UNIVERSITY OF MINNESOTA POLICE DEPARTMENT RETIREMENT PLAN

Actuarial Valuation as of June 30, 1977

October 14, 1977

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UNIVERSITY OF MINNESOTA POLICE DEPARTMENT
RETIREMENT PLAN

Actuarial Valuation as of June 30, 1977

PURPOSE AND SUMMARY

The purpose of this report is to set forth the results of our actuarial valuation of the University of Minnesota Police Department Retirement Plan as of June 30, 1977 in order to establish the sufficiency of indicated support rates for the ensuing 12-month period.

In summary, our valuation reveals that an employer support rate of 20.38% would be indicated for the year commencing July 1, 1977. In this regard, it should be noted that the formal plan document calls for a support rate (net of employee contributions) of 21.20% thus indicating actuarial sufficiency for the period evaluated herein.

The valuation has been performed in accordance with those applicable provisions of Chapter 356 of the Minnesota Statutes (including 1975 revisions).

EMPLOYEE DATA

We received complete data covering 72 active participants, 3 service retirees, 3 surviving spouses, and 1 surviving child. The corresponding numbers last year were 72, 3, 2 and 1 respectively. The data is summarized in Table 3.

The top step of the Police Officers' monthly salary range utilized for purposes of this valuation is $1,400. This would compare to $1,317 used in last year's valuation. Since prospective normal retirement benefits are based on "top" salary rates, such increases lead to increases in prospective pensions - the effect of which not only produces an increase in annual cost provisions, but in the unfunded accrued liability as well.

VALUATION OF ASSETS

A financial report for the year ended June 30, 1977 was made available to us, from which we determined fund assets for actuarial valuation purposes. This financial report is set forth in Table 2.

PLAN VALUED

Table 4 sets forth a brief summary of the main features of the Police Department Retirement Plan.

ACTUARIAL ASSUMPTIONS AND METHODS

The actuarial assumptions and methods employed in this valuation are outlined in Table 5 of this report. These assumptions and methods are identical to those used in last year's valuation and conform to those provisions of Chapter 356 of Minnesota Statutes.

Costs of the plan have been computed according to the entry-age-normal cost method (as prescribed by Statutes). Under this method, the normal cost is determined as a level percentage of salary which would be required to be paid from each member's date of employment to retirement in order to provide the benefits under the plan. The accrued liability under the method is equal to the present value of all benefits payable under the plan less the present value of future normal costs calculated in accordance with the actuarial cost method. The unfunded accrued liability is equal to the excess of the accrued liability over the applicable assets of the fund as of the valuation date.

As set forth in item 9 of Table 5, the entry-age-normal cost method has been utilized for the valuation of benefits payable from the plan other than pre-retirement survivor's benefits and disability benefits. These two categories of benefits have been evaluated on a one-year term cost basis, following the method used in prior years.

The Statutes call for annual normal cost (under the entry-age-normal cost method) to be expressed as a level percentage of future payroll of active participants as of the date of the valuation. The Statutes also call for the computation of the Additional Rate of Support as is required to amortize unfunded accrued liabilities by the end of the fiscal year occurring in 1997. Thus, to maintain consistency, rather than compute the called for amortization of the unfunded accrued liability on a level dollar basis (the method used before 1976), we determined such as a level percentage of active participant covered payroll taking into account future projected increases (in accordance with the salary scale assumption utilized).

It should be noted that the "salary scale" assumption outlined in item 6 of Table 5 basically allows only for anticipated future salary increases attributable to promotions, and does not anticipate future general salary increases of an inflationary nature. Since plan benefits are related almost entirely to final four year average compensation, such general salary increases, if they occur, will produce proportional increases in that part of each participant's pension which is attributable to his past service. Unless the value of the fund produces a yield sufficient to compensate for this, in addition to the 5% actuarial requirement (as set forth in item 5 of Table 5), an upper trend in costs even when expressed as a percentage of the increased payroll will result.

VALUATION RESULTS

The results of our valuation are set forth in Table 1. Section A of the table sets forth basic data items relative to active and retired (including survivors) participants.

Section B sets forth the determination of the unfunded accrued liability as of June 30, 1977, amounting to $1,768,700.

In Section C of Table 1, we have set forth the determination of the annual support rate indicated for the ensuing 12-month period, amount to $240,000 or 20.38% of active covered payroll. The plan calls for an employer support rate of 21.2% of covered payroll; thus, for the covered period, the plan would appear to be in actuarial balance.

COMPARISON OF 1976 AND 1977 VALUATION RESULTS

In Table 6, we set forth a comparison of the principal values underlying the 1976 and 1977 valuations.

Item 5 of the table sets forth the respective unfunded accrued liabilities which have decreased from $1,819,700 to $1,768,700. Offsetting losses atrributable to the increase in "top step" salary rates experienced, over the assumed increases were gains from (i) investment earnings in excess of the 5% assumed rate, and (ii) mortality gain experienced in the retiree group and (iii) continued delayment of retirement for active participants over age 55.

* * * * * * * * * * *

If, in connection with this valuation of the plan, any further investigations are indicated, we will be happy to proceed as directed.

Respectfully submitted,

THE WYATT COMPANY

Allan J. Grosh, F.S.A.
Member, American Academy of Actuaries

Kent P. Howe, A.S.A.
Member, American Academy of Actuaries

Minneapolis, St. Paul
October 14, 1977

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Table 1

UNIVERSITY OF MINNESOTA
POLICE DEPARTMENT RETIREMENT PLAN

Actuarial Valuation as of June 30, 1977
(Valuation determinations rounded to nearest $100)

A. BASIC DATA		
1. Active participants		
(a) Number		72
(b) Average prospective annual pension 1/		$ 13,700
(c) Current covered payroll		$ 178,952
2. Retirees, survivors		
(a) Number of service retirements and survivors		7
(b) Average annual benefit being paid		$ 3,347
B. DETERMINATION OF JUNE 30, 1977 UNFUNDED ACCRUED LIABILITY		
1. Accrued liability as of June 30, 1977		
(a) Service retirements		$ 192,700
(b) Survivors		$ 114,900
(c) Active participants (including refund feature)		$3,338,400
(d) Total		$3,646,000
2. Applicable assets per Table 2		$1,877,300
3. Unfunded accrued liability [1.(d) less (2)]		$1,768,700

C. DETERMINATION OF ANNUAL SUPPORT RATE	Dollar Amount	Percent Of Covered Payroll
1. Normal cost for service retirement, post retirement survivors benefits and employee contribution refunds	$214,800	18.22%
2. Annual expense provision 4/	7,200	.61
3. Term cost of pre-retirement survivors benefits	11,900	1.01
4. Term cost of disability benefits	13,800	1.17
5. Amortization of unfunded accrued liability by July 1, 1997 2/	101,000	8.57
6. Total indicated annual support rate	348,700	29.58
7. Employee contribution rate	108,500	9.20
8. Net employer support rate [(6) less (7)] 3/	240,200	20.38

1/ In accordance with salary scale assumptions in Table 5.
2/ Amortization as a level % of increasing covered payroll.
3/ Plan calls for Employer support rates of 21.2% of covered payroll.
4/ ~~2% of total contribution [.02 times 30.4%].~~

THE Wyatt COMPANY

Table 2

UNIVERSITY OF MINNESOTA
POLICE DEPARTMENT RETIREMENT PLAN

Financial Report for Year Ended June 30, 1977

Total Value of plan as of June 30, 1976		$1,451,034.81
Contributions		
Employees	$108,542.18	
Employer	242,858.33	
Total		$ 351,400.51
Withdrawals		
Annuity Payments -	$ 16,763.46	
Survivor Payments -	7,008.11	
Surrenders -	7,232.78	
Total Withdrawals		$ 31,004.35
Expenses		$ 7,028.00
Interested Credited		
July 1, 1976 through June 30, 1977		$ 112,916.56
Total Value of plan as of June 30, 1977		$1,877,319.53

NOTE: Value as of June 30, 1976 does not reflect June 30, 1976 employee contributions of $4,246.20. Value as of June 30, 1977 includes June 30, 1977 employee contributions.

