



STATE OF ALASKA  
TEACHERS' RETIREMENT SYSTEM

Actuarial Valuation  
as of  
June 30, 1984

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**Benefit Services / Consulting Actuaries**

SUMMARY

We have completed a valuation of the Alaska Teachers' Retirement System as of June 30, 1984. The principal results of the actuarial valuation are presented in this summary and analysis; the two sections which follow are meant to provide the necessary supporting details.

Section 1 presents the fundamental information on which the valuation was based. Included is a summary of plan provisions, information about plan participants, and disclosure of the actuarial method and assumptions used.

Section 2 presents the detailed actuarial valuation results. Its subsections present a step-by-step derivation of the recommended contribution. In addition, information requested by the auditors of the Retirement System is presented.

The purposes of an actuarial valuation are:

1. To examine the status of funding of the Plan, and
2. To determine the contribution rates for the State for each school district in the System.

The most significant results of the valuation are as follows:

	<u>1983</u>	<u>1984</u>
(1) Status of Funding as of June 30		
(a) Valuation Assets ( '000 omitted)	\$562,944	\$674,382
(b) Present Value of Accrued Benefits ( '000 omitted)	706,795	804,018
(c) Accrued Benefit Funding Ratio	79.7%	83.9%
(2) Contributions For Fiscal Year	<u>1986</u>	<u>1987</u>
(a) Normal Cost Rate	13.13%	13.91%
(b) Past Service Rate	4.23%	3.45%
(c) Total Contribution Rate	17.36%	17.36%

In preparing this valuation, we have employed generally accepted actuarial methods and assumptions, in conjunction with employee data provided to us, to determine a sound value for the Plan liabilities. I certify that, to the best of my knowledge and belief, the attached statements are true and correct.

Respectfully submitted,

*Robert F. Richardson*

Robert F. Richardson, ASA  
Principal

RFR/jam

April 4, 1985

## ANALYSIS OF THE VALUATION

### Actuarial Method and Assumptions

This actuarial report utilizes the same actuarial assumptions and methods as were adopted in March of 1982. The most significant assumptions are the economic assumptions concerning salary increases, health inflation, and investment earnings of the assets. In general, deviation of actual experience from these assumptions have the most significant impact on changes in employer contribution rates and funding ratios.

### Investment Performance

During fiscal year 1984, investment performance in the Teachers' Retirement System was much less than last year's recordbreaking performance. In fact, the investment performance based on market values was only 2.16% during the year. Because of the three-year smoothing approach used for actuarial valuation purposes, valuation assets reflected a 9.85% yield during the year. Compared with our 8% interest assumption, the net result was a slight actuarial gain from investment performances. Accordingly, investment performance during the prior year slightly helped the funding ratio and tended to offset actuarial losses from increases in average age.

### Health Inflation

The monthly premium per retiree for health coverage in FY85 is \$191.85 per month. This represents a 23% increase over the premium for the prior year. This premium increase appears to be partially the result

of an over-reaction to extremely poor experience just prior to premium negotiations with the health carrier. Since then the success of cost containment efforts, as well as actual claim experience, has shown the \$191.85 premium rate to be exorbitant. Current projections indicate that a \$165 premium for FY86 should be sufficient. Accordingly, we have used the \$165 projected FY86 premium for our actuarial calculations in this report.

It must be pointed out that increases in the medical premium are affected by factors other than price increases for medical goods and services. Along with price inflation, there has been increased utilization. Another very important factor is the smaller share of the medical burden which is now being shouldered by Medicare. The diminishment of Medicare's role has a leveraged affect on the post-retirement medical premium paid by TRS. The following table illustrates this principal:

	<u>Old Cost</u>	<u>Increase</u>	<u>New Cost</u>
Total Health Cost	\$300	15%	\$345
Medicare Pays	<u>200</u>	<u>10%</u>	<u>220</u>
Net Cost to TRS	\$100	25%	\$125

As this table illustrates, a 15% increase in overall health cost can generate a 25% increase in the monthly premium paid by the retirement system. The following table shows the monthly health premium rates for retirees since 1977:

<u>Fiscal Year</u>	<u>Monthly Premium Per Retiree For Health Coverage</u>	<u>Annual Percentage Increase</u>
1977	\$ 34.75	--
1978	57.64	66%
1979	69.10	20%
1980	64.70	-6%
1981	96.34	49%
1982	96.34	0%
1983	115.61	20%
1984	156.00	35%
1985	191.85	24%

### Salary Increases

Average salary increases during the last year were somewhat higher than increases from a year ago, but still less than our actuarial assumption. The following table shows the growth in average annual salary since 1977. During this seven-year period, the average annual compound increase in salaries was 8.08%, which tracks quite closely with our actuarial assumption. Of interest is the dip in the percentage increase every other year.

