

# **Twenty-Fourth Actuarial Valuation**

**of the Assets and Liabilities  
Under the Railroad Retirement Acts  
as of December 31, 2007  
with  
Technical Supplement**



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







## TABLES

1. Employment, inflation and interest assumptions	15
2. Progress of the Combined National Railroad Retirement Investment Trust and Railroad Retirement Account, and Social Security Equivalent Benefit Account	17
3. Present value of benefits in millions of dollars	20
4. Present value of benefits as a percentage of the present value of tier 2 payroll	21
5. Balance of the Combined National Railroad Retirement Investment Trust and Railroad Retirement Account, and the Social Security Equivalent Benefit Account as of December 31, 2007	22
6. Actuarial surplus or (deficiency) for National Railroad Retirement Investment Trust and Railroad Retirement Account	23
7. Unfunded accrued liability	24
8. Vested dual benefit amounts and average number of beneficiaries	25
9. Supplemental annuity benefit amounts and average number of beneficiaries	26
10. Average number of railroad retirement annuitants and number of annuitants per full time employee	27
11. Transfers to railroad retirement system under financial interchange with social security system, 1937-2009	28
S-1. 2007 RRB Annuitants Mortality Table	43
S-2. 2007 RRB Disabled Mortality Table for Annuitants with Disability Freeze	44
S-3. 2007 RRB Disabled Mortality Table for Annuitants without Disability Freeze	45
S-4. 2003 RRB Active Service Mortality Table	46
S-5. 2007 RRB Spouse Total Termination Table	47
S-6. Probability of a retired employee having a spouse eligible for railroad retirement benefits	48
S-7. 1995 RRB Mortality Table for Widows	49
S-8. 1997 RRB Remarriage Table	50
S-9. 2004 RRB Total Termination Table for Disabled Children	51
S-10. Calendar year rates of immediate age retirement	52
S-11. Rates of immediate disability retirement and of eligibility for disability freeze	53
S-12. Calendar year rates of final withdrawal	54
S-13. Service months and salary scales	55
S-14. Family characteristics of railroad employees assumed for the valuation of survivor benefits	56
S-15. Mortality experience of railroad age annuitants between anniversaries of retirement in 2003 and 2006, by sex and type of retirement	58



S-36. Census of vested inactive employees in 2007 by age and completed years of service	83
S-37. Comparison between 2007 and 2004 of selected characteristics of active railroad employees	84
S-38. Census of employee and spouse annuitants on December 31, 2007	85
S-39. Census of survivor annuitants on December 31, 2007	86
S-40. Comparison of service months of railroad employees during calendar years 2003-2005 with assumptions used in the 24th valuation	87
S-41. Average creditable compensation per service month during 2007	88
S-42. Age distribution of new entrants during calendar years 2003-2006 and comparison with assumptions of the 23rd valuation	89
S-43. Family characteristics of railroad employees who died in 2003-2006 with a current connection	90
S-44. Selected employment and benefit statistics for 2004 and 2007	91



UNITED STATES OF AMERICA  
**RAILROAD RETIREMENT BOARD**  
844 NORTH RUSH STREET  
CHICAGO, ILLINOIS 60611-2092

**BOARD MEMBERS:**

MICHAEL S. SCHWARTZ, CHAIRMAN  
V.M. SPEAKMAN, JR., LABOR MEMBER  
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 24<sup>th</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.

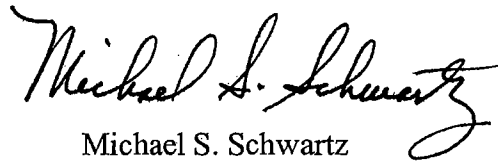
The Chief Actuary's report describes the results of three valuations, each valuation differing from the others as to the employment assumption on which it is based. Cash flow problems occur only under the most pessimistic employment assumption. Even under that assumption, the cash flow problems do not occur until the year 2031.

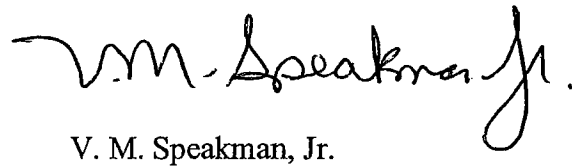
Section 502 of the Solvency Act requires recommendations with respect to tax rates and whether any part of the taxes on employers should be diverted to the Railroad Unemployment Insurance Account to aid in the repayment of any debt to the Railroad Retirement Account. The Chief Actuary's report does not 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 24<sup>th</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 27, 2009

This statement sets forth the Committee's review of the twenty-fourth actuarial valuation of the railroad retirement system. This valuation, performed as of December 31, 2007, was completed in the spring of 2009 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 5, 2008, December 16, 2008, and May 27, 2009, for the purpose of reviewing and discussing the significant elements of the twenty-fourth 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.

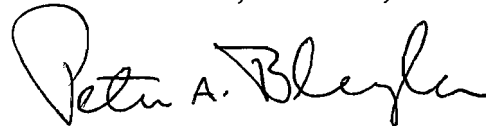
The Chief Actuary's report indicates that the average cost of the program over the projection period as measured by the excess of present value of tier 2 payroll taxes over the actuarial surplus ranges from 16.13% to 21.57% of payroll, depending on assumed future employment levels. This compares to a range of 14.19% to 18.63% of payroll in the twenty-third valuation.

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

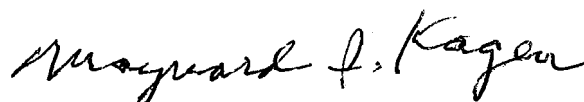
Respectfully submitted,



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 24<sup>th</sup> actuarial valuation, is intended to meet these three requirements for 2009.

### **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 1930s. 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 23<sup>rd</sup> valuation (2006 actuarial report) projected a surplus of 0.33 percent of tier 2 payroll and an average tier 2 tax rate of 16.52 percent under the intermediate employment assumption. Although employment experience has been favorable, large investment losses have resulted in lower trust fund balances, which in turn have produced higher projected taxes due to the tier 2 tax rate schedule. The average tier 2 tax rate has increased to 18.97 percent, and the surplus has increased to 0.35 percent of tier 2 payroll. The combined effect of a 2.45 percent of payroll increase in projected future tier 2 tax rates net of a 0.02 percent of payroll increase in projected surplus results in an overall decline equal to 2.43 percent of tier 2 payroll. If the same rates of decline in freight

employment were used in the 24<sup>th</sup> valuation as in the 23<sup>rd</sup>, the measured decline in financial position would have been somewhat greater.

Legislation enacted since the 23<sup>rd</sup> valuation liberalizing benefits payable under court ordered partitions, expanding eligibility for divorced spouse benefits and increasing the disability earnings limit has not had a significant impact on the system's financial stability.

The 24<sup>th</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 23<sup>rd</sup> valuation, differing mainly because of lower rates of decline assumed for freight employment. Employment assumptions I and II assume stable passenger employment and different rates of decline in freight employment. 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 16.51 percent, and an actuarial surplus of 0.38 percent of tier 2 payroll exists as of December 31, 2007. There are no cash flow problems during the 75-year projection period, and the tier 2 payroll tax rate ranges from 8.2% to 20.0%.
2. Under employment assumption II, the average tier 2 tax rate is 18.97 percent, and an actuarial surplus of 0.35 percent of tier 2 payroll exists as of December 31, 2007. There are no cash flow problems during the 75-year projection period, and the tier 2 payroll tax rate ranges from 8.2% to 27.0%.
3. Under employment assumption III, the average tier 2 tax rate is 21.54 percent, and an actuarial deficiency of 0.03 percent of tier 2 payroll exists as of December 31, 2007. Cash flow problems arise in 2031 and remain to the end of the 75-year projection period. The tier 2 payroll tax rate ranges from 16.0% 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, 2008. 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 22 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 22 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 27, 2009, 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. A 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 results in phasing out the supplemental annuity over a long period. 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 2009 earnings limits are \$106,800 and \$79,200 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 2006 through September 2007 (fiscal year 2007) took place in June 2008. 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. THE FINANCIAL INTERCHANGE AND DUAL BENEFITS**

In the early 1950s, 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 1970s. 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.

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.

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 234,000 in 2008 under each of the three employment assumptions. This is the estimated average for the year (subject to later adjustment) and is equal to the number assumed for 2008 under employment assumption I contained in the 2008 Section 502 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 (0.5 percent for assumption I and 2.0 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 3.5 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 those assumed in the 23<sup>rd</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, cost-of-living increase and investment return assumptions are the same as those used in the 23<sup>rd</sup> valuation. Table 1 shows the employment, inflation and investment return assumptions used in the 24<sup>th</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 23<sup>rd</sup> 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 2008-2082. 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, 2007, using a constant 7.5% interest rate. 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 Combined National Railroad Retirement Investment Trust (NRRIT) and Railroad Retirement (RR) Account, and the Social Security Equivalent Benefit (SSEB) Account.

Projections were made for the various components of income and outgo under each employment assumption for the 75 calendar years 2008-2082. 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 to 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 declines through 2021 and then grows through the end of the projection period. The combined employer and employee tier 2 tax rate increases to 20% in 2022-2032, decreases to 8.2% in 2053-2064 and then increases to 10.0% in 2065-2082.

Under employment assumption II, the combined account balance declines through 2023, and grows thereafter through the end of the projection period. The combined employer and employee tier 2 tax rate increases to 27% in 2026-2032, and then decreases until reaching the minimum rate of 8.2% in 2071-2082.

Under employment assumption III, the combined account balance declines until the balance becomes negative in 2031. 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 2068, when the balance reaches -\$81,990 million. The balance then begins to improve, but remains negative through the end of the projection period. The combined employer and employee tier 2 tax rate increases to 27% in 2023 and remains at that level through the end of the projection period. 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 Combined National Railroad Retirement Investment Trust and Railroad Retirement Account, and the Social Security Equivalent Benefit Account as of December 31, 2007. This table derives the balance in the accounts as of December 31, 2007. No accrual adjustments are made either for financial interchange amounts due and unpaid on that date or for benefits due on

January 2, 2008, because these amounts are included in the projected future cash flows. For the purpose of the present value calculations, an adjustment is made for calendar year 2008 market value losses as discussed in Table 6 below.

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."

Although the actual return of the trust funds during calendar year 2008 was approximately -31.1%, this rate is not used in the present value calculations because the large negative rate of return distorts the present values of income and expenditure. Instead, the present value calculations use 7.5% as the rate for 2008, as well as for the remaining 74 years of the projection. This avoids having present values that would be over 50% higher, thereby facilitating comparison with other years. In order to properly measure the surplus, however, the calendar year 2008 loss must be taken into account, which is done by adjusting the beginning asset value for the anticipated loss. The adjusted balance as of December 31, 2007, is calculated so that, assuming a 7.5% rate of return for 2008, the combined RRA, NRRIT, and SSEBA balance projected on December 31, 2008, is equal to the actual balance on that date.

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 \$53,817 million, or 21.57 percent of payroll, whereas the cost under employment assumption I is \$59,885 million, or 16.13 percent of payroll. Using employment assumption III as the base, the percentage cost variation in dollars between the two valuations is 11.28 percent. As a percentage of payroll, the percentage cost variation is 25.22 percent.

Table 7. Unfunded accrued liability. The railroad retirement program is a social insurance program rather than a private pension plan. A private pension plan should build up funds in an orderly way over the working lifetimes of the participants. With a fully funded program, the value of the accumulated assets will be sufficient to discharge all liabilities for the accrued benefits. Pay-as-you-go funding, where the pension costs are charged to the retirement years as the benefits are paid, is not acceptable for a private pension plan because of a lack of participant security. Because private pension plans can terminate, they should, ideally, be fully funded to protect the rights of active and retired participants.

For a social insurance plan, however, the situation is different, and full funding is not necessary. The program is expected to operate indefinitely. Because the program is compulsory, new entrants will constantly be entering the program, and they and their employers will be paying taxes to support the program.

Unlike some other social insurance programs, the railroad retirement program relies on payroll taxes from the employers and employees of a single industry. Although the railroad retirement program is not subject to the funding standards of a private pension plan, it is still of interest to calculate the normal cost and the accrued liability for the plan.

