BLOOMINGTON FIRE DEPARTMENT RELIEF ASSOCIATION

Actuarial Valuation and Experience Analysis as of January 1, 1983

May 4, 1983

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BLOOMINGTON FIRE DEPARTMENT RELIEF ASSOCIATION

Actuarial Valuation and Experience Analysis as of January 1, 1983

PURPOSE AND SUMMARY

The purpose of this report is to present the results of our January 1, 1983 actuarial valuation and experience analysis of the Bloomington Fire Department Relief Association performed in accordance with the provisions of Chapter 356 of the Minnesota State Statutes. In summary, our valuation indicates a required contribution of $1,570,000 as of January 1, 1983. The contribution must be increased with interest, at the rate of 5% per annum until date of payment. If payment is made as late as December 31, 1983, a contribution of $1,648,500 is required. This contribution is in addition to estimated member contributions of $17,100 for 1983. The results of the valuation are discussed in detail in later sections of the report.

EMPLOYEE DATA

Based on data provided by the Association, there are 120 active members in the Association as of the valuation date. They have an average attained age of 37.7 and an average entry age of 27.7. Table 2(a) sets forth the prospective benefit each member may expect to receive if he remains in the Association to the normal retirement date assumed in the valuation, age 50 and completion of 20 years of service. These benefits assume 3½% future pay increases per year.

The reported data also indicates 31 retired members, 4 disabled members, 8 surviving spouses and 4 surviving children, receiving monthly benefits as of January 1, 1983. There are no terminated members entitled to receive benefits at age 50.

Table 2(b) sets forth a listing showing the benefit each inactive member is currently receiving. Table 2(c) sets forth a reconciliation of the active and inactive data since the last experience analysis of January 1, 1979.

Monthly benefits payable from the plan are based on the most recent three year average salary rates of the highest paid non-officer policeman in the City of Bloomington. Consequently benefits to all inactive members are increased each year, the most recent, January 1, 1983 benefit levels being determined as follows:

1.	Average Monthly Salary		
	(a)	January 1, 1981	2,127
	(b)	January 1, 1982	2,318
	(c)	January 1, 1983	2,435
	(d)	Average	2,293
2.	Monthly Benefits		
	(a)	Retirees (1(d) x 1/3)	764
	(b)	Surviving Spouses (1(d) x 1/4)	573

For cost determinations, future benefits are assumed to increase in accordance with the assumed rate of salary increase, 3½% per year.

ASSETS OF THE SPECIAL FUND

A statement of the assets of the Special Fund as of December 31, 1982 prepared by George Hayden was made available to us by the Association. Our valuation reflects the reported market value of the Special Fund as of December 31, 1982 of $11,248,966 less salaries and pensions of $33,023 which were payable as of December 31, 1982 for a total of $11,215,943 used as valuation assets.

PLAN PROVISIONS

Table 3 is a summary of the principal provisions of the plan. Although the principal provisions of the plan have not changed since the last valuation, benefits to retired members have increased 17.72% from $649 to $764 per month as a result of increases in the pay rate of the highest paid non-officer Bloomington policeman.

ACTUARIAL ASSUMPTIONS

Chapter 356 of the Minnesota Statutes requires that actuarial valuations of public plans be based on an assumed interest rate of 5% per annum and an assumed rate of annual salary increase of 3½% per annum. Other assumptions pertaining to the rates of mortality, turnover, retirement, etc. are left to the discretion of the actuary. With the exception of the mortality assumption, all of the valuation assumptions are the same as those used in the January 1, 1981 valuation of the plan.

The mortality assumption used in the last valuation was the United States Life Table 1959-1961. 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 follows:

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

Table 4 is a summary of all of the actuarial assumptions.

ACTUARIAL METHOD

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 percentage of pay which would fund all benefits if that percentage of pay 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 normal cost is reduced by the members' contribution for the current year.