<u>As of June 30</u>	<u>Average Annual Salary</u>	<u>Percentage Increase</u>
1977	\$22,887	--
1978	25,193	10.1%
1979	26,807	6.4%
1980	29,685	10.7%
1981	32,326	8.9%
1982	35,903	11.1%
1983	37,323	4.0%
1984	39,416	5.6%

### Membership Statistics

As you can see in Section 1.2, the average age of active TRS members continues to increase. Every single year since 1977, when the average age was only 37.20, average age has increased to the present level of



39.76. This increase in age of active participants is a phenomenon which we are observing in virtually every single retirement plan in the country.

An increase in average age applies upward pressure to the employer contribution rate. This is because the value of the pension is greater (since benefits will commence sooner) and the period of time over which to fund the pension is decreased.

#### Retiree Statistics

Section 1.4 of this report shows statistics on new retirees each year since 1980. Of significance is the reversal in the trend toward a lower and lower average age at retirement. Perhaps of greatest significance is the large number of members who remain actively employed even though they are eligible for retirement. As can be seen in Section 1.3, there are 271 teachers who have more than 20 years of service. There are another 253 teachers who have at least five years of service and are over age 55. Nevertheless, our actuarial assumed age of retirement, which averages 55.6, has been above actual experience for the last three years.

#### Funding Progress

As the prior Summary shows, the accrued benefit funding ratio increased by 4 points to its current level of 83.9%.

Conclusions

The lack of any change in the employer contribution rate is due to the balancing of actuarial gains and losses. Modest gains from investment sources and less-than-anticipated salary increases were largely offset by the increase in average age and other demographic factors. In summary, funding progress on the Alaska Teachers' Retirement System is being maintained.

SECTION 1

THE BASIS OF THE VALUATION

The foundation of an actuarial valuation is the information and assumptions used in preparing it. In this section, the salient Plan provisions, employee census data, and actuarial methods and assumptions used in preparing the valuation are outlined.

1.1 BRIEF OUTLINE OF THE  
ALASKA TEACHERS' RETIREMENT SYSTEM

(1) Plan

The Teachers' Retirement System of Alaska is a joint contributory retirement system to provide benefits for teachers of the State.

(2) Effective Date

June 30, 1955, as amended through June 30, 1984.

(3) Administration of Plan

The Commissioner of Administration appoints the administrator of the System; the Alaska Teachers' Retirement Board makes recommendations to the Commissioner of Administration; and the Commissioner of Revenue invests the funds.

(4) Membership

Membership in the Alaska Teachers' Retirement System is compulsory for each certificated elementary or secondary teacher, certificated school nurse, and other certificated personnel who are employed on a full-time or part-time basis in a position which requires a teaching certificate as a condition of employment in the public schools of Alaska, the Commissioner of Education, supervisors within the Department of Education, and all full-time or part-time teachers of the University of Alaska

and administrative personnel occupying a full-time position at the University of Alaska which requires academic standing and is approved by the Administrator. Certain State legislators may also elect to be eligible for membership.

(5) Credited Service

A year of membership service is defined to be the same as a school term which is currently a minimum of 172 days, and fractional service credit is on a daily rate basis. Credit is granted for all Alaskan Public school service. Credit is granted for accrued, unused sick leave as reflected by the records of the last employer once a member has been on retirement an equal amount of time, meets eligibility requirements and has completed an application for the credit.

(6) Contributions by Teachers

Effective July 1, 1970, each teacher shall contribute 7% of base salary earned from July 1 to the following June 30.

