Public Employees' Retirement Association

State of Minnesota

REPORT ON AN ACTUARIAL SURVEY AND VALUATION OF THE PUBLIC EMPLOYEES' RETIREMENT FUND

AND THE

PUBLIC EMPLOYEES' POLICE AND FIRE FUND AS OF JUNE 30, 1963

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Public Employees Retirement Ass'n

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June 26, 1964

Board of Trustees of the
Public Employees' Retirement
Association of Minnesota,
Centennial Office Building
St. Paul, Minnesota

Gentlemen:

There is presented herewith a report on an actuarial survey and valuation of the Public Employees' Retirement Fund of Minnesota as of June 30, 1963, and a review of the operation of the Public Employees' Police and Fire Fund as of the same date.

This report reflects the directives of the Interim Commission on Employees Retirement Systems setting forth the scope of the information to be presented and the standards to be applied.

A considerable amount of detailed information was compiled by the office of the Association and made available to us for this survey. This courtesy is hereby acknowledged. The annual financial reports compiled by the Secretary of the Fund are broad in scope and detailed in content and are quite informative. They proved extremely helpful in an analysis of the statistical and financial trends in operations.

We shall be pleased to discuss any part of this report or elaborate on any phase of the project.

Respectfully submitted,

A. A. Weinberg
Actuary

C O N T E N T S

REPORT ON AN ACTUARIAL SURVEY AND VALUATION OF THE PUBLIC EMPLOYEES' RETIREMENT ASSOCIATION OF MINNESOTA AS OF JUNE 30, 1963

Presented herewith are the results of an actuarial survey and valuation of the Public Employees' Retirement Association of Minnesota as of June 30, 1963.

SCOPE OF SURVEY AND VALUATION

The survey and valuation embraced, among other things, the specifications of work embodied in an Act of the Legislature, approved May 2, 1957, which are stated as follows:

(1) A census of each of active and deferred annuitant classes by attained age, sex and service. The census shall show number of members, their aggregate annual salary, their contributions for the past plan year, and their prospective retirement annuities under the plan.

(2) A census of each of the classes of retired members, disabled members, and survivors of members by type of annuity, attained age and sex (and duration where applicable). The census shall show number of retirants and amount of annual annuity payable as of the survey date.

(3) An actuarial balance sheet showing assets, liabilities, and the deficit from full funding of liabilities.

(4) A statement of assumptions made in determining present value of benefits and contributions, including the following:

- (a) Interest rate
- (b) Mortality rates (before and after retirement)
- (c) Withdrawal rate
- (d) Salary scale

(5) Each actuarial survey shall include findings as to:

(a) The normal support rate required to adequately finance currently accruing liabilities.

(b) Such additional annual rate of support as is required to amortize the deficits found by the end of the fiscal year of the fund occurring in 1997.

The aforesaid directive also stipulated that the following information may be provided in the report on the survey and valuation:

The actuarial balance sheet liabilities and the normal support rate required to adequately finance currently accruing liabilities shall be calculated on a level normal cost basis (entry age normal cost method) except for funds on a money purchase basis.

The interest rate to be assumed is 3% to afford comparability with the 1958 surveys; if any fund wishes in addition to submit a survey based upon an assumption of 3-1/2 per cent interest such additional survey may be submitted.

It may be of interest to the fund to submit a survey using a $6,000, $7,200 and no maximum salary basis.

The directive of the Commission implementing the 1957 specifications as outlined above suggested that a survey and valuation may be submitted upon the basis of a 3-1/2% rate of interest. This was proposed as a means of illustrating the change in costs and liabilities resulting from a different and probably a more realistic rate of interest assumption in the operations of the Association. This suggestion has been followed in the calculation of costs and liabilities and in the preparation of this report.

BASIC PROVISIONS OF THE LAW

The principal provisions of the law governing the operation of the Association as the same were in force and effect at the date of determination of the results of the survey and valuation, namely, June 30, 1963, are summarized in the appendix. These provisions formed the basis of this survey and valuation.

RESULTS OF SURVEY

Mortality among active members. A study of the operating experience of the Fund for the past several years has disclosed some interesting facts. In the case of mortality among active members, it is noted that on the whole the rates were lower than the rates contemplated by the U. S. Life Tables 1939-41 (White Males) and below the rates shown by the 1937 Standard Annuity Mortality Table. A variation from these standards may be expected considering the types of persons comprising the membership of the Fund the their highly select classification.

TABLE A. Illustrative Rates of Mortality per 1,000 In Comparison with Designated Standards

Age	Rates of Death Male	Rates of Death Female	U.S. Life Tables 1939-41 (White Males)	1937 Standard Annuity Mortality Table Male	1937 Standard Annuity Mortality Table Female
20	0.98	0.84	2.12	1.33	1.26
25	1.80	1.12	2.43	1.56	1.33
30	2.33	1.43	2.79	2.07	1.56
35	2.82	2.03	3.63	2.98	2.07
40	3.92	2.58	5.13	4.36	2.98
45	5.31	4.02	7.66	6.36	4.36
50	7.83	6.08	11.55	9.29	6.36
55	11.21	10.40	17.37	13.55	9.29

Considering the basic trend in mortality, it may be assumed that the rates of mortality to be experienced by the Fund in the future will be below the rates contemplated by these and other recognized standards.

Rates of Separation From Service. Separations from service with refundments for the last several years were reviewed. The rates have not followed any consistent trend showing some marked variations between years. From this operating experience, however, certain rates were deduced and these are presented below at certain select ages as the assumed rates for the valuation of the Fund.

TABLE B. Assumed Rates of Separation from Service with Refundments per 1,000

Age	Male	Serv	Female	
20	271.9	~~125~~	335.6	
25	225.9	123	383.2	132
30	162.2		279.9	
35	113.4	60	176.6	96
40	81.2		148.4	
45	57.0	43	89.6	57
50	39.2		66.1	
55	20.5	38	50.3	40

Mortality Among Annuitants. The mortality experience among the retired members disclosed rates that approximated substantially those of the 1937 Standard Annuity Mortality Table. As will be observed in the following comparison for select ages, the rates at the lower ages, especially for female lives, were somewhat below the rates shown by that table but the rates at the upper ages were slightly higher.

TABLE C. Rates of Mortality Among the Annuitants in Comparison with 1937 Standard Annuity Mortality Table, per 1,000

Age	Fund Experience Male	Fund Experience Female	1937 Standard Annuity Mortality Table Male	1937 Standard Annuity Mortality Table Female
60	10.42	8.75	19.75	13.55
65	28.43	15.98	28.75	19.75
70	45.61	23.80	41.76	28.75
75	64.87	33.51	60.46	41.76
80	87.24	61.34	87.16	60.46
85	132.40	96.74	124.84	87.16

It may be expected that the mortality among the annuitants in the future operations of the Fund should show a distinct downward trend at rates somewhat below the 1937 Standard Annuity Mortality Tables for all ages.

Disability Retirement. The experience among the disability retirements has been too limited to provide any indications as to the basic trend in respect to these claims. It is noted, however, that among the 64 male disability retired members, the average age at retirement was 57.4 years and that among the 51 female retired members, the average age at retirement was 56.6 years.

Considering the size of the group exposed to risk, the number of retirements for disability experienced by the Fund appears to have been reasonable. The distribution of these claims as between male and female individuals corresponds substantially to the proportions of male and female employees comprising the membership of the Fund.

<u>Death Benefits</u>. Two death benefits are provided by the Fund, namely, (a) a refund of the member's accumulated contributions including interest at 2% per annum, upon death before retirement where no optional annuity has been elected by the member, and (b) a contingent payment upon death of a retired member consisting of the excess, if any, of the member's contributions, without interest, over payments made by the Fund to the former member or his survivors of every kind whatsoever.

These benefits are considered as refundments in the same manner as payments to the employees becoming separated from active service due to resignation or dismissal. A segregation of these death benefits will be provided in the future for accounting and statistical analyses, thus establishing a base for comparisons of operating experience in future years. The contingent refund provision, however, has been considered in the valuation of liabilities and costs.

<u>Life Insurance</u>. The benefit schedule includes a substantial amount of life insurance represented by the survivors benefits payable upon death occurring before retirement or while a member is in receipt of disability benefits.

Under the survivors program, the following benefits are payable upon death of a member: (a) to the surviving spouse, 30% of the member's monthly average salary not to exceed $65 per month; (b) to each dependent child, 20% of such salary not to exceed $45 per month; and (c) in addition to the foregoing, 10% of such salary, not more than $20 per month, is to be divided equally among the dependent children. The maximum payment to a family is $250 per month.

The total benefits may not exceed the member's monthly salary. In lieu of the foregoing benefit, a surviving dependent spouse of a member having at least 20 years of service may receive, beginning at age 62, an annuity equal to 75% of the retirement annuity earned by the member not exceeding $150 per month.

The amount of life insurance represented by the survivors insurance benefit is as follows:

Male members	$53,769,468
Female members	23,467,240
Total	$77,236,708

The cost of this insurance has been evaluated and included as a part of the obligations of the Fund. It should be noted that only members in service and those on disability are covered by the benefit. Service retirement pensioners are not provided with this coverage.

Rate of interest. The factor of interest is basic in the operation of a retirement fund. It serves to finance a substantial part of the pension cost. In the case of this Fund, income from this source for the 1963 fiscal year was equal approximately to 20% of total revenues. As the measure of funding improves, this proportion should reach higher levels and should become increasingly important in the financing of the Fund's obligations.

According to the report of the State Board of Investment, dated May 13, 1964, the Fund has shown a consistent increase in the average yield on investments as will be noted below:

June 30th	Book Value of Investments	Total Income	Average Yield
1959	$27,567,667	$ 880,223	3.19%
1960	36,175,333	1,211,061	3.35
1961	47,555,893	1,753.679	3.69
1962	61,250,128	2,340,665	3.82
1963	74,921,814	2,990,070	3.99

At December 31, 1963, the report of the State Investment Board indicates that for the fiscal year ending June 30, 1964, the system average rate of return will approximate 4.01%.