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 total accrued liability is compared to the market value of the Special Fund to determine the status of the plan. Any difference, known as the unfunded accrued liability is to be funded with a payment over a number of years specified by law, known as the amortization payment. The unfunded accrued liability of the current plan must be paid over the 30 year period beginning on January 1, 1981 and ending on December 31, 2010. Any changes in the unfunded accrued liability due to changes in benefits or actuarial assumptions must be paid over a new 30 year period.

The total annual contribution due as of the valuation date is the sum of the normal cost, the amortization payment and a $8,500 provision for administrative expenses. The $8,500 provision for expected expenses is necessary because all expenses are paid from the Special Fund. The $8,500 amount is estimated from actual expenses paid from the Special Fund during 1982. 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 must be multiplied by 1.05.

VALUATION RESULTS

Table I sets forth the principal results of our valuation. The first column sets forth the results on the same actuarial basis as used for the January 1, 1981 valuation. A total contribution of $1,395,900 is required on this basis. A contribution of $1,284,600 was reported in the January 1, 1981 valuation. This contribution was expected to increase to $1,342,000 as of January 1, 1983 because the normal cost is expected to increase 3½% each year in accordance with our valuation method.

The reason for the additional increase of $53,900 in the total cost is the increase in the normal cost because of the increases in the Bloomington policeman's pay of 14.48% over the two year period versus our assumption of a 7.12% (1.035 x 1.035) increase over the period. The amortization payment portion of the contribution did not increase because favorable investment experience offset the increase in the unfunded accrued liability because of the salary increases.

The second column of Table 2 sets forth the annual contribution on the new mortality basis previously discussed. This new basis increases the annual contribution by $252,600 from $1,395,900 to $1,648,500.

The annual contribution is the sum of the normal cost, the amortization payment, and administrative expenses. The normal cost is computed to be a level percentage of pay assuming each fireman earns the same as a Bloomington policeman, $29,220 per year. Under this assumption, there is a total covered payroll of $3,506,400 (120 x $29,220) and the net normal cost of $938,500 is 26.77% of payroll.

This valuation is also to be used for the 1984 contribution requirements. The 1984 contribution consists of the 1983 normal cost increased 3.5% for assumed pay increases and offset by the member's contributions plus the same amortization payment and administrative expense charge. Thus, the 1984 requirements may be summarized as follows:

1.	Total normal cost ($955,600 x 1.035)	989,000
2.	Member contributions	17,100
3.	Net normal cost (1 - 2)	971,900
4.	Amortization payment	623,000
5.	Administrative expenses	8,500
6.	Total contribution 1/1/84 (3 + 4 + 5)	1,603,400
7.	Total contribution 12/31/84 (6 x 1.05)	1,683,600

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, 1981 there was an unfunded accrued liability of $7,511,500. As of January 1, 1983 there is an unfunded accrued liability of $9,827,300. This difference of $2,315,800 is accountable as follows:

1.	Unfunded accrued liability as of January 1, 1981		7,511,500
2.	Decrease due to:		
	(a)	Contributions 1981-1982	296,400
	(b)	Investment earnings in excess of those assumed	1,587,800
	(c)	Total decrease	1,884,200
3.	Increase due to:		
	(a)	Salary increases in excess of those assumed	1,375,300
	(b)	Other miscellaneous actuarial losses	198,100
	(c)	Change in mortality assumption	2,626,600
	(d)	Total increase	4,200,000
4.	Unfunded accrued liability as of January 1, 1983 (1 - 2.c + 3.d)		9,827,300

Gains from investment earnings nearly offset the salary and miscellaneous actuarial losses. Investment earnings were 5.14% for 1981 and 23.23% for 1982 versus our assumption of 5%. Salary increases were 8.98% for 1981 and 5.05% for 1982 versus our assumption of 3.5%.

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 mandated 5% interest assumption and 3½% salary increase 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. Table 2(c) tracks the active and inactive membership over the period January 1, 1979 - December 31, 1982.

