



STATE OF ALASKA  
TEACHERS' RETIREMENT SYSTEM

Actuarial Valuation

as of

June 30, 1981

**Benefit Services / Consulting Actuaries**

March 31, 1982

Mr. Paul Arnoldt, Director  
State of Alaska  
Department of Administration  
Division of Retirement & Benefits  
Pouch CR  
Juneau, AK 99811

Re: TRS Contribution Rates -  
FY 84

Dear Paul:

At the recent TRS Board Meeting, the new actuarial assumptions were approved and the Board adopted a 25-year amortization period for the unfunded liability. Unless changed by future legislation, the total TRS contribution rate for FY 84 will be as follows:

Normal Cost Rate . . . . .	13.51%
Past Service Rate. . . . .	<u>3.85%</u>
Total Employer Contribution Rate . . . . .	17.36%

Sincerely,



Robert F. Richardson, ASA  
Vice President/Actuary

RFR:js

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APR 02 1982

Division of Retirement

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**Benefit Services / Consulting Actuaries**

SUMMARY

We have completed a valuation of the Alaska Teachers' Retirement System as of June 30, 1981. 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.

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The most significant results of the valuation are as follows:

	<u>1980</u>	<u>1981</u>
(1) Status of Funding as of June 30		
(a) Valuation Assets	\$311,417,814	\$389,241,229
(b) Present Value of Accrued Benefits	465,722,763	492,234,454
(c) Accrued Benefit Funding Ratio	66.9%	79.1%
(2) Contributions For Fiscal Year	<u>1983</u>	<u>1984</u>
(a) Normal Cost Rate	11.95%	13.51%
(b) Past Service Rate	4.89%	<del>3.65%</del> 3.85%
(c) Total Contribution Rate	16.84%	<del>17.16%</del> 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  
Vice President/Actuary

RFR:js

February 24, 1982

\* see front page

## ANALYSIS OF THE VALUATION

### Actuarial Method and Assumptions

This actuarial valuation report is based upon the actuarial method and assumptions which will be presented to the State of Alaska Teachers' Retirement System Board in March of 1982. The changes in the economic assumptions (interest, salary increases, and health cost inflation) reflect a much higher level of inflation which is now inherent in our economy. The new interest assumption is 8% per year, salary increases are assumed to be at 8% per year for the first five years of employment and 7% per year thereafter. The extra 1% in the first five years of employment recognizes the additional level of merit increases more frequently encountered in the first few years of employment. Health costs are anticipated to increase at 8% per year. The assumed rate of inflation which underlies all of these economic assumptions is 6.5% per year.

Only slight changes in the demographic and other assumptions were made. The new assumptions reflect a higher level of employee turnover in the second and third years of employment than in the first or later years.

The changes in actuarial assumptions had no impact on the total contribution rate. It is believed that the new actuarial assumptions will provide better financial forecasts and cost predictions in our more inflationary economy than would be capable utilizing the prior actuarial assumptions.

Contribution Rate Change

The average contribution rate increased somewhat between the two valuation reports. Some change is always bound to occur. Demographic changes in the data and other differences between actual experience and our actuarial assumptions will undoubtedly lead to slight changes from year to year. However, of greatest significance was the large increase in average age of active teachers from 38.10 to 38.77. Average credited service also increased markedly from 9.09 years to 9.56 years. If average age continues to increase, we can anticipate further increases in the contribution rate.

Membership Statistics

Section 1.2 of this report provides certain statistics concerning TRS members for the last five years. During this time span, total membership has grown slightly from 7,024 members to 7,178 members. The average age has steadily increased to its current level of 38.77. Average credited service during this time span has likewise increased gradually to its current level of 9.56 years.

Since June 30, 1977, the number of retirees and beneficiaries receiving benefits under TRS has increased 55%, while the average age of retirees has remained stable.

Due to the ever-growing number of vested terminations, we have included additional statistics this year concerning vested

terminations. As Section 1.2 shows, there are now 286 former teachers who have terminated but still retain a right to a monthly retirement benefit. The average monthly benefits shown for these vested terminations is based upon their earnings history prior to termination. Of course, should any of these vested terminations return, they may materially increase their monthly retirement benefit. This year we are also providing statistics on terminated members of TRS who are not vested but who have left their contributions in the System. These employees still retain a right to a refund of their contribution, and as such, liabilities must be held for them.

