# REPORT ON THE RESULTS OF AN <br> EXPERIENCE STUDY OF THE VERMONT MUNICIPAL EMPLOYEES’ <br> <br> RETIREMENT SYSTEM 

 <br> <br> RETIREMENT SYSTEM}

Covering the period July 1, 1998 - June 30, 2003

September 20, 2004

Board of Trustees
Vermont Municipal Employees’ Retirement System
Montpelier, Vermont 05633

Dear Board Members:

Section 5062, subsection (k), of Title 24, Chapter 125, Vermont Statutes Annotated, provides that at least once in each five-year period the actuary is to make a study of the System's recent experience to assist in setting assumptions. In accordance with this provision, the results of our experience study covering the five-year period ending June 30, 2003, are described in this report, along with our recommendations for changes in the present assumptions.

The Table of Contents, which immediately follows, outlines the information contained in this report.

Respectfully submitted,

## Davie \$rinale

David L. Driscoll, FSA, EA
Principal and Consulting Actuary

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## I. INTRODUCTION

In order to accumulate funds to pay retirement benefits on a reasonable and relatively stable basis, the actuary prepares annual valuations of the System's assets and liabilities to measure the funded status and to ensure that funding is progressing at a rate that is adequate to meet the System's obligations.

The primary purpose of funding is to equitably allocate costs between generations of taxpayers and provide security to members, who view the funds set aside as assurance that their benefits will be paid.

While the ultimate cost of the System is not determinable until all benefits are paid and expenses provided for, each actuarial valuation attempts to estimate costs based on assumptions selected to predict, as accurately as possible, future experience in order to produce stable contribution rates.

Overly conservative or aggressive assumptions will result in actuarial gains or losses each year. When translated into contributions, this will result in decreasing or increasing contribution rates and an inequitable allocation of costs.

The major actuarial assumptions are:
(a) Active service demographic assumptions,
(b) Compensation increase assumptions,
(c) Post-retirement mortality rates,
(d) Interest rate, and
(e) Cost-of-living adjustment rates.

Before presenting our analysis of the System's experience and discussion of the proposed assumptions, it is important to outline considerations that should govern the selection of actuarial assumptions. The recommendations of the American Academy of Actuaries are as follows:
(i) The actuarial assumptions selected should reflect the actuary's best judgement of future events. They should take into account actual experience to the extent possible, but they should also reflect long-term future trends rather than give undue weight to recent past experience.
(ii) The actuary should consider the impact of inflation in selecting the actuarial assumptions to be used.
(iii) The actuary should give consideration to the reasonableness of each actuarial assumption independently as well as the combined impact of all the assumptions.
(iv) The actuary should give careful attention to changes in plan design that may significantly alter expected future experience. For example, a liberalization of early retirement benefits may make advisable a revision in the retirement assumption.
(v) The actuary, in choosing assumptions, should take into account general or specific information available from other sources, including the plan sponsor, plan administrator, investment managers, accountants, economists, etc.

The purpose of this Report is to provide the information necessary to decide on the appropriate assumptions to be used in future valuations. It should be noted that these decisions cannot be made "in a vacuum" but must reflect the present and expected situation within the participating municipalities and the System.

The balance of this Report deals in detail with the various assumptions. In each area, we have made recommendations as to what we believe are appropriate assumptions. These recommendations reflect our "best estimate" of the likely future experience based on:
(a) recent past experience,
(b) general economic views prevailing at this time, and
(c) anticipated trends.

## II. ACTIVE SERVICE DEMOGRAPHIC ASSUMPTIONS

The active service demographic assumptions include rates of:
(a) Termination,
(b) Disability,
(c) Death before retirement, and
(d) Retirement.

Our review of active service demographic assumptions is based on the actuarial valuation data for Groups A, B and C members of the System. Group D was omitted from the study, as it is relatively new and to date has very few members.

The basis for analysis of the System's experience is a comparison of the actual number of separations from service resulting from each of these decrements with those expected based on the assumptions currently in use.

The "expected" values are calculated by applying the various rates or probabilities to the individuals exposed to each respective event. For example, active members under age 55 with less than 5 years of credited service would be exposed to the probabilities of withdrawal, death and disability. A member age 55 with five years of service would be exposed to disability, death and retirement decrements.

Numerical summaries of the System's experience from July 1, 1998 through June 30, 2003 are presented in Appendix I. The tables show the ratios of the actual separations from service resulting from each decrement to those predicted by the present actuarial assumptions. The results are shown separately by assumption and, where appropriate, by gender.

