

**SPRING LAKE PARK FIREMEN'S  
RELIEF ASSOCIATION**

**Actuarial Valuation and Benefit Study  
as of January 1, 1987**

**April 14, 1987**

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**SPRING LAKE PARK FIREMEN'S RELIEF ASSOCIATION  
ACTUARIAL VALUATION AND BENEFIT STUDY  
AS OF JANUARY 1, 1987**

**PURPOSE AND SUMMARY**

The following report sets forth the results of our study for the Spring Lake Park Firemen's Relief Association. The study included the following:

- o Determination of annual contribution for the current plan. - \$63,525
- o Determination of annual contribution to fund \$1 benefit increase.
- o Determination of annual contribution to fund increased short term disability and lump sum death benefits.

The results of our study are summarized in the tables of the report and discussed further herein.

**EMPLOYEE DATA**

Based on data provided by the Association, there are 61 active members included in the valuation. The members have an average attained age of 36.5 and an average entry age of 27.8. Table 2(a) sets forth the prospective benefit each member may expect to receive if he remains in the Association until the normal retirement date assumed in the valuation, age 53 and completion of 20 years of service. The hire dates shown on the table have been adjusted for periods of absence from service.

There are thirteen inactive members currently receiving benefits from the plan and five inactive members entitled to future benefits. Table 2(b) is a summary of the benefits for these members.

**ASSETS**

The Association provided us with a copy of the financial statement of the Special Fund as of January 1, 1987. Assets less accounts payable are valued at \$1,627,404 on such date with bonds valued at amortized cost value and stocks at cost value. For valuation purposes we have included the stocks at their market value of \$625 versus their cost value of \$20,000 for total valuation assets of \$1,608,029.

## ACTUARIAL ASSUMPTIONS AND METHOD

Table 3 is a summary of the principal plan provisions of the current plan. The monthly benefit level was raised effective January 1, 1986 from \$10 to \$12 per year of service. Table 4 sets forth a summary of the actuarial assumptions used in valuing these plan provisions. We have used the same assumptions as used for the January 1, 1985 valuation. We certify that this Actuarial Valuation and Benefit Study has been prepared in accordance with Chapters 356.20 to 356.23 of the Minnesota State Statutes as they apply to volunteer relief associations defined in Chapter 69.771.

As required by law, the funding method used for the valuation is the entry age normal cost method. Under this method, the normal cost is computed as that level amount which would fund all benefits if it was contributed every year from each fireman's entry into the plan until his retirement. The total normal cost for the plan is the sum of the normal costs for all active members.

The present value of all future benefits payable from the plan for all active and inactive members less the present value of all future normal costs is defined as the accrued liability. The accrued liability is the amount that would have accumulated in the Special Fund if all the actuarial assumptions had been exactly realized in all prior years and if funding for all members, based on current plan benefits, had commenced immediately upon their date of joining the Association.

The accrued liability then is compared to the market value of the Special Fund. Any excess of accrued liability over market value, known as the unfunded accrued liability, is to be funded with a payment to be made annually for number of years specified by law, known as the amortization payment. Increases in the unfunded accrued liability due to changes in the benefits or actuarial assumptions must be paid over 20 years. As of the valuation date, assets exceed the accrued liability of the current plan so no amortization payment is required.



The normal cost is the total annual contribution due as of the valuation date.

Interest must be added to the contribution at the rate of 5% from the valuation date to the date of payment. Thus, if payment were made as of December 31, 1987, the January 1 contribution amount would be multiplied by 1.05.

### **SUMMARY OF VALUATION RESULTS**

Table 1(a) sets forth a summary of the results of the valuation of the current plan. The plan provides a monthly benefit of \$12 per year of service (maximum 30 years) payable on retirement after attainment of age 50 and 20 years of service. Death benefits, deferred vested benefits, and disability benefits are also provided.

The annual contribution required to fund the plan is \$63,525. Based on our January 1, 1985 study, a contribution of \$79,913 was expected for a \$12 benefit level. The contribution requirement is down because investment experience and contributions in excess of the minimum requirement eliminated the past service part of the contribution, leaving only the current service cost or normal cost.

The annual contribution of \$63,525 is that amount of new money which must be contributed to the Special Fund each year to keep the plan funded in accordance with state law. The sources of new money are State Aid and the city tax levy. Interest earnings on the Special Fund cannot be used to meet the contribution requirements.

