to the extent that unable to perform duties of a police officer.

Amount.

Non-Duty. 14/80 of base pay for 10 years of service plus 2/80 for each year in excess of 10 to a maximum of 34/80 of base pay.

Duty. 34/80 of base pay.

Member's Death While Active, Or In Deferred Status, Or Retired

Eligibility.

Spouse. Legally married to member at separation from service and residing with member at time of death. Benefits terminate upon remarriage.

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

Amount.

Spouse. 19/80 of base pay.

Child. 6/80 of base pay per child. Children's maximum is 14/80 if spouse is receiving or 32/80 if no spouse is receiving.

Vested Deferred. 20 years of service and separated before age 50. 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. Member contributions are non-refundable. 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.

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Retirants and Beneficiaries December 31, 1979

By Type of Annuity Being Paid

Type of Annuity Being Paid	No.	Monthly Amounts	Computed Accrued Liabilities
Age & service annuity:			
Retirant receiving	412	$362,803.20	$66,853,785
Spouse receiving	182	81,370.90	9,007,995
Child receiving	5	566.80	31,259
Totals	599	444,740.90	75,893,039
Disability annuity:			
Retirant receiving	33	27,068.52	7,377,996
Spouse receiving	1	448.78	39,319
Child receiving	1	141.72	4,438
Totals	35	27,659.02	7,421,753
Death before retirement:			
Spouse receiving	48	21,194.63	4,084,942
Child receiving	49	7,015.15	784,699
Totals	97	28,209.78	4,869,641
Deferred Annuity:	1	857.23	152,870
Totals	732	$501,466.93	$88,337,303

Minneapolis Police Relief Association

Retirants and Beneficiaries December 31, 1979

By Attained Ages

Attained Ages	Number Age & Service	 Disability	 Death Before Retirement
15-19	5	1	38
20-24			4
25-29		1	
30-34		1	
35-39		5	
40-44		3	
45-49		5	
50-54	44	3	
55-59	58	3	
60-64	113	4	2
65-69	102	5	
70-74	43		
75-79	190	2	52
80-84	27	1	1
85-89	14	1	
90-94	2		
95-99	1		
Totals	599	35	97

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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 No.	Rolls End of Year Annual Allowances	% Incr. in Annual Allowances	Average Allowance	Discounted Value of Allowances Total	Discounted Value of Allowances Average
1978			717	$5,544,391		$7,733	$82,727,290	$115,380
1979	*	*	731	6,007,316	8%	8,218	88,184,433	120,635

* The means by which the member and beneficiary data was supplied did not allow for the tabulation of those added and removed from the rolls.

Minneapolis Police Relief Association

Active Members December 31, 1979

Tabulated by Attained Age Groups and Years of Accrued Service

Attained Age Groups	Number at Indicated Years of Accrued Service to January 1, 1980							Total No.
	0-4	5-9	10-14	15-19	20-24	25-29	30 Plus	
25-29	19	23						42
30-34	25	90	65					180
35-39	4	36	102	5				147
40-44	2	13	48	96	2			161
45-49		3	9	68	29	1		110
50-54			3	21	23	27	4	78
55-59				4	16	11	10	41
60				2				2
61				1		1		2
62				1	1		2	4
63							1	1
64						1	2	3
Totals	50	165	227	198	71	41	19	771

Average age: 40.7 years.

Average accrued service: 14.4 years.

Valuation Payroll: $18,661,284 ($24,204.00 each).

There is one inactive member entitled to a deferred annuity.

The people data included in the valuation is shown in groups or summaries, for reading convenience.

Financial calculations were made individually for each covered person.

Minneapolis Police Relief Association

Comparative Schedule

Of Active Members

Valuation Date December 31	Active Members	Valuation Payroll	Average Age	Average Service	Average Pay	Average % Incr.
1978	811	$18,394,210	40.3 yrs.	13.7 yrs.	$22,681	
1979	771	18,661,284	40.7	14.4	24,204	6.7%

Valuation Assets

The following financial information was furnished by the Association as of December 31, 1979.

Cash & Cash Equivalents	$ 131,312
Fixed-Income Investments	7,218,192
Equity Investments	10,068
Investment Advisors, Inc. Portfolio	22,486,240
Total Market Value	$29,845,812

SECTION C

VALUATION METHODS AND ASSUMPTIONS

Minnesota Police Relief Association

Valuation Methods and Assumptions

Age and Service Allowance. The Entry Age Normal cost method was used to determine the normal cost of age and service benefits including benefits for death after age and service retirement.

Disability and Death before Retirement. The contribution rate sufficient to finance disability and survivor allowances likely to be granted during the next year was computed on a terminal funding basis (One Year Term Cost).

The rate of investment return (interest) used in making the valuation was 5.0 percent per annum, compounded annually.

The mortality table used was the United States Life Table, 1959-61, White Males and White Females.

Sample Ages	Single Life Values: Present Value of $1 Monthly — Level For Life: Men	Level For Life: Women	Increasing 3.5% Yearly: Men	Increasing 3.5% Yearly: Women	Future Life Expectancy (Years): Men	Future Life Expectancy (Years): Women
45	$169.61	$186.84	$263.23	$304.86	27.33	32.52
50	154.85	174.20	229.51	270.80	23.22	28.08
55	139.29	159.62	197.24	236.11	19.45	23.81
60	122.79	142.73	166.26	200.76	16.01	19.69
65	106.31	124.22	137.82	166.16	12.97	15.88
70	89.86	104.31	111.71	132.82	10.29	12.38
75	73.39	83.92	87.66	101.94	7.92	9.28
80	57.54	64.24	66.29	74.77	5.89	6.67

Age & service retirement was assumed to occur at age 56, or attained age if older.

