



STATE OF ALASKA
TEACHERS' RETIREMENT SYSTEM

Actuarial Valuation

as of

June 30, 1983

TABLE OF CONTENTS

| | <u>Page</u> |
|--|-------------|
| SUMMARY | 1 |
| ANALYSIS OF THE VALUATION | 3 |
| SECTION 1 THE BASIS OF THE VALUATION | 7 |
| 1.1 BRIEF OUTLINE OF THE ALASKA TEACHERS' RETIREMENT SYSTEM | 8 |
| 1.2 MISCELLANEOUS INFORMATION AS OF JUNE 30. | 18 |
| 1.3 STATISTICS ON NEW RETIREES DURING THE YEAR ENDING JUNE 30 | 20 |
| 1.4 STATISTICS ON ALL RETIREES AS OF JUNE 30 | 21 |
| 1.5 ACTUARIAL METHOD AND ASSUMPTIONS | 22 |
| TABLE 1 - EMPLOYEE TURNOVER ASSUMPTIONS. | 24 |
| TABLE 2 - DISABILITY RATES | 25 |
| SECTION 2 DETAILED VALUATION RESULTS | 26 |
| 2.1 STATEMENT OF NET ASSETS AS OF JUNE 30, 1983 | 27 |
| 2.2 CHANGES IN NET ASSETS DURING FISCAL YEAR 1983. | 28 |
| 2.3 DEVELOPMENT OF VALUATION ASSETS AS OF JUNE 30, 1983 | 29 |
| 2.4 BREAKDOWN OF PRESENT VALUE OF BENEFITS. | 30 |
| 2.5 CALCULATION OF TOTAL CONTRIBUTION RATE FOR FISCAL YEAR 1986 | 31 |

Benefit Services / Consulting Actuaries

SUMMARY

We have completed a valuation of the Alaska Teachers' Retirement System as of June 30, 1983. 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>1982</u> | <u>1983</u> |
|---|-------------|-------------|
| (1) Status of Funding as of June 30 | | |
| (a) Valuation Assets ('000 omitted) | \$451,650 | \$562,944 |
| (b) Present Value of Accrued Benefits ('000 omitted) | 587,016 | 706,795 |
| (c) Accrued Benefit Funding Ratio | 79.1% | 79.7% |
| (2) Contributions For Fiscal Year | <u>1985</u> | <u>1986</u> |
| (a) Normal Cost Rate | 13.64% | 13.13% |
| (b) Past Service Rate | 4.32% | 4.23% |
| (c) Total Contribution Rate | 17.96% | 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, ASA
Principal

RFR:js

February 2, 1984

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 1983, the Teachers' Retirement Fund enjoyed the highest return rate in memory. The total return rate of the fund, based upon market values, was 20.99% . . . far exceeding our 8% actuarial interest assumption. Valuation assets are adjusted with a three-year smoothing technique in order to avoid placing too much emphasis on investment performance in one year. After dampening this dramatic rise in investment performance for fiscal year 1983, valuation assets reflected a 13.13% yield during the year, still significantly surpassing our 8% interest assumption. In fact, during the last plan year there was an actuarial gain from investment sources of \$24.4 million.

Health Inflation

The second most important "story" in the last plan year was the large increase in monthly premium for retiree health insurance. As

reported in last year's report, health care inflation has been a continual problem . . . not only for TRS but for the United States economy in general. During the last year, the retiree medical premium increased approximately 35%. The impact of this dramatic increase in the health insurance premium was to offset the gains from investment performance.

Salary Increases

During the last fiscal year, average salary increases were about one-half of our actuarial assumption. We assume that salaries will increase at 8% per year for the first five years of employment, and 7% per year after the fifth year. This results in an average annual increase of 7.6%. For TRS members last year, the average salary increase was only 4%. This less-than-anticipated salary inflation was instrumental in reducing the employer contribution rate.

Membership Statistics

As you can see in Section 1.2, the average age of active TRS members increased from 39.19 to 39.47 during the last year. The average number of years of credited service remained virtually unchanged, dropping from 9.55 to 9.51.