Considering the results achieved in this area of operations and the scope of the investment authority for the Fund, the use of a 3-1/2% rate of interest for the calculation of costs and liabilities is justified. It may be expected that under the established authority earnings of the Fund should conveniently average a rate of 3-1/2% over the long term. By the long term is meant the average period of service of the employees prior to retirement and their average future lifetime after retirement which may approximate in total of 40 to 50 years.

Table A. LIFE TABLE FOR AGES 60 and OVER-

MALE ANNUITANTS

Age	Rate of Death	Number of Retirants	Number of Deaths	Age	Rate of Death	Number of Retirants	Number of Deaths
60	.010417	1,000,000	10,417	90	.207419	96,461	20,008
61	.014138	989,583	13,991	91	.221357	76,453	16,923
62	.017858	975,592	17,422	92	.235294	59,530	14,007
63	.021381	958,170	20,487	93	.249363	45,523	11,352
64	.024904	937,683	23,352	94	.263432	34,171	9,002
65	.028427	914,331	25,992	95	.277500	25,169	6,984
66	.032053	888,339	28,474	96	.291569	18,185	5,302
67	.035679	859,865	30,679	97	.305638	12,883	3,938
68	.039305	829,186	32,591	98	.331840	8,945	2,968
69	.042455	796,595	33,819	99	.362122	5,977	2,164
70	.045605	762,776	34,786	100	.397579	3,813	1,516
71	.048755	727,990	35,493	101	.438921	2,297	1,008
72	.051905	692,497	35,944	102	.487276	1,289	628
73	.055054	656,553	36,146	103	.542279	661	358
74	.059964	620,407	37,202	104	.610442	303	185
75	.064874	583,205	37,835	105	.690722	118	82
76.	.069784	545,370	38,058	106	.800000	36	29
77	.074692	507,312	37,892	107	1.000000	7	7
78	.078873	469,420	37,025	108		--	
79	.083054	432,395	35,912				
80	.087235	396,483	34,587				
81	.091416	361,896	33,083				
82	.095597	328,813	31,434				
83	.099778	297,379	29,672				
84	.116091	267,707	31,078				
85	.132404	236,629	31,331				
86	.149005	205,298	30,590				
87	.165605	174,708	28,933				
88	.179543	145,775	26,173				
89	.193481	119,602	23,141				

Table B. LIFE TABLE FOR AGES 60 and OVER - FEMALE ANNUITANTS

Age	Rate of Death	Number of Retirants	Number of Deaths
60	.008745	1,000,000	8,745
61	.009928	991,255	9,841
62	.011111	981,414	10,904
63	.012294	970,510	11,931
64	.013477	958,579	12,919
65	.015981	945,660	15,113
66	.018485	930,547	17,201
67	.020988	913,346	19,169
68	.021858	894,177	19,545
69	.022727	874,632	19,878
70	.023795	854,754	20,339
71	.024863	834,415	20,746
72	.025930	813,669	21,098
73	.026998	792,571	21,398
74	.028065	771,173	21,643
75	.033508	749,530	25,115
76	.038951	724,415	28,217
77	.044393	696,198	30,906
78	.049451	665,292	32,899
79	.055394	632,393	35,031
80	.061336	597,362	36,640
81	.067279	560,722	37,725
82	.073221	522,997	38,294
83	.079164	484,703	38,371
84	.085106	446,332	37,986
85	.096737	408,346	39,502
86	.108368	368,844	39,971
87	.120000	328,873	39,465
88	.131579	289,408	38,080
89	.185185	251,328	46,542
90	.277778	204,786	56,885
91	.370371	147,901	54,778
92	.462964	93,123	43,113
93	.555557	50,010	27,783
94	.648150	22,227	14,406
95	.740743	7,821	5,793
96	.833336	2,028	1,690
97	.925929	338	313
98	1.000000	25	25
99		--	

MEMBERSHIP STATISTICS

A large amount of statistical information was compiled by the office of the Fund and submitted to us for the purposes of this report. Part of this data is reproduced in detail in the appendix. Summaries of the more important basic statistics are as follows:

Active members	Male	Female
Number	25,522	17,330
Proportion of total	59.6%	40.4%
Aggregate salaries	$97,464,899	$49,345,227
Average annual salary	$3,819	$2,847
Average age	45.3	43.0
Average service	6.1	4.5
Accumulated member contributions	$34,107,506.21	$13,083,725.05

Service retirement annuities Law in force prior to July 1, 1957		
Number	822	330
Proportion of total	71.4%	28.6%
Aggregate pension payments	$981,177.48	$303,133.08
Average annual payment	$1,194.00	$919.00
Average age	77.5	76.9

Service retirement annuities Law in force July 1, 1957		
Number	1,862	683
Proportion of total	73.2%	26.8%
Aggregate pension payments	$2,948,902.44	$865,505.28
Average annual payment	$1,584.00	$1,267.00
Average age	64.2	69.9

Disability retirement annuities	Male	Female
Number	64	51
Proportion of total	55.7%	44.3%
Aggregate pension payments	$74,402.16	$51,715.92
Average annual payment	$1,163.00	$1,014.00
Average age at June 30, 1963	58.3	59.4
Average age at retirement	57.4	56.6

Survivors benefits - no children		
Number	19	1,146
Proportion of total	1.6%	98.4%
Aggregate pension payments	$13,038.96	$843,950.16
Average annual payment	$686.00	$736.00
Average age	69.3	67.4

Survivors benefits - involving children		
Number	1	204
Proportion of total	0.5%	99.5%
Aggregate pension payments	$780.00	$156,150.00
Average annual payment	$780.00	$765.00
Average age	50.0	44.3

Survivors benefits - children		
Number	226	206
Proportion of total	52.3%	47.7%
Aggregate pension payments	$125,134.56	$108,522.48
Average annual payment	$554.00	$527.00
Average age	11.4	11.6

ACTUARIAL VALUATION

A retirement fund represents a long term operation which involves a steady and persistent increase in benefit payments. The fund experiences a small outlay during its early years but the expenditures increase steadily until considerably higher levels of disbursements are reached as the fund expands its operations. An actuarial valuation is made for the purpose of computing the liabilities under the prescribed benefit schedule and ascertaining if these liabilities will be met by the expected revenues under the prescribed method of financing.

As previously stated, this valuation is made with the use of the actuarial functions produced in the survey of the operating experience of the fund in prior years. In establishing these functions, it is assumed that the operations of the fund in respect to such factors as rates of mortality among active and retired members, rates of separation with refunds, salary increments and investment earnings will be duplicated in future years. It is the responsibility of the actuary to properly evaluate the results of the past and possibly modify his findings with the view of establishing functions for future valuations which will realistically reflect the assumed experience under conditions that may be expected to exist in future years.

Long range valuations or cost estimates, regardless how determined, cannot be precise no matter how accurately they may have been calculated. There are bound to be differences between actual experience in operations over the long term and in the assumptions made with respect to the several actuarial factors used as a basis in such determinations. Nevertheless, valuations and cost determinations must be made in order that an indication may be had regarding the accrued and accruing financial obligations under the retirement fund and to illustrate cost trends. This is especially important in retirement funds where, either because of the character of the membership or the types of benefit provisions, costs will increase materially in future years as compared with the small expenditures incurred during the early years of the fund's existence.

Types of valuations. Two different methods are used in making an actuarial valuation. One consists of projecting the income and disbursements for a period of years taking into account in such projection membership trends, separations, mortality and other relevant factors bearing upon the future course of operations of the retirement fund. The second method is to set up the assets and liabilities of the fund as of a given date, both accrued and prospective. From the latter method, future contribution rates are computed which may prove sufficient to discharge the benefit liabilities over the expected working lifetime of the members.

Each of these two methods has certain advantages and disadvantages. The principal feature of the projection method is that a graphic and more understandable presentation of what may happen in the future is possible. The second method involves the preparation of a balance sheet and is easier to apply because of the fewer assumptions made as to the probable future experience.

Under either method costs are figured into perpetuity because of the assumption of a continuous flow of new members into the fund to replace those who have retired, died or have otherwise become separated from service, and of probable increases in total membership. The balance sheet method is probably more difficult to understand because it includes the presentation of a technical financial statement reflecting actuarial techniques. That method generally provokes the comment that the figures embodied therein are only actuarial costs and do not represent real costs. This viewpoint is erroneous because the figures constitute actual costs and liabilities, actuarially determined.

It must be assumed that the fund will continue in existence at least until it has discharged in full its obligations to all members thereof, both retired and active, disregarding for the moment prospective future entrants. The incorrect interpretation of the actuarial balance sheet probably arises from the fact that the ultimate cost figures and the accumulated assets of the fund, as compared to current benefit payments, are so much larger than the amounts of benefits currently being paid.

An actuarial valuation of the fund has been completed as of June 30, 1963. A valuation balance sheet, embodying the results of the computation of reserves and liabilities, is presented in the following pages. The technique used in the preparation of this statement is similar to that followed by accountants in the preparation of a financial balance sheet, except that a valuation balance sheet is broader in scope. It includes, in addition to the current liabilities, the actuary's evaluation of the accrued and prospective liabilities, and the present and prospective assets, actuarially determined.

A sound financial condition exists from the actuarial standpoint when assets are on hand equal to the difference between (1) the total of all accrued and prospective liabilities, and (2) the present value of future contributions to be received by the fund. This is known as the actuarial reserve.

