



## C&B CONSULTING GROUP

March 4, 1991

Board of Retirement  
Employees' Retirement Association  
County of Fresno  
Fresno, California

Ladies and Gentlemen:

Pursuant to our agreement, we have completed an actuarial valuation and investigation of the County's Retirement System as of June 30, 1990. We are pleased to submit our report on the results of the survey.

This report describes in detail both the results and the recommendations arising from our study. It also compares these results with two additional valuations made based on economic assumptions which are different than those of the main study.


We look forward to discussing this report with the Board and wish to express our appreciation for the cooperation extended to us during the course of this survey.

Respectfully submitted,

C&B CONSULTING GROUP



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Enclosure

**EMPLOYEES' RETIREMENT ASSOCIATION  
OF THE COUNTY OF FRESNO**

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**ACTUARIAL REPORT**

Prepared for the  
Board of Retirement  
as of  
June 30, 1990

**COUNTY OF FRESNO**  
**JULY 1, 1990**

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SECTION

**I**

REPORT PREFACE

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## (i) INTRODUCTION

We were requested to perform an actuarial investigation and valuation of the Retirement System as of June 30, 1990, using the latest statistical information available as to the active, inactive and retired membership.

The results presented herein are based upon the unaudited data as supplied to C&B Consulting Group by the Retirement Office and the benefits for General and Safety members under Sections 31676.12 and 31664, respectively, of the County Employees Retirement Law of 1937.

The valuation results have been calculated under varying sets of salary scales and interest assumptions in order to point out the effects of changes in these assumptions upon the contribution requirements of the System.

The ratio of the assets of the System to its obligation for benefits earned to the date of the valuation is being provided on a plan termination basis and on the Governmental Accounting Standards Board (GASB) Statement No. 5 basis. We believe that the use of either ratio, if used consistently from year to year, is a good measure of the funding progress of the Plan.

We believe that the information included in this report will be of help to all parties in our mutual effort to assure the actuarial soundness and funding adequacy of the Retirement System.

## (ii) HIGHLIGHTS OF ACTUARIAL DATA

Our July 1, 1990 and July 1, 1988 actuarial valuations of your System were based on the following data:

	July 1, 1990	July 1, 1988	Percentage Increase During the Two Year Period
<b>Active Members</b>			
<b>General</b>			
Number	5,726	5,007	14%
Total annual payroll	\$ 150,194,000	\$ 117,304,000	28%
Average monthly salary	\$ 2,186	\$ 1,952	12%
<b>Safety</b>			
Number	602	479	26%
Total annual payroll	\$ 19,476,000	\$ 14,726,000	32%
Average monthly salary	\$ 2,696	\$ 2,562	5%
<b>General and Safety</b>			
Number	6,328	5,486	15%
Total annual payroll	\$ 169,670,000	\$ 132,030,000	29%
Average monthly salary	\$ 2,234	\$ 2,006	11%
<b>Retired Members</b>			
Number	2,291	2,154	6%
Total annual pension roll (basic)	\$ 16,654,000	\$ 14,524,000	15%
Average monthly allowance (basic)	\$ 606	\$ 562	8%
Total annual pension roll (basic and COL)	\$ 21,130,000	\$ 17,960,000	18%
Average monthly allowance (basic and COL)	\$ 769	\$ 695	11%
<b>Inactive Vested Members</b>			
Number	575	492	17%
<b>Assets</b>			
Total assets at Book Value	\$ 525,355,000	\$ 424,272,000	24%

SECTION

**II**

EXPERIENCE ANALYSIS

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## **(i) NON-ECONOMIC ACTUARIAL ASSUMPTIONS**

### **Probabilities of Separation From Service Prior to Retirement**

An analysis was made, based upon each member's classification, sex, and attained age as of the valuation date, to determine the probabilities of members leaving the System because of nonvested withdrawal, death, disability retirement, service retirement, and vested withdrawal.

First, the probabilities of each of these were developed to reflect the actual experience that took place during the 2-year investigation period, July 1, 1988 through June 30, 1990. Then, a comparison was made between the probabilities of separation used in the previous valuation and those developed for the current study and all necessary adjustments were made.

### **Non-Vested Withdrawal**

As a result of the active investigation, it was found that the actual number of non-vested withdrawals was lower than expected for General male and female members. The rates were changed to reflect this experience. For Safety members, it was found that the actual number of non-vested withdrawals was higher than expected and the rates were adjusted accordingly.

The net effect of these changes is to cause an increase in the cost to the System.

### **Service Retirement**

Based on the experience during the investigation period, rates of service retirement for General males were decreased, rates for General females were increased, and the distribution of rates for Safety members was changed.

### **Disability Retirement**

During the investigation period, the incidence of ordinary and duty disability closely reflected the expected levels for both General and Safety members. Based on this experience, no adjustments were made in the disability rates.

### **Death Before Retirement**

Based on experience during the period there was no need to adjust rates of death before retirement.

### **Vested Withdrawal**

Based upon the experience during the period, the rates of vested withdrawal were increased for both General and Safety members.



## **Summary of Probabilities of Separation**

The rates of separation from active service have been discussed in the foregoing paragraphs. However, it is difficult to obtain the meaning of the various changes in the probabilities of separation by examining each one of them separately. This is because each of the probabilities depends on the others. For example, if there is more turnover, there will be fewer retirements. Because of this interdependency, it is helpful to develop another table which takes this into account. Exhibit 1 at the end of this Section shows for both General and Safety members the expected number of present active members who will eventually separate from the System for each of the various causes of termination based on the current set of assumptions. Exhibit 2 shows the results based on the new set of assumptions. In Exhibit 3, we have used the results from the first two exhibits to graphically display the percentage of members to separate, which makes it easier to visualize the meaning of the probabilities of separation. For purposes of this graph, we have combined the following:

- service retirement and terminated vested into Service Retirement,
- ordinary and duty disabilities into Disability, and
- ordinary death, death while eligible and duty death into Death.

## **Mortality After Service Retirement**

At the time of the last actuarial study of the Retirement System, the 1983 Group Annuity Mortality Table set forward one year for males and females was used as the basis for mortality after service retirement. Based on this table, we expected 212 General and 10 Safety deaths over the four year period ending June 30, 1990. The actual numbers of deaths were 188 and 8, respectively.

Based on this experience and on that of the other Counties we serve, we recommend that the 1983 Group Annuity Mortality Table set back one year for males and still set forward one year for females be used to reflect the longer life expectancies being experienced by your groups. Based on the new male table and current female table, we would expect 195 General and 8 Safety members to die, which compares more favorably to the actual deaths over the four year period. The life expectancies based on these tables are shown in Section IV(x) of this report.

## **Mortality After Disability Retirement**

At the time of the last actuarial study, the 1981 Disability Mortality Table was used to measure mortality after disability for both males and females.

The expected number of deaths of retired disabled members for the four years ending June 30, 1990 was 28. The actual number of deaths was 27. Based on this experience, and the experience of other Counties we serve, we have continued to use the 1981 Disability Mortality Table for both General and Safety members. The life expectancies based on this table are shown in Section IV(xi).

## **Mortality Basis for Employee Contribution Rates**

In accordance with the 1937 County Retirement Act, we calculated basic contribution rates under benefit Section 31676.12 for General members using the 1983 Male Group Annuity Mortality Table with a four year setback to reflect a sex independent mortality table. A two year setback was used previously. The change was necessitated by the improvement in male mortality experience as well as the higher percentage of females in the work force.

The Safety members' unisex rates are based on the 1983 Male Group Annuity Mortality Table set back one year. Previously the table had been set forward one year.

## EXHIBIT 1

### EXPECTED NUMBER TO EVENTUALLY SEPARATE FOR INDICATED CAUSE (Based on Current Actuarial Assumptions)

#### GENERAL MALE MEMBERS

Present Age	Number of Actives	Withdrawal	Ordinary Death	Ordinary Disability	Service	Death While Eligible	Duty Death	Duty Disability	Terminated Vested
20-24	43	39	0	0	3	0	0	0	1
25-29	173	139	1	2	20	1	0	1	9
30-34	268	176	3	4	58	2	0	2	23
35-39	383	185	5	9	134	3	1	3	43
40-44	477	156	8	15	241	5	1	5	46
45-49	357	73	6	12	235	4	1	4	22
50-54	174	20	3	6	136	2	0	2	5
55-59	150	10	2	4	130	1	0	1	2
60-64	51	2	1	1	47	0	0	0	0
65 & OVER	6	0	0	0	6	0	0	0	0
TOTAL	2,082	800 (38.4%)	29 ( 1.4%)	53 ( 2.5%)	1,010 (48.5%)	18 ( .9%)	3 ( .1%)	18 ( .9%)	151 ( 7.3%)

#### GENERAL FEMALE MEMBERS

20-24	129	120	1	0	5	0	0	0	3
25-29	395	334	2	2	36	1	0	1	19
30-34	587	427	5	6	106	1	0	1	41
35-39	748	437	8	12	226	2	0	2	61
40-44	691	299	9	13	304	3	0	2	61
45-49	447	129	6	10	267	2	0	1	32
50-54	302	51	4	6	225	1	0	1	14
55-59	207	18	2	3	177	1	0	1	5
60-64	110	4	1	1	103	0	0	0	1
65 & OVER	28	0	0	0	28	0	0	0	0
TOTAL	3,644	1,819 (49.9%)	38 ( 1.0%)	53 ( 1.5%)	1,477 (40.5%)	11 ( .3%)	0 ( .0%)	9 ( .3%)	237 ( 6.5%)

#### SAFETY MEMBERS

20-24	13	6	0	0	5	0	0	1	1
25-29	75	28	1	1	35	0	1	5	4
30-34	122	28	1	2	71	1	2	10	7
35-39	127	17	1	2	88	1	1	11	6
40-44	144	8	1	2	115	1	1	12	4
45-49	82	1	1	1	71	0	1	6	1
50-54	28	0	0	0	26	0	0	2	0
55 & OVER	11	0	0	0	11	0	0	0	0
TOTAL	602	88 (14.6%)	5 ( .9%)	8 ( 1.3%)	422 (70.1%)	3 ( .5%)	6 ( 1.0%)	47 ( 7.8%)	23 ( 3.8%)