Active Members

As of January 1, 1979 there were 125 active members in the Association. As of December 31, 1982 that number had decreased to 120. As of December 31, 1982 the average attained age for those 120 active members was 37.7 and the average entry age was 27.7. During the period the new entrants had average entry ages that may be summarized as follows:

NEW ENTRANTS

Year	Number	Average Entry Age
1979	9	26.8
1980	10	27.5
1981	9	28.7
1982	6	29.5

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	4.00	1.50
2.	Deaths	1	1.57	.64
3.	Terminations	29	9.41	3.08
4.	Disabilities	3	2.81	1.07

Table 4 is a summary of the actuarial assumptions used as the basis for the expected number of separations.

Inactive Members

As of January 1, 1979 there were 28 members on the inactive rolls of the Association. By December 31, 1982 that number had increased by 19 to 47.

The inactive membership as of January 1, 1979 consisted of:

	Number	Total Monthly Benefit
Retired	20	$10,240
Surviving Spouses	4	1,536
Disabled	3	1,536
Surviving Children	0	0
Deferred Vested	1	512

The inactive membership as of January 1, 1983 consisted of:

	Number	Total Monthly Benefit
Retired	31	$23,684
Surviving Spouses	8	4,584
Disabled	4	3,056
Surviving Children	4	191
Deferred Vested	0	0

Our records have the date of retirement only for those terminating on or after January 1, 1979. During the experience period the average retirement age is summarized as follows:

Year	Number of Retirees	Average Retirement Age
1979	2	52.4
1980	2	51.6
1981	1	53.3
1982	1	51.3
Total	6	52.1

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	3.00
2.	Expected deaths	2.94
3.	A/E	1.02

Surviving children are excluded from the determination of expected deaths.

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 you have any questions, please let us know. We would be happy to meet with you to discuss further the results of our valuation.

Respectfully submitted,

THE WYATT COMPANY

Victoria A. Suchsland

Victoria A. Suchsland
Fellow, Society of Actuaries

VAS/pak
Minneapolis/St. Paul
May 4, 1983

Table I

BLOOMINGTON FIRE DEPARTMENT RELIEF ASSOCIATION

Results of Actuarial Valuation as of January 1, 1983

A. BASIC VALUATION RESULTS

	1/81 Assumptions	1/83 Assumptions
1. Accrued liability		
a. Active members	11,100,700	12,675,400
b. Inactive members		
i. Retired members	5,474,400	6,267,800
ii. Disabled members	980,200	1,081,900
iii. Surviving spouse	830,500	987,300
iv. Surviving children	30,800	30,800
v. Terminated members entitled to deferred benefits	0	0
vi. Total	7,315,900	8,367,800
c. Total accrued liability	18,416,600	21,043,200
2. Market value of special fund as of January 1, 1983	11,215,900	11,215,900
3. Unfunded accrued liability (1 - 2)	7,200,700	9,827,300
4. Annual normal cost		
a. Total	877,700	955,600
b. Estimated member contributions	17,100	17,100
c. Net normal cost	860,600	938,500

B. ANNUAL CONTRIBUTION

	1/81 Assumptions	1/83 Assumptions
1. Payable as of January 1, 1983		
a. Normal cost	860,600	938,500
b. Amortization payment for unfunded accrued liability	460,300	623,000
c. Administrative expenses	8,500	8,500
d. Total	1,329,400	1,570,000
2. Payable as of December 31, 1982 (1.d x 1.05)	1,395,900	1,648,500

Table 2(a)

