CHANHASSEN FIREMEN'S RELIEF ASSOCIATION, INC.

Actuarial Valuation and Experience Analysis as of January 1, 1983

April 8, 1983

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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 Chanhassen Firemen's Relief Association, Inc. The study included the following:

- Determination of annual contribution for the current plan. - $15,822
- 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 31 active members included in the valuation. The members have an average attained age of 41.3 and an average entry age of 32.1. Table 2 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 is one inactive member entitled to benefits under the plan. He receives a disability benefit of $120 from the plan.

ASSETS

Mr. Fred Coulter provided us with a statement of the market value of the Special Fund as of January 1, 1983. Assets are valued at $242,045 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. Under the Chanhassen plan, assets exceed the liabilities of the plan so no amortization payment is required.

The normal cost then becomes the total 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 $6 per year of service (maximum 30 years) at normal retirement, age 50 and 20 years of service. A $ 75 lump sum benefit, deferred vested benefits and disability benefits are also provided.

Our last benefit study as of January 1, 1982 reported an annual contribution of $13,116 as of year end to fund the plan in accordance with the state requirements. As shown in column 1 based on the same actuarial assumptions, the annual contribution has increased to $14,088. The increase is due to the additional three members covered by the plan as of December 31, 1982.

An unfunded accrued liability of $4,658 was reported as of January 1, 1982. As shown in column 1, the unfunded accrued liability as of January 1, 1983 is ($35,761). This $40,419 swing is due principally to actuarial gains from investment performance during 1982 well in excess of our 5% assumption.

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 I the effect of this mortality assumption change is to increase the annual contribution by $1,734 to $15,822. The annual contribution of $15,822 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 ($62,231) as of January 1, 1979.

As of January 1, 1983 there is an unfunded accrued liability of ($11,866). The change of $50,365 is a result of the following:

1.	January 1, 1979 Unfunded Accrued Liability	$(62,231)
2.	Decrease due to:	
	a. Contributions 1979-1982	$ 20,482
	b. Experience gains 1979-1982	$ 29,234
	c. Total decrease	$ 49,716
3.	Increase due to:	
	a. Benefit increase to $6 on 12/79	$ 76,186
	b. Change in mortality assumption 1/83	$ 23,895
	c. Total increase	$100,081
4.	January 1, 1983 Unfunded Accrued Liability (1. - 2.c. + 3.c.)	$(11,866)

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 32 active members in the Association. As of December 31, 1982 that number had decreased by 1 to 31. The following table tracks the active membership during that time period.

		1979	1980	1981	1982
1.	Number of active members as of January 1	32	29	28	28
2.	Separation from active service				
	a. Retirements	--	--	--	--
	b. Deaths	--	--	--	--
	c. Terminations - Non-Vested	2	3	2	2
	d. Terminations - Vested	--	--	--	--
	e. Disabilities	1	--	--	--
	f. Total	3	3	2	2
3.	New entrants during year	--	2	2	5
4.	Number of active members as of December 31 (1 - 2.f + 3)	29	28	28	31

As of December 31, 1982 the average attained age for those 31 active members was 41.3 and the average entry age was 32.1. 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	2	30.0
1981	2	31.0
1982	5	32.6

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	0	0.00	0.00
2.	Deaths	0	.58	0.00
3.	Terminations	9	2.98	3.02
4.	Disabilities	1	1.17	.85

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 no members on the inactive rolls of the Association. On December 31, 1979 one member became disabled. He receives a monthly benefit of $120. There are no other members on the inactive rolls as of December 31, 1982.

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	.06
3.	A/E	0.00

Recommendations

Although the possibility for annual fluctuations in a group this size limits the statistical credibility of such a study, we feel the following trends should be noted:

1. 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.
2. Actual turnover experience has exceeded that predicted by application of the actuarial assumptions. Use of a turnover assumption which underestimates actual turnover experience introduces a degree of conservativeness or extra safety margin into the actuarial valuation.

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

Victoria A. Suchsland
Fellow, Society of Actuaries

Michael C. Gunvalson
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VAS-MCG/pak
April 8, 1983

Table I

CHANHASSEN FIREMEN'S RELIEF ASSOCIATION, INC.

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	191,452	213,834
	b. Disabled Members	14,832	16,345
	c. Total	206,284	230,179
2.	Valuation Assets	242,045	242,045
3.	Unfunded Accrued Liability (1 - 2)	(35,761)	(11,866)
4.	Amortization Payment for Unfunded Accrued Liability	0	0
5.	Annual Normal Cost	13,417	15,069
6.	Annual Contribution Payable as of January 1, 1983 (4 + 5)	13,417	15,069
7.	Annual Contribution Payable as of December 31, 1983 (6 x 1.05)	14,088	15,822

Table 2

CHANHASSEN FIREMEN'S RELIEF ASSOCIATION, INC.

Projected Benefits for Active Members as of January 1, 1983

Name		Birth Date	Entry Date	Projected Annual Benefit
AUSETH	D	07/50	05/82	1524.00
CONE	J	06/49	01/82	1470.00
COULTER	F	12/46	04/74	1848.00
DRESSLER	D	08/53	07/82	1734.00
EIDAM	G	11/46	06/82	1440.00
GREGORY	D	03/48	03/71	2160.00
HALVORSON	R	06/48	09/82	1440.00
HEDTKE	J	06/38	12/70	1476.00
JONES	M	08/38	01/74	1440.00
KAHL	R	11/25	05/66	1440.00
KELLY	T	10/43	12/78	1440.00
KERBER	A	08/35	07/68	1446.00
KERBER	M	11/52	10/74	2160.00
KREGER	J	10/34	05/66	1542.00
KURVERS	F	03/33	05/66	1440.00
LEACH	R	05/37	03/73	1440.00
LITTFIN	M	09/52	05/73	2160.00
MCALLISTER	E	08/24	05/66	1440.00
MCMAHON	J	04/41	12/78	1440.00
MEUWISSEN	H	07/34	05/66	1524.00
MEUWISSEN	R	02/29	05/66	1440.00
MOORE	R	04/50	12/78	1752.00
PEITZ	R	02/36	11/67	1530.00
RABENORT	R	06/49	10/80	1560.00
ROJINA	P	09/25	05/66	1440.00
SCHLENK	J	08/37	05/66	1746.00
SCHMIEG	D	06/47	10/68	2160.00
SKLUZACEK	A	03/30	05/66	1440.00
STAFFORD	D	06/45	10/77	1488.00
SVOBODA	R	06/56	03/81	2034.00
WING	R	03/44	03/81	1440.00

Table 3

CHANHASSEN FIREMEN'S RELIEF ASSOCIATION, INC.

Summary of Current Plan Provisions

1.	Normal Retirement Benefit:	Monthly benefit of $6 per month per year of service payable on retirement after attainment of age 50 and completion of 20 years of service. No credit granted for more than 30 years of service.
2.	Deferred Vested Benefit:	On termination after completion of 20 years of service, a deferred benefit is payable at age 50 equal to the accrued normal retirement benefit.
3.	Disability Benefit:	
	. Short Term:	On disability, a benefit of $5 per day is payable up to 120 days.
	. Long Term:	Benefit is $6.00 per month for each year of service at date of disability. Minimum benefit of $120 per month and maximum benefit of $180 per month.
4.	Lump Sum Death Benefit:	$75 payable on death of any active or inactive member.

Table 4

CHANHASSEN FIREMEN'S RELIEF ASSOCIATION, INC.

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 1947-1949 Weekly Indemnity Tabular Annual Claims Cost was used for valuing the short term disability benefit 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. The table was 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.