## EXHIBIT 2

### EXPECTED NUMBER TO EVENTUALLY SEPARATE FOR INDICATED CAUSE (Based on New Actuarial Assumptions)

#### GENERAL MALE MEMBERS

Present Age	Number of Actives	Withdrawal	Ordinary Death	Ordinary Disability	Service	Death While Eligible	Duty Death	Duty Disability	Terminated Vested
20-24	43	39	0	0	2	0	0	0	2
25-29	173	137	1	1	17	1	0	1	15
30-34	268	156	3	4	62	2	0	2	39
35-39	383	145	6	10	149	3	1	4	65
40-44	477	103	9	17	268	6	1	6	67
45-49	357	40	7	13	251	5	1	5	35
50-54	174	12	3	6	140	2	0	2	9
55-59	150	7	2	4	131	1	0	1	4
60-64	51	1	1	1	47	0	0	0	1
65 & OVER	6	0	0	0	6	0	0	0	0
TOTAL	2,082	640 (30.7%)	32 ( 1.5%)	56 ( 2.7%)	1,073 (51.5%)	20 ( 1.0%)	3 ( .2%)	21 ( 1.0%)	237 (11.4%)

#### GENERAL FEMALE MEMBERS

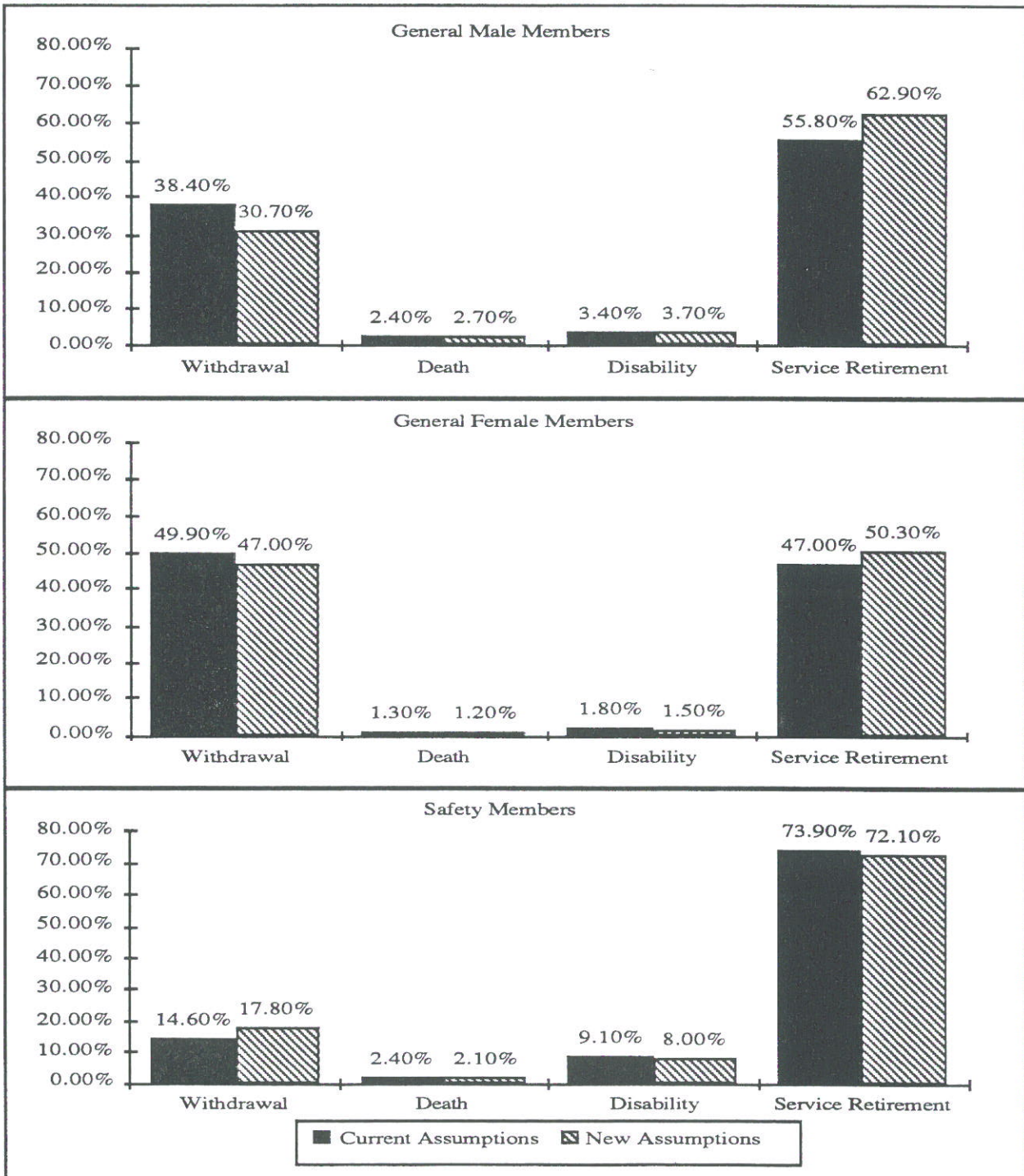
20-24	129	120	0	0	3	0	0	0	6
25-29	395	335	2	2	26	0	0	0	30
30-34	587	411	4	5	86	1	0	1	79
35-39	748	392	7	10	207	2	0	2	128
40-44	691	269	8	13	297	2	0	2	100
45-49	447	119	6	9	265	2	0	1	45
50-54	302	48	3	6	227	1	0	1	16
55-59	207	15	2	3	179	1	0	1	6
60-64	110	3	1	1	103	0	0	0	2
65 & OVER	28	0	0	0	28	0	0	0	0
TOTAL	3,644	1,712 (47.0%)	33 ( .9%)	49 ( 1.3%)	1,421 (39.0%)	9 ( .3%)	0 ( .0%)	8 ( .2%)	412 (11.3%)

#### SAFETY MEMBERS

20-24	13	8	0	0	3	0	0	0	2
25-29	75	35	1	1	21	0	1	3	13
30-34	122	37	1	2	53	1	1	7	20
35-39	127	18	1	2	83	1	1	10	11
40-44	144	8	1	2	115	1	1	12	4
45-49	82	1	1	1	72	0	1	6	0
50-54	28	0	0	0	26	0	0	2	0
55 & OVER	11	0	0	0	11	0	0	0	0
TOTAL	602	107 (17.8%)	5 ( .8%)	8 ( 1.3%)	384 (63.8%)	3 ( .5%)	5 ( .8%)	40 ( 6.7%)	50 ( 8.3%)

### EXHIBIT 3

EXPECTED PERCENTAGE TO EVENTUALLY SEPARATE FOR INDICATED CAUSE  
(Based on Current and New Actuarial Assumptions)





## (ii) ECONOMIC ACTUARIAL ASSUMPTIONS

### **Interest Rate Assumption**

Economic theory holds that the total nominal rate of return on an investment is comprised of two components:

- Inflation
- Real rate of return

In order for an investment to be marketable, it must be expected to provide a hedge against inflation. In addition, there must be some premium reflective of the risk that the investor takes in holding the security.

### **Inflation**

The inflationary component provides a measure of the anticipated debasement of the dollar. It affects benefit amounts in the form of salary increases and cost of living adjustments. The bases for setting the inflation assumption are historical data, surveys, and economic forecasts all considered within the actuarial framework.

Based on all these considerations and the high equity and real estate composition of your portfolio, we recommend a 5.0% annual inflation rate assumption. We believe that the use of this rate will produce costs and liabilities that can be expected to be reasonably stable over the long-term future.

The inflationary salary assumptions used by the 1937 Act Counties are shown below in Table 1. As can be seen in Table 1, the average assumption is 5.17%.

**Table 1**  
**CURRENT LONG-TERM INFLATIONARY ASSUMPTIONS**  
**USED BY 1937 ACT COUNTIES**

Retirement System	Inflation
Alameda	5.50%
Contra Costa	5.50%
Imperial	3.50%
Kern	4.00%
Los Angeles	5.00%
Marin	5.00%
Mendocino	5.75%
Merced	6.00%
Orange	4.50%
Sacramento	5.25%
San Bernardino	5.00%
San Diego	5.00%
San Joaquin	5.50%
San Mateo	5.50%
Santa Barbara	5.50%
Sonoma	5.50%
Stanislaus	5.50%
Tulare	5.50%
Ventura	5.25%
Average	5.17%

Inflation assumptions utilized by California PERS and California State Teachers Retirement System are 5.00% and 5.50%, respectively. In addition, PERS includes a .5% Across the Board Increase in their salary increase assumption.

### Real Rate of Return

In order to develop an appropriate real (inflation free) rate of return assumption, it is necessary to take into account the allocation of assets among the various investment classes: stocks, bonds and other fixed income, real estate and cash equivalents.

The target asset allocation presently adopted and the current level utilized by the System are shown in Table 2.

**Table 2**  
FCERA ASSET ALLOCATION AS OF 6/30/90

	Target*	Current*
Stocks	50%	46%
Fixed Income/Bonds	40%	37%
Real Estate Equity	10%	9%
Cash and Short Term	0%	8%

\* At Market Value

Based upon this information, anticipated real rates of returns for these classes of investments and the potential for variation in real rates of return, we believe that a 3-1/2% real rate of return assumption is reasonable in conjunction with the 5% inflation rate. This results in an interest rate assumption of 8-1/2%.

### Historic Rate of Return

The average investment yields as well as the rates of return assumed by the Fund over the past nine years were as follows:

**Table 3**  
FCERA YIELDS VS. ASSUMED RATE OF RETURNS

Year Ended	Yield Including Realized Profits & Losses	Assumed Rate of Return
June 30, 1982	9.8%	7.00%
June 30, 1983	10.4%	8.00%
June 30, 1984	10.2%	8.00%
June 30, 1985	9.8%	8.50%
June 30, 1986	12.9%	8.50%
June 30, 1987	14.7%	8.50%
June 30, 1988	12.2%	8.50%
June 30, 1989	8.4%	8.50%
June 30, 1990	10.8%	8.50%
9 year average	11.0%	8.22%

## **Salary Scale Assumption**

The salary scale assumption is comprised of two components:

- Inflation
- Merit and Longevity

### **Inflation**

Inflationary salary and wage increases are granted to maintain the purchasing power of salaries and wages earned by employees over time. Since retirement benefits are linked to compensation, inflationary increases affect the projected amount of benefit an employee will receive upon retirement.

### **Merit and Longevity Increases**

The second component of the salary scale assumption is the merit and longevity increase. Employees receive this increase over their careers as a result of promotions and advances in their pay grades.

For your County, the "merit and longevity" increases range from 5% to 1/2% per year depending on the member's age and classification. The effect of the merit and longevity increase is to add approximately 1% per year to the inflationary salary projections.