BLOOMINGTON FIRE DEPARTMENT RELIEF ASSOCIATION

Projected Benefits for Active Members as of January 1, 1983

NAME		BIRTH DATE	ENTRY DATE	ANNUAL PROJECTED BENEFIT
W	AHMAN	09/52	05/73	18733
B	ANDERSON	06/45	04/70	13280
L	ANDERSON	05/41	10/69	12397
L	ANDERSON	02/48	11/77	15773
G	APP	03/41	05/63	12397
J	BARNES	01/53	09/79	18733
L	BERGQUIST	11/42	11/77	15239
S	BLODGETTS	10/43	07/73	15773
R	BOESER	05/38	09/67	11182
B	BONDURANT	12/47	03/81	17488
R	BORST	06/42	04/73	13280
J	BRENING	07/36	11/61	10438
D	CARLSON	05/42	11/66	12631
G	CHAPLIN	06/42	09/66	12831
E	CHRISTIAN	05/39	12/64	11573
J	COLEHOUR	11/48	03/79	16325
D	CRUIKSHANK	03/44	11/72	13745
D	DODDS	04/34	10/63	11182
G	DUGAL	01/48	08/79	16325
B	DUNHAM	03/55	07/80	20067
J	DVORAK	10/48	11/73	14724
D	ELFTMANN	03/36	10/67	10804
D	ELLINGS	03/59	03/82	23028
D	ENGBERG	07/40	02/69	11978
W	FABER	09/32	05/66	10438
R	FALK	09/46	02/71	14724
I	FINN	08/37	01/66	10804
J	FINNEGAN	10/45	05/79	16325
N	FISCHER	10/42	04/66	12631
M	FREEMARK	11/35	10/70	11978
F	FUECKER	10/41	05/68	12397
R	GABRIEL	06/41	01/64	12397
J	GALE	09/3[illegible]	11/75	18733
J	GASTERLAND	06/4[illegible]	05/63	14226
C	GERDES	12/4[illegible]	06/74	16325
G	GERHARDT	06/42	11/75	14226
J	GJEVRE	10/31	02/66	10438
C	GUGGENBERG	10/49	05/82	18100
T	GUSTAFSON	10/4[illegible]	12/75	15773

Table 2(a)
(Con't.)

BLOOMINGTON FIRE DEPARTMENT
RELIEF ASSOCIATION

Projected Benefits for Active Members as of January 1, 1983

NAME		BIRTH DATE	ENTRY DATE	ANNUAL PROJECTED BENEFIT
C	GUTH	09/55	11/80	20067
G	HAEG	08/54	04/75	19389
J	HAEG	01/36	12/66	10804
D	HANSON	08/47	02/73	15239
J	HARRINGER	01/44	10/69	13745
L	HAUGAN	08/52	03/77	18100
G	HAYDEN	09/45	03/66	14226
K	HECHT	10/42	10/74	13745
W	HECHT	12/52	10/71	18733
D	HEDIN	10/54	12/74	19389
P	HEGER	10/53	12/74	18733
P	HUBER	03/42	04/70	12831
A	HUNDT	05/57	05/81	21497
M	HURLEY	03/52	02/80	18100
S	ISAACSON	01/56	09/81	20770
W	JEFFERS	11/47	04/81	17488
G	JESSEN	05/46	03/75	15773
B	JOHNSON	11/59	06/81	23028
R	JOHNSON	07/51	05/77	17488
J	JUDY	10/46	04/81	17488
K	KAISER	06/54	03/80	19389
B	KALINA	10/49	01/75	16325
W	KALINA	02/43	01/75	14226
B	KELLER	01/58	06/82	22249
P	KELLER	05/44	02/76	14724
W	KETTLEKAMP	02/36	01/70	11978
R	KIMBLER	07/[illegible]	03/66	11182
G	KRISTJANSO	01/41	08/70	12397
H	LANENBERG	07/36	09/67	10804
S	LIEDER	10/51	10/80	17488
W	LEMBECK	10/41	04/71	12397
M	LOISELLE	08/42	10/71	15773
S	MALONEY	01/60	10/81	23834
T	MANSKE	07/43	11/70	13280
D	MARTINSON	09/34	11/62	11182
D	MATTSON	12/39	01/66	11978
J	MCWILLIAMS	03/39	03/63	11573
G	MELONY	06/45	11/72	14226
G	MILLER	01/33	05/63	9172
S	MINION	06/29	02/67	11573
D	NAPIER	08/41	03/67	12397

Table 2(a)
(Con't.)