### **CHANGE IN THE UNFUNDED ACCRUED LIABILITY**

Chapter 356 requires a reconciliation of the unfunded accrued liability from one valuation to the next valuation.

As of January 1, 1985 there was an unfunded accrued liability of (\$81,941). As of January 1, 1987, the liability had decreased to (\$166,856). The change of (\$84,915) is a result of the following:

1.	January 1, 1985 Unfunded Accrued Liability	\$ (81,941)
2.	Decrease due to:	
	a. Contributions 1985-1986	\$ 68,832
	b. Experience gains 1985-1986	\$ 261,938
	c. Total decrease	\$ 330,770
3.	Increase due to benefit increase 1/86	\$ 245,855
4.	January 1, 1987 Unfunded Accrued Liability (1.-2.c. + 3)	\$ (166,856)

The experience gain over the period is principally due to favorable investment returns resulting in an investment gain of \$152,328. Other contributing factors were more turnover than expected by the actuarial assumptions, favorable experience in the short term disability benefits area and savings from not paying benefits to Fagerstrom, who is over the normal retirement age.

#### RESULTS OF BENEFIT STUDY

Tables 1(b)-1(e) set forth the results of our benefit study for the Association. Table 1(b) shows the determination of the required annual contribution if the benefit level was raised from \$12 to \$13, \$14, or \$15. The first \$1 of benefit increase adds \$4,557 to the cost of the current plan. The existing overfunding is used to offset part of the cost. The cost of a \$15 plan is \$92,688, slightly less than the \$99,507 received from State Aid for 1986. The first column of table 1(c) shows the annual contribution which would be required to fund an increase in the Short-Term Disability Benefit from \$20 per day to \$25 per day while maintaining the \$12 benefit level for other benefits is \$65,712. The first column of Table 1(d) shows the annual contribution which would be required to fund an increase in the Lump Sum Death Benefits from \$1,500 to \$3,000 while maintaining the \$12 benefit level for other benefits is \$63,632. The first column of Table 1(e) shows the annual contribution if both the Short Term Disability Benefit and Lump Sum Death Benefits were increased is \$65,819. The remaining columns determine the annual contribution required if the \$12 benefit level was raised in

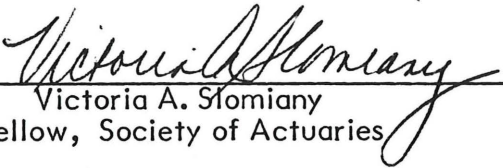
addition to the benefit increases shown in the first columns. In each case, the existing overfunding is used to offset part of the cost of the first \$2 of increases.

\* \* \* \* \*

If in connection with this study any additional work is required we will be happy to proceed as directed.

Respectfully submitted,

THE WYATT COMPANY

  
Victoria A. Slomiany  
Fellow, Society of Actuaries

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Minneapolis/St. Paul  
April 14, 1987

Table 1(a)

SPRING LAKE PARK FIREMEN'S RELIEF ASSOCIATION

Results of Actuarial Valuation as of January 1, 1987

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1. Accrued Liability	
a. Active Members	833,477
b. Retired Members	449,076
c. Disabled Members in Payment Status	23,923
d. Deferred Disabled Members	58,354
e. Deferred Vested Members	76,343
f. Total	1,441,173
2. Valuation Assets	1,608,029
3. Unfunded Accrued Liability (1-2)	(166,856)
4. Amortization Payment for Unfunded Accrued Liability	0
5. Annual Normal Cost	60,500
6. Annual Contribution Payable as of January 1, 1987 (4+5)	60,500
7. Annual Contribution Payable as of December 31, 1987 (6*1.05)	63,525



Table 1(b)  
 SPRING LAKE PARK FIREMEN'S RELIEF ASSOCIATION  
 Results of Benefit Study as of January 1, 1987