### **Multiple Studies**

In connection with this survey, we have again performed more than one valuation of the System by varying the interest rates and/or the corresponding inflation components of the salary scale used. The purpose of this was to analyze the effect of these changes on the County and member contribution rates. The following three studies were performed by us:

- Study #1** A valuation using 8-1/2% interest and 6-3/4% salary scale assumptions. Of the projected increase, 1% for merit and longevity and 5-3/4% for inflation. This set of economic assumptions is currently in effect.
- Study #2** A valuation using 8-1/2% interest and 6% salary scale assumptions. Of the projected salary increase, 1% is for merit and longevity and 5% is for inflation.
- Study #3** A valuation using 8-3/4% interest and 6-1/4% salary scale assumptions. Of the projected salary increase, 1% is for merit and longevity and 5-1/4% is for inflation.

We show in Section IV(ix) a detailed listing of each of the above salary scales.

SECTION  
**III**

VALUATION RESULTS

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## (i) CONTRIBUTION RATES

A comparison of County and employee total (basic and cost of living) rates on a group basis follows. This comparison shows rates currently contributed as well as rates resulting from our new study. The annual amounts are based on the June 30, 1990 payroll.

### COMPOSITE CONTRIBUTION RATES AND ANNUAL AMOUNTS \*

	COUNTY		EMPLOYEE	
	% of Payroll	Annual Amount	% of Payroll	Annual Amount
<b>Current rates @ 8-1/2% interest and 6-3/4% salary scale</b>	11.69%	\$ 19,842,000	4.62%	\$ 7,839,000
<b>Recalculated rates @ 8-1/2% interest and 6-3/4% salary scale (Study #1)</b>	13.36%	\$ 22,661,000	4.51%	\$ 7,644,000
<b>Study #2 rates @ 8-1/2% interest and 6% salary scale</b>	12.14%	\$ 20,603,000	3.99%	\$ 6,775,000
<b>Study #3 rates @ 8-3/4% interest and 6-1/4% salary scale</b>	11.46%	\$ 19,436,000	3.88%	\$ 6,588,000

\* Contribution rates are based upon benefit Section 31676.12 for General members and Section 31664 for Safety members and the fact that the County pays half of the member basic rate. All of the rates shown above reflect the reductions on account of transfers in 1989 from the Undistributed Earnings Reserve to the Cost of Living Reserve made toward liabilities on the County's (\$23,900,000) and the members' (\$10,000,000) behalf.

In comparing the current rates with those recalculated by this study (Study #1), each based on the 8-1/2% assumption, we note an increase in the composite County rate and a decrease in the composite member contribution rate.

The recalculated Study #1 composite County contribution rate increased due primarily to lower termination of non-vested employees than anticipated and the strengthening of the non-vested termination and the post retirement mortality assumptions.

Member basic rates increased due to the strengthening of the mortality assumption. However, the member's share of future COL liabilities was decreased.

Study #2 results in lower composite County and member contribution rates due to lower expected future salary increases. Study #3 results in lower rates reflecting the higher anticipated future investment earnings offset to some extent by the higher salary increases.

A more detailed comparison of the basic and cost of living contribution rates calculated in Studies #1, #2 and #3, as well as previously developed rates, are shown in Tables A and B following this Section. Table A shows a comparison of the member contribution rates; Table B shows a similar comparison of the County contribution rates.

Member contributions are payable over the employee's future working lifetime. The County rates reflect the Entry Age Normal Funding method. Under this method, part of the liability is being paid over the future working lifetimes of the members. The remaining supplemental past service liability is being amortized over 20 years from the valuation date.

### **Recommendations**

We recommend that the Retirement Board adopt the following employee and County contribution rates resulting from Study #2:

- County: 12.14% of total payroll (as a group)
- Member: 3.99% of total payroll (as a group)

In this Section, we have pointed out for comparison purposes some of the corresponding costs if alternative economic assumptions are used. In addition, we have included (in Section III(ii)) the funding test (funding progress ratio). We look forward to meeting with the Board and discussing the various topics covered in this report.

**TABLE A**  
**COMPARISON OF EMPLOYEE CONTRIBUTION RATES\***  
Using percentage of monthly salary in excess of \$350

**Current Rates (Before Study)**

8-1/2% INTEREST AND 6-3/4% SALARY SCALE ASSUMPTIONS

GENERAL MEMBERS				SAFETY MEMBERS			
Entry Age	Basic	COL	Total	Entry Age	Basic	COL	Total
25	3.22%	1.27%	4.49%	21	3.84%	1.52%	5.36%
35	3.55%	1.40%	4.95%	25	3.95%	1.56%	5.51%
45	3.96%	1.57%	5.53%	30	4.12%	1.63%	5.75%

**Rates Updated By 6/30/90 Study**

STUDY #1 - 8-1/2% INTEREST AND 6-3/4% SALARY SCALE ASSUMPTIONS

GENERAL MEMBERS				SAFETY MEMBERS			
Entry Age	Basic	COL	Total	Entry Age	Basic	COL	Total
25	3.31%	1.08%	4.39%	21	3.91%	1.27%	5.18%
35	3.66%	1.19%	4.85%	25	4.02%	1.31%	5.33%
45	4.08%	1.33%	5.41%	30	4.20%	1.37%	5.57%

STUDY #2 - 8-1/2% INTEREST AND 6% SALARY SCALE ASSUMPTIONS

GENERAL MEMBERS				SAFETY MEMBERS			
Entry Age	Basic	COL	Total	Entry Age	Basic	COL	Total
25	2.89%	.87%	3.76%	21	3.50%	1.05%	4.55%
35	3.33%	1.00%	4.33%	25	3.67%	1.10%	4.77%
45	3.87%	1.16%	5.03%	30	3.90%	1.17%	5.07%

STUDY #3 - 8-3/4% INTEREST AND 6-1/4% SALARY SCALE ASSUMPTIONS

GENERAL MEMBERS				SAFETY MEMBERS			
Entry Age	Basic	COL	Total	Entry Age	Basic	COL	Total
25	2.84%	.82%	3.66%	21	3.43%	.99%	4.42%
35	3.26%	.94%	4.20%	25	3.59%	1.04%	4.63%
45	3.79%	1.09%	4.88%	30	3.82%	1.10%	4.92%

\* These rates reflect the fact that the County pays half of the members' basic rates.



**TABLE B**  
**COMPARISON OF EMPLOYER CONTRIBUTION RATES\***

**Current Rates (Before Study)**

8-1/2% INTEREST AND 6-3/4% SALARY SCALE ASSUMPTIONS

GENERAL			SAFETY		
	% of Payroll	Annual Amount*		% of Payroll	Annual Amount*
Basic	8.56%	\$ 12,857,000		14.87%	\$ 2,896,000
COL	2.41	3,620,000		2.41	469,000
Total	10.97%	\$ 16,477,000		17.28%	\$ 3,365,000

Average rate for the total group = 11.69 %

**Rates Updated by 6/30/90 Study**

STUDY #1 - 8-1/2% INTEREST AND 6-3/4% SALARY SCALE ASSUMPTIONS

GENERAL			SAFETY		
	% of Payroll	Annual Amount*		% of Payroll	Annual Amount*
Basic	9.63%	\$ 14,464,000		14.30%	\$ 2,785,000
COL	3.19	4,791,000		3.19	621,000
Total	12.82%	\$ 19,255,000		17.49%	\$ 3,406,000

Average rate for the total group = 13.36%

STUDY #2 - 8-1/2% INTEREST AND 6% SALARY SCALE ASSUMPTIONS

GENERAL			SAFETY		
	% of Payroll	Annual Amount*		% of Payroll	Annual Amount*
Basic	8.69%	\$ 13,052,000		12.81%	\$ 2,495,000
COL	2.98	4,476,000		2.98	580,000
Total	11.67%	\$ 17,528,000		15.79%	\$ 3,075,000

Average rate for the total group = 12.14%

STUDY #3 - 8-3/4% INTEREST AND 6-1/4% SALARY SCALE ASSUMPTIONS

GENERAL			SAFETY		
	% of Payroll	Annual Amount*		% of Payroll	Annual Amount*
Basic	8.31%	\$ 12,481,000		12.10%	\$ 2,357,000
COL	2.71	4,070,000		2.71	528,000
Total	11.02%	\$ 16,551,000		14.81%	\$ 2,885,000

Average rate for the total group = 11.46%

\* Contributions are based on annual salaries on valuation date of \$150,194,000 for General and \$19,476,000 for Safety members.



## (ii) FUNDING PROGRESS OF THE SYSTEM

A comparison of the measurement of the funding progress of the System in successive valuations is an important criteria for determining the soundness of a pension system. There are various methods of measuring the progress of the System's funding, but we believe the most useful measure is the ratio of the System's assets to its obligation for benefits earned to date. Unless amendments are made to the System assumptions are strengthened or actuarial losses are incurred, the assets typically increase at a greater rate than the liabilities for benefits earned to date. This will have the effect of increasing the funding progress ratio in future years.

### **Funding Ratio - Plan Termination" Assumption**

At the time of the last valuation we computed the ratio of the assets of the System to the obligation for benefits earned to date based on a Plan Termination assumption. We believe that this measure will help the Board to monitor the progress of the funding status of the System. To this end, we include below a comparison of the previously calculated and recalculated funding ratios based on the recommended 8-1/2% interest rate assumption and the current and recommended salary increase assumptions. Based on the recommended assumptions, the ratio decreased slightly.

	Previously Calculated (8-1/2% interest 6-3/4% salary scale) June 30, 1988	Recalculated (8-1/2% interest 6-3/4% salary scale) June 30, 1990	Recommended (8-1/2% interest 6% salary scale) June 30, 1990
1. Assets at Book Value*	\$ 423,066,000	\$ 515,667,000	\$ 515,667,000
2. Present Value of Benefits*	\$ 357,737,000	\$ 444,491,000	\$ 444,519,000
3. Funding Ratio (1) ÷ (2)	118%	116%	116%

\* Excludes accounts payable but includes retiree health insurance reserve.

The present value figure includes all liabilities of the System for basic and cost-of-living benefits granted to members and beneficiaries already on the pension roll. All basic and cost of living liabilities of active and vested inactive members are also included for every year of service already earned at the valuation date. Liabilities are based on the salaries of the members as of June 30, 1990. In calculating the funding progress of the System, we have used all of the assets, including all undistributed earnings, except for accounts payable.

The funding ratio at the recommended 8-1/2% interest rate and 6% salary increase assumption of 116% as developed in this study is high compared to the funding ratios of most public retirement plans. However, a funding ratio of 100% or more at a valuation date does not mean that future contributions are unnecessary. It does mean that if the System were to terminate as of that date, there would be more than enough money on hand to pay off all of the obligations incurred through that date.