The ratios of actual to expected experience indicate the extent of deviation from the assumptions. A ratio of 1.0 would indicate that experience has been exactly as anticipated.

As an aid to the Trustees in analyzing these results, we have also prepared a series of graphs, which present the statistical data summarized in Appendix I in visual form. Our comments will refer to these graphs, which immediately follow each of the following subsections.

## Termination

The graphs that follow present the withdrawal and vesting experience separately for male and female municipal employees. Reviewing the withdrawal and vesting experience, it can be seen that the number of members leaving before retirement eligibility is higher than expected among both males and females under the present assumptions, especially at higher ages.

Accordingly, we recommend that the assumed probabilities of withdrawal be replaced with the proposed rates set forth in Appendix II.

We recommend the continued use of separate assumptions for males and females. The graphs presented on page 6 show the current rate, the actual rate and the proposed rate separately for males and females.

## Disability and Death

The graphs that follow show the incidence of disability and active service mortality. The financial impact on the funding of the System as the result of this experience is relatively minor. It should be noted that the low incidence of actual deaths and disabilities makes this experience susceptible to rather large fluctuations from year to year.

The present assumed rates of disability produce expected disabilities that substantially exceed the actual number. We therefore recommend that the disability rates be reduced to $25 \%$ of their present levels at all ages for active employees of both genders, and further that the anticipated "spike" in disabilities at age 50 for female employees be eliminated.

Overall active service mortality for both males and females is below that expected on the basis of the current tables, so it is possible to justify a decrease in the assumed death rates applied to active employees. We recommend that the Board consider the adoption of the 1995 George B. Buck Mortality Tables for Male and Female Employees for this purpose. The proposed rates are set forth in Appendix III.

## Active Service Experience - Terminations

July 1, 1998 through June 30, 2003



## Active Service Experience - Disability Retirements July 1, 1998 through June 30, 2003




Active Service Experience - Deaths
July 1, 1998 through June 30, 2003



## Retirement

The experience with regard to retirement is shown on the following three graphs. Appendix II shows the current and proposed tables of service retirement probabilities.

## Group A Employees

At ages 65 and older, the actual number of retirements is less than the expected number of retirements for Group A employees. We recommend a decrease in the service retirement probabilities at ages 65 and older for both males and females.

## Group B Employees

At ages 66 and older, the actual number of retirements is less than the expected number of retirements for Group B employees. We recommend a decrease in the service retirement probabilities at ages 66 and older for both males and females.

## Group C Employees

At ages 62 through 64, the actual number of retirements is less than the expected number of retirements for Group C employees. We recommend a decrease in the service retirement probabilities at ages 62 through 64 for both males and females.

For all three groups, we would recommend that the assumed probability of retirement remain at $100 \%$ at ages 70 and older.

## Active Service Experience - Retirement, Group A July 1, 1998 through June 30, 2003




## Active Service Experience - Retirement, Group B

July 1, 1998 through June 30, 2003



## Active Service Experience - Retirement, Group C

July 1, 1998 through June 30, 2003



## III. POST-RETIREMENT MORTALITY RATES

A review of the statistics with regard to post-retirement mortality for retired members, which are summarized in Table 8 of Appendix I, reveals that retired individuals are living longer than expected. However, the ratio of actual to expected deaths among retirees varies significantly by gender and by category of retirement (i.e., service retirement, disability retirement, receipt of survivor benefits)

Based on this experience, and in anticipation of future improvements in longevity, we recommend changing the mortality table applied to retired members to the 1995 George B. Buck Mortality Tables for males and females. Probabilities of death under the new recommended table of mortality are shown in Appendix III.

## IV. ECONOMIC ASSUMPTIONS

Economic assumptions include:
(a) rates of compensation increase,
(b) investment income, and
(c) post-retirement adjustment in benefits on account of inflation.

## Inflation

The System provides annual cost-of-living adjustments (COLAs). For the Group A, the annual adjustment is equal to one-half of the percentage increase in the CPI-U, but not more than $2 \%$. For Groups B, C and D, the adjustment equals one-half of the percentage increase in the CPI-U, limited to $3 \%$.

With regard to the inflation assumption for COLAs, the U.S. Consumer Price Index (CPI-U) indicates that the inflation rate has averaged less than 3\% annually since January 1, 1998.

