Report of
AN ACTUARIAL VALUATION
December 31, 1981 of the
City of Minneapolis
Police Relief Association
Minneapolis, Minnesota

GABRIEL, ROEDER, SMITH & COMPANY

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GABRIEL, ROEDER, SMITH & COMPANY
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May 4, 1982

Board of Trustees
City of Minneapolis Police Relief Association
Minneapolis, Minnesota

Submitted in this report are the results of the December 31, 1981 actuarial valuation of the assets, actuarial values, and contribution requirements associated with the benefits provided by the Minneapolis Police 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, 1983. 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.

Section C contains a description of the actuarial funding method and the risk experience assumptions used. 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 of Financial Accounting Standards 35 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,

Robert M. O'Keefe

Gary W. Findlay

SECTION A

RESULTS OF THE VALUATION

COMMENTS

Economic Assumptions and Financing Method

The economic assumptions of 5% annual investment return and 3 1/2% 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 accrued liability by December 31, 2010.

Over the past few years, both the actual rates of salary increase and investment return have generally exceeded the assumed rates, resulting in increases in the dollar amount of unfunded accrued liabilities. If the financial experiences of recent years persist, and the economic assumptions and financing method are not changed, it is reasonable to expect that unfunded accrued liabilities will increase in actual dollar amount for a number of years. This is true even though a level dollar amortization schedule is being followed. Accordingly, it is reasonable to expect that under the described conditions the actual dollar contributions required to make amortization payments will increase for a number of years. On the other hand, if inflation subsides and actual economic activity approaches assumed experience, it is reasonable to expect the dollar amount of the contribution to amortize the unfunded accrued liability to remain relatively constant. The notion that amortization dollar amounts may be increasing is not necessarily cause for alarm. If adjusted for changes in purchasing power, any future increases in the dollar contributions may or may not reflect increases in terms of real dollars (inflation adjusted dollars).

It is also worth noting that when the same assumptions and methods are applied to plans which differ in nature, the valuation results may not be comparable (for example, it is currently not valid to compare valuation results for a plan having full escalation to valuation results for a plan having a 3 1/2% cap on escalation). 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.

Minneapolis Police Relief Association

CONTRIBUTION RATE TO PROVIDE BENEFITS

Member portion & Employer portion

Effective January 1, 1983

Contributions for	If Paid Equally Throughout Year: Normal Cost % of Active Payroll for 1983	+	U.A.L Dollars
Normal cost of annuities:			
Age & service: to members	16.68%		
Age & service: to survivors	3.68		
Disability	2.13		
Death before retirement	2.30		
Refunds of member contributions	-		
Total Normal Cost	24.79%		
Amortization of unfunded accrued liabilities (UAL) (28 year level dollar payment) Total			$10,071,771
Total Cost of Benefits	24.79%	+	$10,071,771
Member contributions	8.00%		
COMPUTED EMPLOYER RATE:			
(a) If Paid Equally Throughout Year	16.79%	+	$10,071,771
(b) IF paid as outlined below	16.98%	+	$10,186,589

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

1. The state amortization aid of $1,776,600 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.

Minneapolis Police Relief Association

Present Actuarial Condition

The Association accrued actuarial assets were in excess of $46 million on December 31, 1981 -- a considerable sum of money if unencumbered and allocated among a small group of persons. This is not the case with Association assets.

The following schedule puts the $46 million into perspective by showing the relationship between accrued assets, accrued liabilities, and the number of persons with actual and potential claims on the Association's assets.

	Accrued Actuarial Assets	Accrued Liabilities	Unfunded Accrued Liabilities	% Funded
Retirants and Beneficiaries				
Retired Members (436)		$ 85,650,241		
Surviving Spouses (220)		14,854,296		
Surviving Children (39)		432,257		
Total (695)		$100,936,794		
Deferred Members (1)		315,103		
Active Members (712)		99,240,689		
Total	$46,721,297	$200,492,586	$153,771,289	23.3%

Accrued liabilities represent the value, computed as of December 31, 1981 of:

(i) retirement allowances likely to be paid the 695 retirants and beneficiaries; and

(ii) the contributions assumed to have been made for the 712 active members from their entry into the plan until December 31, 1981.