Table 7 illustrates what the funding requirements would be for the railroad retirement system as of December 31, 2007, using the entry age normal actuarial funding method. The present value of future benefits and the present value of future administrative expenses for former and present employees are shown on lines 1 and 2, respectively. The portion of the actuarial present value of benefits assigned to a particular year is called the normal cost. For the entry age normal actuarial funding method, the normal cost rate is the average cost expressed as a level percentage of payroll (line 4) that would fund the average employee’s benefits, including dependent benefits, and expenses over the employee’s working lifetime. The accrued liability for the program, shown on line 6, is equal to the difference between the present value of benefits and administrative expenses for former and present employees and the present value of future normal costs. Then the unfunded accrued liability (line 8) is the difference between the accrued liability and the funds on hand as of December 31, 2007 (line 6 minus line 7). This is the amount needed, in excess of funds on hand and future normal costs, to fund combined NRRIT and RR Account benefits and expenses for former and present employees. Line 10 shows the level tax rate that would be required to fund the unfunded accrued liability and meet the normal costs for the next 30 years. The level tax rate after 30 years if all assumptions were realized is shown on line 11.

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 2010 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 2009 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 generally declines throughout the projection period. Under employment assumption II, the average number of annuitants per full time employee increases until reaching a maximum of 2.65 in 2019-2022 and then declines. Under employment assumption III, the average number of annuitants per full time employee increases steadily to 3.48 in 2035 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 #08-4940

Table 1. Employment, inflation and interest assumptions

Calendar year	Average employment (thousands)			Percentage increase over prior year		Investment return
	I	II	III	Earnings	Cost of living	
2008	234	234	234	4.8%	2.3%	-31.1%
2009	233	230	227	4.0	5.8	7.5
2010	232	226	220	4.0	0.0	7.5
2011	231	223	213	4.0	3.0	7.5
2012	230	219	206	4.0	3.0	7.5
2013	229	215	200	4.0	3.0	7.5
2014	228	212	194	4.0	3.0	7.5
2015	227	209	188	4.0	3.0	7.5
2016	226	205	182	4.0	3.0	7.5
2017	225	202	177	4.0	3.0	7.5
2018	224	199	172	4.0	3.0	7.5
2019	224	196	166	4.0	3.0	7.5
2020	223	193	161	4.0	3.0	7.5
2021	222	190	157	4.0	3.0	7.5
2022	221	187	152	4.0	3.0	7.5
2023	220	184	147	4.0	3.0	7.5
2024	219	181	143	4.0	3.0	7.5
2025	218	178	139	4.0	3.0	7.5
2026	217	176	135	4.0	3.0	7.5
2027	216	173	132	4.0	3.0	7.5
2028	216	170	129	4.0	3.0	7.5
2029	215	168	125	4.0	3.0	7.5
2030	214	165	122	4.0	3.0	7.5
2031	213	163	119	4.0	3.0	7.5
2032	212	160	116	4.0	3.0	7.5
2033	211	158	113	4.0	3.0	7.5
2034	211	156	111	4.0	3.0	7.5
2035	210	154	108	4.0	3.0	7.5
2036	209	152	106	4.0	3.0	7.5
2037	208	150	104	4.0	3.0	7.5
2038	208	148	102	4.0	3.0	7.5
2039	207	147	100	4.0	3.0	7.5
2040	206	145	99	4.0	3.0	7.5
2041	206	144	97	4.0	3.0	7.5
2042	205	143	96	4.0	3.0	7.5
2043	205	141	94	4.0	3.0	7.5
2044	204	140	93	4.0	3.0	7.5
2045	204	139	92	4.0	3.0	7.5
2046	204	138	91	4.0	3.0	7.5
2047	203	138	90	4.0	3.0	7.5
2048	203	137	90	4.0	3.0	7.5
2049	203	136	89	4.0	3.0	7.5
2050	202	135	88	4.0	3.0	7.5
2051	202	135	88	4.0	3.0	7.5
2052	202	135	87	4.0	3.0	7.5
2053	202	134	87	4.0	3.0	7.5
2054	202	134	87	4.0	3.0	7.5
2055	202	134	86	4.0	3.0	7.5
2056	202	133	86	4.0	3.0	7.5
2057	202	133	86	4.0	3.0	7.5
2058-2082	202	133	86	4.0	3.0	7.5

**Figure 1. Average Railroad Employment 1937-2082, Historical and Projected**

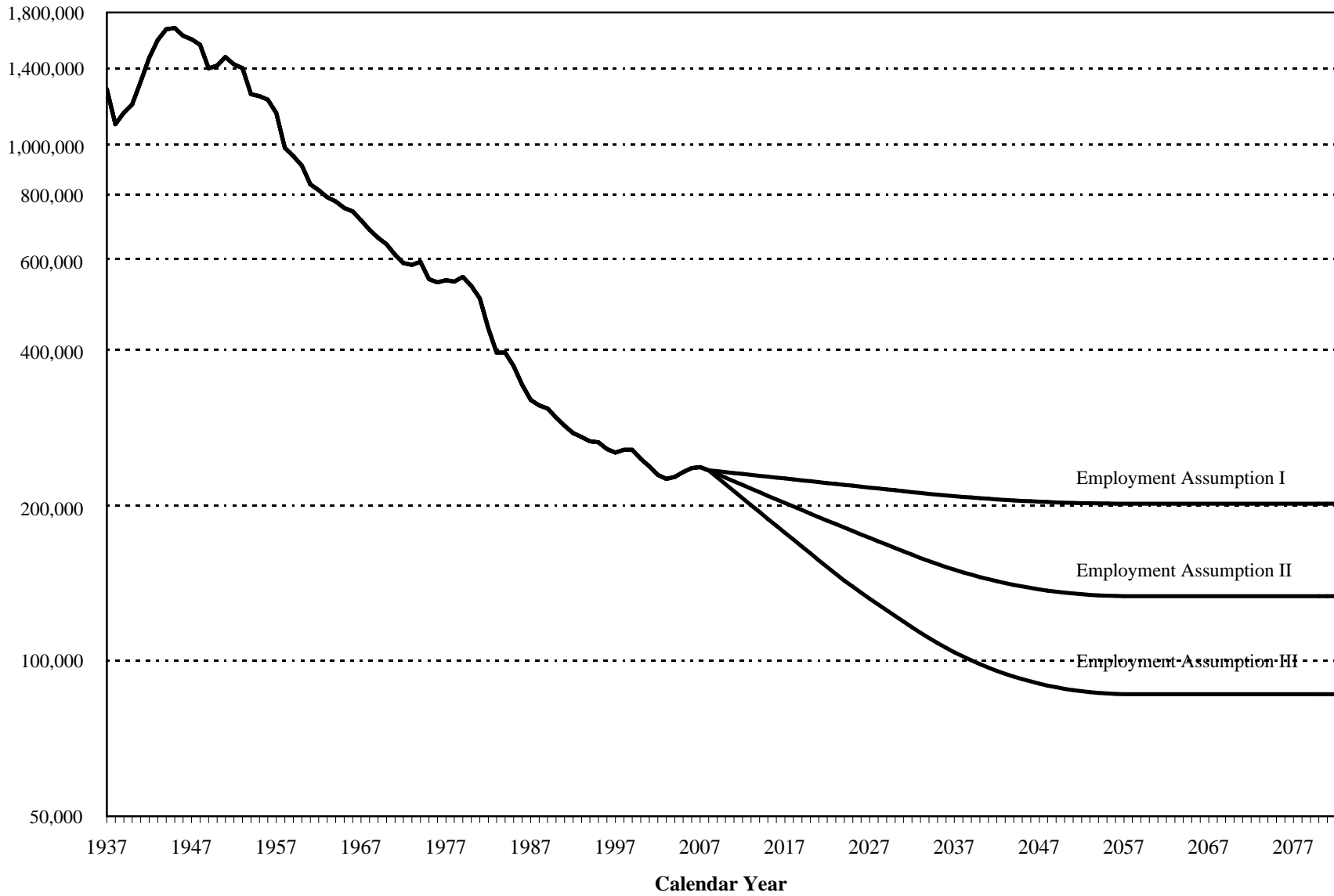


Table 2-I. Progress of the Combined National Railroad Retirement Investment Trust (NRRIT) and Railroad Retirement (RR) Account, and the Social Security Equivalent Benefit (SSEB) Account under Employment Assumption I  
(Dollar amounts in millions)

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 admin-istration	Tax income <sup>c</sup>	Other income <sup>d</sup>	Balance, end year	Benefits and admin-istration	Tax income <sup>c</sup>	Other income and expense <sup>e</sup>	Balance, end year	
2009	4.74	6.90	16.0%	\$4,516	\$2,762	\$1,744	\$20,973	\$6,293	\$2,722	\$3,508	\$783	\$21,756
2010	4.56	6.70	16.0%	4,644	2,851	1,618	20,798	6,333	2,813	3,525	787	21,585
2011	4.32	6.60	16.0%	4,843	2,949	1,541	20,445	6,566	2,913	3,682	816	21,261
2012	4.09	6.30	17.0%	5,046	3,221	1,558	20,178	6,815	3,018	3,827	847	21,025
2013	3.87	6.10	17.0%	5,239	3,333	1,538	19,809	7,083	3,130	3,986	881	20,690
2014	3.68	5.80	18.0%	5,431	3,630	1,518	19,527	7,366	3,248	4,153	916	20,443
2015	3.50	5.50	18.0%	5,617	3,757	1,500	19,167	7,651	3,371	4,315	951	20,118
2016	3.30	5.10	18.0%	5,780	3,889	1,362	18,639	7,949	3,502	4,456	960	19,599
2017	3.15	4.70	18.0%	5,917	4,025	1,411	18,158	8,251	3,640	4,677	1,026	19,184
2018	3.01	4.20	18.0%	6,036	4,166	1,413	17,701	8,548	3,784	4,800	1,063	18,764
2019	2.91	3.90	19.0%	6,136	4,527	1,396	17,489	8,834	3,935	4,935	1,098	18,587
2020	2.85	3.70	19.0%	6,217	4,686	1,391	17,347	9,105	4,081	5,057	1,132	18,479
2021	2.79	3.50	19.0%	6,282	4,850	1,268	17,183	9,357	4,233	5,155	1,163	18,346
2022	2.80	3.40	20.0%	6,333	5,261	1,400	17,511	9,594	4,391	5,232	1,192	18,703
2023	2.86	3.20	20.0%	6,382	5,445	1,437	18,011	9,815	4,554	5,289	1,220	19,231
2024	2.93	3.10	20.0%	6,438	5,634	1,485	18,692	10,027	4,720	5,334	1,246	19,938
2025	3.03	3.10	20.0%	6,500	5,827	1,546	19,565	10,238	4,888	5,376	1,272	20,837
2026	3.15	3.00	20.0%	6,564	6,026	1,528	20,554	10,453	5,061	5,418	1,299	21,853
2027	3.31	3.00	20.0%	6,635	6,231	1,703	21,853	10,675	5,240	5,463	1,326	23,179
2028	3.48	3.00	20.0%	6,725	6,441	1,809	23,377	10,908	5,421	5,515	1,355	24,732
2029	3.68	3.10	20.0%	6,832	6,656	1,931	25,131	11,152	5,606	5,577	1,385	26,516
2030	3.90	3.10	20.0%	6,949	6,881	2,070	27,133	11,409	5,798	5,643	1,417	28,550
2031	4.14	3.20	20.0%	7,074	7,114	2,170	29,343	11,683	5,997	5,719	1,451	30,794
2032	4.42	3.40	20.0%	7,197	7,354	2,401	31,900	11,980	6,203	5,813	1,488	33,388
2033	4.69	3.50	19.0%	7,314	7,249	2,586	34,422	12,308	6,420	5,929	1,528	35,950
2034	4.98	3.70	19.0%	7,448	7,496	2,784	37,254	12,653	6,644	6,052	1,571	38,825
2035	5.29	3.90	19.0%	7,614	7,752	3,006	40,399	13,003	6,873	6,173	1,614	42,013
2036	5.58	4.20	18.0%	7,770	7,628	3,208	43,464	13,371	7,117	6,300	1,660	45,124
2037	5.89	4.40	18.0%	7,925	7,896	3,475	46,911	13,760	7,373	6,435	1,708	48,619
2038	6.23	4.70	18.0%	8,110	8,174	3,742	50,717	14,170	7,637	6,584	1,759	52,476
2039	6.58	4.90	18.0%	8,302	8,464	4,036	54,915	14,614	7,912	6,757	1,814	56,729
2040	6.97	5.20	18.0%	8,493	8,769	4,361	59,551	15,086	8,203	6,942	1,873	61,424
2041	7.36	5.50	18.0%	8,741	9,087	4,710	64,608	15,570	8,502	7,128	1,933	66,541
2042	7.71	5.80	18.0%	9,063	9,417	5,107	70,069	16,061	8,806	7,316	1,994	72,063
2043	8.03	6.20	17.0%	9,371	9,254	5,500	75,452	16,615	9,127	7,556	2,062	77,514
2044	8.35	6.50	16.0%	9,645	9,068	5,888	80,763	17,239	9,467	7,849	2,140	82,903
2045	8.69	6.80	16.0%	9,922	9,407	6,299	86,548	17,880	9,827	8,133	2,220	88,768
2046	8.97	7.20	15.0%	10,262	9,195	6,721	92,202	18,531	10,199	8,413	2,300	94,502
2047	9.15	7.50	14.0%	10,678	8,955	7,132	97,611	19,191	10,580	8,693	2,382	99,993
2048	9.33	7.90	14.0%	11,077	9,295	7,540	103,370	19,921	10,981	9,030	2,473	105,843
2049	9.46	8.20	12.0%	11,452	8,381	7,926	108,225	20,720	11,403	9,416	2,572	110,797
2050	9.49	8.50	10.0%	11,843	7,385	8,248	112,016	21,537	11,845	9,794	2,673	114,689
2055	9.22	9.30	8.2%	14,066	7,498	9,558	128,919	26,088	14,357	11,852	3,238	132,157
2060	8.77	9.30	8.2%	16,601	9,089	10,763	144,639	31,460	17,460	14,141	3,905	148,544
2065	8.38	8.90	10.0%	19,642	13,152	12,154	163,767	37,721	21,231	16,656	4,682	168,449
2070	8.41	8.50	10.0%	23,434	15,969	14,553	196,246	45,187	25,803	19,584	5,609	201,855
2075	8.44	8.50	10.0%	28,168	19,401	17,533	236,625	54,280	31,361	23,164	6,738	243,363
2080	8.44	8.50	10.0%	34,068	23,588	21,192	286,187	65,489	38,127	27,664	8,129	294,316
2082	8.44	8.50	10.0%	36,805	25,509	22,870	308,893	70,686	41,231	29,785	8,774	317,667