### **GASB No. 5 - "Plan Continuation" Assumption With Future Salary Increases**

Reporting requirements were promulgated by the Governmental Accounting Standards Board (GASB) Statement No. 5, effective for plan years starting after December 15, 1986. The GASB No. 5 liabilities assume an ongoing plan, i.e., they include future withdrawals, deaths and

disability retirements. In addition, future projected salary increases are included in these figures. The pension benefit obligation includes all liabilities of the System for basic and cost-of-living benefits granted to members and beneficiaries already on the pension roll. All basic and cost-of-living liabilities of active and vested inactive members are included for every year of service already earned at the valuation date and assume immediate 100% vesting.

The GASB No. 5 liabilities and funding ratios as of June 30, 1988 and June 30, 1990, based on the 8-1/2% interest and current and recommended salary scale assumptions follow. Using the recommended assumptions, the ratio remained level.

	Previously Calculated (8-1/2% interest 6-3/4% salary scale)	Recalculated (8-1/2% interest 6-3/4% salary scale)	Recommended (8-1/2% interest 6% salary scale)
1. Pension Benefit Obligation			
a. Current Retirants and Beneficiaries	\$ 199,036,000	\$ 236,050,000	\$ 236,050,000
b. Terminated Vested Participants	12,621,000	17,582,000	16,589,000
c. Active Participant's Accumulated Contributions	83,684,000	112,322,000	112,322,000
d. Active Participant's Employer Financed Portion:			
Vested	126,846,000	161,948,000	144,331,000
Non-vested	8,319,000	12,907,000	11,768,000
e. Retiree Health Insurance Reserve	18,030,000	26,684,000	26,684,000
f. Total Pension Benefit Obligation	\$ 448,536,000	\$ 567,493,000	\$ 547,744,000
2. Assets at Book Value*	\$ 423,066,000	\$ 515,667,000	\$ 515,667,000
3. Funding Ratio (2) ÷ (1)	94%	91%	94%

\* Excludes accounts payable but includes retiree health insurance reserve.

The lower percentage funded under this ratio should not be of any concern. This funding ratio is expected to reach 100% in 20 years, which is the amortization period currently used to pay off the unfunded liabilities. A GASB No. 5 ratio of 94% compares favorably to those of other 1937 Act retirement funds.



### (iii) ACTUARIAL BALANCE SHEET

The purpose of an Actuarial Balance Sheet is to enable the employer, by reference to the periodic statements of this nature, to determine whether or not the contributions are adequate to provide the benefits without impairment to the Fund. The following is descriptive listing of the items which make up the Actuarial Balance Sheet for basic and cost -of-living benefits under the System.

1. The total assets in the Retirement Fund as of June 30, 1990, taken from the Accounting Balance Sheet.
2. The present value of the contributions that are anticipated will be made by present members after July 1, 1990 until their separation from the System as active members.
3. The present value of future contributions that will be required of the employer in order to fully provide the benefits anticipated on account of present active and retired members.
5. The actuarial present value of the allowances which are currently being paid to retired members and beneficiaries on account of service retirements, disability, and survivor members.
6. The present value of retirement allowances for anticipated future service and disability retirements, including continuance to spouses, to active and inactive members.
7. The present value of death benefits payable on account of the death of currently active members.
8. The present value of termination benefits payable on account of the withdrawal (refund) of currently active members.
9. & 11. The reserves held for future adverse experience, but sometimes used for other Retirement System purposes.
12. Reserve created to pay retiree health insurance premiums.

**ACTUARIAL BALANCE SHEET\***  
**As of June 30, 1990**

ASSETS			
	Basic	COL	Total
1. Total assets now held @ Book Value	\$ 382,672,924	\$ 142,682,076	\$ 525,355,000
2. Present value of future contributions by members	45,034,281	13,492,271	58,526,552
3. Present value of future contributions by County:			
a. Normal Cost	76,571,582	17,825,420	94,397,002
b. UAAL	97,166,160	43,583,008	140,749,168
4. <b>Total actuarial assets</b>	<b>\$ 601,444,947</b>	<b>\$ 217,582,775</b>	<b>\$ 819,027,722</b>
LIABILITIES			
	Basic	COL	Total
5. Present value of retirement allowances payable to present retired members	\$ 146,079,525	\$ 89,970,899	\$ 236,050,424
6. Present value of retirement allowances to be granted:			
a. Service retirement	342,305,536	108,860,453	451,165,989
b. Disability retirement	19,837,881	7,001,514	26,839,395
7. Present value of death benefits to be granted:			
a. 6 months' salary death benefit and return of contributions	1,944,699	546,278	2,490,977
b. Death while eligible to retire	2,138,875	750,061	2,888,936
c. Duty death	1,177,569	466,164	1,643,733
8. Present value of members' contributions to be returned upon withdrawal before retirement	21,262,862	9,987,406	31,250,268
9. Contingency reserve	15,470,000	0	15,470,000
10. Accounts payable	9,688,000	0	9,688,000
11. Undistributed earnings	14,856,000	0	14,856,000
12. Retiree Health Insurance Reserve	26,684,000	0	26,684,000
13. <b>Total actuarial liabilities</b>	<b>\$ 601,444,947</b>	<b>\$ 217,582,775</b>	<b>\$ 819,027,722</b>

\* Based on 8-1/2% interest and 6% salary scale assumptions (Study #2).



## (iv) SPECIAL STUDIES

### Retiree Supplemental Health Insurance Benefits Study

As requested, we have calculated the lump sum (single sum) cost of paying the current monthly amount towards health insurance premiums, assuming 100% participation. The current monthly amount is \$45.00 plus an additional increase equal to \$1.00 for each year of service up to 30 years. Our calculations are based on the June 30, 1990 data and Study #2 economic actuarial assumptions as recommended in this report.

In the following table we summarize the lump sum liabilities required to provide medical coverage on a long-term basis for both present and future retired members. Please note that future retired members include only those from the present active members' group. In calculating the liabilities shown in Case 1 of the table, we assumed that the supplemental benefit will not increase in the future, whereas the liabilities in Cases 2 and 3 assume that this benefit will increase annually by 5% (the recommended inflation assumption) and 8-1/2% (the recommended interest rate), respectively. In our opinion, these assumed increases reflect a reasonable range of potential growth in benefits depending upon the intentions of the Board in reacting to future health care inflation levels.

To offset these liabilities, there was a \$26,684,000 reserve as of June 30, 1990. Under Case 1, this reserve exceeded the liability by \$838,000 and under Cases 2 and 3 the resulting net unfunded liabilities were \$25,856,000 and \$76,694,000, respectively.

#### SUMMARY OF RESULTS AS OF JUNE 30, 1990

	Case 1 0% medical inflation 8-1/2% interest	Case 2 5% medical inflation 8-1/2% interest	Case 3 8-1/2% medical inflation 8-1/2% interest
Number of Retired Members	2,291	2,291	2,291
Annual Supplemental Benefit	\$ 1,706,000	\$ 1,706,000	\$ 1,706,000
Lump Sum Liabilities:			
a. Active	\$ 10,592,000	\$ 28,875,000	\$ 68,408,000
b. Retired	<u>15,254,000</u>	<u>23,665,000</u>	<u>34,970,000</u>
c. Total	\$ 25,846,000	\$ 52,540,000	\$ 103,378,000
Retiree Health Insurance Reserve	<u>\$ 26,684,000</u>	<u>\$ 26,684,000</u>	<u>\$ 26,684,000</u>
Net Unfunded Liabilities	\$ (838,000)	\$ 25,856,000	\$ 76,694,000

Please note that our calculations assume that the Retiree Health Insurance Reserve will be credited with interest at the actuarial rate of 8-1/2% and that benefits will be paid out of this reserve.

### Transfers from Undistributed Earnings Reserve

As part of our study, we were asked to discuss transfers from the Undistributed Earnings Reserve, which on June 30, 1990 stood at \$14,856,000. The transfers as of June 30, 1989 reduced the Cost of Living (COL) liabilities for both the County and the members. This "spreads" the effect on costs and reduces the County's and the members' contributions to COL on an ongoing basis.

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COUNTY OF FRESNO

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Retirement Association



III. VALUATION RESULTS  
REVISED (9/24/91)

If transfers are used to offset liabilities rather than to replace some of next year's contributions, then each \$1,000,000 would reduce the required contribution rates by .04% of total payroll for the County and by .08% for the employees as a group.

Our calculations were based on Study #2 actuarial assumptions. Furthermore, we have assumed that the transfers, if any, will be made by June 30, 1991.

SECTION  
**IV**

APPENDIX

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## **(i) MAJOR PROVISIONS OF THE PENSION PLAN**

### **Benefit Sections 31676.12 and 31664 of the 1937 County Act**

Briefly summarized below are the major provisions of the County Employees Retirement Law of 1937, as amended through June 30, 1990, and as adopted by Fresno County.

#### **Membership**

Each person entering County Employment becomes a member on the first day of the calendar month after entrance.

#### **Final Average Salary**

Final average salary (FAS) is defined as the highest 12 consecutive months of compensation earnable.

#### **Return of Contributions**

If a member should resign or die before becoming eligible for retirement, his contributions plus interest will be refunded. In lieu of receiving a return of contributions, a member with five years of service may elect to leave his contributions on deposit and receive a deferred vested benefit when eligible for retirement.

#### **Death Benefit - Before Retirement**

In addition to the return of contributions, a death benefit is payable to the member's beneficiary or estate equal to one month's salary for each completed year of service under the retirement system, based on the final year's average salary, but not to exceed six (6) months' salary.

If a member dies while eligible for service retirement or non-service connected disability, the spouse receives 60% of the allowance that the member would have received for retirement on the day of his death.

If a member dies in the performance of duty, the spouse receives 50% of the member's FAS.

#### **Death Benefit - After Retirement**

If the retirement was for service connected disability, 100% of the member's allowance as it was at death is continued to the surviving spouse for life.

If the retirement was for other than service connected disability, 60% of the member's allowance is continued to the spouse for life.

#### **Disability Benefit**

Member with 5 years of service, regardless of age, are eligible for non-service connected disability. The benefit is 1.8% of FAS for each year of service. If this benefit does not equal 1/3 of FAS, the benefit is increased by the same percentage of FAS for the years which would have



been credited to age 62 (age 55 for Safety members), but the total benefit in this case cannot be more than 1/3 of FAS.

If the disability is service connected, the member may retire regardless of length of service, and the benefit is 50% of FAS.

### **Service Retirement Benefit**

Members with 10 years of service, who have attained the age of 50, are eligible to retire. Members with 30 years of service (20 years for Safety), regardless of age, are eligible to retire.