VALUATION BALANCE SHEET

JUNE 30, 1963

VALUATION BALANCE SHEET - JUNE 30, 1963

Statement of Assets, Liabilities and Reserves

ASSETS

PRESENT ASSETS		
Cash with State Treasurer	$ 1,265,699.06	
Imprest cash	25.00	$ 1,265,724.06
Accounts Receivable -		
Members' accumulated contributions	$ 601,821.02	
Employers' contributions	19,505,177.51	
Other	74,863.97	20,181,862.50
Notes Receivable		6,788.46
Investments		77,890,796.34
Accrued Interest		771,308.64
Office Equipment		31,106.28
Deferred charges		5,156.74
PROSPECTIVE ASSETS		
Obligation of members and the employers for pension credits accruing after June 30, 1963 -		
Members:		
Male	$18,083,126.00	
Female	8,732,649.00	
Participating Employers	46,026,384.00	72,842,159.00
DUE FROM PARTICIPATING EMPLOYERS		
For unfunded accrued liability on account of earned pension credits covering service prior to July 1, 1963		96,493,211.75
TOTAL ASSETS		$269,488,113.77

VALUATION BALANCE SHEET - JUNE 30, 1963

Statement of Assets, Liabilities and Reserves

LIABILITIES AND RESERVES

L I A B I L I T I E S

Current:		
Accrued accounts payable	$ 8,049.00	
Penalties refundable	17,612.84	
Other	887.93	$ 26,549.77
Future Service Liability		
Present value of pension credits for service after June 30, 1963		
Male	$ 50,198,787.00	
Female	22,643,372.00	72,842,159.00

RESERVE REQUIREMENTS

Members' Contributions -		
For retirement annuities and benefits for active members	$ 20,873,495.39	
For future refunds and death benefits	25,960,551.00	46,834,046.39
Employers' Contributions -		
For retirement annuities and benefits - total requirements	$105,965,798.00	
Less, members' contribution credits	20,873,495.39	85,092,302.61
Retirement and Benefits in Force -		
Service retirement annuities	$ 47,408,754.00	
Disability annuities	1,884,471.00	
Survivors benefits	15,399,831.00	64,693,056.00
TOTAL LIABILITIES AND RESERVES		$269,488,113.77

<u>Present Assets</u> require no explanation since they comprise the assets on hand as taken from the report of the Secretary of the Association.

<u>Prospective Assets</u> consist of the obligations of the participants and the participating employers for service to be rendered subsequent to June 30, 1963. They represent discounted amounts, actuarially computed, giving effect to the factors of mortality, interest, turnover and others that enter into the computation of the present value of the accruing benefit liabilities for future service.

<u>Due from Participating Employers</u> constitutes a deferred receivable and represents the amounts accrued and unpaid on account of service rendered prior to the balance sheet date. This is an obligation of the employers to be discharged in future years by amortization payments on account thereof.

<u>Current liabilities</u> comprise accounts payable and other current or accrued accounts.

<u>Future Service Liability</u> represents the present value of the proportionate pension credits to be earned by the participants during future service from the balance sheet date to the assumed ages of retirement.

<u>Reserve Requirements</u> embrace three items and represent the amounts necessary to fully fund all accrued liabilities for

pensions and refunds covering service prior to the balance sheet date. The three items comprising these requirements are described below.

Members' Contributions consist of the amounts of the participants' own contribution credits including interest to the balance sheet date. Part of these credits are subject to refund in future years on account of resignation, dismissal or death, and part are to be applied to finance a portion of the pensions to become due in the case of participants now in service who will ultimately qualify for retirement and to pay benefits to survivors of members in service.

Employers' Contributions represent the amounts that must be on hand to finance the employers' portion of the accrued pension credits for those participants now in service who will ultimately qualify for retirement at the ages assumed for their retirement, and to meet the cost of disability and survivors benefits.

Retirement and Benefits Reserve constitutes the amount necessary to pay out during the future lifetime of the present annuitants the annuities entered upon and in force at the balance sheet date.

CURRENT LIABILITY TEST OF PROGRESS

The current liability method test of progress reflects the accounting concept. In accounting statements a differentiation is made between fixed liabilities and current liabilities, the former being of long term and unmatured while the latter constitute liabilities of short term and of a matured character. The current liability method test of progress would give full effect to this distinction in liabilities. Long term and unmatured liabilities would comprise the pension credits from employer contributions on account of members in service; short term and matured liabilities would include the total amount of accumulated member contributions, plus the actuarial value of annuities and benefits in force.

An evaluation of the progress of the Fund for the last two years according to the foregoing standard is as follows:

	Fiscal Year Ended June 30	
	1963	1961
Members' Accumulated Contribution Credits	$ 46,834,046	$39,263,989
Actuarial value of matured annuities and benefits	64,693,056	49,896,372
Totals	$111,527,102	$89,160,361
Net Assets	100,126,193	74,285,965
Excess of Matured Liabilities over Net Assets	$ 11,400,909	$14,874,396

It is evident that according to accounting standards the Fund made definite progress during the two-year period ended June 30, 1963, in the improvement of its financial condition. A decrease of $3,473,487 occurred in the excess of matured liabilities over net assets. This trend, if maintained, should result in the elimination of the negative balance within a few years.

FINANCING THE FUND

Certain actuarial concepts are associated with retirement fund operations which are fundamental in the consideration of the financing of a fund. Actuarial science deals with mortality risks and compound interest. In life insurance, its application is comparatively simple. By the use of mortality tables, the number of persons who will die at various ages can be predicted with reasonable accuracy for large groups of individuals. The other important factor is the amount of interest to be earned on invested funds. This is subject to some fluctuation. Usually the actuary introduces a factor of safety in order to compensate for a possible variation in earnings from the assumed rate by adopting for his calculations a lower rate of interest.

In retirement fund operations, actuarial problems are not as simple as in life insurance. The factors of mortality and interest are also basic in these operations. In addition, however, a number of other factors peculiar to pensions must be studied and appraised in making any forecast of probable future experience and in formulating criteria for use in cost calculations. Among these additional factors are: (1) the age at retirement; (2) mortality among retirants; (3) rate of turnover among participants; (4) rates of salary; (5) ages at entry of new participants; (6) distribution of participants by age and sex; (7) rates of disability; and (8) the employer's present and possible future employment policies.

Actuarial reserve

It represents the difference between the sum required to meet the present value of future benefits and the amount representing the present value of future contributions. This reserve, therefore, constitutes a liability of the retirement fund to its participants. It consists of the value of the accrued pension credits and is the balancing amount in the actuarial balance sheet or valuation balance sheet as it is commonly called.

Since this reserve represents an actual accrued liability, it should be offset by present assets in the form of cash, securities and other assets of a realizable value. If the rates of contribution have been accurately computed and the contributions have been regularly made in accordance with such computations, the accumulated reserve together with future contributions should be sufficient to meet all future benefit payments to those who qualify.

Accounting concept

An actuarial reserve is basically a method of cost accounting. It results in spreading the cost of a pension over the period of an employee's productive service. Its application makes it possible to establish rates of contribution which are fairly constant during the period of an employee's service, thus equalizing taxes and contributions over long periods of time.

Orderly budgeting of pension cost is facilitated by means of the actuarial reserve. Budgeting of the cost of future benefits occurs before these benefits mature. Thus, the actuarial reserve is in reality the net liability of a retirement fund to the prospective beneficiaries. The future assets and future liabilities are reduced to present values in order to produce a practical estimate of the amount of the reserve requirements as of a current date. This procedure results in the preparation of a valuation balance sheet which sets forth the financial condition of the retirement fund from an actuarial or technical standpoint.

Accrual method less costly

The actuarial basis of financing reflects the accrual method of meeting pension cost and is frequently referred to as advance funding. This method calls for current contribution in excess of current pension payments, resulting in a carry-over of funds into a reserve. The adequacy of the rates of contribution under this method of advance funding is verified periodically by actuarial procedure and criteria as previously explained.

The requirements for the accrual method of financing are less than under the so-called "out-of-pocket" or owe-as-you-go basis of meeting pension cost. While the pension payments to the retirants will be the same under either type of plan, certain savings in cost are achieved under the funding or accrual method of financing. Interest earnings on the accumulated reserve operate to reduce cost. Of greater importance, however, is that a more rigid control over pension cost is established. In an evaluation and appraisal of the financial impact of changes in benefits or qualifying conditions, cost must be measured in terms of its lifetime value rather than as to the immediate cash outlay for additional or increased benefits.

The meaning of the term "reserve" is quite different in the operation of a retirement fund than in other forms of enterprise. The popular understanding of this term is that it is available for use in times of emergency for either general or specific purposes.

STATEMENT OF COSTS AND ACCRUED OBLIGATIONS

The valuation of the Fund was made on a 3-1/2% interest rate assumption. The directive of the Study Commission suggested that the results also be presented on a 3% interest basis. Because of the numerous imponderables and many variables involved during any extended period of operations, a comparison reflecting a change in interest rate may be valid and informative only if presented as of the same date. The costs and accrued obligations according to the two rates of interest are given below in terms of a percentage of payroll which results in a truer perspective of cost.

	3½% Rate of Interest	3% Rate of Interest
Normal cost		
Service retirement annuity -		
Under present law for all members	7.44%	8.18%
Additional cost due to the 1957 savings provision	0.43	0.48
Disability retirement annuity	0.66	0.72
Survivors benefits -		
Under present law for all members	2.16	2.34
1957 savings provision	0.38	0.42
Administrative expense	0.25	0.25
Total normal cost	11.32%	12.39%

The small differential between the foregoing total cost on a 3½% basis and the combined contribution rates of the members and employers is available to provide for any possible variations in future operations from the assumed operating experience.

Accrued liability

The accrued liability computed upon the basis of the two rates of interest is as follows:

		3½% Rate of Interest	3% Rate of Interest
Earned pension credits of members in service for service retirement, disability annuity and survivors benefits -		$105,965,798.00	$117,973,842.00
Reserve requirements on annuities and benefits in force -			
Service retirement annuities		47,408,754.00	49,352,513.00
Disability annuities		1,884,471.00	1,976,316.00
Survivors benefits		15,399,831.00	16,107,354.00
		$170,658,854.00	$185,410,025.00
Net Assets	$100,126,193.25		
Less, provision for refunds and death benefits	25,960,551.00	74,165,642.25	74,165,642.25
		$ 96,493,211.75	$111,244,382.75

Total salaries of the members subject to the $4,800 limitation are approximately $136,000,000.00. A contribution of 2-1/2% of payroll representing the employers' contributions towards the accrued liability amounts to $3,400,000.00. Upon the basis of a 3-1/2% interest rate assumption, this is sufficient to meet the interest accrual on the unfunded accrued liability. If the margin existing in normal cost between the computed cost of 11.32% and the 12% total contribution rate in force is made available for amortizing the accrued liability, amortization could be accomplished in a period of 45 years.

