LUVERNE FIREMEN'S RELIEF ASSOCIATION

Actuarial Valuation and Experience Analysis
as of January 1, 1983

April 11, 1983

Pursuant to MS 69.77

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LUVERNE FIREMEN'S RELIEF ASSOCIATION
ACTUARIAL VALUATION AND EXPERIENCE ANALYSIS
AS OF JANUARY 1, 1983

PURPOSE AND SUMMARY

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

- Determination of annual contribution for the current plan. - $21,470
- Experience analysis pursuant to Chapter 356 of Minnesota State Statutes.

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 34 active members included in the valuation. The members have an average attained age of 36.6 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.

There are nineteen inactive members receiving benefits from the plan. Table 2(b) is a summary of the benefits for these members.

ASSETS

Mr. Curtis Bloemendaal provided us with a copy of the financial statement of the Special Fund as of January 1, 1983. Assets are valued at $101,951 on such date. We have used this value for valuation purposes.

ACTUARIAL ASSUMPTIONS AND METHOD

Table 3 is a summary of the principal plan provisions of the current plan. Table 4 sets forth a summary of the actuarial assumptions used in valuing these plan provisions. With the exception of the mortality assumption, we have used the same assumptions as used for the 1982 benefit study. The mortality basis was updated from a 1959 table to a 1976 table.

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. The unfunded accrued liability of your current plan must be amortized over 16 years and any increases in the unfunded accrued liability due to changes in the benefits or actuarial assumptions must be paid over 20 years.

The amortization payment is added to the normal cost for 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, 1983, the January 1 contribution amount would be multiplied by 1.05.

SUMMARY OF VALUATION RESULTS

Table I sets forth a summary of the results of the valuation of the current plan. The plan provides a monthly benefit of $60 plus 1% of $60 per year of service in excess of 20 and less than 30 payable on retirement after attainment of age 50 and 20 years of service. A $750 lump sum benefit, deferred vested benefits, and disability and medical benefits are also provided.

The plan was amended effective January 1, 1983 to ~~increase~~ the benefit level from $50 to $60 per month. Our last benefit study as of January 1, 1982 reported an annual contribution as of year end of $19,000 for a $60 benefit level to fund the plan in accordance with the state requirements. As shown in column 1 based on the same actuarial assumptions, there has been no change in the $19,000 required contribution.

The mortality assumption used in the determination of the above costs was the United States Life Table 1959-1961. This table had been selected by the prior actuary. Significant mortality improvements have occurred over the last 20 years. Accordingly, we are recommending that the mortality basis be changed to the 1971 Group Annuity Table projected to 1976. A comparison of the male mortality rates under both tables is shown below:

Age	1959-1961 U.S. Life Table	1976 Projected Experience Table
30	.001560	.000842
40	.003320	.001699
50	.009550	.005501
60	.022710	.013654
70	.048710	.038168

As shown in column 2 of Table 1 the effect of this mortality assumption change is to increase the annual contribution by $2,431 to $21,470.

The annual contribution of $21,470 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. Based on information supplied by the Association, the prior actuary reported an unfunded liability of $65,519 as of January 1, 1979.

As of January 1, 1983 there is an unfunded accrued liability of $126,279. The change of $60,760 is a result of the following:

1.	January 1, 1979 Unfunded Accrued Liability		$ 65,519
2.	Decrease due to contributions 1979-1982		$ 4,164
3.	Increase due to:		
	a.	Experience losses 1979-1982	$ 4,133
	b.	Benefit increase 1/82	$ 4,853
	c.	Benefit increase 1/83	$ 34,337
	d.	Change in mortality assumption 1/83	$ 21,601
	e.	Total increase	$ 64,924
4.	January 1, 1983 Unfunded Accrued Liability (1. - 2. + 3.e.)		$126,279

EXPERIENCE ANALYSIS

Chapter 356 of the Minnesota Statutes requires that an experience study be performed to test the appropriateness of the actuarial assumptions which are utilized in the actuarial valuation in conjunction with the 5% interest assumption. The purpose of our experience study is to fulfill the state requirements. The participant data was provided on listings by the Association. The data was furnished as of December 31, 1982.

Active Members

As of January 1, 1979 there were 34 active members in the Association. As of December 31, 1982 that number remained the same. The following table tracks the active membership during that time period.

