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**Minneapolis
Police Relief Association**



Annual Actuarial Valuation

December 31, 1995

Gabriel, Roeder, Smith & Company
Actuaries and Consultants

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Appendix I Financial Principles and Operational Techniques

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May 30, 1996

Board of Trustees
Minneapolis Police Relief Association
Minneapolis, Minnesota

Submitted in this report are the revised results of the December 31, 1995 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, 1997. Section A also contains comments regarding the valuation results.

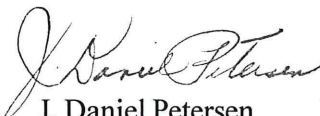

The valuation was based upon information furnished by the Association concerning benefits, financial transactions, active members, terminated members, retirants and beneficiaries. Data was checked for year to year consistency but was not otherwise audited by us. This information is summarized in Section 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. 5 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,

 
J. Daniel Petersen 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, 1997

Contributions for	If Paid Equally Throughout Year		
	Normal Cost % of Active Payroll for 1997	+	UAAL Dollars
Normal cost of annuities			
Age & service to members	18.19%		
Age & service to survivors	3.62		
Disability	1.60		
Death before retirement	1.50		
Refunds of member contributions	<u>0.00</u>		
Total Normal Cost	24.91%		
Amortization of unfunded actuarial accrued liabilities (UAAL) (14 year level dollar payment)			
Retired lives			\$ 0
Active members			<u>6,683,106</u>
Total			6,683,106
Total Cost of Benefits	24.91%	+	\$6,683,106
Member contributions	8.00%		
COMPUTED EMPLOYER RATE:			
(a) If Paid Equally Throughout Year	16.91%	+	\$6,683,106
(b) If Paid As Outlined Below	17.14%	+	\$6,774,664

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 \$294 million on December 31, 1995 -- 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 \$294 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.

	Valuation Assets	Actuarial Accrued Liabilities	Unfunded Actuarial Accrued Liabilities	Percent Funded
Retirants and Beneficiaries				
Retired Members (583)		\$204,609,084		
Surviving Spouses (222)		30,981,202		
Surviving Children (3)		<u>108,041</u>		
Total (808)		\$235,698,327		
Deferred Members (18)		7,446,344		
Active Members (278)	_____	<u>115,512,259</u>	_____	
Total	\$294,692,082	\$358,656,930	\$63,964,848	82.2%

Actuarial accrued liabilities represent the value, computed as of December 31, 1995 of:

- (i) retirement allowances likely to be paid the 808 retirants and beneficiaries; and
- (ii) the contributions assumed to have been made for the 278 active members from entry into the plan until December 31, 1995.

The value of retirement allowances likely to be paid the 808 retirants and beneficiaries, discounted for investment earnings and mortality, was computed to be \$235,698,327 as of December 31, 1995. To put this amount in perspective, the \$235,698,327, together with investment earnings, will just be sufficient to pay the 808 retirants and beneficiaries their allowances for their remaining lifetimes. This assumes the 808 retirants and beneficiaries live and die according to the assumed mortality and the \$235,698,327 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 \$115,512,259 represents the amount that would have been accumulated by December 31, 1995. 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, 1995 for the 278 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
1986	\$272,487	\$136,075	49.9%
1987	288,555	150,307	53.1
1988*#	281,439	184,998	65.7
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

* 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		
1986	1988	29.55%	\$ 9,868,442
1987	1989	29.45	10,026,239
1988	1990*#	24.70	7,961,386
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

* Includes employee contributions.

After change in benefit provisions.

Contribution for Calendar Year Effective January 1, 1997

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 1997		\$_____
(2)	Employer normal cost % from page A-2		16.91%
(3)	Employer normal cost \$ (Line 1 times line 2)		\$_____
(4)	Amortization payment on UAAL from page A-2		6,683,106
(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 1994 was not considered.