<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 admin-istration	Tax income <sup>c</sup>	Other income <sup>d</sup>	Balance, end year	Benefits and admin-istration	Tax income <sup>c</sup>	Other income and expense <sup>e</sup>	Balance, end year	
2009	4.74	6.90	16.0%	\$4,516	\$2,745	\$1,743	\$20,955	\$6,293	\$2,705	\$3,524	\$783	\$21,738
2010	4.54	6.70	16.0%	4,644	2,805	1,615	20,731	6,333	2,767	3,570	787	21,518
2011	4.29	6.60	16.0%	4,843	2,872	1,532	20,293	6,566	2,836	3,758	816	21,109
2012	4.04	6.30	17.0%	5,046	3,104	1,542	19,894	6,815	2,909	3,937	847	20,741
2013	3.79	6.10	17.0%	5,238	3,179	1,510	19,346	7,083	2,984	4,132	881	20,227
2014	3.56	5.80	18.0%	5,429	3,426	1,475	18,817	7,365	3,064	4,337	916	19,733
2015	3.33	5.50	18.0%	5,615	3,508	1,436	18,147	7,651	3,147	4,539	951	19,098
2016	3.08	5.00	18.0%	5,776	3,593	1,274	17,238	7,948	3,235	4,722	959	18,197
2017	2.85	4.60	18.0%	5,912	3,680	1,291	16,297	8,249	3,327	4,988	1,026	17,323
2018	2.63	4.10	18.0%	6,030	3,769	1,257	15,293	8,545	3,424	5,158	1,062	16,355
2019	2.44	3.70	19.0%	6,128	4,050	1,196	14,411	8,829	3,524	5,341	1,098	15,509
2020	2.26	3.50	19.0%	6,207	4,147	1,138	13,490	9,097	3,617	5,513	1,131	14,621
2021	2.09	3.30	20.0%	6,268	4,448	963	12,633	9,345	3,712	5,663	1,162	13,795
2022	1.96	3.10	20.0%	6,316	4,556	1,031	11,904	9,579	3,811	5,793	1,190	13,094
2023	1.92	2.80	23.0%	6,361	5,300	1,011	11,855	9,789	3,911	5,905	1,217	13,072
2024	1.90	2.70	23.0%	6,413	5,427	1,016	11,885	9,992	4,012	6,005	1,242	13,127
2025	1.90	2.50	23.0%	6,470	5,554	1,025	11,995	10,191	4,111	6,104	1,266	13,261
2026	2.01	2.40	27.0%	6,528	6,594	984	13,044	10,391	4,212	6,204	1,291	14,335
2027	2.19	2.20	27.0%	6,595	6,746	1,162	14,358	10,596	4,314	6,307	1,316	15,674
2028	2.38	2.20	27.0%	6,680	6,900	1,267	15,845	10,808	4,415	6,419	1,342	17,187
2029	2.59	2.20	27.0%	6,778	7,055	1,384	17,505	11,027	4,517	6,538	1,370	18,875
2030	2.81	2.20	27.0%	6,884	7,215	1,514	19,350	11,253	4,621	6,660	1,397	20,747
2031	3.05	2.20	27.0%	6,995	7,381	1,600	21,337	11,491	4,728	6,791	1,427	22,764
2032	3.31	2.30	27.0%	7,101	7,550	1,812	23,597	11,746	4,839	6,939	1,458	25,055
2033	3.49	2.50	23.0%	7,196	6,654	1,944	24,999	12,025	4,955	7,105	1,493	26,492
2034	3.65	2.60	23.0%	7,302	6,812	2,055	26,565	12,312	5,075	7,273	1,528	28,093
2035	3.82	2.80	23.0%	7,435	6,975	2,180	28,283	12,596	5,198	7,433	1,564	29,847
2036	3.90	3.00	20.0%	7,555	6,284	2,253	29,265	12,890	5,331	7,596	1,600	30,865
2037	3.99	3.20	20.0%	7,667	6,447	2,360	30,405	13,198	5,472	7,764	1,638	32,043
2038	4.08	3.30	20.0%	7,806	6,615	2,451	31,666	13,518	5,618	7,940	1,678	33,344
2039	4.15	3.50	19.0%	7,945	6,480	2,539	32,739	13,859	5,770	8,131	1,720	34,459
2040	4.23	3.70	19.0%	8,074	6,661	2,626	33,952	14,215	5,935	8,324	1,765	35,717
2041	4.30	3.80	19.0%	8,251	6,851	2,716	35,268	14,571	6,105	8,510	1,809	37,077
2042	4.36	3.90	19.0%	8,483	7,048	2,829	36,662	14,922	6,276	8,690	1,852	38,514
2043	4.39	4.00	18.0%	8,678	6,906	2,921	37,812	15,326	6,462	8,914	1,902	39,714
2044	4.46	4.10	18.0%	8,836	7,115	3,012	39,103	15,777	6,662	9,171	1,958	41,061
2045	4.54	4.20	18.0%	8,997	7,339	3,121	40,566	16,221	6,876	9,400	2,014	42,580
2046	4.61	4.30	18.0%	9,212	7,575	3,239	42,167	16,660	7,097	9,618	2,068	44,235
2047	4.66	4.40	18.0%	9,484	7,821	3,369	43,873	17,096	7,324	9,826	2,122	45,995
2048	4.73	4.40	18.0%	9,717	8,080	3,500	45,736	17,586	7,567	10,080	2,183	47,919
2049	4.84	4.50	18.0%	9,922	8,351	3,647	47,812	18,120	7,825	10,361	2,249	50,061
2050	4.96	4.60	18.0%	10,143	8,638	3,816	50,123	18,644	8,097	10,612	2,314	52,437
2055	5.79	5.00	18.0%	11,400	10,310	4,952	65,972	21,442	9,677	11,838	2,662	68,634
2060	7.22	5.80	18.0%	12,781	12,445	6,843	92,723	24,567	11,697	12,951	3,050	95,773
2065	8.89	7.20	15.0%	14,464	12,718	9,472	129,015	28,094	14,170	14,017	3,487	132,502
2070	10.00	8.70	10.0%	16,620	10,643	12,237	165,866	32,316	17,172	15,258	4,011	169,877
2075	9.93	9.80	8.2%	19,401	10,807	14,203	191,895	37,620	20,825	16,939	4,670	196,565
2080	9.73	10.00	8.2%	23,028	13,109	16,490	222,871	44,429	25,284	19,331	5,515	228,386
2082	9.61	9.90	8.2%	24,747	14,168	17,504	236,545	47,668	27,332	20,541	5,917	242,462