To illustrate, the value of retirement allowances likely to be paid the 695 retirants and beneficiaries and one inactive member, discounted for investment earnings and mortality, was computed to be $101,251,897 as of December 31, 1981. This means that if the 695 retirants and beneficiaries and one inactive member live and die according to the assumed mortality and if the $101,251,897 can be invested to yield an average annual return of 5.0 percent over the remaining lifetimes of the 695 retirants and beneficiaries and one inactive member, then the $101,251,897 together with investment earnings thereon will just be sufficient to pay the 695 retirants and beneficiaries and one inactive member their allowances for their remaining lifetimes.

With respect to active members, the accrued liability of $99,240,689 represents the amount that would have been accumulated by December 31, 1981 if the normal cost (which is expressed as a level percentage of pay) had been contributed from the date of hire until December 31, 1981 for each of the 712 actives, if these amounts had earned 5.0% interest and if the members in the past had 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	Accrued Liabilities	Accrued Assets	Percent Funded
1978	$143,363	$25,317	17%
1979	163,665	29,846	18
1980	179,399	37,980	21
1981	200,493	46,721	23

Minneapolis Police Relief Association

Computed Contributions - Comparative Schedule

Year Ended December 31 Valuation	Fiscal	Total Normal Cost as a Percent of Valuation Payroll*	Contribution For Unfunded Accrued Liabilities - $ or %
1978	1980	21.12%	$ 5,760,080
1979	1981	23.75	8,494,852
1980	1982	24.64	9,114,128
1981	1983	24.79	10,071,771

* Includes employee contributions (currently 8%).

Minneapolis Police Relief Association

CONTRIBUTION FOR CALENDAR YEAR EFFECTIVE JANUARY 1, 1983

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 upon 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 1983	$______	
(2)	Total normal cost % from page A-2	24.79%	
(3)	Total normal cost (Line 1 times line 2)		$______
(4)	Amortization payment on UAL from page A-2		10,071,771
(5)	Total contributions required (Line 3 plus line 4)		______
(6)	Employee contributions (Line 1 times 8%)	$______	
(7)	State amortization aid based on 12/31/78 UAL of $118,046,510	1,776,600	
(8)	Estimated insurance premium aid	______	
(9)	Estimated total contributions from other sources (Line 6 plus line 7 plus line 8)		______
(10)	Employer's Minimum Obligation if payment is made in equal installments throughout the year. (Line 5 minus line 9)		$______
(11)	EMPLOYER'S MINIMUM OBlIGATION IF PAYMENT IS MADE according to the outline on page A-2 (Line 10 times 1.0114)		$______

SECTION B

VALUATION DATA

AND

SUMMARY OF BENEFIT PROVISIONS

Minneapolis Police Relief Association

Retirants and Beneficiaries December 31, 1981

By Type of Annuity Being Paid

Type of Annuity Being Paid	No.	Monthly Amounts	Computed Accrued Liabilities
Retirants receiving:			
Age & Service	409	$457,188.48	$ 78,585,997
Disability	27	30,556.14	7,064,244
Totals	436	487,744.62	85,650,241
Beneficiaries receiving:			
Spouse	220	123,644.40	14,854,296
Child	39	6,566.76	432,257
Totals	259	130,211.16	15,286,553
Totals	695	$617,955.78	$100,936,794

Inactive Members Eligible for Deferred Benefits

December 31, 1981

No.	Monthly Amount	Computed Accrued Liabilities
1	$1,094.46	$315,103

Minneapolis Police Relief Association

Retirants and Beneficiaries December 31, 1981

By Attained Ages

	Number		
Attained Ages	Age & Service Retirants	Disability	Death Before Retirement
Under 20	3	2	31
20-24			4
25-29			
30-34		1	
35-39		1	2
40-44		5	2
45-49		2	3
50-54	41	3	4
55-59	85	2	7
60-64	95	6	4
65-69	141	4	5
70-74	80	2	5
75-79	53		5
80-84	49	1	3
85-89	25	2	
90-94	14		1
95-99	2		
Totals	588	31	76