		1979	1980	1981	1982
1.	Number of active members as of January 1	34	34	33	34
2.	Separation from active service				
	a. Retirements	--	1	1	4
	b. Deaths	--	--	--	--
	c. Terminations - Non-Vested	--	--	--	1
	d. Terminations - Vested	--	--	--	--
	e. Total	--	1	1	5
3.	New entrants during year	--	--	2	5
4.	Number of active members as of December 31 (1 - 2.e + 3)	34	33	34	34

As of December 31, 1982 the average attained age for those 34 active members was 36.6 and the average entry age was 27.8. During the period the new entrants had average entry ages that may be summarized as follows:

NEW ENTRANTS

Year	Number	Average Entry Age
1979	0	--
1980	0	--
1981	2	22.5
1982	5	26.6

As a test of the appropriateness of the actuarial assumptions used for the actuarial valuation, a comparison is made between the actual number of separations from the plan and the number of expected separations if the actuarial assumptions were exactly realized. The ratio of the actual to expected experience (A/E) is an indicator of the deviation of the group from the assumptions used. A ratio greater than 1.00 for deaths and terminations would tend to decrease the cost of the plan. A ratio of less than 1.00 indicates there were fewer separations than expected and would tend to increase plan costs. The reverse analysis is true for disabilities and retirements.

For active lives, this analysis is performed for separations from active service due to retirement, death, termination of membership and disability. The results are summarized in the following table.

SEPARATIONS FROM ACTIVE SERVICE

		Actual	Expected	A/E
1.	Retirements	6	3.00	2.00
2.	Deaths	0	.57	0.00
3.	Terminations	1	2.60	.38

Table 4 is a summary of the actuarial assumptions used as the basis for the expected number of separations. These are the same assumptions used by the prior actuary as of January 1, 1979.

Inactive Members

As of January 1, 1979 there were 13 members on the inactive rolls of the Association. Eleven were receiving benefits from the plan. Two were entitled to future payments upon attainment of age 50. By December 31, 1982 the number of inactive members had increased by 6 to 19. During that period the inactive membership increased as shown below.

INACTIVE MEMBERS

		1979	1980	1981	1982
1.	Number of inactive members as of January 1				
	a. Retired	11	13	14	15
	b. Deferred	2	--	--	--
	c. Total	13	13	14	15
2.	Deaths during year	--	--	--	--
3.	Change in status - deferred to retired	2	--	--	--
4.	Additions during year				
	a. Retired	--	1	1	4
	b. Deferred	--	--	--	--
	c. Total	--	1	1	4
5.	Number of inactive members as of December 31 (1.c - 2 + 4.c)	13	14	15	19

The eleven retired members as of January 1, 1979 received monthly benefits totalling $574. The nineteen retired members now receive monthly payments totalling $1,169.

The 19 retired members as of December 31, 1982 had ~~an~~ average attained age of 71.9. The fifteen retired on or after their normal retirement date, age 50 and 20 years of service, had an average retirement age of 56.0. Mr. McClure has been excluded from the average retirement age calculation so as not to distort the average. During the experience period the average retirement age is summarized as follows:

Year	Number of Retirees	Average Retirement Age
1979	0	--
1980	1	50.0
1981	1	50.0
1982	4	52.3

An analysis of the actual to expected experience (based on the mortality assumption set forth in the Appendix) produces the following results.

INACTIVE MEMBERS

1.	Actual deaths	0.00
2.	Expected deaths	3.59
3.	A/E	0.00

Recommendations

Although the mortality experience has fairly closely followed that expected, the mortality table, which is based on 1959-1961 census data, is not a current table. We have updated the mortality basis to a 1976 table effective January 1, 1983.

We feel that the actuarial assumptions with the mortality revision, in the aggregate, are appropriate for use with this plan.

* * * * * * * * * * * * * * * * * * *

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

Respectfully submitted,

THE WYATT COMPANY

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VAS-MCG/pak
April 11, 1983

Table I

LUVERNE FIREMEN'S RELIEF ASSOCIATION

Results of Actuarial Valuation as of January 1, 1983

		1/82 Benefit Study Assumptions	1/83 Revised Mortality Assumptions
1.	Accrued Liability		
	a. Active Members	77,705	86,840
	b. Retired Members	128,924	141,390
	c. Total	206,629	228,230
2.	Valuation Assets	101,951	101,951
3.	Unfunded Accrued Liability (1 - 2)	104,678	126,279
4.	Amortization Payment for Unfunded Accrued Liability	8,805	10,456
5.	Annual Normal Cost	9,327	9,992
6.	Annual Contribution Payable as of January 1, 1983 (4 + 5)	18,132	20,448
7.	Annual Contribution Payable as of December 31, 1983 (6 x 1.05)	19,039	21,470

