

# **Twenty-Third Actuarial Valuation**

**of the Assets and Liabilities  
Under the Railroad Retirement Acts  
as of December 31, 2004  
with  
Technical Supplement**



**U.S. Railroad Retirement Board  
Bureau of the Actuary  
Chicago, Illinois**

**Twenty-Third Actuarial Valuation  
of the Assets and Liabilities  
Under the Railroad Retirement Acts  
as of December 31, 2004  
with  
Technical Supplement**

by  
Frank J. Buzzi, Chief Actuary

**with Statements of the  
Railroad Retirement Board  
and the  
Actuarial Advisory Committee**

**U.S. Railroad Retirement Board  
Bureau of the Actuary  
October 2006**

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JEROME F. KEVER, MANAGEMENT MEMBER

**STATEMENT OF THE RAILROAD RETIREMENT BOARD**

Section 15(g) of the Railroad Retirement Act of 1974 requires that the Railroad Retirement Board, at intervals not longer than three years, estimate the liabilities created by the Act and include the estimate in its annual report. Section 22 of the Railroad Retirement Act of 1974 requires that the Board submit to the President and the Congress, by July 1 of each year, a report containing a five-year projection of the revenues to and payments from the Railroad Retirement Account. Section 502 of the Railroad Retirement Solvency Act of 1983, Public Law 98-76, requires that the Board submit to the Congress, by July 1 of each year, a report on the actuarial status of the railroad retirement system. The 23<sup>rd</sup> valuation was prepared by the Board's Chief Actuary and meets these requirements. The Actuarial Advisory Committee reviewed the valuation as to assumptions and methods as required by Section 15(f) of the Railroad Retirement Act.

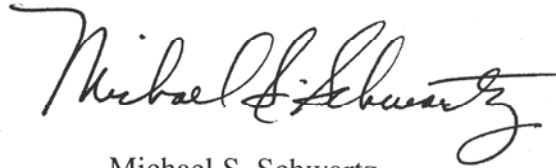
The Chief Actuary's report describes the results of three valuations, each valuation differing from the others as to the employment assumption on which it is based. Cash flow problems occur only under the most pessimistic employment assumption. Even under that assumption, the cash flow problems do not occur until the year 2042.

Section 502 of the Solvency Act requires recommendations with respect to tax rates and whether any part of the taxes on employers should be diverted to the Railroad Unemployment Insurance Account to aid in the repayment of any debt to the Railroad Retirement Account. The Chief Actuary's report does not recommend a change in the tax rate, nor does it recommend a diversion of taxes from the Railroad Retirement Account to the Railroad Unemployment Insurance Account.

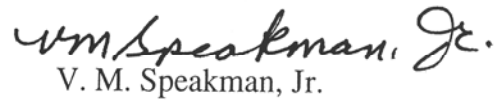
The Board Members believe that the 23<sup>rd</sup> valuation presents a fair picture of the financial condition of the railroad retirement system, and we support the conclusions reached in the report.



The Railroad Retirement Board wishes to thank the members of the Actuarial Advisory Committee for their assistance in this important project.



Michael S. Schwartz



V. M. Speakman, Jr.



Jerome F. Kever



STATEMENT OF THE ACTUARIAL ADVISORY COMMITTEE  
May 24, 2006

This statement sets forth the Committee's review of the twenty-third actuarial valuation of the railroad retirement system. This valuation, performed as of December 31, 2004, was completed in the spring of 2006 by Mr. Frank J. Buzzi, Chief Actuary of the Railroad Retirement Board, and his staff. In both the planning and carrying out of the valuation, the Committee has counseled with Mr. Buzzi as to the structure, actuarial methods, actuarial assumptions, and procedures of the valuation and as to the scope and content of his report. In all, the Committee has met with the Chief Actuary on August 2, 2005, January 23, 2006, and May 24, 2006, for the purpose of reviewing and discussing the significant elements of the twenty-third valuation.

The Committee believes that the actuarial assumptions are reasonable and that the valuation results present a fair picture of the financial condition of the railroad retirement system.

Section 502 of the Railroad Retirement Solvency Act requires the Board to report to Congress on the actuarial status of the railroad retirement system each year. The report must include recommendations for any desirable financing changes. The Chief Actuary recommends no change in payroll tax rates under the railroad retirement system.

The Chief Actuary's report indicates that the average cost of the program over the projection period as measured by the excess of present value of tier 2 payroll taxes over the actuarial surplus ranges from 14.19% to 18.63% of payroll, depending on assumed future employment levels. This compares to a range of 17.55% to 22.76% of payroll in the twenty-second valuation.

The Committee acknowledges the valuable help of the Board, the Chief Actuary and his staff in the Committee's review of this valuation.

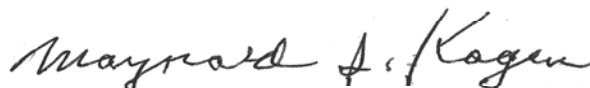
Respectfully submitted,



Albert Pike 3rd, M.A.A.A., Chair



Peter A. Bleyler, M.A.A.A.



Maynard I. Kagen, M.A.A.A.

## **REPORT OF THE ACTUARY**

### **I. INTRODUCTION**

Section 15 of the Railroad Retirement Act of 1974 requires that the Railroad Retirement Board, at intervals of not more than three years, prepare actuarial valuations of the railroad retirement system.

Section 22 of the Railroad Retirement Act of 1974 requires the Railroad Retirement Board to prepare an annual report containing a five-year projection of revenues to and payments from the Railroad Retirement Account and to submit the report to the President and the Congress by July 1. This report must also contain a five-year projection of the account benefits ratio and average account benefits ratio. If the five-year projection indicates that funds in the Railroad Retirement Account will be insufficient to pay full benefits, (1) representatives of railroad employees, railroad carriers and the President must submit proposals to the Congress to preserve the financial solvency of the Railroad Retirement Account, and (2) the Railroad Retirement Board must issue regulations to reduce annuity levels during any fiscal year in which there would be insufficient funds to make full payments.

Section 502 of the Railroad Retirement Solvency Act of 1983 requires the Railroad Retirement Board to prepare an annual report on the actuarial status of the railroad retirement system and to submit the report to the Congress by July 1. The report must contain recommendations for any financing changes which might be advisable, including (1) changes in the tax rates, and (2) whether any part of the taxes on employers should be diverted to the Railroad Unemployment Insurance Account to aid in the repayment of any debt to the Railroad Retirement Account.

This report, the 23<sup>rd</sup> actuarial valuation, is intended to meet these three requirements for 2006.

### **II. SUMMARY OF RECENT DEVELOPMENTS AND RESULTS**

Recent actuarial reports have discussed in detail the importance of the level of railroad employment to the railroad retirement system's financial stability. The payroll tax on railroad employment has been the major source of income to the system since its establishment in the 1930's. It is clear that the fewer railroad workers there are, the less money the retirement account collects in payroll taxes, and the more likely the system is to require additional funds. Declines in railroad employment over a long period, coupled with inflation and subsequent benefit increases, required legislation to strengthen the system's financial condition in 1974, 1981, 1983, and 1987.

The 22<sup>nd</sup> valuation (2003 actuarial report) projected a surplus of 0.24 percent of tier 2 payroll and an average tier 2 tax rate of 20.07 percent under the intermediate employment assumption. Favorable employment and investment experience have combined to produce higher trust fund balances, which in turn have produced lower projected taxes due to the tier 2 tax rate schedule. The surplus has increased to 0.33 percent of tier 2 payroll, and the average tier 2 tax rate has decreased to 16.52 percent. The combined effect of a 3.55 percent of payroll reduction in projected future tier 2 tax rates and a 0.09 percent of payroll increase in projected surplus results in an overall improvement equal to 3.64 percent of tier 2 payroll.

The 23<sup>rd</sup> valuation has been prepared under three assumptions as to the future behavior of railroad employment. These employment assumptions are similar to the employment assumptions used in the 22<sup>nd</sup> valuation. Employment assumptions I and II are based on the stability of employment in passenger service (Amtrak and commuter service) as distinguished from freight service.

Employment assumption III follows the structure of assumptions I and II, except that it has declines in passenger employment and steeper declines in freight employment than employment assumptions I and II. Employment assumptions I, II and III are intended to provide an optimistic, moderate and pessimistic outlook, respectively. The specific results of the projections made in this report of the railroad retirement system's financial condition are as follows:

1. Under employment assumption I, the average tier 2 tax rate is 14.52 percent, and an actuarial surplus of 0.33 percent of tier 2 payroll exists as of December 31, 2004. There are no cash flow problems during the 75-year projection period, and the tier 2 payroll tax rate ranges from 8.2% to 18.0%.
2. Under employment assumption II, the average tier 2 tax rate is 16.52 percent, and an actuarial surplus of 0.33 percent of tier 2 payroll exists as of December 31, 2004. There are no cash flow problems during the 75-year projection period, and the tier 2 payroll tax rate ranges from 8.2% to 18.0%.
3. Under employment assumption III, the average tier 2 tax rate is 18.91 percent, and an actuarial surplus of 0.28 percent of tier 2 payroll exists as of December 31, 2004. Cash flow problems arise in 2042 and remain into 2052. There are no cash flow problems from the close of 2052 to the end of the projection period, and the tier 2 payroll tax rate ranges from 8.2% to 27.0%.

The average tier 2 tax rate is calculated by dividing the present value of tier 2 payroll taxes by the present value of tier 2 payroll as of January 1, 2005. The surplus or deficiency figures given above represent the change in the average tier 2 tax rate which would produce a balance of zero in the combined National Railroad Retirement Investment Trust, Railroad Retirement Account and Social Security Equivalent Benefit Account at the end of the 75-year projection period.

The conclusion is that, barring a sudden, unanticipated, large drop in railroad employment or substantial investment losses, the railroad retirement system will experience no cash flow problems during the next 36 years. The long-term stability of the system, however, is not assured. Under the current financing structure, actual levels of railroad employment and investment return over the coming years will determine whether additional corrective action is necessary.

As mentioned earlier, this report is intended to meet the requirements of Section 502 of the 1983 Solvency Act. Section 502 requires recommendations with regard to (1) the tax rates and (2) whether any part of the taxes on employers should be diverted to the Railroad Unemployment Insurance Account to aid in the repayment of its debt to the Railroad Retirement Account.

1. This report recommends no change in the rate of tax imposed on employers and employees.

The tier 2 tax rate schedule maintains a close balance between the present value of future income and expenditures. Although future financing problems are projected to occur under employment assumption III, as discussed above, the absence of projected cash flow problems for at least 36 years under each employment assumption indicates that an immediate change in the tax rate schedule is not required.

2. No diversion of taxes from the Railroad Retirement Account to the Railroad Unemployment Insurance Account is recommended. As of May 24, 2006, there are no loans outstanding from the Railroad Retirement Account to the Railroad Unemployment Insurance Account.

Section V of this report presents details of the valuations under the three employment assumptions.

### **III. REGULAR AND SUPPLEMENTAL BENEFITS AND THEIR FINANCING**

The Appendix contains a detailed description of the provisions of the current law. Sections III and IV provide a more general summary of the law.

Amounts available for payment of railroad retirement benefits are held in four Accounts: the National Railroad Retirement Investment Trust (NRRIT), the Railroad Retirement (RR) Account, the Social Security Equivalent Benefit (SSEB) Account, and the Dual Benefits Payments Account. Because of their intertwined nature, the NRRIT, RR Account and SSEB Account are discussed together in this section. Dual benefits and the Dual Benefits Payments Account are discussed in a separate section, Section IV.

Amounts held in the NRRIT, RR Account and SSEB Account are mainly used to pay monthly benefits to retired or disabled employees, their spouses, and survivors. The various types of benefits and their eligibility requirements are described in the Appendix. The Accounts also pay out relatively small amounts in lump sums to employees and their survivors in certain cases. The monthly benefits consist of three components, known as tier 1, tier 2 and supplemental annuity.

For all categories of recipients, the gross tier 1 benefit is generally equivalent to the benefit that the social security system would pay if all the employee's earnings (railroad and non-railroad) had been covered under the Social Security Act. Any benefit actually received from social security is subtracted to determine the net tier 1 benefit payable. Section IV explains the logic behind this determination. The cost-of-living increase paid to social security beneficiaries automatically carries over to the tier 1 component of railroad retirement annuities.

There are some differences between social security benefits and tier 1 benefits. The most significant are as follows:

1. An employee may not retire before age 62 under the social security system. Under the railroad retirement system, an employee may retire at age 60 with 30 years of service. A spouse of a 30-year employee may also retire at age 60. If the employee retired after 2001, there is no age reduction in either case.

2. Railroad retirement pays an occupational disability benefit under tier 1 and tier 2. Social security requires total and permanent disability. The same five-month waiting period applies under both systems.
3. Widow(er)s who retire at age 60 or 61 under railroad retirement are deemed age 62 in the computation of the tier 1 benefit, resulting in a smaller age reduction than under social security.
4. From the start of the railroad retirement system through 1984, earnings up to a monthly maximum amount were taxed and credited for benefit computation purposes. Social security has always used an annual earnings limit. The 1983 Solvency Act changed railroad retirement to an annual earnings limit for 1985 and later years, but benefit computations for new beneficiaries will reflect the pre-1985 use of a monthly limit for many years into the future. All benefits awarded before 1985 reflect a monthly limit exclusively.

The formula used to compute the tier 2 component of railroad retirement is comparable to a private pension formula. Under the formula adopted in 1981, the employee tier 2 benefit is equal to 0.7 percent of the employee's average monthly railroad earnings for the 60 months of highest earnings, multiplied by the number of years of railroad service, less 25 percent of any vested dual benefit. Unlike private pensions, tier 2 benefits (1) provide automatic cost-of-living increases, and (2) are paid to spouses and survivors without any reduction in employee benefit for the payment of these auxiliary benefits.

The tier 2 benefit for spouses is equal to 45 percent of the employee's tier 2 benefit. The survivor's tier 2 benefit is a specified percentage of the employee's tier 2 benefit. The Appendix lists the percentages and describes an initial minimum widow(er)'s amount which became payable beginning in calendar year 2002.

The tier 2 cost-of-living increases for employees, spouses and survivors are equal to 32.5 percent of the percentage increase which is used in computing social security increases (and tier 1 increases). The increase is paid at the same time as the tier 1 cost-of-living increase.

The portion of tier 1 benefits which is considered equivalent to social security benefits is subject to Federal income tax under the rules that apply to social security benefits. Tier 2 benefits, the portion of tier 1 benefits in excess of social security benefits, supplemental annuity benefits, and vested dual benefits are subject to Federal income tax under the rules that apply to private pensions.

A railroad retiree may receive a supplemental annuity in addition to his regular annuity if (1) the retiree has a "current connection" with the railroad industry at the time of retirement, and (2) the retiree has attained age 65 with 25 years of railroad service, or attained age 60 with 30 years of railroad service. A current connection is generally defined as at least 12 months of railroad service in the 30 months preceding retirement.

The 1981 amendments added the requirement that an employee must have worked in the railroad industry before October 1, 1981, to receive a supplemental annuity. This provision will result in

phasing out the supplemental annuity over a long period. The first effect will not occur until October 2006. The last supplemental annuity check will probably not be paid until after 2060.

The monthly supplemental annuity benefit is \$23, plus \$4 for each year of service in excess of 25, with a maximum benefit of \$43. No cost-of-living increases are applied. Spouses and survivors do not receive a supplemental annuity.

If the recipient of a supplemental annuity receives a private pension from his railroad employer, the supplemental annuity is reduced by the portion of the private pension that is attributable to the employer's contributions. This reduction is not made if the private pension is reduced for receipt of the supplemental annuity.

Benefits paid from the NRRIT, RR Account and SSEB Account are financed by the following sources of income:

1. Payroll tax. Employees and employers pay a tax at the social security rate on earnings in a year up to the social security, or tier 1, earnings limit. (The Medicare hospital insurance portion of this rate is not subject to an earnings limit.) This tax is called the tier 1 tax. In addition, employers and employees pay a tier 2 tax equal to a percentage of the employee's earnings up to the tier 2 earnings limit. The tier 2 earnings limit is what the social security limit would be if the 1977 social security amendments had not been enacted. The 2006 earnings limits are \$94,200 and \$69,900 for tier 1 and tier 2, respectively.

Tier 2 taxes on both employers and employees are based on a 10-year average of the ratio of certain asset balances to the sum of benefits and administrative expenses (the average account benefits ratio). Depending on the average account benefits ratio, the tier 2 tax rate for employers will range between 8.2 percent and 22.1 percent, while the tier 2 tax rate for employees will be between 0 percent and 4.9 percent. This calculation is described in the Appendix.

2. Income tax. The tax on tier 1 benefits up to the social security level is credited to the SSEB Account and then to social security through the financial interchange. Revenue derived from taxing RR Account benefits (tier 2 and the excess of tier 1 over the social security level) is transferred to the RR Account.
3. Investment income.
4. The financial interchange with the social security system. This extremely important arrangement, which will be discussed in detail in Section IV, has resulted in the large annual lump sum transfers of money from social security to railroad retirement shown in Table 11.
5. Advances from general revenues related to certain features of the financial interchange. Financial interchange transfers are made in a lump sum for a whole fiscal year in the June following the end of that fiscal year. For example, the transfer reflecting transactions which occurred from October 2003 through September 2004 (fiscal year 2004) took place in June 2005. At any time, therefore, there are between 9 and 21 months' worth of financial

interchange transfers that are, in a sense, owed to the railroad retirement system. Railroad retirement receives interest on this money, so this practice does no long-term harm to the financial condition of the railroad retirement system. The lag in the transfers, however, could cause short-term cash flow problems.

In order to avoid the cash flow problems caused by this lag, the 1983 Solvency Act provided for monthly loans to railroad retirement from U.S. Treasury general funds. Each loan is equal to the transfer the Railroad Retirement Board estimates railroad retirement would have received in the preceding month, with interest, if the financial interchange with social security were on an up-to-date basis. Railroad retirement must repay these loans when it receives the transfer from social security against which the money was advanced.

The 1983 Solvency Act created the SSEB Account, effective October 1, 1984. Before that date, all tier 1 benefits, tier 2 benefits, lump sums and administrative expenses had been paid from the RR Account, and all the income described above had been credited to the RR Account. Since then, the SSEB Account has paid the social security level of benefits and the administrative expenses allocable to that level of benefits. The tier 1 portion of the payroll tax, the income taxes on the social security level of benefits, the income from the financial interchange, and the advances from general revenues are credited to the SSEB Account. Repayment of the advances is made from the SSEB Account.

The Railroad Retirement and Survivors' Improvement Act of 2001 created the National Railroad Retirement Investment Trust to manage and invest amounts collected in the RR Account and SSEB Account. The portion of the RR Account that is not needed to pay current administrative expenses and the balance of the SSEB Account not needed to pay current benefits and administrative expenses must be transferred from time to time to the NRRIT in such manner as will maximize investment returns to the Railroad Retirement system.

#### **IV. DUAL BENEFITS, THEIR FINANCING, AND THE FINANCIAL INTERCHANGE**

In the early 1950's, an arrangement known as the financial interchange was established between the railroad retirement and social security systems. The purpose of the financial interchange is to place the social security trust funds in the same financial position they would have been if railroad employment had always been covered under social security. If railroad employment had been covered under social security, social security would have collected taxes on railroad employment, and it would have paid benefits based on railroad employment. Under the financial interchange, the railroad retirement system gives the social security system the taxes social security would have collected, and the social security system gives the railroad retirement system the additional benefits social security would have paid to railroad workers and their families over what it actually pays them.

The word "additional" in the preceding sentence is important, because it is possible for a railroad employee to be covered under both railroad retirement and social security. The social security coverage may be based on earnings from moonlighting while in a railroad job or from coverage under the two systems at different times. Fulfilling the purpose of the financial interchange requires

deducting from social security's fund only the difference between what social security would have paid had it covered railroad employment, and what it actually pays the person based on his non-railroad employment. Under the financial interchange, therefore, social security subtracts an employee's social security benefit from the amount it would otherwise give to the railroad retirement system.

This arrangement gave rise to problems that became acute in the early 1970's. The problems arose from the weighting in the social security formula in favor of low-earning, short-service workers. A railroad employee's non-railroad earnings usually added little to the benefit social security would have paid on combined railroad and non-railroad earnings (called gross tier 1 today). However, the employee might qualify for the minimum social security benefit, receiving much more from social security than his non-railroad earnings added to his gross tier 1 benefit.

The following example of two hypothetical employees may clarify the problem. The size of the benefits is appropriate to the early 1970's. The employees are assumed to have identical dates of birth, dates of retirement, and histories of railroad earnings. One employee, however, is assumed to have had just enough covered employment under social security to qualify for a social security benefit. (The difference in railroad retirement benefits arises from minor reductions in the 1937 Act formula for receipt of a social security benefit.)

	<u>Eligible for social security</u>	<u>Not eligible for social security</u>
A. Railroad retirement benefit	\$380	\$400
B. Social security benefit	100	-
C. Total benefit, A + B	480	400
D. Social security benefit on combined earnings (gross tier 1)	240	220
E. Financial interchange transfer from social security to railroad retirement, D – B	140	220
F. Amount to be financed by excess of railroad retirement taxes over social security taxes, A – E	240	180

Two conclusions are apparent. First, the employee with benefits under both systems received an advantage over the career railroad worker, which many considered unfair. In the example, the employee who is eligible for social security collects \$80 more than the employee who is not eligible (the difference in line C), while, under a completely integrated system, the social security earnings would have added only \$20 (the difference in line D). Second, because social security subtracted the social security benefit in calculating the financial interchange transfer, railroad retirement paid most of the cost of these benefits. In the example, this is represented by the \$60 difference in line F.

This situation was a major cause of the poor financial condition of the railroad retirement system in the early 1970's. In order to improve the system's financial condition, the Railroad Retirement Act of 1974 provided that the tier 1 component of the railroad retirement annuity be reduced by any



social security benefit. This essentially integrated the two systems and eliminated the advantage of qualifying for benefits under both systems.

However, it was generally considered unfair to eliminate this advantage entirely for those already retired or close to retirement when the 1974 Act became effective. The 1974 Act, therefore, provided for a restoration of social security benefits that were considered vested at the end of 1974. The restored amount is known as the "vested dual benefit." This benefit was available to qualifying spouses and survivors as well as to qualifying employees.

For employees retiring in 1975 or later, the vested dual benefit was to be equal to

- (1) a social security benefit based on social security earnings, plus
- (2) a social security benefit based on railroad earnings, minus
- (3) a social security benefit based on combined railroad and social security earnings.

Social security or railroad earnings after 1974 were not to be included in this calculation. The "social security benefit" referred to in (1), (2) and (3) is the one which would have been calculated at the end of 1974. The resulting amount was to be increased by all the automatic social security cost-of-living adjustments between 1974 and the date the employee retired.

For spouses and survivors, the formulas were different and more complicated than those for employees.

The 1981 amendments made significant changes regarding vested dual benefits. Spouses and survivors were not to be awarded vested dual benefits after August 13, 1981, though they would continue to receive these benefits if they were awarded before that date. Also, vested dual benefits awarded to employees would take into account cost-of-living increases only through 1981, rather than through the date of retirement.

Since October 1981, vested dual benefits have been paid from a segregated Dual Benefits Payments Account, and appropriations have been made to that account. This means that, starting in fiscal year 1982, each annual appropriation is to be sufficient to pay the benefits for that year. If the appropriation for a fiscal year is less than required for full funding, the Railroad Retirement Board must reduce benefits to a level that the amount appropriated will cover.

The appropriation for vested dual benefits in fiscal year 1982 was less than required for full funding, resulting in a cutback in benefits during that year. Full funding was restored for the last two months of fiscal year 1982. The appropriation was less than required in fiscal year 1986, resulting in a cutback during April-September of that year. The appropriation was again less than required in fiscal year 1988, which resulted in a cutback during April-September. Benefits were cut back in January 1996 due to a lapse in government funding and then restored later that same month. For years other than those mentioned, full benefits have been paid.

## V. ASSUMPTIONS, METHODOLOGY, AND VALUATION RESULTS

### A. Assumptions and Methodology

Average railroad employment is assumed to be 233,000 in 2005 under each of the three employment assumptions. This is the estimated average for the year (subject to later adjustment) and exceeded the range projected for 2005 under the employment assumptions contained in the 2005 actuarial report.

Employment assumptions I and II, based on a model developed by the Association of American Railroads, assume that (1) passenger employment will remain at the level of 43,000, and (2) the employment base, excluding passenger employment, will decline at a constant annual rate (1.0 percent for assumption I and 2.5 percent for assumption II) for 25 years, at a reducing rate over the next 25 years, and remain level thereafter.

Employment assumption III differs from employment assumptions I and II by assuming that (1) passenger employment will decline by 500 per year until a level of 35,000 is reached and then remain level, and (2) the employment base, excluding passenger employment, will decline at a constant annual rate of 4.0 percent for 25 years, at a reducing rate over the next 25 years, and remain level thereafter.

The assumed rates of decline in freight employment are 0.5% lower during the first 25 years under each employment assumption than assumed in the 22<sup>nd</sup> valuation.

Because inflation has been fairly stable at relatively low levels in recent years, only one set of earnings and price inflation assumptions was used in this valuation. The ultimate earnings increase and cost-of-living increase assumptions are the same as those used in the previous valuation. The ultimate interest rate assumption has decreased from 8.0% in the 22<sup>nd</sup> valuation to 7.5% in the 23<sup>rd</sup> valuation. Table 1 shows the employment, inflation and interest rate assumptions used in the 23<sup>rd</sup> valuation. A comparison of historical and projected employment is illustrated in Figure 1.

Only one combination of non-economic assumptions (for example, rates of mortality, disability, retirement, and withdrawal) was used in this valuation. These assumptions, some of which were changed from the previous valuation to reflect recent experience, are discussed in the Technical Supplement to this report.

Projections were made for the various components of income and outgo under each employment assumption for the 75 calendar years 2005-2079. The projections of these components were combined and the investment income calculated to produce the projected balances in the combined NRRIT and RR Account and in the SSEB Account separately for each year. The results are summarized in Table 2. Present values of the various components of NRRIT and RR Account income and outgo were calculated by discounting amounts in each projection year to December 31, 2004, using the interest rate series shown in Table 1. The present values were combined to calculate the NRRIT and RR Account actuarial surplus or deficiency. The derivation of the surplus or deficiency appears in Table 6.

## B. Valuation Results

This section sets forth the results of the valuation in the form of a discussion of the tables in which the results appear. Because it is desirable for the discussion of a table to be reasonably self-contained, there is some repetition between tables and between this section and preceding sections of this report.

Table 2. Progress of the National Railroad Retirement Investment Trust (NRRIT), Railroad Retirement (RR) and Social Security Equivalent Benefit (SSEB) Accounts. Projections were made for the various components of income and outgo under each employment assumption for the 75 calendar years 2005-2079. The projections of these components were combined and the investment income calculated to produce the projected balances in the combined NRRIT and RR Account, and the SSEB Account at the end of each projection year. The results are summarized in Table 2.

Table 2 consists of three tables, one for each of employment assumptions I, II, and III. The tables show, for the SSEB Account and the combined NRRIT and RR Account for each projection year, (1) the various elements of income and outgo, (2) the account balance on December 31, and (3) the account benefits ratio, average account benefits ratio and combined employer and employee tier 2 tax rate.

The balances of the RR Account and NRRIT are combined because amounts not needed to pay current administrative costs are transferred from the RR Account to the NRRIT for investment. The SSEB Account is assumed to maintain a target balance of approximately 1.5 months of benefit payments in order to meet benefit obligations and contingencies, and transfer any excess to the NRRIT.

Table 2 indicates that no cash-flow problems arise under employment assumptions I and II (Tables 2-I and 2-II).

Under employment assumption I, the combined account balance grows through 2015, declines slightly in 2016 and then continues to grow through the end of the projection period. The combined employer and employee tier 2 tax rate decreases to 15% in 2011, increases to 18% in 2020-2028, decreases to 8.2% in 2040-2078 and then increases to 10.0% in 2079.