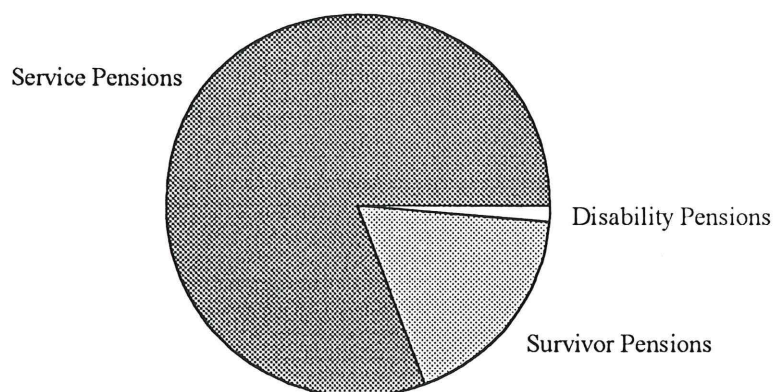
SECTION B

Valuation Data and Summary of Benefit Provisions

Retirants and Beneficiaries December 31, 1995

By Type of Annuity Being Paid

Type of Annuity Being Paid	No.	Monthly Amounts	Computed Actuarial Accrued Liabilities
Retirants receiving			
Age & service	572	\$1,169,598.26	\$199,626,221
Disability	<u>11</u>	<u>19,590.12</u>	<u>4,982,863</u>
Totals	583	1,189,188.38	204,609,084
Beneficiaries receiving			
Spouse	222	255,823.92	30,981,202
Child	<u>3</u>	<u>2,933.28</u>	<u>108,041</u>
Totals	225	258,757.20	31,089,243
	<u> </u>	<u> </u>	<u> </u>
Totals	808	\$1,447,945.58	\$235,698,327



Monthly Amount Paid by Benefit

Inactive Members Eligible For Deferred Benefits
December 31, 1995

<u>No.</u>	<u>Monthly Amount</u>	<u>Computed Actuarial Accrued Liabilities</u>
18	\$32,894.64	\$7,446,344

Retirants and Beneficiaries December 31, 1995
By Attained Ages

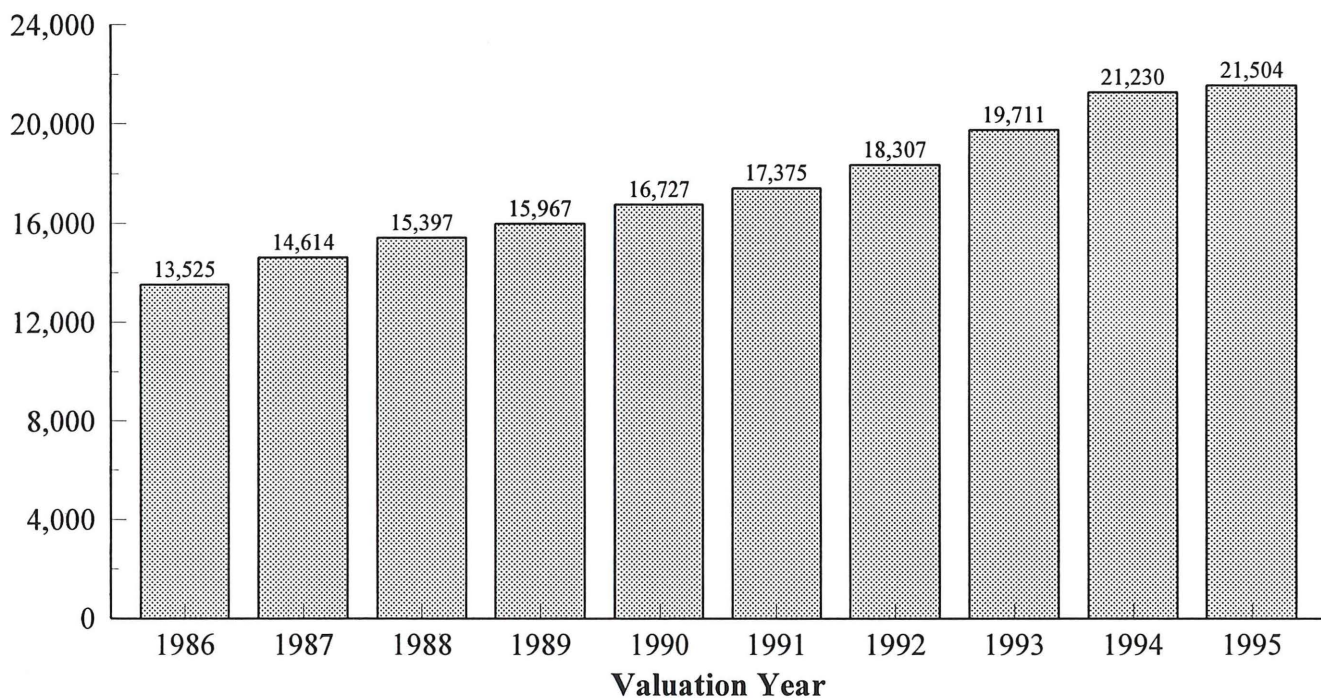
Attained Ages	Number		
	Age & Service	Disability	Death Before Retirement
Under 20	1		1
20-24	1		
35-39			
40-44	1		2
45-49	2	10	2
50-54	74	1	3
55-59	121	1	3
60-64	110		3
65-69	109		6
70-74	111		8
75-79	103		5
80-84	76		2
85-89	36		1
90-94	12		
95-99	2	1	
Totals	759	13	36