Table 2(a)

LUVERNE FIREMEN'S RELIEF ASSOCIATION

Projected Benefits for Active Members as of January 1, 1983

Name	Birth Date	Entry Date	Projected Annual Benefit
C BLOEMENDAA	11/43	3/69	770.40
EFBOLL	8/53	5/75	792.00
L BROER	2/43	12/66	784.80
R BUSS	5/48	5/78	741.60
D CONNELL	8/40	9/67	756.00
F COOK	3/41	5/75	720.00
D DEUTSCH	5/60	10/81	792.00
E FOSS	7/54	12/82	748.80
N FRAKES	4/26	2/56	763.20
R FRAKES	6/58	10/81	784.80
M GONNERMAN	7/34	1/64	741.60
S GRUIS	3/47	9/78	727.20
G GUST	6/48	5/77	748.80
H HESS	11/43	2/70	763.20
G HOLMGREN	8/46	4/82	720.00
JJJOHANNSEN	5/43	1/73	741.60
E JOHNSON	10/48	8/78	741.60
K KESTER	11/47	5/78	734.40
W KETTERLING	4/50	12/78	748.80
M KURTZ	1/60	4/82	792.00
M LAMMERT	2/37	7/71	720.00
M LAMMERT	6/56	4/82	770.40
M LOPAU	8/43	2/71	756.00
R MCCLURE	7/46	6/78	727.20
D MCGUIRE	12/60	4/82	792.00
G MCGUIRE	5/37	1/58	792.00
C MENNING	5/45	8/78	720.00
V PEDERSON	4/29	1/67	720.00
M ROBERTS	10/45	2/70	777.60
B STOLTENBER	7/45	1/73	756.00
R SWENSON	1/57	5/78	792.00
J VANDERBERG	1/35	10/69	720.00
T VANENGELEN	12/37	6/63	770.40
S WYNIA	12/56	9/78	792.00

Table 2(b)

LUVERNE FIREMEN'S RELIEF ASSOCIATION

Monthly Benefits for Inactive Members as of January 1, 1983

NAME	TYPE	MONTHLY BENEFITS
R BAILEY	RETIRED	48.00
H BEUG	RETIRED	60.00
P BEUG	RETIRED	60.00
J BOLSEN	RETIRED	63.00
V CHRISTENSEN	RETIRED	60.00
V CORNISH	RETIRED	66.00
HADEUSCHLE	RETIRED	60.00
F LAPIC	RETIRED	60.00
VJLORENZEN	RETIRED	62.00
K LUETHJE	RETIRED	65.00
C MAXWELL	RETIRED	63.00
LAMCCLURE	RETIRED	66.00
JBMCROBERTS	RETIRED	60.00
A MOLLBERG	RETIRED	60.00
E OLSON	RETIRED	62.00
M SCHAIKOWSK	RETIRED	66.00
K SWENSON	RETIRED	60.00
HPVANROEKEL	RETIRED	66.00
E WOODLEY	RETIRED	62.00

Table 3

LUVERNE FIREMEN'S RELIEF ASSOCIATION

Summary of Current Plan Provisions

1.	Normal Retirement Benefit:	Monthly benefit of $60 plus 1% of $60 times years of service in excess of 20 and less than 30 payable on retirement after attainment of age 50 and completion of 20 years of service.
2.	Deferred Vested Benefit:	On termination after completion of 10 years of service, the monthly benefit determined in 1. multiplied by the vesting percentage is payable on attainment of age 50. The vesting percentage is 60% after 10 years of service, increasing 4% per year to 100% after 20 years.
3.	Disability Benefit:	A weekly benefit of $60 is payable if member is incapitated from active duty. Maximum payment of $600 per year.
4.	Medical Benefit:	Payment of medical benefits for illness or injury for active members up to $750 per year.
5.	Lump Sum Death Benefit:	$750 payable on the death of any active member.

Table 4

LUVERNE FIREMEN'S RELIEF ASSOCIATION

Actuarial Assumptions and Method

1.	Mortality:	The mortality rates used for the experience study are based on the United States Life Table, 1959-1961, White Males and White Females. Effective January 1, 1983 the mortality rates have been changed to the 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 service connected disability on a one year term cost basis. The table was loaded for the nature of the group.
4.	Medical:	The medical benefit was valued on a one year term basis using the experience of the group.
5.	Retirement Age:	Members are assumed to retire after attaining age 53 and completing 20 years of service.
6.	Interest Rate:	Five percent compounded annually.
7.	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.