



STATE OF ALASKA  
TEACHERS' RETIREMENT SYSTEM

Actuarial Valuation  
as of  
June 30, 1982

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**Benefit Services / Consulting Actuaries**

SUMMARY

We have completed a valuation of the Alaska Teachers' Retirement System as of June 30, 1982. 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>1981</u>	<u>1982</u>
(1) Status of Funding as of June 30		
(a) Valuation Assets	\$389,241,229	\$451,649,982
(b) Present Value of Accrued Benefits	492,234,454	587,016,073
(c) Accrued Benefit Funding Ratio	79.1%	76.9%
(2) Contributions For Fiscal Year	<u>1984</u>	<u>1985</u>
(a) Normal Cost Rate	13.57%	13.64%
(b) Past Service Rate	3.85%	4.32%
(c) Total Contribution Rate	17.42%	17.96%

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

December 29, 1982

## ANALYSIS OF THE VALUATION

### Actuarial Method and Assumptions

This actuarial valuation report utilizes the new set of actuarial assumptions which were adopted in March of 1982 by the Board of the Teachers' Retirement System. Of greatest importance are the economic assumptions of salary increases and interest earnings. Employees' salaries are assumed to increase at 8% per year for the first five years of employment and then 7% per year after the fifth year. For the entire group of TRS members, this results in an average annual salary increase of 7.3%. The total investment return rate of the fund is assumed to be 8% per year. Although there has been a sudden, dramatic decrease in the rate of inflation in our economy, it is still believed that these economic assumptions used to value benefits under TRS are appropriate.

During the last plan year, average salaries for teachers increased by 11%. The market value investment return rate was approximately 6.3% for the 12-month period ending June 30, 1982. Since that date, both the bond and stock markets have rallied, while inflation rates have continued to drop. These recent economic developments are all positive factors for the funding of TRS.

### Membership Statistics

Section 1.2 of this report provides certain statistics concerning TRS members for the last five years. During this period, TRS membership has grown at the rate of only 1.0% per year.

Over the same period, there have been moderate increases in both the average age and average credited service of active members. Average annual salaries have increased at an average rate of 9.3% each year.

Since 1978, the number of retirees and beneficiaries receiving benefits under TRS has increased 39%, with an average monthly check now at \$1,194.

### Funding Progress

As the prior Summary shows, the accrued benefit funding ratio decreased slightly from 79.1% to 76.9%. There are two major factors which contributed to this decrease. First of all, the investment return rate of 6.3% during the last plan year was less than the anticipated return rate of 8%. This factor alone lead to 1.1% of the 2.2% decrease in the funding ratio.

Virtually all of the remaining decrease in this funding ratio can be attributed to the large increase in the cost of retiree

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health benefits. In the last year, the monthly premium per retiree for health coverage has increased from \$96.34 per month to \$115.61 per month. This equates to a 20% increase in one year . . . significantly greater than our 8% annual health inflation assumption. During this same period of time, the overall CPI for Anchorage increased by only 7.1%.

Members of TRS accrue the entire health benefit as soon as they become vested for retirement benefits under the System. Accordingly, a dramatic increase in the cost of health benefits will affect the past service rate and accrued liabilities much more directly than the normal cost rate or future service liabilities.

The following table shows health premium rates for TRS 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	<u>20%</u>
Average Annual Increase		22%

Contribution Rate Changes

As can be seen in the prior Summary, the total employer contribution rate (which is paid one-half by the State and one-half by the school district) increased rather significantly by .54% of payroll. This increase in contribution rate for TRS continues the upward trend of the last few years. There are numerous factors which have caused these upward cost pressures.

The two most important factors are the retiree medical premium increases, and the rather substantial annual salary increases. Both of these situations were specifically addressed with the adoption of new actuarial assumptions in the spring of 1982. It is understood that economic events such as inflation, investment return rates, salary increases, etc., can deviate significantly in any given year from our actuarial assumptions. However, often actuarial losses in one economic area are counterbalanced by actuarial gains in another economic area. Typically, losses due to large salary increases are offset by excess interest earnings. Furthermore, even if gains and losses do not balance out within a given year, they tend to over an economic cycle.

In TRS, there have been other demographic changes taking place which have not been anticipated. As can be seen in Section 1.2, the average age of active members has increased steadily since 1978. This is a relatively new phenomenon for TRS.



During most of the 1970's, the average age held steady between 37 and 38 years old. However, starting in 1980, there have been significant increases in both average age and average credited service. As you would imagine, these increases in age and service both provide upward pressures on the contribution rates. Not only is the older teacher closer to retirement, but there is also a shorter period of time to accumulate assets for his or her benefit.