Retiree Statistics

During the last year there was a sharp rise in the number of retirees and beneficiaries receiving benefits under TRS. The total now receiving monthly checks has passed 1,700 and is projected to pass 2,000 benefit recipients in 1985. With the influx of new retirees,

at an average age of approximately 54, the average age for all benefit recipients has decreased slightly to 62.60. The average benefit recipient now receives a monthly check of \$1,306 or a 33% increase since June 30, 1979. Over the same period, there has also been a modest rise in post-retirement pension adjustments as a percentage of the total benefit. June, 1979 PRPA's represented 13.1% of the total retirement check. On June 30, 1983, PRPA's represented 15.1% of the total retirement check.

Funding Progress

As can be seen in the prior Summary, the accrued benefit funding ratio increased only moderately, from 79.1% to 79.7%. This shows how the greater-than-anticipated investment return was counterbalanced almost entirely by the actuarial losses due to retiree medical.

Employer Contribution Rates

The employer contribution rate decreased by .60%. The actuarial gains from investment sources resulted in a decrease in the past service rate. The actuarial losses from health insurance inflation were spread between the normal cost rate and the past service rate, while the salary gains decreased the normal cost rate. The net impact was a decrease in both the normal cost rate and the past service rate.

Conclusions

The two most important events during the last plan year were the excellent investment performance which was almost completely

counterbalanced by the extremely high health inflation during the year. The 79.7% funding ratio is a sign of the excellent funding progress the State of Alaska Teachers' Retirement System has 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 July 1981.

(3) Administration of Plan

The Commissioner of Administration is 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 certified elementary or secondary teacher, certified school nurse, certified principal, supervisor, and superintendent who is employed on a full-time or part-time basis in a position having duties which normally require a year of service in the public schools of Alaska, the Commissioner of Education, supervisors within the Department of Education, and all full-time resident professional and administrative personnel of the University of Alaska. 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 at the time of retirement for accrued, unused sick leave as reflected by the records of the last employer.

(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 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 entry in the System, marriage, or the birth or adoption of a child, or during any open enrollment period authorized by the Board.

(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 June 30, 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 July 1, 1973, 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. A withdrawing teacher will receive total mandatory contributions plus the interest credited.

(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 previous contributions to the System including any interest paid. 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 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 salary shall be eligible for a service retirement salary 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 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, one of the following options may be chosen:

Option 1: The retirement benefit can be withheld until the amount withheld is equal to the outstanding indebtedness.

Option 2: 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 death of a member who has made no supplemental contributions or who made supplemental contributions for less than one year, a lump-sum benefit shall be paid to the designated beneficiary. The lump-sum benefit is the teacher's accumulated mandatory contributions with interest thereon. If the teacher is in active service at the time of death, 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

William M. Mercer, Incorporated

Spouse's Pension commences the month following the member's death. The payment ceases when the spouse dies or remarries.

William M. Mercer, Incorporated

1.2 MISCELLANEOUS INFORMATION

AS OF JUNE 30

Active Members

| | <u>1979</u> | <u>1980</u> | <u>1981</u> | <u>1982</u> | <u>1983</u> |
|------------------------------|-------------|-------------|-------------|-------------|-------------|
| (1) Number | 7,170 | 7,288 | 7,178 | 7,563 | 7,899 |
| (2) Average Age | 37.69 | 38.10 | 38.77 | 39.19 | 39.47 |
| (3) Average Credited Service | 8.97 | 9.09 | 9.56 | 9.55 | 9.51 |
| (4) Average Annual Salary | \$26,807 | \$29,685 | \$32,326 | \$35,903 | \$37,323 |

Retirees and Beneficiaries

| | | | | | |
|----------------------------------|--------|----------|----------|----------|----------|
| (1) Number | 1,136 | 1,245 | 1,380 | 1,485 | 1,712 |
| (2) Average Age | 62.95 | 63.00 | 63.05 | 63.28 | 62.60 |
| (3) Average Monthly Benefit Base | \$ 807 | \$ 849 | \$ 911 | \$ 948 | \$ 1,041 |
| C.O.L.A. | \$ 46 | \$ 50 | \$ 55 | \$ 59 | \$ 68 |
| P.R.P.A. | \$ 129 | \$ 145 | \$ 162 | \$ 187 | \$ 197 |
| Total | \$ 982 | \$ 1,044 | \$ 1,128 | \$ 1,194 | \$ 1,306 |

