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Summary of
July 1956 Actuarial Report
State of Connecticut Employees Retirement Fund

The full Actuarial Report was submitted to the Commission November 29, 1956. The principal result of this study, in terms of expected cost to the State, is given in Table I attached for 5 year periods to the year 2006. Whereas currently the cost to the State is about 2.5% of the payroll of included employees, the study indicates that the cost will increase to about 10% in the period 1966-1971, to 20% in 1976-1981 and to about 27% after 1991, the estimated ultimate level. These costs are in addition to the 5% employee contribution.

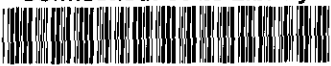
The expected amount in the Retirement Fund at 5 year intervals is compared in Table II with the sum of active life contributions to date and the value of the pensions on then retired employees. It will be noted that as of July 1, 1956 active life contributions exceeded the value of the Retirement Fund by about \$3,000,000. In addition, the value of pensions to then retired employees amounted to about \$38,500,000. By 1971 the Retirement Fund will be zero, whereas active life contributions will equal about \$35,000,000 and the value of pensions on then retired employees will equal about \$148,000,000 for a total of about \$183,000,000.

The data indicates, as pointed out to the Commission in a supplementary report, that for the ten year period, September 1, 1957 to August 31, 1967, an employee contribution rate in excess of 5% would be required if employee contributions are to pay one-half of the pension payments plus employee refunds on termination, after allowance for past favorable experience. This statement is based upon the following data:

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1. Estimated retirement salary payments for ten-year period	\$78,760,000
2. One-half thereof, payable from State Employees' Retirement Fund	39,380,000
3. Estimated contribution refunds for employees leaving service or dying during ten-year period	9,934,000
4. Allowance for past favorable experience, i.e., estimated excess of employee contributions 9-1-45 to 8-31-57 over amounts withdrawn from Fund during that period	11,625,000
5. Total estimated requirements (item 2 plus item 3 minus item 4)	37,689,000
6. Estimated employee contributions for ten-year period at maximum rate of five per cent specified in Section 387	37,111,000

Data given in the full report indicates that if each year of current service were funded at time of service a total cost of about 13% would be required for the year beginning July 1, 1956, consisting of 5% by employee and 8% by the State. This cost would remain nearly constant but does not provide for deficiency in previous funding which as of July 1, 1956 equaled about twice the annual salary, or approximately \$140,000,000.

A summary of the Data, Assumptions and Methods is given in Table III, together with the interest rates earned by the fund in recent years and the salary projection scales used in the valuation. The salary projection scales are based on current salary levels and contain no adjustment for either inflationary or deflationary changes in average salary levels.

W. I. Struble
 W. I. Struble
 Fellow, Society of Actuaries

March 15, 1957

Table I

Summary of Expected Experience
(Male, Female & Police)
Exact Through July 1, 1956, Estimated Thereafter

Period July 1	Pensions (1)	Contrib. (2)	Interest (3)	Refunds on Death or Withdrawal (4)	Portion of Pension Pd. From Ret. Fund (5)	Ret. Fund End of Period (6)	Cost to State	
							Amount (7)	% Payroll (8)
-51	\$7,869,000	\$11,774,000	\$695,000	\$2,041,000	\$3,934,000	\$6,494,000	\$3,934,000	1.1%
1951-56	11,184,000	12,828,000	1,445,000	2,659,000	5,592,000	13,016,000*	5,592,000	1.7
1956-61	26,298,000	18,397,000	2,171,000	4,504,000	13,149,000	15,931,000	13,149,000	3.6
1961-66	44,402,000	18,621,000	1,875,000	5,162,000	22,201,000	9,064,000	22,201,000	6.0
1966-71	60,843,000	18,794,000	455,000	5,654,000	23,151,000	0	37,692,000	10.0
1971-76	75,967,000	18,872,000	0	6,091,000	12,781,000	0	63,186,000	16.7
1976-81	89,699,000	18,839,000	0	6,350,000	12,489,000	0	77,210,000	20.5
1981-86	100,644,000	18,764,000	0	6,471,000	12,293,000	0	88,351,000	23.5
1986-91	107,715,000	18,714,000	0	6,487,000	12,227,000	0	95,488,000	25.5
1991-96	111,446,000	18,685,000	0	6,434,000	12,251,000	0	99,195,000	26.5
1996-01	112,683,000	18,677,000	0	6,397,000	12,280,000	0	100,403,000	26.9
2001-06	112,362,000	18,684,000	0	6,402,000	12,282,000	0	100,080,000	26.8

* Includes \$500,000 Contribution from General Fund, July 1955

Col. (2) - 2½% to 1945, 4% 1945-1956, 5% thereafter

Col. (3) - Assumes 3% interest after 7-1-56

Col. (8) - As % of payroll of included employees.