Meeting in full the normal or current service cost and providing for the accrual of interest on the unfunded accrued liability so as to avoid any increase therein may be considered as an acceptable and practical method of funding the pension obligation.

CHANGE IN SALARY CEILING FOR CONTRIBUTIONS AND BENEFITS

As in the case of several other retirement funds operating in the State, member contributions and annuity and benefit computations are limited to a salary limitation of $4,800 per year. This constitutes an unrealistic standard. A salary ceiling results in discrimination against a certain segment of the membership and creates an inequity as to those members. An arbitrary salary ceiling is opposed to pension principle.

The several retirement funds that still maintain a salary ceiling in the State of Minnesota are in the small minority among public employee retirement funds in the United States. Recent years have witnessed a removal of these limitations in an effort to give full effect to the underlying motivations and principles governing the operation of a retirement plan as an essential adjunct of a progressive personnel policy for government.

The directive for an actuarial survey and valuation also calls for cost estimates relative to a change in the salary limitation or its entire removal. The following constitutes the estimated increase in annual cost of such a change under the assumed conditions as stated:

Assumed annual salary ceiling	Increase in Employer Contributions	Per cent of members who would still be subject to ceiling
$6,000	$293,100	11.3%
7,200	471,240	4.1
None	552,360	--

It is contemplated that the change in the limitation would be applicable to future pension credits resulting from employee and employer contributions based upon the higher salary limitation, therefore there would be no increase in the accrued liability for services rendered prior to the effective date of the change.

BASIC FACTORS

The financial condition of a retirement fund is established by the valuation of its assets and liabilities. Such a valuation is predicated upon certain basic factors including, among other things, the conditions for retirement, rates of death among active members, rates of separation from service, the incidence of disability, rates of retirement and mortality among annuitants. These factors are applied to determine the cost of the retirement annuities and other benefits prescribed by the plan of operation.

The factor of age has an important bearing upon cost considerations. For example, a young entrant into the service requires larger total contributions than an older entrant because the younger entrant will be able to earn a larger retirement annuity. On the other hand, an employee in service at the date of inception of the fund who is of an advanced age may require an immediate outlay of moneys to provide for his retirement, as contrasted with a younger employee in service for whom no contributions may be necessary because of the possibility that he may withdraw from service or die while in service before reaching retirement age.

The age of retirement must also be considered in cost calculations. A low retirement age results in higher costs not only because of longer life expectancy but also because by early retirement such employees avoid the risk of health impairment that usually results from extreme physical exertion and the rigors of employment at the advanced ages.

The factor of sex is also of importance because of the diverse physiological and economic conditions governing the two sexes. Thus, marriage is a contributing factor in the rate of separation from service of female employees. That women live longer than men is apparent from a study of mortality rates. Retirement annuities for women, therefore, require a larger outlay of moneys, not only because of their increased longevity but also because, on the average, women tend to retire at earlier ages than men.

All of these factors are basic and interactive in a valuation of a retirement fund. A change in the death or withdrawal rates on active members will affect the present value of the retirement annuities unless the change is counter-balanced by the operation of other factors. Costs of retirement and other benefits, therefore, are dependent upon these forces.

Mortality. The rate of mortality among members of a retirement fund affects its financial operations in two diverse ways. If the number of deaths is lower than contemplated by the mortality standard in use, certain gains to the fund accrue because a smaller amount of death benefits are payable if a death benefit is provided. On the other hand, if more members survive at the ages fixed for retirement, more annuities have to be paid and the result is higher pension cost. The increase in pension cost is generally much greater than the saving in death benefit payments.

If the rates of mortality among retired members are less than the expected, according to the mortality table used to measure mortality among annuitants, a deficit results which must be met by increased revenues for the fund. Conversely, if the rates of death among the annuitants is greater than the expected according to the assumed mortality table, a gain to the fund occurs and an excess is created. This excess may be considered as a surplus for use as an additional reserve for future contingencies or may be applied as a credit on future contributions.

Turnover. Another important factor affecting pension cost is employee turnover. While one of the objectives of a retirement fund is to reduce employee turnover, and this is generally achieved in operations, there are usually a number of employees who leave the service with relatively short periods of employment and forfeit their accrued pension credits by accepting a refund of their contributions. On the other hand, the provision for the vesting of pension credit makes it possible for some employees to leave the service and retain their rights to a deferred retirement annuity.

The factor of turnover is basic in the calculation of costs and liabilities of a retirement fund. Annual valuations and periodic actuarial surveys are prescribed in order that a continuous check of the factor of turnover may be made and its impact in operations may be fully evaluated. By these valuations, changes in basic assumptions may be made without too long a delay if it appears that the results of operating experience are such as to dictate such changes.

Disability. The operating experience of a retirement fund with disability incidents is subject to wide variations depending upon the types of provisions made and the character and degree of administration of disability claims. The personnel policies of the governmental unit have a considerable bearing upon the number of disability claims to be processed by a retirement fund and the payments to be made. Members disabled for the particular duties of their previously assigned position are frequently able to perform useful service in another capacity. If they are given other employment, the burden on account of disability claims is reduced. As a general rule, however, this is not done and the members are placed upon disability retirement.

For these and other reasons, established disability tables cannot be applied with any degree of dependability in the operation of a retirement fund as a measure of the number of disability incidents and the amount of claims to be paid.

Where such tables are applied, they must be carefully reviewed and checked periodically. Thus, the forecasts of costs and obligations that they reflect would take into account present and prospective factors of both internal and external character influencing the incidence of disability claims.

Employment. The policies maintained by the employer relative to the employment of personnel must be carefully studied and evaluated as to their effect in current operations. These policies frequently affect the number of persons entering service, the age and salary distribution of new entrants, the rates of separation from service and rates of disability. Any major revisions in employment or fiscal policies of the governmental unit may have an immediate or future effect on the course of operations of the retirement fund and its financial requirements.

In an actuarial survey, these possibilities must be considered. If any of these factors are of sufficient scope to warrant adjustment or revision in the financing provisions of the retirement fund or in the qualifying conditions relating to the several benefits comprising the benefit schedule, the necessary changes must be made. Such changes are imperative if the underlying plan governing the retirement fund is to be maintained on a basis that will meet most effectively, in accord with technical requirements, the peculiar needs of government.

<u>Interest</u>. The factor of interest is also basic in the financing of a retirement fund. All calculations of costs and liabilities are predicated upon the theory that its reserves will be continuously invested in income-bearing securities at an assumed rate. Mortality tables used in the computation of annuities and reserves reflect an interest factor. Interest income accounts for a substantial part of its revenues. For all public employee retirement systems in the United States, investment income at this time comprises 21% of total revenues. This proportion is steadily increasing with the upward trend in the measure of funding.

The effect on cost of the income from invested assets is quite pronounced. Earnings on investments have a direct bearing on the amounts to be contributed to the retirement fund. The larger the earnings, the smaller are the contribution requirements from the employees and employers.

The amount of these earnings depends upon two factors, namely; (1) the rate of income on investments, and (2) the length of service rendered by those qualifying for pension benefits. Assuming a fixed return of 2-1/2% per year and regular monthly contributions to the fund, the interest earnings after a period of 30 years would be equal to 32.8 per cent of the total accumulated sum consisting of principal and interest, and after 25 years, to 27.9 per cent of such sum.

To illustrate further, an investment made over a period of 25 years at 3 per cent will produce 28 per cent more income than one made at 2-1/2 per cent for the same period. Likewise, an investment made at 3-1/2 per cent for 25 years would produce 25 per cent more income than one made at 3 per cent for the same period of time.

Two rates of interest have been used in calculations in connection with this survey, 3% and 3-1/2% per annum. Under the existing investment authority for the fund, a rate of 3-1/2% should be earned conveniently over the long term. By the long term is meant the period of productive service of the employees and their length of life after retirement. Thus, this may involve a period ranging from 40 to 50 years.

Salary. The retirement annuities payable by the fund are based upon the average salary of a member for a prescribed period subject to a maximum of $4,800 per year. For the proper calculation of costs and liabilities, future increases in salary within such limitation must be taken into account. The accrued liabilities of the fund at any given date, representing the present value of future pension expectancies, must reflect salary increases occurring prior to the time when the annuities become payable. Generally, a salary scale is prepared showing the rates of salary in effect at various ages until the prescribed minimum ages of retirement, on the assumption that as a member progresses in service towards retirement, his salary will be continuously increased in accordance with the rates assumed in the salary scale.

In cost determinations, a salary scale is generally applied in terms of an average salary relationship between the present age of the member and the assumed ratirement age. The relationship between ages may be unaffected in a salary scale by any over-all increase in salary for the employees on a fixed percentage basis uniformly applied.

ACTUARY'S CERTIFICATION

We have completed an actuarial valuation of the assets and liabilities of the Public Employees' Retirement Fund of Minnesota as of June 30, 1963.

Present assets and current liabilities at the aforesaid date were derived from a financial report suppled by the Secretary of the system dated November 15, 1963.

In our opinion, the foregoing Valuation Balance Sheet correctly presents the condition of the Public Employees' Retirement Fund of Minnesota at June 30, 1963 after giving effect to accrued liabilities and reserve requirements under the law in force at that date.

A. A. Weinberg

A. A. Weinberg

Actuary

June 26, 1964

PUBLIC EMPLOYEES' POLICE AND FIRE FUND

The Public Employees' Police and Fire Fund operates as a separate entity under the management and direction of the Board of Trustees of the Public Employees' Retirement Fund. The Fund was created for the purpose of establishing a state-wide fund for all policemen and firemen of the several government subdivisions of the State without jeopardizing the accrued rights, benefits or future expectancies of members of the uniformed personnel who are participants in an established local relief or retirement fund. A summary of the principal benefit and contribution provisions of the Public Employees' Police and Fire Fund is presented as a preface to a review of its financial condition.