Under employment assumption II, the combined account balance grows to \$31,730 million in 2010, decreases to \$29,592 million in 2023, and grows thereafter through the end of the projection period. The combined employer and employee tier 2 tax rate decreases to 15% in 2011, increases to 18% in 2018-2051, and then decreases until reaching the minimum rate of 8.2% in 2064-2079.

Under employment assumption III, the combined account balance grows to \$31,260 million in 2010, and then it begins to decline (Table 2-III). The balance becomes negative in 2042. Negative after-transfer balances indicate the amount that would be owed, including interest, if unreduced benefits were paid by borrowing from some unknown source. The combined account deficit grows until 2047, when the balance reaches -\$2,232 million. The balance then begins to improve, and it becomes positive in 2052. The combined employer and employee tier 2 tax rate decreases to 16% in 2007-2015, increases to the maximum rate of 27% in 2031-2064 and then decreases until

reaching the minimum rates of 8.2% in 2075-2079. Under this assumption, the tax rate mechanism does not respond quickly enough to avoid cash flow problems.

Table 3. Present value of benefits in millions of dollars. This table shows, for each employment assumption, the present value of tier 2 benefits, supplemental annuity benefits and the portion of tier 1 benefits which exceeds the social security level of benefits. The portion of tier 1 benefits in excess of the social security level is referred to as "tier 1 liability." The most important components of this liability were described in Section III. Supplemental annuity benefits are included with tier 2 benefits in this table. The present values are shown separately by type of beneficiary (employee, spouse, survivor) and by employee status on the valuation date (retired, retired and deceased, active, inactive, future entrants).

Table 4. Present value of benefits as a percentage of the present value of tier 2 payroll. The format for this table is the same as for Table 3. Each number in Table 4 was obtained by dividing the corresponding number in Table 3 by the appropriate present value of one percent of tier 2 payroll. The payroll figures are shown in Table 6.

Table 5. Balance of the Railroad Retirement and Social Security Equivalent Benefit Accounts as of December 31, 2004. This table derives the balance in the accounts as of December 31, 2004. No accrual adjustments are made either for financial interchange amounts due and unpaid on that date or for benefits due on January 3, 2005, because these amounts are included in the projected future cash flows.

Table 6. Actuarial surplus or (deficiency) for National Railroad Retirement Investment Trust and Railroad Retirement Account. The top half of Table 6 expresses the asset and liability components of the actuarial balance as present values in dollars. The bottom half expresses these components as a percentage of tier 2 payroll. The actuarial surplus or deficiency was calculated for the NRRIT and RR Account, but not for the SSEB Account, for the following reason.

The SSEB Account pays the social security level of benefits and administrative expenses allocable to those benefits, and it receives as income the social security level of taxes. If there were no other source of income or outgo during the course of a year, a surplus or deficiency would build up, depending on whether taxes exceeded or were less than benefits. However, the SSEB Account also receives or pays any financial interchange transfers. The financial interchange transfer, subject to qualifications described in the next paragraph, should be enough to offset any surplus or deficit for the year. Furthermore, this would be the case even if the social security level of benefits or taxes are raised or lowered. The SSEB Account can thus be regarded as automatically funded, the financial interchange being the mechanism for correcting any surplus or deficiency. Therefore, the concept of actuarial balance is not meaningful when applied to the SSEB Account.

The qualification mentioned above arises because, in a relatively small number of cases, the railroad retirement system does not pay benefits when social security would pay benefits. In these cases, mainly dependent children of retired railroad employees, the SSEB Account collects an amount through the financial interchange but does not pay a corresponding benefit. This imbalance between outgo and income is transferred from time to time to the NRRIT. The value of these

transfers, or amounts available for transfer, is included as an asset in Table 6 as “Available from SSEB Account.”

Revenue derived from taxing NRRIT and RR Account benefits (tier 2 and the excess of tier 1 over the social security level) is transferred to the RR Account. The present value of these transfers is shown as an asset in Table 6 as “Income taxes on benefits.”

The cost of the system to the railroad industry may be considered as the excess of “Retirement taxes” over “Actuarial surplus or (deficiency).” Table 6 shows that the cost of the system is much more stable when expressed in dollars than when expressed as a percentage of payroll. For example, the cost of the system under employment assumption III is \$40,841 million, or 18.63 percent of payroll; whereas the cost under employment assumption I is \$45,615 million, or 14.19 percent of payroll. Using employment assumption III as the base, the percentage cost variation in dollars between the two valuations is 11.69 percent. As a percentage of payroll, the percentage cost variation is 23.83 percent.

Table 7. Minimum contribution required under ERISA. The railroad retirement system is specifically exempt from the minimum funding provisions of the Employee Retirement Income Security Act (ERISA). In the past, there has been some interest in what the contribution requirement of the system would be if this were not the case. The following discussion is limited to the regular minimum funding standard for multiemployer plans.

The funding goal of the railroad retirement system is to receive enough funds each year to cover benefits and expenses for the year and to maintain a reasonable account balance. In terms of the participants in the system, payroll taxes collected each year from rail employers and employees are used to pay benefits to rail retirees, their spouses and survivors. In contrast, ERISA essentially requires that pension plans be "advance-funded." Under this arrangement, the goal is to receive enough funds each year over the employees' working lifetimes to fully fund their retirement benefits.

ERISA recognizes that when a private pension plan is initiated, it will usually have an "accrued liability." This liability represents the value placed on future benefits and expenses of the plan that is attributable to employee service preceding the date of the plan (often referred to as "past service"). As such, the liability might be measured by the amount that would have been accumulated if contributions to fund each employee's benefits had been made from the time employment began. Since a new plan would have no funds at the time it is initiated, the accrued liability is also the unfunded accrued liability. The unfunded accrued liability is specifically identified by ERISA, because ERISA has separate funding rules for benefits based on past and future service.

In the case of an existing pension plan which becomes subject to ERISA funding standards, as for a new plan, the accrued liability must be determined. This determination is made based on employee service preceding the date the plan becomes subject to ERISA standards, but taking into account projected future levels of employee pay. The unfunded accrued liability for an existing plan is the excess of the accrued liability over the funds on hand.

Table 7 illustrates what the minimum funding requirements would be for the railroad retirement system as of December 31, 2004, using the entry age normal actuarial funding method, if it became subject to ERISA on that date. The unfunded accrued liability of \$35,941 million shown in Table 7 may be considered to be the amount needed, in excess of funds on hand and tier 2 payroll taxes at a 6.00 percent rate, to fund combined NRRIT and RR Account benefits and expenses for former and present employees. The 6.00 percent rate (normal cost rate) is the average cost expressed as a percentage of tier 2 payroll that would fund each employee's benefits and expenses over the employee's working lifetime.

Under ERISA requirements, the minimum annual contribution to be made would be equivalent to tier 2 payroll taxes at the rate of 6.00 percent, plus the level annual amount of \$2,921 million which would amortize the unfunded accrued liability of \$35,941 million over 30 years.

Since the amortization payment is a level dollar amount, and since the taxable payroll would change from year to year, the required contribution expressed as a percentage of payroll would vary during the amortization period. Line 10 of the table shows the level percentage of tier 2 payroll that would be required to fund the unfunded accrued liability and meet a 6.00 percent payroll tax over the 30 year amortization period. Under the ERISA requirements, the minimum annual contribution after 30 years, if all assumptions were realized, would be the 6.00 percent of payroll normal cost.

In summary, the effect of ERISA would be to accelerate funding for the railroad retirement system. Contributions equivalent to an average of 21.50 to 26.18 percent of tier 2 payroll would be required for 30 years with 6.00 percent contributions thereafter.

Table 8. Vested dual benefit amounts and average number of beneficiaries. This table shows a projection of vested dual benefit payments for every fiscal year from 2007 through 2030. After 2030, the amounts become insignificant. The amounts shown assume that the benefits are fully funded. Fiscal years are shown because vested dual benefit appropriations are made on a fiscal year basis. The table also indicates the average number of vested dual beneficiaries in each fiscal year. The table applies to all the employment assumptions discussed in this report.

The revenue derived from taxing pre-October 1988 vested dual benefits was transferred to the RR Account. The revenue derived from taxing vested dual benefits in fiscal years 1989 and later is transferred to the Dual Benefits Payments Account, and it reduces the amount of the appropriation by the same amount. Therefore, the amount available for the payment of vested dual benefits is unaffected by income tax revenues derived from these benefits.

The 1981 amendments removed much of the uncertainty from projections of future vested dual benefit payments. The volatility caused by inflation is gone, since future awards take into account cost-of-living increases from 1975 through 1981, rather than through the date of retirement. Also, awards of these benefits to spouses and widow(er)s ceased after August 13, 1981. Uncertainties which remain in projecting future vested dual benefit payments are when employees will retire, what their benefits will be, and when beneficiaries will die.

The projections of vested dual benefit payments by the Railroad Retirement Board are the basis for the agency's requests for appropriated amounts. Generally, a margin of about 2 percent is added to

projected amounts to determine the appropriated amounts requested. This margin is needed because of the uncertainties in making projections and to ensure that adequate funds are available for the full payment of vested dual benefits. Appropriated amounts remaining in a fiscal year after all benefit payments have been made are returned to the Treasury.

Table 9. Supplemental annuity benefit amounts and average number of beneficiaries. This table shows a projection of supplemental annuity benefits for every calendar year from 2006 through 2045. Since service before October 1, 1981 is required for a supplemental annuity, benefit amounts after 2045 will continue to decline.

Table 10. Average number of railroad retirement annuitants and number of annuitants per full time employee. The left half of Table 10 shows the average number of annuitants under each employment assumption, and the right half shows the average number per full time employee. Under employment assumption I, the average number of annuitants per full time employee remains relatively level through 2019 and then declines. Under employment assumption II, the average number of annuitants per full time employee increases until reaching a maximum of 2.95 in 2021-2022 and then declines. Under employment assumption III, the average number of annuitants per full time employee increases steadily to 3.91 in 2031-2032 and declines thereafter.

## **VI. STATEMENT OF ACTUARIAL OPINION**

It is my opinion that (1) the techniques and methodology used herein to evaluate the financial and actuarial status of the Railroad Retirement System are generally accepted within the actuarial profession; and (2) the assumptions used and the resulting actuarial estimates are, in the aggregate, reasonable for the purpose of evaluating the financial and actuarial status of the trust funds, taking into consideration the experience and expectations of the program.

Frank J. Buzzi  
Chief Actuary, Railroad Retirement Board  
Fellow of the Society of Actuaries  
Member of the American Academy of Actuaries  
Enrolled Actuary #05-4940

Table 1. Employment, inflation and interest assumptions

Calendar year	Average employment (thousands)			Percentage increase over prior year		Interest rate
	I	II	III	Earnings	Cost of living	
2005	233	233	233	3.7%	2.7%	7.3%
2006	231	228	225	4.0	4.1	7.5
2007	229	224	217	4.0	2.6	7.5
2008	227	219	210	4.0	3.0	7.5
2009	226	215	202	4.0	3.0	7.5
2010	224	210	195	4.0	3.0	7.5
2011	222	206	189	4.0	3.0	7.5
2012	220	202	182	4.0	3.0	7.5
2013	218	198	176	4.0	3.0	7.5
2014	217	194	170	4.0	3.0	7.5
2015	215	191	164	4.0	3.0	7.5
2016	213	187	159	4.0	3.0	7.5
2017	211	183	153	4.0	3.0	7.5
2018	210	180	148	4.0	3.0	7.5
2019	208	176	143	4.0	3.0	7.5
2020	206	173	139	4.0	3.0	7.5
2021	205	170	134	4.0	3.0	7.5
2022	203	167	130	4.0	3.0	7.5
2023	202	164	126	4.0	3.0	7.5
2024	200	161	123	4.0	3.0	7.5
2025	198	158	119	4.0	3.0	7.5
2026	197	155	116	4.0	3.0	7.5
2027	195	152	112	4.0	3.0	7.5
2028	194	149	109	4.0	3.0	7.5
2029	192	147	106	4.0	3.0	7.5
2030	191	144	104	4.0	3.0	7.5
2031	189	142	101	4.0	3.0	7.5
2032	188	139	98	4.0	3.0	7.5
2033	187	137	96	4.0	3.0	7.5
2034	186	135	94	4.0	3.0	7.5
2035	184	133	92	4.0	3.0	7.5
2036	183	132	91	4.0	3.0	7.5
2037	182	130	89	4.0	3.0	7.5
2038	181	129	87	4.0	3.0	7.5
2039	181	127	86	4.0	3.0	7.5
2040	180	126	85	4.0	3.0	7.5
2041	179	125	84	4.0	3.0	7.5
2042	178	124	83	4.0	3.0	7.5
2043	178	123	82	4.0	3.0	7.5
2044	177	122	81	4.0	3.0	7.5
2045	176	121	80	4.0	3.0	7.5
2046	176	120	80	4.0	3.0	7.5
2047	176	120	79	4.0	3.0	7.5
2048	175	119	79	4.0	3.0	7.5
2049	175	119	78	4.0	3.0	7.5
2050	175	118	78	4.0	3.0	7.5
2051	174	118	78	4.0	3.0	7.5
2052	174	118	77	4.0	3.0	7.5
2053	174	118	77	4.0	3.0	7.5
2054	174	118	77	4.0	3.0	7.5
2055-2079	174	118	77	4.0	3.0	7.5



**Figure 1. Average Railroad Employment 1937-2079, Historical and Projected**

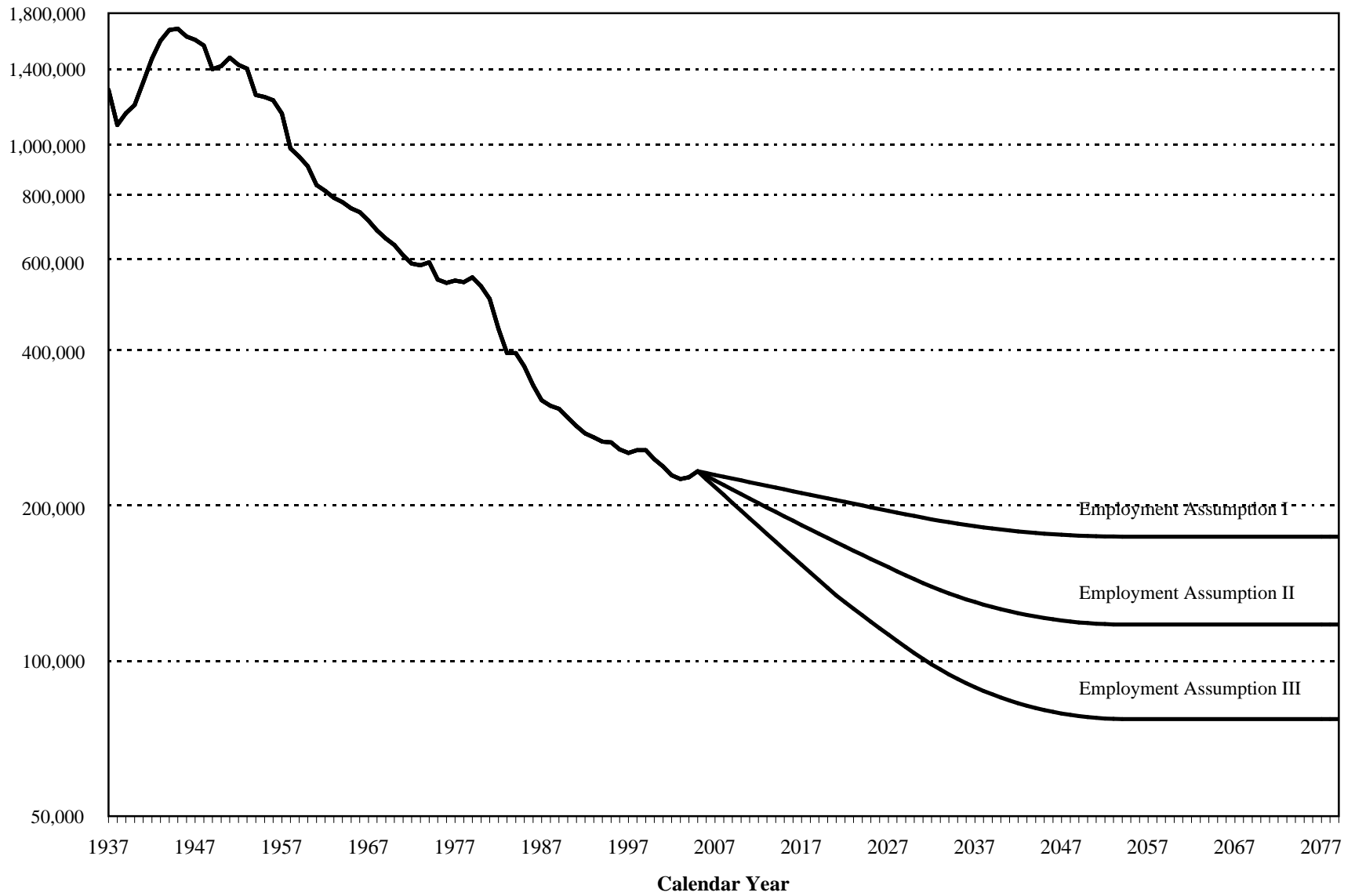


Table 2-I. Progress of the Combined National Railroad Retirement Investment Trust (NRRIT) and Railroad Retirement (RR) Account, and the Social Security Equivalent Benefit (SSEB) Account under Employment Assumption I  
(Dollar amounts in millions)

Calendar year	Average			Combined NRRIT and RR Account				SSEB Account				Combined balance, end year
	Account benefits ratio <sup>a</sup>	account benefits ratio <sup>b</sup>	Tier 2 tax rate	Benefits and administration	Tax income <sup>c</sup>	Other income <sup>d</sup>	Balance, end year	Benefits and administration	Tax income <sup>c</sup>	Other income and expense <sup>e</sup>	Balance, end year	
2006	7.37	6.40	17.0%	\$4,005	\$2,639	\$2,197	\$29,221	\$5,699	\$2,426	\$3,211	\$709	\$29,930
2007	7.20	6.60	16.0%	4,193	2,606	2,215	29,849	5,838	2,525	3,330	727	30,576
2008	6.99	6.80	16.0%	4,401	2,703	2,256	30,407	6,013	2,617	3,418	748	31,155
2009	6.80	6.90	16.0%	4,596	2,799	2,293	30,904	6,219	2,709	3,535	774	31,678
2010	6.62	6.90	16.0%	4,786	2,895	2,328	31,340	6,449	2,802	3,676	803	32,143
2011	6.40	7.00	15.0%	4,985	2,830	2,315	31,500	6,682	2,898	3,814	832	32,332
2012	6.21	6.90	16.0%	5,186	3,093	2,372	31,778	6,923	2,996	3,957	862	32,640
2013	6.03	6.90	16.0%	5,375	3,196	2,392	31,991	7,181	3,100	4,113	894	32,885
2014	5.86	6.90	16.0%	5,556	3,301	2,408	32,145	7,447	3,208	4,271	927	33,072
2015	5.70	6.70	16.0%	5,730	3,410	2,422	32,246	7,716	3,322	4,428	960	33,206
2016	5.54	6.60	16.0%	5,881	3,521	2,324	32,209	7,995	3,441	4,555	960	33,169
2017	5.45	6.40	17.0%	6,004	3,832	2,404	32,442	8,275	3,556	4,789	1,030	33,472
2018	5.41	6.20	17.0%	6,105	3,955	2,466	32,758	8,544	3,676	4,902	1,063	33,821
2019	5.40	6.10	17.0%	6,184	4,081	2,498	33,153	8,800	3,801	5,030	1,095	34,248
2020	5.45	5.90	18.0%	6,247	4,429	2,546	33,881	9,040	3,931	5,139	1,125	35,006
2021	5.52	5.80	18.0%	6,295	4,569	2,486	34,643	9,264	4,065	5,227	1,152	35,795
2022	5.65	5.70	18.0%	6,324	4,714	2,678	35,710	9,471	4,204	5,292	1,178	36,888
2023	5.82	5.70	18.0%	6,351	4,861	2,768	36,988	9,662	4,346	5,339	1,202	38,190
2024	6.02	5.60	18.0%	6,383	5,012	2,874	38,490	9,842	4,490	5,374	1,224	39,714
2025	6.25	5.60	18.0%	6,420	5,166	2,994	40,230	10,021	4,636	5,408	1,246	41,476
2026	6.50	5.70	18.0%	6,461	5,322	3,040	42,131	10,208	4,785	5,446	1,269	43,400
2027	6.79	5.80	18.0%	6,507	5,485	3,282	44,392	10,398	4,938	5,484	1,293	45,685
2028	7.11	5.90	18.0%	6,569	5,651	3,459	46,933	10,596	5,094	5,526	1,317	48,250
2029	7.41	6.10	17.0%	6,650	5,528	3,643	49,454	10,804	5,253	5,577	1,343	50,797
2030	7.72	6.30	17.0%	6,742	5,695	3,837	52,244	11,030	5,416	5,641	1,371	53,615
2031	8.01	6.50	16.0%	6,834	5,554	3,981	54,945	11,277	5,586	5,721	1,401	56,346
2032	8.35	6.80	16.0%	6,915	5,725	4,247	58,003	11,543	5,766	5,810	1,434	59,437
2033	8.69	7.00	15.0%	6,994	5,569	4,470	61,048	11,829	5,954	5,911	1,470	62,518
2034	9.04	7.30	15.0%	7,085	5,743	4,706	64,411	12,126	6,149	6,014	1,507	65,918
2035	9.37	7.60	14.0%	7,204	5,568	4,950	67,724	12,436	6,350	6,124	1,545	69,269
2036	9.69	7.90	14.0%	7,330	5,744	5,175	71,314	12,775	6,558	6,259	1,587	72,901
2037	9.97	8.30	12.0%	7,448	5,166	5,448	74,480	13,135	6,780	6,400	1,632	76,112
2038	10.12	8.60	10.0%	7,617	4,547	5,660	77,070	13,496	7,007	6,534	1,676	78,746
2039	10.18	8.90	10.0%	7,852	4,697	5,858	79,773	13,856	7,236	6,665	1,721	81,494
2040	10.17	9.20	8.2%	8,074	4,094	6,029	81,822	14,264	7,479	6,836	1,771	83,593
2041	10.19	9.40	8.2%	8,257	4,230	6,172	83,966	14,727	7,737	7,048	1,829	85,795
2042	10.24	9.60	8.2%	8,437	4,372	6,348	86,249	15,201	8,012	7,248	1,887	88,136
2043	10.25	9.80	8.2%	8,678	4,525	6,525	88,622	15,671	8,296	7,433	1,946	90,568
2044	10.17	10.00	8.2%	9,000	4,687	6,705	91,014	16,137	8,585	7,611	2,004	93,018
2045	10.08	10.10	8.2%	9,319	4,856	6,881	93,431	16,655	8,889	7,830	2,068	95,499
2050	9.78	10.10	8.2%	10,945	5,817	7,845	106,464	19,766	10,665	9,185	2,454	108,918
2055	9.48	9.90	8.2%	12,836	7,021	8,942	121,185	23,525	12,915	10,710	2,920	124,105
2060	9.31	9.60	8.2%	14,957	8,496	10,243	138,692	27,891	15,702	12,304	3,462	142,154
2065	9.19	9.40	8.2%	17,488	10,286	11,824	160,064	32,974	19,084	14,024	4,093	164,157
2070	9.05	9.30	8.2%	20,653	12,466	13,736	185,946	39,083	23,185	16,062	4,851	190,797
2075	8.82	9.10	8.2%	24,679	15,129	15,993	216,398	46,627	28,169	18,663	5,788	222,186
2079	8.65	8.90	10.0%	28,666	21,064	18,166	247,233	53,987	32,925	21,306	6,701	253,934

<sup>a</sup> The fair market value of the assets in the RR Account and NRRIT as of the close of the fiscal year (September 30) divided by the total benefits and administrative expenses paid from the RR Account and NRRIT during the fiscal year.

<sup>b</sup> The average of the account benefits ratios for the 10 most recent fiscal years ending before the calendar year.

<sup>c</sup> Includes payroll taxes and income taxes on benefits.

<sup>d</sup> Includes investment income and transfers from SSEB Account.

<sup>e</sup> Other income includes financial interchange income, advances from general revenues, and interest income. Other expense includes repayment of advances from general revenues and transfers to the NRRIT.

Table 2-II. Progress of the Combined National Railroad Retirement Investment Trust (NRRIT) and Railroad Retirement (RR) Account, and the Social Security Equivalent Benefit (SSEB) Account under Employment Assumption II  
(Dollar amounts in millions)

Calendar year	Average			Combined NRRIT and RR Account				SSEB Account				Combined balance, end year
	Account benefits ratio <sup>a</sup>	account benefits ratio <sup>b</sup>	Tier 2 tax rate	Benefits and administration	Tax income <sup>c</sup>	Other income <sup>d</sup>	Balance, end year	Benefits and administration	Tax income <sup>c</sup>	Other income and expense <sup>e</sup>	Balance, end year	
2006	7.37	6.40	17.0%	\$4,005	\$2,622	\$2,196	\$29,204	\$5,699	\$2,411	\$3,226	\$709	\$29,913
2007	7.18	6.60	16.0%	4,193	2,563	2,212	29,786	5,838	2,484	3,372	727	30,513
2008	6.97	6.80	16.0%	4,401	2,633	2,248	30,266	6,013	2,547	3,487	748	31,014
2009	6.75	6.90	16.0%	4,596	2,698	2,279	30,648	6,219	2,609	3,635	774	31,422
2010	6.54	6.90	16.0%	4,786	2,762	2,303	30,927	6,449	2,671	3,807	803	31,730
2011	6.29	7.00	15.0%	4,984	2,674	2,278	30,895	6,682	2,732	3,979	832	31,727
2012	6.05	6.90	16.0%	5,185	2,891	2,318	30,920	6,923	2,795	4,158	861	31,781
2013	5.82	6.90	16.0%	5,373	2,958	2,318	30,823	7,180	2,862	4,350	893	31,716
2014	5.60	6.80	16.0%	5,553	3,025	2,310	30,604	7,445	2,931	4,546	926	31,530
2015	5.37	6.70	16.0%	5,727	3,093	2,294	30,264	7,713	3,004	4,743	960	31,224
2016	5.16	6.40	17.0%	5,877	3,331	2,168	29,887	7,990	3,080	4,910	960	30,847
2017	4.99	6.20	17.0%	5,998	3,404	2,213	29,506	8,266	3,150	5,185	1,029	30,535
2018	4.87	6.00	18.0%	6,097	3,655	2,234	29,299	8,531	3,223	5,341	1,061	30,360
2019	4.77	5.80	18.0%	6,174	3,735	2,225	29,085	8,781	3,300	5,513	1,093	30,178
2020	4.69	5.60	18.0%	6,234	3,816	2,217	28,884	9,014	3,378	5,665	1,121	30,005
2021	4.60	5.40	18.0%	6,278	3,897	2,086	28,589	9,228	3,458	5,797	1,148	29,737
2022	4.56	5.20	18.0%	6,303	3,981	2,196	28,463	9,423	3,541	5,906	1,172	29,635
2023	4.53	5.10	18.0%	6,324	4,065	2,194	28,398	9,600	3,625	5,998	1,194	29,592
2024	4.51	5.00	18.0%	6,349	4,149	2,197	28,395	9,764	3,708	6,077	1,214	29,609
2025	4.50	4.90	18.0%	6,377	4,234	2,202	28,454	9,924	3,790	6,154	1,234	29,688
2026	4.48	4.80	18.0%	6,408	4,319	2,119	28,485	10,088	3,873	6,235	1,254	29,739
2027	4.49	4.70	18.0%	6,442	4,407	2,219	28,669	10,251	3,957	6,314	1,274	29,943
2028	4.49	4.70	18.0%	6,489	4,496	2,237	28,913	10,418	4,041	6,397	1,295	30,208
2029	4.50	4.60	18.0%	6,552	4,586	2,259	29,206	10,590	4,126	6,485	1,316	30,522
2030	4.50	4.60	18.0%	6,624	4,680	2,283	29,544	10,774	4,212	6,585	1,339	30,883
2031	4.50	4.60	18.0%	6,692	4,776	2,254	29,882	10,974	4,303	6,696	1,364	31,246
2032	4.53	4.60	18.0%	6,746	4,880	2,341	30,356	11,186	4,400	6,812	1,390	31,746
2033	4.58	4.60	18.0%	6,793	4,988	2,381	30,932	11,412	4,504	6,936	1,418	32,350
2034	4.64	4.60	18.0%	6,850	5,102	2,430	31,614	11,641	4,612	7,057	1,446	33,060
2035	4.70	4.60	18.0%	6,931	5,222	2,486	32,392	11,876	4,724	7,181	1,475	33,867
2036	4.76	4.60	18.0%	7,013	5,347	2,521	33,247	12,130	4,840	7,321	1,506	34,753
2037	4.86	4.60	18.0%	7,082	5,482	2,618	34,265	12,395	4,968	7,460	1,539	35,804
2038	4.94	4.70	18.0%	7,196	5,625	2,702	35,395	12,651	5,098	7,584	1,571	36,966
2039	5.00	4.70	18.0%	7,361	5,773	2,791	36,598	12,897	5,229	7,699	1,601	38,199
2040	5.08	4.80	18.0%	7,495	5,929	2,882	37,914	13,182	5,371	7,847	1,636	39,550
2041	5.20	4.80	18.0%	7,590	6,094	2,976	39,394	13,506	5,525	8,021	1,676	41,070
2042	5.35	4.90	18.0%	7,683	6,272	3,106	41,090	13,820	5,692	8,167	1,715	42,805
2043	5.50	5.00	18.0%	7,830	6,462	3,242	42,964	14,120	5,864	8,294	1,753	44,717
2044	5.61	5.10	18.0%	8,041	6,660	3,389	44,971	14,408	6,038	8,406	1,788	46,759
2045	5.74	5.20	18.0%	8,229	6,868	3,541	47,151	14,737	6,224	8,554	1,829	48,980
2050	6.75	5.80	18.0%	9,151	8,100	4,584	61,904	16,640	7,347	9,343	2,066	63,970
2055	8.08	6.70	16.0%	10,193	8,725	6,073	82,639	18,845	8,826	10,077	2,339	84,978
2060	9.45	8.00	12.0%	11,328	8,125	7,878	107,197	21,338	10,692	10,711	2,649	109,846
2065	10.12	9.30	8.2%	12,711	7,018	9,471	128,336	24,227	12,960	11,344	3,007	131,343
2070	10.38	10.10	8.2%	14,556	8,466	11,094	150,833	27,797	15,711	12,183	3,450	154,283
2075	10.58	10.40	8.2%	17,058	10,246	13,196	179,923	32,403	19,060	13,470	4,022	183,945
2079	10.65	10.60	8.2%	19,635	11,958	15,262	208,428	37,062	22,262	14,957	4,601	213,029

<sup>a</sup> The fair market value of the assets in the RR Account and NRRIT as of the close of the fiscal year (September 30) divided by the total benefits and administrative expenses paid from the RR Account and NRRIT during the fiscal year.