Table 3

UNIVERSITY OF MINNESOTA
POLICE DEPARTMENT RETIREMENT PLAN

Distribution of Participants as of June 30, 1977 and Changes During Year Ending on June 30, 1977

A. ACTIVE PARTICIPANTS

Age Group Last Birthday	Male	Female	Total	Percentage Distribution	Covered Payroll
20 - 24	2	-	2	2.78%	$ 28,440
25 - 29	8	2	10	13.89%	152,148
30 - 34	20	1	21	29.17%	344,436
35 - 39	9	1	10	13.89%	166,728
40 - 44	5	-	5	6.94%	84,000
45 - 49	8	-	8	11.11%	134,400
50 - 54	6	-	6	8.33%	100,800
55 - 59	10	-	10	13.89%	168,000
Total	68	4	72	100.00%	$1,178,952
Average Attained Age	40.19	29.75	39.61		
Average Entry Age	27.79	27.25	27.76		

B. ANNUITANTS

Type		Number	Annual Benefit Being Paid
1.	Service retirements	3	$15,237
2.	Surviving spouses	3	7,387
3.	Surviving children	1	810
4.	Total	~~5~~ 7	$23,434

C. RECONCILIATION

		Number
1.	Active members on June 30, 1976	72
2.	Decrements during year	
	(a) Service retirements (since deceased)	1
	(b) Deaths	-
	(c) Termination other than by death and retirement	2
	(d) Total	3
3.	New entrants	3
4.	Active participants on June 30, 1977	72

Table 4

UNIVERSITY OF MINNESOTA
POLICE DEPARTMENT RETIREMENT PLAN

Summary of Principal Provisions of Plan

1.	Eligibility:	Members of the University Policy Department who hold eligible positions designated by Regents are immediately eligible to participate.
2.	Contributions:	Employees contribute 9.2% of the lesser of actual salary or top step police officers monthly salary range. Employer contributes 21.2% of the salary on which employee contribution is based.
3.	Average Salary:	Average salary of top step police officers during 48-month period immediately preceding date of retirement, death, termination of active service, or onset of disability.
4.	Service:	Continuous full time employment in eligible position prior to age 60. Broken periods counted provided employee has not withdrawn his own contributions. Those employed on January 1, 1973 and unable to complete 20 years of service prior to age 60 will be credited with 20 years upon attainment of age 60.
5.	Normal and Deferred Service Pension:	Upon retirement on or after the first day of month next following or coinciding with 55th birthday (but in no event later than first day of month following 60th birthday), employee entitled to receive a benefit of 2% of average salary for each year of service subject to a maximum of 50% (i.e. 25 years).
6.	Vesting:	Upon termination with 20 or more years of service, employee eligible to receive as early as age 55 a benefit equal to 2% of average salary for each year of service (maximum 50%) and shall be deemed a deferred pensioner. Survivor benefits payable upon death prior to commencement of deferred pension are set forth in item 8.

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Upon termination with fewer than 20 years of service, deferred benefit is determined solely on the basis of employee contributions plus interest. Upon termination with fewer than 10 years of service, employee may withdraw his own accumulated contributions with interest, in which case he would forfeit right to a deferred benefit. In the event of death prior to receipt of benefits for those who terminated with fewer than 20 years of service, accrued values are payable.

7. Disability Pension: Upon permanent disability from causes related to his duties, employee is eligible to receive a benefit of 40% of average salary. If the disablement results from causes not related to his duties, employee is eligible for a benefit based on average salary as follows:

Years of Service	% of Average Salary
Less than 5	0
5 but less than 10	15%
10 but less than 20	40%
20 or more	See item 6.

8. Survivor Benefits: Upon the death of a service pensioner, disability pensioner, deferred pensioner (pre- and post-retirement) or an employee in active service, survivor benefits payable as follows:

Surviving spouse: 22½% of average salary payable until death or remarriage.

Each child: 7½% of average salary payable for life.

Maximum Family Benefit: 40% of average salary.

9. Funding Vehicle: IPG contract underwritten by Minnesota Mutual Life Insurance Company.

Table 5

UNIVERSITY OF MINNESOTA
POLICE DEPARTMENT RETIREMENT PLAN

Summary of Actuarial Assumptions and Methods

1.	Pre-retirement mortality disability and turnover:	In accordance with Crocker Sarason unadjusted T-1 Table.
2.	Post-retirement annuitant mortality and pre-retirement survivors benefit:	In accordance with Progressive Annuity Mortality Table.
3.	Disability:	Progressive Annuity Mortality Table used for annuitant mortality. Disability decrements determined in accordance with following sample rates:

Age	Rate
20	.00040
25	.00060
30	.00080
35	.00110
40	.00180
45	.00290
50	.00501

Cause related and non-cause related disabilities assumed to occur equally.

4.	Expenses:	2% of total stipulated contribution.
5.	Interest rate:	5% per annum.
6.	Salary scale:	3½% per annum.
7.	Assumed retirement age:	Age 55, or in one year if over age 55, but not later than age 60.
8.	Surviving spouse/children:	Two qualified children assumed in average family of surviving spouse.
9.	Actuarial cost method:	Individual entry-age-normal cost method developing costs as a % of covered payroll. One year term basis for pre-retirement survivors and disability benefits.
10.	Amortization of unfunded accrued liability:	As a % of increasing payroll to July 1, 1997.

Table 6

UNIVERSITY OF MINNESOTA
POLICE DEPARTMENT RETIREMENT PLAN

Comparison of 1976 and 1977 Valuation Results

		1976	1977
1.	Active Participants		
	(a) Number	72	72
	(b) Covered payroll	1,110,540	1,178,952
2.	Retirees, Survivors		
	(a) Number	6	7
	(b) Average annual benefit being paid	3,566	3,347
3.	Accrued Liability		
	(a) Service retirements	199,500	192,700
	(b) Survivors	88,100	114,900
	(c) Active participants	2,987,400	3,338,400
	(d) Total	3,275,000	3,646,000
4.	Valuation Assets	1,455,300	1,877,300
5.	Unfunded Accrued Liability	1,819,700	1,768,700
6.	Annual Normal Cost (Including One Year Term Costs and Expense Provision)		
	(a) Dollar amount	232,900	247,700
	(b) % of covered payroll	20.97%	21.01%
7.	Amortization of Unfunded Accrued Liability		
	(a) Dollar amount	99,700	101,000
	(b) % of covered payroll	8.98%	8.57%
8.	Employer Support Rate (Before Offset for Employee Contributions)		
	(a) Dollar amount	332,600	348,700
	(b) % of covered payroll	29.95%	29.58%
9.	Employee Contributions		
	(a) Dollar amount	102,200	108,500
	(b) % of covered payroll	9.20%	9.20%
10.	Net Employer Support Rate		
	(a) Dollar amount	230,400	240,200
	(b) % of covered payroll	20.75%	20.38%

UNIVERSITY OF MINNESOTA POLICE DEPARTMENT
RETIREMENT PLAN

Analysis of Change in Unfunded Accrued Liability
(Estimated)

1.	Unfunded accrued liability as of June 30, 1976	$1,819,700
2.	Contributions during year in excess of normal cost plus interest	24,600
3.	Expected unfunded accrued liability as of June 30, 1977 (1) less (2)	1,795,100
4.	Actual unfunded accrued liability as of June 30, 1977.	1,768,700
5.	Actuarial gain during year (3) less (4)	26,400
6.	Analysis of sources of gain:	
	a. Top step monthly salary range increase in excess of 3½% assumption (from $1,317 to $1,400)	$ (90,900)
	b. Investment return in excess of 5% assumption	32,500
	c. Gains from mortality	28,600
	d. Gains from delayed retirements	45,000
	e. Other	11,200
	f. Total gain	$ 26,400

GVS Minnesota Memorandum No. 77-5
December 1, 1977

THE UNIVERSITY OF MINNESOTA POLICE PENSION PLAN VALUATION AS OF JUNE 30, 1977

The purpose of this memorandum is to discuss the valuation report of the University of Minnesota Police Pension Plan as of June 30, 1977. This report was submitted in accordance with Chapter 356 of Minnesota Laws 1974. The valuation was prepared by Allan J. Grosh and Kent P. Howe of The Wyatt Company.