If these demographic trends continue, we would anticipate even higher contribution rates. However, during the deflationary/ economic contraction phase of the business cycle, we would anticipate net actuarial gains from economic sources. While the direction in TRS contribution rates in future years is difficult to predict, it would be very unusual to see another large increase such as the one presented in this actuarial report.

### Conclusions

The State of Alaska Teachers' Retirement System continues to be funded in a most satisfactory manner. The decrease in the accrued benefit funding ratio during the last plan year is due to the 20% increase in retiree health insurance premiums and to the less-than-anticipated investment return.

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 5 years.

A maximum of 5 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 4 1/2%.

(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) 8 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 8 years of fully-paid membership service); or
- (3) 5 years of fully-paid membership service and 3 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 5 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 5 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) 8 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 8 years of fully-paid membership service); or
- (3) 5 years of fully-paid membership service and 3 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 5 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

	<u>Active Members</u>				
	<u>1978</u>	<u>1979</u>	<u>1980</u>	<u>1981</u>	<u>1982</u>
(1) Number	7,255	7,170	7,288	7,178	7,563
(2) Average Age	37.33	37.69	38.10	38.77	39.19
(3) Average Credited Service	8.84	8.97	9.09	9.56	9.55
(4) Average Annual Salary	\$25,193	\$26,807	\$29,685	\$32,326	\$35,903

	<u>Retirees and Beneficiaries</u>				
(1) Number	1,072	1,136	1,245	1,380	1,485
(2) Average Age	62.71	62.95	63.00	63.05	63.28
(3) Average Monthly Benefit Base	\$ 787	\$ 807	\$ 849	\$ 911	\$ 948
C.O.L.A.	\$ 46	\$ 46	\$ 50	\$ 55	\$ 59
P.R.P.A.	\$ 141	\$ 129	\$ 145	\$ 162	\$ 187
Total	\$ 974	\$ 982	\$ 1,044	\$ 1,128	\$ 1,194

	<u>Vested Terminations</u>	
(1) Number	286	343
(2) Average Age	45.80	45.51
(3) Average Monthly Benefit	\$ 675	\$ 736

	<u>Not Vested Terminations With Account Balances</u>	
(1) Number	1,051	987
(2) Average Account Balance	\$4,350	\$5,230

-----		BY AGE-----		-----		BY SERVICE-----	
AGE GROUP	NUMBER OF PEOPLE	TOTAL	AVERAGE	SERVICE GROUP	NUMBER OF PEOPLE	TOTAL	AVERAGE
0-19	0	0.	0.	0	211	5827159.	27617.
20-24	101	2392266.	23686.	1	876	25418314.	29016.
25-29	875	24002854.	27432.	2	684	21317150.	31165.
30-34	1677	52939232.	31568.	3	549	17818812.	32457.
35-39	1788	64628592.	36146.	4	592	19574418.	33065.
40-44	1376	53874064.	39153.	0-4	2912	89956048.	30892.
45-49	873	36190016.	41455.	5-9	2096	76393432.	36447.
50-54	507	21706232.	42813.	10-14	1577	63033904.	39971.
55-59	237	10328925.	43582.	15-19	716	30147064.	42105.
60-64	112	4839538.	43210.	20-24	208	9405976.	45221.
65-69	14	514171.	36727.	25-29	47	2216231.	47154.
70-74	3	114061.	38020.	30-34	7	377520.	53931.
75-79	0	0.	0.	35-39	0	0.	0.
80+	0	0.	0.	40+	0	0.	0.
TOTAL	7563	271529952.	35902.	TOTAL	7563	271530208.	35902.

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+			
0-19	0	0	0	0	0	0	0	0	0	0	0	0
20-24	101	0	0	0	0	0	0	0	0	0	0	101
25-29	718	157	0	0	0	0	0	0	0	0	0	875
30-34	872	663	142	0	0	0	0	0	0	0	0	1677
35-39	595	546	566	81	0	0	0	0	0	0	0	1788
40-44	316	339	413	286	22	0	0	0	0	0	0	1376
45-49	161	174	253	184	93	8	0	0	0	0	0	873
50-54	83	124	117	105	56	19	3	0	0	0	0	507
55-59	41	59	54	45	22	14	2	0	0	0	0	237
60-64	21	28	30	13	13	5	2	0	0	0	0	112
65-69	4	5	1	2	2	0	0	0	0	0	0	14
70-74	0	1	1	0	0	1	0	0	0	0	0	3
75-79	0	0	0	0	0	0	0	0	0	0	0	0
80+	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	2912	2096	1577	716	208	47	7	0	0	0	0	7563