-----  
 \$1 Increase under Current Plan  
 -----

	\$12	\$13	\$14	\$15
	-----	-----	-----	-----
1. Accrued Liability				
a. Active Members	833,477	902,833	972,189	1,041,545
b. Retired Members	449,076	486,474	523,872	561,270
c. Disabled Members in Payment Status	23,923	25,917	27,911	29,905
d. Deferred Disabled Members	58,354	63,217	68,080	72,943
e. Deferred Vested Members	76,343	82,705	89,067	95,429
f. Total	1,441,173	1,561,146	1,681,119	1,801,092
2. Valuation Assets	1,608,029	1,608,029	1,608,029	1,608,029
3. Unfunded Accrued Liability (1-2)	(166,856)	(46,883)	73,090	193,063
4. Amortization Payment for Unfunded Accrued Liability	0	0	5,586	14,754
5. Annual Normal Cost	60,500	64,840	69,180	73,520
6. Annual Contribution Payable as of January 1, 1987 (4+5)	60,500	64,840	74,766	88,274
7. Annual Contribution Payable as of December 31, 1987 (6*1.05)	63,525	68,082	78,504	92,688

Table 1(c)  
 SPRING LAKE PARK FIREMEN'S RELIEF ASSOCIATION  
 Results of Benefit Study as of January 1, 1987  
 -----

\$1 Increase under Current Plan with increased Short Term Disability Benefit  
 -----

	\$12	\$13	\$14	\$15
	-----	-----	-----	-----
1. Accrued Liability				
a. Active Members	833,477	902,833	972,189	1,041,545
b. Retired Members	449,076	486,474	523,872	561,270
c. Disabled Members in Payment Status	23,923	25,917	27,911	29,905
d. Deferred Disabled Members	58,354	63,217	68,080	72,943
e. Deferred Vested Members	76,343	82,705	89,067	95,429
f. Total	1,441,173	1,561,146	1,681,119	1,801,092
2. Valuation Assets	1,608,029	1,608,029	1,608,029	1,608,029
3. Unfunded Accrued Liability (1-2)	(166,856)	(46,883)	73,090	193,063
4. Amortization Payment for Unfunded Accrued Liability	0	0	5,586	14,754
5. Annual Normal Cost	62,583	66,923	71,263	75,603
6. Annual Contribution Payable as of January 1, 1987 (4+5)	62,583	66,923	76,849	90,357
7. Annual Contribution Payable as of December 31, 1987 (6*1.05)	65,712	70,269	80,691	94,875

Table 1(d)  
 SPRING LAKE PARK FIREMEN'S RELIEF ASSOCIATION  
 Results of Benefit Study as of January 1, 1987

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**\$1 Increase under Current Plan with increased Lump Sum Death Benefit**

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	\$12	\$13	\$14	\$15
1. Accrued Liability				
a. Active Members	834,685	904,041	973,397	1,042,753
b. Retired Members	449,076	486,474	523,872	561,270
c. Disabled Members in Payment Status	23,923	25,917	27,911	29,905
d. Deferred Disabled Members	58,354	63,217	68,080	72,943
e. Deferred Vested Members	76,343	82,705	89,067	95,429
f. Total	1,442,381	1,562,354	1,682,327	1,802,300
2. Valuation Assets	1,608,029	1,608,029	1,608,029	1,608,029
3. Unfunded Accrued Liability (1-2)	(165,648)	(45,675)	74,298	194,271
4. Amortization Payment for Unfunded Accrued Liability	0	0	5,678	14,846
5. Annual Normal Cost	60,602	64,942	69,282	73,622
6. Annual Contribution Payable as of January 1, 1987 (4+5)	60,602	64,942	74,960	88,468
7. Annual Contribution Payable as of December 31, 1987 (6*1.05)	63,632	68,189	78,708	92,891

Table 1(e)  
 SPRING LAKE PARK FIREMEN'S RELIEF ASSOCIATION  
 Results of Benefit Study as of January 1, 1987  
 -----

\$1 Increase under Current Plan with increased Disability and Death Benefits  
 -----

	\$12	\$13	\$14	\$15
	-----	-----	-----	-----
1. Accrued Liability				
a. Active Members	834,685	904,041	973,397	1,042,753
b. Retired Members	449,076	486,474	523,872	561,270
c. Disabled Members in Payment Status	23,923	25,917	27,911	29,905
d. Deferred Disabled Members	58,354	63,217	68,080	72,943
e. Deferred Vested Members	76,343	82,705	89,067	95,429
f. Total	1,442,381	1,562,354	1,682,327	1,802,300
2. Valuation Assets	1,608,029	1,608,029	1,608,029	1,608,029
3. Unfunded Accrued Liability (1-2)	(165,648)	(45,675)	74,298	194,271
4. Amortization Payment for Unfunded Accrued Liability	0	0	5,678	14,846
5. Annual Normal Cost	62,685	67,025	71,365	75,705
6. Annual Contribution Payable as of January 1, 1987 (4+5)	62,685	67,025	77,043	90,551
7. Annual Contribution Payable as of December 31, 1987 (6*1.05)	65,819	70,376	80,895	95,079



