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The Report of the
GAIN/LOSS ANALYSIS OF FINANCIAL EXPERIENCE
During calendar 1979 and 1980
CITY OF VIRGINIA
POLICE RELIEF ASSOCIATION
Virginia, Minnesota

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GABRIEL, ROEDER, SMITH & COMPANY
CONSULTING ACTUARIES

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ACTUARIES & CONSULTANTS

2090 First National Building
Detroit, Michigan 48226
Area 313: 961-3346

June 19, 1981

City of Virginia
Police Relief Association
Virginia, Minnesota

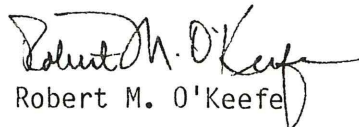
Submitted in this report are the results of the 1979-80 gain/loss analysis of the financial experiences of the Virginia Police Relief Association.

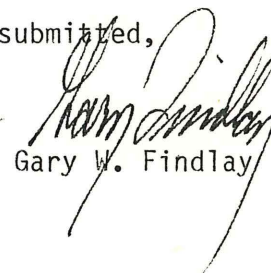
The composite results of this study are reported on Schedules 1(A) and 1(B) and comments regarding the results are on page 12.

The gain/loss analysis was based upon statistical data furnished by the Association regarding active and retired member changes and related financial transactions.

The actuarial assumptions used for regular valuation purposes and which produce "expected" experience data are shown in the appendix of this report.

Respectfully submitted,


Robert M. O'Keefe


Gary W. Findlay

PURPOSE OF GAIN/LOSS ANALYSIS

Actual financial experience will not coincide exactly with assumed financial experience--differences are to be expected since the future cannot be predicted with absolute precision. The changes in computed liabilities resulting from differences between actual and assumed experiences are called actuarial gains if the experience was financially favorable and actuarial losses if the experience was financially unfavorable. Actuarial gains result in decreases in contribution rates and actuarial losses result in increases.

Regular actuarial valuations provide information about aggregate computed liabilities. However, regular valuations do not develop the information needed to explain the year to year changes in computed liabilities attributable to each activity within the retirement system financial mechanism. The purpose of a gain/loss analysis is to determine the change in computed liabilities and contribution rates attributable to variations between actual and assumed experience.

Once a difference between actual and assumed experience in a risk area has been observed to be sizeable and persistent, the assumed experience should be changed to reflect the observed reality. However, gains and losses over a relatively short period of time may not be indicative of long term trends which provide the basis for selection of actuarial assumptions.

ACTIVITY WHICH RESULTS IN GAINS OR LOSSES

Age & Service Retirement.

If members retire at older ages than assumed, there is a gain. If retirements occur at younger ages than assumed there is a loss.

Disability & Death-in-Service.

If casulaty claims are less than assumed, there is a gain. If there are more casualty losses than assumed, there is a loss.

Withdrawal.

If more liabilities are released by withdrawal than assumed, there is a gain.
If there are fewer withdrawals than assumed, there is a loss.

Salary Increases.

If there are smaller salary increases than assumed, there is a gain.
If salary increases are greater than assumed, there is a loss.

Investment Income.

If there is greater investment income than assumed, there is a gain.
If investment income is less than assumed, there is a loss.

Post Retirement Mortality.

If benefit recipients die at younger ages than assumed, there is a gain.
If they live longer than assumed, there is a loss.

Contribution.

Gains or losses arise due to the delay in implementing changes in the recommended contribution.

Miscellaneous.

Miscellaneous gains and losses include changes due to data adjustments, rounding and changes in the average age and service characteristics of the group.

VIRGINIA POLICE RELIEF ASSOCIATION

Schedule 1(A)

Gains & Losses in Accrued Liabilities
and Changes in Contribution Requirements
During Calendar 1979

<u>Type of Activity</u>	<u>Accrued Liabilities</u> <u>(Gain) or Loss</u>		<u>Contribution Requirements</u> <u>(Gain) or Loss</u>	
	<u>Active</u>	<u>Retirants &</u>	<u>Normal Cost</u>	<u>\$ Payment</u>
	<u>Members</u>	<u>Beneficiaries</u>	<u>% of Payroll</u>	<u>on UAL</u>
	(\$ in 1,000)		(\$ in 1,000)	
<u>Age & Service Retirements</u>	\$ (7.8)	\$ N/A	N/A	\$(0.4)
<u>Disability & Death-in-Service</u>				
a. <u>Disability</u>	(6.1)	N/A	N/A	(0.3)
b. <u>Death-in Service</u>	(11.1)	N/A	N/A	(0.5)
<u>Withdrawal</u>	(25.5)	N/A	N/A	(1.2)
<u>Salary Increases</u>	176.3	25.8		9.9
<u>Investment Income</u>	(1.7)	(8.9)		(0.5)
<u>Post Retirement Mortality</u>	N/A	(47.2)	N/A	(2.3)
<u>Contributions</u>	(32.7)	(33.1)		(3.2)
<u>Miscellaneous</u>	<u>5.5</u>	<u>0.5</u>	<u>—</u>	<u>0.2</u>
EXPERIENCE RELATED (GAIN)/LOSS & CORRESPONDING CHANGE IN CONTRIBUTION REQUIREMENTS	\$ 96.9	\$(63.1)	N/A	\$ 1.7
<u>Changes due to plan amendments</u>	<u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>
TOTAL (GAIN)/LOSS DURING YEAR	\$ <u>96.9</u>	\$ <u>(63.1)</u>	<u>N/A</u>	\$ <u>1.7</u>