Vested Terminations

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

Not Vested Terminations With Account Balances

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

| ----- ANNUAL EARNINGS BY AGE----- | | ANNUAL EARNINGS BY SERVICE----- | |
|-----------------------------------|------------------|---------------------------------|-------------------------|
| AGE GROUP | NUMBER OF PEOPLE | TOTAL ANNUAL EARNINGS | AVERAGE ANNUAL EARNINGS |
| 0-19 | 0 | 0. | 29760. |
| 20-24 | 107 | 2773128. | 31291. |
| 25-29 | 783 | 22890332. | 31887. |
| 30-34 | 1691 | 56322520. | 34133. |
| 35-39 | 1890 | 70503792. | 35273. |
| 40-44 | 1560 | 61978964. | 32744. |
| 45-49 | 953 | 40167000. | 37559. |
| 50-54 | 532 | 23186576. | 40912. |
| 55-59 | 247 | 10970289. | 42579. |
| 60-64 | 117 | 5189641. | 45940. |
| 65-69 | 16 | 690087. | 47512. |
| 70-74 | 3 | 144979. | 53002. |
| 75-79 | 0 | 0. | 0. |
| 80+ | 0 | 0. | 0. |
| TOTAL | 7899 | 294817344. | 37323. |

| ----- ANNUAL EARNINGS BY AGE----- | | ANNUAL EARNINGS BY SERVICE----- | |
|-----------------------------------|------------------|---------------------------------|-------------------------|
| AGE GROUP | NUMBER OF PEOPLE | TOTAL ANNUAL EARNINGS | AVERAGE ANNUAL EARNINGS |
| 0 | 134 | 3987799. | 29760. |
| 1 | 785 | 24563246. | 31291. |
| 2 | 777 | 24776532. | 31887. |
| 3 | 635 | 21674454. | 34133. |
| 4 | 523 | 18447798. | 35273. |
| 0- 4 | 2854 | 93450080. | 32744. |
| 5- 9 | 2352 | 88338464. | 37559. |
| 10-14 | 1584 | 64804812. | 40912. |
| 15-19 | 851 | 36234988. | 42579. |
| 20-24 | 199 | 9142112. | 45940. |
| 25-29 | 51 | 2423102. | 47512. |
| 30-34 | 8 | 424018. | 53002. |
| 35-39 | 0 | 0. | 0. |
| 40+ | 0 | 0. | 0. |
| TOTAL | 7899 | 294817600. | 37323. |

SERVICE GROUPS BY AGE GROUPS

| AGE | S E R V I C E G R O U P | | | | | | | | | | TOTAL |
|-------|-------------------------|------|-------|-------|-------|-------|-------|-------|-----|-------|-------|
| | 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 | 0 |
| 20-24 | 107 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 107 |
| 25-29 | 648 | 135 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 783 |
| 30-34 | 885 | 706 | 100 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1691 |
| 35-39 | 589 | 658 | 553 | 90 | 0 | 0 | 0 | 0 | 0 | 0 | 1890 |
| 40-44 | 323 | 421 | 466 | 332 | 18 | 0 | 0 | 0 | 0 | 0 | 1560 |
| 45-49 | 161 | 206 | 241 | 253 | 82 | 10 | 0 | 0 | 0 | 0 | 953 |
| 50-54 | 79 | 125 | 133 | 115 | 60 | 20 | 0 | 0 | 0 | 0 | 532 |
| 55-59 | 38 | 56 | 60 | 48 | 24 | 15 | 6 | 0 | 0 | 0 | 247 |
| 60-64 | 22 | 35 | 29 | 11 | 14 | 4 | 2 | 0 | 0 | 0 | 117 |
| 65-69 | 2 | 8 | 2 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 16 |
| 70-74 | 0 | 2 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 3 |
| 75-79 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 80+ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| TOTAL | 2854 | 2352 | 1584 | 851 | 199 | 51 | 8 | 0 | 0 | 0 | 7899 |