This memorandum contains the following:

1. Statistical and Valuation Data
2. Discussion of Valuation Results
3. Conclusion

1. Statistical and Valuation Data

Results of the valuation reports as of June 30, 1976 and June 30, 1977 are shown for comparative purposes.

		As of June 30, 1976	As of June 30, 1977
(1)	Membership		
	Active Participants	72	72
	Retired Participants	3	3
	Surviving Spouse	2	3
	Surviving Children	1	1
(2)	Payroll and Annuities Payable		
	Annual Covered Payroll	$1,110,540	$1,178,952
	Annual Benefits	21,398	23,434
(3)	Valuation Balance Sheet		
	Accrued Liability		
	Actives	$2,987,400	$3,338,400
	Annuitants	287,600	307,600
	Total Accrued Liability	$3,275,000	$3,646,000
	Assets	1,455,300	1,877,300
	Unfunded Accrued Liability	$1,819,700	$1,768,700
	Funding Ratio	44.4%	51.5%

(4) Normal Costs and Funding Costs	As of June 30, 1976 % of Payroll	As of June 30, 1977 % of Payroll
Normal Cost	20.36%	20.40%
Expenses	0.61	0.61
Normal Cost Plus Expense	20.97%	21.01%
Normal Cost Plus Expense	20.97%	21.01%
Interest on Deficit	8.19	7.50
Total (Minimum Contribution)	29.16%	28.51%
Normal Cost Plus Expense	20.97%	21.01%
Amortization by 1997	8.98 *	8.57 *
Total (Required Contribution)	29.95%	29.58%
(5) Support		
Employee	9.20%	9.20%
Employer	21.20	21.20
Total	30.40%	30.40%

* The reported amortization figure is a level percentage of increasing payroll. The 1976 figure on a level dollar basis is 12.17%, and the 1977 figure is 11.46%.

2. Discussion of Valuation Results

The normal cost as a percentage of payroll changed very little, and the progress on the funding of the deficit combined with a larger payroll produced a decrease in the amortization requirement as a percentage of payroll.

We have directed attention to the use of the one-year term method for death and survivor benefits in prior years' memoranda and suggested that if this method is to be continued, it would be prudent to include an accrued liability item each year equal to the accumulation of the excess of those one-year term costs over the reserves for emerging benefits. If this suggestion had been followed, the accrued liability would have been $25,200 larger than reported above.

One-year term costs increase with the age of the participant. For this reason and since the funds other than this one and the Minneapolis Teachers determine the cost figures for these benefits with the entry age normal cost method, the Commission may wish to request that the method for this fund be changed.

We direct attention also to the fact that in the valuations, the amortization figure has been determined as a level percentage of increasing payroll rather than as a level dollar amount. Since the benefits in this plan are all based upon the salary of a particular position, the future benefits will not be at the level projected unless the salary of this position increases at the assumed rate and carries with it a corresponding across-the-board increase for all positions. Therefore, this is some justification for the use of the level percentage approach in this case. The only factor which could negate the above reasoning would be a substantial reduction in the active force.

As shown above, the unfunded accrued liability decreased by $51,000. The Actuary gave the following analysis of this decrease.

Decreases:

Amortization Contribution	$24,600	
Excess Interest	32,500	
Mortality Gain	28,600	
Delayed Retirements	45,000	
Other Gains	11,200	
Total Decreases		$141,900
Increases:		
Salary Scale Loss		90,900
Net Decrease		$ 51,000

3. Conclusion

Subject to the question about the use of the one-year term method for survivor and disability benefits, the report submitted by the University of Minnesota Police Pension Plan complies with the requirements of Chapter 356.

The funding appears to be in actuarial balance provided the amortization is determined on a level percentage basis.

Franklin C. Smith
Associate, Society of Actuaries
STENNES & ASSOCIATES, INC.
Commission Actuaries

UNIVERSITY OF MINNESOTA POLICE DEPARTMENT RETIREMENT PLAN

Actuarial Valuation as of June 30, 1976

November 24, 1976

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UNIVERSITY OF MINNESOTA POLICE DEPARTMENT
RETIREMENT PLAN

Actuarial Valuation as of June 30, 1976

PURPOSE AND SUMMARY

The purpose of this report is to set forth the results of our actuarial valuation of the University of Minnesota Police Department Retirement Plan as of June 30, 1976 in order to establish the sufficiency of indicated support rates for the ensuing 12-month period.

In summary, our valuation reveals that an employer support rate of 20.75% would be indicated for the year commencing July 1, 1976. In this regard, it should be noted that the formal plan document calls for a support rate (net of employee contributions) of 21.20% thus indicating actuarial sufficiency for the period evaluated herein.

The valuation has been performed in accordance with those applicable provisions of Chapter 356 of the Minnesota Statutes (including 1975 revisions).

EMPLOYEE DATA

We received complete data covering 72 active participants, 3 service retirees, 2 surviving spouses, and 1 surviving child. The corresponding numbers last year were 73, 2, 1 and 1 respectively, although the valuation was performed on only 72 active participants. The data is summarized in Table 3.

The top step of the Police Officers' monthly salary range utilized for purposes of this valuation is $1,317. This would compare to $1,230 used in last year's valuation. Since prospective normal retirement benefits are based on "top" salary rates, such increases lead to increases in prospective pensions - the effect of which not only produces an increase in annual cost provisions, but in the unfunded accrued liability as well.

VALUATION OF ASSETS

A financial report for the year ended June 30, 1976 was made available to us, from which we determined fund assets for actuarial valuation purposes. This financial report is set forth in Table 2. It should be noted that for valuation purposes, we included the accrued employee contribution of $4,246.20 made in June 1976 and not reflected in the financial report.

PLAN VALUED

Table 4 sets forth a brief summary of the main features of the Police Department Retirement Plan.

ACTUARIAL ASSUMPTIONS AND METHODS

The actuarial assumptions and methods employed in this valuation are outlined in Table 5 of this report. These assumptions and methods are identical to those used in last year's valuation with the exception of the method utilized for amortizing unfunded accrued liabilities and conform to those provisions of Chapter 356 of Minnesota Statutes.

Costs of the plan have been computed according to the entry-age-normal cost method (as prescribed by Statutes). Under this method, the normal cost is determined as a level percentage of salary which would be required to be paid from each member's date of employment to retirement in order to provide the benefits under the plan. The accrued liability under the method is equal to the present value of all benefits payable under the plan less the present value of future normal costs calculated in accordance with the actuarial cost method. The unfunded accrued liability is equal to the excess of the accrued liability over the applicable assets of the fund as of the valuation date.

As set forth in item 9 of Table 5, the entry-age-normal cost method has been utilized for the valuation of benefits payable from the plan other than pre-

retirement survivor's benefits and disability benefits. These two categories of benefits have been evaluated on a one-year term cost basis, following the method used in prior years.

The Statutes call for annual normal cost (under the entry-age-normal cost method) to be expressed as a level percentage of future payroll of active participants as of the date of the valuation. The Statutes also call for the computation of the Additional Rate of Support as is required to amortize unfunded accrued liabilities by the end of the fiscal year occurring in 1997. Thus, to maintain consistency, rather than compute the called for amortization of the unfunded accrued liability on a level dollar basis (the method used last year), we determined such as a level percentage of active participant covered payroll taking into account future projected increases (in accordance with the salary scale assumption utilized). The net effect of this change is to produce a decrease in the amortization of approximately $35,000 (or 3.15% of covered payroll).

It should be noted that the "salary scale" assumption outlined in item 6 of Table 5 basically allows only for anticipated future salary increases attributable to promotions, and does not anticipate future general salary increases of an inflationary nature. Since plan benefits are related almost entirely to final four year average compensation, such general salary increases, if they occur, will produce proportional increases in that part of each participant's pension which is attributable to his past service. Unless the value of the fund produces a yield sufficient to compensate for this, in addition to the 5% actuarial requirement (as set forth in item 5 of Table 5), an upper trend in costs even when expressed as a percentage of the increased payroll will result, which would have been the case this year absent a revision in the approach to the amortization of the unfunded accrued liability.