(7) Voluntary Supplemental Contributions

If a teacher who first joined the system before July 1, 1982 wishes to make his or her spouse or minor children eligible for a spouse's pension and/or survivor's pension allowance, the teacher may elect to make supplemental contributions of an additional 1% of base salary commencing not later than 90 days after marriage,

or the birth or adoption of a child, or upon re-entry into the system provided there was at least a twelve (12) month break in service.

(8) Arrearage Contributions

Up to 10 years of public or non-public teaching service, or service by a certificated person in a position requiring certification, in an accredited school not covered under the Teachers' Retirement System, or service in an institution of higher learning not under the control of the Board of Regents of the University of Alaska, may be credited for retirement purposes.

After July 1, 1978, the full actuarial cost of providing benefits for this service will be borne by the teacher. In addition, teaching service in Alaska B.I.A. schools may be used to increase total outside and Alaska B.I.A. service to 15 years before July 1, 1978. After that date, Alaska B.I.A. service is limited to five years.

A maximum of five years of military service may be included as outside service. No fractional credit is granted for outside service. Fractional credit is granted for Alaska B.I.A. service and military service.

(9) Retroactive Contributions

If a teacher was not subject to the provisions of the Retirement Act and, at a later date became subject to them due to legislative changes of the eligibility requirements, the teacher may elect to receive credit for creditable service prior to membership by submitting to the Retirement Fund an amount equal to the contributions that would have been made if the teacher had been a member of the System for any year's service after June 30, 1955, plus interest thereon. Retroactive contributions are not required for creditable membership service before July 1, 1955.

(10) Employers' and State's Contributions

The employer and the State each contribute an amount equal to one-half of the amount required in addition to member contributions to finance the benefits of the System.

(11) Rate of Interest

The amount deposited in a member account will be credited with interest at the rate established for a school year at the end of such school year. Effective June 30, 1974, the interest rate was increased to 4½%.

(12) Withdrawal of Mandatory Contributions

If a member terminates teaching services in Alaska, mandatory contributions may be withdrawn. Upon request, a terminated teacher will receive a refund of the balance of the member contribution account.

(13) Reinstatement of Contributions

If Mandatory Contributions are withdrawn and a member subsequently resumes teaching in Alaska, the member will be indebted to the Teachers' Retirement Fund in the amount of the total refund. The reinstatement indebtedness bears compound interest at the rate prescribed by regulation to the date of repayment or the date of retirement, whichever occurs first.

(14) Normal Retirement Eligibility

Meeting the requirement of either (a) or (b) below:

(a) Upon attaining age 55 and meeting one of the following service requirements:

- (1) Eight years of fully-paid membership service, or
- (2) 15 years of fully-paid creditable service, the last five of which have been membership service; (after July 1, 1975 a new member needs eight years of fully-paid membership service); or
- (3) Five years of fully-paid membership service and three years of fully-paid Alaska B.I.A. service;

or;

(b) At any age after meeting one of the following service requirements:

- (1) 25 years of fully-paid creditable service, the last five of which are membership service; or
- (2) 20 years of fully-paid membership service; or



- (3) 20 years of fully-paid combined membership service and Alaska B.I.A. service, the last five of which are membership service.

A retired teacher who has been receiving a disability retirement benefit shall be eligible for a service retirement benefit upon or after satisfying normal retirement eligibility.

(15) Early Retirement Eligibility

Upon attaining age 50 and meeting one of the following service requirements:

- (1) Eight years of fully-paid membership service, or
- (2) 15 years of fully-paid creditable service, the last five of which have been membership service; (after July 1, 1975 a new member needs eight years of fully-paid membership service); or
- (3) Five years of fully-paid membership service and three years of fully-paid Alaska B.I.A. service.

(16) Computation of Average Base Salary

A teacher's average base salary is determined by averaging the teacher's highest base salary which the teacher received for any three years of membership service.

(17) Normal Retirement Benefit

The normal retirement benefit is 2% of the teacher's Average Base Salary multiplied by the total number of years of creditable service.

(18) Early Retirement Benefit

A teacher who meets the service requirements for normal retirement, but not the age requirements, may elect to have reduced payments commence as early as age 50. The reduced Early Retirement Benefit is equal to the actuarial equivalent of the normal retirement benefit.