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	
1986	35	38	696	\$ 9,413,244	\$132,060,228
1987	60	28	728	10,639,309	151,962,120
1988	45	30	743	11,440,308	155,541,576
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

Average Annual Allowances



Active Members December 31, 1995
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
40-44				6	18			24	\$ 1,203,240
45-49				16	69	35		120	6,016,200
50-54				4	25	47	2	78	3,910,530
55-59					7	18	20	45	2,256,075
60						1	1	2	100,270
62						1		1	50,135
63							3	3	150,405
64							3	3	150,405
65							1	1	50,135
66							1	1	50,135
Totals				26	119	102	31	278	\$13,937,530

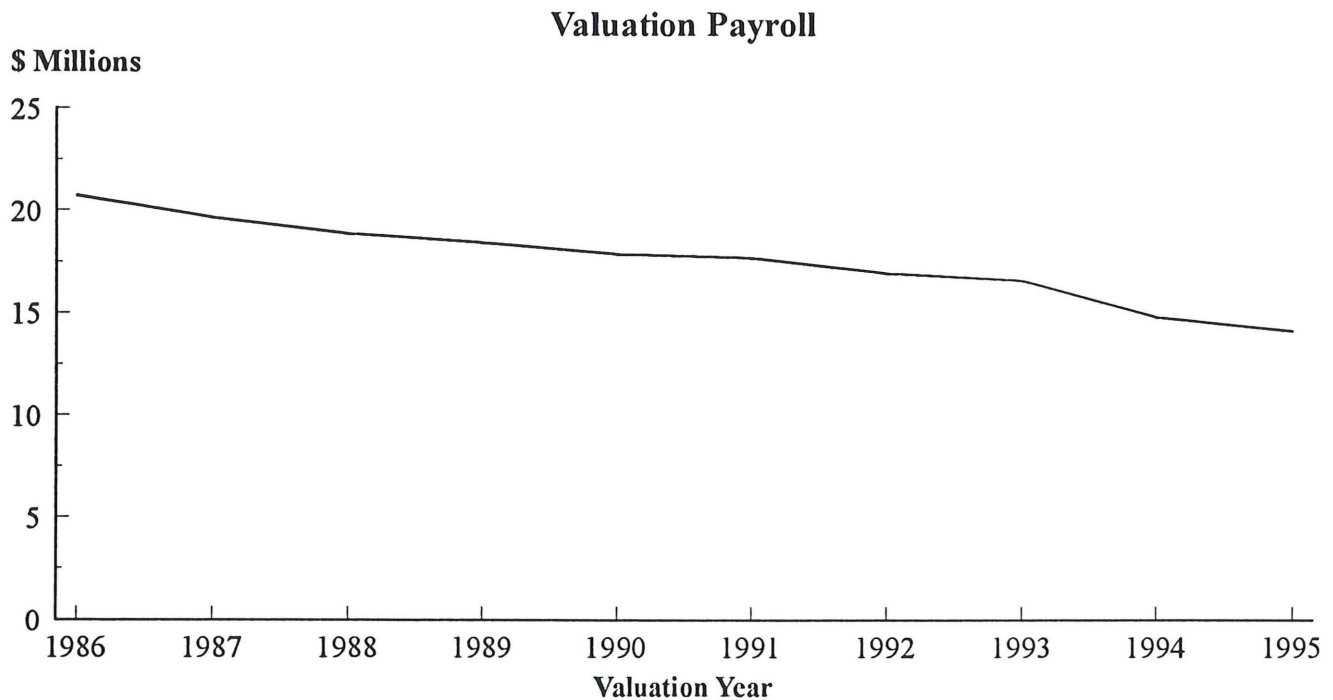
While not used in the financial computations, the following group averages are computed and shown because of their general interest.