BLOOMINGTON FIRE DEPARTMENT RELIEF ASSOCIATION

Projected Benefits for Active Members as of January 1, 1983

NAME	BIRTH DATE	ENTRY DATE	ANNUAL PROJECTED BENEFIT
D NICHOLS	03/39	08/57	11573
W NOLEEN	06/37	04/59	10804
J NORDSKOG	01/57	09/73	21497
R OLSON	07/54	01/79	19339
K PAHL	06/48	08/68	15773
D PETERSON	03/40	02/68	11978
R PETERSON	03/43	08/73	14226
G PETERSON	08/36	02/61	10438
T PRESSLER	09/35	09/70	11978
L QUADE	03/43	05/77	15239
S REINHARDT	12/43	03/79	16325
K ROBERTS	03/47	01/72	15239
R ROEHL	04/52	09/78	18100
M ROUEN	12/41	09/72	12831
R SCHOENBORN	07/45	02/71	12397
K SCHUMAN	08/55	07/75	20067
K SCHUMAN	06/50	09/81	17488
U SEAL	10/57	06/76	21497
G SELINSKY	09/41	08/72	12831
D SHEFLET	02/42	02/69	12831
D SMITH	04/47	03/61	17488
R SMITH	05/52	06/78	18100
W SNYDER	04/33	01/70	11978
C STAINER	10/55	01/75	20067
M STERN	01/43	05/72	13280
B SVEUM	01/52	06/73	18100
E SWEIVEN	09/35	09/70	11978
J THOMA	05/43	04/65	11978
R THOMA	03/37	03/59	10804
W THOMMEN	12/62	08/81	26425
D TRAVERS	10/39	10/67	11573
L TSCHIMPERL	04/37	01/67	10804
M VOTER	01/44	02/71	13745
D WALKER	12/45	05/74	15239
E WENSHAU	09/37	09/71	12397
C WILLIAMS	03/43	04/74	13745
C WILSON	06/37	01/66	10804
G WILSON	11/42	04/55	12831
L WISE	03/36	06/63	11182
R WOTHERSPOON	04/49	03/82	18100

Table 2(b)

BLOOMINGTON FIRE DEPARTMENT RELIEF ASSOCIATION

Monthly Benefits for Inactive Members as of January 1, 1983

NAME	TYPE	MONTHLY BENEFITS
B ANDERSON	RETIRED	764
R ANDERSON	RETIRED	764
L CHADWICK	WIDOW	573
C CHRISTENSEN	WIDOW	573
D CIARDELLI	RETIRED	764
R CLEMENSEN	RETIRED	764
G DOUSETTE	RETIRED	764
J ELLRICH	WIDOW	573
R ELM	RETIRED	764
J ENGBERG	RETIRED	764
R ENGLAND	RETIRED	764
A FRIENDSHUH	RETIRED	764
A FLRULI	RETIRED	764
N GABRIEL	RETIRED	764
P GOETTSCHE	WIDOW	573
P GOETTSCHE	CHILD	191
W HAEG	RETIRED	764
P HALL	RETIRED	764
C HECHT	RETIRED	764
C HEDIN	RETIRED	764
F HEDIN	RETIRED	764
K HEGER	RETIRED	764
B HOAGLUND	WIDOW	573
R JUSTEN	DISABLED	764
M KAISER	RETIRED	764
E KEITH	RETIRED	764
C KELLEY	RETIRED	764
O LUND	WIDOW	573
R MACALLISTER	DISABLED	764
R MCDONALD	RETIRED	764
R MCKENZIE	RETIRED	764
D OLSON	DISABLED	764
M PAHL	RETIRED	764
E PETERSEN	RETIRED	764
D PETERSON	RETIRED	764
R PUEGER	RETIRED	764
J SAVAGE	RETIRED	764
R SAVAGE	RETIRED	764
V SEGERSTROM	RETIRED	764
B SMITH	RETIRED	764
R SWANSON	DISABLED	764
THOMA	WIDOW	573
A WELTER	RETIRED	764
M ZOCHERT	WIDOW	573

Table 2(c)

BLOOMINGTON FIRE DEPARTMENT RELIEF ASSOCIATION

Reconciliation of Active and Inactive Membership from January 1, 1979 to January 1, 1983