(19) Indebtedness Owing At Retirement

If on the date of making application for retirement, a teacher has not paid the full amount of his indebtedness including interest to the Retirement Fund, the retirement benefit will be reduced for life by an amount equal to the actuarial equivalent of the outstanding indebtedness at the time of retirement.

(20) Re-employment of a Retired Teacher

If a retired teacher is reemployed in a position covered under the System, the retirement benefit will be suspended during the period of reemployment.

During such period of reemployment, retirement contributions are mandatory.

(21) Disability Retirement Benefits

A disability retirement benefit may be paid if a teacher has become permanently disabled before 55 and has at least five years of membership service.

The benefit will be equal to 50% of the disabled teacher's base salary immediately prior to becoming disabled. This benefit will be increased by 10% of the teacher's base salary for each minor child up to a maximum of 40%.

When the disabled teacher attains age 55, the disability benefit will automatically terminate. A normal retirement benefit will be computed as if the teacher had been in membership service during the period of disability, and a service retirement will be granted.

(22) Cost-of-Living Allowance

An eligible retired teacher who remains in Alaska is entitled to receive an additional cost-of-living allowance equal to 10% of the base retirement benefit.

(23) Post-Retirement Pension Adjustment

When the administrator determines that the cost of living has increased and that the financial condition of the retirement fund permits, all retirement benefits may be increased. The amount of the increase shall be not more than 4% compounded for each year of retirement, reduced by prior Post-Retirement Pension Adjustments.

(24) Lump Sum Death Benefit

Upon a nonoccupational death of a member who has made no supplemental contributions or who made supplemental contributions

for less than one year and has completed less than one year of membership service, a lump-sum benefit shall be paid to the designated beneficiary. The lump-sum benefit is the teacher's accumulated member contribution account. If the teacher is in active service at the time of death after completing at least one year of membership service but before becoming a vested member, an additional death benefit equal to \$1,000 plus \$100 for each year of membership service (the total not to exceed \$3,000), plus \$500 if the teacher is survived by one or more minor children is also payable.

If the teacher had received a retirement benefit prior to his death, payment shall be his accumulated contributions, plus interest, minus all benefits paid.

(25) Survivor's Allowance

If a teacher dies while in service or while receiving a service or disability retirement benefit, is survived by one or more minor children and has made supplemental contributions for at least one year before his death, his surviving spouse is entitled to the survivor's allowance. The amount of the benefit is 35% of the teacher's base salary immediately prior to his death or becoming disabled for his spouse and 10% for each minor child up to a maximum of 40%.

(26) Spouse's Pension

If a teacher has made supplemental contributions for at least one year and dies while in membership service, or while receiving a disability benefit, or if a teacher has made supplemental contributions for at least five years and dies while on retirement or in deferred retirement status, the surviving spouse is entitled to receive the Spouse's Pension. The amount of the benefit is 50% of the service retirement benefit that the deceased teacher was receiving or would have received. The Spouse's Pension commences the month following the member's death. The payment ceases when the spouse dies or remarries.

1.2 MISCELLANEOUS INFORMATION

AS OF JUNE 30

Active Members

	<u>1980</u>	<u>1981</u>	<u>1982</u>	<u>1983</u>	<u>1984</u>
(1) Number	7,288	7,178	7,563	7,899	8,259
(2) Average Age	38.10	38.77	39.19	39.47	39.76
(3) Average Credited Service	9.09	9.56	9.55	9.51	9.53
(4) Average Annual Salary	\$29,685	\$32,326	\$35,903	\$37,323	\$39,416

Retirees and Beneficiaries

(1) Number	1,245	1,380	1,485	1,712	1,764
(2) Average Age	63.00	63.05	63.28	62.60	63.17
(3) Average Monthly Benefit Base	\$ 849	\$ 911	\$ 948	\$ 1,041	\$1,060
C.O.L.A.	\$ 50	\$ 55	\$ 59	\$ 68	\$ 68
P.R.P.A.	\$ 145	\$ 162	\$ 187	\$ 197	\$ 188
Total	\$ 1,044	\$ 1,128	\$ 1,194	\$ 1,306	\$1,316