VALUATION RESULTS

The results of our valuation are set forth in Table 1. Section A of the table sets forth basic data items relative to active and retired (including survivors) participants.

Section B sets forth the determination of the unfunded accrued liability as of June 30, 1976, amounting to $1,819,700.

In Section C of Table 1, we have set forth the determination of the annual support rate indicated for the ensuing 12-month period, amounting to $230,400 or 20.75% of active covered payroll. The plan calls for an employer support rate of 21.2% of covered payroll; thus, for the covered period, the plan would appear to be in actuarial balance. It should be noted that absent the revised treatment accorded the amortization of unfunded accrued liabilities, such would not be the case in that an emerging employer support rate of approximately 23.90% would result.

COMPARISON OF 1975 AND 1976 VALUATION RESULTS

In Table 6, we set forth a comparison of the principal values underlying the 1975 and 1976 valuations.

Item 5 of the table sets forth the respective unfunded accrued liabilites which have increased from $1,599,000 to $1,819,700. We would attribute the increase primarily to the increase in "top step" salary rates experienced to the extent not offset by fund earnings in excess of the 5% requirement. As minor items contributing to the increase, we would also highlight turnover experienced and the omission of an active participant last year.

* * * * * * * * * * *

If, in connection with this valuation of the plan, any further investigations are indicated, we will be happy to proceed as directed.

Respectfully submitted,

THE WYATT COMPANY

Allan J. Grosh, F.S.A.
Member, American Academy of Actuaries

Kent P. Howe, A.S.A.
Member, American Academy of Actuaries

Minneapolis, St. Paul
November 24, 1976

Table 1

UNIVERSITY OF MINNESOTA
POLICE DEPARTMENT RETIREMENT PLAN

Actuarial Valuation as of June 30, 1976
(Valuation determinations rounded to nearest $100)

A.	BASIC DATA	
1.	Active participants	
(a)	Number	72
(b)	Average prospective annual pension 1/	13,061
(c)	Current covered payroll	1,110,540
2.	Retirees, survivors	
(a)	Number of service retirements and survivors	6
(b)	Average annual benefit being paid	3,566
B.	DETERMINATION OF JUNE 30, 1976 UNFUNDED ACCRUED LIABILITY	
1.	Accrued liability as of June 30, 1976	
(a)	Service retirements	199,500
(b)	Survivors	88,100
(c)	Active participants (including refund feature)	2,987,400
(d)	Total	3,275,000
2.	Applicable assets per Table 2, including accrued employee contribution of $4,246.20 as of June 30, 1976	$1,455,300
3.	Unfunded accrued liability [1.(d) less (2)]	1,819,700

C. DETERMINATION OF ANNUAL SUPPORT RATE	Dollar Amount	Percent of Covered Payroll
1. Normal cost for service retirement, post retirement survivors benefits and employee contribution refunds	$202,100	18.20%
2. Annual expense provision 4/	6,800	.61
3. Term cost of pre-retirement survivors benefits	11,200	1.01
4. Term cost of disability benefits	12,800	1.15
5. Amortization of unfunded accrued liability by July 1, 1997 2/	99,700	8.98
6. Total indicated annual support rate	332,600	29.95
7. Employee contribution rate	102,200	9.20
8. Net employer support rate [(6) less (7)] 3/	230,400	20.75%

1/ In accordance with salary scale assumptions in Table 5.
2/ Amortization as a level % of increasing covered payroll.
3/ Plan calls for Employer support rates of 21.2% of covered payroll.
4/ 2% of total contribution [.02 times 30.4%].

THE Wyatt COMPANY

Table 2

UNIVERSITY OF MINNESOTA
POLICE DEPARTMENT RETIREMENT PLAN

Financial Report for Year Ended June 30, 1976

Total Value of plan as of June 30, 1975			1,081,462.26
Gross Contributions			
Employees	*$ 96,038.08		
Employer	225,659.81		
Total	$321,697.89		
Net Contribution	$321,697.89 x .98 =	315,263.92	
Withdrawals			
Annuity Payments -	Jensen	3,741.71	
	Standing	4,411.20	
	Wendfeldt	4,411.20	
		12,564.11	
Survivor Payments -			
	Herberg	3,240.00	
	Nichols	973.32	
		4,213.32	
Surrenders** -	Dunn	4,801.48	
	Garcia	185.54	
	Rollins	1,042.54	
	Sande	4,234.39	
		10,263.95	
Interested Credited			
July 1, 1975 through June 30, 1976		81,350.01	
Total Value of plan as of June 30, 1976			$1,451,034.81

* Includes June 30, 1975 contribution. June 30, 1976 employee contribution of $4,246.20 not reflected.

** Amounts do not reflect refunds made directly to employee which had not been remitted to the insurance company.

Table 3

UNIVERSITY OF MINNESOTA
POLICE DEPARTMENT RETIREMENT PLAN

Distribution of Participants as of June 30, 1976 and
Changes During Year Ending on June 30, 1976

A. ACTIVE PARTICIPANTS

Age Group Last Birthday	Male	Female	Total	Percentage Distribution	Covered Payroll
20 - 24	1	-	1	1.39%	$12,864
25 - 29	15	3	18	25.00%	265,680
30 - 34	17	-	17	23.61%	265,224
35 - 39	6	1	7	9.72%	108,456
40 - 44	4	-	4	5.56%	63,216
45 - 49	9	-	9	12.50%	142,236
50 - 54	7	-	6	8.33%	94,824
55 - 59	10	-	10	13.80%	158,040
Total	68	4	72	100.00%	$1,110,540
Average Attained Age	39.68	28.25	39.05		
Average Entry Age	28.10	26.25	28.00		

B. ANNUITANTS

Type		Number	Annual Benefit Being Paid
1.	Service retirements	3	$15,237
2.	Surviving spouses	2	5,351
3.	Surviving children	1	810
4.	Total	6	$21,398

C. RECONCILIATION

		Number
1.	Active members on June 30, 1975	73
2.	Decrements during year	
	(a) Service retirements	1
	(b) Deaths	1
	(c) Termination other than by death and retirement	4
	(d) Total	6
3.	New entrants	5
4.	Active participants on June 30, 1976	72

Table 4

UNIVERSITY OF MINNESOTA
POLICE DEPARTMENT RETIREMENT PLAN

Summary of Principal Provisions of Plan

1.	Eligibility:	Members of the University Policy Department who hold eligible positions designated by Regents are immediately eligible to participate.
2.	Contributions:	Employees contribute 9.2% of the lesser of actual salary or top step police officers monthly salary range. Employer contributes 21.2% of the salary on which employee contribution is based.
3.	Average Salary:	Average salary of top step police officers during 48-month period immediately preceding date of retirement, death, termination of active service, or onset of disability.
4.	Service:	Continuous full time employment in eligible position prior to age 60. Broken periods counted provided employee has not withdrawn his own contributions. Those employed on January 1, 1973 and unable to complete 20 years of service prior to age 60 will be credited with 20 years upon attainment of age 60.
5.	Normal and Deferred Service Pension:	Upon retirement on or after the first day of month next following or coinciding with 55th birthday (but in no event later than first day of month following 60th birthday), employee entitled to receive a benefit of 2% of average salary for each year of service subject to a maximum of 50% (i.e. 25 years).
6.	Vesting:	Upon termination with 20 or more years of service, employee eligible to receive as early as age 55 a benefit equal to 2% of average salary for each year of service (maximum 50%) and shall be deemed a deferred pensioner. Survivor benefits payable upon death prior to commencement of deferred pension are set forth in item 8.

Upon termination with fewer than 20 years of service, deferred benefit is determined solely on the basis of employee contributions plus interest. Upon termination with fewer than 10 years of service, employee may withdraw his own accumulated contributions with interest, in which case he would forfeit right to a deferred benefit. In the event of death prior to receipt of benefits for those who terminated with fewer than 20 years of service, accrued values are payable.