Sample Rates of Separation From Active Employment Before Retirement, Death or Disability

Sample Ages	% of Active Members Separating Within Next Year
20	3.00%
25	2.50
30	2.00
35	1.50
40	1.00
45	0.50
50+	0.00

Sample Pay Adjustment Factors used to Project Current Pays

Sample Ages	Present Pay Resulting in Pay of $1,000 at Age 60	Percent Increase in Pay During Next Year
20	$ 253	3.5%
25	300	3.5
30	356	3.5
35	423	3.5
40	503	3.5
45	597	3.5
50	709	3.5
55	842	3.5
60	1,000	3.5

Total covered payroll for active members is assumed to increase 3.5% annually.

Disability retirements were assumed to occur as indicated below:

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

Appendix I

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.

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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 year, 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.

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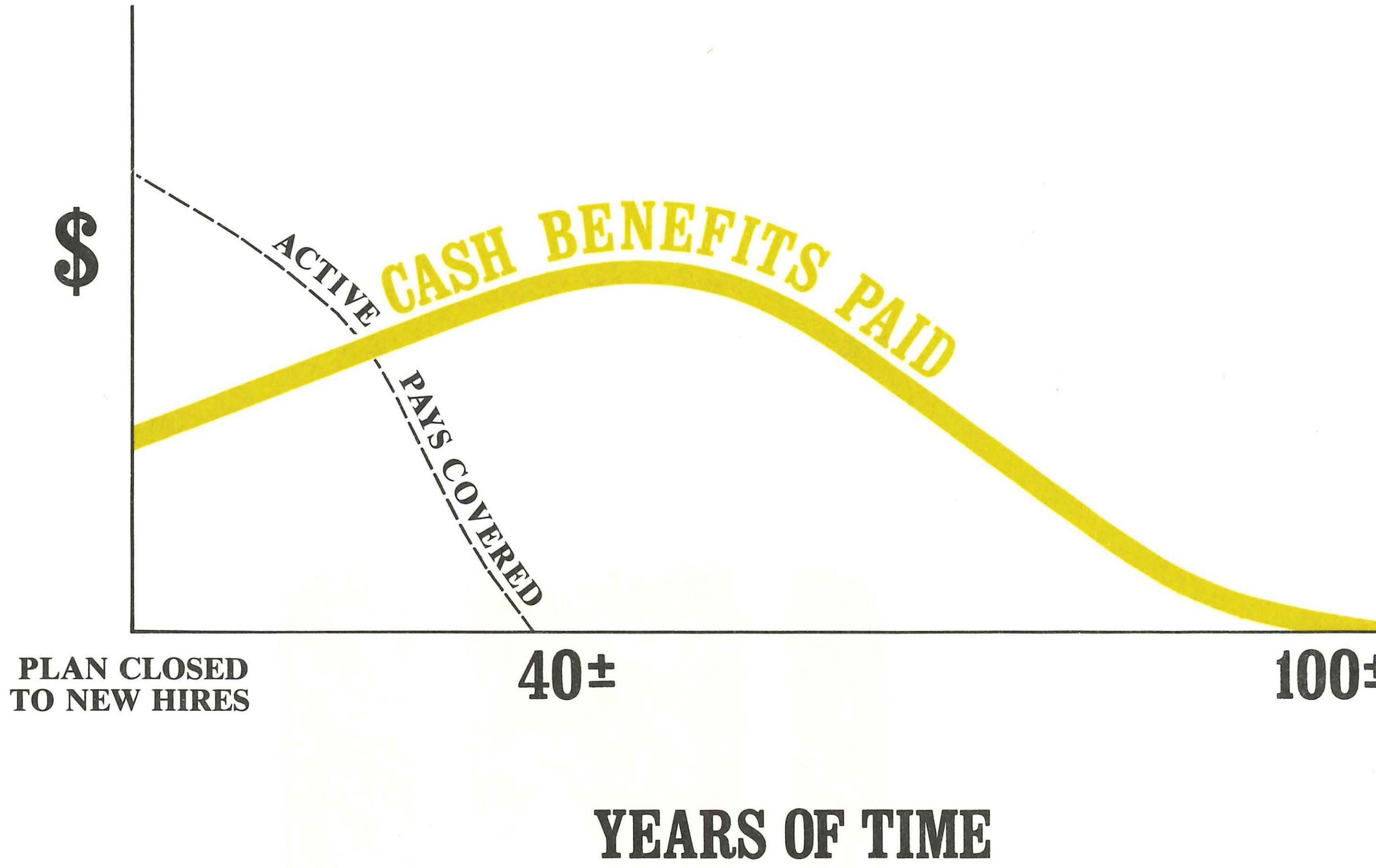
The existence of unfunded accrued liabilities is not bad, then (any more than a mortgage on your house is "bad"), but the changes from year to year in amount of unfunded accrued liabilities are important - - - "bad" or "good" or somewhere in between.

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.

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.