#### **Benefit**

The benefit expressed as a percentage of monthly FAS per year of service, depending on age at retirement, is illustrated below for typical ages. For members integrated with Social Security, the benefit is reduced by 1/3 of the percentage shown below times the first \$350 of monthly FAS per year of service after January 1, 1956.

Age	General	Safety
50	1.34%	2.00%
55	1.77%	2.62%
60	2.34%	2.62%
62 and over	2.62%	2.62%

### **Maximum Benefit**

The maximum benefit payable to a member or beneficiary is 100% of FAS.

### **Cost of Living**

The current maximum increase in retirement allowance is 3% per year for all members. The maximum is based on the change in the Consumer Price Index for the calendar year prior to the April 1 effective date.

### **Contribution Rates**

#### **Member**

The basic rates are based on the age nearest birthday at entry into the System. The rates are such as to provide an average annuity at age 60 equal to 1/200 of FAS for General members and at age 50 equal to 1/200 of FAS for Safety members. For members integrated with Social Security, the above contributions payable with respect to the first \$350 of monthly salary are reduced by 1/3. Cost-of-living rates are designed to pay for one half of the future cost-of-living costs. Member contributions are refundable upon termination from the System.

#### **County**

The County rates are actuarially determined to provide for the balance of the contributions needed to fund the benefits promised under the Retirement System.

## (ii) SUMMARY OF ASSUMPTIONS AND FUNDING METHOD

### Assumptions

**Valuation Interest Rate** 8-1/2%

#### Post-Retirement Mortality

##### (a) Service

General Males	1983 Male Group Annuity Mortality Table set back one year
General Females	1983 Female Group Annuity Mortality Table set forward one year
Safety	1983 Male Group Annuity Mortality Table set back one year

**(b) Disability** 1981 Disability Mortality Table

##### (c) For Employee Contribution Purposes

General	1983 Male Group Annuity Mortality Table with a four year setback
Safety	1983 Male Group Annuity Mortality Table set back one year

**Pre-Retirement Mortality** Based upon the Experience Analysis

**Withdrawal Rates** Based upon the Experience Analysis

**Disability Rates** Based upon the Experience Analysis

**Service Retirement Rates** Based upon the Experience Analysis

**Salary Scales** Total increase of approximately 6% per year. Approximately 1% of this increase is for merit and longevity and 5% is for inflation.

**Assets** Valued at Book

### Funding Method

The County's liability is currently being funded on the Entry Age Normal method with a Supplemental Present Value. The amortization period for the Supplemental Present Value is 20 years from the June 30, 1990 valuation date.

**(iii) ANNUAL SALARY AND MEMBERSHIP  
DISTRIBUTION OF ACTIVE GENERAL MEMBERS  
AS OF JUNE 30, 1990  
MALES**

YEARS OF SERVICE								TOTAL
Age	0 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30 & OVER	
Below 20	2							2
	27,330							27,330
20 - 24	41							41
	699,871							699,871
25 - 29	152	21						173
	3,044,602	485,802						3,530,404
30 - 34	165	72	30	1				268
	4,052,199	1,935,632	758,042	26,732				6,772,605
35 - 39	157	101	95	30				383
	4,417,011	3,168,147	3,044,066	825,332				11,454,556
40 - 44	115	87	110	130	35			477
	3,019,559	2,842,718	4,051,618	4,463,841	1,195,180			15,572,916
45 - 49	68	52	65	91	68	13		357
	2,274,796	1,814,867	2,124,569	3,151,957	2,498,279	505,004		12,369,472
50 - 54	33	12	19	41	35	22	12	174
	863,451	536,123	734,745	1,467,558	1,205,701	785,581	493,765	6,086,924
55 - 59	19	17	20	27	18	28	21	150
	453,925	551,536	562,944	874,074	550,867	1,100,098	824,927	4,918,371
60 - 64	6	12	6	5	10	6	6	51
	149,627	313,614	181,189	195,209	385,873	197,164	223,089	1,645,765
65 - 69		2				1	2	5
		40,920				30,243	94,693	165,856
70 & OVER				1				1
				56,237				56,237
	758	376	345	326	166	70	41	2,082
TOTAL	19,002,371	11,689,359	11,457,173	11,060,940	5,835,900	2,618,090	1,636,474	63,300,307
Average Age					41.50			
Average Service					9.75			
Average Entry Age					31.75			



**ANNUAL SALARY AND MEMBERSHIP  
DISTRIBUTION OF ACTIVE GENERAL MEMBERS  
AS OF JUNE 30, 1990  
FEMALES**

Present Age	YEARS OF SERVICE							TOTAL
	0 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30 & OVER	
BELOW	4							4
20	42,647							42,647
	123	2						125
20 - 24	1,916,340	35,262						1,951,602
	317	69	9					395
25 - 29	6,239,479	1,686,647	166,713					8,092,839
	309	177	97	4				587
30 - 34	6,805,380	4,827,140	2,445,613	107,292				14,185,425
	354	176	156	60	2			748
35 - 39	7,676,935	4,646,732	4,048,074	1,638,453	51,202			18,061,396
	264	147	118	111	48	3		691
40 - 44	5,766,093	3,835,608	3,347,437	3,308,473	1,428,351	69,899		17,755,861
	161	90	75	53	51	17		447
45 - 49	3,571,248	2,176,744	1,956,617	1,441,452	1,618,327	531,406		11,295,794
	89	69	50	45	26	11	12	302
50 - 54	1,874,644	1,630,246	1,215,611	1,083,445	702,217	328,841	335,919	7,170,923
	38	32	45	41	28	11	12	207
55 - 59	822,686	714,822	1,248,898	975,456	741,038	341,402	335,531	5,179,833
	10	18	29	26	20	5	2	110
60 - 64	213,338	400,057	640,803	606,100	495,663	120,451	37,753	2,514,165
		6	8	3	4	3	1	25
65 - 69		132,076	148,549	61,084	109,008	88,673	48,107	587,497
			1			1	1	3
70 & OVER			10,383			26,732	18,489	55,604
	1,669	786	588	343	179	51	28	3,644
TOTAL	34,928,790	20,085,334	15,228,698	9,221,755	5,145,806	1,507,404	775,799	86,893,586
Average Age					40.00			
Average Service					7.50			
Average Entry Age					32.50			



**ANNUAL SALARY AND MEMBERSHIP  
DISTRIBUTION OF ACTIVE SAFETY MEMBERS  
AS OF JUNE 30, 1990  
MALES AND FEMALES**

Present Age	YEARS OF SERVICE						30 & Over	TOTAL
	0 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29		
BELOW 20								
	13							13
20 - 24	289,424							289,424
	71	4						75
25 - 29	1,771,211	139,588						1,910,799
	65	34	23					122
30 - 34	1,680,872	1,069,052	760,388					3,510,312
	34	22	53	18				127
35 - 39	832,997	712,462	1,910,542	718,760				4,174,761
	26	11	40	52	15			144
40 - 44	675,921	332,954	1,357,491	2,049,937	584,656			5,000,959
	9	4	10	26	33			82
45 - 49	257,335	109,997	401,146	932,791	1,427,688			3,128,957
	3		4	4	5	12		28
50 - 54	99,673		116,163	167,410	180,867	486,001		1,050,114
	3				3	4		10
55 - 59	82,927				111,247	193,156		387,330
60 & OVER	1							1
	23,534							23,534
	225	75	130	100	56	16		602
TOTAL	5,713,894	2,364,053	4,545,730	3,868,898	2,304,458	679,157		19,476,190
Average Age					38.00			
Average Service					9.50			
Average Entry Age					28.50			

(iv) SUMMARY OF MONTHLY ALLOWANCES  
AS OF JUNE 30, 1990

GENERAL MEMBERS

<u>Service</u>	<u>Number</u>	<u>Monthly Allowance</u>		
		<u>Basic</u>	<u>Cost of Living</u>	<u>Total</u>
Unmodified	1,434	\$ 931,563	\$ 233,690	\$ 1,165,253
Option 1	200	68,018	24,216	92,234
Options 2 & 3	83	48,877	7,613	56,490
Total	1,717	\$ 1,048,458	\$ 265,519	\$ 1,313,977
<u>Disability</u>				
Unmodified	128	\$ 52,473	\$ 18,409	\$ 70,882
Option 1	14	3,546	1,719	5,265
Options 2 & 3	3	815	105	920
Total	145	\$ 56,834	\$ 20,233	\$ 77,067
<u>Beneficiaries</u>				
Total	233	\$ 68,692	\$ 28,591	\$ 97,283
<u>TOTAL</u>	2,095	\$ 1,173,984	\$ 314,343	\$ 1,488,327
	=====	=====	=====	=====

SAFETY MEMBERS

<u>Service</u>	<u>Number</u>	<u>Monthly Allowance</u>		
		<u>Basic</u>	<u>Cost of Living</u>	<u>Total</u>
Unmodified	132	\$ 164,037	\$ 42,908	\$ 206,945
Option 1	2	2,320	715	3,035
Options 2 & 3	3	1,425	262	1,687
Total	137	\$ 167,782	\$ 43,885	\$ 211,667
<u>Disability</u>				
Unmodified	31	\$ 30,354	\$ 8,340	\$ 38,694
Option 1	2	1,335	582	1,917
Options 2 & 3	0	0	0	0
Total	33	\$ 31,689	\$ 8,922	\$ 40,611
<u>Beneficiaries</u>				
Total	26	\$ 14,359	\$ 5,909	\$ 20,268
<u>TOTAL</u>	196	\$ 213,830	\$ 58,716	\$ 272,546
	===	=====	=====	=====

**(v) ANNUAL BENEFIT AND MEMBERSHIP  
DISTRIBUTION OF RETIRED GENERAL MEMBERS  
AS OF JUNE 30, 1990  
MALES**

Present Age	YEARS OF RETIREMENT							30 & Over	TOTAL
	0 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29			
BELOW 45	3 26,055	1 6,855							4 32,910
45 - 49	1 9,159	1 4,230	2 16,137	1 7,035					5 36,561
50 - 54	24 182,007	4 47,951		1 3,438					29 233,396
55 - 59	58 778,469	41 357,242	2 12,171						101 1,147,882
60 - 64	86 1,621,741	39 425,726	21 162,429			2 10,161	1 1,311		149 2,221,368
65 - 69	41 596,402	102 1,511,955	41 354,722	17 63,499		2 6,133			203 2,532,711
70 - 74	13 168,950	48 633,774	77 954,258	19 104,171	2 8,053		1 1,299		160 1,870,505
75 - 79		7 78,616	48 422,237	26 169,138	5 18,463	2 6,348			88 694,802
80 - 84		1 11,487	10 147,389	28 172,718	14 58,214	4 6,029			57 395,837
85 - 89		1 833		7 44,350	13 61,177	4 21,757			25 128,117
90 & OVER				1 3,024	1 10,047	5 13,362	1 6,767		8 33,200
TOTAL	226 3,382,783	245 3,078,669	201 2,069,343	100 567,373	35 155,954	19 63,790	3 9,377		829 9,327,289
Average Age					68.00				
Average Years Retired					9.25				
Average Retirement Age					58.75				