Vested Terminations

(1) Number	286	343	430	509
(2) Average Age	45.80	45.51	47.50	46.75
(3) Average Monthly Benefit	\$ 675	\$ 736	\$ 908	\$ 944

Not Vested Terminations With Account Balances

(1) Number	1,051	987	1,037	914
(2) Average Account Balance	\$ 4,350	\$ 5,230	\$ 5,360	\$5,573

1.3 ANNUAL EARNINGS BY AGE AND SERVICE  
AND SERVICE GROUPS BY AGE GROUPS

William M. Mercer-Meidinger, Incorporated

STATE OF ALASKA - TRS ACTIVES VALUATION DATE 6/30/84

AGE GROUP	ANNUAL NUMBER OF PEOPLE	TOTAL ANNUAL EARNINGS	AVERAGE ANNUAL EARNINGS	SERVICE GROUP	NUMBER OF PEOPLE	TOTAL ANNUAL EARNINGS	AVERAGE ANNUAL EARNINGS
0-19	0	0.	0.	0	169	5269580.	31181.
20-24	92	2480733.	26964.	1	776	24745360.	31888.
25-29	765	23250996.	30393.	2	745	25562400.	34312.
30-34	1652	58357520.	35325.	3	730	25394538.	34787.
35-39	2012	78597512.	39064.	4	570	20949402.	36753.
40-44	1752	73379496.	41883.	0-4	2990	101921528.	34087.
45-49	1044	45766204.	43837.	5-9	2412	96415936.	39973.
50-54	552	25146404.	45555.	10-14	1588	68828976.	43343.
55-59	263	12458161.	47369.	15-19	998	45154168.	45245.
60-64	103	5040393.	48936.	20-24	215	10436463.	48542.
65-69	22	952391.	43290.	25-29	51	2484660.	48719.
70-74	2	110499.	55249.	30-34	5	298728.	59746.
75-79	0	0.	0.	35-39	0	0.	0.
80+	0	0.	0.	40+	0	0.	0.
TOTAL	8259	325540320.	39416.	TOTAL	8259	325540448.	39416.

SERVICE GROUPS BY AGE GROUPS

AGE	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40+	TOTAL
0-19	0	0	0	0	0	0	0	0	0	0
20-24	92	0	0	0	0	0	0	0	0	92
25-29	640	125	0	0	0	0	0	0	0	765
30-34	877	665	110	0	0	0	0	0	0	1652
35-39	662	709	530	111	0	0	0	0	0	2012
40-44	373	453	492	412	22	0	0	0	0	1752
45-49	185	242	230	287	91	9	0	0	0	1044
50-54	92	122	134	123	63	18	0	0	0	552
55-59	48	58	59	51	26	18	3	0	0	263
60-64	17	29	31	11	9	4	2	0	0	103
65-69	4	8	2	3	4	1	0	0	0	22
70-74	0	1	0	0	0	1	0	0	0	2
75-79	0	0	0	0	0	0	0	0	0	0
80+	0	0	0	0	0	0	0	0	0	0
TOTAL	2990	2412	1588	998	215	51	5	0	0	8259

1.4 STATISTICS ON NEW RETIREES  
DURING THE YEAR ENDING JUNE 30

	<u>1980</u>	<u>1981</u>	<u>1982</u>	<u>1983</u>	<u>1984</u>
<u>Service</u>					
Number	153	129	109	242	179
Average Age At Retirement	56.20	55.70	55.24	54.54	54.66
Average Benefit	\$ 1,252	\$ 1,320	\$ 1,425	\$ 1,680	\$1,770
<u>Disability</u>					
Number	3	8	10	7	5
Average Age At Retirement	48.76	42.56	44.47	45.03	52.60
Average Benefit	\$ 1,799	\$ 1,766	\$ 2,075	\$ 2,333	\$ 2,749
<u>Survivor</u>					
Number	8	16	5	3	8
Average Age At Retirement	58.25	53.39	67.39	43.36	53.65
Average Benefit	\$ 602	\$ 956	\$ 700	\$ 1,727	\$ 1,330
<u>Total</u>					
Number	164	153	124	252	192
Average Age At Retirement	56.16	55.62	55.70	54.14	54.53
Average Benefit	\$ 1,230	\$ 1,305	\$ 1,448	\$ 1,699	\$ 1,777