<sup>b</sup> The average of the account benefits ratios for the 10 most recent fiscal years ending before the calendar year.

<sup>c</sup> Includes payroll taxes and income taxes on benefits.

<sup>d</sup> Includes investment income and transfers from SSEB Account.

<sup>e</sup> Other income includes financial interchange income, advances from general revenues, and interest income. Other expense includes repayment of advances from general revenues and transfers to the NRRIT.

Table 2-III. Progress of the Combined National Railroad Retirement Investment Trust (NRRIT) and Railroad Retirement (RR) Account, and the Social Security Equivalent Benefit (SSEB) Account under Employment Assumption III  
(Dollar amounts in millions)

Calendar year	Average			Combined NRRIT and RR Account				SSEB Account				Combined balance, end year
	Account benefits ratio <sup>a</sup>	account benefits ratio <sup>b</sup>	Tier 2 tax rate	Benefits and administration	Tax income <sup>c</sup>	Other income <sup>d</sup>	Balance, end year	Benefits and administration	Tax income <sup>c</sup>	Other income and expense <sup>e</sup>	Balance, end year	
2006	7.36	6.40	17.0%	\$4,005	\$2,603	\$2,196	\$29,184	\$5,699	\$2,394	\$3,243	\$709	\$29,893
2007	7.17	6.60	16.0%	4,193	2,514	2,208	29,713	5,838	2,435	3,420	727	30,440
2008	6.93	6.80	16.0%	4,401	2,552	2,240	30,104	6,013	2,468	3,567	748	30,852
2009	6.69	6.90	16.0%	4,595	2,584	2,262	30,354	6,219	2,496	3,748	774	31,128
2010	6.45	6.90	16.0%	4,785	2,613	2,275	30,457	6,449	2,522	3,956	803	31,260
2011	6.19	6.90	16.0%	4,983	2,640	2,241	30,355	6,682	2,547	4,164	832	31,187
2012	5.91	6.90	16.0%	5,184	2,668	2,269	30,109	6,922	2,572	4,380	861	30,970
2013	5.62	6.80	16.0%	5,371	2,696	2,246	29,680	7,179	2,600	4,611	893	30,573
2014	5.34	6.70	16.0%	5,551	2,724	2,212	29,066	7,443	2,629	4,846	926	29,992
2015	5.04	6.60	16.0%	5,723	2,752	2,165	28,259	7,709	2,660	5,083	959	29,218
2016	4.75	6.30	17.0%	5,872	2,923	2,001	27,312	7,984	2,693	5,290	959	28,271
2017	4.48	6.10	17.0%	5,991	2,951	2,002	26,274	8,256	2,719	5,606	1,027	27,301
2018	4.24	5.80	18.0%	6,088	3,125	1,971	25,282	8,516	2,746	5,802	1,060	26,342
2019	4.01	5.50	18.0%	6,162	3,153	1,901	24,174	8,760	2,775	6,015	1,090	25,264
2020	3.78	5.30	18.0%	6,219	3,180	1,824	22,959	8,984	2,805	6,207	1,118	24,077
2021	3.53	5.00	18.0%	6,258	3,210	1,615	21,525	9,189	2,837	6,377	1,143	22,668
2022	3.30	4.70	18.0%	6,277	3,243	1,638	20,129	9,371	2,873	6,520	1,166	21,295
2023	3.06	4.50	18.0%	6,292	3,277	1,540	18,653	9,532	2,910	6,643	1,186	19,839
2024	2.80	4.20	18.0%	6,310	3,311	1,434	17,089	9,678	2,946	6,750	1,204	18,293
2025	2.56	3.90	19.0%	6,329	3,504	1,327	15,591	9,818	2,981	6,854	1,221	16,812
2026	2.29	3.70	19.0%	6,350	3,539	1,126	13,906	9,957	3,016	6,958	1,238	15,144
2027	2.02	3.50	19.0%	6,371	3,577	1,095	12,208	10,091	3,051	7,056	1,254	13,462
2028	1.75	3.20	20.0%	6,403	3,778	977	10,560	10,225	3,085	7,156	1,271	11,831
2029	1.47	3.00	20.0%	6,448	3,818	856	8,785	10,359	3,119	7,257	1,287	10,072
2030	1.23	2.70	23.0%	6,499	4,361	744	7,391	10,500	3,153	7,364	1,305	8,696
2031	1.07	2.40	27.0%	6,543	5,088	611	6,547	10,651	3,191	7,478	1,323	7,870
2032	0.95	2.20	27.0%	6,570	5,156	609	5,741	10,806	3,235	7,590	1,342	7,083
2033	0.82	2.00	27.0%	6,587	5,229	552	4,935	10,971	3,284	7,707	1,362	6,297
2034	0.70	1.70	27.0%	6,611	5,311	497	4,132	11,132	3,337	7,815	1,382	5,514
2035	0.57	1.50	27.0%	6,653	5,397	442	3,318	11,291	3,391	7,920	1,402	4,720
2036	0.44	1.30	27.0%	6,693	5,488	357	2,470	11,461	3,449	8,033	1,423	3,893
2037	0.32	1.20	27.0%	6,714	5,593	327	1,676	11,630	3,517	8,134	1,444	3,120
2038	0.21	1.00	27.0%	6,773	5,704	275	883	11,781	3,585	8,214	1,462	2,345
2039	0.08	0.80	27.0%	6,865	5,820	221	59	11,916	3,654	8,279	1,479	1,538
2040	0.07	0.70	27.0%	6,906	5,948	899	-	12,086	3,734	7,635	762	762
2041	0.07	0.60	27.0%	6,910	6,086	824	-	12,277	3,823	7,751	60	60
2042	-0.01	0.50	27.0%	6,914	6,240	145	(528)	12,441	3,922	8,459	-	(528)
2043	-0.09	0.40	27.0%	6,967	6,402	47	(1,045)	12,583	4,022	8,561	-	(1,045)
2044	-0.15	0.30	27.0%	7,066	6,572	12	(1,528)	12,707	4,123	8,585	-	(1,528)
2045	-0.21	0.20	27.0%	7,122	6,754	(17)	(1,914)	12,867	4,235	8,632	-	(1,914)
2050	-0.15	-0.20	27.0%	7,369	7,868	-	(1,362)	13,706	4,928	8,778	-	(1,362)
2055	0.67	-0.10	27.0%	7,671	9,384	308	5,212	14,639	5,871	8,926	561	5,773
2060	2.77	0.80	27.0%	8,076	11,322	1,499	23,001	15,731	7,077	8,893	1,581	24,582
2065	6.45	2.80	23.0%	8,750	11,763	4,156	57,393	17,115	8,544	8,609	2,124	59,517
2070	9.30	5.90	18.0%	9,819	11,310	6,648	92,153	19,033	10,330	8,758	2,363	94,516
2075	11.15	9.00	8.2%	11,389	6,733	9,286	126,756	21,748	12,513	9,311	2,700	129,456
2079	11.37	10.50	8.2%	13,023	7,852	10,793	147,713	24,637	14,608	10,127	3,058	150,771

<sup>a</sup> The fair market value of the assets in the RR Account and NRRIT as of the close of the fiscal year (September 30) divided by the total benefits and administrative expenses paid from the RR Account and NRRIT during the fiscal year.

<sup>b</sup> The average of the account benefits ratios for the 10 most recent fiscal years ending before the calendar year.

<sup>c</sup> Includes payroll taxes and income taxes on benefits.

<sup>d</sup> Includes investment income and transfers from SSEB Account.

<sup>e</sup> Other income includes financial interchange income, advances from general revenues, and interest income. Other expense includes repayment of advances from general revenues and transfers to the NRRIT.

Table 3. Present value of benefits in millions of dollars

	Employment assumption I			Employment assumption II			Employment assumption III		
	Tier 2 <sup>a</sup>	Tier 1 liability	Total	Tier 2 <sup>a</sup>	Tier 1 liability	Total	Tier 2 <sup>a</sup>	Tier 1 liability	Total
<b>Employee annuities</b>									
Retired	\$14,372	\$ 5,417	\$19,789	\$14,372	\$ 5,417	\$19,789	\$14,372	\$ 5,417	\$19,789
Active	17,281	8,589	25,869	17,281	8,589	25,869	17,281	8,589	25,869
Inactive	1,379	525	1,904	1,379	525	1,904	1,379	525	1,904
Future entrants	<u>5,557</u>	<u>2,041</u>	<u>7,598</u>	<u>4,174</u>	<u>1,537</u>	<u>5,711</u>	<u>2,934</u>	<u>1,082</u>	<u>4,015</u>
Total	38,589	16,572	55,160	37,206	16,068	53,274	35,965	15,612	51,578
<b>Spouse annuities</b>									
Retired	4,041	1,402	5,443	4,041	1,402	5,443	4,041	1,402	5,443
Active	4,324	2,430	6,754	4,324	2,430	6,754	4,324	2,430	6,754
Inactive	297	95	392	297	95	392	297	95	392
Future entrants	<u>1,121</u>	<u>358</u>	<u>1,479</u>	<u>845</u>	<u>271</u>	<u>1,117</u>	<u>595</u>	<u>192</u>	<u>787</u>
Total	9,784	4,284	14,068	9,508	4,198	13,706	9,258	4,118	13,376
<b>Survivor annuities</b>									
Retired & deceased	5,094	849	5,943	5,094	849	5,943	5,094	849	5,943
Active	2,124	263	2,388	2,124	263	2,388	2,124	263	2,388
Inactive	67	24	91	67	24	91	67	24	91
Future entrants	<u>761</u>	<u>156</u>	<u>917</u>	<u>577</u>	<u>117</u>	<u>694</u>	<u>408</u>	<u>83</u>	<u>491</u>
Total	8,046	1,292	9,338	7,862	1,253	9,116	7,693	1,219	8,912
<b>All annuities combined</b>									
Retired & deceased	23,507	7,668	31,175	23,507	7,668	31,175	23,507	7,668	31,175
Active	23,729	11,281	35,011	23,729	11,281	35,011	23,729	11,281	35,011
Inactive	1,743	644	2,387	1,743	644	2,387	1,743	644	2,387
Future entrants	<u>7,439</u>	<u>2,554</u>	<u>9,994</u>	<u>5,597</u>	<u>1,926</u>	<u>7,523</u>	<u>3,937</u>	<u>1,356</u>	<u>5,293</u>
Total annuities	\$56,419	\$22,147	\$78,567	\$54,576	\$21,519	\$76,095	\$52,916	\$20,949	\$73,865
Lump sum payments			<u>73</u>			<u>73</u>			<u>73</u>
Total benefits			\$78,640			\$76,168			\$73,939

Note: Detail may not add to totals due to rounding.

<sup>a</sup> Includes supplemental annuity benefits.

Table 4. Present value of benefits as a percentage of the present value of tier 2 payroll

	Employment assumption I			Employment assumption II			Employment assumption III		
	Tier 2 <sup>a</sup>	Tier 1 liability	Total	Tier 2 <sup>a</sup>	Tier 1 liability	Total	Tier 2 <sup>a</sup>	Tier 1 liability	Total
<b>Employee annuities</b>									
Retired	4.47%	1.68%	6.16%	5.39%	2.03%	7.43%	6.56%	2.47%	9.03%
Active	5.37	2.67	8.05	6.48	3.22	9.71	7.88	3.92	11.80
Inactive	0.43	0.16	0.59	0.52	0.20	0.71	0.63	0.24	0.87
Future entrants	<u>1.73</u>	<u>0.63</u>	<u>2.36</u>	<u>1.57</u>	<u>0.58</u>	<u>2.14</u>	<u>1.34</u>	<u>0.49</u>	<u>1.83</u>
Total	12.00	5.15	17.16	13.96	6.03	19.99	16.41	7.12	23.53
<b>Spouse annuities</b>									
Retired	1.26	0.44	1.69	1.52	0.53	2.04	1.84	0.64	2.48
Active	1.34	0.76	2.10	1.62	0.91	2.53	1.97	1.11	3.08
Inactive	0.09	0.03	0.12	0.11	0.04	0.15	0.14	0.04	0.18
Future entrants	<u>0.35</u>	<u>0.11</u>	<u>0.46</u>	<u>0.32</u>	<u>0.10</u>	<u>0.42</u>	<u>0.27</u>	<u>0.09</u>	<u>0.36</u>
Total	3.04	1.33	4.38	3.57	1.58	5.14	4.22	1.88	6.10
<b>Survivor annuities</b>									
Retired & deceased	1.58	0.26	1.85	1.91	0.32	2.23	2.32	0.39	2.71
Active	0.66	0.08	0.74	0.80	0.10	0.90	0.97	0.12	1.09
Inactive	0.02	0.01	0.03	0.03	0.01	0.03	0.03	0.01	0.04
Future entrants	<u>0.24</u>	<u>0.05</u>	<u>0.29</u>	<u>0.22</u>	<u>0.04</u>	<u>0.26</u>	<u>0.19</u>	<u>0.04</u>	<u>0.22</u>
Total	2.50	0.40	2.90	2.95	0.47	3.42	3.51	0.56	4.07
<b>All annuities combined</b>									
Retired & deceased	7.31	2.38	9.70	8.82	2.88	11.70	10.73	3.50	14.22
Active	7.38	3.51	10.89	8.90	4.23	13.14	10.83	5.15	15.97
Inactive	0.54	0.20	0.74	0.65	0.24	0.90	0.80	0.29	1.09
Future entrants	<u>2.31</u>	<u>0.79</u>	<u>3.11</u>	<u>2.10</u>	<u>0.72</u>	<u>2.82</u>	<u>1.80</u>	<u>0.62</u>	<u>2.41</u>
Total annuities	17.55%	6.89%	24.44%	20.48%	8.07%	28.55%	24.14%	9.56%	33.70%
Lump sum payments			<u>0.02</u>			<u>0.03</u>			<u>0.03</u>
Total benefits			24.46%			28.58%			33.73%

Note: Detail may not add to totals due to rounding.

<sup>a</sup> Includes supplemental annuity benefits.

Table 5. Balance of the Combined National Railroad Retirement Investment Trust (NRRIT) and Railroad Retirement (RR) Account, and the Social Security Equivalent Benefit (SSEB) Account as of December 31, 2004  
(Dollar amounts in millions)

	Combined NRRIT and RR Account	SSEB Account
Securities:		
Market value of NRRIT investments	\$ 27,008	\$ -
Par value specials <sup>a</sup> (including accrued interest)	334	738
Cash accounts	<u>8</u>	<u>12</u>
Balance	\$ 27,350	\$ 750

<sup>a</sup> Par value specials are securities issued by the Treasury directly to the Railroad Retirement and Social Security Equivalent Benefit Accounts, maturing on the first business day of the month following the month of issue. Their yield rate each month is the average yield rate, computed as of the last day of the previous month, of marketable Treasury notes with maturity dates not less than three years away.

Table 6. Actuarial surplus or (deficiency) for National Railroad Retirement Investment Trust and Railroad Retirement Account

	Employment assumption		
	I	II	III
	<u>Present values in millions of dollars</u>		
Funds on hand, 12/31/2004	\$ 27,350	\$ 27,350	\$ 27,350
Retirement taxes	46,687	44,021	41,456
Income taxes on benefits	6,432	6,228	6,044
Available from SSEB Account	<u>1,788</u>	<u>1,742</u>	<u>1,700</u>
Total, present and prospective assets	82,257	79,341	76,550
Benefit payments	78,640	76,168	73,939
Administrative expenses	<u>2,545</u>	<u>2,281</u>	<u>1,996</u>
Total liabilities	<u>81,185</u>	<u>78,449</u>	<u>75,935</u>
Actuarial surplus or (deficiency)	<u>1,072</u>	<u>892</u>	<u>615</u>
One percent of tier 2 payroll	\$ 3,215	\$ 2,665	\$ 2,192
	<u>Present values as a percentage of tier 2 payroll</u>		
Funds on hand, 12/31/2004	8.51%	10.26%	12.48%
Retirement taxes	14.52	16.52	18.91
Income taxes on benefits	2.00	2.34	2.76
Available from SSEB Account	<u>0.56</u>	<u>0.65</u>	<u>0.78</u>
Total, present and prospective assets	25.58	29.77	34.93
Benefit payments	24.46	28.58	33.73
Administrative expenses	<u>0.79</u>	<u>0.86</u>	<u>0.91</u>
Total liabilities	<u>25.25</u>	<u>29.44</u>	<u>34.65</u>
Actuarial surplus or (deficiency)	<u>0.33</u>	<u>0.33</u>	<u>0.28</u>



Table 7. Minimum contribution required under ERISA  
(Dollar amounts in millions)

	Amount or rate		
1. Present value of benefits for former and present employees	\$ 68,646		
2. Present value of administrative expenses for former and present employees	2,056		
3. Present value of tier 2 payroll for present employees	111,016		
4. Normal cost as a percentage of tier 2 payroll	6.00%		
5. Present value of future service costs for present employees = (3) x (4)	6,661		
6. Accrued liability = (1) + (2) - (5)	64,041		
7. Funds on hand, 12/31/2004 <sup>a</sup>	28,100		
8. Unfunded accrued liability = (6) - (7)	35,941		
9. Level amount to fund unfunded accrued liability in 30 years	2,921		
	Employment Assumption		
	I	II	III
10. Level tax rate to fund unfunded accrued liability and meet normal costs for next 30 years	21.50%	23.55%	26.18%
11. Tax rate after 30 years (normal cost rate)	6.00%	6.00%	6.00%

<sup>a</sup> The amount shown is the sum of the NRRIT, RR Account and SSEB Account balances shown in Table 5.

Table 8. Vested dual benefit amounts and average number of beneficiaries

Fiscal year	Vested dual benefit amounts <sup>a</sup> (Millions)	Average number of beneficiaries
2007	\$88	47,000
2008	79	41,000
2009	70	37,000
2010	62	32,000
2011	55	28,000
2012	48	25,000
2013	42	21,000
2014	36	18,000
2015	31	16,000
2016	26	13,000
2017	22	11,000
2018	19	10,000
2019	16	8,000
2020	13	7,000
2021	11	5,000
2022	9	4,000
2023	7	4,000
2024	6	3,000
2025	4	2,000
2026	3	2,000
2027	3	1,000
2028	2	1,000
2029	2	1,000
2030	1	1,000

<sup>a</sup> When projected amounts are used to determine the appropriation needed for benefit payments, a margin must be added to ensure payment of full benefits.

Table 9. Supplemental annuity benefit amounts and average number of beneficiaries

Calendar year	Supplemental benefit amounts (Millions)	Average number of beneficiaries <sup>a</sup>
2006	\$61	122,000
2007	61	121,000
2008	60	121,000
2009	60	120,000
2010	60	120,000
2011	60	120,000
2012	60	120,000
2013	60	119,000
2014	59	119,000
2015	59	118,000
2016	58	117,000
2017	58	115,000
2018	56	113,000
2019	55	110,000
2020	53	106,000
2021	51	102,000
2022	49	98,000
2023	46	93,000
2024	44	88,000
2025	42	83,000
2026	39	78,000
2027	37	73,000
2028	34	68,000
2029	32	64,000
2030	29	59,000
2031	27	54,000
2032	25	50,000
2033	23	45,000
2034	21	41,000
2035	19	37,000
2036	17	33,000
2037	15	30,000
2038	13	26,000
2039	12	23,000
2040	10	20,000
2041	9	17,000
2042	7	15,000
2043	6	13,000
2044	5	10,000
2045	4	9,000

<sup>a</sup> Average number in a year. Excludes cases where the supplemental annuity is totally eliminated because of a private pension. On January 1, 2005, there were about 32,000 of these cases.

Table 10. Average number of railroad retirement annuitants and number of annuitants per full time employee

Calendar year	Average number of annuitants under each employment assumption			Average number of annuitants per full time employee		
	I	II	III	I	II	III
2006	588,600	588,600	588,600	2.55	2.58	2.62
2007	579,300	579,300	579,300	2.53	2.59	2.67
2008	571,500	571,500	571,500	2.51	2.61	2.73
2009	564,600	564,600	564,600	2.50	2.63	2.79
2010	559,100	559,100	559,100	2.50	2.66	2.86
2011	554,100	554,000	554,000	2.50	2.69	2.93
2012	549,700	549,700	549,700	2.50	2.72	3.01
2013	545,700	545,700	545,600	2.50	2.75	3.10
2014	541,900	541,800	541,600	2.50	2.79	3.18
2015	538,100	537,900	537,700	2.50	2.82	3.27
2016	534,100	533,800	533,400	2.51	2.86	3.36
2017	529,400	528,900	528,400	2.50	2.89	3.44
2018	523,800	523,100	522,400	2.50	2.91	3.52
2019	517,300	516,400	515,400	2.49	2.93	3.60
2020	509,900	508,700	507,400	2.47	2.94	3.66
2021	501,800	500,300	498,500	2.45	2.95	3.72
2022	492,800	490,900	488,700	2.42	2.95	3.76
2023	483,400	481,000	478,300	2.40	2.94	3.79
2024	473,700	470,700	467,500	2.37	2.93	3.82
2025	464,100	460,500	456,700	2.34	2.92	3.84
2026	454,700	450,500	445,800	2.31	2.91	3.85
2027	445,400	440,400	435,000	2.28	2.90	3.87
2028	436,600	430,700	424,300	2.25	2.89	3.88
2029	428,100	421,300	414,000	2.23	2.88	3.89
2030	420,300	412,400	404,000	2.20	2.87	3.90
2031	412,900	403,900	394,300	2.18	2.85	3.91
2032	405,800	395,500	384,500	2.16	2.84	3.91
2033	398,900	387,200	374,900	2.14	2.82	3.90
2034	392,400	379,300	365,500	2.11	2.81	3.88
2035	386,400	371,800	356,500	2.09	2.79	3.86
2036	381,000	364,800	347,900	2.08	2.77	3.84
2037	375,800	357,800	339,100	2.06	2.75	3.81
2038	371,100	351,100	330,600	2.05	2.73	3.78
2039	367,000	344,900	322,400	2.03	2.71	3.74
2040	363,300	339,000	314,400	2.02	2.69	3.70
2041	359,800	333,300	306,400	2.01	2.67	3.66
2042	356,400	327,400	298,200	2.00	2.65	3.60
2043	353,300	321,800	290,400	1.99	2.62	3.55
2044	350,700	316,700	283,000	1.98	2.60	3.49
2045	348,600	311,900	275,700	1.98	2.58	3.43
2050	340,300	289,800	241,700	1.95	2.45	3.11
2055	333,300	269,900	212,100	1.91	2.30	2.75
2060	324,800	250,700	186,500	1.87	2.13	2.42
2065	315,000	233,100	165,600	1.81	1.98	2.15
2070	306,000	218,700	150,300	1.76	1.86	1.95
2075	299,300	208,500	140,300	1.72	1.77	1.82
2079	295,800	203,400	135,400	1.70	1.73	1.76

Table 11. Transfers to railroad retirement system under financial interchange with social security system, 1937-2006<sup>a</sup>  
(Millions of dollars)

Determination number	Fiscal years covered	Benefit credits to railroad retirement <sup>b</sup>	Tax credits to social security	Cash transfers to <sup>c</sup> railroad retirement	
				Amount	Year of transfer
1-20	1937-71 d	12,981.3	6,572.3	6,636.9 d	1953-72 d
21	1972	1,217.1	470.9	802.5	1973
22	1973	1,412.8	556.4	930.9	1974
23	1974	1,575.6	653.5	1,010.3	1975
24	1975	1,853.3	718.7	1,238.7	1976
25	1976	1,872.2 f	772.0	1,207.5	1977
26	1977 e	2,556.6 f	1,060.8	1,618.5	1978
27	1978	2,230.3	902.6	1,477.4	1979
28	1979	2,389.5	1,089.9	1,429.9	1980
29	1980	2,683.4	1,204.8	1,614.4	1981
30	1981	2,973.7	1,322.5	1,819.6	1982
31	1982	3,321.9	1,296.0	2,278.6	1983
32	1983	3,471.8	1,287.9	2,425.6	1984
33	1984	3,524.1	1,472.8	2,352.9	1985
34	1985	3,658.5	1,443.1	2,652.8	1986
35	1986	3,744.8	1,398.7	2,614.2	1987
36	1987	3,864.4	1,305.0	2,851.3	1988
37	1988	4,028.8	1,427.3	2,933.5	1989
38	1989	4,149.5	1,418.9	3,049.1	1990
39	1990	4,415.3	1,451.1	3,456.7	1991
40	1991	4,434.7	1,476.5	3,206.4	1992
41	1992	4,720.1	1,523.1	3,435.4	1993
42	1993	4,796.5	1,583.3	3,525.5	1994
43	1994	5,199.6	1,515.5	4,120.1	1995
44	1995	4,836.2 f	1,545.1	3,556.3	1996
45	1996	5,008.0	1,566.8	3,747.2	1997
46	1997	5,114.1	1,615.4	3,819.1	1998
47	1998	5,173.5	1,641.9	3,816.0	1999
48	1999	5,195.6	1,767.5	3,697.6	2000
49	2000	4,767.8 f	1,750.9	3,282.8	2001
50	2001	5,180.5	1,756.9	3,646.8	2002
51	2002	5,217.5	1,748.2	3,747.3	2003
52	2003	5,350.6	1,731.1	3,843.5	2004
53	2004	5,480.8	1,820.0	3,917.3	2005
54	2005	5,527.6	1,906.1	3,946.3	2006
Total	1937-2005	143,928.1	52,773.6	99,708.7	

<sup>a</sup> Financial interchange transactions with the Hospital Insurance Trust Fund are not included. These involve mainly a transfer of collected taxes to the Centers for Medicare and Medicaid Services, with some adjustments for difference in earnings bases under the two systems.