**ANNUAL BENEFIT AND MEMBERSHIP  
DISTRIBUTION OF RETIRED GENERAL MEMBERS  
AS OF JUNE 30, 1990  
FEMALES**

Present Age	YEARS OF RETIREMENT							Total
	0 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30 & Over	
BELOW	6	3	1	2				12
45	64,497	37,305	5,195	13,618				120,615
	3	4	2	1	1			11
45 - 49	32,751	16,790	8,603	5,102	7,217			70,463
	38	2	4	2				46
50 - 54	273,180	11,512	26,994	10,701				322,387
	55	32	5	6	1			99
55 - 59	476,330	179,424	33,504	35,036	3,961			728,255
	97	54	33	7	1	1		193
60 - 64	1,009,955	385,746	152,060	30,995	4,043	1,762		1,584,561
	73	112	61	20	6	1		273
65 - 69	708,214	1,047,444	321,179	81,882	25,374	1,412		2,185,505
	10	70	98	47	7	1		233
70 - 74	95,124	732,187	611,426	177,044	33,877	2,659		1,652,317
	2	9	71	77	19	5		183
75 - 79	32,566	72,258	512,208	347,153	73,191	11,237		1,048,613
		1	11	70	41	9	2	134
80 - 84		8,025	49,915	293,236	134,963	21,348	2,292	509,779
			1	10	21	14	4	50
85 - 89			2,680	36,593	84,230	53,746	12,037	189,286
			1	3	7	13	8	32
90 & OVER			11,182	7,807	18,391	61,939	21,507	120,826
	284	287	288	245	104	44	14	1,266
TOTAL	2,692,617	2,490,691	1,734,946	1,039,167	385,247	154,103	35,836	8,532,607

Average Age 70.00  
Average Years Retired 11.25  
Average Retirement Age 58.75

**ANNUAL BENEFIT AND MEMBERSHIP  
DISTRIBUTION OF RETIRED SAFETY MEMBERS  
AS OF JUNE 30, 1990  
MALES AND FEMALES**

Present Age	YEARS OF RETIREMENT						30 & Over	TOTAL
	0 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29		
BELOW	7	3	2					12
45	170,123	44,360	19,097					233,580
	12	3						15
45 - 49	186,129	29,113						215,242
	4	5	1	1				11
50 - 54	76,812	63,827	14,802	8,790				164,231
	21	12	4					37
55 - 59	510,843	185,539	54,139					750,521
	7	16	17	1	1			42
60 - 64	194,518	419,253	209,502	14,405	4,552			842,230
	2	4	21	10		2		39
65 - 69	77,575	100,314	353,988	91,463		7,523		630,863
			8	10	3			21
70 - 74			114,062	107,094	13,437			234,593
				10	1			11
75 - 79				95,980	4,677			100,657
				1	4			5
80 - 84				8,567	39,063			47,630
					2			2
85 - 89					24,481			24,481
		1						1
90 & OVER		26,526						26,526
	53	44	53	33	11	2		196
TOTAL	1,216,000	868,932	765,590	326,299	86,210	7,523		3,270,554

Average Age 61.75  
Average Years Retired 9.75  
Average Retirement Age 52.00

**(vi) PROBABILITIES OF SEPARATION PRIOR TO RETIREMENT  
GENERAL MALE MEMBERS**

<u>Age</u>	<u>Withdrawal</u>	<u>Ordinary Death</u>	<u>Ordinary Disability</u>	<u>Service</u>	<u>Death While Eligible</u>	<u>Duty Death</u>	<u>Duty Disability</u>	<u>Terminated Vested</u>
20	.1600	.0002	.0000	.0000	.0000	.0001	.0001	.0005
21	.1600	.0002	.0000	.0000	.0000	.0001	.0001	.0005
22	.1600	.0002	.0000	.0000	.0000	.0001	.0001	.0010
23	.1600	.0002	.0000	.0000	.0000	.0001	.0001	.0015
24	.1600	.0002	.0000	.0000	.0000	.0001	.0001	.0020
25	.1600	.0003	.0001	.0000	.0001	.0001	.0001	.0025
26	.1600	.0003	.0001	.0000	.0001	.0001	.0001	.0030
27	.1600	.0003	.0001	.0000	.0001	.0001	.0001	.0040
28	.1600	.0003	.0001	.0000	.0001	.0001	.0001	.0050
29	.1600	.0003	.0001	.0000	.0001	.0001	.0001	.0060
30	.1600	.0004	.0001	.0000	.0001	.0001	.0001	.0070
31	.1300	.0004	.0001	.0000	.0001	.0001	.0001	.0080
32	.1100	.0004	.0001	.0000	.0001	.0001	.0001	.0090
33	.1000	.0004	.0002	.0000	.0002	.0001	.0001	.0100
34	.0900	.0004	.0002	.0000	.0002	.0001	.0001	.0120
35	.0800	.0005	.0003	.0000	.0002	.0001	.0002	.0150
36	.0700	.0005	.0003	.0000	.0002	.0001	.0002	.0175
37	.0630	.0005	.0003	.0000	.0002	.0001	.0002	.0175
38	.0580	.0005	.0004	.0000	.0002	.0001	.0002	.0175
39	.0530	.0006	.0004	.0000	.0002	.0001	.0002	.0170
40	.0480	.0006	.0005	.0000	.0003	.0001	.0003	.0165
41	.0430	.0006	.0006	.0000	.0003	.0001	.0003	.0160
42	.0380	.0007	.0008	.0000	.0003	.0001	.0003	.0155
43	.0330	.0007	.0010	.0000	.0004	.0001	.0003	.0150
44	.0280	.0008	.0012	.0000	.0004	.0001	.0003	.0145
45	.0230	.0008	.0014	.0000	.0005	.0001	.0004	.0140
46	.0190	.0009	.0016	.0000	.0005	.0001	.0005	.0136
47	.0150	.0010	.0018	.0000	.0006	.0001	.0006	.0132
48	.0120	.0011	.0020	.0000	.0006	.0001	.0007	.0128
49	.0100	.0012	.0022	.0000	.0007	.0001	.0008	.0124
50	.0090	.0013	.0025	.0400	.0008	.0001	.0009	.0112
51	.0090	.0014	.0028	.0300	.0009	.0001	.0010	.0095
52	.0090	.0015	.0031	.0200	.0010	.0002	.0011	.0080
53	.0090	.0016	.0035	.0200	.0011	.0002	.0012	.0070
54	.0090	.0017	.0039	.0400	.0012	.0002	.0013	.0065
55	.0090	.0018	.0043	.0600	.0013	.0002	.0014	.0065
56	.0090	.0019	.0045	.0700	.0014	.0002	.0016	.0065
57	.0090	.0020	.0047	.0850	.0015	.0002	.0017	.0065
58	.0090	.0021	.0049	.1000	.0016	.0002	.0019	.0065
59	.0090	.0022	.0051	.1300	.0017	.0003	.0020	.0065
60	.0090	.0024	.0053	.1500	.0018	.0003	.0021	.0060
61	.0090	.0026	.0054	.1800	.0019	.0003	.0021	.0050
62	.0090	.0028	.0055	.4000	.0020	.0003	.0022	.0040
63	.0090	.0030	.0056	.2400	.0022	.0003	.0023	.0030
64	.0090	.0032	.0057	.2500	.0024	.0004	.0024	.0020
65	.0000	.0034	.0000	.3500	.0027	.0004	.0000	.0000
66	.0000	.0036	.0000	.3000	.0030	.0004	.0000	.0000
67	.0000	.0038	.0000	.3000	.0034	.0004	.0000	.0000
68	.0000	.0040	.0000	.4500	.0039	.0004	.0000	.0000
69	.0000	.0042	.0000	.6000	.0045	.0004	.0000	.0000
70	.0000	.0000	.0000	1.0000	.0000	.0000	.0000	.0000