Currently, we assume a $2 \%$ annual adjustment in pensions for Group A and a $2.3 \%$ annual adjustment in pensions for Groups B, C and D. Over the past five years, this has resulted in experience gains. We recommend that the assumed annual adjustment for Group A be reduced to $1.5 \%$ and for Groups B, C and D to $1.8 \%$.

## Merit-Promotion Salary Increases

Currently, salaries are assumed to increase at $5.6 \%$ annually. Overall, actual salary increases tracked this assumption fairly closely over the five-year period covered by this experience study. In the aggregate, salaries of continuing active members rose at the rate of $5.46 \%$ annually in this period.

If the salary increase experience of the System is analyzed by age or by service group, it is possible to detect some variation from group to group; salaries of younger members and those with relatively small amounts of service tend to rise somewhat faster than those of older and long-serving members. This is consistent with the usual pattern of salary increases over an archetypal worker's career. However, some of the observed pattern is also due to the difficulty that has generally been encountered in the accurate extrapolation of annual rates of pay from data on new entrants, who are typically younger workers. Because the variations among age groups are not significant for ages at which much exposure exists, we recommend retention of the current salary increase assumption.

## Interest Rate

The total rates of return earned by the VMERS assets (measured at actuarial value) are shown below.

| Year <br> Ending <br> June 30 | Rate of Return <br> Based on Actuarial <br> Asset Value |
| :---: | :---: |
| 1999 | $17.28 \%$ |
| 2000 | $13.80 \%$ |
| 2001 | $10.03 \%$ |
| 2002 | $6.42 \%$ |
| 2003 | $3.49 \%$ |
| $1999-03$ | $10.09 \%$ |

The rate of return has been about $10 \%$ annually during the past five years. We recommend retention of the current assumed interest rate of $8 \%$.

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## APPENDIX I

ACTUAL AND EXPECTED EXPERIENCE

TABLE 1

## COMPARISON OF ACTUAL AND EXPECTED SEPARATIONS FROM ACTIVE SERVICE

TERMINATIONS

| Central <br> Age of <br> Group | Men |  |  | Women |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Actual | Expected | Ratio of Actual To Expected | Actual | Expected | Ratio of Actual To Expected |
| 25 | 84 | 91.23 | 0.921 | 170 | 243.34 | 0.699 |
| 30 | 116 | 88.21 | 1.315 | 175 | 171.62 | 1.020 |
| 35 | 119 | 72.66 | 1.638 | 170 | 168.34 | 1.010 |
| 40 | 107 | 54.46 | 1.965 | 229 | 192.12 | 1.192 |
| 45 | 115 | 37.47 | 3.069 | 286 | 133.70 | 2.139 |
| 50 | 88 | 10.86 | 8.103 | 192 | 61.96 | 3.099 |
| 53 and 54 | 21 | 0.92 | 22.826 | 43 | 7.40 | 5.811 |
| 55 and over | 80 | 0.00 | $\mathrm{n} / \mathrm{a}$ | 121 | 1.37 | 88.321 |
| Total | 730 | 356 | 2.052 | 1,386 | 980 | 1.415 |

TABLE 2

## COMPARISON OF ACTUAL AND EXPECTED SEPARATIONS FROM ACTIVE SERVICE

DISABILITY RETIREMENTS

| Central <br> Age of <br> Group | Men |  |  | Women |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Actual | Expected | Ratio of Actual To Expected | Actual | Expected | Ratio of Actual To Expected |
| 25 | 0 | 0.25 | 0.000 | 0 | 0.58 | 0.000 |
| 30 | 0 | 0.44 | 0.000 | 0 | 0.97 | 0.000 |
| 35 | 0 | 0.74 | 0.000 | 0 | 2.35 | 0.000 |
| 40 | 0 | 1.56 | 0.000 | 0 | 5.94 | 0.000 |
| 45 | 1 | 3.2 | 0.313 | 0 | 18.11 | 0.000 |
| 50 | 1 | 4.85 | 0.206 | 1 | 57.93 | 0.017 |
| 55 | 2 | 2.8 | 0.714 | 0 | 13.79 | 0.000 |
| 60 | 2 | 21.85 | 0.092 | 0 | 30.47 | 0.000 |
| Total | 6 | 35.69 | 0.168 | 1 | 130.14 | 0.008 |