<sup>b</sup> Benefit amounts were credited to RR Account for covered years 1983 and earlier and to SSEB Account for covered years 1984 and later. Amounts include allowances for administrative expenses and adjustments to previous determinations.

<sup>c</sup> Cash transfers were made to RR Account in 1984 and earlier and to SSEB Account in 1985 and later. Transfers include interest, which is not shown in table.

<sup>d</sup> First determination covered period January 1937-June 1952. Initial balance of \$488.2 million was never transferred to social security; only interest was paid until debt was liquidated by subsequent offsets in favor of railroad retirement.

<sup>e</sup> 1977 figure covered 15 months (July 1976 - September 1977) because of change in definition of fiscal year.

<sup>f</sup> Includes adjustment for pre-1957 military service.

## APPENDIX

### Outline of the benefit and financing provisions of the railroad retirement system as amended through December 31, 2005

#### EMPLOYEE BENEFITS

1. Normal age annuity

Requirement of 10 years of service or 5 years of service after 1995 for retirement at social security retirement age (see definition at end of outline). Employees with less than 10 years of service must meet Social Security Act eligibility requirements to receive a tier 1 benefit.

2. Prenormal age annuity

- A. Eligible for unreduced benefit upon later of (1) attainment of age 60 and (2) completion of 30 years of service (60/30 eligibility).
- B. Eligible for reduced benefit with less than 30 years of service upon later of (1) attainment of age 62 and (2) completion of 10 years of service or 5 years of service after 1995. The benefit is reduced by 1/180 for each of the first 36 months and by 1/240 for each additional month the employee is under social security retirement age. (Reduction for age in excess of 36 months applies only to tier 1 benefit if employee had any service before 8-12-1983.)

3. Total and permanent disability annuity

10-year service requirement or 5 years of service after 1995. Benefit may not begin earlier than the later of (1) the first day of the sixth month following date disability begins and (2) the first day of the twelfth month before the month in which the application is filed. Employees with less than 10 years of service and at least 5 years of service after 1995 who meet Social Security eligibility requirements may qualify for a tier 1 benefit only (an age reduced tier 2 benefit would be payable at age 62).

4. Occupational disability annuity

Requirement of 20 years of service or attainment of age 60 with 10 years of service; current connection (see definition at end of outline) required. Benefit may not begin earlier than the later of (1) the first day of the sixth month following date disability begins and (2) the first day of the twelfth month before the month in which the application is filed.

5. Supplemental annuity

Requirement of attainment of age 60 with 30 years of service if retired on or after 7-1-1974, or age 65 with 25 years of service. Must have service before 10-1-1981. Current connection required.

6. Vested dual benefit

- A. Requirement of fully insured (see definition at end of outline) status under Social Security Act effective 12-31-1974 and either (1) 25 years of railroad service before 1975 or (2) 10 years of railroad service before 1975, with some railroad work in 1974 or a current connection on 12-31-1974 or at the time the annuity begins, or
- B. Requirement of fully insured status under Social Security Act as of last year of railroad work before 1975 and 10 years of railroad service before 1975.

## 7. Work restrictions

Suspension of annuity for any month annuitant is employed by a railroad. For disabilities, loss of one month's annuity for each \$400 in excess of \$4,800 earned in a year with the last \$200 of such excess treated as \$400 (no annuity is lost for any month with earnings below \$400). In addition, the tier 1 portion of a regular annuity based on railroad earnings (see definition at end of outline) after 1974 and all social security earnings (see definition at end of outline) is subject to social security work restrictions, unless a social security benefit is also being paid. If annuitant is employed by last non-railroad employer preceding retirement, the tier 2 portion and the supplemental annuity are also affected, being reduced one dollar for each two dollars of earnings, subject to a maximum reduction of 50 percent. All vested dual benefits are subject to social security work restrictions.

## 8. Creditable service (continuity not required)

All service after December 31, 1936. Service before 1937 may be used if annuitant had employment relation on August 29, 1935 or 6 months of service after August 29, 1935 and before 1946. No limit on service except 30-year maximum if pre-1937 service used. Additional service months may be deemed, for years after 1984, where employee does not work in every month of year, but railroad earnings exceed monthly prorations of annual tier 2 maximum earnings creditable.

## 9. Creditable and taxable railroad earnings

From 1966 through 1978, the maximum monthly earnings were one-twelfth of the annual social security maximum. The 1977 social security amendments introduced a difference between the maximum monthly earnings creditable for tier 1 and tier 2 benefits starting in 1979.

before July 1, 1954	\$ 300		<u>Tier 1</u>	<u>Tier 2</u>
July 1, 1954 - May 31, 1959	350	1979	\$1,908.33	\$1,575
June 1, 1959 - Oct. 31, 1963	400	1980	2,158.33	1,700
Nov. 1, 1963 - Dec. 31, 1965	450	1981	2,475	1,850
1966-67	550	1982	2,700	2,025
1968-71	650	1983	2,975	2,225
1972	750	1984	3,150	2,350
1973	900			
1974	1,100			
1975	1,175			
1976	1,275			
1977	1,375			
1978	1,475			

Starting in 1985, earnings are credited on an annual rather than a monthly basis. The annual maximums are:

	<u>Tier 1</u>	<u>Tier 2</u>		<u>Tier 1</u>	<u>Tier 2</u>
1985	\$39,600	\$29,700	1996	\$62,700	\$46,500
1986	42,000	31,500	1997	65,400	48,600
1987	43,800	32,700	1998	68,400	50,700
1988	45,000	33,600	1999	72,600	53,700
1989	48,000	35,700	2000	76,200	56,700
1990	51,300	38,100	2001	80,400	59,700
1991	53,400	39,600	2002	84,900	63,000
1992	55,500	41,400	2003	87,000	64,500
1993	57,600	42,900	2004	87,900	65,100
1994	60,600	45,000	2005	90,000	66,900
1995	61,200	45,300	2006	94,200	69,900

#### 10. Creditable military service and earnings

Military service is creditable in war and national emergency periods, and in some cases between June 15, 1948 and December 15, 1950, if preceded by railroad service in the year of entry into military service or the preceding year.

Earnings: \$160 before 1968  
 \$260 after 1967 but before 1975  
 For each calendar year after 1974, earnings are the same as that credited under social security.

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#### 11. Basic monthly annuity computation

Tier 1: Social security benefit based on combined railroad and social security earnings, less social security benefit actually payable (based on social security earnings only). See item 2 for computation of tier 1 benefit for employees with 60/30 eligibility.

Tier 2: 0.7% of the average monthly compensation (AMC) multiplied by the number of years of service. This amount is then reduced by 25% of the employee's gross vested dual benefit. The AMC is the average of an individual's highest 60 months of railroad earnings up to the tier 2 maximum. For each month of service in a year for which the Railroad Retirement Board's records do not show earnings on a monthly basis, the total earnings for the year divided by the months of service in that year will be considered the monthly earnings for each month of service in the year.

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#### 12. Vested dual benefit computation

A. For employees satisfying requirements in item 6.A., benefit is social security benefit based on railroad earnings through 1974, plus social security benefit based on social security earnings through 1974, less social security benefit based on combined railroad and social security earnings through 1974.

B. For employees satisfying requirements of item 6.B., benefit is the same as in A., except for the exclusion of all earnings after last pre-1975 year employee had railroad employment.

In both cases, benefit might be proportionally reduced so that the total amount paid out in vested dual benefits in any fiscal year does not exceed the total amount appropriated for that year (see item 40).

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#### 13. Supplemental annuity computation

For employees who were entitled to supplemental annuities or who would have been entitled, but for last person service, prior to 1975, the monthly benefit is a minimum of \$45 increased by \$5 for each year of service over 25, with a maximum benefit of \$70. These employees have a reduction in their regular railroad retirement annuity because of the supplemental annuity. For employees first entitled or potentially entitled after 1974, the monthly benefit is a minimum of \$23 increased by \$4 for each year of service over 25, with a maximum benefit of \$43. These employees have no reduction in their regular railroad retirement annuity. Supplemental annuity will be reduced if employee receives a private pension from railroad employer based on employer contributions.

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#### 14. Cost-of-living increases (annually, effective with January 1 payments)

Tier 1: Same as social security increases.

Tier 2: 32.5% of social security increases.

Vested dual benefits: Frozen at the 1974 level, except that social security cost-of-living increases effective between 12-31-1974 and the earlier of January 1, 1982 and the annuity beginning date are included in the benefit computation.

Supplemental annuity: None.

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#### 15. Tax rebate lump sum

Employee who has at least 10 years of railroad service and is not eligible for the vested dual benefit will receive a lump sum at retirement computed by summing for each year from 1951 through 1974 the product of the social security tax rate for the year times the excess of the employee's combined railroad and social security earnings for the year over (approximately) the maximum creditable for the year under the 1937 Act. Survivors of employee may receive refund if employee dies before receiving it.

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## 16. Separation/severance lump sum

Lump sum, equal to tier 2 payroll taxes deducted from separation or severance payments, will be paid at retirement to employees with at least 10 years of service or 5 years of service after 1995 to the extent that separation or severance payments did not yield additional tier 2 service credits.

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## SPOUSE BENEFITS

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## 17. Eligibility

## A. Unreduced annuity:

1. Spouse retiring at age 60 (or any age with a child in care), if (a) employee attained 60/30 eligibility before 7-1-1984 and retired at age 60 or later, (b) employee attained 60/30 eligibility after 6-30-1984 and retired at age 62 or later, (c) employee has 30 or more years of service and retired after 12-31-2001 at age 60 or later, or (d) spouse retired after 12-31-2001, and employee retired from disability, has 30 or more years of service and is age 60 or over.
2. Spouse retiring at social security normal retirement age (or any age with a child in care), if (a) employee retired before 1-1-1975 and is age 65 or over, (b) employee retired after 12-31-1974 and is age 62 or over, or (c) employee retired after 6-30-1974, has 30 or more years of service and is age 60 or over.

## B. Reduced annuity:

1. Spouse retiring at age 60 if employee attained 60/30 eligibility after 6-30-1984 and retired with an age annuity before 1-1-2002 before attaining age 62.
2. Spouse retiring at age 62, if employee has less than 30 years of service, is retired, and has attained age 62. Age reduction is 1/144 for each of the first 36 months spouse is under social security retirement age and 1/240 for each month in excess of 36 that spouse is under retirement age. (Reduction for age in excess of 36 months applies to tier 1, but not tier 2, if employee had any service before 8-12-1983.)

## 18. Work restrictions

Same as employee; in addition, spouse is not paid for any month employee annuity is not payable by virtue of work restrictions, and spouse is reduced \$1 for each \$2 of employee's earnings for last non-railroad employer preceding employee's retirement (see item 7).

## 19. Annuity computation

Tier 1: One-half of social security benefit based on employee's combined railroad and social security earnings. See item 17 for computation of spouse tier 1 in cases where employee is receiving a reduced 60/30 benefit. If spouse is entitled to a social security benefit, tier 1 is reduced by the amount of the benefit, but not below 0. If spouse is entitled to employee annuity or a public service pension, certain additional restrictions apply.

Tier 2: 45% of employee's tier 2 benefit. Spouse receives additional benefit if spouse is also an employee annuitant and either the employee or spouse has railroad service prior to 1975.

## 20. Vested dual benefit

A spouse receiving a vested dual benefit on August 13, 1981 will continue to receive a benefit (adjusted as described in item 12). No vested dual benefits will be awarded after that date.

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## 21. Divorced spouse

Entitled to a tier 1 benefit only. Employee must be age 62 and retired. Divorced spouse must be social security retirement age (or age 62 for reduced benefit), unmarried, and have been married for at least 10 consecutive years to employee.

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## 22. Cost-of-living increases for spouses

Each tier is subject to same percentage increase as corresponding tier of employee benefit.

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## SURVIVOR AND DEATH BENEFITS

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## 23. Residual lump sum death benefit

Payable when it appears no further benefits will derive from deceased employee except possibly to a widow, widower or parent at a future date. In this case, survivor must waive the right to all future benefits based on the deceased employee's railroad service. The amount payable is the sum of 4% of taxable railroad earnings from 1-1-1937 to 12-31-1946, 7% from 1-1-1947 to 12-31-1958, 7-1/2% from 1-1-1959 to 12-31-1961, 8% from 1-1-1962 to 12-31-1965, 8.1% from 1-1-1966 to 12-31-1966, 8.65% from 1-1-1967 to 12-31-1967, 8.8% from 1-1-1968 to 12-31-1968, 9.45% from 1-1-1969 to 12-31-1970, 9.85% from 1-1-1971 to 12-31-1972, 10.1% from 1-1-1973 to 9-30-1973, 5.35% from 10-1-1973 to 12-31-1973, and 5.45% from 1-1-1974 to 12-31-1974. Railroad earnings after 1974 are not taken into account. The amount actually paid is reduced by the amount of benefits paid deriving from the deceased employee.

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## 24. Employee requirement for survivor benefits

All benefits except residual lump sum require deceased employee to have 10 years of railroad service or 5 years of service after 1995 and a current connection. If employee does not meet above conditions, his earnings record is transferred to social security, which pays any survivor benefits.

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## 25. Aged widow's and widower's eligibility

A widow or widower must be age 60 and unremarried. Those age 60-61 are deemed age 62 in computing the benefit. For those born before 1940, the benefit reduction is 19/40% for each month of age under 65 when benefits begin. For those born after 1939, the age reduction depends on the age at retirement and the social security retirement age. In this case, the monthly reduction factor is that percentage which would cause retirement at age 60 to result in a 28.5 percent reduction.

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## 26. Disabled widow's and widower's eligibility

A widow or widower must be at least age 50 and under age 60, unremarried, and totally and permanently disabled if disability occurs within 7 years of employee's death or within 7 years after widowed mother's or father's status terminated. Age reduction is 28.5%. Benefit may not begin earlier than the later of (1) the first day of the sixth month following the date disability begins and (2) the first day of the twelfth month before the month in which the application is filed.

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## 27. Widowed mother's and father's eligibility

Unremarried surviving spouse of a deceased employee who is under social security retirement age and who at the time of filing an application has in his or her care a minor or disabled child of the deceased employee.

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## 28. Divorced widow(er)'s and remarried widow(er)'s eligibility

The following are eligible for a tier 1 benefit only.

- A. Divorced widow(er) - must (1) have been married to employee at least 10 years, be unmarried or remarried after age 60 (after age 50 and disability onset if disabled), and have attained age 60 or age 50 if disabled, or (2) be unmarried at any age with a child of the employee in care.
- B. Remarried widow(er) - must have remarried after age 60 (after age 50 and disability onset if disabled), or the remarriage must have ended. Widow(er) must have attained age 60, be between 50 and 59 and disabled or be any age with a child in care.

Benefits for divorced aged widow(er)s and remarried aged widow(er)s are reduced for the full number of months under social security retirement age.

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## 29. Child's eligibility

A child of a deceased employee must be under 18 or under 19 and a full-time elementary or secondary school student. Unmarried children continuously disabled since before age 22 are also eligible, regardless of age.

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## 30. Parent's eligibility

A parent of a deceased employee who has attained age 60 and received at least one-half of his or her support from the employee will be eligible for an annuity. If the employee died leaving a widow, widower or child who is or might become eligible in the future, the parent will be eligible for a tier 1 benefit only. In certain instances, a remarried parent of a deceased employee will be eligible for a tier 1 benefit.

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## 31. Work restrictions

Annuity not payable for any month in which survivor engages in railroad employment. Entire benefit subject to social security work restrictions.

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## 32. Annuity computation

Tier 1: Amount payable to survivor under Social Security Act, based on the deceased employee's combined railroad and social security earnings after 12-31-1936, less the amount of any social security benefit received. Additional restrictions exist for a widow or widower who also receives an annuity as a railroad employee or who receives a public service pension.

Tier 2: Widow or widower - 50% of employee tier 2 benefit  
 Parent - 35% of employee tier 2 benefit  
 Children - 15% of employee tier 2 benefit for each child  
 The total family tier 2 benefit has a minimum of 35% and a maximum of 80% of the employee's tier 2 benefit (a maximum of 130% is used for the purpose of calculating the widow(er) initial minimum amount).

For a widow or widower an "initial minimum amount" based on the two-tier annuity amount that would have been payable to the railroad employee at the time the widow(er)'s annuity is awarded is computed with a widow(er)'s tier 2 amount equal to 100 percent of the employee's tier 2 amount. Widow(er)s' annuities computed on the basis of the initial minimum amount are not adjusted for annual cost-of-living increases until the total annuity amount is exceeded by the annuity amount the widow(er) would have been paid under prior law (tier 2 amount equal to 50 percent of the employee's tier 2 amount), with all interim cost-of-living increases otherwise payable.

For an aged widow or widower, the total benefit exclusive of any vested dual benefit may not be less than amount received as spouse in month before employee's death.

All percentages are before deductions for work or entitlement to social security benefit or railroad retirement employee annuity.

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## 33. Vested dual benefit for widow or widower

A widow or widower receiving a vested dual benefit on August 13, 1981 will continue to receive a benefit (adjusted as described in item 12). No vested dual benefits will be awarded after that date.

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## 34. Insurance lump sum

Payable if employee leaves no survivor eligible for monthly benefits in the month of his death.

- A. If employee had 10 years of service before 1-1-1975, the benefit is 10 times the basic amount. The basic amount is 52.4% of the first \$75 of average monthly remuneration (AMR), plus 12.8% of the remainder, increased by 1% for each year before 1975 with earnings of \$200 or more. The AMR is combined railroad and social security earnings before 1975 divided by the number of months after 1936 or age 22 and up to retirement or death.
- B. If employee had less than 10 years of service as of 12-31-1974, the amount will be the amount social security would have paid (currently \$255). This amount will only be paid to a widow or widower living with the employee at the time of the employee's death.

## 35. Cost-of-living increases for survivors

Each tier is subject to same percentage increase as corresponding tier of employee benefit.

## FINANCING, INVESTMENTS AND TAXATION OF BENEFITS

## 36. Employee and employer payroll taxes

Employees and employers contribute at the prevailing social security rate up to the tier 1 earnings limit. In addition, employees and employers pay a tier 2 tax up to the tier 2 earnings limit. Tier 2 taxes on both employers and employees are based on the ratio of certain asset balances to the sum of benefits and administrative expenses (the average account benefits ratio).

At the end of each fiscal year (September 30), an Account Benefits Ratio (ABR) is calculated by dividing the fair market value of the assets in the RR Account and the NRRIT (and for years before 2002, the SSEB Account) as of the close of such fiscal year by the total benefits and administrative expenses paid from the RR Account and the NRRIT during such fiscal year. The Average Account Benefits Ratio (AABR), with respect to any calendar year, is then calculated as the average of the account benefits ratios for the 10 most recent fiscal years ending before such calendar year. If the AABR is not a multiple of 0.1, it is increased to the next highest multiple of 0.1. The tier 2 tax rate is determined from a tax rate table based on the AABR.

AABR		Tier 2 tax rate	
At least	But less than	Employer	Employee
	2.5	22.1	4.9
2.5	3.0	18.1	4.9
3.0	3.5	15.1	4.9
3.5	4.0	14.1	4.9
4.0	6.1	13.1	4.9
6.1	6.5	12.6	4.4
6.5	7.0	12.1	3.9
7.0	7.5	11.6	3.4
7.5	8.0	11.1	2.9
8.0	8.5	10.1	1.9
8.5	9.0	9.1	0.9
9.0		8.2	0.0

Contributions to 401(k) deferred compensation plans and the value of employer-paid premiums for group term life insurance coverage in excess of \$50,000 are included in railroad earnings for payroll tax purposes.

## 37. Supplemental annuity tax

As of 1-1-2002, the supplemental annuity work-hour tax has been repealed.

#### 38. Financial interchange

Railroad retirement system pays to social security system the taxes social security would have collected and receives the additional amount of benefits and administrative expenses social security would have paid if railroad employment had been covered under social security. The net difference (including interest) is transferred in the June after the fiscal year for which the transfer is made.

The Railroad Retirement Board estimates the amount and direction of the financial interchange transfer that would be made for each month if transfers were on a current monthly basis. If this estimate favors the railroad retirement system, Treasury advances the amount with interest to the Railroad Retirement Account, as a loan from the general fund, by the middle of the succeeding month. Within 10 days after receipt of the annual financial interchange for a fiscal year, the RRB must repay the amount, with interest, advanced during the fiscal year.

#### 39. Investments

Amounts in the Railroad Retirement Account not needed to pay current administrative expenses and amounts in the Social Security Equivalent Benefit Account not needed to pay current benefits and administrative expenses are transferred to the National Railroad Retirement Investment Trust whose Board of seven trustees is empowered to invest Trust assets in non-governmental assets, such as equities and debt, as well as in governmental securities.

#### 40. Financing of vested dual benefits

General revenue appropriations finance all vested dual benefit payments since September 1981. Beginning October 1, 1981, each annual appropriation is placed in the Dual Benefits Payments Account. Total benefits paid in any fiscal year (starting with 1982) may not exceed the total available in the account. The account may borrow at the end of a fiscal year the amount that the Railroad Retirement Board estimates will be necessary to pay vested dual benefits for the first month of the next fiscal year.

#### 41. Taxability of benefits

The portion of tier 1 benefits equivalent to social security benefits is taxed under the same rules as are social security benefits. Tier 1 benefits in excess of social security equivalent benefits, tier 2 benefits, vested dual benefits, and supplemental annuities are taxed under the rules by which private pensions are taxed.

Revenues from taxes on social security equivalent benefits are transferred to the social security system through the financial interchange. Revenues from taxes on tier 1 benefits in excess of social security equivalent benefits and tier 2 benefits are transferred to the Railroad Retirement Account. Revenues from taxes on vested dual benefits are transferred to the Dual Benefits Payments Account.

### **MISCELLANEOUS PROVISIONS**

#### 42. Benefit preservation

Each year the Railroad Retirement Board must report to the President and Congress the results of a five-year projection of anticipated revenues to and payments from the railroad retirement account. If the results show that the funds in the account will be insufficient to pay full benefits at any time during the five-year period, the report must indicate (1) the first fiscal year in which benefits would have to be reduced because of insufficient funds in the absence of any changes, and (2) the amount of adjustments necessary to preserve financial solvency. Within 180 days after publication of this report, representatives of railroad labor and management are obligated to submit proposals designed to preserve the fund's solvency. The Railroad Retirement Board will publish regulations necessary to provide a constant level of benefits at the maximum level possible and to insure that no individual receives less than what he would have had all his earnings been covered under social security. The Railroad Retirement Board's regulations will take effect beginning with the first year in which benefit reductions will be necessary and continue until legislative action supersedes them.

#### 43. Minimum annuity

The overall minimum guaranty for employees and dependents is 100% of the amount, or the additional amount, the family would receive under the Social Security Act if the employee's railroad earnings after 1936 were credited as social security earnings.

#### 44. Automatic benefit eligibility adjustments

Liberalizations in social security eligibility requirements will automatically be reflected in railroad retirement eligibility requirements, but reductions in social security requirements for categories not entitled to railroad retirement annuities under the 1937 act will not confer railroad retirement eligibility. If the Social Security Act is amended to provide benefits to a class not previously entitled under social security, the new class will also be provided railroad retirement benefits. The amount will be the social security benefit based on the employee's combined railroad and social security earnings.

#### 45. Transfer of credits

Transfer of railroad retirement credits is made to social security if an employee had less than 10 years of railroad service and less than 5 years of service after 1995 or, in the case of a survivor, if the employee lacked a current connection.

## DEFINITIONS

The meanings of terms used in the outline are defined below:

Railroad earnings - earnings derived from covered railroad employment, up to the maximums specified in item 9.

Social security earnings - earnings derived from employment covered under the Social Security Act (excludes railroad earnings), up to the maximums allowed.

Current connection - generally defined as having at least 12 months of railroad service in the 30 months preceding death or retirement. An employee whose last 12 months of railroad service occurred prior to the 30 months before retirement or death may maintain a current connection if the employee did not perform any regular employment between the end of the 30 month period containing the last 12 months of railroad service and the month of retirement or death. For purposes of the supplemental annuity or survivors' benefits, an employee who was terminated involuntarily and without fault on or after October 1, 1975, after 25 years of service and did not thereafter decline an offer of employment in the same class or craft in the railroad industry is deemed to have a current connection.

Fully insured - insured for retirement at age 62 under social security; does not necessarily imply an insured status for disability benefits or for survivor benefits for death before age 62.

Social security benefit - when used in describing the computation of the vested dual benefit, the term "social security benefit" means a primary insurance amount computed by using the social security formula in effect in 1974 and the specified earnings; it does not imply an actual benefit.

Social security retirement age - the age at which an individual may receive an unreduced benefit at retirement under the Social Security Act, as follows:

Year of attainment of early retirement age (62 for employees and spouses, <u>60 for widows and widowers</u> )	Retirement age ( <u>age for unreduced benefit</u> )
1999 or earlier	65 years, 0 months
2000	65 years, 2 months
2001	65 years, 4 months
2002	65 years, 6 months
2003	65 years, 8 months
2004	65 years, 10 months
2005-2016	66 years, 0 months
2017	66 years, 2 months
2018	66 years, 4 months
2019	66 years, 6 months
2020	66 years, 8 months
2021	66 years, 10 months
2022 or later	67 years, 0 months

## TECHNICAL SUPPLEMENT

### GENERAL METHODOLOGY AND ASSUMPTIONS

1. Approach. The 23<sup>rd</sup> valuation presents results under three different employment assumptions. The same set of earnings inflation, price inflation, and interest rate assumptions was used with each of the three employment assumptions. This set of assumptions is discussed in Section V and listed in Table 1 of the valuation report.

A projection of the progress of the railroad retirement fund through 2079 is shown under each of the three employment assumptions. All the projections are based on an open group (that is, they include future entrants). The calculations were arranged so that closed-group valuations, limited to former and present employees, could be obtained as a by-product. A balance sheet deriving actuarial surplus or deficiency is also shown.

2. Basic data. All data concerning current beneficiaries were derived from a "universe" file (file including all beneficiaries as of December 31, 2004). This included information needed to project benefits for this group and to derive exposures and terminations for mortality and remarriage studies.

Active and inactive census data and data needed to study the withdrawal, mortality, and age and disability retirement experience of active employees were also compiled from a universe file.

3. Service tables. For the projections of employees in active service and new entrants, a service month table was prepared.

Five sets of withdrawal rates were used with the differentiation made by attained age. Three sets of rates for disability retirement and two sets of rates for age retirement were used, with the differentiation made by completed years of service. Rates of death in active service are aggregate.

4. Actuarial assumptions.

Mortality after age retirement. Mortality studies for nondisability retirements covering the period 2000-2003 showed that the pattern of improved mortality at the younger ages found in the 1997-2000 experience continued. Based on the thinning of margin and the degree of fit by attained age, a new table, the 2004 RRB Annuitants Mortality Table, was constructed.

Mortality after disability retirement. The overall ratio of actual to expected deaths after disability retirement based on the 22<sup>nd</sup> valuation standard was 98.0% and 101.9% for annuitants with and without disability freeze, respectively. Based on the improvement in mortality and the degree of fit by five-year age group, two new tables, the 2004 RRB Disabled Mortality Table for Annuitants with Disability Freeze and the 2004 RRB Disabled Mortality Table for Annuitants without Disability Freeze, were constructed.

Mortality of employees in active service. Mortality studies for active employees showed an overall ratio of actual to expected deaths of 95.1%. Based on the volatility observed in the mortality experience, the 22<sup>nd</sup> valuation standard, the 1994 RRB Active Service Mortality Table, was retained.