			1979	1980	1981	1982
A.	ACTIVE MEMBERS					
	1.	January 1	125	122	120	119
	2.	New Entrants	9	10	9	6
	3.	Separations				
		(a) Vested terminations	4	1	1	0
		(b) Non-vested terminations	6	6	8	3
		(c) Disabilities	0	2	0	1
		(d) Deaths	0	1	0	0
		(e) Retirements	2	2	1	1
		(f) Total separations	12	12	10	5
	4.	December 31	122	120	119	120
B.	RETIRED MEMBERS					
	1.	January 1	20	22	23	29
	2.	New Retirees	2	2	1	1
	3.	Transfers from deferred vested status	1	0	5	1
	4.	Deaths	1	1	0	0
	5.	December 31	22	23	29	31
C.	SURVIVING SPOUSES					
	1.	January 1	4	6	8	8
	2.	New Beneficiaries	2	2	0	0
	3.	Deaths	0	0	0	0
	4.	December 31	6	8	8	8

D. DISABLED MEMBERS

		1979	1980	1981	1982
1.	January 1	3	2	4	4
2.	New Disabilities	0	2	0	1
3.	Deaths	1	0	0	0
4.	Recoveries	0	0	0	1
5.	December 31	2	4	4	4

E. SURVIVING CHILDREN

		1979	1980	1981	1982
1.	January 1	0	0	5	5
2.	New Recipients	0	5	0	0
3.	Benefits Expired	0	0	0	1
4.	December 31	0	5	5	4

F. DEFERRED VESTED MEMBERS

		1979	1980	1981	1982
1.	January 1	1	4	5	1
2.	New Vested Terminations	4	1	1	0
3.	Transferred to Retiree Status	1	0	5	1
4.	December 31	4	5	1	0

Table 3

BLOOMINGTON FIRE DEPARTMENT
RELIEF ASSOCIATION

Summary of Current Plan Provisions

1.	Basic Benefit:	One-third of the final average salary of a policeman of the highest grade, not including officers of the City of Bloomington. Final average earnings is the average of the monthly pay for such a policeman over the past three years. All benefits under the plan increase each time a pay increase is granted to the Bloomington Police Department.
2.	Normal Retirement Benefit:	Basic benefit is payable at retirement after attainment of age 50 and completion of 20 years of service.
3.	Deferred Vested Benefit:	On termination after completion of 20 years of service, the basic benefit is payable after attainment of age 50.
4.	Disability Benefit:	The basic benefit is payable while the member remains disabled. After attainment of age 50, a normal retirement benefit is payable. Disability is defined as inability to perform the duties of a fireman.
5.	Spouse's Benefit:	On the death of any active or inactive member, 75% of the basic benefit is payable to the surviving spouse for her remaining lifetime. Benefits cease on remarriage of the surviving spouse.
6.	Children's Benefit:	On the death of an active member, 12% of the the basic benefit is payable to each surviving child until attainment of age 18. Maximum family benefit is 100% of the basic benefit.
7.	Lump Sum Death Benefit:	On the death of any active or inactive member \$500 is payable.
8.	Membership Dues:	Each member contributes \$144.00 per year payable semi-annually on January 1 and July 1.

Table 4

BLOOMINGTON FIRE DEPARTMENT RELIEF ASSOCIATION

Actuarial Method and Assumptions

1.	Interest Rate:	5% per annum.
2.	Mortality:	The mortality rates used 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. Zero mortality rates are assumed prior to age 20. The table is used for all rates of mortality.
3.	Withdrawal:	The rate of withdrawal is .030 at age 20 decreasing uniformly to zero at age 50 with no withdrawal after that age.
4.	Disability:	The Railroad Retirement Board 12th Valuation rates loaded for the nature of the group.
5.	Retirement Age:	Effective January 1, 1981 members are assumed to retire after attaining age 50 and completing 20 years of service. A retirement age of 53 and 20 was used for the experience study for the period January 1, 1979 - December 31, 1980.
6.	Salary Scale:	3½% per annum.
7.	Valuation Assets:	Market value.
8.	Funding Method:	The entry age normal cost method has been used with the normal cost determined as a level percentage of pay each year from the date of joining the Association to the assumed retirement age. Each fireman is assumed to earn the same as a Bloomington policeman.