TABLE 3

## COMPARISON OF ACTUAL AND EXPECTED SEPARATIONS

 FROM ACTIVE SERVICEDEATHS

| Central <br> Age of <br> Group | Men |  |  | Women |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Actual | Expected | Ratio of Actual To Expected | Actual | Expected | Ratio of Actual To Expected |
| 25 | 0 | 0.27 | 0.000 | 0 | 0.27 | 0.000 |
| 30 | 0 | 0.53 | 0.000 | 0 | 0.40 | 0.000 |
| 35 | 0 | 0.85 | 0.000 | 0 | 0.77 | 0.000 |
| 40 | 0 | 1.60 | 0.000 | 1 | 1.83 | 0.546 |
| 45 | 0 | 3.38 | 0.000 | 0 | 3.26 | 0.000 |
| 50 | 2 | 4.98 | 0.402 | 2 | 4.60 | 0.435 |
| 55 | 3 | 3.85 | 0.779 | 1 | 3.19 | 0.313 |
| 60 | 1 | 8.19 | 0.122 | 2 | 5.08 | 0.394 |
| 65 and over | 5 | 10.21 | 0.490 | 0 | 6.78 | 0.000 |
| Total | 11 | 33.86 | 0.325 | 6 | 26.18 | 0.229 |

TABLE 4

COMPARISON OF ACTUAL AND EXPECTED SEPARATIONS
FROM ACTIVE SERVICE
GROUP A RETIREMENTS

| Central <br> Age of <br> Group | Men |  |  | Women |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Actual | Expected | Ratio of Actual To Expected | Actual | Expected | Ratio of Actual To Expected |
| 55 | 2 | 1.14 | 1.754 | 2 | 3.42 | 0.585 |
| 56 | 2 | 1.22 | 1.639 | 2 | 3.12 | 0.641 |
| 57 | 1 | 1.12 | 0.893 | 4 | 2.80 | 1.429 |
| 58 | 1 | 1.00 | 1.000 | 3 | 2.10 | 1.429 |
| 59 | 3 | 1.12 | 2.679 | 1 | 1.72 | 0.581 |
| 60 | 0 | 2.50 | 0.000 | 1 | 4.30 | 0.233 |
| 61 | 3 | 2.30 | 1.304 | 5 | 4.45 | 1.124 |
| 62 | 4 | 6.20 | 0.645 | 13 | 14.40 | 0.903 |
| 63 | 5 | 4.80 | 1.042 | 6 | 9.80 | 0.612 |
| 64 | 5 | 4.80 | 1.042 | 4 | 6.40 | 0.625 |
| 65 | 7 | 14.25 | 0.491 | 5 | 17.25 | 0.290 |
| 66 | 2 | 9.00 | 0.222 | 6 | 17.25 | 0.348 |
| 67 | 2 | 9.75 | 0.205 | 2 | 10.50 | 0.190 |
| 68 | 2 | 5.25 | 0.381 | 1 | 11.25 | 0.089 |
| 69 | 1 | 4.50 | 0.222 | 1 | 10.50 | 0.095 |
| 70 and over | 2 | 13.00 | 0.154 | 7 | 44.50 | 0.157 |
| Total | 42 | 82 | 0.513 | 63 | 164 | 0.385 |

## TABLE 5

COMPARISON OF ACTUAL AND EXPECTED SEPARATIONS
FROM ACTIVE SERVICE
GROUP B RETIREMENTS

| Central <br> Age of <br> Group | Men |  |  | Women |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Actual | Expected | Ratio of Actual To Expected | Actual | Expected | Ratio of Actual To Expected |
| 55 | 3 | 1.48 | 2.027 | 2 | 2.32 | 0.862 |
| 56 | 0 | 1.44 | 0.000 | 2 | 2.22 | 0.901 |
| 57 | 0 | 1.62 | 0.000 | 0 | 2.14 | 0.000 |
| 58 | 0 | 1.68 | 0.000 | 1 | 1.96 | 0.510 |
| 59 | 0 | 1.74 | 0.000 | 3 | 1.86 | 1.613 |
| 60 | 4 | 4.15 | 0.964 | 2 | 4.00 | 0.500 |
| 61 | 10 | 4.50 | 2.222 | 5 | 3.40 | 1.471 |
| 62 | 27 | 37.00 | 0.730 | 12 | 27.00 | 0.444 |
| 63 | 12 | 12.00 | 1.000 | 8 | 10.00 | 0.800 |
| 64 | 10 | 8.75 | 1.143 | 7 | 7.75 | 0.903 |
| 65 | 9 | 12.00 | 0.750 | 9 | 10.50 | 0.857 |
| 66 | 3 | 9.75 | 0.308 | 2 | 6.75 | 0.296 |
| 67 | 1 | 6.00 | 0.167 | 0 | 4.50 | 0.000 |
| 68 | 2 | 5.25 | 0.381 | 1 | 6.00 | 0.167 |
| 69 | 0 | 3.00 | 0.000 | 0 | 6.00 | 0.000 |
| 70 and over | 2 | 10.75 | 0.186 | 7 | 27.75 | 0.252 |
| Total | 83 | 121 | 0.685 | 61 | 124 | 0.491 |