Application. The Fund applies to any police officer or fire fighter serving on a full-time basis on or after July 1, 1961. Any person in such capacity serving less than full-time may become a member upon adoption of a resolution by the governing body.

Exclusions. The Fund shall not apply to any police officer or fire fighter who is required to contribute to any other pension fund maintained for officers and employees of a governmental unit.

Normal annuity. A member may retire beginning at age 58 after 10 years of service. The annuity is equal to 2% of "average salary" for each of the first 30 years of service, and 1% for each year of service thereafter.

Any member becoming separated from service with at least 10 years of service shall be entitled to a deferred annuity beginning at age 58.

Average salary. For years prior to July 1, 1957, average salary shall mean the average for the yea rs in which the highest salary was paid upon which pension deductions were based for any 5 consecutive years prior to such date, subject to a limitation of $4,800 per year.

For years subsequent to June 30, 1957, average salary shall mean the average of salaries paid to the member, not exceeding $4,800 per year, upon which salary deductions were made for pension purposes.

Non-duty disability. The conditions for disability retirement are the completion of 10 years of service regardless of age or the attainment of age 50 with at least 5 years of service. The benefit is equal to the amount of normal annuity provided for the general employees who are members of the Public Employees' Retirement Fund plus a supplementary monthly annuity equal to $50 if the age of the member is less than 51 years when disabled, which supplementary payment is reduced by the amount of $6 for each year's advance in age at date of disability down to a supplementary payment of $6 if the age of the member at date of disability is 57 years. Benefits terminate at age 58, at which time the member may elect a normal annuity at the rate aforesaid or may continue with the disability annuity, whichever is greater.

Duty disability. Upon total and permanent disability occurring in line of duty regardless of age or length of service, a member is entitled to 40% of "average salary" as above defined. Benefits terminate at age 58 at which time the member may receive a normal annuity at the rate aforesaid or disability annuity, whichever is greater.

Survivors annuity. Upon death of a member occurring before retirement having at least 20 years of service, his surviving dependent spouse shall be entitled to receive at age 62 a survivors annuity equal to 75% of the normal annuity described above but not to exceed $150 per month.

If at date of death the member was under age 58, his normal annuity is reduced 1/2 of 1% for each month that the member is under age 58.

The annuity to a spouse terminates upon remarriage. The dependent spouse, at her option, may elect to receive the aforesaid annuity or the survivors benefits prescribed for a spouse under the law governing the Public Employees' Retirement Fund, but not both.

No reduction of benefits. The annuities and benefits payable by this Fund shall not be affected, diminished or impaired by any amounts received by a member from a retirement fund supported in whole or in part by public funds for the same or different periods of service.

Savings provision. Any member of this fund who was a member of the Public Employees' Retirement Association on June 30, 1957 having at that time 10 years of service or more may elect to receive the benefits hereunder or the benefits prescribed by the law in force on June 30, 1957.

Financing. Members contribute 6% of salary up to a maximum salary measure of $4,800 per year.

The employer is required to contribute 9% of salary for each member up to a salary measure of $4,800 per year. In addition each employer is obligated to contribute 2-1/2% of salary of each member for the purpose of amortizing any accrued deficit in the Fund.

MEMBERSHIP

The following constitute the political subdivisions participating in the Fund on behalf of their policemen and firemen:

Counties	83
Cities	86
Villages	233

Membership of policemen and firemen in the Fund at the end of each of the last three fiscal years was as follows:

Year Ended June 30th	Membership
1961	811
1962	1,174
1963	1,525

Beneficiaries numbered 32 annuitants who received annuity payments during the 1963 fiscal year amounting to $38,834.26, and 20 survivors of deceased members whose payments for the year totalled $22,342.19.

FINANCIAL REVIEW

Total assets of the Fund at June 30, 1963, amounted to $5,020,937.19 of which the sum of $2,606,334.76 represented members' accumulated contribution credits. The annual payroll of the members subject to the $4,800 maximum salary measure amounted to $6,550,000.00. The average salary, therefore, was $4,295.00.

In the absence of detailed statistics on the membership of the Fund which are in process of compilation by the participating employers it would appear from a study of operations, that its obligations are well financed. Applying standards in effect for policemen and firemen of similar governmental units of other States, the conclusion may reasonably be drawn that the financial provisions made for the prescribed benefit schedule are adequately funded.

A more extensive valuation will be undertaken when all detailed statistics have been made available to the Fund by the participating governmental units.

APPENDIX

Summary of Principal Provisions of the Retirement Plan for General Employees

Statistical Tables

SUMMARY OF PRINCIPAL PROVISIONS OF THE RETIREMENT PLAN FOR GENERAL EMPLOYEES

Coverage. Any officer or employee of a governmental subdivision of the State whose salary is paid in whole or in part from taxes, fees, assessments or other public revenues is provided coverage. Included also are members of the Legislature, the Secretary of the Senate, the chief clerk of the House, any district court reporter, any officer or employee of the Public Employees Retirement Association and any employee of the League of Minnesota Municipalities. Membership of an elected official is optional.

The exclusions from coverage are persons employed for professional service on a per diem basis, election officers, independent contractors, patient and inmate institutional help, members of boards and commissions paid on a per diem basis, members of volunteer fire departments, temporary or seasonal workers, members of other retirement funds and persons electing to become excluded because of certain religious affiliations.

Governmental subdivision. This term means a county, city, village, borough, town, school district, or a department or unit of state government or any other public body employing a person described above. It does not include any municipal housing or redevelopment authority, or any port authority, or any soil conservation district, or any hospital district reorganized under Laws of 1959.

Allowable credit. Any service for which contributions have been made to the fund, in any form, or as may have been otherwise authorized by statute for service prior to June 30, 1958, including any authorized leaves of absence not to exceed 3-1/2 months in any calendar year, or one year during the entire period of membership. Military service credit is provided under specified conditions upon payment of prescribed contributions.

Age and service retirement. (1) A member may retire beginning at age 65 after 10 years of allowable service, or at age 58 after 20 years of allowable service. The amount of retirement annuity is equal to 1% per year of service for the first 10 years; 2% per year of service for the next 10 years; 2-1/2% per year of service for the 3rd 10 years; and 3% per year of service thereafter, based upon "average salary" as defined below.

(2) Any member over age 65 and who at June 30, 1957 was at least 60 years of age and had at least 5 years of credited service on such date, whose total service was between 5 and 10 years, is entitled to 2% of average salary per year of service in lieu of the regular formula and may retire even though his service is less than 10 years.

(3) Any member who had 10 or more years of credited service on July 1, 1957 may have the option of receiving the retirement benefit in effect prior to such date under the 1955 law or, in lieu thereof, the benefit in effect under the law of 1957, as amended.

Definition of average salary. For credited service prior to July 1, 1957 "average salary" means the average for any 5 consecutive years prior to such date during which such average was highest. For service after June 30, 1957, average salary means the salary (not exceeding $4,800 per year) on which contributions were made by the member. Salary includes wages and fees.

Early retirement. Upon retirement before age 65, a member is entitled to the aforesaid retirement annuity, reduced 1/2 of 1% for each month that the member's age is under 65 at retirement.

Vesting of pension credit. Any member withdrawing from service after completing 10 years of allowable service, may retain his rights in the fund and receive a deferred annuity beginning at age 65 of the amount accrued at date of withdrawal from service based upon the law in force on such date.

Total and permanent disability. Any member, regardless of age, having at least 10 years of credited service, and any member aged 50 or over with at least 5 years of allowable service credit is eligible for total and permanent disability benefit. Any member whose average salary is less than $75 per month is ineligible for this benefit.

The amount of benefit is the same as that for service retirement payable to a member at age 65 or over, plus a supplementary benefit equal to $50 per month if age of the member is less than 56 years; or $45 per month if age is 56 years, reduced $5 per month for each age above 56 down to a minimum of $5 at age 64. If the total disability benefit exceeds the monthly average salary of the disabled member, the benefit is reduced to such average salary.

The disability benefit terminates, in any event, when the member attains age 65. At such time the member may apply for a service retirement annuity or an annuity equal to the disability benefit, whichever is greater. A member may also elect an optional annuity at such time, under the conditions applicable to such annuity.

Optional annuities. In lieu of the normal retirement annuity, a member may elect at or before retirement a lesser retirement annuity and provide an annuity for a designated beneficiary to become payable upon his death after retirement provided the beneficiary survives the member. These joint and last survivor annuities are provided on an actuarial equated basis.

Survivors' benefits. (1) Upon death of a member before retirement or upon death of a member in receipt of total and permanent disability benefits, if such member had at least 18 months of credited service, the following benefits are payable: (a) to the surviving spouse, 30% of the member's monthly average salary not to exceed $65 per month; (b) to each dependent child 20% of average salary not to exceed $45 per month; (c) in addition to the foregoing, 10% of average salary not to exceed $20 per month to be divided equally among the dependent children. The maximum monthly benefit to a family is $250.

If the total survivors' benefits exceed the member's monthly salary, benefits are to be reduced to a level equal to such salary. Any survivors of a member whose salary was less than $75 per month are not entitled to benefits.

Benefits to a dependent spouse terminate on remarriage or death, and on account of a dependent child when dependency ceases.

(2) In lieu of the foregoing, a surviving dependent spouse of a member who has at least 20 years of credited service and has attained age 58, may receive, beginning at age 62, an annuity equal to 75% of the retirement annuity earned by the member but not more than $150 per month. The benefit terminates on remarriage.

Death benefit - Death before retirement. Upon death of a member or former member before retirement if no optional annuity has been elected, a refund is payable to a designated beneficiary of the total member contributions, plus interest at 2% per annum. If a disability benefit had been paid to the member, no interest is added to this death benefit.

Death benefit - Death after retirement. Upon death of a retired member who did not elect an optional annuity, his designated beneficiary is entitled to a refund of the excess, if any, of the accumulated contributions (without interest) over the payments made by the fund to the former member or survivors of every kind whatsoever.