<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 admin-istration	Tax income <sup>c</sup>	Other income <sup>d</sup>	Balance, end year	Benefits and admin-istration	Tax income <sup>c</sup>	Other income and expense <sup>e</sup>	Balance, end year	
2009	4.74	6.90	16.0%	\$4,516	\$2,725	\$1,742	\$20,935	\$6,293	\$2,686	\$3,543	\$783	\$21,718
2010	4.53	6.70	16.0%	4,644	2,752	1,611	20,654	6,333	2,715	3,623	787	21,441
2011	4.26	6.60	16.0%	4,842	2,784	1,523	20,119	6,566	2,749	3,846	816	20,935
2012	3.98	6.30	17.0%	5,045	2,972	1,524	19,570	6,815	2,784	4,062	847	20,417
2013	3.70	6.10	17.0%	5,237	3,006	1,479	18,818	7,083	2,821	4,296	881	19,699
2014	3.42	5.80	18.0%	5,428	3,198	1,426	18,015	7,365	2,859	4,541	916	18,931
2015	3.13	5.40	18.0%	5,612	3,234	1,365	17,002	7,650	2,899	4,786	951	17,953
2016	2.82	5.00	18.0%	5,773	3,271	1,175	15,675	7,947	2,943	5,012	959	16,634
2017	2.52	4.50	18.0%	5,907	3,307	1,159	14,233	8,247	2,989	5,325	1,025	15,258
2018	2.21	4.00	18.0%	6,024	3,343	1,085	12,639	8,541	3,037	5,541	1,062	13,701
2019	1.91	3.60	19.0%	6,119	3,544	977	11,040	8,823	3,087	5,771	1,097	12,137
2020	1.63	3.30	20.0%	6,196	3,749	870	9,463	9,087	3,128	5,992	1,130	10,593
2021	1.33	3.00	20.0%	6,254	3,789	634	7,633	9,331	3,170	6,190	1,160	8,793
2022	1.10	2.70	23.0%	6,298	4,340	648	6,323	9,555	3,213	6,370	1,188	7,511
2023	0.96	2.40	27.0%	6,339	5,073	584	5,642	9,761	3,255	6,531	1,213	6,855
2024	0.85	2.20	27.0%	6,387	5,129	539	4,923	9,953	3,298	6,679	1,237	6,160
2025	0.72	1.90	27.0%	6,438	5,188	490	4,163	10,138	3,341	6,820	1,260	5,423
2026	0.58	1.70	27.0%	6,490	5,249	344	3,266	10,323	3,385	6,961	1,282	4,548
2027	0.45	1.40	27.0%	6,547	5,311	373	2,404	10,509	3,429	7,103	1,305	3,709
2028	0.30	1.20	27.0%	6,618	5,372	311	1,468	10,699	3,471	7,251	1,329	2,797
2029	0.15	1.00	27.0%	6,701	5,432	243	443	10,891	3,512	7,403	1,353	1,796
2030	0.09	0.90	27.0%	6,787	5,496	848	-	11,084	3,555	6,874	697	697
2031	0.01	0.70	27.0%	6,876	5,563	751	(562)	11,283	3,599	6,987	-	(562)
2032	-0.18	0.60	27.0%	6,958	5,631	19	(1,870)	11,495	3,645	7,850	-	(1,870)
2033	-0.37	0.40	27.0%	7,024	5,703	(77)	(3,267)	11,722	3,695	8,027	-	(3,267)
2034	-0.58	0.30	27.0%	7,099	5,782	(179)	(4,763)	11,949	3,749	8,200	-	(4,763)
2035	-0.79	0.20	27.0%	7,198	5,865	(290)	(6,386)	12,165	3,803	8,362	-	(6,386)
2036	-1.02	-0.10	27.0%	7,278	5,958	(437)	(8,143)	12,386	3,865	8,521	-	(8,143)
2037	-1.25	-0.20	27.0%	7,351	6,062	(537)	(9,969)	12,612	3,934	8,678	-	(9,969)
2038	-1.50	-0.40	27.0%	7,444	6,171	(671)	(11,913)	12,843	4,005	8,838	-	(11,913)
2039	-1.75	-0.60	27.0%	7,533	6,288	(814)	(13,973)	13,084	4,081	9,003	-	(13,973)
2040	-2.01	-0.80	27.0%	7,607	6,420	(963)	(16,123)	13,327	4,168	9,159	-	(16,123)
2041	-2.27	-1.00	27.0%	7,720	6,560	(1,130)	(18,413)	13,558	4,257	9,302	-	(18,413)
2042	-2.54	-1.20	27.0%	7,867	6,706	(1,291)	(20,866)	13,777	4,347	9,431	-	(20,866)
2043	-2.83	-1.50	27.0%	7,954	6,866	(1,469)	(23,423)	14,041	4,451	9,590	-	(23,423)
2044	-3.13	-1.70	27.0%	8,005	7,039	(1,653)	(26,042)	14,329	4,566	9,764	-	(26,042)
2045	-3.44	-2.00	27.0%	8,061	7,230	(1,842)	(28,715)	14,589	4,690	9,898	-	(28,715)
2046	-3.73	-2.20	27.0%	8,165	7,430	(2,037)	(31,488)	14,834	4,818	10,016	-	(31,488)
2047	-4.02	-2.50	27.0%	8,306	7,639	(2,239)	(34,393)	15,065	4,949	10,117	-	(34,393)
2048	-4.33	-2.80	27.0%	8,385	7,864	(2,448)	(37,363)	15,344	5,094	10,250	-	(37,363)
2049	-4.65	-3.10	27.0%	8,436	8,101	(2,660)	(40,357)	15,642	5,249	10,392	-	(40,357)
2050	-4.97	-3.30	27.0%	8,506	8,356	(2,875)	(43,382)	15,907	5,414	10,494	-	(43,382)
2055	-6.46	-4.90	27.0%	8,900	9,872	(3,960)	(58,610)	17,233	6,387	10,846	-	(58,610)
2060	-7.61	-6.30	27.0%	9,319	11,871	(4,928)	(71,942)	18,622	7,664	10,958	-	(71,942)
2065	-8.01	-7.50	27.0%	9,957	14,344	(5,568)	(80,483)	20,218	9,234	10,985	-	(80,483)
2070	-7.35	-7.90	27.0%	10,978	17,365	(5,645)	(80,962)	22,319	11,145	11,174	-	(80,962)
2075	-5.53	-7.30	27.0%	12,523	21,062	(4,844)	(68,887)	25,242	13,482	11,759	-	(68,887)
2080	-2.64	-5.60	27.0%	14,678	25,586	(2,701)	(37,627)	29,287	16,350	12,937	-	(37,627)
2082	-1.21	-4.60	27.0%	15,719	27,665	(1,321)	(17,641)	31,277	17,671	13,607	-	(17,641)

<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<sup>a</sup> of benefits in millions of dollars

	Employment assumption I			Employment assumption II			Employment assumption III		
	Tier 2 <sup>b</sup>	Tier 1 liability	Total	Tier 2 <sup>b</sup>	Tier 1 liability	Total	Tier 2 <sup>b</sup>	Tier 1 liability	Total
<b>Employee annuities</b>									
Retired	\$16,549	\$ 6,281	\$22,831	\$16,549	\$ 6,281	\$22,831	\$16,549	\$ 6,281	\$22,831
Active	18,627	9,229	27,856	18,627	9,229	27,856	18,627	9,229	27,856
Inactive	1,309	446	1,755	1,309	446	1,755	1,309	446	1,755
Future entrants	<u>6,508</u>	<u>2,668</u>	<u>9,176</u>	<u>4,813</u>	<u>1,977</u>	<u>6,790</u>	<u>3,333</u>	<u>1,370</u>	<u>4,703</u>
Total	42,994	18,624	61,618	41,298	17,933	59,231	39,818	17,327	57,145
<b>Spouse annuities</b>									
Retired	4,178	1,610	5,788	4,178	1,610	5,788	4,178	1,610	5,788
Active	4,525	2,669	7,193	4,525	2,669	7,193	4,525	2,669	7,193
Inactive	278	85	363	278	85	363	278	85	363
Future entrants	<u>1,269</u>	<u>439</u>	<u>1,708</u>	<u>943</u>	<u>328</u>	<u>1,271</u>	<u>654</u>	<u>229</u>	<u>883</u>
Total	10,250	4,802	15,053	9,924	4,692	14,615	9,635	4,592	14,227
<b>Survivor annuities</b>									
Retired & deceased	5,216	870	6,086	5,216	870	6,086	5,216	870	6,086
Active	2,142	278	2,421	2,142	278	2,421	2,142	278	2,421
Inactive	60	23	83	60	23	83	60	23	83
Future entrants	<u>816</u>	<u>175</u>	<u>991</u>	<u>610</u>	<u>130</u>	<u>740</u>	<u>425</u>	<u>90</u>	<u>515</u>
Total	8,234	1,347	9,581	8,028	1,302	9,329	7,843	1,262	9,105
<b>All annuities combined</b>									
Retired & deceased	25,943	8,762	34,705	25,943	8,762	34,705	25,943	8,762	34,705
Active	25,294	12,176	37,470	25,294	12,176	37,470	25,294	12,176	37,470
Inactive	1,647	554	2,201	1,647	554	2,201	1,647	554	2,201
Future entrants	<u>8,594</u>	<u>3,281</u>	<u>11,876</u>	<u>6,365</u>	<u>2,435</u>	<u>8,800</u>	<u>4,412</u>	<u>1,689</u>	<u>6,101</u>
Total annuities	\$61,478	\$24,773	\$86,252	\$59,249	\$23,926	\$83,176	\$57,296	\$23,181	\$80,477
Lump sum payments			<u>62</u>			<u>62</u>			<u>62</u>
Total benefits			\$86,314			\$83,238			\$80,539

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

<sup>a</sup> Present values are determined using a 7.5% interest rate for all years.

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

Table 4. Present value<sup>a</sup> of benefits as a percentage of the present value<sup>a</sup> of tier 2 payroll

	Employment assumption I			Employment assumption II			Employment assumption III		
	Tier 2 <sup>b</sup>	Tier 1 liability	Total	Tier 2 <sup>b</sup>	Tier 1 liability	Total	Tier 2 <sup>b</sup>	Tier 1 liability	Total
<b>Employee annuities</b>									
Retired	4.46%	1.69%	6.15%	5.43%	2.06%	7.49%	6.63%	2.52%	9.15%
Active	5.02	2.49	7.50	6.11	3.03	9.14	7.47	3.70	11.17
Inactive	0.35	0.12	0.47	0.43	0.15	0.58	0.52	0.18	0.70
Future entrants	1.75	0.72	2.47	1.58	0.65	2.23	1.34	0.55	1.89
Total	11.58	5.02	16.60	13.55	5.88	19.43	15.96	6.95	22.91
<b>Spouse annuities</b>									
Retired	1.13	0.43	1.56	1.37	0.53	1.90	1.68	0.65	2.32
Active	1.22	0.72	1.94	1.48	0.88	2.36	1.81	1.07	2.88
Inactive	0.07	0.02	0.10	0.09	0.03	0.12	0.11	0.03	0.15
Future entrants	0.34	0.12	0.46	0.31	0.11	0.42	0.26	0.09	0.35
Total	2.76	1.29	4.05	3.26	1.54	4.79	3.86	1.84	5.70
<b>Survivor annuities</b>									
Retired & deceased	1.40	0.23	1.64	1.71	0.29	2.00	2.09	0.35	2.44
Active	0.58	0.07	0.65	0.70	0.09	0.79	0.86	0.11	0.97
Inactive	0.02	0.01	0.02	0.02	0.01	0.03	0.02	0.01	0.03
Future entrants	0.22	0.05	0.27	0.20	0.04	0.24	0.17	0.04	0.21
Total	2.22	0.36	2.58	2.63	0.43	3.06	3.14	0.51	3.65
<b>All annuities combined</b>									
Retired & deceased	6.99	2.36	9.35	8.51	2.87	11.38	10.40	3.51	13.91
Active	6.81	3.28	10.09	8.30	3.99	12.29	10.14	4.88	15.02
Inactive	0.44	0.15	0.59	0.54	0.18	0.72	0.66	0.22	0.88
Future entrants	2.31	0.88	3.20	2.09	0.80	2.89	1.77	0.68	2.45
Total annuities	16.56%	6.67%	23.23%	19.44%	7.85%	27.28%	22.97%	9.29%	32.26%
Lump sum payments			0.02			0.02			0.02
Total benefits			23.25%			27.30%			32.29%

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

<sup>a</sup> Present values are determined using a 7.5% interest rate for all years.

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



Table 5. Balance of the Combined National Railroad Retirement Investment Trust and Railroad Retirement Account, and the Social Security Equivalent Benefit Account as of December 31, 2007  
(Dollar amounts in millions)

	Combined NRRIT and RR Account	SSEB Account
Securities:		
Market value of NRRIT investments	\$ 32,098	\$ -
Par value specials <sup>a</sup> (including accrued interest)	357	750
Cash accounts	<u>13</u>	<u>1</u>
Balance	32,468	751
Adjustment due to 2008 market value loss <sup>b</sup>	<u>11,433</u>	<u>-</u>
Adjusted balance for use in present value calculation	\$ 21,035	\$ 751

<sup>a</sup> Par value specials are securities issued by the Treasury directly to the RR and SSEB 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.

<sup>b</sup> The adjusted balance as of December 31, 2007, is calculated so that, when projected with a 7.5% rate of return, the combined NRRIT, RR Account and SSEB Account balance projected on December 31, 2008, is equal to the actual balance on that date. This adjustment is used to allow recognition of known losses when comparing assets with present values calculated using a 7.5% rate of return.