TABLE 6

## COMPARISON OF ACTUAL AND EXPECTED SEPARATIONS

FROM ACTIVE SERVICE

GROUP C RETIREMENTS

| Central <br> Age of <br> Group | Men |  |  | Women |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Actual | Expected | Ratio of Actual To Expected | Actual | Expected | Ratio of Actual To Expected |
| 55 | 3 | 2.55 | 1.176 | 0 | 2.70 | 0.000 |
| 56 | 0 | 1.30 | 0.000 | 1 | 1.70 | 0.588 |
| 57 | 1 | 1.50 | 0.667 | 2 | 1.60 | 1.250 |
| 58 | 1 | 1.50 | 0.667 | 1 | 1.50 | 0.667 |
| 59 | 1 | 1.70 | 0.588 | 2 | 1.60 | 1.250 |
| 60 | 1 | 2.10 | 0.476 | 2 | 1.80 | 1.111 |
| 61 | 1 | 1.30 | 0.769 | 2 | 0.90 | 2.222 |
| 62 | 2 | 5.00 | 0.400 | 2 | 3.00 | 0.667 |
| 63 | 3 | 7.50 | 0.400 | 2 | 5.25 | 0.381 |
| 64 | 1 | 3.75 | 0.267 | 4 | 4.50 | 0.889 |
| 65 | 0 | 2.00 | 0.000 | 2 | 2.00 | 1.000 |
| 66 | 0 | 3.00 | 0.000 | 0 | 0.00 | n/a |
| 67 | 0 | 3.00 | 0.000 | 0 | 0.00 | n/a |
| 68 | 0 | 0.00 | $\mathrm{n} / \mathrm{a}$ | 0 | 0.00 | n/a |
| 69 | 0 | 0.00 | n/a | 0 | 0.00 | n/a |
| 70 and over | 0 | 3.00 | 0.000 | 0 | 0.00 | n/a |
| Total | 14 | 39 | 0.357 | 20 | 27 | 0.753 |

TABLE 7

COMPARISON OF ACTUAL AND EXPECTED ANNUAL SALARIES OF MEMBERS

| Central <br> Age of <br> Group | Annual Salaries |  |  |
| :---: | :---: | :---: | :---: |
|  | Actual | Expected | Ratio of Actual To Expected |
| 25 | 3,237,011 | 3,166,512 | 1.022 |
| 30 | 9,114,651 | 9,017,459 | 1.011 |
| 35 | 16,152,863 | 15,807,735 | 1.022 |
| 40 | 25,355,352 | 25,501,447 | 0.994 |
| 45 | 37,618,397 | 37,718,925 | 0.997 |
| 50 | 37,890,512 | 37,863,151 | 1.001 |
| 55 | 33,116,394 | 33,262,284 | 0.996 |
| 60 | 25,354,061 | 25,756,642 | 0.984 |
| 65 | 7,947,995 | 8,033,258 | 0.989 |
| Total | 195,787,237 | 196,127,413 | 0.998 |

TABLE 8

SUMMARY OF MORTALITY EXPERIENCE
OF PENSIONERS

| Group | Men |  |  | Women |  |  | Total |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Actual | Expected | Ratio of Actual To Expected | Actual | Expected | Ratio of Actual To Expected | Actual | Expected | Ratio of Actual To <br> Expected |
| Service Retirees | 55 | 62.96 | 0.874 | 33 | 40.15 | 0.822 | 88 | 103.11 | 0.853 |
| Disability Retirees | 12 | 2.46 | 4.878 | 2 | 0.60 | 3.338 | 14 | 3.06 | 4.577 |
| Dependants of Deceased Members | 1 | 1.21 | 0.826 | 7 | 7.84 | 0.893 | 8 | 9.05 | 0.884 |
| Total | 68 | 66.6309 | 1.021 | 42 | 48.5877 | 0.864 | 110 | 115.2186 | 0.955 |