If the member had elected an optional annuity, a payment on the aforesaid basis is to be made to the member's designated beneficiary.

If no beneficiary had been designated by the member, or if the beneficiary does not survive the member, payment of the amount is to be made to the estate of the member, provided that if the moneys are not applied for within 5 years from date of death, they revert to the fund, as by law provided.

Refundments. Upon separation from service, a member is entitled to a refund of his accumulated contributions without interest, thus forfeiting all accumulated credits and rights in the fund.

If no refund is applied for within 5 years from the date of the last salary deduction, and the total amount of the accumulated contributions does not exceed $25, the amounts thereof revert to the retirement fund to be credited to a suspense account. If not applied for within a period of 10 years, the amount is transferred to the retirement fund, provided that should the former employee reenter service, the amount of his account is to be revived to his credit.

Upon reentry into service and the completion of at least 18 months of credited service, the member may regain his previously forfeited credits by the repayment of all prior refunds plus interest at 4% per annum, compounded annually.

Member contributions. Employees contribute 6% of salary, not exceeding salary of $4,800 in any calendar year.

Employer contributions. Each governmental unit participating in the fund on behalf of its employees is required to contribute 6% of salary not exceeding $4,800 of salary in any calendar year. This contribution is for current service of the members.

To meet the requirements on account of the unfunded accrued liability for the purpose of amortizing this liability, each such employer is to contribute 2-1/2% of salary of each member not to exceed $4,800 salary for any calendar year.

Each governmental unit shall pay these contributions out of funds collected from taxes or other revenues accruing to the employer which are to be considered as an administrative cost of the employer. The taxes levied for the purposes of the fund may be considered outside of the limitation applicable to the governmental unit. In the event of failure on the part of the governmental unit to contribute the amount required by the fund, the deficiency may be added to the next tax levy to be made by the governmental unit but no interest shall accrue on the delinquent payments.

Management. The management of the fund is vested in a board of trustees of 12 members consisting of (a) the State Auditor, the State Insurance Commissioner and the State Treasurer as members ex officio, and (b) 9 trustees elected by the members.

Investments. Investment of the reserves of the fund in excess of current requirements are made by the State Investment Board under a broad investment authority. This authority includes United States Government Bonds and notes, State and municipal bonds in Minnesota and of other states, obligations of Canada and of cities therein, public housing obligations, bonds or other obligations that are insured by an agency of the United States, and corporate bonds and corporate stocks of domestic corporations.

Table 1. ACTIVE MEMBERS CLASSIFIED BY AGE AND ANNUAL SALARIES SHOWING TOTAL SERVICE FOR EACH AGE GROUP

M A L E

Age Group	Number	Annual Salaries	Total Service (Years)
Under age 20	51	$ 117,633	51
20 to 24 incl.	790	3,600,780	1,000
25 to 29 incl.	1,930	8,512,251	4,868
30 to 34 incl.	2,343	8,790,520	9,233
35 to 39 incl.	2,945	11,000,553	16,264
40 to 44 incl.	3,047	11,023,937	19,155
45 to 49 incl.	3,360	12,663,196	23,910
50 to 54 incl.	3,394	12,896,926	26,536
55 to 59 incl.	3,031	11,592,107	26,642
60 to 64 incl.	2,277	9,521,111	25,211
65 to 69 incl.	1,301	5,351,397	15,790
70 and over	1,053	2,394,488	7,849
Totals	25,522	$97,464,899	176,509

Table 2. ACTIVE MEMBERS CLASSIFIED BY AGE AND ANNUAL SALARIES SHOWING TOTAL SERVICE FOR EACH AGE GROUP

F E M A L E

Age Group	Number	Annual Salaries	Total Service (Years)
Under age 20	338	$ 984,179	259
20 to 24 incl.	1,890	6,845,637	3,103
25 to 29 incl.	1,353	4,780,646	3,298
30 to 34 incl.	1,174	3,335,040	3,515
35 to 39 incl.	1,580	3,951,136	5,948
40 to 44 incl.	2,057	5,016,332	8,769
45 to 49 incl.	2,413	5,921,953	12,766
50 to 54 incl.	2,462	6,730,104	16,038
55 to 59 incl.	1,912	5,533,207	14,860
60 to 64 incl.	1,311	3,951,884	12,779
65 to 69 incl.	564	1,723,875	6,100
70 and over	276	571,234	2,485
Totals	17,330	$49,345,227	89,920

Table 3. SERVICE RETIREMENT ANNUITIES CLASSIFIED BY AGE AND ANNUAL PAYMENTS

MALE

Age	Law in Force Prior to July 1, 1957 Number	Law in Force Prior to July 1, 1957 Annual Payments	Law in Force July 1, 1957 and subsequent Number	Law in Force July 1, 1957 and subsequent Annual Payments	Combined Number	Combined Annual Payments
60	--	$ --	1	$ 2,149.20	1	$ 2,149.20
61	--	--	6	11,432.40	6	11,432.40
62	--	--	17	27,110.64	17	27,110.64
63	--	--	16	27,762.48	16	27,762.48
64	--	--	38	69,850.92	38	69,850.92
65	--	--	50	93,395.40	50	93,395.40
66	1	1,764.84	131	189,263.16	132	191,028.00
67	3	4,188.36	175	276,034.32	178	280,222.68
68	13	21,519.72	178	288,689.76	191	310,209.48
69	7	13,575.36	203	325,983.72	210	339,559.08
70	9	12,775.80	179	280,062.96	188	292,838.76
71	38	52,855.68	180	286,573.56	218	339,429.24
72	54	60,919.44	135	214,549.44	189	275,468.88
73	65	77,083.08	101	167,821.44	166	244,904.52
74	65	76,971.00	115	187,477.44	180	264,448.44
75	61	71,042.40	79	124,859.52	140	195,901.92
76	71	78,070.92	65	99,107.76	136	177,178.68
77	61	66,325.68	44	61,171.32	105	127,497.00
78	55	67,857.24	40	62,077.20	95	129,934.44
79	59	64,966.80	27	43,222.44	86	108,189.24
80	57	68,699.28	20	26,521.08	77	95,220.36
81	40	46,819.08	16	21,032.76	56	67,851.84
82	30	32,745.84	17	23,936.88	47	56,682.72
83	31	31,483.44	11	14,050.20	42	45,533.64
84	22	30,604.32	4	3,970.56	26	34,574.88
85	25	32,526.00	8	11,788.20	33	44,314.20
86	14	16,418.40	4	6,456.24	18	22,874.64
87	8	11,351.52	2	2,551.44	10	13,902.96
88	11	12,674.88	--	--	11	12,674.88
89	10	13,228.20	--	--	10	13,228.20
90	5	6,235.80	--	--	5	6,235.80
91	3	3,538.92	--	--	3	3,538.92
92	1	698.28	--	--	1	698.28
94	1	1,119.96	--	--	1	1,119.96
96	2	3,117.24	--	--	2	3,117.24
Totals	822	$981,177.48	1,862	$2,948,902.44	2,684	$3,930,079.92

Table 4. SERVICE RETIREMENT ANNUITIES CLASSIFIED BY AGE AND ANNUAL PAYMENTS

FEMALE

Age	Law in Force Prior to July 1, 1957		Law in Force July 1, 1957 and subsequent		Combined	
	Number	Annual Payments	Number	Annual Payments	Number	Annual Payments
60	--	$ --	1	$ 489.60	1	$ 489.60
61	--	--	7	7,573.56	7	7,573.56
62	--	--	14	21,504.96	14	21,504.96
63	--	--	13	18,929.88	13	18,929.88
64	--	--	23	34,991.88	23	34,991.88
65	--	--	36	55,671.48	36	55,671.48
66	1	1,979.28	57	72,585.12	58	74,564.40
67	3	4,001.52	67	81,311.52	70	85,313.04
68	2	1,462.44	77	97,136.88	79	98,599.32
69	4	4,113.96	58	71,099.64	62	75,213.60
70	4	4,907.88	62	70,078.68	66	74,986.56
71	12	9,350.04	61	77,447.16	73	86,797.20
72	22	19,854.60	40	49,375.44	62	69,230.04
73	30	26,742.00	32	41,897.16	62	68,639.16
74	31	29,689.92	39	47,462.04	70	77,151.96
75	36	31,415.88	33	41,269.56	69	72,685.44
76	30	25,823.52	19	25,909.80	49	51,733.32
77	22	19,330.68	10	12,811.80	32	32,142.48
78	24	17,507.28	9	8,194.92	33	25,702.20
79	23	25,877.88	7	7,982.40	30	33,860.28
80	19	15,316.44	5	6,252.48	24	21,568.92
81	21	19,857.84	3	5,004.36	24	24,862.20
82	9	7,088.52	3	3,090.12	12	10,178.64
83	6	6,404.52	6	7,066.08	12	13,470.60
84	6	7,041.84	1	368.76	7	7,410.60
85	7	6,156.72	--	--	7	6,156.72
86	5	4,378.20	--	--	5	4,378.20
87	2	4,095.60	--	--	2	4,095.60
88	5	4,213.68	--	--	5	4,213.68
89	2	1,856.88	--	--	2	1,856.88
90	2	2,768.16	--	--	2	2,768.16
91	1	787.44	--	--	1	787.44
92	1	1,110.36	--	--	1	1,110.36
Totals	330	$303,133.08	683	$865,505.28	1,013	$1,168,638.36

Table 5. SERVICE RETIREMENT ANNUITIES CLASSIFIED BY AGES AT RETIREMENT

M A L E

Age at Retirement	Law in Force Prior to July 1, 1957	Law in force July 1, 1957 and subsequent	Combined
58	--	1	1
59	--	1	1
60	17	34	51
61	15	27	42
62	10	35	45
63	17	47	64
64	19	61	80
65	155	495	650
66	98	171	269
67	47	222	269
68	68	143	211
69	55	114	169
70	74	120	194
71	50	91	141
72	55	71	126
73	35	60	95
74	19	44	63
75	26	38	64
76	14	21	35
77	12	18	30
78	10	10	20
79	9	16	25
80	5	7	12
81	2	9	11
82	7	5	12
84	--	1	1
86	2	--	2
87	1	--	1
Totals	822	1,862	2,684