-----		BY AGE-----		-----		BY SERVICE-----	
AGE GROUP	NUMBER OF PEOPLE	TOTAL	AVERAGE	SERVICE GROUP	NUMBER OF PEOPLE	TOTAL	AVERAGE
0-19	1	3217.	3217.	0	124	2154581.	17376.
20-24	1	3118.	3118.	1	148	2459471.	16618.
25-29	0	0.	0.	2	155	2525566.	16294.
30-34	2	39941.	19970.	3	146	2237530.	15326.
35-39	13	216265.	16636.	4	140	2001450.	14296.
40-44	20	389001.	19450.	0-4	713	11378601.	15959.
45-49	61	1148600.	18830.	5-9	508	6446011.	12689.
50-54	180	2927204.	16262.	10-14	185	2286267.	12358.
55-59	264	3879352.	14695.	15-19	56	766481.	13687.
60-64	323	4462789.	13817.	20-24	17	288545.	16973.
65-69	257	3500149.	13619.	25-29	5	92931.	18586.
70-74	180	2247709.	12487.	30-34	1	17909.	17909.
75-79	138	1777507.	12880.	35-39	0	0.	0.
80+	45	681889.	15153.	40+	0	0.	0.
TOTAL	1485	21276740.	14328.	TOTAL	1485	21276746.	14328.

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	1	0	0	0	0	0	0	0	0	1
20-24	1	0	0	0	0	0	0	0	0	1
25-29	0	0	0	0	0	0	0	0	0	0
30-34	1	1	0	0	0	0	0	0	0	2
35-39	9	3	1	0	0	0	0	0	0	13
40-44	16	4	0	0	0	0	0	0	0	20
45-49	52	7	2	0	0	0	0	0	0	61
50-54	156	22	2	0	0	0	0	0	0	180
55-59	199	61	3	1	0	0	0	0	0	264
60-64	174	142	7	0	0	0	0	0	0	323
65-69	84	147	26	0	0	0	0	0	0	257
70-74	17	99	55	9	0	0	0	0	0	180
75-79	2	20	79	29	8	0	0	0	0	138
80+	1	2	10	17	9	5	1	0	0	45
TOTAL	713	508	185	56	17	5	1	0	0	1485

1.3 STATISTICS ON NEW RETIREES  
DURING THE YEAR ENDING JUNE 30

	<u>1978</u>	<u>1979</u>	<u>1980</u>	<u>1981</u>	<u>1982</u>
<u>Service:</u>					
Number	97	139	153	129	109
Average Age At Retirement	54.81	55.60	56.20	55.70	55.24
Average Benefit	\$1,093	\$1,145	\$1,252	\$1,320	\$1,425
<u>Disability:</u>					
Number	8	9	3	8	10
Average Age At Retirement	46.56	48.03	48.76	42.56	44.47
Average Benefit	\$1,290	\$1,546	\$1,799	\$1,766	\$2,075
<u>Survivor:</u>					
Number	5	12	8	16	5
Average Age At Retirement	48.45	49.85	58.25	53.39	67.39
Average Benefit	\$1,110	\$ 550	\$ 602	\$ 956	\$ 700
<u>Total:</u>					
Number	110	160	164	153	124
Average Age At Retirement	53.92	54.74	56.16	55.62	55.70
Average Benefit	\$1,108	\$1,123	\$1,230	\$1,305	\$1,448

1.4 STATISTICS ON ALL RETIREES  
AS OF JUNE 30

	<u>1981</u>	<u>1982</u>
<u>Normal Retirement</u>		
Number	1,262	1,361
Average Age At Retirement	57.86	57.59
Average Age Now	64.00	64.19
Average Monthly Benefit	\$1,128.00	\$1,192.75
<u>Widow's Benefits</u>		
Number	34	36
Average Age At Retirement	61.18	59.74
Average Age Now	64.99	66.11
Average Monthly Benefit	\$ 529.50	\$ 566.17
<u>Survivor's Benefits</u>		
Number	31	31
Average Age At Retirement	41.24	41.27
Average Age Now	45.75	46.86
Average Monthly Benefit	\$1,190.75	\$1,184.33
<u>Disabilities</u>		
Number	53	57
Average Age At Retirement	44.58	44.13
Average Age Now	49.22	48.63
Average Monthly Benefit	\$1,474.67	\$1,625.83



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~~<sup>25</sup> years.