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>		
Adjusted funds on hand, 12/31/2007	\$ 21,035	\$ 21,035	\$ 21,035
Retirement taxes	61,286	57,820	53,739
Income taxes on benefits	6,002	5,783	5,590
Available from SSEB Account	<u>2,094</u>	<u>2,025</u>	<u>1,966</u>
Total, present and prospective assets	90,417	86,663	82,330
Benefit payments	86,314	83,238	80,539
Administrative expenses	<u>2,702</u>	<u>2,355</u>	<u>1,869</u>
Total liabilities	<u>89,016</u>	<u>85,593</u>	<u>82,408</u>
Actuarial surplus or (deficiency)	<u>1,401</u>	<u>1,070</u>	<u>(78)</u>
One percent of tier 2 payroll	\$ 3,713	\$ 3,048	\$ 2,494
	<u>Present values as a percentage of tier 2 payroll</u>		
Adjusted funds on hand, 12/31/2007	5.67%	6.90%	8.43%
Retirement taxes	16.51	18.97	21.54
Income taxes on benefits	1.62	1.90	2.24
Available from SSEB Account	<u>0.56</u>	<u>0.66</u>	<u>0.79</u>
Total, present and prospective assets	24.35	28.43	33.01
Benefit payments	23.25	27.30	32.29
Administrative expenses	<u>0.73</u>	<u>0.77</u>	<u>0.75</u>
Total liabilities	<u>23.97</u>	<u>28.08</u>	<u>33.04</u>
Actuarial surplus or (deficiency)	<u>0.38</u>	<u>0.35</u>	<u>(0.03)</u>

Table 7. Unfunded accrued liability  
(Dollar amounts in millions)

	Amount or rate		
1. Present value of benefits for former and present employees	\$ 74,438		
2. Present value of administrative expenses for former and present employees	2,106		
3. Present value of tier 2 payroll for present employees	128,929		
4. Normal cost as a level percentage of tier 2 payroll	6.26%		
5. Present value of future service costs for present employees = (3) x (4)	8,071		
6. Accrued liability = (1) + (2) - (5)	68,473		
7. Funds on hand, 12/31/2007 <sup>a</sup>	21,786		
8. Unfunded accrued liability = (6) - (7)	46,687		
9. Level amount to fund unfunded accrued liability in 30 years	3,800		
	Employment Assumption		
	I	II	III
10. Level tax rate to fund unfunded accrued liability and meet normal costs for next 30 years	24.03%	26.44%	29.46%
11. Tax rate after 30 years (normal cost rate)	6.26%	6.26%	6.26%

<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
2010	\$64	33,000
2011	57	29,000
2012	50	25,000
2013	44	22,000
2014	38	19,000
2015	33	17,000
2016	28	14,000
2017	24	12,000
2018	20	10,000
2019	17	9,000
2020	14	7,000
2021	12	6,000
2022	10	5,000
2023	8	4,000
2024	6	3,000
2025	5	3,000
2026	4	2,000
2027	3	2,000
2028	3	1,000
2029	2	1,000
2030	2	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>
2009	\$61	121,000
2010	61	121,000
2011	61	121,000
2012	61	122,000
2013	61	122,000
2014	61	121,000
2015	60	121,000
2016	60	119,000
2017	59	118,000
2018	58	115,000
2019	56	112,000
2020	55	109,000
2021	53	105,000
2022	50	100,000
2023	48	96,000
2024	45	91,000
2025	43	86,000
2026	40	81,000
2027	38	76,000
2028	36	71,000
2029	33	66,000
2030	31	61,000
2031	28	57,000
2032	26	52,000
2033	24	48,000
2034	22	44,000
2035	20	39,000
2036	18	35,000
2037	16	32,000
2038	14	28,000
2039	12	25,000
2040	11	22,000
2041	9	19,000
2042	8	16,000
2043	7	14,000
2044	6	12,000
2045	5	10,000

<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, 2008, 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
2009	559,500	559,500	559,500	2.40	2.43	2.47
2010	554,100	554,100	554,100	2.39	2.45	2.52
2011	549,500	549,500	549,500	2.38	2.47	2.58
2012	545,700	545,700	545,700	2.37	2.49	2.64
2013	542,100	542,100	542,100	2.37	2.52	2.71
2014	539,200	539,200	539,200	2.36	2.54	2.78
2015	536,000	535,900	535,900	2.36	2.57	2.85
2016	532,500	532,400	532,400	2.35	2.59	2.92
2017	528,400	528,300	528,200	2.34	2.61	2.98
2018	523,700	523,500	523,400	2.33	2.63	3.05
2019	518,100	517,900	517,600	2.32	2.65	3.11
2020	511,600	511,300	510,800	2.30	2.65	3.16
2021	504,100	503,600	503,000	2.27	2.65	3.21
2022	495,800	495,100	494,200	2.24	2.65	3.25
2023	487,000	486,000	484,900	2.21	2.64	3.29
2024	478,100	476,700	475,300	2.18	2.63	3.33
2025	469,000	467,300	465,500	2.15	2.62	3.35
2026	460,000	457,900	455,600	2.12	2.61	3.36
2027	451,200	448,600	445,800	2.08	2.59	3.38
2028	442,900	439,800	436,300	2.05	2.58	3.39
2029	435,100	431,300	427,200	2.03	2.57	3.41
2030	427,700	423,100	418,100	2.00	2.56	3.42
2031	420,600	415,100	409,200	1.97	2.55	3.44
2032	414,000	407,500	400,600	1.95	2.54	3.45
2033	407,800	400,200	392,200	1.93	2.53	3.46
2034	402,200	393,400	384,000	1.91	2.52	3.47
2035	397,000	386,900	376,100	1.89	2.51	3.48
2036	391,900	380,400	368,200	1.88	2.50	3.47
2037	387,100	374,000	360,400	1.86	2.49	3.47
2038	382,900	368,200	353,000	1.84	2.48	3.46
2039	379,200	362,800	345,900	1.83	2.47	3.45
2040	375,800	357,500	338,700	1.82	2.46	3.44
2041	372,900	352,600	331,800	1.81	2.45	3.42
2042	370,700	348,100	325,300	1.81	2.44	3.40
2043	368,900	343,900	318,800	1.80	2.43	3.38
2044	367,400	339,900	312,400	1.80	2.42	3.35
2045	366,000	335,800	305,900	1.79	2.41	3.32
2046	365,000	332,100	299,600	1.79	2.40	3.29
2047	364,400	328,600	293,600	1.79	2.39	3.25
2048	364,100	325,300	287,700	1.79	2.38	3.21
2049	363,900	322,100	281,800	1.80	2.37	3.17
2050	363,700	318,800	275,700	1.80	2.35	3.12
2055	363,100	302,300	246,400	1.80	2.26	2.85
2060	360,200	284,700	218,400	1.79	2.13	2.53
2065	354,700	266,800	193,900	1.76	2.00	2.25
2070	348,600	251,100	174,500	1.73	1.88	2.02
2075	343,500	239,200	161,100	1.70	1.79	1.87
2080	340,200	231,400	152,800	1.69	1.73	1.77
2082	339,300	229,300	150,700	1.68	1.72	1.75

Table 11. Transfers to railroad retirement system under financial interchange with social security system, 1937-2009<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	3,846.3	2006
55	2006	5,746.8	1,976.5	4,019.8	2007
56	2007	5,853.6	2,076.6	4,049.9	2008
57	2008	6,005.5	2,095.6	4,137.3	2009
Total	1937-2008	161,534.0	58,922.3	111,815.7	

<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 & Medicaid Services, with some adjustments for difference in earnings bases under the two systems.

<sup>b</sup> Amounts include allowances for administrative expenses and adjustments to previous determinations.

<sup>c</sup> 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, 2008

#### 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 in 2009, loss of one month's annuity for each \$770 in excess of \$9,240 earned in a year with the last \$385 of such excess treated as \$770 (no annuity is lost for any month with earnings below \$770). 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	1998	\$68,400	\$50,700
1986	42,000	31,500	1999	72,600	53,700
1987	43,800	32,700	2000	76,200	56,700
1988	45,000	33,600	2001	80,400	59,700
1989	48,000	35,700	2002	84,900	63,000
1990	51,300	38,100	2003	87,000	64,500
1991	53,400	39,600	2004	87,900	65,100
1992	55,500	41,400	2005	90,000	66,900
1993	57,600	42,900	2006	94,200	69,900
1994	60,600	45,000	2007	97,500	72,600
1995	61,200	45,300	2008	102,000	75,900
1996	62,700	46,500	2009	106,800	79,200
1997	65,400	48,600			

#### 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.

---

#### 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.

---

#### 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 39).

---

#### 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.

---

#### 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.

---

#### 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.

---

## 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.

---

## SPOUSE BENEFITS

---

## 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.

---

#### 21. Divorced spouse, partitioned spouse and partitioned divorced spouse

A divorced spouse is entitled to a tier 1 benefit if the employee is retired, the employee and divorced spouse have been married for at least 10 consecutive years and have both attained age 62, and the divorced spouse is unmarried. If the employee is not retired, but has sufficient railroad service to otherwise be eligible for an annuity, the divorced spouse can receive a tier 1 benefit if the above conditions are met and the parties have been divorced for a period of not less than 2 years, and the employee is fully insured under the Social Security Act using combined railroad and social security earnings.

If the employee is retired, court ordered partition of tier 2, supplemental annuity, vested dual benefit and minimum guarantee amounts (see item 42) are payable, and the employee's monthly annuity is reduced by the amount of the partition payment. If the employee is not retired, court ordered partition of tier 2 and vested dual benefit payments are payable if (1) the employee has 10 years of service or 5 years of service after 1995, and (2) both the employee and former spouse have attained age 62.

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

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

### **SURVIVOR AND DEATH BENEFITS**

#### 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.

#### 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.

#### 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.

#### 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.

#### 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.

## 28. Divorced widow(er)s, remarried widow(er)s eligibility, partitioned surviving spouse and partitioned surviving divorced spouse

The following are eligible for a tier 1 benefit.

- 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.

Where court ordered partition of tier 2, supplemental annuity and vested dual benefit payments are in effect at the time of the employee's death, such payments will continue after the employee's death unless the court order requires termination upon the employee's death. Where the employee dies before partition payments are initiated, and the employee acquired 120 months of railroad service, or 60 months of service after 1995, such payments may be made when both the spouse/divorced spouse, and the employee if he had survived, would be 62.

## 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.

## 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.

## 31. Work restrictions

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

## 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.

## 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.

## 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.

<u>AABR</u>		<u>Tier 2 tax rate</u>	
<u>At least</u>	<u>But less than</u>	<u>Employer</u>	<u>Employee</u>
	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. 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.

### 38. 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. The Trust may transfer funds back to the Railroad Retirement Account for the payment of benefits.

### 39. 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.

### 40. 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

### 41. 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.

### 42. 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.

## 43. Automatic benefit eligibility adjustments

A liberalization of entitlement provisions enacted for title II of the Social Security Act will be applied to provide entitlement to a Tier 1 benefit under the Railroad Retirement Act.

## 44. 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 24<sup>th</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 2082 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, 2007). This included information needed to project benefits for this group. Information needed to derive exposures and terminations for mortality and remarriage studies was obtained from a similar universe file created at an earlier date.

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 universe files.

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. Four 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 2003-2006 showed that the pattern of improved mortality at the younger ages found in the 2000-2003 experience continued. Based on the thinning of margin and the degree of fit by attained age, a new table, the 2007 RRB Annuitants Mortality Table, was constructed.

Mortality after disability retirement. The overall ratio of actual to expected deaths after disability retirement based on the 23<sup>rd</sup> valuation standard was 97.0% and 99.8% 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 2007 RRB Disabled Mortality Table for Annuitants with Disability Freeze and the 2007 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 90.3%. Based on the continued improvement in the mortality experience, a new table, the 2003 Active Service Mortality Table, was constructed.

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 if the employee maintained a current connection.

The overall ratio of actual terminations to those expected on the basis of the 23<sup>rd</sup> valuation standard was 99.6%. Based on the improvement in spouse termination since the 2000-2003 period, a new table, the 2007 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, 2006, to the expected number based on the 23<sup>rd</sup> valuation standard was 104.3% and 100.6%, for employees with fewer than 30 years of service and employees with 30 or more years of service, 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 111.4% based on the 23<sup>rd</sup> valuation standard, the 1995 RRB Mortality Table for Widows. Since the current standard provides adequate margin for mortality improvement, both overall and at most ages, the 23<sup>rd</sup> valuation standard was retained.

Remarriage of widows. The overall ratio of actual to expected remarriages on the basis of the 23<sup>rd</sup> valuation standard, the 1997 RRB Remarriage Table, was 97.8%. Based on the degree of fit, newness of the current standard, relatively small number of remarriages, and relatively small impact of a change in remarriage rates on the valuation results, the 23<sup>rd</sup> valuation standard was retained.

Total termination for disabled children. The overall ratio of actual terminations to those expected on the basis of the 23<sup>rd</sup> valuation standard, the 2004 RRB Total Termination Table for Disabled Children, was 112.1%. Based on the relatively small number of terminations, the accompanying higher volatility of termination rates, and the adequate margin in the current standard, the 23<sup>rd</sup> valuation standard was retained.

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 23<sup>rd</sup> valuation standard was 83.3%. Based on the volatility of withdrawal rates, the lack of any clear trend in withdrawal patterns, and the reasonable overall fit of the 23<sup>rd</sup> valuation rates, the 23<sup>rd</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 with service before October, 1981, 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 23<sup>rd</sup> and 24<sup>th</sup> valuations and the crude rates during calendar years 2004-2006 is shown in Table S-28. For employees with 5-29 years of service, the assumed 24<sup>th</sup> valuation rates are close to the 2004-2006 crude rates at ages under 67 and constant for ages over 66. For employees with 30 or more years of service, the assumed 24<sup>th</sup> valuation rates are close to the crude rates for ages 60-71 and constant for ages over 71.