William M. Mercer, Incorporated

1.3 STATISTICS ON NEW RETIREES
DURING THE YEAR ENDING JUNE 30

| | <u>1979</u> | <u>1980</u> | <u>1981</u> | <u>1982</u> | <u>1983</u> |
|------------------------------|-------------|-------------|-------------|-------------|-------------|
| <u>Service</u> | | | | | |
| Number | 139 | 153 | 129 | 109 | 242 |
| Average Age At Retirement | 55.60 | 56.20 | 55.70 | 55.24 | 54.54 |
| Average Benefit | \$ 1,145 | \$ 1,252 | \$ 1,320 | \$ 1,425 | \$ 1,680 |
| <u>Disability</u> | | | | | |
| Number | 9 | 3 | 8 | 10 | 7 |
| Average Age At Retirement | 48.03 | 48.76 | 42.56 | 44.47 | 45.03 |
| Average Benefit | \$ 1,546 | \$ 1,799 | \$ 1,766 | \$ 2,075 | \$ 2,333 |
| <u>Survivor</u> | | | | | |
| Number | 12 | 8 | 16 | 5 | 3 |
| Average Age At Retirement | 49.85 | 58.25 | 53.39 | 67.39 | 43.36 |
| Average Benefit | \$ 550 | \$ 602 | \$ 956 | \$ 700 | \$ 1,727 |
| <u>Total</u> | | | | | |
| Number | 160 | 164 | 153 | 124 | 252 |
| Average Age At Retirement | 54.74 | 56.16 | 55.62 | 55.70 | 54.14 |
| Average Benefit | \$ 1,123 | \$ 1,230 | \$ 1,305 | \$ 1,448 | \$ 1,699 |

1.4 STATISTICS ON ALL RETIREES
AS OF JUNE 30

| | <u>1981</u> | <u>1982</u> | <u>1983</u> |
|----------------------------|-------------|-------------|-------------|
| <u>Normal Retirement</u> | | | |
| Number | 1,262 | 1,361 | 1,579 |
| Average Age At Retirement | 57.86 | 57.59 | 57.01 |
| Average Age Now | 64.00 | 64.19 | 63.44 |
| Average Monthly Benefit | \$1,128.00 | \$1,192.75 | \$1,305.08 |
| <u>Widow's Benefits</u> | | | |
| Number | 34 | 36 | 42 |
| Average Age At Retirement | 61.18 | 59.74 | 59.13 |
| Average Age Now | 64.99 | 66.11 | 66.22 |
| Average Monthly Benefit | \$ 529.50 | \$ 566.17 | \$ 812.92 |
| <u>Survivor's Benefits</u> | | | |
| Number | 31 | 31 | 35 |
| Average Age At Retirement | 41.24 | 41.27 | 37.83 |
| Average Age Now | 45.75 | 46.86 | 43.09 |
| Average Monthly Benefit | \$1,190.75 | \$1,184.33 | \$1,264.17 |
| <u>Disabilities</u> | | | |
| Number | 53 | 57 | 56 |
| Average Age At Retirement | 44.58 | 44.13 | 43.32 |
| Average Age Now | 49.22 | 48.63 | 48.36 |
| Average Monthly Benefit | \$1,474.67 | \$1,625.83 | \$1,738.50 |

1.5 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 30 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 |

TABLE 2

William M. Mercer, Incorporated

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, 1983
('000 OMITTED)

| | <u>Cost Value</u> | <u>Market Value</u> |
|---|-------------------|---------------------|
| Cash | \$ 2,414 | \$ 2,414 |
| CD's and Other Short- Term Issues | 20,350 | 20,350 |
| Gold | 20,905 | 14,181 |
| Investment Securities: | | |
| U.S. Government | 241,511 | 227,881 |
| Other | 25,864 | 20,496 |
| Common Stock (including Convertible Stock) | 63,660 | 90,181 |
| Real Estate Equity Fund | 27,924 | 29,592 |
| Loans & Mortgages | 169,842 | 169,842 |
| Miscellaneous | <u>16,445</u> | <u>16,445</u> |
| Total Assets | \$588,915 | \$591,382 |