Table I
Summary of Expected Experience

Table II

Active Life Contributions to Date plus Value of Pensions In-Force
-vs-
Retirement Fund

<u>July 1</u>	<u>Active Lives Sum of EE Contributions to Date</u> (1)	<u>Retired Lives Present Value* of Pensions In-Force</u> (2)	<u>Total</u> (3)	<u>Retirement Fund</u> (4)
1956	\$15,919,484	\$38,575,668	\$54,495,152	\$13,016,000
1961	24,678,153	82,313,689	106,991,842	15,931,000
1966	31,186,374	118,034,252	149,220,626	9,064,000
1971	35,395,051	148,063,350	183,458,401	-
1976	37,215,533	174,852,964	212,068,497	-
1981	37,199,114	197,804,210	235,003,324	-
1986	36,749,085	211,221,797	247,970,882	-
1991	36,459,511	216,090,526	252,550,037	-
1996	36,283,683	216,751,061	253,034,744	-
2001	36,373,562	214,094,448	250,468,010	-
2006	36,452,460	211,456,683	247,909,143	-

*Life Annuity Value at 1937 Standard Annuity 3%, Net.

Table II

Active Life Contributions to Date plus Value of Pensions In-Force
-vs-
Retirement Fund

Table III

Data, Assumptions, Methods

1. Data - An individual punch card was provided on each active participating employee and on each retired employee as of 7-1-56 by Mr. J. E. Wahlberg, Supervisor of Retirements. Copies of the monthly Statements of Income and Expenses of the State Employees Retirement Fund were made available as were active life age/service distributions as of 1950.
2. Interest - Interest rates earned by the Fund in the six years ending 7-1-56 were computed. On the basis of these figures 3% interest was used.
3. Survival Rates - Using the 1950 active life distributions and the 1956 active and retired life distributions, there were computed, for each of the three classes of employees,
 - (a) Five Year Survival-in-Service Rates
 - (b) Probability of Disability Retirement in and Survival to end of Five Year Period
 - (c) Probability of Non-Disability Retirement in and Survival to end of Five Year Period.

Only retirements in the six year period ending 7-1-56 were considered in obtaining (b) and (c) above. A small amount of graduation of the crude rates was required.
4. Mortality after Retirement - The 1937 Standard Annuity was used for this purpose.
5. Staff Replacements - It was assumed that the total number of employees in each of the three classifications remains at the 7-1-56 level. New employees were added to keep totals unchanged. The survivors of employees added in each 5 year period were assumed to have the same distribution by age as the survivors of those added in the five years ending 7-1-56.
6. Salary Scale - Using the age/service distribution of number of employees and average salary as of 7-1-56, factors were obtained by relating to the average salary of an attained age group the average salary of the next higher age group, after eliminating from this latter group salaries of employees then with less than five years of service. The factors for the three classifications showed considerable similarity. One scale, after some graduation, was used for all classifications. For staff replacements we used the average salary, by attained age groups, of employees with less than 5 years of service as of 7-1-56. Base salary at retirement was taken to be salary $2\frac{1}{2}$ years prior to retirement.
7. Contribution Rate - For computational purposes 5% was used as the employee contribution rate from 7-1-56.
8. Employee Refunds - Employee refunds were obtained by multiplying the number of terminations from active service in a five year period by the average amount of accumulative contributions at mid-period for each age/service grouping.
9. Plan Provisions - According to booklet "State of Connecticut, State Employees Retirement Act, Chapter 15, Part I, 1949 Pension of the General Statutes as amended in 1951, 1953 and 1955."
10. General Methods - Estimates are shown on a contributory pay-as-you-go basis for 5 year periods. It is assumed that employee refunds on withdrawal or death together with one-half of the pension payments will be paid out of the Fund, to the extent the Fund is sufficient. The balance of estimated disbursements are shown as net cost to the State.

Table III, Contd.

Salary Projection Factors
Male, Female & Police

<u>Age</u>	<u>Five Year</u> <u>Salary Projection Factors</u>	<u>Ratio of Age 60-64</u> <u>Projected Salary</u> <u>To Current Salary</u>
-19	1.30	2.96
20-24	1.25	2.27
25-29	1.15	1.82
30-34	1.13	1.58
35-39	1.11	1.40
40-44	1.09	1.26
45-49	1.07	1.16
50-54	1.05	1.08
55-59	1.03	1.03
60-64	1.03	1.00
65-	1.03	-

Interest Rates, 6 Years Ending 7-1-56

<u>June</u> <u>30</u>	<u>Through Date Shown</u>				<u>Net</u> <u>Interest</u> <u>for Year</u>	<u>Assets</u>	<u>Interest</u> <u>Rate</u>
	<u>Net Stock</u> <u>Dividends</u>	<u>Net</u> <u>Interest</u> <u>on Bonds</u>	<u>Profit on</u> <u>Securities</u>	<u>Net</u> <u>Interest</u>			
1950	\$49,246	\$467,182	\$15,425	\$531,853		\$5,482,846	
1951	59,446	603,110	15,556	678,112	\$146,259	6,493,999	2.47%
1952	74,253	781,916	15,571	871,740	193,628	7,431,170	2.82
1953	90,499	987,365	15,543	1,093,407	221,667	8,581,840	2.81
1954	106,626	1,233,034	16,355	1,356,015	262,608	9,771,588	2.90
1955	130,473	1,519,176	24,931	1,674,580	318,565	10,988,841	3.12
1956	167,055	1,843,787	24,953	2,035,795	361,215	13,015,663	3.06