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 2004-2006 to those expected based on the 23<sup>rd</sup> valuation standard was 82.7%. The ratio of actual to expected disability retirements for employees with 20-24 years of service was 113.8%, and for employees with 25-29 years of service it was 66.3%. For employees with 30 or more years of service the ratio of actual to expected disability retirements was 92.3%. The overall ratio of actual to expected disability retirements for all employees was 85.7%. Because of the recent volatility of experience, current experience was combined with that of the period 2001-2003, and a new table of rates of disability retirement was constructed based on the combined 2001-2006 experience.

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 23<sup>rd</sup> valuation standard was 99.9% and 100.4% 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 24<sup>th</sup> valuation. In the current experience, the disability freeze rates for the 20-24 years of service group, the 25-29 years of service group, and the 30 or more years of service group are close, and 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 0.3% (30 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 24<sup>th</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. 2007 RRB Annuitants Mortality Table

Age <sup>a</sup>	1,000q <sub>x</sub>	Age <sup>a</sup>	1,000q <sub>x</sub>
60	6.24	95	268.71
61	7.07	96	289.17
62	8.01	97	308.70
63	9.06	98	326.87
64	10.24	99	343.32
65	11.57	100	357.71
66	13.05	101	369.73
67	14.72	102	379.10
68	16.58	103	385.52
69	18.66	104	388.66
70	20.98	105	390.05
71	23.57	106	391.43
72	26.45	107	392.81
73	29.66	108	394.18
74	33.22	109	395.55
75	37.17	110	1,000.00
76	41.55		
77	46.40		
78	51.76		
79	57.66		
80	64.17		
81	71.33		
82	79.19		
83	87.81		
84	97.24		
85	107.53		
86	118.74		
87	130.93		
88	144.16		
89	158.47		
90	173.91		
91	190.53		
92	208.36		
93	227.44		
94	247.79		

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

Table S-2. 2007 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	15.44	65	33.91	100	367.77
31	15.59	66	36.30	101	377.91
32	15.75	67	38.89	102	385.86
33	15.90	68	41.70	103	391.37
34	16.06	69	44.74	104	394.18
35	16.22	70	48.04	105	395.55
36	16.38	71	51.61	106	396.92
37	16.54	72	55.47	107	398.29
38	16.71	73	59.65	108	399.65
39	16.87	74	64.17	109	401.01
40	17.04	75	69.05	110	1,000.00
41	17.30	76	74.33		
42	17.56	77	80.04		
43	17.83	78	86.20		
44	18.10	79	92.84		
45	18.38	80	100.00		
46	18.66	81	107.72		
47	18.94	82	116.03		
48	19.23	83	124.97		
49	19.52	84	134.57		
50	19.82	85	144.89		
51	20.12	86	155.95		
52	20.43	87	167.80		
53	20.74	88	180.47		
54	21.06	89	194.02		
55	21.38	90	208.47		
56	21.70	91	223.86		
57	22.03	92	240.34		
58	22.37	93	257.69		
59	23.05	94	275.42		
60	24.48	95	293.08		
61	26.08	96	310.28		
62	27.80	97	326.66		
63	29.68	98	341.89		
64	31.71	99	355.68		

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

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

Table S-3. 2007 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	3.77	70	34.75	100	366.45
41	3.89	71	37.99	101	376.04
42	4.00	72	41.54	102	383.53
43	4.12	73	45.40	103	388.73
44	4.24	74	49.62	104	391.43
45	4.36	75	54.23	105	392.81
46	4.49	76	59.27	106	394.18
47	4.62	77	64.78	107	395.55
48	4.76	78	70.79	108	396.92
49	5.21	79	77.36	109	398.29
50	5.70	80	84.54	110	1,000.00
51	6.25	81	92.36		
52	6.84	82	100.90		
53	7.49	83	110.19		
54	8.20	84	120.31		
55	8.98	85	131.32		
56	9.83	86	143.29		
57	10.77	87	156.27		
58	11.79	88	170.34		
59	12.90	89	185.57		
60	14.13	90	202.02		
61	15.46	91	219.76		
62	16.92	92	238.37		
63	18.52	93	257.13		
64	20.27	94	275.39		
65	22.18	95	293.06		
66	24.27	96	310.26		
67	26.55	97	326.63		
68	29.05	98	341.72		
69	31.77	99	354.95		

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

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



Table S-4. 2003 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	1.72
		46	1.81
17	1.11	47	1.91
18	1.11	48	2.03
19	1.11	49	2.16
20	1.11	50	2.30
21	1.11	51	2.47
22	1.11	52	2.65
23	1.11	53	2.85
24	1.11	54	3.08
25	1.11	55	3.34
26	1.11	56	3.63
27	1.11	57	3.96
28	1.11	58	4.33
29	1.11	59	4.74
30	1.11	60	5.20
31	1.12	61	5.72
32	1.14	62	6.30
33	1.16	63	6.96
34	1.18	64	7.69
35	1.21	65	8.52
36	1.24	66	9.44
37	1.27	67	10.48
38	1.31	68	11.65
39	1.35	69	12.96
40	1.39	70	14.43
41	1.44	71	16.08
42	1.50	72	17.94
43	1.57	73	20.02
44	1.64	74	22.36
		75	24.99

<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. 2007 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	23.06	95	368.07
61	24.83	96	387.77
62	26.76	97	407.05
63	28.85	98	425.90
64	31.13	99	444.30
65	33.61	100	462.26
66	36.32	101	479.76
67	39.26	102	496.80
68	42.47	103	513.38
69	45.98	104	529.50
70	49.80	105	545.16
71	53.96	106	560.36
72	58.51	107	575.10
73	63.48	108	589.38
74	68.90	109	603.21
75	74.82	110	1,000.00
76	81.29		
77	88.35		
78	96.06		
79	104.47		
80	113.66		
81	123.67		
82	134.60		
83	146.50		
84	159.45		
85	173.55		
86	188.86		
87	205.47		
88	223.47		
89	242.92		
90	263.69		
91	285.29		
92	306.55		
93	327.44		
94	347.95		

<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	0.196	0.000
61	0.300	0.000
62	0.414	0.087
63	0.507	0.192
64	0.580	0.276
65	0.637	0.349
66	0.681	0.412
67	0.713	0.466
68	0.738	0.510
69	0.756	0.546
70	0.770	0.574
71	0.779	0.594
72	0.784	0.609
73	0.785	0.616
74	0.781	0.619
75	0.775	0.616
76	0.765	0.610
77	0.753	0.599
78	0.738	0.585
79	0.721	0.569
80	0.703	0.551
81	0.682	0.531
82	0.661	0.510
83	0.638	0.490
84	0.616	0.469
85	0.592	0.449
86	0.568	0.429
87	0.543	0.408
88	0.517	0.387
89	0.490	0.366
90	0.462	0.344
91	0.432	0.322
92	0.402	0.298
93	0.370	0.273
94	0.337	0.247
95	0.303	0.220
96	0.266	0.190
97	0.228	0.159
98	0.189	0.126
99 & over	0.147	0.091

<sup>a</sup> Age nearest 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	8.29
56	1.85	3.78	3.93	3.60	14.84	61	4.17
57	1.58	3.15	3.18	15.76	8.28	62	5.24
58	1.31	2.55	14.26	8.24	9.93	63	4.67
59	1.06	13.76	8.54	10.16	8.98	64	4.16
60	7.27	8.49	9.95	9.11	8.13	65	3.71
61	3.77	9.78	9.10	8.16	7.35	66	3.31
62	4.67	8.98	8.32	7.32	6.65	67	2.95
63	4.18	8.24	7.60	6.56	6.01	68	2.63
64	3.74	7.56	6.95	5.88	5.44	69	2.34
65	3.35	6.94	6.35	5.27	4.92	70	2.08
66	3.00	6.38	5.81	4.72	4.45	71	1.85
67	2.68	5.86	5.31	4.23	4.03	72	1.64
68	2.40	5.38	4.85	3.79	3.60	73	1.45
69	2.15	4.94	4.43	3.36	3.17	74	1.27
70	1.92	4.54	4.02	2.95	2.77	75	1.10
71	1.72	4.13	3.60	2.56	2.38	76	0.94
72	1.54	3.73	3.21	2.20	2.03	77	0.81
73	1.39	3.34	2.83	1.86	1.70	78	0.69
74	1.26	2.96	2.47	1.57	1.42	79	0.58
75	1.14	2.61	2.14	1.30	1.16	80	0.49
76	1.04	2.28	1.84	1.08	0.95	81	0.40
77	0.95	1.97	1.57	0.88	0.76	82	0.33
78	0.87	1.70	1.33	0.71	0.60	83	0.27
79	0.79	1.45	1.11	0.57	0.47	84	0.22
80	0.73	1.22	0.92	0.45	0.37	85	0.18
81	0.68	1.03	0.76	0.35	0.28	86	0.15
82	0.63	0.85	0.62	0.27	0.22	87	0.12
83	0.59	0.71	0.50	0.21	0.16	88	0.09
84	0.48	0.38	0.32	0.16	0.12	89	0.06

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

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

Age <sup>a</sup>	1,000 $q'_x$	Age <sup>a</sup>	1,000 $q'_x$	Age <sup>a</sup>	1,000 $q'_x$
		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		620
61		490
62	100	400
63	90	400
64	90	400
65	230	430
66	380	330
67	250	330
68	250	300
69	250	300
70	250	300
71	250	300
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	20-24 years of service	25-29 years of service	30 or more years of service	10-19 years of service	20 or more years of service
Under 35	1.2	4.6	2.6	2.6	98.5%	36.3%
35	1.5	5.4	3.0	3.0	98.5	36.3
36	1.7	6.3	3.5	3.5	98.5	36.3
37	2.0	7.3	4.1	4.1	98.5	36.3
38	2.4	8.4	4.7	4.7	98.5	36.3
39	2.7	9.6	5.3	5.3	98.5	36.4
40	3.2	10.9	6.0	6.0	98.5	36.4
41	3.6	12.3	6.8	6.8	98.5	36.5
42	4.1	13.9	7.7	7.7	98.5	36.6
43	4.7	15.5	8.6	8.6	98.5	36.8
44	5.3	17.3	9.6	9.6	98.5	37.0
45	6.0	19.2	11.2	11.2	98.5	37.4
46	6.8	21.3	12.7	12.7	98.5	37.9
47	7.6	23.5	14.3	14.3	98.5	38.7
48	8.6	25.9	15.9	15.9	98.5	39.9
49	9.6	28.4	17.6	17.6	98.5	41.6
50	10.8	31.2	19.2	19.2	98.5	44.3
51	12.0	34.2	21.0	21.0	98.5	48.2
52	13.5	37.4	22.7	22.7	98.5	54.1
53	15.0	40.9	24.5	24.5	98.5	62.9
54	16.8	44.7	26.3	26.3	98.5	76.1
55	18.7	48.7	28.2	28.2	98.5	89.5
56	20.9	53.1	30.1	30.1	98.5	89.5
57	23.2	57.8	32.0	32.0	98.5	89.5
58	25.9	62.8	34.0	34.0	98.5	89.5
59	28.8	68.3	36.0	36.0	98.5	89.5
60	50.1	74.2	38.0	18.4	91.9	89.5
61	49.3	80.5	40.1	14.8	91.9	89.5
62	47.3	86.2	56.6	11.4	91.9	89.5
63	42.7	82.5	52.9	8.2	91.9	89.5
64	32.1	71.8	42.2	5.4	91.9	89.5
65	7.7	40.5	10.9	2.8	91.9	89.5