**PROBABILITIES OF SEPARATION PRIOR TO RETIREMENT**  
**GENERAL FEMALE MEMBERS**

<u>Age</u>	<u>Withdrawal</u>	<u>Ordinary Death</u>	<u>Ordinary Disability</u>	<u>Service</u>	<u>Death While Eligible</u>	<u>Duty Death</u>	<u>Duty Disability</u>	<u>Terminated Vested</u>
20	.1800	.0001	.0000	.0000	.0000	.0000	.0001	.0030
21	.1800	.0001	.0000	.0000	.0000	.0000	.0001	.0030
22	.1800	.0001	.0000	.0000	.0000	.0000	.0001	.0030
23	.1800	.0001	.0000	.0000	.0000	.0000	.0001	.0030
24	.1800	.0001	.0000	.0000	.0000	.0000	.0001	.0050
25	.1700	.0002	.0001	.0000	.0001	.0000	.0001	.0050
26	.1700	.0002	.0001	.0000	.0001	.0000	.0001	.0050
27	.1700	.0002	.0001	.0000	.0001	.0000	.0001	.0050
28	.1600	.0002	.0001	.0000	.0001	.0000	.0001	.0050
29	.1600	.0003	.0001	.0000	.0001	.0000	.0001	.0050
30	.1500	.0003	.0001	.0000	.0001	.0000	.0001	.0050
31	.1400	.0003	.0001	.0000	.0001	.0000	.0001	.0050
32	.1300	.0003	.0002	.0000	.0001	.0000	.0001	.0050
33	.1200	.0004	.0002	.0000	.0001	.0000	.0001	.0050
34	.1100	.0004	.0002	.0000	.0001	.0000	.0001	.0100
35	.1000	.0004	.0003	.0000	.0001	.0000	.0001	.0180
36	.0900	.0005	.0003	.0000	.0001	.0000	.0001	.0220
37	.0800	.0005	.0004	.0000	.0001	.0000	.0001	.0220
38	.0700	.0005	.0004	.0000	.0001	.0000	.0001	.0200
39	.0650	.0005	.0005	.0000	.0001	.0000	.0001	.0190
40	.0600	.0006	.0005	.0000	.0001	.0000	.0001	.0184
41	.0550	.0006	.0006	.0000	.0001	.0000	.0001	.0181
42	.0510	.0006	.0007	.0000	.0001	.0000	.0001	.0177
43	.0480	.0007	.0008	.0000	.0001	.0000	.0001	.0174
44	.0450	.0007	.0009	.0000	.0001	.0000	.0001	.0171
45	.0420	.0007	.0010	.0000	.0002	.0000	.0001	.0168
46	.0400	.0008	.0011	.0000	.0002	.0000	.0002	.0165
47	.0380	.0008	.0012	.0000	.0002	.0000	.0002	.0160
48	.0360	.0009	.0013	.0000	.0002	.0000	.0002	.0155
49	.0340	.0009	.0014	.0000	.0003	.0000	.0002	.0145
50	.0320	.0010	.0015	.0400	.0003	.0000	.0003	.0130
51	.0300	.0010	.0016	.0300	.0003	.0000	.0003	.0110
52	.0280	.0011	.0017	.0300	.0004	.0000	.0003	.0090
53	.0260	.0011	.0018	.0300	.0004	.0000	.0003	.0070
54	.0240	.0012	.0020	.0300	.0004	.0000	.0003	.0050
55	.0220	.0012	.0022	.0800	.0004	.0000	.0004	.0050
56	.0200	.0013	.0024	.0300	.0005	.0000	.0004	.0080
57	.0180	.0014	.0026	.0800	.0005	.0000	.0004	.0070
58	.0160	.0015	.0028	.1000	.0005	.0000	.0004	.0060
59	.0140	.0016	.0030	.1200	.0006	.0000	.0005	.0050
60	.0130	.0018	.0032	.1400	.0006	.0000	.0005	.0050
61	.0120	.0019	.0034	.1000	.0006	.0000	.0005	.0050
62	.0110	.0020	.0036	.3000	.0007	.0000	.0005	.0050
63	.0100	.0021	.0038	.1250	.0007	.0000	.0005	.0050
64	.0100	.0022	.0040	.1250	.0007	.0000	.0005	.0050
65	.0000	.0024	.0000	.4500	.0008	.0000	.0000	.0000
66	.0000	.0025	.0000	.2000	.0008	.0000	.0000	.0000
67	.0000	.0026	.0000	.3000	.0008	.0000	.0000	.0000
68	.0000	.0027	.0000	.3000	.0009	.0000	.0000	.0000
69	.0000	.0028	.0000	.3000	.0009	.0000	.0000	.0000
70	.0000	.0000	.0000	1.0000	.0000	.0000	.0000	.0000

# PROBABILITIES OF SEPARATION PRIOR TO RETIREMENT SAFETY MEMBERS

Age	Withdrawal	Ordinary Death	Ordinary Disability	Service	Death While Eligible	Duty Death	Duty Disability	Terminated Vested
20	.0950	.0002	.0000	.0000	.0000	.0002	.0005	.0010
21	.0920	.0002	.0000	.0000	.0000	.0002	.0005	.0011
22	.0890	.0002	.0000	.0000	.0000	.0002	.0005	.0012
23	.0860	.0002	.0000	.0000	.0000	.0002	.0006	.0013
24	.0830	.0002	.0000	.0000	.0000	.0002	.0007	.0014
25	.0800	.0003	.0002	.0000	.0001	.0003	.0007	.0020
26	.0770	.0003	.0002	.0000	.0001	.0003	.0008	.0030
27	.0740	.0003	.0003	.0000	.0002	.0003	.0008	.0050
28	.0710	.0003	.0003	.0000	.0002	.0003	.0009	.0100
29	.0680	.0003	.0003	.0000	.0002	.0003	.0010	.0170
30	.0640	.0004	.0003	.0000	.0002	.0004	.0010	.0250
31	.0600	.0004	.0004	.0000	.0002	.0004	.0011	.0340
32	.0560	.0004	.0004	.0000	.0002	.0004	.0013	.0300
33	.0510	.0004	.0004	.0000	.0002	.0004	.0015	.0270
34	.0460	.0004	.0005	.0000	.0002	.0004	.0017	.0240
35	.0410	.0005	.0006	.0000	.0002	.0005	.0019	.0220
36	.0360	.0005	.0006	.0000	.0002	.0005	.0021	.0200
37	.0310	.0005	.0007	.0000	.0002	.0005	.0023	.0180
38	.0260	.0005	.0008	.0000	.0002	.0005	.0025	.0160
39	.0210	.0005	.0009	.0000	.0002	.0005	.0029	.0140
40	.0170	.0006	.0010	.0000	.0003	.0006	.0032	.0120
41	.0140	.0006	.0010	.0000	.0003	.0006	.0036	.0100
42	.0120	.0006	.0011	.0000	.0003	.0006	.0039	.0080
43	.0100	.0007	.0012	.0000	.0003	.0007	.0043	.0060
44	.0080	.0007	.0012	.0000	.0003	.0007	.0047	.0040
45	.0070	.0008	.0013	.0500	.0004	.0008	.0053	.0030
46	.0060	.0008	.0014	.0400	.0004	.0008	.0058	.0020
47	.0050	.0009	.0014	.0450	.0005	.0009	.0065	.0010
48	.0040	.0009	.0015	.0500	.0006	.0009	.0072	.0008
49	.0030	.0010	.0016	.0550	.0007	.0010	.0080	.0005
50	.0000	.0010	.0016	.1300	.0008	.0010	.0088	.0000
51	.0000	.0011	.0017	.0800	.0009	.0011	.0096	.0000
52	.0000	.0011	.0018	.0800	.0010	.0012	.0104	.0000
53	.0000	.0012	.0019	.0900	.0011	.0013	.0112	.0000
54	.0000	.0012	.0020	.1000	.0012	.0013	.0120	.0000
55	.0000	.0013	.0020	.2700	.0013	.0014	.0127	.0000
56	.0000	.0013	.0021	.2700	.0014	.0015	.0135	.0000
57	.0000	.0014	.0022	.2500	.0015	.0016	.0143	.0000
58	.0000	.0014	.0022	.3000	.0016	.0017	.0151	.0000
59	.0000	.0015	.0023	.7000	.0017	.0018	.0159	.0000
60	.0000	.0000	.0000	1.0000	.0000	.0000	.0000	.0000



**(vii) MEMBER CONTRIBUTION RATES\***  
GENERAL - SECTION 31676.12

ENTRY AGE	Basic		COL**		Basic and COL	
	First \$350 of Monthly Compensation	Excess of Monthly Compensation Over \$350	First \$350 of Monthly Compensation	Excess of Monthly Compensation Over \$350	First \$350 of Monthly Compensation	Excess of Monthly Compensation Over \$350
16	1.82%	2.73%	.55%	.82%	2.37%	3.55%
17	1.83	2.74	.55	.82	2.38	3.56
18	1.83	2.75	.55	.82	2.38	3.57
19	1.84	2.76	.55	.83	2.39	3.59
20	1.85	2.77	.55	.83	2.40	3.60
21	1.86	2.79	.56	.84	2.42	3.63
22	1.87	2.81	.56	.84	2.43	3.65
23	1.89	2.83	.57	.85	2.46	3.68
24	1.91	2.86	.57	.86	2.48	3.72
25	1.93	2.89	.58	.87	2.51	3.76
26	1.95	2.92	.58	.87	2.53	3.79
27	1.97	2.96	.59	.89	2.56	3.85
28	2.00	3.00	.60	.90	2.60	3.90
29	2.03	3.04	.61	.91	2.64	3.95
30	2.05	3.08	.61	.92	2.66	4.00
31	2.09	3.13	.63	.94	2.72	4.07
32	2.11	3.17	.63	.95	2.74	4.12
33	2.15	3.22	.64	.96	2.79	4.18
34	2.19	3.28	.66	.98	2.85	4.26
35	2.22	3.33	.67	1.00	2.89	4.33
36	2.25	3.38	.67	1.01	2.92	4.39
37	2.29	3.43	.69	1.03	2.98	4.46
38	2.32	3.48	.70	1.04	3.02	4.52
39	2.36	3.54	.71	1.06	3.07	4.60
40	2.39	3.59	.72	1.08	3.11	4.67
41	2.43	3.64	.73	1.09	3.16	4.73
42	2.47	3.70	.74	1.11	3.21	4.81
43	2.51	3.76	.75	1.13	3.26	4.89
44	2.54	3.81	.76	1.14	3.30	4.95
45	2.58	3.87	.77	1.16	3.35	5.03
46	2.62	3.93	.78	1.18	3.40	5.11
47	2.66	3.99	.80	1.20	3.46	5.19
48	2.70	4.05	.81	1.21	3.51	5.26
49	2.73	4.10	.82	1.23	3.55	5.33
50	2.77	4.16	.83	1.25	3.60	5.41
51	2.81	4.22	.84	1.26	3.65	5.48
52	2.86	4.29	.86	1.29	3.72	5.58
53	2.90	4.35	.87	1.30	3.77	5.65
54	2.94	4.41	.88	1.32	3.82	5.73
55	2.98	4.47	.89	1.34	3.87	5.81
56	3.03	4.54	.91	1.36	3.94	5.90
57	3.07	4.60	.92	1.38	3.99	5.98
58	3.11	4.67	.93	1.40	4.04	6.07
59 & Over	3.15	4.73	.94	1.42	4.09	6.15

\* As a percentage of salary based upon 8.50% interest and 6.00% salary scale assumptions (Study #2).

\*\* 29.96% of basic rates.