Table 2(a)

SPRING LAKE PARK FIREMEN'S RELIEF ASSOCIATION

Projected Benefits for Active Members as of January 1, 1987 <sup>1/</sup>

<u>Name</u>	<u>Birth Date</u>	<u>Entry Date</u>	<u>Projected Annual Benefit</u>
SJ ACKERMANN	7/55	11/81	3744.00
RW ADAIR	7/55	7/83	3600.00
GA ANDERSON	6/53	11/80	3600.00
WA BATES	12/50	11/80	3312.00
DD BECKER	7/60	11/84	4032.00
WB BECKER	1/34	5/70	2880.00
DH BECKMAN	6/64	1/85	4320.00
KL BENDER	1/60	4/84	4032.00
EF BÖCHNIAK	3/39	5/71	2880.00
RR BODIN	4/52	11/80	3456.00
JK BOHAN	6/57	3/83	3888.00
R CANTU	9/45	8/76	3168.00
JE COPELAND	3/54	1/82	3600.00
JL DIEMERT	6/53	8/79	3744.00
FL DOLL	11/28	9/68	2880.00
SD DREWITZ	3/58	4/76	4320.00
JD DURKOT	4/53	5/80	3600.00
ER EMERSON	9/51	4/78	3744.00
MP ERKO	9/57	11/81	4032.00
JI HANSEN	7/49	10/79	3168.00
BD HANSON	10/61	10/83	4320.00
GH HAWKE	10/46	6/70	4176.00
TC HAWLEY	11/63	3/83	4320.00
HD HOVLAND	4/46	9/75	3312.00
DN HUGHES	10/52	2/80	3600.00
RA KRONE	12/58	11/84	3888.00
DW KRUEGER	8/51	5/82	3168.00
JT KVITRUD	10/51	4/78	3744.00
JE MAHAFFEY	9/37	4/72	2880.00
BH MATTI	4/64	3/83	4320.00
TV MATTSON	9/41	6/71	3312.00
MF MCCALLEY	6/47	11/81	2880.00
LM MYSLICKI	7/46	8/79	2880.00

<sup>1/</sup> Assuming retirement at age 53 and completion of 20 years of service. Hire dates have been adjusted for leaves of absence.

Table 2(a)  
(Continued)

SPRING LAKE PARK FIREMEN'S RELIEF ASSOCIATION

Projected Benefits for Active Members as of January 1, 1987 <sup>1/</sup>

<u>Name</u>	<u>Birth Date</u>	<u>Entry Date</u>	<u>Projected Annual Benefit</u>
RC NELSON	6/43	3/67	4176.00
RC NELSON	6/42	6/69	3744.00
TR NELSON	12/63	4/84	4320.00
CW NORLING	5/44	3/75	3168.00
DM OLSON	10/61	3/80	4320.00
OM OSEN	10/38	9/69	3168.00
RA PACKENHAM	7/41	11/69	3456.00
FC PAULSON	6/43	12/73	3168.00
JM POLENIK	3/42	4/72	3168.00
FJ RAMOLA	6/43	1/71	3600.00
RE REYNOLDS	4/62	6/83	4320.00
EA ROSENGREN	11/47	7/74	3744.00
CW SANDBERG	1/48	3/81	2880.00
TJ SHAPE	11/60	4/84	4176.00
GJ SIMON	3/30	7/68	2880.00
TJ SKEATE	6/36	8/71	2880.00
EA SORENSON	4/33	4/69	2880.00
MR STRAND	1/61	7/82	4320.00
CA SUMMERFIEL	6/58	9/85	3600.00
GL TESKE	12/46	8/74	3600.00
ED THORSON	7/47	10/82	2880.00
DP TOSKE	12/46	11/80	2880.00
KT VITO	3/51	2/75	4176.00
RJ VOLD	1/48	11/84	2880.00
MJ WELLE	8/53	3/79	3888.00
SM WEST	11/51	2/74	4320.00
DE YAEKEL	4/63	11/82	4320.00
NR ZIKMUND	5/58	11/82	4032.00

<sup>1/</sup> Assuming retirement at age 53 and completion of 20 years of service. Hire dates have been adjusted for leaves of absence.