Total termination for spouses. Total termination rates are used in projecting future tier 1 and tier 2 benefits for spouses receiving these benefits on the valuation date. Spouse benefits terminate at either the spouse's or the employee's death. A spouse receiving benefits at the time of the employee's death would begin to receive survivor benefits.

The overall ratio of actual terminations to those expected on the basis of the 22<sup>nd</sup> valuation standard was 101.9%. Based on the improvement in spouse termination since the 1997-2000 period, a new table, the 2004 RRB Spouse Total Termination Table, was constructed.

Probability of a retired employee having an eligible spouse. Projected tier 1 and tier 2 benefits for spouses of active employees and future entrants were determined by applying factors to the projected employee tier 1 and tier 2 benefits, respectively. These factors, shown in Table S-6, reflect the age-by-age probability that an employee annuitant has a spouse receiving benefits. Although the overall ratio of the actual number of spouses on December 31, 2003, to the expected number based on the 22<sup>nd</sup> valuation standard was 100.7% and 101.1%, for 10-29 years of service employees and 30 or more years of service employees, respectively, it has been past practice to update this table for each new valuation.

Mortality of widow annuitants. The ratio of actual to expected deaths for widow annuitants was 114.3% based on the 22<sup>nd</sup> valuation standard, the 1995 RRB Mortality Table for Widows. Recently enacted increases in widow benefits may serve to improve the standard of living of widows and contribute to mortality improvement. Since it is not expected that widow mortality will continue to decline, the 22<sup>nd</sup> valuation standard was retained.

Remarriage of widows. The overall ratio of actual to expected remarriages on the basis of the 22<sup>nd</sup> valuation standard, the 1980 RRB Remarriage Table, was 121.8%. When consideration was given to the increase in the ratio of actual to expected remarriages observed over the years, a new standard, the 1997 RRB Remarriage Table, was constructed.

Total termination for disabled children. The overall ratio of actual terminations to those expected on the basis of the 22<sup>nd</sup> valuation standard, the 1986 RRB Total Termination Table for Disabled Children, was 119.0%. Based on the persistent high ratio of actual to expected terminations over the past three study periods, a new table, the 2004 RRB Total Termination Table for Disabled Children, was constructed.

Withdrawal from the railroad industry. The overall ratio of actual final withdrawals (withdrawals net of re-entrants) to those expected on the basis of the 22<sup>nd</sup> valuation standard was 111.6%. Based on the volatility of withdrawal rates, the reasonable overall fit of the 22<sup>nd</sup> valuation rates, and the fact that more recent experience would point to a decrease in rates, the 22<sup>nd</sup> valuation standard was retained.



Age retirement. A normal age annuity is payable at social security normal retirement age (SSNRA) with 10 years of total service or 5 years of service after 1995. For employees with 30 or more years of service, an unreduced benefit is payable to those who retire after the attainment of age 60. Benefits are reduced for employees who retire from age 62 to SSNRA with 5-29 years of service. A supplemental annuity is payable to employees who have attained age 60 with 30 or more years of service, or attained age 65 with 25 or more years of service.

A comparison between the rates of age retirements assumed in the 22<sup>nd</sup> and 23<sup>rd</sup> valuations and the crude rates during calendar years 2001-2003 is shown in Table S-28. For employees with 5-29 years of service, the assumed 23<sup>rd</sup> valuation rates are close to the 2001-2003 crude rates at ages under 68 and constant for ages over 67. For employees with 30 or more years of service, the assumed 23<sup>rd</sup> valuation rates are close to the crude rates for ages 64-69 and constant for ages over 69. Because of legislated changes in early retirement benefits, the 2002 experience for employees with 30 years of service at ages 60-63 reflects the first year of experience under current law and is not indicative of expected future experience. The recommended rates at ages 60-63 were based on the 2003 experience and preliminary experience compiled for 2004.

Disability retirement. An employee is eligible for disability retirement based on total and permanent disability at any age with at least 10 years of service or 5 years of service after 1995. Eligibility for occupational disability requires (i) permanent disability for an employee's regular railroad occupation, (ii) attainment of age 60 with 10 years of service or any age with 20 years of service, and (iii) a current connection.

For employees with 10-19 years of service, the ratio of actual disability retirements during 2001-2003 to those expected based on the 22<sup>nd</sup> valuation standard was 114.0%. The ratio of actual to expected disability retirements for employees with 20-29 years of service was 109.9%, and for employees with 30 or more years of service it was 102.3%. The overall ratio of actual to expected disability retirements for all employees was 107.6%. Based on these results, a new table of rates of disability retirement was constructed.

Disability retirements are not projected for participants with 5-9 years of service because the benefits are limited to what social security would pay and are reimbursed through the financial interchange. These employees become eligible for tier 2 benefits at age 62 and are treated as vested withdrawals in our projections.

The ratio of actual to expected disability retirements qualifying for a disability freeze based on the 22<sup>nd</sup> valuation standard was 104.7% and 109.4% for employees with 10-19 years of service and 20 or more years of service, respectively. A new table of percentages eligible for a disability freeze was constructed for the 23<sup>rd</sup> valuation. Since there was no clear pattern of difference between the disability freeze rates for the 20-29 years of service group and the 30 or more years of service group, there is a single set of rates for employees with 20 or more years of service. These rates are shown in Table S-11.

Other assumptions. Assumptions involving (1) service months and salary scales, (2) family composition, and (3) the age distribution of new entrants are shown in Tables S-13, S-14, and S-42, respectively.

Investment and administrative expenses. For investment and administrative expenses, best estimates are used in the initial projection years. Thereafter, investment expenses are assumed to equal 0.2% (20 basis points) of the prior year end combined NRRIT and RR Account fund balance. Administrative expenses are assumed to increase at the same rate as the wage increase assumption shown in Table 1 of the valuation report, subject to the following limits. Administrative expenses for the RR Account are limited to 2% of benefits paid from the RR Account and NRRIT. Administrative expenses for the SSEB Account are limited to 0.7% of benefits paid from the SSEB Account.

A complete list of the assumptions and the tables that present them follows.

List of assumptions and tables used in the 23<sup>rd</sup> valuation

Item	Assumption or table
<b>A. Mortality and total termination rates</b>	
1. After age retirement	
(a) Current retirements	Table S-1
(b) Future retirements	Table S-1 with a 1-year rateback in age
2. After disability retirement	
(a) with Disability Freeze	Table S-2
(b) without Disability Freeze	Table S-3
3. Employees in active service	Table S-4
4. Spouses	Table S-5
5. Nondisabled widows	
(a) Widows of deceased employees	Table S-7
(b) Widows coming from future employee deaths	Table S-7 with a 1-year rateback in age
6. Disabled widows	Table S-2
7. Children under age 18	Disregarded
8. Disabled children age 18 and over	Table S-9
<b>B. Remarriage rates for widows</b>	Table S-8
<b>C. Retirement rates</b>	
1. Age retirement	Table S-10
2. Disability (with "disability freeze" percentages)	Table S-11
<b>D. Withdrawal rates</b>	Table S-12
<b>E. Other assumptions</b>	
1. Probability of a retired employee having an eligible spouse	Table S-6
2. Economic assumptions	Table 1 of valuation report
3. Service months and salary scales	Table S-13
4. Family composition	Table S-14
5. Age distribution of future entrants	Table S-42

Table S-1. 2004 RRB Annuitants Mortality Table

Age <sup>a</sup>	1,000q <sub>x</sub>	Age <sup>a</sup>	1,000q <sub>x</sub>
60	6.64	95	264.76
61	7.56	96	284.78
62	8.60	97	305.64
63	9.78	98	327.13
64	11.10	99	347.57
65	12.58	100	364.85
66	14.24	101	377.10
67	16.10	102	382.53
68	18.17	103	383.93
69	20.48	104	385.33
70	23.06	105	386.72
71	25.92	106	388.11
72	29.10	107	389.50
73	32.62	108	390.88
74	36.52	109	392.26
75	40.81	110	1,000.00
76	45.55		
77	50.76		
78	56.47		
79	62.73		
80	69.57		
81	77.03		
82	85.15		
83	93.97		
84	103.52		
85	113.83		
86	124.95		
87	136.90		
88	149.72		
89	163.41		
90	178.01		
91	193.53		
92	209.97		
93	227.33		
94	245.59		

<sup>a</sup> Age nearest birthday.

Table S-2. 2004 RRB Disabled Mortality Table for Annuitants with Disability Freeze<sup>a</sup>

Age <sup>b</sup>	1,000q <sub>x</sub>	Age <sup>b</sup>	1,000q <sub>x</sub>	Age <sup>b</sup>	1,000q <sub>x</sub>
30	17.01	65	38.04	100	380.85
31	17.11	66	40.60	101	385.66
32	17.21	67	43.37	102	388.11
33	17.33	68	46.37	103	389.50
34	17.46	69	49.62	104	390.88
35	17.61	70	53.12	105	392.26
36	17.76	71	56.92	106	393.63
37	17.93	72	61.01	107	395.01
38	18.12	73	65.44	108	396.38
39	18.31	74	70.22	109	397.74
40	18.52	75	75.38	110	1,000.00
41	18.75	76	80.95		
42	18.98	77	86.95		
43	19.23	78	93.42		
44	19.49	79	100.38		
45	19.76	80	107.88		
46	20.05	81	115.94		
47	20.35	82	124.60		
48	20.66	83	133.89		
49	20.98	84	143.87		
50	21.32	85	154.55		
51	21.63	86	165.99		
52	21.91	87	178.22		
53	22.19	88	191.28		
54	22.53	89	205.19		
55	22.96	90	220.01		
56	23.52	91	235.76		
57	24.25	92	252.46		
58	25.19	93	270.15		
59	26.39	94	288.83		
60	27.88	95	308.53		
61	29.60	96	329.24		
62	31.47	97	348.05		
63	33.49	98	362.52		
64	35.67	99	373.28		

<sup>a</sup> Qualified under social security definition of disability.

<sup>b</sup> Age nearest birthday.

Table S-3. 2004 RRB Disabled Mortality Table for Annuitants without Disability Freeze<sup>a</sup>

Age <sup>b</sup>	1,000q <sub>x</sub>	Age <sup>b</sup>	1,000q <sub>x</sub>	Age <sup>b</sup>	1,000q <sub>x</sub>
40	3.13	70	37.69	100	376.05
41	3.19	71	41.23	101	382.37
42	3.26	72	45.08	102	385.33
43	3.32	73	49.27	103	386.72
44	3.45	74	53.81	104	388.11
45	3.78	75	58.75	105	389.50
46	4.15	76	64.10	106	390.88
47	4.55	77	69.89	107	392.26
48	4.99	78	76.17	108	393.63
49	5.48	79	82.95	109	395.01
50	6.01	80	90.29	110	1,000.00
51	6.59	81	98.20		
52	7.23	82	106.72		
53	7.93	83	115.90		
54	8.69	84	125.78		
55	9.53	85	136.38		
56	10.45	86	147.74		
57	11.46	87	159.91		
58	12.57	88	172.93		
59	13.78	89	186.81		
60	15.11	90	201.60		
61	16.56	91	217.32		
62	18.16	92	234.00		
63	19.90	93	251.65		
64	21.81	94	270.30		
65	23.91	95	289.93		
66	26.20	96	310.56		
67	28.70	97	332.17		
68	31.44	98	351.53		
69	34.43	99	365.94		

<sup>a</sup> Not qualified under social security definition of disability.

<sup>b</sup> Age nearest birthday.

Table S-4. 1994 RRB Active Service Mortality Table<sup>a</sup>

Age <sup>b</sup>	1,000q <sub>x-1/2</sub>	Age <sup>b</sup>	1,000q <sub>x-1/2</sub>
		45	1.78
		46	1.89
17	.91	47	2.02
18	.91	48	2.17
19	.92	49	2.33
20	.92	50	2.51
21	.93	51	2.72
22	.94	52	2.95
23	.94	53	3.22
24	.95	54	3.51
25	.96	55	3.85
26	.97	56	4.22
27	.98	57	4.65
28	1.00	58	5.12
29	1.01	59	5.66
30	1.03	60	6.27
31	1.05	61	6.95
32	1.07	62	7.72
33	1.09	63	8.59
34	1.12	64	9.57
35	1.15	65	10.67
36	1.19	66	11.91
37	1.22	67	13.31
38	1.27	68	14.88
39	1.32	69	16.66
40	1.37	70	18.66
41	1.44	71	20.91
42	1.51	72	23.45
43	1.59	73	26.31
44	1.68	74	29.54
		75	33.17

<sup>a</sup> Deaths in active service are those of employees who last worked in the railroad industry in the year in which death occurred or in the preceding calendar year. The exposures correspond to this definition.

<sup>b</sup> Age attained in calendar year of exposure.

Table S-5. 2004 RRB Spouse Total Termination<sup>a</sup> Table

Age <sup>b</sup>	1,000 $q'_x$	Age <sup>b</sup>	1,000 $q'_x$
60	25.41	95	372.00
61	27.29	96	390.44
62	29.34	97	408.50
63	31.56	98	426.20
64	33.97	99	443.52
65	36.60	100	460.47
66	39.46	101	477.04
67	42.56	102	493.23
68	45.95	103	509.05
69	49.64	104	524.49
70	53.65	105	539.55
71	58.03	106	554.23
72	62.81	107	568.54
73	68.01	108	582.48
74	73.69	109	596.04
75	79.88	110	1,000.00
76	86.63		
77	94.00		
78	102.03		
79	110.79		
80	120.34		
81	130.75		
82	142.08		
83	154.42		
84	167.84		
85	182.41		
86	198.23		
87	215.37		
88	233.91		
89	253.93		
90	274.47		
91	294.67		
92	314.54		
93	334.05		
94	353.21		

<sup>a</sup> Mainly death of employee or death of spouse.

<sup>b</sup> Age nearest birthday.



Table S-6. Probability of a retired employee having a spouse eligible for railroad retirement benefits

Age <sup>a</sup> of employee	Employees with 30 or more years of service	Employees with less than 30 years of service
59 and under	0.000	0.000
60	0.258	0.000
61	0.344	0.000
62	0.449	0.147
63	0.536	0.235
64	0.607	0.311
65	0.663	0.376
66	0.706	0.431
67	0.738	0.476
68	0.760	0.511
69	0.774	0.539
70	0.781	0.559
71	0.783	0.573
72	0.782	0.581
73	0.777	0.583
74	0.770	0.582
75	0.760	0.577
76	0.748	0.570
77	0.734	0.560
78	0.718	0.548
79	0.701	0.534
80	0.683	0.518
81	0.665	0.501
82	0.645	0.483
83	0.624	0.464
84	0.601	0.444
85	0.578	0.424
86	0.554	0.404
87	0.528	0.383
88	0.501	0.362
89	0.473	0.340
90	0.444	0.318
91	0.413	0.295
92	0.381	0.272
93	0.348	0.247
94	0.313	0.222
95	0.277	0.195
96	0.239	0.167
97	0.200	0.138
98	0.160	0.107
99 & over	0.117	0.075

<sup>a</sup> Age last birthday.

Table S-7. 1995 RRB Mortality Table for Widows

Age <sup>a</sup>	1,000q <sub>x</sub>	Age <sup>a</sup>	1,000q <sub>x</sub>	Age <sup>a</sup>	1,000q <sub>x</sub>
20	0.23	55	5.42	90	128.50
21	0.25	56	5.93	91	140.66
22	0.27	57	6.49	92	153.98
23	0.30	58	7.11	93	168.56
24	0.33	59	7.78	94	184.52
25	0.36	60	8.52	95	201.99
26	0.39	61	9.32	96	221.00
27	0.43	62	10.21	97	241.15
28	0.47	63	11.17	98	261.92
29	0.52	64	12.23	99	282.85
30	0.56	65	13.39	100	303.44
31	0.62	66	14.66	101	323.26
32	0.68	67	16.04	102	341.87
33	0.74	68	17.56	103	358.88
34	0.81	69	19.23	104	373.89
35	0.89	70	21.05	105	386.55
36	0.97	71	23.04	106	396.55
37	1.06	72	25.22	107	403.60
38	1.16	73	27.61	108	407.43
39	1.27	74	30.22	109	407.86
40	1.39	75	33.08	110	1,000.00
41	1.53	76	36.21		
42	1.67	77	39.64		
43	1.83	78	43.40		
44	2.00	79	47.51		
45	2.19	80	52.00		
46	2.40	81	56.93		
47	2.63	82	62.32		
48	2.88	83	68.22		
49	3.15	84	74.67		
50	3.45	85	81.74		
51	3.77	86	89.48		
52	4.13	87	97.96		
53	4.52	88	107.23		
54	4.95	89	117.38		

<sup>a</sup> Age nearest birthday.

Table S-8. 1997 RRB Remarriage Table  
(Probabilities of remarriage)

Age <sup>a</sup> at widowhood [x]	1,000 $q_{(x)+n}^m$ for n equal to					Age <sup>a</sup> x	1,000 $q_x^m$
	0	1	2	3	4		
20	24.76	56.57	66.98	72.11	61.24	25	45.66
21	23.57	53.82	63.69	68.54	58.18	26	43.35
22	22.42	51.18	60.54	65.12	55.24	27	41.14
23	21.32	48.64	57.51	61.83	52.42	28	39.02
24	20.27	46.21	54.61	58.67	49.71	29	36.98
25	19.25	43.88	51.82	55.64	47.12	30	35.02
26	18.28	41.64	49.14	52.73	44.62	31	33.14
27	17.35	39.49	46.58	49.94	42.23	32	31.34
28	16.45	37.42	44.11	47.27	39.93	33	29.61
29	15.59	35.44	41.74	44.69	37.73	34	27.95
30	14.77	33.54	39.47	42.23	35.61	35	26.36
31	13.97	31.72	37.29	39.86	33.58	36	24.83
32	13.21	29.97	35.20	37.59	31.63	37	23.36
33	12.48	28.29	33.20	35.40	29.76	38	21.95
34	11.78	26.67	31.27	33.31	27.97	39	20.60
35	11.11	25.13	29.42	31.30	26.24	40	19.30
36	10.47	23.64	27.64	29.37	24.59	41	18.05
37	9.85	22.21	25.94	27.52	23.00	42	16.86
38	9.25	20.84	24.31	25.74	21.48	43	15.71
39	8.68	19.53	22.74	24.04	20.02	44	14.61
40	8.14	18.27	21.23	22.40	18.61	45	13.55
41	7.61	17.06	19.79	20.83	17.26	46	12.53
42	7.11	15.90	18.40	19.32	15.97	47	11.56
43	6.62	14.78	17.07	17.88	14.73	48	10.63
44	6.16	13.71	15.79	16.49	13.54	49	9.73
45	5.71	12.69	14.56	15.15	12.40	50	8.87
46	5.29	11.70	13.38	13.87	11.30	51	8.04
47	4.87	10.75	12.25	12.65	10.25	52	7.25
48	4.48	9.85	11.17	11.47	9.24	53	6.49
49	4.10	8.98	10.13	10.34	8.27	54	5.76
50	3.74	8.14	9.13	9.25	7.33	55	5.06
51	3.39	7.34	8.17	8.21	6.44	56	4.38
52	3.06	6.57	7.25	7.21	5.58	57	3.74
53	2.74	5.83	6.37	6.25	4.76	58	3.12
54	2.43	5.12	5.52	5.33	3.97	59	2.52
55	2.13	4.44	4.71	4.44	3.21	60	1.95
56	1.85	3.78	3.93	3.60	2.48	61	1.41
57	1.58	3.15	3.18	2.82	1.76	62	0.89
58	1.31	2.55	2.46	2.04	1.06	63	0.47
59	1.06	1.96	1.76	1.36	0.54	64	0.24
60	0.81	1.41	1.26	0.96	0.34	65	0.14
61	0.61	1.06	0.91	0.71	0.26	66	0.09
62	0.46	0.78	0.67	0.52	0.19	67	0.06
63	0.34	0.58	0.49	0.38	0.14	68	0.04
64	0.26	0.43	0.36	0.28	0.10	69	0.03
65	0.20	0.32	0.27	0.20	0.07	70	0.02
66	0.15	0.24	0.20	0.15	0.05	71	0.01
67	0.11	0.18	0.15	0.11	0.04	72	0.01
68	0.08	0.13	0.11	0.08	0.03	73	0.01
69	0.06	0.10	0.08	0.06	0.02	74	0.01
70	0.04	0.07	0.06	0.04	0.02	75	0.01
71	0.03	0.05	0.04	0.03	0.01	76	0.01
72	0.02	0.04	0.03	0.02	0.01	77	0.01
73	0.01	0.03	0.02	0.01	0.01	78	0.01
74	0.01	0.02	0.01	0.01	0.01	79	0.01
75	0.01	0.01	0.01	0.01	0.01	80	0.01
76	0.01	0.01	0.01	0.01	0.01	81	0.01
77	0.01	0.01	0.01	0.01	0.01	82	0.01
78	0.01	0.01	0.01	0.01	0.01	83	0.01
79	0.01	0.01	0.01	0.01	0.01	84	0.01
80	0.01	0.01	0.01	0.01	0.01	85	0.01
81	0.01	0.01	0.01	0.01	0.01	86	0.01
82	0.01	0.01	0.01	0.01	0.01	87	0.01
83	0.01	0.01	0.01	0.01	0.01	88	0.01
84	0.01	0.01	0.01	0.01	0.01	89	0.01

<sup>a</sup> Age nearest birthday.

Table S-9. 2004 RRB Total Termination Table for Disabled Children

Age <sup>a</sup>	1,000q' <sub>x</sub>	Age <sup>a</sup>	1,000q' <sub>x</sub>	Age <sup>a</sup>	1,000q' <sub>x</sub>
		50	16.97	85	142.28
		51	17.85	86	152.12
		52	18.79	87	162.66
18	21.92	53	19.79	88	173.96
19	21.83	54	20.87	89	186.07
20	21.54	55	22.03	90	199.04
21	21.06	56	23.27	91	212.94
22	20.39	57	24.59	92	227.83
23	19.53	58	26.01	93	243.79
24	18.50	59	27.54	94	260.90
25	17.30	60	29.17	95	279.22
26	15.95	61	30.92	96	298.86
27	14.45	62	32.79	97	319.90
28	13.19	63	34.80	98	342.44
29	12.14	64	36.96	99	366.60
30	11.30	65	39.26	100	379.29
31	10.65	66	41.73	101	384.08
32	10.17	67	44.38	102	386.52
33	9.85	68	47.22	103	387.90
34	9.68	69	50.26	104	389.28
35	9.63	70	53.52	105	390.66
36	9.70	71	57.01	106	392.03
37	9.88	72	60.75	107	393.39
38	10.14	73	64.76	108	394.76
39	10.47	74	69.05	109	396.12
40	10.86	75	73.65	110	1,000.00
41	11.30	76	78.58		
42	11.77	77	83.87		
43	12.27	78	89.53		
44	12.81	79	95.60		
45	13.39	80	102.10		
46	14.01	81	109.06		
47	14.68	82	116.53		
48	15.39	83	124.53		
49	16.15	84	133.10		

<sup>a</sup> Age nearest birthday.

Table S-10. Calendar year rates<sup>a</sup> of immediate<sup>b</sup> age retirement  
(Retirements per 1,000 exposed)

Age <sup>c</sup>	Years of service	
	5-29	30 & over
60		640
61		500
62	160	450
63	130	410
64	100	400
65	430	460
66	320	350
67	300	350
68	250	350
69	250	300
70	250	250
71	250	250
72	250	250
73	250	250
74	250	250
75 & over	250	250

<sup>a</sup> Technically probabilities.

<sup>b</sup> Immediate retirements are defined as those for which the calendar year of retirement is the same as, or the year following, the calendar year of last employment in the railroad industry.

<sup>c</sup> The age interval is from  $x-.5$  to  $x+.5$ , except as indicated below:

<u>Age</u>	<u>Years of service</u>	<u>Interval for</u>	
		<u>Exposure</u>	<u>Retirements</u>
60	30 or more	59.5-60.5	60-60.5
62	5-29	61.5-62.5	62-62.5

Table S-11. Rates<sup>a</sup> of immediate<sup>b</sup> disability retirement and of eligibility for disability freeze<sup>c</sup>

Age <sup>d</sup>	Calendar year rates per 1,000 exposed			Percent of retirements eligible for disability freeze	
	10-19 years of service	20-29 years of service	30 or more years of service	10-19 years of service	20 or more years of service
Under 35	1.0	6.0	4.9	99.1%	38.1%
35	1.3	6.6	5.3	99.1	38.1
36	1.7	7.2	5.8	99.1	38.1
37	2.0	7.9	6.4	99.1	38.2
38	2.4	8.7	7.0	99.1	38.2
39	2.9	9.5	7.7	99.1	38.3
40	3.4	10.5	8.5	99.1	38.5
41	3.9	11.4	9.2	99.1	38.7
42	4.6	12.5	10.1	99.1	38.9
43	5.2	13.7	11.1	99.1	39.2
44	6.0	14.9	12.1	99.1	39.7
45	6.8	16.3	13.2	99.1	40.3
46	7.8	17.7	14.3	99.1	41.1
47	8.8	19.3	15.6	99.1	42.2
48	9.9	21.0	17.0	99.1	43.7
49	11.2	22.9	18.5	99.1	45.7
50	12.6	25.0	20.2	99.1	48.4
51	14.2	27.2	22.0	99.1	52.0
52	15.9	29.5	23.9	99.1	57.0
53	17.8	32.1	26.0	99.1	63.7
54	19.9	35.0	28.3	99.1	72.8
55	22.3	38.0	30.8	99.1	85.0
56	24.9	41.3	33.4	99.1	87.6
57	27.7	44.9	36.4	99.1	87.6
58	30.9	48.8	36.0	99.1	87.6
59	34.5	53.0	32.9	99.1	87.6
60	38.4	57.6	18.6	90.2	87.6
61	42.3	62.5	0.0	90.2	87.6
62	43.7	67.9	0.0	90.2	87.6
63	39.7	68.5	0.0	90.2	87.6
64	24.2	56.1	0.0	90.2	87.6
65	5.9	15.2	0.0	90.2	87.6

<sup>a</sup> Technically probabilities.

<sup>b</sup> Immediate retirements are defined as those for which the calendar year of retirement is the same as, or the year following, the calendar year of last employment in the railroad industry.

<sup>c</sup> Qualified under the social security definition of disability.

<sup>d</sup> Age attained in calendar year of exposure.

Table S-12. Calendar year rates<sup>a</sup> of final withdrawal

Years of service <sup>b</sup>	Attained age <sup>c</sup>				
	Under 25	25-34	35-44	45-54	55 & over
0	0.196	0.148	0.177	0.208	0.269
1	0.171	0.116	0.115	0.106	0.116
2	0.097	0.087	0.077	0.072	0.110
3	0.072	0.072	0.059	0.058	0.103
4	0.062	0.062	0.052	0.047	0.093
5	0.054	0.054	0.046	0.039	0.082
6	0.049	0.049	0.042	0.032	0.071
7	0.044	0.044	0.038	0.028	0.060
8	0.041	0.041	0.035	0.024	0.049
9	0.038	0.038	0.032	0.022	0.040
10	0.036	0.036	0.030	0.021	0.032
11	0.034	0.034	0.028	0.020	0.027
12	0.032	0.032	0.026	0.019	0.023
13	0.030	0.030	0.024	0.018	0.020
14	0.028	0.028	0.023	0.017	0.019
15	0.026	0.026	0.021	0.016	0.018
16	0.024	0.024	0.019	0.015	0.017
17	0.022	0.022	0.017	0.014	0.017
18	0.021	0.021	0.016	0.013	0.016
19	0.019	0.019	0.014	0.013	0.016
20	0.017	0.017	0.013	0.012	0.015
21	0.015	0.015	0.011	0.011	0.014
22	0.013	0.013	0.010	0.010	0.014
23	0.011	0.011	0.009	0.009	0.013
24	0.010	0.010	0.008	0.009	0.012
25	0.008	0.008	0.008	0.008	0.011
26	0.007	0.007	0.007	0.007	0.010
27	0.007	0.007	0.007	0.007	0.010
28	0.006	0.006	0.006	0.006	0.009
29	0.006	0.006	0.006	0.005	0.008
30 & over	0.014	0.014	0.014	0.014	0.022

<sup>a</sup> Technically probabilities.