#### Funding Progress

As can be seen in the Summary, the accrued benefit funding ratio increased significantly from 66.9% to 79.1%. Much of this increase can be attributed to the change in the actuarial interest assumption.

#### Accounting Changes

In recognition of changes recently adopted by the Financial Accounting Standards Board, this year's actuarial valuation report utilizes the accrual method of determining assets. This change had relatively little financial impact. This year's report also includes, for the first time, an exhibit which summarizes the changes in assets during the last fiscal year.



Conclusions

It is our conclusion that the State of Alaska Teachers' Retirement System is being funded in a satisfactory manner. We believe that the adoption of new actuarial assumptions more accurately reflects the true status of the System. The increase in the average total contribution rate reflects demographic changes in the characteristics of TRS members. In particular, the large increase in average age of active teachers was noteworthy.

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 full-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 credit-able 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.

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1.2 MISCELLANEOUS INFORMATION

AS OF JUNE 30

	<u>Active Members</u>				
	<u>1977</u>	<u>1978</u>	<u>1979</u>	<u>1980</u>	<u>1981</u>
(1) Number	7,024	7,255	7,170	7,288	7,178
(2) Average Age	37.20	37.33	37.69	38.10	38.77
(3) Average Credited Service	8.70	8.84	8.97	9.09	9.56
(4) Average Annual Salary	\$22,887	\$25,193	\$26,807	\$29,685	\$32,326

	<u>Retirees and Beneficiaries</u>				
(1) Number	891	1,072	1,136	1,245	1,380
(2) Average Age	63.39	62.71	62.95	63.00	63.05
(3) Average Monthly Benefit Base	\$ 749	\$ 787	\$ 807	\$ 849	\$ 911
C.O.L.A.	\$ 42	\$ 46	\$ 46	\$ 50	\$ 55
P.R.P.A.	\$ 70	\$ 141	\$ 129	\$ 145	\$ 162
Total	\$ 861	\$ 974	\$ 982	\$ 1,044	\$ 1,128

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

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

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1.3 RETIREMENT STATISTICS

	Retirements in Year Ending June 30					
	<u>1976</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>	<u>1980</u>	<u>1981</u>
<u>Service:</u>						
Number	146	164	97	139	153	129
Average Age	58.22	56.76	54.81	55.60	56.20	55.70
Average Benefit	\$ 937	\$ 937	\$ 1,093	\$ 1,145	\$ 1,252	\$ 1,320
<u>Disability:</u>						
Number	10	9	8	9	3	8
Average Age	46.33	47.41	46.56	48.03	48.76	42.56
Average Benefit	\$ 1,013	\$ 1,675	\$ 1,290	\$ 1,546	\$ 1,799	\$ 1,766
<u>Survivor:</u>						
Number	1	5	5	12	8	16
Average Age	35.71	55.59	48.45	49.85	58.25	53.39
Average Benefit	\$ 1,172	\$ 578	\$ 1,110	\$ 550	\$ 602	\$ 950
<u>Total:</u>						
Number	157	178	110	160	164	155
Average Age	57.31	56.26	53.92	54.74	56.16	55.60
Average Benefit	\$ 943	\$ 961	\$ 1,108	\$ 1,123	\$ 1,230	\$ 1,300

----- ANNUAL EARNINGS BY AGE -----			----- ANNUAL EARNINGS BY SERVICE -----		
AGE GROUP	NUMBER OF PEOPLE	TOTAL ANNUAL EARNINGS	SERVICE GROUP	NUMBER OF PEOPLE	TOTAL ANNUAL EARNINGS
		AVERAGE ANNUAL EARNINGS			AVERAGE ANNUAL EARNINGS
0-19	27	841388.	0	241	6198278.
20-24	114	2444868.	1	764	20158916.
25-29	884	22052342.	2	623	17557768.
30-34	1696	49016344.	3	636	18218642.
35-39	1647	53727324.	4	591	17666022.
40-44	1206	42799344.	0-4	2855	79799856.
45-49	799	29979624.	5-9	1966	64488484.
50-54	465	17825228.	10-14	1502	54256260.
55-59	219	8548272.	15-19	623	23922370.
60-64	101	4098162.	20-24	181	7292341.
65-69	16	564243.	25-29	45	1976611.
70-74	3	112521.	30-34	5	231472.
75-79	1	27300.	35-39	1	69842.
80+	0	0.	40+	0	0.
TOTAL	7178	232036976.	TOTAL	7178	232037216.