TABLE 2(B)

SPRING LAKE PARK VOLUNTEER FIRE DEPARTMENT RELIEF ASSOCIATION  
 MONTHLY BENEFITS FOR INACTIVE MEMBERS AS OF JANUARY 1, 1987

NAME	TYPE	MONTHLY BENEFITS
RL ANDERSON	RETIRED	360.00
IS BRANDT	RETIRED	240.00
WC COX	RETIRED	300.00
SL DOLIN	DEF DISB	120.00
LL DRABANT	RETIRED	240.00
RW FAGERSTRO	DEF VSTD	240.00
JJ FORBES	RETIRED	348.00
EF GALE	RETIRED	240.00
GT HAFSLUND	RETIRED	252.00
RG JOHNSON	DISABLED	120.00
LW KOLAR	RETIRED	240.00
VE OLSON	DEF DISB	132.00
LC PASK	DEF VSTD	240.00
GF PORTER	RETIRED	240.00
WK SCHOEN	DEF DISB	120.00
WC SCHULDT	RETIRED	252.00
LJ ST. MARIE	RETIRED	300.00
HO SYVERSON	RETIRED	132.00

Table 3

SPRING LAKE PARK FIREMEN'S RELIEF ASSOCIATION

Summary of Current Plan Provisions

1. Normal Retirement Benefit: Monthly benefit of \$12 per year of service payable on retirement after attainment of age 50 and completion of 20 years of service. Maximum benefit of \$360.
2. Deferred Vested Benefit: On termination after completion of 20 years of service, the monthly benefit determined in 1. is payable on attainment of age 50.
3. Disability Benefit:
  - . Short Term Disability: On disability a benefit of \$20 per day is payable up to 26 weeks.
  - . Long Term Disability: Service Related - \$12.00 per month per year of service, maximum \$360. Benefit is payable after 26 weeks of disability.  
Non-Service Related - 10 years of service is required. Benefit equals \$12.00 per month per year of service to a maximum of \$240 payable at normal retirement date.
4. Lump Sum Death Benefit: \$1,500 payable on the death of any active member.
5. Spouse's Benefits:

On death of any retiree, or disabled service related member, 75% of the member's accrued benefit is payable immediately to the surviving spouse.

On death of any deferred inactive or active member not in the line of duty with vested rights, 75% of the members accrued benefit is payable to the surviving spouse commencing on the date the member would have attained age 50 and completed 20 years of service.

On death of any active member in the line of duty, 100% of the member's accrued benefit is payable to the surviving spouse.



**Table 3  
(Continued)**

**SPRING LAKE PARK FIREMEN'S RELIEF ASSOCIATION**

**Summary of Current Plan Provisions**

**6. Children's Benefits:**

On death of the firefighter's surviving spouse, the surviving children will receive the pension that was payable to the surviving spouse. Benefit ceases upon the last surviving child's attainment of age 18.

Table 4

SPRING LAKE PARK FIREMEN'S RELIEF ASSOCIATION

Actuarial Assumptions and Method

1. Mortality: 1971 Group Annuity Mortality Table, without margins, projected to 1976 by Scale E. This table used for all rates of mortality.
2. Withdrawal: The rate of withdrawal is .060 at age 20 decreasing uniformly to zero at age 45 with no withdrawal after that age.
3. Disability: The 1947-49 Weekly Indemnity Tabular Annual Claims Cost was used for valuing the short term disability on a one year term cost basis. The Railroad Retirement Board 12th Valuation rates of disablement were used for valuing the long term disability benefit on a full funding basis. Both tables were loaded for the size and nature of the group.
4. Retirement Age: Members are assumed to retire after attaining age 53 and completing 20 years of service.
5. Interest Rate: Five percent compounded annually.
6. Actuarial Cost Method: The entry age normal cost method has been used with the normal cost determined as a level amount each year from the date of joining the Association to the assumed retirement age.
7. In/Out of Duty: 25% of all active deaths and disabilities were presumed to be in the line of duty or service related.