Table 6. SERVICE RETIREMENT ANNUITIES CLASSIFIED BY AGES AT RETIREMENT

F E M A L E

Age at Retirement	Law in Force Prior to July 1, 1957	Law in force July 1, 1957 and subsequent	Combined
58	--	1	1
59	--	1	1
60	8	36	44
61	4	15	19
62	7	23	30
63	3	22	25
64	17	30	47
65	73	164	237
66	37	72	109
67	33	80	113
68	35	39	74
69	24	45	69
70	22	44	66
71	13	26	39
72	16	19	35
73	12	26	38
74	6	11	17
75	9	11	20
76	3	5	8
77	--	5	5
78	3	2	5
79	2	3	5
80	1	1	2
81	1	--	1
82	1	2	3
Totals	330	683	1,013

Table 7. DISABILITY RETIREMENT ANNUITIES CLASSIFIED BY AGE AND ANNUAL PAYMENTS

MALE

Age at June 30, 1963	Number	Annual Payments
38	1	$ 1,170.96
41	1	965.40
47	1	1,214.76
49	2	2,025.96
51	2	2,643.48
52	2	3,317.76
53	4	5,397.72
54	2	2,754.00
55	1	2,131.20
56	5	8,975.52
57	6	6,995.40
58	2	1,327.56
59	4	6,006.00
60	3	5,417.88
61	2	1,092.60
62	7	8,425.32
63	7	6,231.48
64	6	5,873.40
65	2	909.84
66	3	1,085.64
68	1	440.28
Totals	64	$74,402.16

FEMALE

Age at June 30, 1963	Number	Annual Payments
46	1	$ 780.00
50	2	2,245.44
51	1	780.00
52	1	780.00
54	4	4,970.88
55	5	5,976.72
56	3	3,660.00
57	4	6,109.56
58	2	2,340.00
59	1	780.00
60	2	3,260.40
61	3	3,146.64
62	5	4,547.40
63	7	6,079.20
64	2	1,348.80
65	3	1,124.88
66	1	382.08
67	2	1,634.04
68	1	989.88
71	1	780.00
Totals	51	$51,715.92

Table 8. DISABILITY RETIREMENT ANNUITIES CLASSIFIED BY AGE AT RETIREMENT AND ANNUAL PAYMENTS

MALE

Age at Retirement	Number	Annual Payments
37	1	$ 1,170.96
39	1	965.40
44	1	934.56
45	1	1,214.76
47	3	4,290.96
49	1	1,519.80
50	3	3,761.28
51	4	6,818.88
52	3	4,745.28
53	3	3,024.96
54	2	3,521.28
55	5	7,391.04
56	3	3,936.84
57	2	1,477.20
58	7	11,069.40
59	4	3,610.08
60	7	5,574.84
61	1	1,163.40
62	4	4,054.68
63	4	1,774.20
64	4	2,382.36
Totals	64	$74,402.16

FEMALE

Age at Retirement	Number	Annual Payments
43	1	$ 780.00
47	1	1,560.00
48	1	685.44
50	3	2,409.60
51	2	3,008.64
53	9	11,772.84
54	2	2,206.08
55	2	2,880.00
56	2	3,702.60
57	1	780.00
58	6	7,407.48
59	6	3,791.88
60	3	1,528.56
61	4	3,844.32
62	4	2,776.68
63	2	1,431.84
64	1	369.96
70	1	780.00
Totals	51	$51,715.92

Table 9. SURVIVOR ANNUITY BENEFICIARIES CLASSIFIED BY AGE AND ANNUAL PAYMENTS - No Children

MALE

Age	Number	Annual Payments
52	1	$ 780.00
55	1	780.00
56	1	780.00
60	1	780.00
64	1	780.00
65	2	1,560.00
66	2	1,152.12
70	1	918.00
71	1	780.00
73	1	780.00
75	1	435.24
76	2	888.72
78	1	126.84
80	1	1,200.00
82	1	788.28
86	1	509.76
Totals	19	$13,038.96

Table 10. SURVIVOR ANNUITY BENEFICIARIES CLASSIFIED BY AGE AND ANNUAL PAYMENTS - No Children

FEMALE

Age	Number	Annual Payments	Age	Number	Annual Payments
27	1	$ 780.00	65	43	$ 32,157.48
33	1	780.00	66	38	31,936.68
34	1	780.00	67	55	48,620.28
			68	44	37,043.16
36	1	780.00	69	52	43,515.60
39	2	1,560.00			
			70	57	40,652.16
40	1	780.00	71	46	34,703.52
41	2	1,560.00	72	47	35,338.92
42	1	780.00	73	41	24,965.52
43	2	1,560.00	74	49	33,793.20
44	3	2,340.00			
			75	42	30,311.16
45	3	2,033.04	76	38	21,395.28
46	4	3,120.00	77	38	25,720.68
47	4	3,120.00	78	23	11,796.84
48	11	8,580.00	79	34	20,498.16
49	8	6,240.00			
			80	19	13,574.88
50	18	13,601.04	81	19	11,163.72
51	9	6,589.44	82	13	8,498.28
52	11	8,580.00	83	5	2,822.76
53	18	13,771.44	84	15	10,631.64
54	16	12,077.16			
			85	6	3,460.20
55	14	10,920.00	86	4	2,889.00
56	21	16,180.08	87	7	4,053.60
57	24	18,720.00	88	1	468.60
58	18	14,655.12			
59	23	17,746.20	91	3	1,389.60
60	28	21,946.56	Totals	1,146	$843,950.16
61	42	33,248.88			
62	43	31,907.16			
63	38	29,219.04			
64	39	28,594.08			

Table 11. SURVIVOR ANNUITY BENEFICIARIES CLASSIFIED BY AGE AND ANNUAL PAYMENTS - With Children

MALE

Age	Number	Annual Payments
50	1	$ 780.00

FEMALE

Age	Number	Annual Payments
21	1	$ 780.00
25	1	780.00
28	1	780.00
31	2	1,560.00
32	4	2,340.00
33	2	1,560.00
34	6	4,680.00
35	3	2,340.00
36	8	6,240.00
37	5	3,510.00
38	3	1,950.00
39	3	2,340.00
40	13	10,140.00
41	6	4,290.00
42	5	3,900.00
43	13	9,750.00
44	12	10,680.00
45	11	7,020.00
46	11	8,580.00
47	10	7,800.00
48	10	7,800.00
49	11	8,580.00
50	12	9,360.00
51	11	8,580.00
52	6	4,680.00
53	14	10,530.00
54	9	7,020.00
55	2	1,560.00
56	2	1,560.00
57	2	1,560.00
58	2	1,560.00
59	2	1,560.00
63	1	780.00
Totals	204	$156,150.00

Table 12. CHILDREN BENEFICIARIES CLASSIFIED BY AGE AND ANNUAL PAYMENTS

MALE

Age	Number	Annual Payments
1	1	$ 204.12
2	3	1,715.04
3	2	1,064.04
4	8	4,189.20
5	9	5,454.00
6	14	7,041.00
7	13	7,076.40
8	9	3,930.48
9	12	6,004.56
10	14	7,970.04
11	21	12,719.16
12	19	10,372.92
13	18	8,537.40
14	12	6,253.08
15	23	12,854.28
16	28	17,680.56
17	19	11,798.28
18	1	270.00
Totals	226	$125,134.56

FEMALE

Age	Number	Annual Payments
1	3	$ 1,684.08
2	2	1,150.08
4	6	3,520.08
5	4	2,131.56
6	8	3,355.68
7	12	6,341.04
8	7	3,518.40
9	16	7,369.08
10	16	7,372.80
11	17	8,205.36
12	20	10,440.24
13	21	11,309.28
14	17	10,136.04
15	15	8,908.80
16	22	11,778.96
17	20	11,301.00
Totals	206	$108,522.48

September 18, 1964

Memorandum to: EMPLOYEE RETIREMENT SYSTEMS INTERIM COMMISSION

Subject: PERA Actuarial Survey

From: George V. Stennes and Associates
Commission Actuaries

We received a copy of the PERA "Report on an Actuarial Survey and Valuation of the Public Employees' Retirement Fund and the Public Employees' Police and Fire Fund as of June 30, 1963", on August 17.

After an examination of this report, and in view of the fact that it is compiled in a manner similar to the report for SERA, on September 3 I called Mr. A. A. Weinberg, Actuary for PERA as well as SERA, to inquire about the PERA Survey. I told him that we had reviewed it and felt that it was not compiled on the basis of the Entry Age Normal Cost Method. Mr. Weinberg agreed and said that it was on the Unit Credit Cost basis, the same as the SERA report.

The Executive Secretary of PERA sent a letter to the Chairman of the Commission dated September 10 with which he enclosed a copy of a letter from Mr. Weinberg dated September 8. In this letter, Mr. Weinberg explained the reasons for his use of the Unit Credit basis of funding. With this letter, he sent to PERA "additional figures on a valuation of the Fund according to the method specified by the Commission". He sent copies of worksheets containing the results of his calculations.

The result of our analysis of these figures is the same as is explained in our memorandum for this meeting in regard to the SERA Actuarial Survey.

Therefore, our conclusion is that the PERA Actuarial Survey calculations submitted to the Commission are not in compliance with the Commission's directives.

Gerald G. Toy
Fellow, Society of Actuaries

GGT:jf

Actuarial Valuation

STATE OF MINNESOTA

Public Employees Retirement Association

CENTENNIAL OFFICE BUILDING
658 CEDAR STREET
SAINT PAUL, MINNESOTA 55101
TELEPHONE 221-3331
AREA CODE 612

September 10, 1964

In reply please refer to No.________

Honorable Fay G. Child, Chairman
Employee Retirement Systems Interim Commission
330 State Capitol
St. Paul, Minnesota 55101

Attention: Mr. Frank V. Moulton, Executive Secretary

Dear Mr. Moulton:

Pursuant to request of Mr. A. A. Weinberg, we enclose copy of his letter dated September 8, 1964 addressed to our office, with copies of work sheets which accompanied such letter.