<sup>b</sup> Rounded up to nearest whole year.

<sup>c</sup> Age attained in calendar year of exposure.

Table S-13. Service months and salary scales

Years of service <sup>a</sup>	Service months	Increase in average monthly salary from prior service level	
		Tier 1	Tier 2
0	6.4		
1	11.2	16.7%	14.9%
2	11.4	11.4%	10.2%
3	11.5	7.6%	6.8%
4	11.5	4.6%	4.0%
5	11.6	2.0%	1.6%
6	11.6	0.8%	0.5%
7	11.6	0.8%	0.5%
8	11.6	0.8%	0.5%
9	11.6	0.8%	0.5%
10	11.6	0.8%	0.5%
11	11.7	0.8%	0.5%
12	11.7	0.8%	0.5%
13	11.7	0.7%	0.5%
14	11.7	0.7%	0.4%
15	11.7	0.7%	0.4%
16	11.7	0.7%	0.4%
17	11.7	0.7%	0.4%
18	11.7	0.7%	0.4%
19	11.7	0.7%	0.4%
20	11.7	0.7%	0.4%
21	11.8	0.7%	0.4%
22	11.8	0.6%	0.4%
23	11.8	0.6%	0.4%
24	11.9	0.6%	0.4%
25	11.9	0.6%	0.4%
26	11.9	0.6%	0.4%
27	11.9	0.6%	0.4%
28	11.9	0.6%	0.4%
29	11.9	0.6%	0.4%
30	11.9	0.6%	0.4%
31	11.9	0.6%	0.4%
32	11.9	0.5%	0.3%
33	11.9	0.5%	0.3%
34	11.9	0.5%	0.3%
35	11.9	0.5%	0.3%
36	11.9	0.5%	0.3%
37	11.9	0.5%	0.3%
38	11.9	0.5%	0.3%
39	11.9	0.5%	0.3%
40	11.9	0.5%	0.3%
41	11.9	0.5%	0.3%
42	11.9	0.5%	0.3%
43	11.9	0.5%	0.3%
44	11.9	0.5%	0.3%
45 & over	11.9	0.5%	0.3%

<sup>a</sup> Rounded up to nearest whole year.



Table S-14. Family characteristics of railroad employees assumed for the valuation of survivor benefits

Age of employee <sup>a</sup>	Percent married							Percent with eligible child	
	Total	Widow age 62 & over	Widow age 60-61	Widow under age 60	Widow under 60 with eligible child				
					Youngest child under 16	Youngest child age 16-17	Youngest child disabled	Minor child	Disabled child
Under 35	72.0	-	-	72.0	58.9	-	-	77.1	-
35 - 39	72.0	-	-	72.0	58.1	2.0	-	83.6	2.0
40 - 44	72.0	-	-	72.0	52.6	6.3	0.3	77.0	2.0
45 - 49	72.0	-	-	72.0	30.4	9.7	0.6	50.7	2.0
50 - 54	72.0	1.5	0.6	69.9	14.2	5.5	1.5	25.7	2.0
55 - 59	72.0	3.5	2.7	65.8	5.8	2.2	1.4	11.0	2.0
60 - 64	72.0	18.7	15.3	38.0	2.4	0.6	0.8	4.4	2.0
65 - 69	72.0	53.0	7.6	11.4	0.7	0.2	0.3	1.8	1.6
70 - 74	72.0	66.2	2.0	3.8	0.4	0.1	0.1	0.8	1.4
75 - 79	67.3	65.0	0.7	1.6	0.2	-	-	0.3	1.0
80 - 84	61.1	60.0	0.3	0.8	0.1	-	-	0.2	0.8
85 - 89	50.2	49.7	0.1	0.4	0.1	-	-	0.1	0.8
90 & over	30.6	30.2	0.1	0.3	-	-	-	-	0.6

Age of employee <sup>a</sup>	Average ages of widows									
	Widow age 62 & over	Widow age 60-61	Widow under age 60	Widow under 60 with eligible child			Average ages of children			Average number of minor children <sup>c</sup>
				Youngest child under 16	Youngest child age 16-17	Youngest child disabled	Youngest child under 16 <sup>b</sup>	All minor children	All disabled children	
Under 35	-	-	31	31	-	-	4	6	-	2.5
35 - 39	-	-	37	37	38	-	7	8	20	2.1
40 - 44	-	-	41	40	42	44	10	11	20	2.0
45 - 49	-	-	45	43	46	48	11	12	21	1.6
50 - 54	64	61	50	46	48	52	11	12	24	1.5
55 - 59	65	61	53	49	51	55	11	12	28	1.4
60 - 64	66	61	56	49	52	56	11	12	31	1.4
65 - 69	67	61	56	49	53	57	11	12	34	1.3
70 - 74	70	61	55	46	53	58	11	12	39	1.3
75 - 79	74	61	54	46	-	-	11	12	43	1.3
80 - 84	78	61	54	46	-	-	11	12	47	1.3
85 - 89	82	61	54	46	-	-	11	12	49	1.3
90 & over	86	61	54	-	-	-	-	-	55	-

<sup>a</sup> Age nearest birthday at time of death.

<sup>b</sup> Includes families with widows under 60 and children under 16 only.

<sup>c</sup> Includes families with minor children only.

## MORTALITY AND REMARRIAGE EXPERIENCE

1. Mortality of age annuitants. The mortality studies conducted for age annuitants are summarized in Tables S-15 through S-17. The tables show actual-to-expected ratios by age, sex, year and duration on the basis of the 22<sup>nd</sup> and 23<sup>rd</sup> valuation standards.
2. Mortality after disability retirement. The mortality studies conducted for disability annuitants are summarized in Tables S-18 through S-20. The tables show select, ultimate and aggregate crude death rates, actual-to-expected ratios, and disability freeze percentages.
3. Mortality in active service. The mortality experience of active railroad employees is shown in Table S-21. The table provides crude rates and actual-to-expected ratios.
4. Total termination, mortality and probability of spouse. Tables S-22 and S-23 show, respectively, the total termination and mortality experience of spouse annuitants between anniversaries of retirement in 2000 and 2003. Spouse mortality is not used directly in any part of the valuation. Table S-24 shows, as of December 31, 2003, the number of retired employees and the number of eligible spouses of employees, by age of employee. The probabilities shown in Table S-6 are based on the results shown in Table S-24.
5. Mortality and remarriage of widows. Table S-25 shows ratios of actual deaths of widow annuitants to those expected on the basis of the 22<sup>nd</sup> valuation standard, which was retained for the 23<sup>rd</sup> valuation. Table S-26 shows ratios of actual remarriages to those expected on the basis of the 1980 RRB Remarriage Table and 1997 RRB Remarriage Table.
6. Termination of disabled children. Table S-27 shows ratios of actual terminations of disabled children annuitants to those expected on the basis of the 22<sup>nd</sup> and 23<sup>rd</sup> valuation standards.

Table S-15. Mortality experience of railroad age annuitants<sup>a</sup> between anniversaries of retirement in 2000 and 2003, by sex and type of retirement

	Attained age <sup>b</sup>								
	All ages	60-64	65-69	70-74	75-79	80-84	85-89	90-94	95 & over
<b>A. Both sexes combined</b>									
Exposed	680,992	52,741	103,264	144,357	162,850	119,618	64,597	25,288	8,277
Actual deaths	43,700	519	1,792	4,642	8,751	10,721	9,184	5,417	2,674
Age specific death rates (per thousand)	64.2	9.8	17.4	32.2	53.7	89.6	142.2	214.2	323.1
Ratio of actual to expected deaths									
1994 GAM males <sup>c</sup>	118.0%	88.6%	95.2%	110.5%	117.8%	120.4%	125.2%	120.9%	120.4%
2001 RRB <sup>d</sup>	102.1%	91.6%	94.4%	98.2%	98.8%	102.1%	104.9%	106.3%	112.3%
2004 RRB <sup>e</sup>	106.0%	104.1%	105.3%	107.2%	105.5%	106.3%	106.4%	104.9%	106.4%
<b>B. Male</b>									
Exposed	610,418	48,547	94,167	132,838	143,316	107,271	57,421	20,744	6,114
Actual deaths	39,729	492	1,684	4,426	8,053	9,966	8,438	4,647	2,023
Age specific death rates (per thousand)	65.1	10.1	17.9	33.3	56.2	92.9	146.9	224.0	330.9
Ratio of actual to expected deaths									
1994 GAM males <sup>c</sup>	122.5%	91.4%	98.1%	114.6%	123.2%	124.8%	129.6%	126.9%	124.1%
2001 RRB <sup>d</sup>	105.9%	94.5%	97.2%	101.8%	103.3%	105.8%	108.6%	111.4%	115.6%
2004 RRB <sup>e</sup>	110.1%	107.3%	108.5%	111.2%	110.3%	110.1%	110.1%	110.0%	109.7%
<b>C. Female</b>									
Exposed	70,574	4,194	9,097	11,519	19,534	12,347	7,176	4,544	2,163
Actual deaths	3,971	27	108	216	698	755	746	770	651
Age specific death rates (per thousand)	56.3	6.4	11.9	18.8	35.7	61.1	104.0	169.5	301.0
Ratio of actual to expected deaths									
1995 RRB Widows <sup>f</sup> , 1-year rateback	109.7%	64.0%	80.0%	79.0%	98.2%	108.7%	117.3%	121.9%	131.3%
2001 RRB <sup>d</sup>	75.2%	59.1%	64.8%	56.8%	65.6%	69.9%	75.8%	83.0%	103.0%
2004 RRB <sup>e</sup>	77.1%	67.1%	72.4%	62.0%	70.0%	72.8%	76.8%	81.8%	97.4%
<b>D. Immediate<sup>g</sup></b>									
Exposed	438,542	34,459	59,375	84,865	104,965	84,495	46,986	17,570	5,827
Actual deaths	29,755	302	1,019	2,732	5,707	7,570	6,709	3,806	1,910
Age specific death rates (per thousand)	67.8	8.8	17.2	32.2	54.4	89.6	142.8	216.6	327.8
Ratio of actual to expected deaths									
2001 RRB <sup>d</sup>	102.6%	82.3%	93.5%	97.9%	99.5%	101.9%	105.4%	107.7%	113.5%
2004 RRB <sup>e</sup>	106.3%	93.5%	104.3%	106.9%	106.2%	106.1%	106.9%	106.3%	107.6%
<b>E. Deferred<sup>g</sup></b>									
Exposed	242,450	18,282	43,889	59,492	57,885	35,123	17,611	7,718	2,450
Actual deaths	13,945	217	773	1,910	3,044	3,151	2,475	1,611	764
Age specific death rates (per thousand)	57.5	11.9	17.6	32.1	52.6	89.7	140.5	208.7	311.8
Ratio of actual to expected deaths									
2001 RRB <sup>d</sup>	101.1%	108.7%	95.6%	98.6%	97.5%	102.5%	103.6%	103.0%	109.2%
2004 RRB <sup>e</sup>	105.4%	123.4%	106.7%	107.7%	104.1%	106.7%	105.0%	101.7%	103.6%

<sup>a</sup> Nondisability retirement.

<sup>b</sup> Age attained during the calendar year in which the year of exposure begins, which is on the date or an anniversary of retirement. Approximates age nearest birthday at the beginning of the year of exposure.

<sup>c</sup> 1994 Group Annuity Mortality Static Table.

<sup>d</sup> 2001 RRB Annuitants Mortality Table.

<sup>e</sup> 2004 RRB Annuitants Mortality Table.

<sup>f</sup> 1995 RRB Mortality Table for Widows.

<sup>g</sup> Immediate retirements are those which occur in the same calendar year as, or the calendar year following, the year of last employment in the railroad industry; all others are deferred retirements.

Table S-16. Mortality experience of railroad age annuitants<sup>a</sup> between anniversaries of retirement in 2000 and 2003, by year

	Attained age <sup>b</sup>								
	All ages	60-64	65-69	70-74	75-79	80-84	85-89	90-94	95 & over
1. 2000-2003 experience									
Exposed	680,992	52,741	103,264	144,357	162,850	119,618	64,597	25,288	8,277
Actual deaths	43,700	519	1,792	4,642	8,751	10,721	9,184	5,417	2,674
Crude rate per 1,000	64.2	9.8	17.4	32.2	53.7	89.6	142.2	214.2	323.1
Ratio Act./Exp. <sup>c</sup>	102.1%	91.6%	94.4%	98.2%	98.8%	102.1%	104.9%	106.3%	112.3%
Ratio Act./Exp. <sup>d</sup>	106.0%	104.1%	105.3%	107.2%	105.5%	106.3%	106.4%	104.9%	106.4%
2. Crude rate per 1,000 for individual years <sup>e</sup>									
2000 - 2001	64.6	11.8	17.5	32.4	56.0	91.9	143.7	208.9	334.6
2001 - 2002	65.2	10.2	17.3	32.9	53.5	90.7	142.8	216.6	325.6
2002 - 2003	62.7	8.0	17.2	31.1	51.7	86.3	140.0	217.4	307.9
3. Ratio Act./Exp. <sup>c</sup> for individual years <sup>e</sup>									
2000 - 2001	104.0%	107.4%	95.0%	99.0%	103.0%	104.6%	105.9%	103.5%	116.2%
2001 - 2002	102.9%	92.3%	94.2%	100.3%	98.3%	103.3%	105.4%	107.4%	113.1%
2002 - 2003	99.5%	77.7%	93.9%	94.9%	94.8%	98.4%	103.3%	108.1%	107.1%
4. Ratio Act./Exp. <sup>d</sup> for individual years <sup>e</sup>									
2000 - 2001	108.0%	121.9%	106.0%	108.0%	110.0%	108.9%	107.4%	102.1%	110.1%
2001 - 2002	106.7%	104.8%	105.1%	109.5%	105.0%	107.5%	106.9%	106.0%	107.2%
2002 - 2003	103.2%	88.3%	104.8%	103.6%	101.2%	102.4%	104.8%	106.7%	101.6%

<sup>a</sup> Nondisability retirement.

<sup>b</sup> Age attained during the calendar year in which the year of exposure begins, which is on the date or an anniversary of retirement. Approximates age nearest birthday at the beginning of the year of exposure.

<sup>c</sup> Expected based on 2001 RRB Annuitants Mortality Table.

<sup>d</sup> Expected based on 2004 RRB Annuitants Mortality Table.

<sup>e</sup> Exposure is between anniversaries of retirement in indicated years.

Table S-17. Mortality ratios for railroad age annuitants on a select and ultimate basis between anniversaries of retirement in 2000 and 2003

Duration	Exposure	Actual deaths	Crude rate per 1,000	Ratio Act./Exp. <sup>a</sup>	Ratio Act./Exp. <sup>b</sup>
0	24,406	201	8.2	76.8%	87.0%
1	19,408	233	12.0	92.8	104.5
2	19,898	277	13.9	95.9	107.6
3	20,072	292	14.5	89.9	100.5
4	19,945	328	16.4	90.7	101.1
5	20,694	410	19.8	98.0	108.8
6	21,201	433	20.4	90.4	99.9
7	22,661	564	24.9	97.4	107.2
8	24,692	682	27.6	96.4	105.6
9	27,045	838	31.0	97.0	105.9
10 & over	460,970	39,442	85.6	103.1	106.2
All durations	680,992	43,700	64.2	102.1%	106.0%

<sup>a</sup> Expected based on 2001 RRB Annuitants Mortality Table.

<sup>b</sup> Expected based on 2004 RRB Annuitants Mortality Table.

Table S-18. Age specific death rates of railroad disability annuitants between anniversaries of retirement in 2000 and 2003, by age and duration

		<u>Select section</u>						
		Age at retirement <sup>a</sup>						
		All ages	Under 40	40-44	45-49	50-54	55-59	60-64
<b>Exposed</b>								
Duration 0	14,906	115	719	2,613	4,856	4,643	1,961	
1	14,175	93	852	2,581	4,482	4,256	1,912	
2	13,254	92	1,022	2,488	4,005	3,851	1,798	
3	12,741	111	1,173	2,503	3,738	3,501	1,717	
4	12,664	148	1,356	2,644	3,479	3,298	1,739	
<b>Actual deaths</b>								
Duration 0	423	b	10	78	126	128	81	
1	327	b	13	42	81	124	66	
2	258	b	11	35	82	74	53	
3	261	b	10	34	73	85	59	
4	225	b	10	36	48	80	51	
<b>Crude rate per 1,000</b>								
Duration 0	28.4	b	13.9	29.9	25.9	27.6	41.3	
1	23.1	b	15.3	16.3	18.1	29.1	34.5	
2	19.5	b	10.8	14.1	20.5	19.2	29.5	
3	20.5	b	8.5	13.6	19.5	24.3	34.4	
4	17.8	b	7.4	13.6	13.8	24.3	29.3	

Ultimate section, durations 5 and over

Attained age <sup>c</sup>	Exposed	Actual deaths	Crude rate per 1,000
Under 50	7,345	97	13.2
50-54	17,400	246	14.1
55-59	23,586	429	18.2
60-64	25,521	762	29.9
65-69	31,563	1,216	38.5
70-74	34,215	1,985	58.0
75-79	26,103	2,230	85.4
80-84	14,387	1,837	127.7
85 & over	9,198	1,908	207.4
All ages	189,317	10,710	56.6

<sup>a</sup> Age attained in calendar year of retirement. Those retiring before birthday in year of attainment of age 65 included in group 60-64.

<sup>b</sup> Fewer than 10 actual deaths.

<sup>c</sup> Age attained during the calendar year in which the year of exposure begins, which is on the date or an anniversary of retirement. Approximates age nearest birthday at the beginning of the year of exposure.

Table S-19. Mortality experience of railroad disability annuitants between anniversaries of retirement in 2000 and 2003, by disability freeze status

Attained age <sup>a</sup>	All disability annuitants			Annuitants with disability freeze					Annuitants without disability freeze				
	Exposed	Actual deaths	Crude rate per 1,000	Exposed	Actual deaths	Crude rate per 1,000	Ratio Act./Exp <sup>b</sup>	Ratio Act./Exp <sup>c</sup>	Exposed	Actual deaths	Crude rate per 1,000	Ratio Act./Exp <sup>d</sup>	Ratio Act./Exp <sup>e</sup>
Under 40	273	f	f	268	f	f	f	f	5	f	f	f	f
40-44	3,162	39	12.3	2,175	36	16.6	85.5%	86.3%	987	f	f	f	f
45-49	16,806	262	15.6	9,356	222	23.7	112.7	115.9	7,450	40	5.4	105.0%	112.1%
50-54	36,178	599	16.6	19,719	463	23.5	99.0	106.8	16,459	136	8.3	108.2	111.7
55-59	43,771	892	20.4	28,195	716	25.4	90.2	103.5	15,577	176	11.3	95.5	98.6
60-64	39,471	1,179	29.9	27,978	962	34.4	94.0	109.3	11,493	217	18.9	100.0	103.9
65-69	33,497	1,272	38.0	22,005	936	42.5	86.2	98.1	11,492	336	29.2	96.3	100.6
70-74	34,215	1,985	58.0	20,001	1,259	62.9	92.8	102.6	14,214	726	51.1	105.6	111.4
75-79	26,103	2,230	85.4	15,320	1,457	95.1	102.9	110.2	10,783	773	71.7	97.9	104.7
80-84	14,387	1,837	127.7	9,500	1,295	136.3	106.9	110.6	4,887	542	110.9	100.0	106.1
85-89	6,260	1,100	175.7	4,304	782	181.7	103.9	103.9	1,956	318	162.6	103.6	103.6
90-94	2,364	608	257.2	1,458	388	266.1	113.1	109.6	906	220	242.8	111.1	106.2
95 & over	574	200	348.4	252	79	313.5	99.7	93.7	322	121	375.8	123.1	113.7
All ages	257,060	12,204	47.5	160,529	8,596	53.5	98.0%	106.0%	96,531	3,608	37.4	101.9%	106.0%

<sup>a</sup> Age attained during the calendar year in which the year of exposure begins, which is on the date or an anniversary of retirement. Approximates age nearest birthday at the beginning of the year of exposure.

<sup>b</sup> Expected based on 2001 RRB Disabled Mortality Table for Annuitants with Disability Freeze.

<sup>c</sup> Expected based on 2004 RRB Disabled Mortality Table for Annuitants with Disability Freeze.

<sup>d</sup> Expected based on 2001 RRB Disabled Mortality Table for Annuitants without Disability Freeze.

<sup>e</sup> Expected based on 2004 RRB Disabled Mortality Table for Annuitants without Disability Freeze.

<sup>f</sup> Fewer than 10 actual deaths.

Table S-20. Percentages of railroad disability annuitants included in the 23rd valuation mortality studies who would have qualified for a benefit under the social security disability standards

Duration and type of freeze decision <sup>a</sup>	Period between anniversaries of retirement					
	2000-2001		2001-2002		2002-2003	
	Exposures	Actual deaths	Exposures	Actual deaths	Exposures	Actual deaths
Duration 0						
Freeze allowed	70.6%	92.6%	70.7%	92.6%	67.2%	94.2%
Freeze disallowed	29.4	7.4	28.4	7.4	25.3	5.8
No freeze decision <sup>a</sup>	0.1	0.0	0.9	0.0	7.5	0.0
Duration 1						
Freeze allowed	69.0	88.8	69.9	87.7	70.1	86.9
Freeze disallowed	30.9	11.2	30.0	12.3	29.0	13.1
No freeze decision	0.1	0.0	0.1	0.0	0.9	0.0
Duration 2						
Freeze allowed	67.4	82.8	68.6	80.2	69.5	85.6
Freeze disallowed	32.6	17.2	31.3	19.8	30.5	14.4
No freeze decision	0.0	0.0	0.1	0.0	0.1	0.0
Duration 3						
Freeze allowed	66.7	85.7	67.1	87.5	68.4	80.9
Freeze disallowed	33.2	14.3	32.9	12.5	31.5	19.1
No freeze decision	0.0	0.0	0.0	0.0	0.1	0.0
Duration 4						
Freeze allowed	65.1	81.5	66.4	79.5	66.6	76.8
Freeze disallowed	34.9	18.5	33.6	20.5	33.3	23.2
No freeze decision	0.0	0.0	0.0	0.0	0.0	0.0
Duration 5 and over						
Freeze allowed	60.5	67.5	60.4	69.1	60.2	68.0
Freeze disallowed	39.5	32.5	39.6	30.9	39.7	32.0
No freeze decision	0.0	0.0	0.0	0.0	0.0	0.0

<sup>a</sup> No decision is made if death occurs within 5 months of onset of disability. For the mortality studies, these were included as though a freeze was allowed.



Table S-21. Mortality experience of active<sup>a</sup> railroad employees during calendar years 1998-2002

Age <sup>b</sup>	Exposed	Actual deaths	Crude rate per 1,000	Ratio Act./Exp. <sup>c</sup>
Under 35	219,919	233	1.1	103.8%
35-39	114,321	143	1.3	101.3
40-44	190,158	326	1.7	111.7
45-49	277,361	542	2.0	95.6
50-54	264,984	748	2.8	95.5
55-59	170,904	759	4.4	96.4
60-64	66,089	389	5.9	81.9
65 & over	7,411	73	9.9	67.5
All ages	1,311,146	3,213	2.5	95.1%

<sup>a</sup> An employee is said to have died in active service if he died before retirement and had last worked in the railroad industry in the calendar year of his death or the calendar year immediately preceding.

<sup>b</sup> Age attained in calendar year of exposure.

<sup>c</sup> Expected deaths based on 1994 RRB Active Service Mortality Table.

Table S-22. Total termination experience of spouse annuitants between anniversaries of retirement in 2000 and 2003<sup>a</sup>

	Attained age <sup>b</sup>							
	All ages	60-64	65-69	70-74	75-79	80-84	85-89	90 & over
1. 2000-2003 experience								
Exposed <sup>c</sup>	486,464	67,315	108,491	122,837	102,920	59,366	20,566	4,969
Actual terminations	40,488	2,156	5,003	8,276	10,144	8,715	4,546	1,648
Crude rate per 1,000	83.2	32.0	46.1	67.4	98.6	146.8	221.0	331.7
Ratio Act./Exp. I <sup>d</sup>	101.9%	99.9%	101.6%	101.7%	100.9%	102.1%	103.8%	105.4%
Ratio Act./Exp. II <sup>e</sup>	106.0%	105.3%	107.0%	106.6%	105.2%	105.6%	106.3%	107.2%
2. Crude rate per 1,000 for individual years								
2000 - 2001	84.1	33.3	47.0	68.0	102.2	152.2	216.9	341.6
2001 - 2002	83.7	30.4	46.2	67.8	99.2	145.8	229.2	321.4
2002 - 2003	81.8	32.3	45.0	66.2	94.0	142.6	217.0	331.8
3. Ratio Act./Exp. for individual years I <sup>d</sup>								
2000 - 2001	104.1%	103.6%	103.3%	102.8%	104.6%	105.9%	101.8%	108.6%
2001 - 2002	102.1%	94.7%	101.9%	102.3%	101.7%	101.5%	107.6%	102.1%
2002 - 2003	99.3%	101.2%	99.5%	99.9%	96.3%	99.0%	102.0%	105.5%
4. Ratio Act./Exp. for individual years II <sup>e</sup>								
2000 - 2001	108.4%	109.2%	108.8%	107.8%	109.0%	109.5%	104.3%	110.4%
2001 - 2002	106.2%	99.8%	107.2%	107.3%	106.0%	105.0%	110.1%	103.8%
2002 - 2003	103.3%	106.7%	104.7%	104.7%	100.3%	102.4%	104.4%	107.3%

<sup>a</sup> Excludes spouses under age 60 with child in care.

<sup>b</sup> Age attained during the calendar year in which the year of exposure begins, which is on the date or an anniversary of retirement. Approximates age nearest birthday at the beginning of the year of exposure.

<sup>c</sup> Exposure is between anniversaries of retirement in indicated years.

<sup>d</sup> Expected based on 2001 RRB Spouse Total Termination Table.

<sup>e</sup> Expected based on 2004 RRB Spouse Total Termination Table.

Table S-23. Mortality experience of spouse annuitants between anniversaries of retirement in 2000 and 2003<sup>a</sup>

	Attained age <sup>b</sup>							
	All ages	60-64	65-69	70-74	75-79	80-84	85-89	90 & over
1. 2000-2003 experience								
Exposed <sup>c</sup>	472,834	66,528	106,683	119,923	99,476	56,513	19,197	4,516
Actual deaths	13,228	581	1,386	2,448	3,255	3,009	1,807	742
Crude rate per 1,000	28.0	8.7	13.0	20.4	32.7	53.2	94.1	164.3
Ratio Act./Exp. <sup>d</sup>	82.7%	80.8%	78.4%	78.5%	80.0%	83.2%	93.1%	97.2%
2. Crude rate per 1,000 for individual years								
2000 - 2001	27.8	8.5	13.0	20.5	33.3	55.1	88.8	175.9
2001 - 2002	28.5	9.2	13.3	20.8	32.7	54.3	98.6	148.6
2002 - 2003	27.7	8.5	12.7	19.9	32.1	50.4	94.9	168.0
3. Ratio Act./Exp. for individual years <sup>d</sup>								
2000 - 2001	83.2%	78.7%	78.3%	78.7%	81.4%	86.0%	87.8%	104.1%
2001 - 2002	83.9%	85.2%	80.0%	80.0%	80.0%	85.1%	97.3%	87.6%
2002 - 2003	81.1%	78.8%	76.9%	76.6%	78.6%	78.7%	94.1%	99.6%

<sup>a</sup> Excludes spouses under age 60 with child in care.

<sup>b</sup> Age attained during the calendar year in which the year of exposure begins, which is on the date or an anniversary of retirement. Approximates age nearest birthday at the beginning of the year of exposure.

<sup>c</sup> Exposure is between anniversaries of retirement in indicated years.