7. Disability Pension: Upon permanent disability from causes related to his duties, employee is eligible to receive a benefit of 40% of average salary. If the disablement results from causes not related to his duties, employee is eligible for a benefit based on average salary as follows:

Years of Service	% of Average Salary
Less than 5	0
5 but less than 10	15%
10 but less than 20	40%
20 or more	See item 6.

8. Survivor Benefits: Upon the death of a service pensioner, disability pensioner, deferred pensioner (pre- and post-retirement) or an employee in active service, survivor benefits payable as follows:

Surviving spouse: 22½% of average salary payable until death or remarriage.

Each child: 7½% of average salary payable for life.

Maximum Family Benefit: 40% of average salary.

9. Funding Vehicle: IPG contract underwritten by Minnesota Mutual Life Insurance Company.

Table 5

UNIVERSITY OF MINNESOTA
POLICE DEPARTMENT RETIREMENT PLAN

Summary of Actuarial Assumptions and Methods

1.	Pre-retirement mortality disability and turnover:	In accordance with Crocker Sarason unadjusted T-1 Table.
2.	Post-retirement annuitant mortality and pre-retirement survivors benefit:	In accordance with Progressive Annuity Mortality Table.
3.	Disability:	Progressive Annuity Mortality Table used for annuitant mortality. Disability decrements determined in accordance with following sample rates:

Age	Rate
20	.00040
25	.00060
30	.00080
35	.00110
40	.00180
45	.00290
50	.00501

Cause related and non-cause related disabilities assumed to occur equally.

4.	Expenses:	2% of total stipulated contribution.
5.	Interest rate:	5% per annum.
6.	Salary scale:	3½% per annum.
7.	Assumed retirement age:	Age 55, or in one year if over age 55, but not later than age 60.
8.	Surviving spouse/children:	Two qualified children assumed in average family of surviving spouse.
9.	Actuarial cost method:	Individual entry-age-normal cost method developing costs as a % of covered payroll. One year term basis for pre-retirement survivors and disability benefits.
10.	Amortization of unfunded accrued liability:	As a % of increasing payroll to July 1, 1997.

Table 6

UNIVERSITY OF MINNESOTA
POLICE DEPARTMENT RETIREMENT PLAN

Comparison of 1975 and 1976 Valuation Results

		1975	1976
1.	Active Participants		
	(a) Number	72 **	72
	(b) Covered payroll	1,067,865	1,110,540
2.	Retirees, Survivors		
	(a) Number	4	6
	(b) Average annual benefit being paid	3,016	3,566
3.	Accrued Liability		
	(a) Service retirements	110,000	199,500
	(b) Survivors	39,600	88,100
	(c) Active participants	2,530,900	2,987,400
	(d) Total	2,680,500	3,275,000
4.	Valuation Assets	1,081,500	1,455,300
5.	Unfunded Accrued Liability	1,599,000	1,819,700
6.	Annual Normal Cost (Including One Year Term Costs and Expense Provision)		
	(a) Dollar amount	208,600	232,900
	(b) % of covered payroll	19.53%	20.97%
7.	Amortization of Unfunded Accrued Liability		
	(a) Dollar amount	115,700*	99,700
	(b) % of covered payroll	10.83%*	8.98%
8.	Employer Support Rate (Before Offset for Employee Contributions)		
	(a) Dollar amount	324,300	332,600
	(b) % of covered payroll	30.37%	29.95%
9.	Employee Contributions		
	(a) Dollar amount	98,200	102,200
	(b) % of covered payroll	9.20%	9.20%
10.	Net Employer Support Rate		
	(a) Dollar amount	226,100	230,400
	(b) % of covered payroll	21.17%	20.75%

* Determined on basis of level dollar amortization. If increasing payroll method was used in 1975, amortization would have been $84,200 (or 7.89% of covered payroll).

**Number valued last year although 73 actives actually participated.

GVS Minnesota Memorandum No. 76-15
February 15, 1977

THE UNIVERSITY OF MINNESOTA POLICE PENSION PLAN VALUATION AS OF JUNE 30, 1976

The purpose of this memorandum is to discuss the valuation report of the University of Minnesota Police Pension Plan as of June 30, 1976. This report was submitted in accordance with Chapter 356 of Minnesota Laws 1974. The 1975 valuation was prepared by Jenean C. Nelson of the Minnesota Mutual Life Insurance Company and the 1976 valuation by Allan J. Grosh of The Wyatt Company.

This memorandum contains the following:

1. Statistical and Valuation Data
2. Discussion of Valuation Results
3. Conclusion

1. Statistical and Valuation Data

Results of the valuation reports as of June 30, 1975 and June 30, 1976 are shown for comparative purposes.

	As of June 30, 1975	As of June 30, 1976
(1) Membership		
Active Participants	73*	72
Retired Participants	2	3
Surviving Spouse	1	2
Surviving Children	1	1
(2) Payroll and Annuities Payable		
Annual Covered Payroll	$1,067,865	$1,110,540
Annual Benefits	12,062	21,398
(3) Valuation Balance Sheet		
Accrued Liability		
Actives	$2,530,939	$2,987,400
Annuitants	149,534	287,600
Total Accrued Liability	$2,680,473	$3,275,000
Assets	1,081,462	1,455,300
Unfunded Accrued Liability	$1,599,011	$1,819,700
Funding Ratio	40.3%	44.4%

*The 1975 report covered 72 as one participant was overlooked.

	As of June 30, 1975	As of June 30, 1976
(4) Normal Costs and Funding Costs	% of Payroll	% of Payroll
Normal Cost	18.92%	20.36%
Expenses	0.60	0.61
Normal Cost Plus Expense	19.52%	20.97%
Normal Cost Plus Expense	19.52%	20.97%
Interest on Deficit	7.49	8.19
Total (Minimum Contribution)	27.01%	29.16%
Normal Cost Plus Expense	19.52%	20.97%
Amortization by 1997	10.83*	8.98*
Total (Required Contribution)	30.35%	29.95%
(5) Support		
Employee	9.20%	9.20%
Employer	21.20	21.20
Total	30.40%	30.40%

*The 1975 amortization figure was on a level dollar basis whereas the 1976 figure is a level percentage of increasing payroll. The 1975 figure on a level percentage basis is 7.89%, and the 1976 figure on a level dollar basis is 12.17%.

2. Discussion of Valuation Results

The increase in the normal cost as a percentage of payroll came about mainly from the fact that the salary of a top-step patrolman (on which all benefits are based) increased 7% rather than 3.5%. In addition, the cost of pre-retirement survivors' benefits and disability benefits has been calculated in both years as a one-year term cost. Therefore, in addition to the effect of the 7% salary increase, these costs are pushed upward by the fact that each participant is a year older in 1976.

We directed attention to the use of the one-year term method in last year's memorandum and suggested that if this method is continued, it would be prudent to include an accrued liability item each year equal to the accumulation of the excess of these one-year term costs over the reserves for emerging benefits. However, since the death of an active police officer occurred during the year, there is no such excess this year.

One-year term costs increase with the age of the participant. For this reason and since the other funds determine the cost figures for these benefits with the entry age normal cost method, the Commission may wish to request that the method for this fund be changed.

We direct attention also to the fact that in the 1976 valuation, the amortization figure has been determined as a level percentage of increasing payroll rather than as a level dollar amount. Since the benefits in this plan are all based upon the salary of a particular position, the future benefits will not be at the level projected unless the salary of this position increases at the assumed rate and carries with it a corresponding across-the-board increase for all positions. Therefore, this is some justification for the use of the level percentage approach in this case. The only factor which could negate the above reasoning would be a substantial reduction in the active force.

As shown above, the unfunded accrued liability increased by $220,689. The Actuary gave the following analysis of this increase.

Increases:

Salary Scale Loss	$136,700	
Survivor's Benefit in Excess of One-Year Term Cost	39,600	
Additional Active Participant	41,400	
Other Actuarial Losses	50,189	
Total Increases		$267,889

Decreases:

Amortization Contribution	$ 27,100	
Excess Interest	20,100	
Total Decreases		47,200
Net Increase		$220,689

3. Conclusion

The report submitted by the University of Minnesota Police Pension Plan complies with the requirements of Chapter 356.