1.5(a) STATISTICS ON ALL RETIREES  
AS OF JUNE 30

	<u>1981</u>	<u>1982</u>	<u>1983</u>	<u>1984</u>
<u>Normal Retirement</u>				
Number	1,262	1,361	1,579	1,627
Average Age At Retirement	57.86	57.59	57.01	56.96
Average Age Now	64.00	64.19	63.44	64.13
Average Monthly Benefit	\$1,128.00	\$1,192.75	\$1,305.08	\$1,316.92
<u>Surviving Spouse's Benefits</u>				
Number	34	36	42	40
Average Age At Retirement	61.18	59.74	59.13	57.87
Average Age Now	64.99	66.11	66.22	64.87
Average Monthly Benefit	\$ 529.50	\$ 566.17	\$ 812.92	\$ 592.92
<u>Survivor's Benefits</u>				
Number	31	31	35	37
Average Age At Retirement	41.24	41.27	37.83	35.47
Average Age Now	45.75	46.86	43.09	41.09
Average Monthly Benefit	\$1,190.75	\$1,184.33	\$1,264.17	\$1,247.17
<u>Disabilities</u>				
Number	53	57	56	60
Average Age At Retirement	44.58	44.13	43.32	44.11
Average Age Now	49.22	48.63	48.36	49.64
Average Monthly Benefit	\$1,474.67	\$1,625.83	\$1,738.50	\$1,816.75

STATE OF ALASKA - TRS BENEFIT RECIPIENTS

VALUATION DATE 6/30/84

-----ANNUAL BENEFIT BY AGE-----				-----ANNUAL BENEFIT BY YEARS-----			
AGE GROUP	NUMBER OF PEOPLE	TOTAL ANNUAL BENEFIT	AVERAGE ANNUAL BENEFIT	YEARS RECEIVING BENEFIT	NUMBER OF PEOPLE	TOTAL ANNUAL BENEFIT	AVERAGE ANNUAL BENEFIT
0-19	3	12480.	4160.	0	192	4094209.	21324.
20-24	4	11802.	2951.	1	129	2439182.	18908.
25-29	0	0.	0.	2	124	2213234.	17849.
30-34	0	0.	0.	3	147	2421021.	16470.
35-39	11	180380.	16398.	4	152	2553046.	16796.
40-44	28	593680.	21203.	0- 4	744	13720690.	18442.
45-49	84	1667123.	19847.	5- 9	641	9146114.	14269.
50-54	226	4278569.	18932.	10-14	258	3269455.	12672.
55-59	329	5324963.	16185.	15-19	92	1202070.	13066.
60-64	345	5453366.	15807.	20-24	22	386623.	17574.
65-69	296	4388808.	14827.	25-29	4	74906.	18726.
70-74	203	2709953.	13350.	30-34	3	58083.	19361.
75-79	163	2169372.	13309.	35-39	0	0.	0.
80+	72	1067447.	14826.	40+	0	0.	0.
TOTAL	1764	27857944.	15792.	TOTAL	1764	27857942.	15792.

William M. Mercer-Meidinger, Incorporated  
 1.5(b) ANNUAL BENEFIT BY AGE AND RETIREMENT YEARS

NUMBER OF YEARS RECEIVING BENEFITS

AGE	0- 4	5- 9	10-14	15-19	20-24	25-29	30-34	35-39	40+	TOTAL
0-19	3	0	0	0	0	0	0	0	0	3
20-24	2	1	1	0	0	0	0	0	0	4
25-29	0	0	0	0	0	0	0	0	0	0
30-34	0	0	0	0	0	0	0	0	0	0
35-39	6	4	1	0	0	0	0	0	0	11
40-44	18	9	1	0	0	0	0	0	0	28
45-49	76	6	2	0	0	0	0	0	0	84
50-54	183	40	2	1	0	0	0	0	0	226
55-59	207	113	6	2	1	0	0	0	0	329
60-64	142	193	10	0	0	0	0	0	0	345
65-69	78	179	36	3	0	0	0	0	0	296
70-74	22	83	90	8	0	0	0	0	0	203
75-79	7	12	94	42	8	0	0	0	0	163
80+	0	1	15	36	13	4	3	0	0	72
TOTAL	744	641	258	92	22	4	3	0	0	1764