<sup>d</sup> Expected based on 1995 RRB Mortality Table for Widows.

Table S-24. Number of retired employees and number with a spouse eligible for railroad retirement benefits, by attained age of employee on December 31, 2003

Age <sup>a</sup> of employee	30 or more years of service			Less than 30 years of service		
	Number of employees	Number of eligible spouses	Ratio of spouses to employees	Number of employees	Number of eligible spouses	Ratio of spouses to employees
60	4,176	1,078	0.258			
61	4,743	1,648	0.347			
62	4,603	2,054	0.446	3,420	519	0.152
63	4,086	2,147	0.525	3,349	799	0.239
64	4,061	2,496	0.615	3,334	1,001	0.300
65	4,286	2,864	0.668	4,109	1,584	0.385
66	4,370	3,066	0.702	4,141	1,737	0.419
67	4,177	3,089	0.740	3,994	1,864	0.467
68	4,377	3,352	0.766	4,144	2,141	0.517
69	4,670	3,625	0.776	4,106	2,206	0.537
70	4,501	3,483	0.774	4,021	2,222	0.553
71	4,891	3,792	0.775	4,185	2,453	0.586
72	5,195	4,044	0.778	4,099	2,412	0.588
73	5,675	4,415	0.778	4,424	2,580	0.583
74	6,118	4,787	0.782	4,392	2,585	0.589
75	6,839	5,225	0.764	4,746	2,754	0.580
76	7,361	5,554	0.755	4,954	2,839	0.573
77	7,118	5,173	0.727	4,858	2,696	0.555
78	6,651	4,695	0.706	4,547	2,457	0.540
79	6,570	4,611	0.702	4,295	2,239	0.521
80	6,233	4,242	0.681	4,096	2,144	0.523
81	5,695	3,781	0.664	3,620	1,795	0.496
82	5,251	3,419	0.651	3,369	1,606	0.477
83	5,000	3,110	0.622	2,794	1,291	0.462
84	4,213	2,527	0.600	2,344	1,016	0.433
85	3,911	2,269	0.580	2,217	988	0.446
86	3,366	1,908	0.567	1,989	841	0.423
87	2,794	1,487	0.532	1,675	645	0.385
88	2,378	1,188	0.500	1,348	495	0.367
89	1,810	845	0.467	1,118	376	0.336
90	1,430	648	0.453	959	326	0.340
91	1,059	435	0.411	836	254	0.304
92	816	288	0.353	655	157	0.240
93	629	213	0.339	475	108	0.227
94	449	124	0.276	415	83	0.200
95	372	102	0.274	338	57	0.169
96	251	65	0.259	283	43	0.152
97	203	51	0.251	171	25	0.146
98	124	17	0.137	127	20	0.157
99 & over	222	31	0.140	193	19	0.098

<sup>a</sup> Age last birthday.

Table S-25. Mortality experience of widow annuitants between anniversaries of retirement in 2000 and 2003

	Attained age <sup>a</sup>											
	All ages	under 50	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85-89	90-94	95 & over
1. 2000-2003 experience												
Exposed	575,734	2,381	809	586	18,230	39,218	75,306	112,487	130,076	104,845	63,158	28,642
Actual deaths	48,457	10	4	5	198	757	2,147	4,890	8,983	11,761	11,518	8,184
Crude rate per 1,000	84.2	4.2	4.9	8.5	10.9	19.3	28.5	43.5	69.1	112.2	182.4	285.7
Ratio Act./Exp. <sup>b</sup>	114.3%	208.5%	120.8%	129.9%	102.6%	116.5%	110.0%	107.5%	110.3%	114.9%	120.4%	115.4%
2. Crude rate per 1,000 for individual years <sup>c</sup>												
2000 - 2001	83.8	7.1	0.0	19.8	10.0	19.1	28.7	45.3	69.2	112.5	180.2	284.4
2001 - 2002	85.1	2.6	3.7	5.2	9.4	19.2	29.1	41.9	70.6	114.2	186.9	285.3
2002 - 2003	83.6	2.7	11.6	0.0	13.2	19.6	27.7	43.0	67.4	109.7	179.9	287.6
3. Ratio Act./Exp. for individual years <sup>c</sup>												
2000 - 2001	114.6%	358.2%	0.0%	298.4%	94.0%	115.2%	110.9%	112.0%	110.5%	115.3%	118.9%	115.0%
2001 - 2002	115.5%	127.6%	90.1%	78.5%	89.0%	116.0%	112.1%	103.6%	112.8%	117.0%	123.2%	115.2%
2002 - 2003	112.8%	128.7%	282.2%	0.0%	125.3%	118.4%	106.7%	106.5%	107.5%	112.5%	118.9%	116.0%

<sup>a</sup> Age attained during the calendar year in which the year of exposure begins, which is on the date or an anniversary of retirement. Approximates age nearest birthday at the beginning of the year of exposure.

<sup>b</sup> Expected based on 1995 RRB Mortality Table for Widows.

<sup>c</sup> Exposure is between anniversaries of retirement in indicated years.

Table S-26. Remarriage experience of widows between 1991 and 2003 anniversaries of widowhood

	Age <sup>a</sup>									
	All ages	Under 35	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70 & over
<b>1. Exposed</b>										
Duration <sup>b</sup> 0	108,420	173	353	565	613	841	1,027	9,259	15,693	79,897
1	108,867	196	366	575	574	935	2,333	9,885	16,576	77,427
2	108,120	218	376	535	559	932	3,415	10,395	17,248	74,443
3	106,983	232	377	475	533	937	4,432	10,967	17,930	71,100
4	105,637	246	362	426	557	946	5,470	11,575	18,475	67,580
5 or more	2,065,911	230	905	2,024	2,286	3,515	6,921	60,596	141,285	1,848,150
<b>2. Actual remarriages</b>										
Duration <sup>b</sup> 0	179	c	c	c	c	c	c	43	39	80
1	393	c	c	10	c	c	19	85	94	158
2	377	c	11	13	c	c	31	81	101	126
3	321	10	12	c	c	c	34	88	75	84
4	307	c	13	c	c	c	47	86	68	72
5 or more	1,795	c	27	33	30	25	17	309	395	953
<b>3. Crude remarriage rate per 1,000</b>										
Duration <sup>b</sup> 0	1.65	c	c	c	c	c	c	4.64	2.49	1.00
1	3.61	c	c	17.40	c	c	8.14	8.60	5.67	2.04
2	3.49	c	29.22	24.30	c	c	9.08	7.79	5.86	1.69
3	3.00	43.10	31.83	c	c	c	7.67	8.02	4.18	1.18
4	2.91	c	35.87	c	c	c	8.59	7.43	3.68	1.07
5 or more	0.87	c	29.85	16.31	13.13	7.11	2.46	5.10	2.80	0.52
<b>4. Ratio Act./Exp. I<sup>d</sup></b>										
Duration <sup>b</sup> 0	133.3%	c	c	c	c	c	c	163.8%	149.6%	161.0%
1	109.0%	c	c	46.9%	c	c	110.4%	123.1%	113.8%	140.5%
2	115.3%	c	54.2%	71.7%	c	c	129.2%	125.4%	134.0%	139.3%
3	119.5%	74.5%	101.2%	c	c	c	116.7%	139.6%	120.3%	132.3%
4	146.4%	c	125.8%	c	c	c	176.9%	170.8%	144.7%	167.0%
5 or more	122.2%	c	96.6%	79.1%	125.1%	145.7%	61.1%	135.6%	99.2%	136.9%
<b>5. Ratio Act./Exp. II<sup>d</sup></b>										
Duration <sup>b</sup> 0	100.0%	c	c	c	c	c	c	101.1%	93.4%	103.1%
1	100.0%	c	c	109.6%	c	c	87.8%	100.8%	97.6%	101.7%
2	100.0%	c	113.4%	131.5%	c	c	95.2%	94.8%	111.2%	99.1%
3	100.0%	108.3%	115.9%	c	c	c	74.4%	111.0%	99.7%	106.6%
4	100.0%	c	155.6%	c	c	c	87.0%	113.1%	92.7%	103.7%
5 or more	100.0%	c	131.3%	97.4%	112.9%	100.4%	68.8%	101.5%	96.6%	101.0%

<sup>a</sup> For durations 0-4, age nearest birthday on date of employee's death. For durations 5 and over, age nearest birthday at beginning of year of exposure which is on an anniversary of employee's death.

<sup>b</sup> Completed years since employee's death.

<sup>c</sup> Fewer than 10 actual remarriages.

<sup>d</sup> I and II denote expected based on 1980 RRB Remarriage Table and 1997 RRB Remarriage Table, respectively.

Table S-27. Total termination experience of disabled children annuitants between anniversaries of retirement in 2000 and 2003

Age <sup>a</sup>	Exposed	Actual terminations	Ratio Act./Exp.-I <sup>b</sup>	Ratio Act./Exp.-II <sup>c</sup>
Under 25	542	7	71.0%	63.0%
25-29	707	8	71.2	78.1
30-34	1,098	13	87.8	115.3
35-39	2,098	14	55.5	66.7
40-44	3,104	39	104.2	105.9
45-49	3,776	53	105.5	95.1
50-54	3,984	88	131.1	117.1
55-59	4,123	107	113.7	105.2
60-64	3,226	100	102.2	94.6
65-69	2,709	122	115.1	101.4
70-74	2,379	149	125.8	102.8
75-79	1,899	177	139.7	111.5
80-84	1,065	151	142.9	123.9
85 & over	560	109	119.6	111.3
All ages	31,270	1,137	119.0%	106.0%

<sup>a</sup> Age attained during the calendar year in which the year of exposure begins, which is on the date or an anniversary of retirement. Approximates age nearest birthday at the beginning of the year of exposure.

<sup>b</sup> Expected based on 1986 RRB Total Termination Table for Disabled Children.

<sup>c</sup> Expected based on 2004 RRB Total Termination Table for Disabled Children.

## RETIREMENT STUDIES

1. Age retirement. Age retirement studies covering experience during calendar years 2001-2003 are summarized in Tables S-28 through S-30. Table S-28 shows a comparison among crude retirement rates for 2001-2003, the 22<sup>nd</sup> valuation retirement rates, and the 23<sup>rd</sup> valuation retirement rates. Tables S-29 and S-30 show ratios of actual retirements to those expected for employees with 5-29 years of service and for employees with 30 or more years of service, respectively.
2. Disability retirement. Table S-31 shows a comparison of crude disability retirement rates for 2001-2003 with the 22<sup>nd</sup> and 23<sup>rd</sup> valuation standards. Table S-32 shows ratios of actual retirements in 2001-2003 to those expected by age and service.

Table S-33 shows percentages of disability retirements in 2001-2003 that were eligible for a disability freeze. Disability freeze standards are needed because of the financial interchange with social security. Assumptions must be made regarding the percentage of railroad retirement disability annuitants who would qualify under the social security definition of disability. Only these disabilities qualify for reimbursement under the financial interchange.



Table S-28. Rates<sup>a</sup> of immediate age retirement

Age <sup>b</sup>	5-29 years of service			30 or more years of service		
	Assumed rates 22nd valuation	Assumed rates 23rd valuation	2001-2003 Crude rates	Assumed rates 22nd valuation	Assumed rates 23rd valuation	2001-2003 Crude rates
60				0.60	0.64	0.453
61				0.40	0.50	0.456
62	0.20	0.16	0.156	0.40	0.45	0.737
63	0.17	0.13	0.126	0.40	0.41	0.500
64	0.13	0.10	0.093	0.42	0.40	0.409
65	0.53	0.43	0.427	0.46	0.46	0.455
66	0.39	0.32	0.326	0.39	0.35	0.352
67	0.37	0.30	0.295	0.35	0.35	0.343
68	0.33	0.25	0.263	0.31	0.35	0.346
69	0.25	0.25	0.246	0.25	0.30	0.308
70	0.25	0.25	0.211	0.25	0.25	0.273
71	0.25	0.25	0.268	0.25	0.25	0.257
72	0.25	0.25	0.216	0.25	0.25	0.345
73	0.25	0.25	0.233	0.25	0.25	0.233
74	0.25	0.25	c	0.25	0.25	c
75 & over	0.25	0.25	0.128	0.25	0.25	0.142

<sup>a</sup> Technically probabilities, because exposures were not adjusted for other separations.

<sup>b</sup> Age attained in calendar year of exposure.

<sup>c</sup> Insufficient data.

Table S-29. Immediate age<sup>a</sup> retirement experience of railroad employees with 5-29 years of service during calendar years 2001-2003

Age <sup>b</sup>	Exposed <sup>c</sup>	Actual retirements	Crude rate <sup>d</sup> per 1,000	Ratio Act./Exp. I <sup>e</sup>	Ratio Act./Exp. II <sup>e</sup>
62	3,362	523	155.6	77.8%	97.2%
63	2,247	284	126.4	74.3	97.2
64	1,573	147	93.5	71.9	93.5
65	1,277	545	426.8	80.5	99.3
66	567	185	326.3	83.7	102.0
67	342	101	295.3	79.8	98.4
68	213	56	262.9	79.7	105.2
69	126	31	246.0	98.4	98.4
70-74	269	59	219.3	87.7	87.7
75 & over	78	10	128.2	51.3	51.3
All ages	10,054	1,941	193.1	78.5	97.4

<sup>a</sup> Nondisability retirement.

<sup>b</sup> Age attained in calendar year of exposure.

<sup>c</sup> Exposure includes part of the year in which employees were not eligible for age retirement because they were under 62. Employees with 5-9 years of service are included in calendar years 2002 and 2003 only.

<sup>d</sup> Technically probabilities, because exposures were not adjusted for other separations.

<sup>e</sup> I and II denote expected according to rates used in the 22nd and 23rd valuations, respectively.

Table S-30. Immediate age<sup>a</sup> retirement experience of railroad employees with 30 or more years of service during calendar years 2001-2003

Age <sup>b</sup>	Exposed <sup>c</sup>	Actual retirements	Crude rate <sup>d</sup> per 1,000	Ratio Act./Exp. I <sup>e</sup>	Ratio Act./Exp. II <sup>e</sup>
60	11,770	5,328	452.7	75.4%	70.7%
61	7,982	3,641	456.2	114.0	91.2
62	6,141	4,523	736.5	184.1	163.7
63	1,947	973	499.7	124.9	121.9
64	1,158	474	409.3	97.5	102.3
65	800	364	455.0	98.9	98.9
66	494	174	352.2	90.3	100.6
67	315	108	342.9	98.0	98.0
68	211	73	346.0	111.6	98.8
69	156	48	307.7	123.1	102.6
70-74	315	86	273.0	109.2	109.2
75 & over	141	20	141.8	56.7	56.7
All ages	31,430	15,812	503.1	106.4	96.2

<sup>a</sup> Nondisability retirement.

<sup>b</sup> Age attained in calendar year of exposure.

<sup>c</sup> Exposure includes part of the year in which employees were not eligible for age retirement because they were under 60.

<sup>d</sup> Technically probabilities, because exposures were not adjusted for other separations.

<sup>e</sup> I and II denote expected according to rates used in the 22nd and 23rd valuations, respectively.

Table S-31. Rates<sup>a</sup> of immediate<sup>b</sup> disability retirement

Age <sup>c</sup>	10-19 years of service			20-29 years of service			30 or more years of service		
	Assumed rates 22nd valuation	Assumed rates 23rd valuation	2001-2003 Crude rates	Assumed rates 22nd valuation	Assumed rates 23rd valuation	2001-2003 Crude rates	Assumed rates 22nd valuation	Assumed rates 23rd valuation	2001-2003 Crude rates
Under 35	0.0010	0.0010	0.0011	0.0047	0.0060	d	0.0030	0.0049	d
35	0.0013	0.0013	0.0029	0.0053	0.0066	d	0.0034	0.0053	d
36	0.0015	0.0017	0.0027	0.0059	0.0072	d	0.0038	0.0058	d
37	0.0018	0.0020	0.0031	0.0066	0.0079	d	0.0044	0.0064	d
38	0.0022	0.0024	0.0036	0.0074	0.0087	d	0.0050	0.0070	d
39	0.0026	0.0029	0.0033	0.0082	0.0095	d	0.0056	0.0077	d
40	0.0030	0.0034	0.0031	0.0091	0.0105	0.0117	0.0062	0.0085	d
41	0.0034	0.0039	0.0037	0.0100	0.0114	0.0165	0.0069	0.0092	d
42	0.0039	0.0046	0.0050	0.0110	0.0125	0.0112	0.0077	0.0101	d
43	0.0045	0.0052	0.0033	0.0121	0.0137	0.0136	0.0085	0.0111	d
44	0.0051	0.0060	0.0066	0.0133	0.0149	0.0131	0.0095	0.0121	d
45	0.0058	0.0068	0.0073	0.0146	0.0163	0.0167	0.0105	0.0132	d
46	0.0065	0.0078	0.0071	0.0160	0.0177	0.0163	0.0115	0.0143	d
47	0.0073	0.0088	0.0088	0.0175	0.0193	0.0192	0.0127	0.0156	d
48	0.0083	0.0099	0.0117	0.0191	0.0210	0.0193	0.0140	0.0170	d
49	0.0093	0.0112	0.0096	0.0209	0.0229	0.0212	0.0155	0.0185	0.0120
50	0.0104	0.0126	0.0114	0.0228	0.0250	0.0290	0.0170	0.0202	0.0226
51	0.0116	0.0142	0.0124	0.0249	0.0272	0.0320	0.0187	0.0220	0.0240
52	0.0129	0.0159	0.0117	0.0271	0.0295	0.0308	0.0204	0.0239	0.0216
53	0.0144	0.0178	0.0178	0.0295	0.0321	0.0317	0.0224	0.0260	0.0272
54	0.0160	0.0199	0.0190	0.0321	0.0350	0.0329	0.0246	0.0283	0.0305
55	0.0178	0.0223	0.0266	0.0350	0.0380	0.0374	0.0269	0.0308	0.0325
56	0.0198	0.0249	0.0265	0.0380	0.0413	0.0387	0.0295	0.0334	0.0341
57	0.0220	0.0277	0.0236	0.0413	0.0449	0.0368	0.0323	0.0364	0.0320
58	0.0245	0.0309	0.0244	0.0449	0.0488	0.0535	0.0353	0.0360	0.0360
59	0.0271	0.0345	0.0318	0.0488	0.0530	0.0517	0.0386	0.0329	0.0329
60	0.0442	0.0384	0.0601	0.0530	0.0576	0.0557	0.0377	0.0186	0.0186
61	0.0480	0.0423	0.0397	0.0575	0.0625	0.0641	0.0000	0.0000	d
62	0.0521	0.0437	0.0394	0.0624	0.0679	0.0733	0.0000	0.0000	d
63	0.0493	0.0397	0.0417	0.0591	0.0685	0.0685	0.0000	0.0000	d
64	0.0347	0.0242	0.0242	0.0416	0.0561	0.0561	0.0000	0.0000	d
65	0.0061	0.0059	d	0.0073	0.0152	0.0152	0.0000	0.0000	d

<sup>a</sup> Technically probabilities, because exposures were not adjusted for other terminations.

<sup>b</sup> Immediate retirements are defined as those for which the calendar year of retirement is the same as, or the year following, the calendar year of last employment in the railroad industry.

<sup>c</sup> Age attained in calendar year of exposure.

<sup>d</sup> Insufficient data.

Table S-32. Immediate disability retirement experience of railroad employees during calendar years 2001-2003

	Attained age <sup>a</sup>												
	All ages	Under 40	40-44	45-49	50-54	55-59	60-65 <sup>b</sup>	60	61	62	63	64	65 <sup>b</sup>
1. 10-19 years of service													
Exposed	115,360	31,186	28,651	26,263	16,748	8,443	4,069	1,098	857	787	576	413	338
Actual retirements	1,059	78	125	231	235	223	167	66	34	31	24	10	f
Crude rate per 1,000 <sup>c</sup>	9.2	2.5	4.4	8.8	14.0	26.4	41.0	60.1	39.7	39.4	41.7	24.2	f
Ratio Act./Exp. <sup>d</sup>	114.0%	151.9%	109.1%	120.0%	109.9%	123.1%	95.2%	136.0%	82.7%	75.6%	84.5%	69.8%	f
Ratio Act./Exp. <sup>e</sup>	100.1%	140.7%	93.9%	100.4%	89.4%	97.7%	113.1%	156.5%	93.8%	90.1%	105.0%	100.1%	f
2. 20-29 years of service													
Exposed	244,914	307	25,191	95,012	79,549	32,556	12,299	3,553	2,903	2,359	1,562	1,069	853
Actual retirements	6,689	2	332	1,783	2,474	1,361	737	198	186	173	107	60	13
Crude rate per 1,000 <sup>c</sup>	27.3	6.5	13.2	18.8	31.1	41.8	59.9	55.7	64.1	73.3	68.5	56.1	15.2
Ratio Act./Exp. <sup>d</sup>	109.9%	81.0%	109.0%	104.6%	116.4%	104.3%	114.2%	105.1%	111.4%	117.5%	115.9%	134.9%	208.8%
Ratio Act./Exp. <sup>e</sup>	100.0%	69.7%	96.6%	94.9%	106.7%	96.0%	101.5%	96.7%	102.5%	108.0%	100.0%	100.0%	100.3%
3. 30 or more years of service <sup>g</sup>													
Exposed	138,288	0	0	4,635	53,786	68,123	11,744	11,744	g	g	g	g	g
Actual retirements	3,942	f	f	51	1,392	2,281	218	218	g	g	g	g	g
Crude rate per 1,000 <sup>c</sup>	28.5	f	f	11.0	25.9	33.5	18.6	18.6	g	g	g	g	g
Ratio Act./Exp. <sup>d</sup>	102.3%	f	f	72.7%	121.2%	104.1%	49.2%	49.2%	g	g	g	g	g
Ratio Act./Exp. <sup>e</sup>	100.0%	f	f	60.7%	104.1%	99.1%	g	99.8%	g	g	g	g	g

<sup>a</sup> Age attained in calendar year of exposure.

<sup>b</sup> Refers to employees retiring before normal retirement age. Exposure includes part of the year in which employees were not eligible for disability retirement because they passed normal retirement age.

<sup>c</sup> Technically probabilities of retirement, because exposures were not adjusted for other terminations.

<sup>d</sup> Expected based on 22nd valuation disability rates.

<sup>e</sup> Expected based on 23rd valuation disability rates.

<sup>f</sup> Insufficient data.

<sup>g</sup> Excludes data for 30-year service employees over age 60.

Table S-33. Percentages of immediate<sup>a</sup> disability retirements in 2001-2003 meeting the disability freeze standards of the Social Security Act<sup>b</sup>

Age <sup>c</sup>	10-19 years of service			20-29 years of service			30 or more years of service		
	Assumed rates 22nd valuation	Assumed rates 23rd valuation	2001-2003 Crude rates	Assumed rates 22nd valuation	Assumed rates 23rd valuation	2001-2003 Crude rates	Assumed rates 22nd valuation	Assumed rates 23rd valuation	2001-2003 Crude rates
Under 35	95.9%	99.1%	100.0%	30.9%	38.1%	d	30.9%	38.1%	d
35	95.9	99.1	100.0	30.9	38.1	d	30.9	38.1	d
36	95.9	99.1	100.0	31.0	38.1	d	31.0	38.1	d
37	95.9	99.1	100.0	31.0	38.2	d	31.0	38.2	d
38	95.9	99.1	100.0	31.1	38.2	d	31.1	38.2	d
39	95.9	99.1	100.0	31.2	38.3	d	31.2	38.3	d
40	95.9	99.1	100.0	31.3	38.5	d	31.3	38.5	d
41	95.9	99.1	100.0	31.5	38.7	44.7%	31.5	38.7	d
42	95.9	99.1	100.0	31.8	38.9	40.0	31.8	38.9	d
43	95.9	99.1	100.0	32.1	39.2	34.0	32.1	39.2	d
44	95.9	99.1	100.0	32.5	39.7	36.6	32.5	39.7	d
45	95.9	99.1	97.6	33.1	40.3	35.6	33.1	40.3	d
46	95.9	99.1	100.0	34.0	41.1	38.6	34.0	41.1	d
47	95.9	99.1	100.0	35.1	42.2	42.4	35.1	42.2	d
48	95.9	99.1	100.0	36.5	43.7	47.8	36.5	43.7	d
49	95.9	99.1	97.7	38.6	45.7	52.1	38.6	45.7	42.9%
50	95.9	99.1	100.0	41.3	48.4	51.5	41.3	48.4	46.2
51	95.9	99.1	97.8	44.9	52.0	46.3	44.9	52.0	47.8
52	95.9	99.1	94.7	49.8	57.0	55.2	49.8	57.0	54.0
53	95.9	99.1	98.1	56.5	63.7	63.8	56.5	63.7	67.0
54	95.9	99.1	100.0	65.4	72.8	75.3	65.4	72.8	74.1
55	95.9	99.1	100.0	77.6	85.0	83.1	77.6	85.0	84.4
56	95.9	99.1	98.0	84.2	87.6	83.6	84.2	87.6	88.7
57	95.9	99.1	100.0	84.2	87.6	87.8	84.2	87.6	85.9
58	95.9	99.1	97.0	84.2	87.6	85.0	84.2	87.6	85.9
59	95.9	99.1	100.0	84.2	87.6	91.1	84.2	87.6	88.6
60	79.6	90.2	92.3	84.2	87.6	91.2	84.2	87.6	91.6
61	79.6	90.2	97.1	84.2	87.6	93.3			
62	79.6	90.2	86.7	84.2	87.6	89.4			
63	79.6	90.2	83.3	84.2	87.6	80.2			
64	79.6	90.2	d	84.2	87.6	88.3			
65	79.6	90.2	d	84.2	87.6	d			

<sup>a</sup> Immediate retirements are defined as those for which the calendar year of retirement is the same as, or the year following, the calendar year of last employment in the railroad industry.

<sup>b</sup> Individuals who died within 1 year of the onset of disability were deemed to qualify if no decision was made.

<sup>c</sup> Age attained in calendar year of exposure.

<sup>d</sup> Insufficient data.

## WITHDRAWAL STUDIES

Table S-34 shows the withdrawal experience for the years 1999-2002. The actual withdrawals are shown net of re-entrants into the industry at each attained age and service group. Since a re-entrant has his earnings record restored for benefit purposes, he cannot be considered a final withdrawal. The table presents crude net withdrawal rates by attained age and years of service along with ratios of actual net withdrawals to those expected on the basis of the 23<sup>rd</sup> valuation standard, which was retained from the 22<sup>nd</sup> valuation.