MINNEAPOLIS POLICE RELIEF ASSOCIATION

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 Allowances	Discounted Value of Allowances Total	Discounted Value of Allowances Average
1978			717	$5,544,391	%	$ 7,733	$ 82,727,290	$115,380
1979	N/A	N/A	731	6,007,316	8	8,218	88,184,433	120,635
1980	29	72	688	6,214,153	3	9,032	94,396,604	137,204
1981	59	90	695	7,415,469	19	10,670	100,936,794	145,233

Minneapolis Police Relief Association

Active Members December 31, 1981

By Attained Age and Years of Service

Attained Age	Years of Service to Valuation Date							
	0-4	5-9	10-14	15-19	20-24	25-29	30 Plus	Totals
25-29	3	12						15
30-34		85	29					114
35-39	2	46	117	15				180
40-44		5	55	99				159
45-49		3	14	86	25			128
50-54			4	13	26	15	7	65
55-59				8	8	10	12	38
60					4			4
61						1	3	4
62				2				2
64				1			1	2
65							1	1
Totals	5	151	219	224	63	26	24	712

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

Age: 41.9 years.

Service: 15.5 years.

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
1980	737	19,350,672	41.4	15.1	26,257	8.5
1981	712	20,218,664	41.9	15.5	28,397	8.2

Minneapolis Police Relief Association

Reported Assets Available

for Benefits December 31, 1981

Investments:	
Cash and Short Term	$ 6,287,939
Bonds	24,673,292
Common Stock	14,421,870
Total Investments	$45,383,101
Accrued Income and Contributions Recivable	1,338,196
Assets Available for Benefits	$46,721,297

The above Statement was prepared on an accrual basis using market value of assets. Asset available for benefits of $46,721,297 were used for valuation purposes.

Minneapolis Police Relief Association

Brief Summary (12/31/81) of Benefit Provisions Evaluated and/or Considered

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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. (Members retired prior to 7/80 receive 1/80 of base pay less and those retired prior to 7/69 receive 1/80 of base pay for each year over 20 thru 28th year.)

Pay Used For Plan Purposes. "Base pay" means the salary of a top grade patrol officer.

Disability Retirement

Eligibility.

Non-duty. 10 years of service.

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. 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. (Prior to 7/80 the range was 13/80 to 33/80)

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

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 simultaneously changed 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.

SECTION C

VALUATION METHODS AND ASSUMPTIONS

Minneapolis Police Relief Association

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) used in making the valuation was 5.0 percent per annum, compounded annually. State law requires use of this assumption.

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

	Single Life Values: Present Value of $1 Monthly					
	Level For Life		Increasing 3.5% Yearly		Future Life Expectancy (Years)	
Sample Ages	Men	Women	Men	Women	Men	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

Pay Adjustment Factor 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

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

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

SECTION D

ACCUMULATED PLAN BENEFITS

Minneapolis Police Relief Association

Statement of the Present Value of Accumulated Plan Benefits

December 31, 1981

Actuarial Present Value of Accumulated Plan Benefits	
Vested Benefits:	
Participants currently receiving payments	$101,219,328
Other participants	22,372,475
Total Vested Benefits	123,591,803
Non-Vested Benefits	39,761,504
Total Actuarial Present Value of Accumulated Plan Benefits	$163,353,307

The accompanying notes are an integral part of the Statement of the Present Value of Accumulated Plan Benefits.

1. The actuarial present value of accumulated plan benefits presented in this statement was determined using the following assumptions:

    a. Future salary increases prior to retirement were not considered for active members.

    b. Future service was considered only to the extent that it would permit active plan participants to become eligible for benefits attributable to service rendered prior to the date of determination.

    c. Regular valuation assumptions were used as to mortality, withdrawal, retirement ages, and disability.

    d. Investment return was assumed to be at the rate of 7% compounded annually.

    e. Salary increase related post retirement benefit adjustments were assumed to be at the rate of 5 1/2% compounded annually unless a lower rate is specified by law.

2. The calculation of the actuarial present value of accumulated plan benefits was made because of the requirements of the Financial Accounting Standards Board. Comparison of this value with plan assets is not indicative of the future ability of the plan to pay benefits when due or of their security in a termination situation.

    Calculation of contribution requirements and related benefit value information in a "going concern" environment according to the principles of level cost financing is made by the annual actuarial valuations. The results of the contribution rate calculations cannot be simply replaced by the accumulated plan benefit results. To do so will mislead.

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.

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 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 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.

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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.