## APPENDIX II

## RECOMMENDED ACTIVE SERVICE TABLES

TABLE 1

## COMPARISON OF CURRENT AND RECOMMENDED ASSUMPTIONS AS TO SEPARATIONS FROM ACTIVE SERVICE

TERMINATIONS

| $\begin{aligned} & \text { Central Age } \\ & \text { of Group } \\ & \hline \end{aligned}$ | Men |  |  |  | Women |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Withdrawal and Vested Retirement |  | Disability |  | Withdrawal and Vested Retirement |  | Disability |  |
|  | Current | Recommended | Current | Recommended | Current | Recommended | Current | Recommended |
| 25 | 14.86\% | 15.00\% | 0.040\% | 0.010\% | 22.31\% | 18.00\% | 0.050\% | 0.013\% |
| 30 | 10.33\% | 15.00\% | 0.050\% | 0.013\% | 14.82\% | 16.00\% | 0.080\% | 0.020\% |
| 35 | 7.29\% | 14.00\% | 0.070\% | 0.018\% | 10.25\% | 11.00\% | 0.140\% | 0.035\% |
| 40 | 4.20\% | 8.00\% | 0.120\% | 0.030\% | 7.16\% | 8.00\% | 0.210\% | 0.053\% |
| 45 | 2.52\% | 8.00\% | 0.200\% | 0.050\% | 4.01\% | 8.00\% | 0.320\% | 0.080\% |
| 50 | 0.69\% | 6.50\% | 0.360\% | 0.090\% | 2.22\% | 6.50\% | 2.530\% | 0.150\% |
| 55 | 0.00\% | 5.00\% | 0.720\% | 0.180\% | 0.13\% | 5.00\% | 0.950\% | 0.238\% |

TABLE 2

## COMPARISON OF CURRENT AND RECOMMENDED SEPARATIONS

FROM ACTIVE SERVICE

GROUP A RETIREMENTS

| Central Age <br> of Group | Men |  | Women |  |
| :---: | :---: | :---: | :---: | :---: |
|  | Current | Recommended | Current | Recommended |
| 55 | $2.00 \%$ |  |  |  |
| 56 | $2.00 \%$ | $2.00 \%$ | $2.00 \%$ | $2.00 \%$ |
| 57 | $2.00 \%$ | $2.00 \%$ | $2.00 \%$ | $2.00 \%$ |
| 58 | $2.00 \%$ | $2.00 \%$ | $2.00 \%$ | $2.00 \%$ |
| 59 | $2.00 \%$ | $2.00 \%$ | $2.00 \%$ | $2.00 \%$ |
| 60 | $5.00 \%$ | $5.00 \%$ | $5.00 \%$ | $2.00 \%$ |
| 61 | $5.00 \%$ | $5.00 \%$ | $5.00 \%$ | $5.00 \%$ |
| 62 | $20.00 \%$ | $20.00 \%$ | $20.00 \%$ | $5.00 \%$ |
| 63 | $20.00 \%$ | $20.00 \%$ | $20.00 \%$ | $20.00 \%$ |
| 64 | $20.00 \%$ | $20.00 \%$ | $20.00 \%$ | $20.00 \%$ |
| 65 | $75.00 \%$ | $40.00 \%$ | $75.00 \%$ | $20.00 \%$ |
| 66 | $75.00 \%$ | $25.00 \%$ | $75.00 \%$ | $40.00 \%$ |
| 67 | $75.00 \%$ | $25.00 \%$ | $75.00 \%$ | $25.00 \%$ |
| 68 | $75.00 \%$ | $25.00 \%$ | $75.00 \%$ | $25.00 \%$ |
| 69 | $75.00 \%$ | $25.00 \%$ | $75.00 \%$ | $25.00 \%$ |
| 70 | $100.00 \%$ | $100.00 \%$ | $100.00 \%$ | $25.00 \%$ |
|  |  |  | $100.00 \%$ |  |