## 1.6 ACTUARIAL METHOD AND ASSUMPTIONS

### Valuation of Liabilities

- A. Actuarial Method - Attained Age Normal, also known as Aggregate Method with Supplemental Liability. The unfunded accrued benefit liability is amortized over 25 years.
- B. Actuarial Assumptions -
1. Interest 8% per year, compounded annually, net of investment expenses.
  2. Salary Scale 8% per year for the first five years of employment and 7% per year thereafter.
  3. Health Inflation 8% per year.
  4. Mortality 1971 Group Annuity Mortality Table.
  5. Turnover Based upon the 1980-81 actual total turnover experience. (See Table 1).
  6. Disability Incidence rates in accordance with Table 2. Post-disability mortality in accordance with rates published by the Pension Benefit Guaranty Corporation to reflect mortality of those receiving disability benefits under Social Security.
  7. Retirement Age The average of age 60 and the earliest age for which unreduced retirement benefits will be available.
  8. Spouse's Age Wives are assumed to be four years younger than husbands.
  9. Contribution Refunds 100% of those terminating after age 35 with eight or more years of service will leave their contributions and thereby retain their deferred vested benefit. All others who terminate are assumed to have their contributions refunded.

- |                |   |
|----------------|---|
| 10. C.O.L.A.   | 49% of those receiving retirement benefits will be eligible for C.O.L.A.  |
| 11. Sick Leave | 4.7 days of unused sick leave for each year of service will be available to be credited once the member is retired. |
| 12. Expenses   | No loading for expenses.  |

Valuation of Assets

Based upon the three-year average ratio between market and book values of the System's assets. Assets are accounted for on an accrued basis.

Valuation of Medical Benefits

Medical benefits for retirees are provided by the payment of premiums from the trust fund. A pre-65 cost and lower post-65 cost (due to Medicare) were assumed such that the total rate for all retirees equals the present premium rate. These medical premiums are then increased with the health inflation assumption. The same method used for funding retirement benefits is also used to fund health benefits.

TABLE 1  
EMPLOYEE TURNOVER ASSUMPTIONS

<u>Select Rates of Turnover During the First 3 Years of Employment</u>		<u>After 3 Years of Employment</u>	
<u>Year of Employment</u>	<u>Males</u>	<u>Attained Age</u>	<u>Rate</u>
1	.12	20	.1500
2	.26	21	.1500
3	.32	22	.1500
		23	.1500
		24	.1500
		25	.1500
		26	.1500
		27	.1500
		28	.1500
		29	.1500
		30	.1400
		31	.1300
		32	.1200
		33	.1100
		34	.1000
		35	.0900
		36	.0800
		37	.0800
		38	.0700
		39	.0700
		40	.0650
		41	.0650
		42	.0650
		43	.0600
		44	.0600
		45	.0600
		46	.0600
		47	.0550
		48	.0550
		49	.0550
		50	.0500
		51	.0500
		52	.0500
		53	.0500
		54	.0500
		55 and Up	.0000

DISABILITY RATES  
ANNUAL RATES FOR 1,000 EMPLOYEES

<u>Age</u>	<u>Rate</u>
20	.70
21	.71
22	.72
23	.73
24	.74
25	.75
26	.76
27	.78
28	.80
29	.82
30	.84
31	.86
32	.88
33	.90
34	.93
35	.96
36	.99
37	1.03
38	1.07
39	1.11
40	1.15
41	1.20
42	1.27
43	1.36
44	1.48
45	1.62
46	1.76
47	1.91
48	2.07
49	2.23
50	2.40
51	2.60
52	2.86
53	3.18
54	3.56
55	4.00
56	4.59
57	5.34
58	6.10
59	7.20
60	8.43
61	9.75
62	11.30
63	13.05
64	14.90

SECTION 2  
DETAILED VALUATION RESULTS

This section presents in the detail the results of the actuarial valuation that were outlined in the Summary.