Group Averages:

Age: 50.3 years
Service: 25.3 years
Annual Pay: \$50,135

Comparative Schedule Of Active Members

Valuation Date December 31	Active Members	Valuation Payroll	Average			
			Age	Service	Pay	% Incr.
1986	586	\$20,737,368	45.2 yrs.	19.3 yrs.	\$35,388	3.5%
1987	529	19,634,893	45.4	19.6	37,117	4.9
1988	489	18,876,378	45.9	20.3	38,602	4.0
1989	460	18,421,160	46.6	21.0	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



Brief Summary (12/31/95) 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. (Members retired prior to 12/94 receive 1/80 of base pay for each year over 20 thru the 24th year and 4/80 for the 25th year, those 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 the 28th year.)

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 <u>December 31</u>	<u>(a)</u> Market Value	<u>(b)</u> Book Value	<u>(c)</u> Market- Book
1993	\$283,268,217	\$263,648,064	\$ 19,620,153
1994	268,609,725	266,926,523	1,683,202
1995	314,030,813	276,561,039	37,469,774
			<hr/>
(d) Average Unrealized Gain			\$ 19,591,043
(e) Excess Investment Income*			1,460,000
			<hr/>
(f) Assets 12/31/95 (Book Value 12/31/95 + (d) - (e))			<u>\$294,692,082#</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: <u>Present Value of \$1 Monthly</u>				Future Life <u>Expectancy (Years)</u>	
	Level		Increasing			
	<u>For Life</u>		<u>3.5% Yearly</u>			
	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

<u>Sample Ages</u>	<u>Present Pay Resulting in Pay of \$1,000 at Age 60</u>	<u>Present Increase in Pay During Next Year</u>
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

<u>Sample Ages</u>	<u>% of Active Members Becoming Disabled within Next Year</u>
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

The Pension Benefit Obligation and Certain Other Disclosures Required by Statement No. 5 of The Governmental Accounting Standards Board

Pension Benefit Obligation

The amount shown below as the "pension benefit obligation" is a standardized disclosure measure of the present value of pension benefits, adjusted for the effects of projected salary increases, estimated to be payable in the future as a result of employee service to date. The measure is the actuarial present value of credited projected benefits and is intended to (i) help users assess the plan's funding status on a going-concern basis, (ii) assess progress being made in accumulating sufficient assets to pay benefits when due, and (iii) allow for comparisons among public employee retirement plans. The measure is independent of the actuarial funding method used to determine contributions to the plan.

The pension benefit obligation was determined as part of an actuarial valuation of the plan as of December 31, 1995. Significant actuarial assumptions used in determining the pension benefit obligation include (a) a rate of return on the investment of present and future assets of 6.0% per year compounded annually, (b) projected salary increases of 4.0% per year compounded annually, attributable to inflation, and (c) the assumption that benefits will increase 4.0% per year after retirement.

At December 31, 1995, the unfunded pension benefit obligation was \$77,627,128 determined as follows:

Pension Benefit Obligation:

Retirants and beneficiaries currently receiving benefits and terminated employees not yet receiving benefits	\$243,144,671
Current employees --	
Accumulated employee contributions including allocated investment income	0
Employer financed	<u>111,043,496</u>
Total Pension Benefit Obligation	\$354,188,167
Net assets available for benefits, at cost (market value was \$314,030,813)	<u>276,561,039</u>
Unfunded Pension Benefit Obligation	<u>\$ 77,627,128</u>

The total pension benefit obligation as of January 1, 1995 was \$342,964,213. During the year, the plan experienced a net change of \$11,223,954 in the pension benefit obligation.