<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	6.6		
1	11.5	17.8%	15.4%
2	11.6	11.2%	9.7%
3	11.6	7.1%	6.1%
4	11.6	4.3%	3.7%
5	11.6	2.5%	2.0%
6	11.7	1.4%	1.0%
7	11.7	0.8%	0.5%
8	11.7	0.7%	0.4%
9	11.7	0.7%	0.4%
10	11.7	0.7%	0.4%
11	11.7	0.7%	0.4%
12	11.7	0.7%	0.4%
13	11.7	0.7%	0.4%
14	11.7	0.7%	0.4%
15	11.7	0.7%	0.4%
16	11.7	0.6%	0.4%
17	11.7	0.6%	0.4%
18	11.8	0.6%	0.4%
19	11.8	0.6%	0.4%
20	11.8	0.6%	0.4%
21	11.8	0.6%	0.3%
22	11.8	0.6%	0.3%
23	11.8	0.6%	0.3%
24	11.8	0.6%	0.3%
25	11.8	0.6%	0.3%
26	11.9	0.5%	0.3%
27	11.9	0.5%	0.3%
28	11.9	0.5%	0.3%
29	11.9	0.5%	0.3%
30	11.9	0.5%	0.3%
31	11.9	0.5%	0.3%
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	0.4%	0.3%
40	11.9	0.4%	0.3%
41	11.9	0.4%	0.3%
42	11.9	0.4%	0.3%
43	11.9	0.4%	0.3%
44	11.9	0.4%	0.3%
45 & over	11.9	0.4%	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								
	Total	Widow age 62 & over	Widow age 60-61	Widow under age 60	Widow under 60 with eligible child			Percent with eligible child	
					Youngest child under 16	Youngest child age 16-17	Youngest child disabled	Minor child	Disabled child
Under 35	71.0	-	-	71.0	58.6	-	-	82.5	-
35 - 39	71.0	-	-	71.0	58.6	3.2	-	86.7	2.0
40 - 44	71.0	-	-	71.0	52.1	7.2	0.2	79.2	2.0
45 - 49	71.0	-	-	71.0	29.1	10.1	0.5	51.2	2.0
50 - 54	71.0	1.6	0.6	68.8	14.6	5.1	1.1	26.3	2.0
55 - 59	71.0	3.5	2.8	64.7	5.5	2.2	1.3	11.0	2.0
60 - 64	71.0	18.6	15.3	37.1	2.3	0.6	0.7	4.7	2.0
65 - 69	71.0	51.6	7.5	11.9	0.7	0.3	0.2	1.9	1.6
70 - 74	71.0	65.0	2.1	3.9	0.4	0.1	0.1	0.9	1.4
75 - 79	66.8	64.2	0.8	1.8	0.2	-	-	0.4	1.0
80 - 84	60.8	59.7	0.3	0.8	0.1	-	-	0.2	0.8
85 - 89	50.2	49.6	0.1	0.5	0.1	-	-	0.1	0.8
90 & over	31.9	31.5	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	-	-	36	36	38	-	7	8	20	2.1
40 - 44	-	-	41	40	42	44	10	11	20	2.0
45 - 49	-	-	45	43	47	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	54	11	12	28	1.4
60 - 64	66	61	56	50	53	55	11	12	31	1.4
65 - 69	67	61	56	50	53	56	11	12	35	1.3
70 - 74	70	61	55	46	53	57	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	50	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, REMARRIAGE, AND RELATED 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 23<sup>rd</sup> and 24<sup>th</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 2003 and 2006. Spouse mortality is not used directly in any part of the valuation. Table S-24 shows, as of December 31, 2006, 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 23<sup>rd</sup> valuation standard, which was retained for the 24<sup>th</sup> valuation. Table S-26 shows ratios of actual remarriages to those expected on the basis of the 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 2004 RRB Total Termination Table for Disabled Children.

Table S-15. Mortality experience of railroad age annuitants<sup>a</sup> between anniversaries of retirement in 2003 and 2006, by sex and type of retirement

	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	630,670	72,165	91,813	107,896	141,549	118,621	67,190	24,217	7,219
Actual deaths	38,750	621	1,484	3,149	7,053	9,723	9,205	5,185	2,330
Age specific death rates (per thousand)	61.4	8.6	16.2	29.2	49.8	82.0	137.0	214.1	322.8
Ratio of actual to expected deaths									
1994 GAM males <sup>c</sup>	111.5%	82.0%	88.8%	100.8%	108.2%	110.1%	120.4%	121.7%	120.0%
2004 RRB <sup>d</sup>	99.9%	96.6%	98.3%	98.0%	96.7%	97.2%	102.2%	105.5%	106.2%
2007 RRB <sup>e</sup>	106.0%	104.0%	107.5%	107.8%	105.7%	104.5%	106.9%	106.6%	105.6%
<b>B. Male</b>									
Exposed	565,241	66,808	83,294	98,675	127,107	103,921	59,500	20,565	5,371
Actual deaths	35,081	595	1,392	2,969	6,546	8,866	8,430	4,526	1,757
Age specific death rates (per thousand)	62.1	8.9	16.7	30.1	51.5	85.3	141.7	220.1	327.1
Ratio of actual to expected deaths									
1994 GAM males <sup>c</sup>	115.2%	85.0%	91.8%	103.9%	112.2%	114.5%	124.5%	125.5%	122.1%
2004 RRB <sup>d</sup>	103.3%	100.2%	101.6%	100.9%	100.3%	101.1%	105.8%	108.8%	107.9%
2007 RRB <sup>e</sup>	109.7%	107.8%	111.2%	111.0%	109.6%	108.6%	110.6%	110.0%	107.3%
<b>C. Female</b>									
Exposed	65,429	5,357	8,519	9,221	14,442	14,700	7,690	3,652	1,848
Actual deaths	3,669	26	92	180	507	857	775	659	573
Age specific death rates (per thousand)	56.1	4.9	10.8	19.5	35.1	58.3	100.8	180.4	310.1
Ratio of actual to expected deaths									
1995 RRB Widows <sup>f</sup> , 1-year rateback	109.1%	50.1%	72.7%	83.9%	93.3%	104.0%	114.5%	130.4%	136.7%
2004 RRB <sup>d</sup>	76.3%	53.2%	65.7%	66.1%	66.1%	69.7%	75.0%	87.4%	101.3%
2007 RRB <sup>e</sup>	80.3%	57.3%	71.9%	72.7%	72.2%	74.9%	78.4%	88.2%	100.7%
<b>D. Immediate<sup>g</sup></b>									
Exposed	404,621	51,722	54,769	61,814	86,009	79,928	48,098	17,365	4,916
Actual deaths	26,050	428	837	1,780	4,363	6,652	6,653	3,719	1,618
Age specific death rates (per thousand)	64.4	8.3	15.3	28.8	50.7	83.2	138.3	214.2	329.1
Ratio of actual to expected deaths									
2004 RRB <sup>d</sup>	100.7%	94.5%	93.1%	96.7%	98.1%	98.2%	103.1%	105.8%	108.1%
2007 RRB <sup>e</sup>	106.6%	101.6%	101.8%	106.4%	107.2%	105.6%	107.9%	106.8%	107.5%
<b>E. Deferred<sup>g</sup></b>									
Exposed	226,049	20,443	37,044	46,082	55,540	38,693	19,092	6,852	2,303
Actual deaths	12,700	193	647	1,369	2,690	3,071	2,552	1,466	712
Age specific death rates (per thousand)	56.2	9.4	17.5	29.7	48.4	79.4	133.7	214.0	309.2
Ratio of actual to expected deaths									
2004 RRB <sup>d</sup>	98.5%	101.8%	106.0%	99.7%	94.5%	95.1%	100.0%	105.0%	102.0%
2007 RRB <sup>e</sup>	104.8%	109.7%	116.0%	109.6%	103.3%	102.2%	104.6%	106.0%	101.4%

<sup>a</sup> Nondisability retirement.

<sup>b</sup> Age nearest birthday at the beginning of the year of exposure.

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

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

<sup>e</sup> 2007 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 2003 and 2006, by year

	Age <sup>b</sup>								
	All ages	60-64	65-69	70-74	75-79	80-84	85-89	90-94	95 & over
1. 2003-2006 experience									
Exposed	630,670	72,165	91,813	107,896	141,549	118,621	67,190	24,217	7,219
Actual deaths	38,750	621	1,484	3,149	7,053	9,723	9,205	5,185	2,330
Crude rate per 1,000	61.4	8.6	16.2	29.2	49.8	82.0	137.0	214.1	322.8
Ratio Act./Exp. <sup>c</sup>	99.9%	96.6%	98.3%	98.0%	96.7%	97.2%	102.2%	105.5%	106.2%
Ratio Act./Exp. <sup>d</sup>	106.0%	104.0%	107.5%	107.8%	105.7%	104.5%	106.9%	106.6%	105.6%
2. Crude rate per 1,000 for individual years <sup>e</sup>									
2003 - 2004	62.6	8.0	17.4	31.7	51.1	84.1	138.2	217.4	322.4
2004 - 2005	60.9	9.7	15.5	27.7	49.0	80.7	138.6	210.8	327.8
2005 - 2006	60.8	8.1	15.4	27.8	49.3	81.1	134.2	214.1	317.8
3. Ratio Act./Exp. <sup>c</sup> for individual years <sup>e</sup>									
2003 - 2004	102.6%	90.9%	106.2%	106.2%	99.7%	99.9%	103.5%	107.0%	106.2%
2004 - 2005	99.0%	109.8%	94.5%	93.1%	95.0%	95.8%	103.3%	103.9%	107.8%
2005 - 2006	98.1%	89.6%	93.7%	93.8%	95.2%	95.9%	100.0%	105.7%	104.4%
4. Ratio Act./Exp. <sup>d</sup> for individual years <sup>e</sup>									
2003 - 2004	108.9%	97.8%	116.1%	116.8%	109.0%	107.4%	108.3%	108.0%	105.5%
2004 - 2005	105.0%	118.1%	103.4%	102.3%	103.8%	102.9%	108.0%	105.0%	107.2%
2005 - 2006	104.0%	96.5%	102.5%	103.1%	104.0%	103.1%	104.5%	106.8%	103.9%

<sup>a</sup> Nondisability retirement.

<sup>b</sup> Age nearest birthday at the beginning of the year of exposure.

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

<sup>d</sup> Expected based on 2007 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 2003 and 2006

Duration	Exposure	Actual deaths	Crude rate per 1,000	Ratio Act./Exp. <sup>a</sup>	Ratio Act./Exp. <sup>b</sup>
0	23,653	187	7.9	89.1%	95.8%
1	27,400	272	9.9	100.7	108.6
2	25,107	267	10.6	92.6	100.3
3	23,571	300	12.7	94.1	102.4
4	18,626	310	16.6	101.5	110.9
5	19,002	341	17.9	97.8	107.0
6	19,049	389	20.4	99.7	109.3
7	18,834	379	20.1	88.0	96.5
8	19,443	493	25.4	99.2	108.9
9	19,735	517	26.2	91.8	100.8
10 & over	416,250	35,295	84.8	100.4	106.2
All durations	630,670	38,750	61.4	99.9%	106.0%

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

<sup>b</sup> Expected based on 2007 RRB Annuitants Mortality Table.

Table S-18. Age specific death rates of railroad disability annuitants between anniversaries of retirement in 2003 and 2006, by age and duration

Select section

	Age at retirement <sup>a</sup>						
	All ages	Under 40	40-44	45-49	50-54	55-59	60 & over
<b>Exposed</b>							
Duration 0	13,455	181	378	1,774	4,355	5,029	1,738
1	13,986	192	488	2,085	4,635	4,793	1,795
2	14,296	147	590	2,368	4,776	4,626	1,789
3	13,944	112	705	2,448	4,585	4,291	1,804
4	13,305	88	831	2,451	4,252	3,935	1,748
<b>Actual deaths</b>							
Duration 0	382	b	b	37	96	174	62
1	325	b	b	27	99	127	64
2	268	b	b	34	71	100	56
3	280	b	13	29	73	111	53
4	244	b	b	28	73	75	61
<b>Crude rate per 1,000</b>							
Duration 0	28.4	b	b	20.9	22.0	34.6	35.7
1	23.2	b	b	13.0	21.4	26.5	35.7
2	18.7	b	b	14.4	14.9	21.6	31.3
3	20.1	b	18.4	11.8	15.9	25.9	29.4
4	18.3	b	b	11.4	17.2	19.1	34.9

Ultimate section, durations 5 and over

Age <sup>c</sup>	Exposed	Actual deaths	Crude rate per 1,000
Under 50	4,970	59	11.9
50-54	16,958	238	14.0
55-59	30,132	493	16.4
60-64	32,810	849	25.9
65-69	31,278	1,193	38.1
70-74	28,471	1,460	51.3
75-79	26,951	2,121	78.7
80-84	14,888	1,691	113.6
85 & over	9,288	1,825	196.5
All ages	195,745	9,929	50.7

<sup>a</sup> Age nearest birthday. Those retiring prior to attainment of normal retirement age are included in 60 & over group.