VIRGINIA POLICE RELIEF ASSOCIATION

Schedule 1(B)

Gains & Losses in Accrued Liabilities
and Changes in Contribution Requirements
During Calendar 1980

Type of Activity	Accrued Liabilities (Gain) or Loss		Contribution Requirements (Gain) or Loss	
	Active	Retirants &	Normal Cost	\$ Payment
	Members	Beneficiaries	% of Payroll	on UAL
	(\$ in 1,000)		(\$ in 1,000)	
<u>Age & Service Retirements</u>	\$(20.6)	\$ N/A	0.51%	\$(1.0)
<u>Disability & Death-in-Service</u>				
a. <u>Disability</u>	(6.4)	N/A	(0.69)	(0.3)
b. <u>Death-in Service</u>	(11.6)	N/A	0.11	(0.6)
<u>Withdrawal</u>	(75.7)	N/A	0.25	(3.7)
<u>Salary Increases</u>	74.9	41.2		5.8
<u>Investment Income</u>	(3.6)	(20.1)		(1.2)
<u>Post Retirement Mortality</u>	N/A	18.1	N/A	0.9
<u>Contributions</u>	(52.2)	(56.3)		(5.3)
<u>Miscellaneous</u>	(2.5)	(0.2)	—	(0.2)
EXPERIENCE RELATED (GAIN)/LOSS & CORRESPONDING CHANGE IN CONTRIBUTION REQUIREMENTS	\$(97.7)	\$(17.3)	0.18%	\$(5.6)
<u>Conversion to UAL Amortization</u>			N/A	16.3
<u>Change in Funding Method For Death & Disability</u>	45.7	N/A	1.27	2.2
<u>Changes due to plan amendments</u>	30.7	—	0.83	1.5
TOTAL (GAIN)/LOSS DURING YEAR	\$(21.3)	\$(17.3)	2.28%	\$14.4

VIRGINIA POLICE RELIEF ASSOCIATION

Schedule 2(A)

Employees Active at Both Beginning & End of 1979

<u>Age Group Beg. Year</u>	<u>No.</u>	<u>Beginning Salary</u>	<u>Ending Salary</u>	<u>% Increase In Salary</u>
20-24	1	\$ 15,265	\$ 16,413	7.5%
25-29	10	152,650	165,435	8.4
30-34	2	30,530	35,835	17.4
35-39	3	45,795	53,330	16.5
40-44	1	15,265	18,651	22.2
45-49	2	30,530	37,068	21.4
50-54	3	45,795	53,651	17.2
55-59	<u>1</u>	<u>19,073</u>	<u>23,841</u>	25.0
TOTALS	23	\$354,902	\$404,224	13.9%

Employees Active at Either Beginning or End of 1979

<u>Years Service</u>	<u>Beginning of Year</u>	<u>End of Year</u>
0	0	0
1	5	3
2	0	4
3	1	0
4	8	1
5 or more	12	18

Average Age: 35.0 years.

Average Service: 8.9 years.

VIRGINIA POLICE RELIEF ASSOCIATION

Schedule 2(B)

Employees Active at Both Beginning & End of 1980

<u>Age Group Beg. Year</u>	<u>No.</u>	<u>Beginning Salary</u>	<u>Ending Salary</u>	<u>% Increase In Salary</u>
20-24	1	\$ 16,643	\$ 18,178	9.2%
25-29	7	116,501	127,243	9.2
30-34	3	49,929	54,533	9.2
35-39	3	49,929	54,533	9.2
40-44	1	16,643	18,178	9.2
45-49	2	33,286	36,355	9.2
50-54	3	49,929	54,533	9.2
55-59	<u>1</u>	<u>16,643</u>	<u>18,178</u>	9.2
TOTALS	21	\$349,503	\$381,731	9.2%

Employees Active at Either Beginning or End of 1980

<u>Years Service</u>	<u>Beginning of Year</u>	<u>End of Year</u>
0	0	2
1	3	0
2	4	4
3	0	2
4	1	0
5 or more	18	16

Average Age: 36.6 years.