1.4(a) ANNUAL EARNINGS BY AGE AND SERVICE AND SERVICE GROUPS BY AGE GROUPS ACTIVE

AGE GROUP	SERVICE GROUPS BY AGE GROUPS										TOTAL
	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40+	TOTAL	
0-19	26	1	0	0	0	0	0	0	0	0	27
20-24	114	0	0	0	0	0	0	0	0	0	114
25-29	756	127	0	1	0	0	0	0	0	0	884
30-34	850	668	177	1	0	0	0	0	0	0	1696
35-39	516	526	533	72	0	0	0	0	0	0	1647
40-44	283	293	375	236	19	0	0	0	0	0	1206
45-49	161	160	221	177	75	5	0	0	0	0	799
50-54	84	107	119	81	53	20	1	0	0	0	465
55-59	39	55	54	38	17	15	1	0	0	0	219
60-64	21	23	19	15	16	3	3	0	0	0	101
65-69	5	4	3	2	1	1	0	0	0	0	16
70-74	0	1	1	0	0	1	0	0	0	0	3
75-79	0	1	0	0	0	0	0	0	0	0	1
80+	0	0	0	0	0	0	0	0	0	0	0
TOTAL	2855	1966	1502	623	181	45	5	1	0	0	7178

AGE GROUP	ANNUAL NUMBER OF PEOPLE	TOTAL ANNUAL BENEFIT	AVERAGE ANNUAL BENEFIT	SERVICE GROUP	NUMBER OF PEOPLE	TOTAL ANNUAL BENEFIT	AVERAGE ANNUAL BENEFIT
0-19	1	3189.	3189.	0	153	2396206.	15661.
20-24	1	3009.	3009.	1	160	2482946.	15518.
25-29	0	0.	0.	2	149	2208344.	14821.
30-34	3	44516.	14839.	3	145	1992886.	13744.
35-39	13	224052.	17235.	4	152	1996926.	13138.
40-44	16	275161.	17198.	0-4	759	11077311.	14595.
45-49	54	950415.	17600.	5-9	419	5051640.	12056.
50-54	183	2701119.	14760.	10-14	133	1563620.	11757.
55-59	247	3493429.	14143.	15-19	52	704060.	13540.
60-64	292	3823943.	13096.	20-24	11	182052.	16550.
65-69	255	3246060.	12730.	25-29	5	82685.	16537.
70-74	173	2080298.	12025.	30-34	1	18277.	18277.
75-79	107	1296446.	12116.	35-39	0	0.	0.
80+	35	538008.	15372.	40+	0	0.	0.
TOTAL	1380	18679644.	13536.	TOTAL	1380	18679646.	13536.

1.4(b) ANNUAL EARNINGS BY AGE AND SERVICE AND SERVICE GROUPS BY AGE GROUPS CURRENT RETIREES

AGE GROUP	SERVICE GROUPS BY AGE GROUPS											TOTAL
	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	0	0	1
20-24	1	0	0	0	0	0	0	0	0	0	0	1
25-29	0	0	0	0	0	0	0	0	0	0	0	0
30-34	2	1	0	0	0	0	0	0	0	0	0	3
35-39	9	4	0	0	0	0	0	0	0	0	0	13
40-44	13	3	0	0	0	0	0	0	0	0	0	16
45-49	50	3	1	0	0	0	0	0	0	0	0	54
50-54	160	21	1	1	0	0	0	0	0	0	0	183
55-59	210	33	4	0	0	0	0	0	0	0	0	247
60-64	200	88	4	0	0	0	0	0	0	0	0	292
65-69	97	149	8	1	0	0	0	0	0	0	0	255
70-74	10	103	44	16	0	0	0	0	0	0	0	173
75-79	6	13	65	18	5	0	0	0	0	0	0	107
80+	0	1	6	16	6	1	0	0	0	0	0	35
TOTAL	759	419	133	52	11	1	0	0	0	0	0	1380

## 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 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 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 until termination or retirement. The same method used for funding retirement benefits is also used to fund health benefits.