2.2 CHANGES IN NET ASSETS
DURING FISCAL YEAR 1983

| | | |
|---|-------------------|-------------------|
| Net Assets, 6-30-82 | | \$443,528,570 |
| Additions: | | |
| Employee Contributions | \$24,546,266 | |
| Employer and State Matching Contributions | 54,717,900 | |
| Investment Income | 62,075,568 | |
| Interest on Member's Indebtedness | 771,414 | |
| Unrealized Gain (Loss) on Investments | <u>36,217,914</u> | 178,329,062 |
| Deductions: | | |
| Medical Benefits | \$ 2,307,011 | |
| Retirement Benefits | 24,053,352 | |
| Refunds of Contributions | 2,509,240 | |
| Administrative Expenses | <u>1,605,430</u> | <u>30,475,033</u> |
| Net Assets, 6-30-83 | | \$591,382,599 |
| Approximate Investment Return Rate During the Year | | 20.99% |

2.3 DEVELOPMENT OF VALUATION ASSETS

AS OF JUNE 30, 1983

('000 OMITTED)

| | <u>Market Value</u> | <u>Cost Value</u> | <u>Ratio (M/C)</u> |
|---|---------------------|-------------------|--------------------|
| (1) June 30, 1983 | \$591,382 | \$588,915 | 1.0042 |
| (2) June 30, 1982 | 443,529 | 477,280 | .9293 |
| (3) June 30, 1981 | 373,253 | 399,550 | .9342 |
| (4) Average Ratio | | | .9559 |
| (5) Cost Value at June 30, 1983 | | | \$588,915 |
| (6) Valuation Assets at June 30, 1983 (4) x (5) | | | \$562,944 |

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 | \$191,652 | \$ 555,135 |
| Termination Benefits | 88,214 | 206,505 |
| Disability Benefits | 10,461 | 16,202 |
| Death Benefits | 3,928 | 7,747 |
| Return of Contributions | 11,152 | 17,240 |
| Health Benefits | <u>81,759</u> | <u>101,780</u> |
| Subtotal | \$387,166 | \$ 904,609 |
| <u>Inactive Members</u> | | |
| Not Vested | \$ 5,558 | \$ 5,558 |
| Vested Terminations | 39,879 | 39,879 |
| Retirees & Beneficiaries | <u>274,192</u> | <u>274,182</u> |
| Subtotal | \$319,629 | \$ 319,629 |
| <u>Totals</u> | \$706,795 | \$1,224,238 |

2.5 CALCULATION OF TOTAL CONTRIBUTION RATE
FOR FISCAL YEAR 1986
('000 OMITTED)

Normal Cost Rate

| | |
|--|-------------|
| (1) Present Value of Fully Projected Benefits | \$1,224,238 |
| (2) Present Value of Accrued Benefits | 706,795 |
| (3) Present Value of Arrearage Indebtedness | 20,610 |
| (4) Present Value of Future Contributions (1) - (2) - (3) | 496,833 |
| (5) Present Value of Future Salaries | 2,437,346 |
| (6) Normal Cost Rate (4) ÷ (5) | 20.38% |
| (7) Average Member Contribution Rate | 7.25% |
| (8) Consolidated Employer Normal Cost Rate | 13.13% |

Past Service Rate

| | |
|---------------------------------------|------------|
| (1) Present Value of Accrued Benefits | \$ 706,795 |
| (2) Valuation Assets | 562,944 |
| (3) Total Unfunded Liability | 143,851 |
| (4) 25-Year Amortization Factor | 11.528758 |
| (5) Past Service Payment | 12,478 |
| (6) Total Salaries | 294,817 |
| (7) Past Service Rate | 4.23% |

Total Employer Contribution Rate 17.36%