Yours very truly,

PUBLIC EMPLOYEES RETIREMENT ASSOCIATION

O. M. Ousdigian

Secretary

OMO:jc
encls.

Suite 1507
14 East Jackson Blvd.
Wabash 2-4573

Retirement & Pension Plans
Certified Public Accountant

Member - American Institute of
Certified Public Accountants

A. A. Weinberg
Consulting Actuary
Chicago 4

September 8, 1964

RECEIVED
SEP 10 1964
Public Employees Retirement Assn.

Mr. O. M. Ousdigian, Secretary
Public Employees Retirement Association
Centennial Office Building
Saint Paul, Minnesota

Dear Mr. Ousdigian:

I received a telephone call from the actuary of the Interim Pension Commission asking for additional cost figures on PERA according to another method of funding, namely, the entry age normal cost method.

The specifications submitted by the Commission made reference to the aforesaid method of valuation. We did not conform to this directive because the valuation of the Fund was previously made on the unit cost basis of funding. We admit that we erred in not following the Commission's directive. We did not realize that it would insist on its strict conformance.

We have, accordingly, prepared additional figures on a valuation of the Fund according to the method specified by the Commission. Copies of work sheets containing the results of calculations made on the basis of the Commission's methods are enclosed. The results do not give effect to the factor of withdrawal. We believe the actuary of the Commission would like to have these items as quickly as possible, therefore, we suggest that they be forwarded to him without delay, together with a copy of this letter.

The entry age normal cost method provides more monies for the retirement fund at earlier ages for investment purposes, but the ultimate reserve requirements to meet the cost of the annuities at dates of retirement are the same under either method. The method specified by the Commission is generally used for fairly small groups of employees where it is quite possible for a marked variation to occur in the average age of the group when one or a few individuals terminate coverage, either by death or retirement.

Where a large group of individuals are involved, such as that represented by PERA, the movement of the employees between years is fairly constant and the average age generally does not change. The unit credit method that we used for the valuation has an advantage from a funding standpoint in that it is susceptible to a better understanding by the appropriate public officials and can be more clearly explained. Such method is pecularily adaptable to public employment because of the stability of such employment. Since the benefits are financed by public funds, it is naturally desirable to keep the money outlay at all times at the lowest possible level. There is value, therefore, in relating the cost of current benefits to the contributions currently required.

In any event, the Commission has indicated its desire for valuation figures according to the first method. We should, therefore, have complied initially with its specifications. We have been so accustomed to valuations for public employee retirement systems of large size that we proceeded to use the unit cost basis. This was also the basis used in the previous valuation of your Fund.

Sincerely yours,

A. A. Weinberg
Actuary

AAW:ho

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SEP 10 1964
Public Employees Retirement Assn.

	Initials	Date
Prepared By		
Approved By		

EYE-EASE 45-812
20/20 BUFF 45-912

Public Employees Retirement Association of Minnesota

VALUATION ACCORDING TO ENTRY AGE NORMAL COST METHOD OF FUNDING

1937 Standard Annuity Mortality Table and 3-1/2% Interest

MALE

Age Group	Number	Future Average Salary	(1) Total Future Salary	(2) Total Annuity Earned	(3) Annual Cost	(4) Single Premium Deferred Annuity	(5) Present Value of Future Contributions	(6) Accrued Liability Before Withdrawals
UNDER AGE 20	51	$ 4,110	$ 209,610	$ 209,610	$ 12,458	$ 295,847	$ 282,928	$ 12,919
20 TO 24 INCL.	790	4,190	3,310,100	3,210,797	239,573	5,417,803	5,169,502	248,301
25 TO 29 INCL.	1,930	4,300	8,299,000	7,303,120	628,306	14,746,664	12,720,191	2,026,473
30 TO 34 INCL.	2,343	4,470	10,473,210	7,959,640	835,134	19,276,234	15,613,728	3,662,506
35 TO 39 INCL.	2,945	4,490	13,223,050	8,859,444	1,087,261	25,839,330	18,392,272	7,447,058
40 TO 44 INCL.	3,047	4,510	13,741,970	7,214,534	1,171,952	25,504,720	17,439,403	8,065,317
45 TO 49 INCL.	3,360	4,620	15,523,200	6,597,360	1,371,812	28,536,656	17,215,645	11,321,011
50 TO 54 INCL.	3,394	4,660	15,816,040	5,298,373	1,449,819	28,429,390	14,294,451	14,134,939
55 TO 59 INCL.	3,031	4,690	14,215,390	3,411,694	1,277,725	23,169,534	8,555,671	14,613,863
60 TO 64 INCL.	2,277	4,800	10,929,600	1,967,328	968,006	17,414,551	2,742,854	14,671,697
65 TO 69 INCL.	1,301	4,800	6,244,800	936,720	1,238,103	9,285,771	374,688	8,911,083
70 AND OVER	1,053	4,800	5,054,400	353,808	418,993	2,932,948	303,264	2,629,684
TOTALS	25,522				$10,699,142			$87,744,851

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SEP 10 1964
Public Employees Retirement Assn.

EYE-EASE 45-812
20/20 BUFF 45-912

	Initials	Date
Prepared By		
Approved By		

Public Employees Retirement Association of Minnesota

VALUATION ACCORDING TO ENTRY AGE NORMAL COST METHOD OF FUNDING

1937 Standard Annuity Mortality Table and 3-1/2% Interest

FEMALE

AGE GROUP	NUMBER	Future average Salary	① Total Future Salary	② Total annuity Earned	③ annual Cost	④ Single Premium Deferred Annuity	⑤ Present Value of Future Contributions	⑥ accrued Liability Before Withdrawals
UNDER AGE 20	338	$ 2,500	$ 845,000	$ 845,000	$ 64,302	$ 1,545,266	$ 1,478,634	$ 66,632
20 to 24 INCL.	1,890	2,720	5,140,800	5,140,800	467,738	11,236,149	10,249,112	987,037
25 to 29 INCL.	1,353	2,800	3,788,400	3,220,140	370,120	8,414,281	7,633,138	781,143
30 to 34 INCL.	1,174	2,920	3,428,080	2,502,498	350,459	7,825,119	6,694,788	1,130,331
35 to 39 INCL	1,580	2,970	4,692,600	2,768,634	478,227	10,383,078	8,285,790	2,097,288
40 to 44 INCL.	2,057	3,200	6,582,400	3,126,640	718,178	14,121,617	10,963,850	3,157,767
45 to 49 INCL.	2,413	3,090	7,456,170	2,796,064	827,223	15,307,038	10,655,249	4,651,789
50 to 54 INCL.	2,462	3,180	7,829,160	2,348,748	857,121	15,732,626	8,659,145	7,073,481
55 to 59 INCL.	1,912	3,250	6,214,000	1,367,080	685,389	11,359,278	4,677,119	6,682,159
60 to 64 INCL	1,311	3,300	4,326,300	692,208	458,953	7,279,737	1,309,917	5,969,820
65 to 69 INCL.	564	3,600	2,030,400	243,648	470,924	2,825,544	121,824	2,703,720
70 AND OVER	276	3,600	993,600	89,429	98,496	886,516	59,616	826,900
TOTALS	17,330				$ 5,847,130			$ 36,128,067

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Public Employees Retirement Assn.

Public Employees' Retirement Association
State of Minnesota

VALUATION BALANCE SHEET AS OF

JUNE 30, 1963

AND STATEMENT OF ANNUAL COST

Prepared on Entry Age Normal Cost
Basis - at 3% Interest

A. A. Weinberg

Consulting Actuary

Public Employees' Retirement Association
State of Minnesota

VALUATION BALANCE SHEET

June 30, 1963

ASSETS

PRESENT ASSETS

Cash	$ 1,265,724.06	
Accounts and Notes Receivable	20,188,650.96	
Accrued Interest	771,308.64	
Investments	77,890,796.34	
Other Assets	36,263.02	
	$100,152,743.02	
Less: Current Liabilities	26,549.77	
Net Present Assets		$100,126,193.25

PROSPECTIVE ASSETS

Normal Contributions -		
Male	$102,721,057.00	
Female	61,578,865.00	164,299.922.00
Deficiency contributions payable until liabilities on account of past service are liquidated		101,290,224.75
TOTAL ASSETS		$365,716,340.00

Public Employees' Retirement Association
State of Minnesota

VALUATION BALANCE SHEET

June 30, 1963

LIABILITIES

RETIREMENT ANNUITIES AND OTHER BENEFITS IN FORCE		
Present value of annuities and benefits to present beneficiaries -		
Service retirement	$ 49,352,513.00	
Disability	1,976,316.00	
Survivors	16,107,354.00	$ 67,436,183.00
TOTAL PENSION CREDITS FOR ACTIVE MEMBERS		
Present value of annuities and benefits to be provided on account of active members-		
Male	$197,074,341.00	
Female	101,205,816.00	298,280,157.00
TOTAL LIABILITIES		$365,716,340.00

STATEMENT OF ANNUAL COST

The normal cost represents the amount required to meet the accruing cost of current service. This cost has been determined to be as follows:

Male Members	$13,388,967.00
Female Members	7,393,754.00
Total	$20,782,721.00

Towards the financing of the Fund, the members contribute 6% of salary not exceeding $4,800.00 in any calendar year. The governmental units are required to contribute (a) An amount equal to 6% of salary not exceeding $4,800.00 of salary in any calendar year for current service; plus (b) an additional 2-1/2% of salary not to exceed $4,800.00 of salary per year towards the unfunded accrued liability.

ASSUMED PAYROLL

The annual payroll assumed in the calculation of liabilities and costs, including a projection of possible future increases in salaries within the $4,800.00 annual salary limitation, is as follows:

Male Members	$117,040,370.00
Female Members	53,326,950.00