2.1 STATEMENT OF NET ASSETS  
AS OF JUNE 30, 1984  
( '000 OMITTED)

	<u>Cost Value</u>	<u>Market Value</u>
Cash	\$ 48,001	\$ 48,001
CD's and Other Short- Term Issues	8,000	8,000
Investment Securities:		
U.S. Government	318,711	278,406
Other	25,368	17,236
Common Stock	34,566	34,016
Foreign Investments	11,806	11,290
Real Estate Equity Fund	51,625	55,427
Loans & Mortgages	185,399	185,399
Miscellaneous	<u>21,797</u>	<u>21,797</u>
Total Assets	\$705,273	\$659,572



2.2 CHANGES IN NET ASSETS  
DURING FISCAL YEAR 1984  
( '000 OMITTED)

Net Assets, June 30, 1983 \$591,382

Additions:

Employee Contributions	\$27,257	
Employer and State Matching Contributions	63,316	
Investment Income	60,586	
Interest on Member's Indebtedness	973	
Unrealized Gain (Loss) on Investments	<u>(48,194)</u>	103,938

Deductions:

Medical Benefits	\$ 3,257	
Retirement Benefits	27,792	
Refunds of Contributions	3,094	
Administrative Expenses	<u>1,605</u>	<u>35,748</u>

Net Assets, June 30, 1984 \$659,572

Approximate Investment Return  
Rate During the Year:

Based on Market Values	2.16%
Based on Book Values	9.82%
Based on Valuation Assets	9.85%

2.3 DEVELOPMENT OF VALUATION ASSETS

AS OF JUNE 30, 1984

('000 OMITTED)

	<u>Market Value</u>	<u>Cost Value</u>	<u>Ratio (M/C)</u>
(1) June 30, 1984	\$659,572	\$705,273	.9352
(2) June 30, 1983	591,382	588,915	1.0042
(3) June 30, 1982	443,529	477,280	.9293
(4) Average Ratio			.9562
(5) Cost Value at June 30, 1984			\$705,273
(6) Valuation Assets at June 30, 1984 (4) x (5)			\$674,382

2.4 BREAKDOWN OF PRESENT VALUE  
OF BENEFITS  
( '000 OMITTED)

	<u>Present Value of Accrued Benefit</u>	<u>Present Value of Fully Projected Benefit</u>
<u>Active Members</u>		
Retirement Benefits	\$217,205	\$ 636,645
Termination Benefits	96,522	230,031
Disability Benefits	12,033	18,511
Death Benefits	4,388	8,678
Return of Contributions	10,837	17,104
Health Benefits	<u>122,592</u>	<u>152,886</u>
Subtotal	\$463,577	\$1,063,855
<u>Inactive Members</u>		
Not Vested	\$ 5,094	\$ 5,094
Vested Terminations	51,086	51,086
Retirees & Beneficiaries	<u>284,261</u>	<u>284,261</u>
Subtotal	\$340,441	\$ 340,441
<u>Totals</u>	\$804,018	\$1,404,296

2.5 CALCULATION OF TOTAL CONTRIBUTION RATE  
 FOR FISCAL YEAR 1987  
 ('000 OMITTED)

Normal Cost Rate

(1) Present Value of Fully Projected Benefits	\$1,404,296
(2) Present Value of Accrued Benefits	804,018
(3) Present Value of Arrearage Indebtedness	23,426
(4) Present Value of Future Contributions (1) - (2) - (3)	576,852
(5) Present Value of Future Salaries	2,726,381
(6) Normal Cost Rate (4) ÷ (5)	21.16%
(7) Average Member Contribution Rate	7.25%
(8) Consolidated Employer Normal Cost Rate, (6) - (7)	13.91%

Past Service Rate

(1) Present Value of Accrued Benefits	\$ 804,018
(2) Valuation Assets	674,382
(3) Total Unfunded Liability, (1) - (2)	129,636
(4) 25-Year Amortization Factor	11.528758
(5) Past Service Payment, (3) ÷ (4)	11,245
(6) Total Salaries	325,540
(7) Past Service Rate, (5) ÷ (6)	3.45%

Total Employer Contribution Rate      17.36%

1985 2.68  
 1986 1.18  
 1987 1.20  
 1988 .01  
 1989 .02  
 1990 9.09