B. Actuarial Assumptions -

1. Interest 8% per year, compounded annually, net of investment expenses.
2. Salary Scale 8% per year for the first 5 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 8 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.

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- |                |   |
|----------------|---|
| 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 Systems'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 detail the results of the actuarial valuation that were outlined in the Summary.

2.1 STATEMENT OF NET ASSETS

AS OF JUNE 30, 1982

	<u>Cost Value</u>	<u>Market Value</u>
Cash	\$ 559,777	\$ 559,777
CD's and Other Short-Term Issues	66,101,804	67,070,028
Gold	20,905,555	18,424,049
Investment Securities:		
U.S. Government	123,457,108	101,805,475
Other	25,387,030	15,922,603
Common Stock (including Convertible Stock)	47,152,139	44,497,158
Real Estate Equity Fund	25,918,564	27,451,862
Loans & Mortgages	156,209,601	156,209,601
Miscellaneous	<u>11,588,018</u>	<u>11,588,018</u>
Total Assets	\$477,279,596	\$443,528,571

2.2 CHANGES IN NET ASSETS  
DURING FISCAL YEAR 1982

Net Assets, 6-30-81		\$373,253,081
Additions:		
Employee Contributions	\$21,735,042	
Employer and State Matching Contributions	50,856,750	
Investment Income	30,900,759	
Interest on Member's Indebtedness	672,620	
Unrealized Gain (Loss) on Investments	<u>(6,701,194)</u>	97,463,977
Deductions:		
Medical Benefits	\$ 1,683,098	
Retirement Benefits	21,198,346	
Refunds of Contributions	2,974,426	
Administrative Expenses	<u>1,332,617</u>	<u>27,188,487</u>
Net Assets, 6-30-82		\$443,528,571

2.3 DEVELOPMENT OF VALUATION ASSETS

AS OF JUNE 30, 1982

	<u>Market Value</u>	<u>Cost Value</u>	<u>Ratio (M/C)</u>
(1) June 30, 1982	\$443,528,571	\$477,279,596	.9293
(2) June 30, 1981	373,253,081	399,549,609	.9342
(3) June 30, 1980	320,314,293	328,346,720	.9755
(4) Average Ratio			.9463
(5) Cost Value at June 30, 1982		\$477,279,596	
(6) Valuation Assets at June 30, 1982 (4) x (5)		\$451,649,682	



2.4 BREAKDOWN OF PRESENT VALUE  
OF BENEFITS

	<u>Present Value of Accrued Benefit</u>	<u>Present Value of Fully Projected Benefit</u>
<u>Active Members</u>		
Retirement Benefits	\$184,705,520	\$528,111,712
Termination Benefits	83,012,367	203,667,575
Disability Benefits	9,881,216	15,277,706
Death Benefits	4,074,787	7,903,625
Return of Contributions	9,290,996	15,146,004
Health Benefits	<u>56,078,016</u>	<u>70,358,656</u>
Subtotal	\$347,042,902	\$840,465,278
<u>Inactive Members</u>		
Not Vested	\$ 4,902,825	\$ 4,902,825
Vested Terminations	24,727,385	24,727,385
Retirees & Beneficiaries	<u>210,342,961</u>	<u>210,342,961</u>
Subtotal	\$239,973,171	\$239,973,171
 TOTALS	 \$587,016,073	 \$1,080,438,449

2.5 CALCULATION OF TOTAL CONTRIBUTION RATE  
FOR FISCAL YEAR 1985

Normal Cost Rate

(1) Present Value of Fully Projected Benefits	\$1,080,438,449
(2) Present Value of Accrued Benefits	587,016,073
(3) Present Value of Arrearage Indebtedness	19,370,260
(4) Present Value of Future Contributions (1) - (2) - (3)	474,052,116
(5) Present Value of Future Salaries	2,263,486,356
(6) Normal Cost Rate (4) ÷ (5)	20.94%
(7) Average Member Contribution Rate	7.30%
(8) Consolidated Employer Normal Cost Rate	13.64%

Past Service Rate

(1) Present Value of Accrued Benefits	\$ 587,016,073
(2) Valuation Assets	451,649,682
(3) Total Unfunded Liability	135,366,391
(4) 25-Year Amortization Factor	11.528758
(5) Past Service Payment	11,741,628
(6) Total Salaries	271,530,848
(7) Past Service Rate	4.32%

Total Employer Contribution Rate 17.96%