TABLE 3

## COMPARISON OF CURRENT AND RECOMMENDED SEPARATIONS <br> FROM ACTIVE SERVICE

GROUP B RETIREMENTS

| Central Age <br> of Group | Men |  | Women |  |
| :---: | :---: | :---: | :---: | :---: |
|  | Current | Recommended | Current | Recommended |
| 55 | $2.00 \%$ | $2.00 \%$ | $2.00 \%$ | $2.00 \%$ |
| 56 | $2.00 \%$ | $2.00 \%$ | $2.00 \%$ | $2.00 \%$ |
| 57 | $2.00 \%$ | $2.00 \%$ | $2.00 \%$ | $2.00 \%$ |
| 58 | $2.00 \%$ | $2.00 \%$ | $2.00 \%$ | $2.00 \%$ |
| 59 | $2.00 \%$ | $2.00 \%$ | $2.00 \%$ | $2.00 \%$ |
| 60 | $5.00 \%$ | $5.00 \%$ | $5.00 \%$ | $5.00 \%$ |
| 61 | $5.00 \%$ | $5.00 \%$ | $5.00 \%$ | $5.00 \%$ |
| 62 | $50.00 \%$ | $50.00 \%$ | $50.00 \%$ | $50.00 \%$ |
| 63 | $25.00 \%$ | $25.00 \%$ | $25.00 \%$ | $25.00 \%$ |
| 64 | $25.00 \%$ | $25.00 \%$ | $25.00 \%$ | $25.00 \%$ |
| 65 | $50.00 \%$ | $50.00 \%$ | $50.00 \%$ | $50.00 \%$ |
| 66 | $75.00 \%$ | $25.00 \%$ | $75.00 \%$ | $25.00 \%$ |
| 67 | $75.00 \%$ | $25.00 \%$ | $75.00 \%$ | $25.00 \%$ |
| 68 | $75.00 \%$ | $25.00 \%$ | $75.00 \%$ | $25.00 \%$ |
| 70 | $75.00 \%$ | $25.00 \%$ | $75.00 \%$ | $25.00 \%$ |
| $100.00 \%$ | $100.00 \%$ | $100.00 \%$ | $100.00 \%$ |  |
|  |  |  |  |  |

TABLE 4

COMPARISON OF CURRENT AND RECOMMENDED SEPARATIONS
FROM ACTIVE SERVICE

GROUP C RETIREMENTS

| Central Age <br> of Group | Men |  | Women |  |
| :---: | :---: | :---: | :---: | :---: |
|  | Current | Recommended | Current | Recommended |
| 55 | $15.00 \%$ | $15.00 \%$ | $15.00 \%$ | $15.00 \%$ |
| 56 | $10.00 \%$ | $10.00 \%$ | $10.00 \%$ | $10.00 \%$ |
| 57 | $10.00 \%$ | $10.00 \%$ | $10.00 \%$ | $10.00 \%$ |
| 58 | $10.00 \%$ | $10.00 \%$ | $10.00 \%$ | $10.00 \%$ |
| 59 | $10.00 \%$ | $10.00 \%$ | $10.00 \%$ | $10.00 \%$ |
| 60 | $15.00 \%$ | $15.00 \%$ | $15.00 \%$ | $15.00 \%$ |
| 61 | $10.00 \%$ | $10.00 \%$ | $10.00 \%$ | $10.00 \%$ |
| 62 | $50.00 \%$ | $25.00 \%$ | $50.00 \%$ | $25.00 \%$ |
| 63 | $75.00 \%$ | $25.00 \%$ | $75.00 \%$ | $25.00 \%$ |
| 64 | $75.00 \%$ | $25.00 \%$ | $75.00 \%$ | $25.00 \%$ |
| 65 | $100.00 \%$ | $100.00 \%$ | $100.00 \%$ | $100.00 \%$ |
| 66 | $100.00 \%$ | $100.00 \%$ | $100.00 \%$ | $100.00 \%$ |
| 67 | $100.00 \%$ | $100.00 \%$ | $100.00 \%$ | $100.00 \%$ |
| 68 | $100.00 \%$ | $100.00 \%$ | $100.00 \%$ | $100.00 \%$ |
| 69 | $100.00 \%$ | $100.00 \%$ | $100.00 \%$ | $100.00 \%$ |
| 70 | $100.00 \%$ | $100.00 \%$ | $100.00 \%$ | $100.00 \%$ |