Average Service: 9.6 years.

VIRGINIA POLICE RELIEF ASSOCIATION

Schedule 3(A)

Separations From Active Service (Other Than Age & Service Retirement) During 1979

<u>Age at Termination</u>	<u>Withdrawal</u>		<u>Disability</u>		<u>Death</u>	
	<u>Actual</u>	<u>Expected</u>	<u>Actual</u>	<u>Expected</u>	<u>Actual</u>	<u>Expected</u>
20-24	1			*		*
25-29	2	0.3		*		*
30-34		0.1		*		*
35-39				*		*
40-44	—	—	—	*	—	*
TOTALS	3	0.4	0	0.1	0	0.1

* Less than 0.1%

<u>Years Service at Termination</u>	<u>Actual</u>	<u>Expected</u>
0		0.1
1		0.1
2	1	
3		0.1
4	1	0.1
5 or more	<u>1</u>	<u>0.1</u>
TOTALS	3	0.5

Average age at separation: 26.0 years.

Average service at separation: 3.6 years.

VIRGINIA POLICE RELIEF ASSOCIATION

Schedule 3(B)

Separations From Active Service (Other Than Age & Service Retirement) During 1980

Age at Termination	Withdrawal		Disability		Death	
	<u>Actual</u>	<u>Expected</u>	<u>Actual</u>	<u>Expected</u>	<u>Actual</u>	<u>Expected</u>
25-29	3	0.3		*		*
30-34	1	0.1		*		*
35-39	1	0.1		*		*
40-44	—	—	—	*	—	*
TOTALS	5	0.5	0	0.1	0	0.1

* Less than 0.1%

Years Service at Termination	<u>Actual</u>	<u>Expected</u>
0		0.1
1		
2	1	
3	1	
4		0.1
5 or more	<u>3</u>	<u>0.1</u>
TOTALS	5	0.3

Average age at separation: 29.8 years.

Average service at separation: 5.1 years.

VIRGINIA POLICE RELIEF ASSOCIATION

Schedule 4

Separations From Active Service
For Age & Service Retirement

<u>Age at Termination</u>	<u>1979</u>		<u>1980</u>	
	<u>Actual</u>	<u>Expected</u>	<u>Actual</u>	<u>Expected</u>
59		1.0		
60	—	—	—	<u>1.0</u>
TOTALS	0	1.0	0	1.0

Average age at retirement during period examined: N/A.

Average service at retirement during period examined: N/A.

VIRGINIA POLICE RELIEF ASSOCIATION

Schedule 5

Death After Retirement
(Disability and Service Retirants)

<u>Age at Death</u>	<u>1979</u>		<u>1980</u>	
	<u>Actual</u>	<u>Expected</u>	<u>Actual</u>	<u>Expected</u>
50-54		0.0111		0.0121
55-59		0.0166		0.0181
60-64	1			
70-74		0.2099		0.2258
75-79		0.0939		
80-84	—	<u>0.1341</u>	—	<u>0.2465</u>
TOTALS	1	0.4656	0	0.5025

Average age at death: 62 years.

APPENDICES

VIRGINIA POLICE RELIEF ASSOCIATION

Valuation Methods and Assumptions

The Entry Age Normal Cost method was used to determine the normal cost of all benefits. Disability and death before retirement benefits were valued in previous valuations 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:				Future Life Expectancy (Years)	
	Present Value of \$1 Monthly					
	Level		Increasing			
	For Life		3.5% Yearly			
	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 58, 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

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

Disability retirements were assumed to occur as indicated below:

<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

Virginia Police Relief Association

Brief Summary (12/31/80) of Benefit Provisions Evaluated and/or Considered

Age & Service Retirement

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

Amount. 50% of salary of rank held at retirement but no less than 50% of top patrolman's salary. For each year over 25 an additional 1/2% of pay used for retirement purposes is added to the benefit. (The additional benefit is not subject to the post retirement adjustment provisions.)

Disability Retirement.

Eligibility. Disabled to the extent that no longer able to perform duties of police officer.

Amount. Same as regular retirement benefit.

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.

Amount.

Spouse. 50% of regular retirement benefit.

Child. \$300 per child per year.

Maximum Family Benefit. Regular retirement benefit amount.

Vested Deferred. 20 years of service and separated before age 50. Payment beginning is deferred to attainment of age 50.

Post Retirement Adjustments ("Escalator"). Adjustments are made when 50% (or in the case of surviving spouse, 25%) of the prevailing pay of a top paid patrolman is greater than the benefit being received. The amount of the adjustment is the

amount necessary to bring the benefit up to the 50% or 25% level. Adjustments are applicable only to those who retire after January 12, 1966, and are not applied to children's benefits.

Member Contributions. 8% of basic compensation. Total contributions are refundable, without interest, if no monthly benefit is payable upon separation from service.