Table S-34. Withdrawal experience of railroad employees during calendar years 1999-2002, by attained age and years of service

Years of service <sup>a</sup>	Attained age <sup>b</sup> under 25				Attained age <sup>b</sup> 25-34				Attained age <sup>b</sup> 35-44			
	Exposed	Actual net <sup>c</sup> withdrawals	Crude rate per 100	Ratio Act./Exp. <sup>d</sup>	Exposed	Actual net <sup>c</sup> withdrawals	Crude rate per 100	Ratio Act./Exp. <sup>d</sup>	Exposed	Actual net <sup>c</sup> withdrawals	Crude rate per 100	Ratio Act./Exp. <sup>d</sup>
0	11,835	2,786	23.5	120.1%	18,915	3,148	16.6	112.5%	12,743	2,499	19.6	110.8%
1	10,286	2,050	19.9	116.5	22,492	2,976	13.2	114.1	14,234	1,876	13.2	114.6
2	6,574	724	11.0	113.5	22,967	2,260	9.8	113.1	14,447	1,300	9.0	116.9
3	3,774	291	7.7	107.1	20,939	1,594	7.6	105.7	13,415	919	6.9	116.1
4	1,941	138	7.1	114.7	18,537	1,096	5.9	95.4	12,533	722	5.8	110.8
5	724	38	5.2	97.2	14,795	726	4.9	90.9	10,845	500	4.6	100.2
6	131	e	e	e	12,162	581	4.8	97.5	9,884	451	4.6	108.6
7	13	e	e	e	9,889	426	4.3	97.9	9,510	411	4.3	113.7
8	5	e	e	e	7,650	306	4.0	97.6	8,748	324	3.7	105.8
9	1	e	e	e	5,777	201	3.5	91.6	8,068	295	3.7	114.3
10	-	e	e	e	4,662	203	4.4	121.0	8,338	311	3.7	124.3
11	-	e	e	e	3,520	136	3.9	113.6	8,494	254	3.0	106.8
12	-	e	e	e	2,229	59	2.6	82.7	8,299	239	2.9	110.8
13	-	e	e	e	1,226	35	2.9	95.2	7,537	246	3.3	136.0
14	-	e	e	e	602	e	e	e	6,780	148	2.2	94.9
15	-	e	e	e	205	e	e	e	6,690	157	2.3	111.8
16	-	e	e	e	35	e	e	e	6,822	115	1.7	88.7
17	-	e	e	e	1	e	e	e	7,207	116	1.6	94.7
18	-	e	e	e	-	e	e	e	7,964	131	1.6	102.8
19	-	e	e	e	1	e	e	e	9,090	132	1.5	103.7
20	-	e	e	e	1	e	e	e	10,808	158	1.5	112.5
21	-	e	e	e	1	e	e	e	11,289	156	1.4	125.6
22	-	e	e	e	1	e	e	e	10,732	110	1.0	102.5
23	-	e	e	e	-	e	e	e	9,024	70	0.8	86.2
24	-	e	e	e	-	e	e	e	6,201	49	0.8	98.8
25	-	e	e	e	-	e	e	e	3,785	34	0.9	112.3
26	-	e	e	e	-	e	e	e	1,150	10	0.9	124.2
27	-	e	e	e	-	e	e	e	25	e	e	e
28	-	e	e	e	-	e	e	e	2	e	e	e
29	-	e	e	e	-	e	e	e	-	e	e	e
30 & over	-	e	e	e	-	e	e	e	-	e	e	e
All years	35,284	6,035	17.1	117.1	166,607	13,757	8.3	107.1	244,664	11,734	4.8	111.6

<sup>a</sup> Service as of beginning of calendar year of exposure rounded up to next highest whole year.

<sup>b</sup> Age attained in calendar year of exposure.

<sup>c</sup> Withdrawals less re-entrants.

<sup>d</sup> Expected based on 23rd valuation withdrawal rates.

<sup>e</sup> Fewer than 10 actual net withdrawals.



Table S-34. continued

Years of service <sup>a</sup>	Attained age <sup>b</sup> 45-54				Attained age <sup>b</sup> 55 and over				All ages			
	Exposed	Actual net <sup>c</sup> withdrawals	Crude rate per 100	Ratio Act./Exp. <sup>d</sup>	Exposed	Actual net <sup>c</sup> withdrawals	Crude rate per 100	Ratio Act./Exp. <sup>d</sup>	Exposed	Actual net <sup>c</sup> withdrawals	Crude rate per 100	Ratio Act./Exp. <sup>d</sup>
0	5,323	1,189	22.3	107.4%	1,155	330	28.6	106.2%	49,971	9,952	19.9	113.2%
1	5,830	830	14.2	134.3	1,226	190	15.5	133.6	54,068	7,922	14.7	117.1
2	5,910	568	9.6	133.5	1,194	148	12.4	112.7	51,092	5,000	9.8	116.1
3	5,692	379	6.7	114.8	1,107	94	8.5	82.4	44,927	3,277	7.3	108.7
4	5,361	289	5.4	114.7	1,092	92	8.4	90.6	39,464	2,337	5.9	102.7
5	4,722	231	4.9	125.4	935	73	7.8	95.2	32,021	1,568	4.9	98.1
6	4,491	173	3.9	120.4	1,043	66	6.3	89.1	27,711	1,279	4.6	103.5
7	4,509	144	3.2	114.1	1,103	69	6.3	104.3	25,024	1,050	4.2	106.1
8	4,471	167	3.7	155.6	1,179	58	4.9	100.4	22,053	855	3.9	108.9
9	4,381	115	2.6	119.3	1,200	49	4.1	102.1	19,427	660	3.4	106.1
10	4,579	168	3.7	174.7	1,091	54	4.9	154.7	18,670	736	3.9	134.1
11	4,884	118	2.4	120.8	1,202	55	4.6	169.5	18,100	563	3.1	115.5
12	4,853	138	2.8	149.7	1,276	33	2.6	112.4	16,657	469	2.8	114.8
13	4,828	88	1.8	101.3	1,233	32	2.6	129.8	14,824	401	2.7	121.8
14	4,842	50	1.0	60.7	1,193	36	3.0	158.8	13,417	241	1.8	86.8
15	5,314	75	1.4	88.2	1,199	37	3.1	171.4	13,408	272	2.0	107.8
16	5,991	100	1.7	111.3	1,253	27	2.2	126.8	14,101	242	1.7	100.2
17	7,109	81	1.1	81.4	1,372	19	1.4	81.5	15,689	216	1.4	88.0
18	8,676	64	0.7	56.7	1,589	32	2.0	125.9	18,229	227	1.2	85.5
19	11,038	142	1.3	99.0	2,016	43	2.1	133.3	22,145	317	1.4	104.6
20	14,590	190	1.3	108.5	2,708	54	2.0	132.9	28,107	402	1.4	112.9
21	18,060	188	1.0	94.6	3,263	62	1.9	135.7	32,613	406	1.2	110.2
22	21,753	225	1.0	103.4	3,775	64	1.7	121.1	36,261	399	1.1	105.6
23	24,989	230	0.9	102.3	4,360	85	1.9	150.0	38,373	385	1.0	106.1
24	26,462	212	0.8	89.0	4,440	61	1.4	114.5	37,103	322	0.9	94.4
25	30,192	262	0.9	108.5	5,102	71	1.4	126.5	39,079	367	0.9	111.9
26	32,971	215	0.7	93.2	5,694	97	1.7	170.4	39,815	322	0.8	108.9
27	32,084	195	0.6	86.8	6,320	101	1.6	159.8	38,429	297	0.8	103.1
28	31,238	171	0.5	91.2	7,533	85	1.1	125.4	38,773	256	0.7	100.3
29	27,824	123	0.4	88.4	8,545	104	1.2	152.1	36,369	227	0.6	109.4
30 & over	70,598	977	1.4	98.8	82,298	2,396	2.9	132.3	152,896	3,373	2.2	120.5
All years	443,565	8,097	1.8	108.8	158,696	4,717	3.0	125.4	1,048,816	44,340	4.2	111.6

<sup>a</sup> Service as of beginning of calendar year of exposure rounded up to next highest whole year.

<sup>b</sup> Age attained in calendar year of exposure.

<sup>c</sup> Withdrawals less re-entrants.

<sup>d</sup> Expected based on 23rd valuation withdrawal rates.

<sup>e</sup> Fewer than 10 actual net withdrawals.

## EMPLOYEE AND BENEFICIARY CENSUSES, FAMILY COMPOSITION, AND MISCELLANEOUS STATISTICS

Age and service distributions of active and inactive employees are shown in Tables S-35 and S-36. A comparison between 2001 and 2004 active censuses is shown in Table S-37.

Tables S-38 and S-39 provide a census of beneficiaries on December 31, 2004. Also included are their tier 1, tier 2 and vested dual benefit amounts.

Table S-40 shows the average number of service months in a year for calendar years 2000-2002 by attained age group and years of service. The number of service months credited to an employee for a given year is equal to the employee's total creditable tier 2 earnings in the year, divided by one-twelfth of the tier 2 earnings base for the year, with a maximum of 12 and a minimum of the number of months in which the individual had service.

The average creditable earnings per service month during 2004 are shown in Table S-41. Because of the difference in the maximum creditable earnings for tier 1 and tier 2 benefits, separate salary scales were constructed.

The age distribution of new entrants during calendar years 2000-2003 is shown in Table S-42, as is the distribution for 1997-2000.

Table S-43 presents family characteristics of railroad employees who died in the period 2000-2003 with a current connection.

Table S-44 provides selected employment and benefit statistics for 2001 and 2004.

Table S-35. Distribution of 2004 active employees<sup>a</sup> by age and completed years of service

Age in 2004	Completed years of service											
	Total	0	1	2-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40 & over
Total	251,067	21,828	11,530	24,048	41,893	23,527	16,382	21,672	40,101	35,893	12,779	1,414
Under 20	576	517	55	4	0	0	0	0	0	0	0	0
20-24	7,986	4,145	1,838	1,807	196	0	0	0	0	0	0	0
25-29	17,920	4,454	2,642	5,136	5,512	176	0	0	0	0	0	0
30-34	25,273	3,884	2,173	5,011	10,402	3,661	142	0	0	0	0	0
35-39	25,653	3,178	1,691	4,020	8,724	5,807	2,168	65	0	0	0	0
40-44	27,326	2,677	1,469	3,352	6,893	5,028	4,241	3,048	618	0	0	0
45-49	42,234	1,702	926	2,368	5,042	3,922	4,246	8,499	13,761	1,768	0	0
50-54	52,141	825	462	1,350	3,097	2,740	3,082	6,039	15,739	17,622	1,185	0
55-59	41,857	353	213	707	1,443	1,520	1,663	2,938	7,505	15,143	9,909	463
60-64	8,705	62	44	231	496	555	705	936	2,217	1,226	1,572	661
65-69	1,145	20	12	48	71	100	111	125	233	112	103	210
70 & over	251	11	5	14	17	18	24	22	28	22	10	80

<sup>a</sup> Employees alive and not retired at the end of 2004 with some railroad service in 2004.

Table S-36. Census of vested<sup>a</sup> inactive employees<sup>b</sup> in 2004 by age and completed years of service

Age in 2004	Completed years of service						
	Total	5-9	10-14	15-19	20-24	25-29	30 & over
Total	62,977	3,241	32,438	14,502	7,182	2,928	2,686
Under 35	1,044	928	116	0	0	0	0
35-39	1,424	727	660	36	1	0	0
40-44	2,822	640	1,707	407	67	1	0
45-49	9,944	432	6,037	2,337	969	165	4
50-54	18,341	293	10,354	4,529	2,113	765	287
55-59	20,263	146	9,103	4,890	2,594	1,290	2,240
60-64	8,372	64	3,987	2,150	1,369	666	136
65 & over	767	11	474	153	69	41	19

<sup>a</sup> Employees with at least 10 years of total service, or 5 years of service after 1995.

<sup>b</sup> Employees alive and not retired at the end of 2004 with no railroad work in 2004.

Table S-37. Comparison between 2004 and 2001 of selected characteristics of active<sup>a</sup> railroad employees

	2004	2001	Change from 2001 to 2004	
			Number	Percent
Number alive and not retired	251,067	263,409	-12,342	-4.7%
Percent with 5 or more years of service	77.1%	77.8%	b	b
Number age 60 or over	10,101	13,419	-3,318	-24.7%
Number age 65 or over	1,396	1,222	174	14.2%
Number age 60-64 with 30 or more years of service	3,459	7,075	-3,616	-51.1%
Average age on December 31	45.5	45.7	-0.2	b
Median age on December 31	47.8	47.5	0.3	b
Average years of service				
All employees	17.0	18.0	-1.0	b
Employees under age 45	6.6	8.0	-1.4	b
Employees age 45-49	18.7	20.5	-1.8	b
Employees age 60 or over	26.7	29.6	-2.9	b
Employees age 65 or over	26.6	27.2	-0.6	b

<sup>a</sup> Active employees were those with some railroad service during the year.

<sup>b</sup> Not applicable.

Table S-38. Census of employee and spouse annuitants on December 31, 2004<sup>a</sup>

Age <sup>c</sup>	Number	Monthly benefits <sup>b</sup>			
		Tier 1	Tier 2	Vested dual	Supplemental
<b>1. Employee age annuitants</b>					
60-64	23,543	\$ 37,512,825	\$ 21,250,611	\$ 42,485	\$ 624,007
65-69	30,350	38,068,622	20,314,352	352,624	614,690
70-74	35,202	38,433,595	20,082,391	871,585	684,317
75-79	46,034	46,998,928	22,751,122	1,939,206	944,495
80-84	38,592	37,580,094	14,246,459	2,146,444	823,281
85-89	20,742	21,118,897	5,548,234	1,229,553	485,089
90-94	7,152	5,882,134	1,512,627	379,355	155,568
95 & over	2,033	1,204,591	251,064	123,053	65,672
Total	203,648	\$ 226,799,686	\$ 105,956,860	\$ 7,084,305	\$ 4,397,119
<b>2. Employee disability annuitants</b>					
Under 40	157	\$ 222,245	\$ 23,356	\$ -	\$ -
40-44	492	731,475	178,660	-	-
45-49	3,820	5,779,975	1,792,837	-	-
50-54	11,753	17,781,580	6,349,417	-	-
55-59	17,834	26,271,530	10,235,980	185	-
60-64	15,599	21,593,202	8,619,985	35,048	157,705
65-69	10,814	13,603,279	5,471,078	145,353	190,627
70-74	9,192	10,631,505	3,979,033	251,257	183,499
75-79	8,594	9,122,298	2,938,224	402,166	190,101
80-84	4,599	4,395,467	958,070	243,173	89,567
85-89	1,966	1,623,965	280,256	102,460	33,716
90-94	612	420,914	68,472	31,465	10,002
95 & over	128	71,978	7,482	5,701	3,151
Total	85,560	\$ 112,249,413	\$ 40,902,850	\$ 1,216,808	\$ 858,368
<b>3. Spouse annuitants</b>					
Under 60	1,187	\$ 841,037	\$ 413,906	\$ -	\$ -
60-64	23,144	13,101,404	8,682,060	-	-
65-69	31,281	11,096,379	8,715,226	89	-
70-74	33,154	11,138,519	8,065,798	95	-
75-79	29,621	10,163,070	6,221,325	298	-
80-84	18,712	6,275,699	3,275,400	4,680	-
85-89	6,456	1,989,093	935,348	289,783	-
90-94	1,312	261,087	162,311	75,132	-
95 & over	120	19,159	13,743	7,417	-
Total	144,987	\$ 54,885,447	\$ 36,485,117	\$ 377,494	\$ -

<sup>a</sup> Includes annuities which were in withheld status as of December 31, 2004. Therefore, these figures may disagree with other published data.

<sup>b</sup> Amounts shown reflect benefits paid in January 2005.

<sup>c</sup> Age attained in 2004.

Table S-39. Census of survivor annuitants on December 31, 2004<sup>a</sup>

Age <sup>c</sup>	Monthly benefits <sup>b</sup>			
	Number	Tier 1	Tier 2	Vested dual
1. Aged widows and widowers <sup>d</sup>				
60-64	5,361	\$ 5,713,047	\$ 1,809,943	\$ -
65-69	10,689	9,835,591	3,116,283	-
70-74	19,276	16,973,128	5,100,974	-
75-79	31,035	26,877,488	6,929,938	-
80-84	38,440	32,796,630	6,824,833	1,251
85-89	31,179	23,665,303	4,429,469	126,493
90-94	17,217	10,582,908	2,102,725	119,668
95 & over	7,206	3,942,318	852,524	49,315
Total	160,403	\$ 130,386,413	\$ 31,166,689	\$ 296,727
2. Other survivors <sup>e</sup>				
0-4	57	\$ 51,005	\$ 3,841	\$ -
5-9	301	276,034	23,176	-
10-14	968	924,175	87,603	-
15-19	1,534	1,537,254	165,337	-
20-24	142	138,994	14,995	-
25-29	206	187,458	21,440	-
30-34	326	273,275	36,987	-
35-39	600	473,918	74,984	-
40-44	1,074	825,111	147,583	-
45-49	1,492	1,132,278	225,279	-
50-54	1,881	1,385,514	302,163	-
55-59	2,318	1,652,725	402,052	-
60-64	2,379	1,589,418	332,083	-
65-69	1,738	1,112,166	174,414	-
70-74	1,500	901,648	147,581	436
75-79	1,302	737,728	133,571	5,307
80-84	929	471,640	96,851	10,727
85-89	481	247,718	49,972	4,952
90-94	150	79,109	15,218	906
95 & over	10	4,227	1,094	69
Total	19,388	\$ 14,001,395	\$ 2,456,224	\$ 22,397

<sup>a</sup> Includes annuities which were in withheld status as of December 31, 2004. Therefore, these figures may disagree with other published data.

<sup>b</sup> Amounts shown reflect benefits paid in January 2005.

<sup>c</sup> Age attained in 2004.

<sup>d</sup> Includes divorced and remarried aged widows and widowers, and parents.

<sup>e</sup> Includes disabled widows and widowers, remarried and divorced disabled widows and widowers, widowed mothers and fathers, remarried and divorced widowed mothers and fathers, minor children, student children and disabled children.

Table S-40. Comparison of service months of railroad employees during calendar years 2000-2002 with assumptions used in the 23rd valuation  
(For employees not separated in the year)

Years of service <sup>a</sup>	Service months by attained age						Service months by calendar year				23rd valuation assumption
	Under 25	25-34	35-44	45-54	55 & over	Total	2000	2001	2002	Total	
0	6.1	6.5	6.4	6.4	6.6	6.4	6.3	6.8	6.2	6.4	6.4
1	10.8	11.2	11.3	11.3	10.8	11.2	11.3	11.1	11.1	11.2	11.2
2	11.3	11.4	11.4	11.4	11.5	11.4	11.4	11.3	11.3	11.4	11.4
3	11.4	11.5	11.4	11.5	11.5	11.5	11.5	11.5	11.4	11.5	11.5
4	11.5	11.5	11.5	11.5	11.4	11.5	11.5	11.5	11.5	11.5	11.5
5	11.6	11.6	11.6	11.5	11.6	11.6	11.6	11.6	11.6	11.6	11.6
6	11.7	11.7	11.6	11.5	11.3	11.6	11.7	11.6	11.5	11.6	11.6
7	11.8	11.7	11.6	11.6	11.6	11.6	11.6	11.7	11.6	11.6	11.6
8		11.7	11.7	11.6	11.5	11.6	11.7	11.6	11.6	11.6	11.6
9		11.7	11.6	11.5	11.6	11.6	11.7	11.6	11.6	11.6	11.6
10		11.7	11.6	11.6	11.6	11.6	11.6	11.6	11.6	11.6	11.6
11		11.8	11.7	11.6	11.6	11.7	11.7	11.7	11.6	11.7	11.7
12		11.8	11.7	11.6	11.5	11.7	11.7	11.7	11.6	11.7	11.7
13		11.9	11.7	11.6	11.6	11.7	11.7	11.7	11.7	11.7	11.7
14		11.8	11.7	11.6	11.6	11.7	11.6	11.7	11.7	11.7	11.7
15		11.8	11.8	11.6	11.6	11.7	11.7	11.7	11.7	11.7	11.7
16		11.9	11.8	11.7	11.7	11.7	11.7	11.7	11.7	11.7	11.7
17			11.8	11.7	11.6	11.7	11.7	11.7	11.7	11.7	11.7
18			11.8	11.7	11.7	11.7	11.7	11.7	11.7	11.7	11.7
19			11.8	11.7	11.6	11.7	11.8	11.7	11.7	11.7	11.7
20			11.8	11.7	11.6	11.7	11.8	11.7	11.7	11.7	11.7
21			11.8	11.8	11.7	11.8	11.8	11.8	11.8	11.8	11.8
22			11.9	11.8	11.7	11.8	11.9	11.8	11.8	11.8	11.8
23			11.9	11.8	11.7	11.8	11.9	11.8	11.8	11.8	11.8
24			11.9	11.9	11.8	11.9	11.9	11.9	11.8	11.9	11.9
25			11.9	11.9	11.8	11.9	11.9	11.9	11.8	11.9	11.9
26			12.0	11.9	11.8	11.9	11.9	11.9	11.9	11.9	11.9
27			12.0	11.9	11.8	11.9	11.9	11.9	11.9	11.9	11.9
28				11.9	11.9	11.9	11.9	11.9	11.9	11.9	11.9
29				11.9	11.9	11.9	11.9	11.9	11.9	11.9	11.9
30 & over				11.9	11.8	11.9	11.9	11.8	11.9	11.9	11.9

<sup>a</sup> Rounded up to nearest whole year.



Table S-41. Average creditable<sup>a</sup> compensation per service month during 2004

Years of service <sup>b</sup>	Tier 1	Tier 2
0	\$3,176	\$3,165
1	3,826	3,755
2	4,146	4,003
3	4,295	4,112
4	4,356	4,160
5	4,483	4,261
6	4,697	4,442
7	4,859	4,522
8	4,851	4,504
9	5,026	4,601
10	5,029	4,593
11	4,830	4,441
12	4,736	4,404
13	4,788	4,410
14	4,872	4,491
15	4,984	4,548
16	4,954	4,535
17	4,939	4,495
18	4,930	4,465
19	4,899	4,460
20	4,965	4,521
21	4,894	4,489
22	4,907	4,501
23	5,022	4,577
24	5,046	4,587
25	5,191	4,677
26	5,292	4,731
27	5,262	4,717
28	5,265	4,723
29	5,230	4,690
30	5,370	4,768

<sup>a</sup> Maximum creditable annual compensation during 2004 was \$87,900 and \$65,100 for tier 1 and tier 2, respectively.

<sup>b</sup> Completed service at beginning of year rounded up to nearest whole year.

Table S-42. Age distribution of new entrants during calendar years 2000-2003  
and comparison with assumptions of the 22nd valuation

Age at entry <sup>a</sup>	Year of entry					22nd Val. 1997-00
	2000	2001	2002	2003	2000-03 <sup>b</sup>	
All ages						
Number	14,379	9,320	11,277	12,688	47,664	70,099
Percent	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Under 20	3.4%	3.8%	2.8%	2.5%	3.1%	3.4%
20-24	20.9	21.0	19.7	20.2	20.4	21.0
25-29	20.4	19.9	19.3	20.5	20.1	22.6
30-34	17.1	17.6	18.2	17.2	17.4	17.6
35-39	14.0	14.2	14.9	14.2	14.3	14.4
40-44	11.1	10.0	11.2	12.4	11.3	10.3
45-49	7.1	7.1	7.6	7.3	7.3	6.1
50-54	3.6	3.9	4.0	3.7	3.8	2.9
55 & over	2.4	2.6	2.4	1.9	2.3	1.6
Average age at entry	32.6	32.6	33.1	32.9	32.8	31.9
Median age at entry	30.9	30.9	31.6	31.4	31.2	30.2

<sup>a</sup> Age attained in the year of entry (year of entry minus year of birth).

<sup>b</sup> Used in 23rd valuation.

Table S-43. Family characteristics of railroad employees who died in 2000-2003 with a current connection

Age of employee <sup>a</sup>	Number of deaths <sup>b</sup>	Percent married								Percent with eligible child	
		Total	Widow age 62 & over	Widow age 60-61	Widow under age 60	Widow under 60 with eligible child			Minor child		
						Youngest child under 16	Youngest child age 16-17	Youngest child disabled			
Under 35	18	94.4	-	-	94.4	72.2	-	-	77.8	-	
35 - 39	38	73.7	-	-	73.7	57.9	2.6	-	84.2	2.6	
40 - 44	139	76.3	-	-	76.3	56.8	5.8	-	80.6	2.2	
45 - 49	494	67.6	0.8	0.2	66.6	26.8	9.9	0.4	50.2	1.0	
50 - 54	1,074	69.0	1.6	0.5	66.9	12.9	5.3	1.3	26.0	2.5	
55 - 59	1,524	71.6	3.4	2.9	65.3	5.5	1.8	1.5	10.8	2.1	
60 - 64	2,062	71.2	18.2	15.1	37.9	2.3	0.4	0.7	4.0	2.0	
65 - 69	3,023	73.1	53.1	7.8	12.2	0.8	0.3	0.4	2.0	1.7	
70 - 74	6,235	72.3	66.4	2.1	3.8	0.4	0.1	-	0.9	1.4	
75 - 79	10,753	66.7	64.2	0.8	1.7	0.2	-	-	0.3	1.0	
80 - 84	12,826	61.2	60.0	0.4	0.8	0.1	-	-	0.2	0.8	
85 - 89	11,006	51.0	50.5	0.1	0.4	0.1	-	-	0.1	0.8	
90 & over	10,082	30.7	30.3	0.1	0.3	-	-	-	-	0.6	

Age of employee <sup>a</sup>	Average ages of widows									
	Widow age 62 & over	Widow age 60-61	Widow under age 60	Widow under 60 with eligible child			Average ages of children			Average number of minor children <sup>d</sup>
				Youngest child under 16	Youngest child age 16-17	Youngest child disabled	Youngest child under 16 <sup>c</sup>	All minor children	All disabled children	
Under 35	e	e	31.2	30.1	e	e	3.0	5.8	e	2.6
35 - 39	e	e	38.9	37.0	e	e	6.6	7.5	e	2.1
40 - 44	e	e	40.2	39.1	e	e	9.8	10.8	e	2.0
45 - 49	e	e	45.9	43.8	46.1	e	11.2	11.7	e	1.6
50 - 54	64.1	e	50.0	46.3	48.1	49.6	11.2	11.8	23.7	1.5
55 - 59	65.8	60.8	53.6	49.0	50.9	52.6	11.3	12.5	28.0	1.5
60 - 64	64.9	60.9	55.7	49.1	e	55.1	12.1	12.2	31.3	1.5
65 - 69	66.5	61.0	55.7	49.0	53.6	56.4	11.1	12.2	34.2	1.2
70 - 74	70.2	61.0	55.1	45.6	e	e	10.3	10.5	40.2	1.3
75 - 79	74.4	60.9	54.4	46.4	e	e	12.7	12.3	43.6	1.4
80 - 84	78.5	61.0	54.2	48.9	e	e	10.9	13.6	47.2	1.6
85 - 89	82.2	61.0	52.9	45.2	e	e	9.5	11.1	50.4	1.2
90 & over	85.7	e	55.0	e	e	e	e	e	54.6	e

<sup>a</sup> Age nearest birthday at time of death.

<sup>b</sup> Includes employees with 120 or more service months and employees with 60 or more service months after 1995.

<sup>c</sup> Includes families with widows under 60 and children under 16 only.

<sup>d</sup> Includes families with minor children only.

<sup>e</sup> Insufficient data.

Table S-44. Selected employment and benefit<sup>a</sup> statistics for 2001 and 2004

	2001	2004	Percentage change
1. Membership (thousands of employees)			
Average employment for the year	238	227	-4.6%
Active census, Dec. 31	263	251	-4.6
Retired, Dec. 31	300	289	-3.7
Nonretired employees with vested rights <sup>b</sup> , total	271	257	-5.2
Active census, Dec. 31	205	194	-5.4
Inactive census, Dec. 31	66	63	-4.5
Employees in active census with 30 or more years of service	47	50	+6.4
2. Number of beneficiaries (thousands), Dec. 31, total <sup>c</sup>	651	606	-6.9
Retired employees	300	289	-3.7
Spouses	155	145	-6.5
Survivors	203	180	-11.3
3. Average monthly benefits paid in December			
Retired employees	\$1,492.49	\$1,708.84	+14.5
Spouses	565.65	632.80	+11.9
Survivors	856.54	991.87	+15.8
4. Amount of monthly benefit payments for the year (millions), total	\$8,373	\$8,982	+7.3
Retired employees and their spouses	6,310	6,853	+8.6
Survivors	2,063	2,129	+3.2
5. Miscellaneous information			
Tier 1 taxable payroll as a percentage of total payroll	96.6%	94.9%	
Benefit payments in year as a percentage of tier 1 taxable payroll	63.3%	64.8%	
Number of beneficiaries per 100 full-time employees	274	265	
Percentage distribution of amount of monthly benefit payments in year			
Retired employees	63.0%	64.3%	
Spouses	12.4	12.0	
Survivors	24.6	23.7	

<sup>a</sup> Includes tier 1, tier 2 and vested dual benefit payments. Excludes supplemental annuities.

<sup>b</sup> Employees with at least 10 years of total service, or 5 years of service after 1995.

<sup>c</sup> Individuals receiving more than one type of benefit (for example, an employee and a spouse benefit) are counted separately in each category but only once in total.