Contributions Required and Contributions Made

The Association's funding policy provides for periodic employer contributions at actuarially determined rates that, expressed as percentages of annual covered payroll, are designed to accumulate sufficient assets to pay benefits when due. The normal cost and actuarial accrued liability are determined using an entry age actuarial funding method. Unfunded actuarial accrued liabilities are being amortized as a level dollar amount over a period of 14 years.

During the year ended December 31, 1995 contributions totaling \$9,590,526 -- \$8,359,115 employer and \$1,231,411 employee -- were made in accordance with contribution requirements determined by an actuarial valuation of the plan as of December 31, 1993. The employer contributions consisted of \$2,912,544 for normal cost and \$5,446,571 for amortization of the unfunded actuarial accrued liability. Employer contributions represented 50.43% of covered payroll.

Significant actuarial assumptions used to compute contribution requirements were the same as those used to compute the standardized measure of the pension benefit obligation.

Computed Contribution Comparative Schedule

Fiscal Year Dec. 31	Valuation Date Dec. 31	Contribution Rates		Valuation Payroll	Dollar Contribution For Fiscal Year	
		Normal Cost % of Valuation Payroll	UAAL Dollars		Computed	Actual
1988	1986	21.55%	\$ 9,868,442	\$20,737,368	\$14,337,345	\$14,557,987
1989	1987	21.45	10,026,239	19,634,893	14,237,924	12,479,453
1990*#	1988	16.70	7,961,386	18,876,378	11,113,741	9,367,856
1991	1989	16.53	6,727,495	18,421,160	9,772,513	9,845,377
1992#	1990	17.61	6,547,850	17,859,951	9,692,987	8,281,262
1993	1991	17.58	6,319,193	17,658,290	9,423,520	8,859,961
1994#	1992	17.62	5,615,587	16,913,352	8,595,720	6,239,591
1995#	1993	17.57	5,663,676	16,576,802	8,576,220	8,359,115
1996#	1994	17.43	6,331,000	14,799,242	8,910,508	
1997	1995	16.91	6,683,106	13,937,530	9,039,942	

* After change in actuarial assumptions.

After change in benefit provisions.

Required Supplementary Information

Analysis of Funding Progress

Val'n Date Dec. 31	(1) Net Assets Available for Benefits	(2) Pension Benefit Obligation (PBO)	(3) Percent Funded (1)/(2)	(4) Unfunded PBO (2)-(1)	(5) Annual Covered Payroll	(5) Unfunded PBO as a % of Covered Payroll (4)/(5)
1988	\$167,440,802	\$272,696,589	61.4%	\$105,255,787	\$18,876,378	557.6%
1989	193,586,986	282,263,629	68.6	88,676,643	18,421,160	481.4
1990	206,722,728	291,428,562	70.9	84,705,834	17,859,951	474.3
1991	215,182,428	301,809,936	71.3	86,627,508	17,658,290	490.6
1992	242,153,384	318,171,131	76.1	76,017,747	16,913,352	449.5
1993	264,156,182	341,880,488	77.3	77,724,306	16,576,802	468.9
1994	266,926,523	342,964,213	77.8	76,037,690	14,799,242	513.8
1995	276,561,039	354,188,167	78.1	77,627,128	13,937,530	557.0

Analysis of the dollar amounts of net assets available for benefits, pension benefit obligation, and unfunded pension benefit obligation in isolation can be misleading. Expressing the net assets available for benefits as a percentage of the pension benefit obligation provides one indication of the plan's funded status on a going-concern basis. Analysis of this percentage over time indicates whether the system is becoming financially stronger or weaker. Generally, the greater this percentage, the stronger the plan. The unfunded pension benefit obligation and annual covered payroll are both affected by inflation. Expressing the unfunded pension benefit obligation as a percentage of annual covered payroll approximately adjusts for the effects of inflation and aids analysis of the progress being made in accumulating sufficient assets to pay benefits when due. Generally, the smaller this percentage, the stronger the plan.