The funding appears to be in actuarial balance provided the amortization is determined on a level percentage basis.

Franklin C. Smith
Associate, Society of Actuaries
STENNES & ASSOCIATES. INC.
Commission Actuaries

GVS Minnesota Memorandum No. 75-14
January 22, 1976

THE UNIVERSITY OF MINNESOTA POLICE PENSION PLAN VALUATION AS OF JUNE 30, 1975

The purpose of this memorandum is to discuss the valuation report of the University of Minnesota Police Pension Plan as of June 30, 1975. This is the first report for this plan submitted in accordance with Chapter 356 of Minnesota Laws 1974. The valuation was prepared by Jenean C. Nelson of the Minnesota Mutual Life Insurance Company.

This memorandum contains the following:

1. Description of Plan
2. Statistical and Valuation Data
3. Discussion of Valuation Results
4. Review of Experience Study
5. Conclusion

1. Description of Plan

Since this is the first report submitted to the Commission, it is appropriate to review the benefits provided by the Plan.

The amount of several of the benefits is based upon the average salary of the top step Police Officer during the 48-month period immediately preceding the date of determination of the benefit.

An employee qualifies for a normal retirement benefit upon the attainment of age 55 and the completion of 20 years of service. Retirement is mandatory at age 60. Those who were employed as of January 1, 1973 will be given credit for 20 years of service at age 60 regardless of the actual service.

The amount of the retirement benefit is 2% of the final average salary for each year of credited service, but the total percentage may not exceed 50%.

If an employee terminates with 20 or more years of service, he is entitled to a benefit starting at age 55 in an amount equal to 2% of final average salary for each year of service subject to the 50% limit. If he terminates with less than 20 years of service, the amount of the deferred benefit is determined only from his own contributions plus interest. If he terminates with less than 10 years of service, he may withdraw his contributions.

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If an employee becomes disabled from causes related to his duties, he receives a monthly benefit in an amount equal to 40% of his final average salary. If the disablement results from causes not related to his duties, then the benefit depends upon his period of service as follows:

Service	Benefit
Less than 5	0
5 - 10	15% of final avg sal
10 - 20	40%
20 and Over	Deferred Vested Benefit

The plan provides survivor benefits upon the death of an active employee, a service pensioner, a disability pensioner or a deferred pensioner. The amount of the benefit to a surviving spouse is 22.5% of final average salary, and each child receives 7.5%, but the total per family is restricted to 40%.

The plan is funded by an IPG contract with the Minnesota Mutual Life Insurance Company. Under an IPG contract, the insurance company provides administrative and investment management services but does not assume mortality and insurance risks. In other words, the fund is operated much like a trust fund.

2. Statistical and Valuation Data

	As of June 30, 1975
Active Participants	72
Retired Participants	2
Surviving Spouse	1
Surviving Children	1
Annual Covered Payroll	$1,067,865
Annual Benefits	$ 12,062
Accrued Liability	
Actives	$2,530,939
Annuitants	149,534
Total Accrued Liability	$2,680,473
Assets	1,081,462
Unfunded Accrued Liability	$1,599,011
Funding Ratio	40.3%
Normal Cost	18.92%
Amortization by 1997	10.83
Expenses (2% of Contributions)	0.60
Total Required Contribution	30.35%
Support	
Employee	9.2%
Employer	21.2
Total	30.4%

3. Discussion of Valuation Results

It is interesting to note that the total required contribution came extremely close to matching the current support rate which is an item subject to bargaining between the Union and the University.

The only other matter which we wish to point out is the fact that the cost of the disability benefit and the cost of the survivors' benefits have been handled in a different manner on this valuation from that used by the other funds. The cost for these benefits has been included in the normal cost, but it has been calculated with one-year term insurance factors at the current ages rather than with level normal cost factors at the entry ages. These one-year term costs are higher than the normal costs would have been, but with one-year term costs, there is no accrued liability. With a group of this size, it might be prudent in future valuations to include as an accrued liability for these benefits the excess of these one-year term costs over benefits actually paid. This would provide a cushion against the possibility of having years when the benefits exceed the one-year term costs.

4. Review of Experience Study

The report also included a study of the actual experience under the plan for the period from July 1, 1971 to June 30, 1975 compared with the experience which would have been predicted by the assumptions which were adopted.

During the 4-year period, there were 4 terminations, 1 death and no disablements among active lives. The assumptions would have predicted 7.1744 decrements which means that the ratio of actual to expected was 69.69%. It should be remarked that the number of participants is too small to produce statistically significant results.

The valuation was based on the assumption that those under age 55 will retire at 55 and that those 55 and over will retire in 1 year. Since some members will continue beyond the earliest retirement date, this assumption contains some margin.

The statutes specify a salary scale of 3.5% and an interest rate of 5%. The following chart shows the increases in the salary of a top step Police Officer and the actual interest rates during each of the 4 plan years:

Year	Salary Increase	Interest Rate
71 - 72	8.5%	6.00%
72 - 73	4.1	6.50
73 - 74	8.0	7.00
74 - 75	12.4	7.25

Since this is the first report to the Commission, we will not be able to measure the effect of the deviations from the assumed experience until future reports are received.

5. Conclusion

The report submitted by the University of Minnesota Police Pension Plan complies with the requirements of Chapter 356.

The plan appears to be in actuarial balance at the present time, but it will be necessary to wait until future reports are received to judge the effect of the deviations from the assumed experience since some of these are in the conservative direction and some are not.

Franklin C. Smith
Associate, Society of Actuaries
GEORGE V. STENNES AND ASSOCIATES
Commission Actuaries

THE MINNESOTA MUTUAL LIFE INSURANCE COMPANY
345 Cedar Street, Saint Paul, Minnesota 55101 • Telephone 298-3500 Area 612

January 9, 1976

To the Regents of the University of Minnesota

ACTUARIAL VALUATION FOR UNIVERSITY OF MINNESOTA

Gentlemen:

Attached is a report which includes both an actuarial valuation covering the liabilities of the University of Minnesota Police Pension Plan and an experience study of this plan. The valuation and experience study were prepared to meet the requirements of Chapter 356 of the Laws of Minnesota.

After you have reviewed this material, I would welcome an opportunity to discuss it with you.

Sincerely,

Jenean C. Nelson

Jenean C. Nelson, FSA
Assistant Actuary

JCN:mf

enc.

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ACTUARIAL VALUATION FOR
UNIVERSITY OF MINNESOTA
POLICE DEPARTMENT RETIREMENT PLAN

Introduction:

Chapter 356 of Minnesota Laws requires an annual valuation and quadrennial experience study for the University of Minnesota Police Department Retirement Plan. The 1975 valuation and the 1971 to 1975 experience study are presented in this report.

A copy of the Plan document is attached to this report and is labeled Attachment A. An age and service table is included as Attachment B.

The following schedules show the results of this year's valuation and supporting data.

ACTUARIAL COST METHOD AND ASSUMPTIONS

Actuarial Cost Method:

The normal cost of the pension and post-retirement survivors benefits were determined by the entry age normal cost method.

The accrued liability for active employers was determined as the present value of pension and post-retirement survivors benefits reduced by the value of all future normal costs assumed to be payable during the remaining working lifetime of the present employees.

The costs of the disability and pre-retirement survivors benefits were computed on a one-year term basis.

Actuarial Assumptions:

Interest	:	5% compounded annually
Salary Increase	:	3 1/2% per year
Retirement Age	:	Age 55, or in one year if over age 55, but not later than age 60
Mortality, Disability and Turnover	:	In the entry age normal calculation, the Crocker, Sarason, Straight T-1 Table was used for the combined mortality, disability and termination decrements for active lives. The Progressive Annuity Mortality Table was used for the annuitant mortality and the term cost of pre-retirement survivor benefits. The disability table used in calculating the term cost of disability benefits is illustrated below.