# MEMBER CONTRIBUTION RATES\*

## SAFETY - SECTION 31664

ENTRY AGE	Basic		COL**		Basic and COL	
	First \$350 of Monthly Compensation	Excess of Monthly Compensation Over \$350	First \$350 of Monthly Compensation	Excess of Monthly Compensation Over \$350	First \$350 of Monthly Compensation	Excess of Monthly Compensation Over \$350
18	2.29%	3.43%	.69%	1.03%	2.98%	4.46%
19	2.30	3.45	.69	1.03	2.99	4.48
20	2.31	3.47	.69	1.04	3.00	4.51
21	2.33	3.50	.70	1.05	3.03	4.55
22	2.36	3.54	.71	1.06	3.07	4.60
23	2.39	3.58	.72	1.07	3.11	4.65
24	2.41	3.62	.72	1.08	3.13	4.70
25	2.45	3.67	.73	1.10	3.18	4.77
26	2.47	3.71	.74	1.11	3.21	4.82
27	2.51	3.76	.75	1.13	3.26	4.89
28	2.53	3.80	.76	1.14	3.29	4.94
29	2.57	3.85	.77	1.15	3.34	5.00
30	2.60	3.90	.78	1.17	3.38	5.07
31	2.64	3.96	.79	1.19	3.43	5.15
32	2.67	4.01	.80	1.20	3.47	5.21
33	2.71	4.07	.81	1.22	3.52	5.29
34	2.75	4.12	.82	1.23	3.57	5.35
35	2.79	4.18	.84	1.25	3.63	5.43
36	2.83	4.24	.85	1.27	3.68	5.51
37	2.87	4.30	.86	1.29	3.73	5.59
38	2.91	4.37	.87	1.31	3.78	5.68
39	2.95	4.43	.88	1.33	3.83	5.76
40	3.00	4.50	.90	1.35	3.90	5.85
41	3.04	4.56	.91	1.37	3.95	5.93
42	3.09	4.63	.93	1.39	4.02	6.02
43	3.13	4.70	.94	1.41	4.07	6.11
44	3.17	4.76	.95	1.43	4.12	6.19
45	3.22	4.83	.96	1.45	4.18	6.28
46	3.27	4.90	.98	1.47	4.25	6.37
47	3.31	4.97	.99	1.49	4.30	6.46
48	3.36	5.04	1.01	1.51	4.37	6.55
49 & Over	3.41	5.11	1.02	1.53	4.43	6.64

\* As a percentage of salary based upon 8.50% interest and 6.00% salary scale assumptions (Study #2).

\*\* 29.96% of basic rates.

(viii) ACCOUNTING BALANCE SHEET

AS OF JUNE 30, 1990

ASSETS

1. Cash	\$	48,664,000
2. Contributions and other receivables		2,873,000
3. Securities owned (cost basis)		468,496,000
4. Interest and dividends receivable		5,268,000
5. Prepaid expenses		54,000
6. Total Assets	\$	525,355,000

LIABILITIES AND FUND BALANCE

7. Members' deposit reserve			
a. Normal contributions	\$	67,424,000	
b. Cost of living contributions		44,898,000	
			\$ 112,322,000
8. Current service advance reserve			80,023,000
9. Current service pension reserve			139,105,000
10. Annuity reserve			27,140,000
11. Survivors' death benefit reserve			2,282,000
12. Cost-of-living reserve			97,785,000
13. Investment contingency reserve			15,470,000
14. Undistributed earnings			14,856,000
15. Retiree health insurance reserve			26,684,000
16. Accounts payable			9,688,000
17. Total Liabilities	\$		525,355,000

**(ix) RATIO OF CURRENT COMPENSATION  
TO COMPENSATION ANTICIPATED AT RETIREMENT AGE**

<b>GENERAL MEMBERS</b>				<b>SAFETY MEMBERS</b>		
<u>AGE</u>	<u>Study #1</u>	<u>Study #2</u>	<u>Study #3</u>	<u>Study #1</u>	<u>Study #2</u>	<u>Study #3</u>
20	.034	.049	.044	.074	.098	.089
21	.039	.055	.049	.080	.106	.097
22	.043	.060	.054	.087	.114	.104
23	.047	.066	.059	.094	.123	.112
24	.052	.072	.065	.102	.131	.121
25	.057	.078	.071	.110	.140	.129
26	.062	.085	.076	.118	.150	.138
27	.067	.091	.083	.126	.159	.147
28	.073	.098	.089	.135	.170	.157
29	.079	.106	.096	.145	.181	.168
30	.085	.113	.103	.155	.192	.179
31	.092	.121	.110	.166	.204	.191
32	.098	.129	.118	.178	.217	.203
33	.105	.136	.125	.190	.230	.216
34	.111	.144	.132	.203	.244	.230
35	.118	.152	.140	.217	.259	.244
36	.126	.160	.147	.231	.274	.259
37	.134	.169	.156	.246	.290	.274
38	.142	.178	.165	.262	.306	.290
39	.151	.188	.175	.278	.323	.307
40	.160	.199	.185	.295	.340	.325
41	.171	.210	.196	.314	.359	.343
42	.181	.221	.207	.334	.379	.363
43	.193	.233	.219	.354	.400	.384
44	.205	.247	.232	.377	.423	.407
45	.218	.260	.245	.400	.445	.429
46	.232	.275	.259	.426	.471	.455
47	.246	.290	.274	.453	.497	.482
48	.261	.306	.290	.481	.524	.509
49	.277	.322	.306	.511	.553	.539
50	.295	.340	.325	.543	.583	.570
51	.314	.360	.344	.577	.616	.603
52	.333	.379	.363	.614	.650	.638
53	.354	.400	.384	.652	.686	.674
54	.377	.422	.406	.694	.724	.714
55	.401	.446	.430	.737	.764	.755
56	.426	.470	.455	.784	.806	.799
57	.453	.496	.481	.834	.852	.846
58	.481	.523	.509	.885	.898	.894
59	.511	.553	.539	.941	.948	.945
60	.543	.583	.570	1.000	1.000	1.000
61	.577	.615	.602			
62	.614	.650	.638			
63	.652	.686	.674			
64	.694	.724	.714			
65	.737	.764	.755			
66	.784	.806	.799			
67	.833	.851	.845			
68	.885	.898	.894			
69	.941	.948	.945			
70	1.000	1.000	1.000			

Study #1 = 8.50% interest with salary scale of merit and longevity plus 5.75% for inflation.  
Study #2 = 8.50% interest with salary scale of merit and longevity plus 5.00% for inflation.  
Study #3 = 8.75% interest with salary scale of merit and longevity plus 5.25% for inflation.



**(x) YEARS OF LIFE EXPECTANCY  
AFTER SERVICE RETIREMENT**

**GENERAL AND SAFETY MEMBERS**

YEARS OF LIFE EXPECTANCY			YEARS OF LIFE EXPECTANCY		
Age	Male	Female	Age	Male	Female
50	30.08	33.97	80	8.10	9.63
51	29.18	33.03	81	7.64	9.09
52	28.30	32.10	82	7.21	8.57
53	27.42	31.16	83	6.91	8.06
54	26.55	30.23	84	6.43	7.58
55	25.68	29.31	85	6.07	7.11
56	24.82	28.39	86	5.73	6.66
57	23.97	27.48	87	5.41	6.23
58	23.13	26.57	88	5.10	5.81
59	22.29	25.67	89	4.82	5.40
60	21.46	24.78	90	4.54	5.02
61	20.64	23.89	91	4.28	4.66
62	19.83	23.01	92	4.04	4.31
63	19.02	22.15	93	3.80	3.98
64	18.23	21.28	94	3.58	3.67
65	17.45	20.43	95	3.37	3.37
66	16.69	19.59	96	3.16	3.10
67	15.95	18.76	97	2.98	2.84
68	15.23	17.94	98	2.80	2.59
69	14.52	17.13	99	2.62	2.36
70	13.84	16.34	100	2.45	2.14
71	13.18	15.56	101	2.28	1.93
72	12.54	14.81	102	2.11	1.74
73	11.92	14.08	103	1.95	1.55
74	11.31	13.37	104	1.78	1.37
75	10.72	12.69	105	1.61	1.19
76	10.15	12.03	106	1.43	1.03
77	9.60	11.39	107	1.26	0.87
78	9.08	10.78	108	1.09	0.71
79	8.57	10.20	109	0.92	0.50

1983 GA (x - 1) (y + 1)

**(xi) YEARS OF LIFE EXPECTANCY  
AFTER DISABILITY RETIREMENT**

**GENERAL MEMBERS**

<u>Age</u>	<u>Male &amp; Female</u>	<u>Age</u>	<u>Male &amp; Female</u>	<u>Age</u>	<u>Male &amp; Female</u>
20	38.73	50	21.08	80	7.00
21	37.98	51	20.59	81	6.63
22	37.26	52	20.11	82	6.27
23	36.56	53	19.63	83	5.94
24	35.87	54	19.13	84	5.63
25	35.19	55	18.68	85	5.34
26	34.53	56	18.21	86	5.06
27	33.87	57	17.75	87	4.80
28	33.23	58	17.29	88	4.55
29	32.60	59	16.83	89	4.31
30	31.98	60	16.37	90	4.09
31	31.37	61	15.91	91	3.87
32	30.76	62	15.45	92	3.66
33	30.17	63	14.99	93	3.46
34	29.58	64	14.53	94	3.26
35	29.00	65	14.07	95	3.07
36	28.43	66	13.60	96	2.89
37	27.87	67	13.13	97	2.71
38	27.31	68	12.66	98	2.54
39	26.76	69	12.18	99	2.37
40	26.21	70	11.70	100	2.20
41	25.67	71	11.21	101	2.04
42	25.14	72	10.72	102	1.88
43	24.61	73	10.22	103	1.72
44	24.09	74	9.73	104	1.55
45	23.57	75	9.24	105	1.38
46	23.06	76	8.76	106	1.21
47	22.56	77	8.28	107	1.04
48	22.06	78	7.83	108	0.88
49	21.57	79	7.41	109	0.71
				110	0.50

1981 Disability Table

# YEARS OF LIFE EXPECTANCY AFTER DISABILITY RETIREMENT

## SAFETY MEMBERS

Age	Male & Female	Age	Male & Female	Age	Male & Female
20	49.29	50	23.59	80	7.00
21	48.39	51	22.80	81	6.63
22	47.48	52	22.03	82	6.27
23	46.58	53	21.26	83	5.94
24	45.68	54	20.50	84	5.63
25	44.79	55	19.77	85	5.34
26	43.89	56	19.06	86	5.06
27	43.01	57	18.40	87	4.80
28	42.12	58	17.78	88	4.55
29	41.24	59	17.20	89	4.31
30	40.36	60	16.64	90	4.09
31	39.48	61	16.11	91	3.87
32	38.61	62	15.59	92	3.66
33	37.74	63	15.08	93	3.46
34	36.88	64	14.58	94	3.26
35	36.02	65	14.09	95	3.07
36	35.16	66	13.61	96	2.89
37	34.31	67	13.13	97	2.71
38	33.45	68	12.66	98	2.54
39	32.61	69	12.18	99	2.37
40	31.77	70	11.70	100	2.20
41	30.93	71	11.21	101	2.04
42	30.09	72	10.72	102	1.88
43	29.26	73	10.22	103	1.72
44	28.43	74	9.73	104	1.55
45	27.61	75	9.24	105	1.38
46	26.80	76	8.76	106	1.21
47	25.98	77	8.28	107	1.04
48	25.18	78	7.83	108	0.88
49	24.38	79	7.41	109	0.71
				110	0.50

1981 Disability Table