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

DISABILITY RATES

ANNUAL RATES PER 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.

William M. Mercer, Incorporated

2.1 STATEMENT OF NET ASSETS

AS OF JUNE 30, 1981

	<u>Cost Value</u>	<u>Market Value</u>
Cash	\$ 1,582,187	\$ 1,582,187
CD's and Other Short-Term Issues	21,433,197	21,729,175
Gold	20,905,555	19,750,310
Investment Securities:		
U.S. Government	107,247,400	85,922,770
Other	26,648,905	17,713,523
Common Stock (including Convertible Stock)	54,003,577	57,381,723
Real Estate Equity Fund	21,250,000	22,694,605
Loans & Mortgages	134,867,500	134,867,500
Miscellaneous	<u>11,611,288</u>	<u>11,611,288</u>
Total Assets	\$399,549,609	\$373,253,081

**William M. Mercer, Incorporated**

2.2 CHANGES IN NET ASSETS  
DURING FISCAL YEAR 1981

Net Assets, 6-30-80 \$320,314,293

Additions:

Employee Contributions	\$18,853,076	
Employer and State Matching Contributions	37,653,917	
Investment Income	39,180,591	
Interest on Member's Indebtedness	622,790	
Unrealized Gain (Loss) on Investments	<u>(19,017,496)</u>	77,292,879

Deductions:

Medical Benefits	\$ 1,590,476	
Retirement Benefits	18,413,659	
Refunds of Contributions	3,172,253	
Administrative Expenses	<u>1,177,702</u>	<u>24,354,090</u>

Net Assets, 6-30-81 \$373,253,081

2.3 DEVELOPMENT OF VALUATION ASSETS

AS OF JUNE 30, 1981

	<u>Market Value</u>	<u>Cost Value</u>	<u>Ratio (M/C)</u>
(1) June 30, 1981	\$373,253,081	\$399,549,609	.9342
(2) June 30, 1980	320,314,293	328,346,720	.9755
(3) June 30, 1979	265,835,222	262,437,828	1.0129
(4) Average Ratio			.9742
(5) Cost Value at June 30, 1981		\$399,549,609	
(6) Valuation Assets at June 30, 1981 (4) x (5)		\$389,241,229	

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	\$153,382,896	\$444,201,216
Termination Benefits	70,584,211	175,973,270
Disability Benefits	8,428,578	13,096,602
Death Benefits	3,536,212	6,863,737
Return of Contributions	8,585,916	13,989,002
Health Benefits	<u>41,112,372</u>	<u>51,886,268</u>
Subtotal	\$285,630,185	\$706,010,095
<u>Inactive Members</u>		
Not Vested	\$ 4,571,772	\$ 4,571,772
Vested Terminations	19,194,920	19,194,920
Retirees & Beneficiaries	<u>182,837,577</u>	<u>182,837,577</u>
Subtotal	\$206,604,269	\$206,604,269
TOTALS	\$492,234,454	\$912,614,364



2.5 CALCULATION OF TOTAL CONTRIBUTION RATE  
FOR FISCAL YEAR 1984

Normal Cost Rate

(1) Present Value of Fully Projected Benefits	\$912,614,364
(2) Present Value of Accrued Benefits	492,234,454
(3) Present Value of Future Member Contributions	135,894,993
(4) Present Value of Future Supplemental Contributions	6,166,124
(5) Present Value of Arrearage Indebtedness	16,186,455
(6) Present Value of Future Consolidated Employer Contributions (1) - (2) - (3) - (4) - (5)	262,132,338
(7) Present Value of Future Salaries	1,940,858,418
(8) Normal Cost Rate (6) ÷ (7)	13.51%

Past Service Rate

(1) Present Value of Accrued Benefits	\$492,234,454
(2) Valuation Assets	389,241,229
(3) Total Unfunded Liability	102,993,225
(4) 30-Year Amortization Factor	12.158406
(5) Past Service Payment	8,470,948
(6) Total Salaries	232,038,272
(7) Past Service Rate	<del>3.65%</del> 3.85%

Total Employer Contribution Rate

17.36%  
17.16% \*

\* see front page