## APPENDIX III

## RECOMMENDED POST-RETIREMENT MORTALITY

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## POST-RETIREMENT MORTALITY RATES

| AGE | MALES | FEMALES | AGE | MALES | FEMALES |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 19 | 0.00064 | 0.00019 | 67 | 0.01590 | 0.00913 |
| 20 | 0.00068 | 0.00019 | 68 | 0.01787 | 0.01062 |
| 21 | 0.00070 | 0.00019 | 69 | 0.02001 | 0.01222 |
| 22 | 0.00071 | 0.00019 | 70 | 0.02233 | 0.01389 |
| 23 | 0.00071 | 0.00019 | 71 | 0.02485 | 0.01562 |
| 24 | 0.00071 | 0.00018 | 72 | 0.02760 | 0.01740 |
| 25 | 0.00070 | 0.00018 | 73 | 0.03062 | 0.01927 |
| 26 | 0.00068 | 0.00018 | 74 | 0.03397 | 0.02124 |
| 27 | 0.00067 | 0.00019 | 75 | 0.03767 | 0.02335 |
| 28 | 0.00066 | 0.00020 | 76 | 0.04176 | 0.02566 |
| 29 | 0.00065 | 0.00021 | 77 | 0.04629 | 0.02821 |
| 30 | 0.00065 | 0.00024 | 78 | 0.05129 | 0.03106 |
| 31 | 0.00065 | 0.00027 | 79 | 0.05678 | 0.03427 |
| 32 | 0.00066 | 0.00031 | 80 | 0.06280 | 0.03789 |
| 33 | 0.00068 | 0.00036 | 81 | 0.06934 | 0.04195 |
| 34 | 0.00070 | 0.00040 | 82 | 0.07634 | 0.04649 |
| 35 | 0.00073 | 0.00044 | 83 | 0.08378 | 0.05152 |
| 36 | 0.00076 | 0.00047 | 84 | 0.09160 | 0.05710 |
| 37 | 0.00080 | 0.00050 | 85 | 0.09971 | 0.06329 |
| 38 | 0.00085 | 0.00052 | 86 | 0.10800 | 0.07012 |
| 39 | 0.00090 | 0.00055 | 87 | 0.11636 | 0.07758 |
| 40 | 0.00096 | 0.00058 | 88 | 0.12474 | 0.08568 |
| 41 | 0.00102 | 0.00062 | 89 | 0.13320 | 0.09425 |
| 42 | 0.00110 | 0.00067 | 90 | 0.14184 | 0.10316 |
| 43 | 0.00118 | 0.00074 | 91 | 0.15083 | 0.11249 |
| 44 | 0.00127 | 0.00082 | 92 | 0.16026 | 0.12230 |
| 45 | 0.00138 | 0.00090 | 93 | 0.17028 | 0.13267 |
| 46 | 0.00151 | 0.00099 | 94 | 0.18102 | 0.14370 |
| 47 | 0.00165 | 0.00109 | 95 | 0.19261 | 0.15548 |
| 48 | 0.00180 | 0.00119 | 96 | 0.20526 | 0.16809 |
| 49 | 0.00197 | 0.00131 | 97 | 0.21918 | 0.18168 |
| 50 | 0.00215 | 0.00143 | 98 | 0.23464 | 0.19640 |
| 51 | 0.00235 | 0.00155 | 99 | 0.25195 | 0.21246 |
| 52 | 0.00257 | 0.00169 | 100 | 0.27147 | 0.23013 |
| 53 | 0.00283 | 0.00183 | 101 | 0.29353 | 0.24979 |
| 54 | 0.00312 | 0.00196 | 102 | 0.31847 | 0.27189 |
| 55 | 0.00346 | 0.00211 | 103 | 0.34656 | 0.29697 |
| 56 | 0.00387 | 0.00226 | 104 | 0.37804 | 0.32556 |
| 57 | 0.00436 | 0.00242 | 105 | 0.41312 | 0.35819 |
| 58 | 0.00495 | 0.00262 | 106 | 0.45193 | 0.39528 |
| 59 | 0.00563 | 0.00287 | 107 | 0.49453 | 0.43713 |
| 60 | 0.00643 | 0.00319 | 108 | 0.54086 | 0.48387 |
| 61 | 0.00735 | 0.00360 | 109 | 0.59071 | 0.53538 |
| 62 | 0.00840 | 0.00413 | 110 | 0.64374 | 0.59129 |
| 63 | 0.00959 | 0.00479 | 111 | 0.69941 | 0.65094 |
| 64 | 0.01094 | 0.00562 | 112 | 0.75705 | 0.71342 |
| 65 | 0.01243 | 0.00661 | 113 | 0.81591 | 0.77769 |
| 66 | 0.01408 | 0.00779 | 114 | 0.87527 | 0.84269 |
|  |  |  | 115 | 1.00000 | 1.00000 |

Basis: 1995 George B. Buck Mortality Tables for males and females.