Sample Rates of Disability

Age	Rate
20	.00040
25	.00060
30	.00080
35	.00110
40	.00180
45	.00290
50	.00501

RESULTS OF ACTUARIAL VALUATION

A.	Annual Costs	
	Normal Cost for retirement benefits, post-retirement survivors benefits, and return of employee contributions	$ 184,979
	Term cost of pre-retirement survivors benefits	7,013
	Term cost of disability benefits	10,099
		$ 202,091
B.	Accrued Liability	
	Accrued liability for active employees	$2,530,939
	Reserves required for annuitants	
	Retirements	109,957
	Surviving spouse	38,030
	Surviving children	1,547
		$2,680,473
	Assets	1,081,462
	Unfunded accrued liability	1,599,011
	Cost to amortize the unfunded liability by July 1, 1997	115,693
C.	Annual costs plus cost to amortize unfunded liability by 1997	317,784
D.	Costs in C. as a percentage of the expected 7-1-75 to 6-30-76 payroll	29.76%

FINANCIAL REPORT FOR

UNIVERSITY OF MINNESOTA POLICE RETIREMENT PLAN

Total Value as of July 1, 1974			$757,225.87
Gross Contributions			
Employees	$ 80,272.16		
University	208,050.40		
			288,322.56
Withdrawals			
Annuity Payments - Wendfeldt		$4,411.20	
- Standing		4,411.20	
Surrender - Patrick		4,480.62	
Survivor Payments- Herberg		3,240.00	
			16,543.02
Expense			5,766.45
Interest Credited			58,223.30
Total Value as of June 30, 1975			$1,081,462.26 *

*Of this total, $288,578.40 represents the total contributions to date made by presently active participants.

SUMMARY OF CENSUS STATISTICS

		Number	Expected Payroll 7-1-75 to 6-30-76
(a)	Active members	72	$1,067,865

		Number	Annual Annuity Benefit
(b)	Annuitants		
	Service retirements	2	$8,822
	Surviving spouse	1	2,430
	Surviving children	1	810

PLAN CONTRIBUTIONS

The plan provides for employer contributions of 21.2% of salary and employee contributions of 9.2% of salary. Subtracting the 2% expense charge leaves 29.792% of salary for payment of benefit costs.

EXPERIENCE STUDY FOR
UNIVERSITY OF MINNESOTA POLICE

Chapter 356 of Minnesota Laws requires an annual actuarial valuation and quadrennial experience study for the University of Minnesota Police retirement plan. The 1971 to 1975 experience study is presented here.

Mortality, Termination and Disability :

The valuation uses the Crocker-Sarason-Straight T-1 Table. This table combines the decrements, mortality, termination and disability.

Over the past four years, July 1, 1971 to July 1, 1975, there has been one death and four terminations. There have been no disability claims. The expected number of deaths, terminations and disability claims based on the above table for the past four years was 7.1744. This gives an aggregate decrement ratio of $5 \div 7.1744 = 69.69\%$.

It must be noted that this is a small plan. Due to the very small amount of exposure the above stated ratio is not statistically relevant.

Retirement Date :

The valuation assumes that retirement will take place upon attaining age 55 if the participant is not yet 55, or within one year if the participant is 55 or over.

The present composition of participants seems to indicate that an individual will continue working beyond age 55 even if he (she) has 25 years of service, the maximum number that will be credited. The normal cost ratio generated by the assumption of retirement at age 55 or upon completion of 25 years of service if later, but not later than age 60, was lower than the assumption stated in the first sentence of this section.

Salary Scale :

The valuation assumes a 3 1/2% annual increase in salary with benefits based

on a final four year average. Actual salary increases are given below:

Fiscal Year	Average Salary Increase
7-1-71 to 7-1-72	8.5%
7-1-72 to 7-1-73	4.1%
7-1-73 to 7-1-74	8.0%
7-1-74 to 7-1-75	12.4%

The above percentages were derived by taking successive ratios of the time weighted average 'top step of the Police Officers monthly salary range' as of July 1 each year.

Interest Rate : The valuation rate of interest is 5%. The interest rates credited on contributions to the plan are given in the following table.

Fiscal Year	Rate
7-1-71 to 7-1-72	6%
7-1-72 to 7-1-73	6 1/2%
7-1-73 to 7-1-74	7%
7-1-74 to 7-1-75	7 1/4%

Widows Benefit and Disability Benefit : The mortality assumption used to calculate the one year term cost of the widows benefit was the Progressive Annuity Table. Here again the very small amount of exposure precludes making any relevant statement as to the ratio of actual deaths to expected deaths. The same statement also applies to the calculation of expected disability claims. The underlying disability rates were those generously provided by Dr. Franklin C. Smith.

Entry Age : (1) The average age at entry for presently active participants was 28.4.

The average age for new entrants for the period:

7-1-71 to 7-1-72 was	25
7-1-72 to 7-1-73 was	29
7-1-73 to 7-1-74 was	27
7-1-74 to 7-1-75 was	28

The above averages are based on only eleven new entrants.

(2) The average age at retirement for the two individuals who retired during fiscal year 7-1-73 to 6-30-74 was 63.

ATTACHMENT A

UNIVERSITY OF MINNESOTA

POLICE DEPARTMENT RETIREMENT PLAN

SECTION 1. PURPOSE OF PLAN

This Plan is being established to provide monthly income payments to certain staff members or their dependents for retirement, disability or death. Participation in this Plan shall be compulsory for all Eligible Employees.

SECTION 2. DEFINITIONS

2.01 Employee - "Employee" shall mean members of the University of Minnesota Department of Police who hold the position of Captain of Police, Lieutenant, Sergeant of Police, Police Officer and such other positions as may be designated by the Regents of the University of Minnesota.

2.02 Unit - "Unit" shall mean 1/80th of the "Average Salary" as defined hereafter.

2.03 Average Salary - "Average Salary" shall mean the average of the top step of the Police Officers monthly salary range, as approved by the Regents over the 48 months immediately preceding whichever of the following is applicable:

a. The actual date of retirement if retirement occurs during the period from ages 55 to 60 inclusive.

b. The date of death of an employee on an active status as distinguished from a former employee who is a "Deferred Pensioner".

c. The date determined to be the date of onset of disability for those employees who qualify for disability benefits hereunder.

d. The 48 months preceding the date of termination of active employment as an eligible Employee for a "Deferred Pensioner".

2.04 Age - "Age" shall mean the age at the last anniversary of the date of birth.

2.05 Eligible Service - "Eligible Service" shall mean continuous full-time employment by the University of Minnesota in a position defined as "Employee" hereunder, except that broken periods of service may be counted provided the Employee has not withdrawn his contributions following previous termination. Such service rendered after age 60 or fractional parts of a year shall be ignored in determining the total years of eligible service.

2.06 Deferred Pensioner - "Deferred Pensioner" shall mean a former Employee who is entitled to receive a benefit pursuant to the terms of this Plan.

2.07 Service Pensioner - "Service Pensioner" shall mean a former employee who has remained in continuous Eligible Service until at least age 55 and is receiving a monthly retirement annuity.

2.08 Disability Pensioner - "Disability Pensioner" shall mean a former employee who is receiving a monthly disability annuity pursuant to the provisions of Section 8 of this Plan.

2.09 Widow or Widower - "Widow or Widower" shall mean a person who was his legally married spouse, residing with him and, who was married while or prior to the time he was on the payroll of the Police Department, and who, in case the deceased member was a service or deferred pensioner, was legally married to the member at least one year before his retirement from the Police Department.

2.10 Child or Children - "Child or Children" shall mean an unmarried, dependent child or children who were living while the deceased was on the payroll of the Police Department or born within ten months after the deceased was withdrawn from such payroll. Such child or children must be under the age of 18 years, except where the individual concerned is a full-time student at an accredited educational institution, in which case the period of time shall extend until the first to occur of the following events:

1. Attainment of age 22;
2. Receipt of a Bachelor's Degree.

2.11 Pronouns of masculine gender as used herein shall refer to persons of either sex unless the text clearly indicates the contrary.