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.

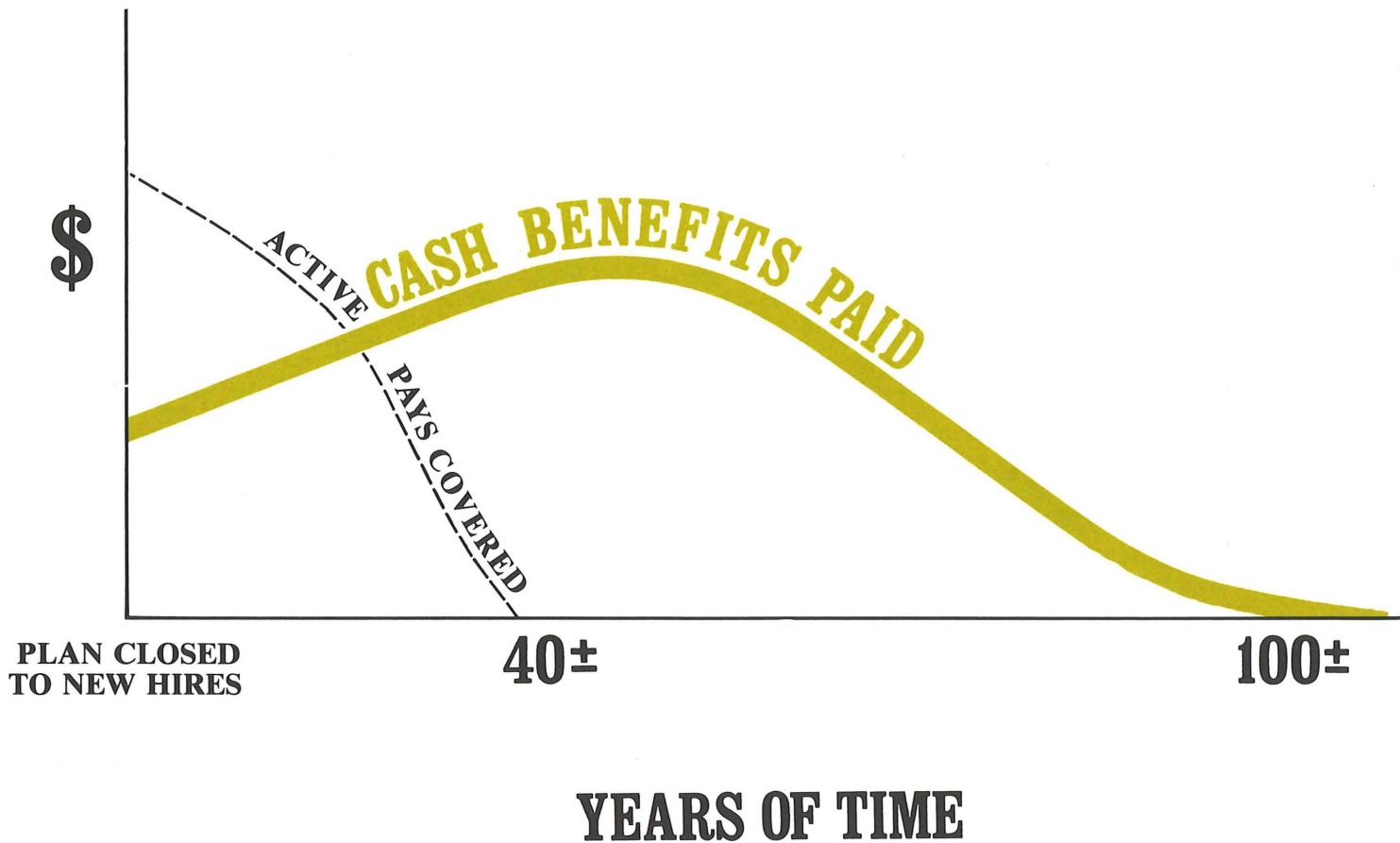
Computing Contributions To Support Plan Benefits. From a given schedule of benefits and from the employee data and asset data furnished him, the actuary determines the contribution rates to support the benefits by means of an actuarial valuation and a funding method.

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.