2.12 Employer shall mean the Regents of the University of Minnesota.

SECTION 3. ELIGIBILITY AND EFFECTIVE DATE

3.01 Eligibility

All members of the University of Minnesota Department of Police who qualify as an Employee shall be eligible for coverage hereunder. All Employees shall remain eligible during such time as they continue to hold appointment in one of the positions eligible. In the event that an employee should transfer from a position eligible to a position not eligible, only that period of time spent in one of the positions eligible shall be counted hereunder.

3.02 Effective Date

All Eligible Employees shall be covered hereunder immediately upon the effective date of appointment.

SECTION 4. RETIREMENT AGE AND DATE

4.01 Normal Retirement Age and Date

Normal Retirement Age shall be age 55. Normal Retirement Date shall be the first day of the month next following or coinciding with the 55th birthday.

4.02 Deferred Retirement

Upon recommendation of the Chief of Police and approval by the Director of Personnel, the retirement date may be deferred, but, in no event shall such retirement be deferred to a date later than the first day of the month next following the 60th anniversary of the date of birth of the Employee.

SECTION 5. CONTRIBUTIONS

5.01 Employee Contributions

Each Employee shall contribute 9.2% of the lesser of

a. the Employee's actual salary, or

b. the top step of the Police Officers monthly salary range, as approved by the Regents.

5.02 Employer Contributions

The Employer shall contribute 21.2% of the salary on which the Employee contribution is based.

SECTION 6. MONTHLY RETIREMENT ANNUITY PAYMENTS

An Employee who remains in Eligible Service until Normal Retirement Date shall be entitled to receive a monthly retirement annuity equal to 1.6 Units for each complete year of Eligible Service. In no event shall an individual receive a total of more than 40 Units.

Those Employees who are employed by the University on January 1, 1973 who will not be able to complete 20 years of service prior to age 60 shall nevertheless be credited with 20 years of service upon attainment of age 60.

SECTION 7. VESTING

7.01 Termination with less than 20 years of Eligible Service.

An Employee, who, upon termination from Eligible Service, shall have completed less than 20 complete years of such service, shall be entitled to a deferred annuity in such amount as may be provided by the Employee's contributions plus any interest accumulated thereon in accordance with the terms of the Group Annuity Contract to which this Plan is attached and made a part thereof.

All and only those Employees who have completed less than ten complete years of Eligible Service shall be entitled to withdraw the value of his contributions with accumulated interest. If such withdrawal rights are exercised, all rights to a deferred annuity shall be cancelled.

A former Employee who has completed at least 10 but less than 20 years of service shall commence receiving a monthly retirement annuity upon his election. Such annuity shall be of a form that will provide a monthly income during the remaining lifetime of the person concerned.

In the event of the death of the former Employee during the period of time between the date of termination of employment and the effective date of commencement of a monthly retirement annuity, the then accrued values shall be payable to a designated beneficiary. If no beneficiary has been designated or if there is no beneficiary surviving, such amount shall be paid according to the following order of priority:

1. A surviving lawful wife or husband;
2. Surviving children, equally, if more than one. The term "children" refers to the first generation lawful bodily and legally adopted persons.
3. Surviving parents in equal shares.
4. A duly appointed legal representative of the estate of the Employee.

7.02 Termination with 20 or more years of Eligible Service.

An Employee, who, upon termination from Eligible Service, shall have completed 20 or more years of such service, shall be considered a Deferred Pensioner and shall be entitled to a deferred annuity in an amount as determined by applying his years of service to the formula as contained in Section 4. Such annuity shall commence at a date elected by the Deferred Pensioner, but, in no event earlier than the first day of the month next following or coinciding the 55th anniversary of the date of birth of such Deferred Pensioner. In the event that the effective date of commencement of such annuity shall be deferred beyond such date, the amount of each monthly income payment shall be the same as if the effective date had not been deferred.

In the event of the death of the Deferred Pensioner between the date of termination of Employment and the effective date of commencement of a monthly retirement annuity, survivor payments shall be payable to any eligible survivors as provided

under Section 9 hereunder.

The benefits as provided under this Section 7.02 shall be in lieu of all other benefits.

Section 8. DISABILITY

8.01 Permanent Disability Defined

Disability shall be deemed to be permanent, whenever an Employee, as the result of bodily injury or disease, is presumably prevented for life, from continuing to perform the police duties assigned to that Employee.

8.02 Permanent Disability not resulting from performance of assigned Police Duties

If an Employee becomes permanently disabled from a cause which is deemed to be a result not attributable to the performance of his assigned police duties, he shall be entitled to receive a monthly pension in accordance with the following table:

Completed years of Eligible Service	Number of Units
Less than 5	0
More than 5, but less than 10	12
More than 10, but less than 20	32
20 or more	Deferred Pension as provided in Section 7.02

8.03 Permanent Disability resulting from performance of Assigned Police Duties.

If an Employee becomes permanently disabled from a cause which is deemed to be a result attributable to the performance of his assigned police duties, he shall be entitled to receive a monthly pension equal to 32 units.

8.04 Form and Term of Disability

a. Monthly pension benefits shall be payable for the lifetime of the person concerned, subject to proof of continued disability. Proof of continued disability shall be submitted as requested, except, that

1. after benefits have been paid for 24 months, proof of continued disability shall not be required more often than once in any twelve month period,
2. once an individual has reached age 55, proof of continued disability shall no longer be required.

b. In no event shall any monthly Disability pensions be paid until the individual concerned has exhausted all vacation, sick leave and other forms of salary continuance benefits provided by the Employer.

8.05 Recovery From Disability

a. In the event of recovery and subsequent return to active employment as an eligible Employee hereunder, any period of disablement shall be counted as Eligible Service.

b. In the event of recovery without returning to active employment as an eligible Employee hereunder, the Employee shall be deemed to have terminated on such recovery date, except, that where applicable, Average Salary shall be defined as the "Average Salary" used in determining the amount of the monthly disability pension.

8.06 Determination of Disability

All questions of determination of Disability status shall be made by the Insurance Company issuing the Annuity Contract to which this Plan is attached.

8.07 Death of Disability Pensioner

In the event of the death of the Disability Pensioner while receiving monthly disability payments, survivor pensions shall be payable in accordance with Section 9 hereunder.

SECTION 9. SURVIVORS BENEFITS

9.01 Qualification for and Amount of Survivor Benefits

When a Service Pensioner, Disability Pensioner, Deferred Pensioner or an Employee in active service dies leaving a widow or widower, and/or a child or children surviving, such survivors shall be entitled to receive the following monthly benefits:

A. A Widow or Widower shall be entitled to receive a pension of 18 units per month for the balance of her lifetime, except that in the event or remarriage, the monthly pension shall cease effective with the date of such remarriage.

B. Each child shall be entitled to receive a pension of 6 Units per month.

9.02 Maximum Survivor's Benefit

In no event shall the combined monthly pension payable to a widow or widower and/or a child or children exceed 32 units.

9.03 Entitlement to receive benefits

In all cases where benefits are payable to a child or children, such payments shall be made to the surviving spouse, if any; if no spouse survives, payments shall be made to a legally appointed guardian.

SECTION 10. EMPLOYEE CONVICTED OF A FELONY

An Employee who has been convicted of a felony shall forfeit all rights to any pension payments during the period of his incarceration in any penal institution.

A spouse, child or children, widow or widower shall not be deprived of a pension solely by reason of the conviction of the Employee unless such individual was convicted as a party to the commission of the same felony. If the Employee who was receiving a pension at the time of his conviction or later would otherwise have become eligible to commence receiving a pension during his incarceration, survivor benefits shall be payable during such incarceration on the same basis as if the Employee were deceased.

ATTACHMENT B

AGE AND COMPLETED YEARS OF SERVICE SUMMARY

Completed Years of Service

AGE	0-4	5-9	10-14	15-19	20-24	≥ 25	Row Totals
20-24	2						2
25-29	9	7					16
30-34	4	10	2				16
35-39	1	3	3				7
40-44		1	2	1			4
45-49			2	5	4		11
50-54		1	1	4	1		7
55-59		1	2		3	3	9
Column Totals	16	23	12	10	8	3	72