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

<sup>c</sup> 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 2003 and 2006, 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	516	f	f	506	f	f	f	f	11	f	f	f	f
40-44	1,653	20	12.1	1,311	18	13.7	71.7%	77.4%	342	f	f	f	f
45-49	12,144	165	13.6	7,321	141	19.3	93.8	100.8	4,823	24	5.0	101.9%	103.1%
50-54	35,695	558	15.6	20,759	452	21.8	99.0	106.1	14,936	106	7.1	95.2	100.6
55-59	54,303	1,052	19.4	36,085	849	23.5	96.0	106.3	18,218	203	11.1	97.1	103.4
60-64	47,447	1,263	26.6	33,740	1,003	29.7	94.6	107.1	13,707	260	19.0	105.2	112.8
65-69	33,376	1,266	37.9	22,971	973	42.4	98.1	109.4	10,405	293	28.2	97.6	105.5
70-74	28,471	1,460	51.3	17,567	972	55.3	90.7	99.8	10,904	488	44.8	98.3	106.6
75-79	26,951	2,121	78.7	14,923	1,293	86.6	100.2	108.8	12,028	828	68.8	98.7	106.4
80-84	14,888	1,691	113.6	8,931	1,088	121.8	98.9	106.2	5,957	603	101.2	97.1	102.8
85-89	6,689	1,138	170.1	4,495	789	175.5	100.7	107.0	2,194	349	159.1	102.6	105.2
90-94	2,095	520	248.2	1,396	338	242.1	98.9	104.1	699	182	260.4	114.4	112.9
95 & over	504	167	331.3	255	81	317.6	94.8	99.9	249	86	345.4	103.6	104.4
All ages	264,730	11,428	43.2	170,259	8,004	47.0	97.0%	106.0%	94,471	3,424	36.2	99.8%	105.9%

<sup>a</sup> Age nearest birthday at the beginning of the year of exposure.

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

<sup>c</sup> Expected based on 2007 RRB Disabled Mortality Table for Annuitants with Disability Freeze.

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

<sup>e</sup> Expected based on 2007 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 24th valuation mortality studies who would have qualified for a benefit under the social security disability standards

Duration and type of freeze decision	Period between anniversaries of retirement					
	2003-2004		2004-2005		2005-2006	
	Exposures	Actual deaths	Exposures	Actual deaths	Exposures	Actual deaths
<b>Duration 0</b>						
Freeze allowed	77.1%	92.9%	76.8%	94.9%	75.4%	93.3%
Freeze disallowed	22.9	7.1	23.1	5.1	23.4	6.7
No freeze decision	0.0	0.0	0.1	0.0	1.1	0.0
<b>Duration 1</b>						
Freeze allowed	75.5	87.9	76.7	89.3	76.2	89.6
Freeze disallowed	24.5	12.1	23.3	10.7	23.6	10.4
No freeze decision	0.0	0.0	0.0	0.0	0.1	0.0
<b>Duration 2</b>						
Freeze allowed	73.3	82.2	75.3	84.4	76.5	80.7
Freeze disallowed	26.6	17.8	24.7	15.6	23.5	19.3
No freeze decision	0.0	0.0	0.0	0.0	0.0	0.0
<b>Duration 3</b>						
Freeze allowed	71.6	86.7	73.2	87.3	75.3	88.3
Freeze disallowed	28.4	13.3	26.7	12.7	24.7	11.7
No freeze decision	0.0	0.0	0.0	0.0	0.0	0.0
<b>Duration 4</b>						
Freeze allowed	69.9	80.8	71.3	89.4	73.0	89.6
Freeze disallowed	30.0	19.2	28.7	10.6	26.9	10.4
No freeze decision	0.1	0.0	0.0	0.0	0.0	0.0
<b>Duration 5 and over</b>						
Freeze allowed	60.4	66.6	60.7	67.5	61.0	67.7
Freeze disallowed	39.6	33.4	39.3	32.5	39.0	32.3
No freeze decision	0.0	0.0	0.0	0.0	0.0	0.0

Table S-21. Mortality experience of active<sup>a</sup> railroad employees during calendar years 2001-2005

Age <sup>b</sup>	Exposed	Actual deaths	Crude rate per 1,000	Ratio Act./Exp. <sup>c</sup>	Ratio Act./Exp. <sup>d</sup>
Under 35	215,606	233	1.1	105.3%	95.9%
35-39	113,952	141	1.2	100.6	97.0
40-44	138,413	206	1.5	97.3	98.0
45-49	225,871	445	2.0	95.7	101.4
50-54	263,368	729	2.8	93.0	103.8
55-59	198,600	770	3.9	84.2	98.8
60-64	60,114	347	5.8	80.3	97.9
65 & over	8,131	95	11.7	80.9	103.3
All ages	1,224,053	2,966	2.4	90.3%	100.0%

<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.

<sup>d</sup> Expected deaths based on 2003 RRB Active Service Mortality Table.

Table S-22. Total termination experience of spouse annuitants between anniversaries of retirement in 2003 and 2006<sup>a</sup>

	Age <sup>b</sup>							
	All ages	60-64	65-69	70-74	75-79	80-84	85-89	90 & over
1. 2003-2006 experience								
Exposed <sup>c</sup>	450,392	72,010	96,311	102,437	92,815	59,795	21,973	5,051
Actual terminations	35,856	2,023	4,147	6,468	8,587	8,381	4,652	1,598
Crude rate per 1,000	79.6	28.1	43.1	63.1	92.5	140.2	211.7	316.4
Ratio Act./Exp. I <sup>d</sup>	99.6%	93.3%	100.4%	99.6%	98.5%	100.2%	102.0%	102.3%
Ratio Act./Exp. II <sup>e</sup>	106.0%	102.2%	108.8%	106.9%	104.8%	105.8%	106.9%	105.2%
2. Crude rate per 1,000 for individual years								
2003 - 2004	81.2	27.9	45.3	64.9	93.4	145.6	219.8	302.9
2004 - 2005	78.5	29.0	42.3	61.2	89.3	142.3	206.9	313.5
2005 - 2006	79.0	27.4	41.5	63.3	94.8	132.5	208.8	331.8
3. Ratio Act./Exp. for individual years I <sup>d</sup>								
2003 - 2004	102.2%	92.7%	105.6%	102.4%	99.5%	104.3%	105.9%	98.1%
2004 - 2005	98.2%	96.4%	98.5%	96.5%	95.0%	101.7%	99.6%	101.3%
2005 - 2006	98.4%	90.8%	96.8%	99.9%	101.0%	94.6%	100.5%	107.3%
4. Ratio Act./Exp. for individual years II <sup>e</sup>								
2003 - 2004	108.8%	101.6%	114.5%	109.9%	105.9%	110.2%	111.1%	100.8%
2004 - 2005	104.5%	105.6%	106.8%	103.6%	101.1%	107.4%	104.5%	104.1%
2005 - 2006	104.7%	99.4%	104.9%	107.2%	107.4%	99.9%	105.4%	110.3%

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

<sup>b</sup> 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 2004 RRB Spouse Total Termination Table.

<sup>e</sup> Expected based on 2007 RRB Spouse Total Termination Table.

Table S-23. Mortality experience of spouse annuitants between anniversaries of retirement in 2003 and 2006<sup>a</sup>

	Age <sup>b</sup>							
	All ages	60-64	65-69	70-74	75-79	80-84	85-89	90 & over
1. 2003-2006 experience								
Exposed <sup>c</sup>	438,361	71,284	94,797	100,184	89,878	57,057	20,538	4,625
Actual deaths	11,794	570	1,119	1,961	2,712	2,904	1,782	746
Crude rate per 1,000	26.9	8.0	11.8	19.6	30.2	50.9	86.8	161.3
Ratio Act./Exp. <sup>d</sup>	78.0%	75.0%	71.7%	75.1%	73.7%	79.2%	86.1%	96.4%
2. Crude rate per 1,000 for individual years								
2003 - 2004	27.5	8.1	12.4	19.9	31.7	53.4	86.9	155.3
2004 - 2005	26.5	8.2	11.9	19.1	28.3	51.2	87.4	160.5
2005 - 2006	26.6	7.7	11.1	19.7	30.5	48.1	86.0	167.7
3. Ratio Act./Exp. for individual years <sup>d</sup>								
2003 - 2004	80.3%	76.3%	75.1%	76.4%	77.7%	83.2%	85.9%	93.4%
2004 - 2005	76.9%	76.9%	72.6%	73.2%	69.1%	79.6%	86.9%	96.0%
2005 - 2006	76.8%	71.9%	67.4%	75.7%	74.3%	74.9%	85.4%	99.6%

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

<sup>b</sup> 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 age of employee on December 31, 2006

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	3,263	638	0.196			
61	4,794	1,445	0.301			
62	5,343	2,204	0.413	3,122	272	0.087
63	5,328	2,699	0.507	3,964	776	0.196
64	5,811	3,378	0.581	4,238	1,143	0.270
65	5,009	3,183	0.635	3,976	1,381	0.347
66	4,650	3,163	0.680	4,236	1,744	0.412
67	4,100	2,950	0.720	3,919	1,844	0.471
68	4,166	3,068	0.736	3,931	2,027	0.516
69	4,235	3,203	0.756	4,030	2,222	0.551
70	4,161	3,199	0.769	3,713	2,107	0.567
71	4,004	3,135	0.783	3,745	2,226	0.594
72	4,280	3,367	0.787	3,926	2,384	0.607
73	4,128	3,236	0.784	3,597	2,155	0.599
74	4,405	3,418	0.776	3,770	2,363	0.627
75	4,437	3,370	0.760	3,571	2,215	0.620
76	4,910	3,745	0.763	3,810	2,301	0.604
77	5,102	3,895	0.763	3,778	2,293	0.607
78	5,680	4,265	0.751	3,894	2,275	0.584
79	6,144	4,446	0.724	4,153	2,393	0.576
80	6,078	4,282	0.705	4,102	2,234	0.545
81	5,638	3,780	0.670	3,761	2,015	0.536
82	5,386	3,528	0.655	3,587	1,813	0.505
83	5,057	3,216	0.636	3,317	1,604	0.484
84	4,615	2,887	0.626	2,921	1,357	0.465
85	4,001	2,352	0.588	2,599	1,188	0.457
86	3,673	2,113	0.575	2,231	965	0.433
87	3,228	1,720	0.533	1,787	715	0.400
88	2,658	1,375	0.517	1,481	589	0.398
89	2,303	1,159	0.503	1,323	478	0.361
90	1,856	850	0.458	1,134	390	0.344
91	1,485	641	0.432	842	290	0.344
92	1,132	430	0.380	699	202	0.289
93	821	310	0.378	504	134	0.266
94	541	201	0.372	438	109	0.249
95	405	119	0.294	342	74	0.216
96	282	70	0.248	233	36	0.155
97	214	43	0.201	161	23	0.143
98	141	28	0.199	118	14	0.119
99 & over	242	39	0.161	264	31	0.117

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

Table S-25. Mortality experience of widow annuitants between anniversaries of retirement in 2003 and 2006

	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. 2003-2006 experience												
Exposed	508,053	1,913	799	536	16,867	32,559	59,320	95,850	118,935	99,466	56,612	25,199
Actual deaths	42,456	7	9	6	176	585	1,721	3,988	7,975	10,778	10,090	7,121
Crude rate per 1,000	83.6	3.7	11.3	11.2	10.4	18.0	29.0	41.6	67.1	108.4	178.2	282.6
Ratio Act./Exp. <sup>b</sup>	111.4%	179.4%	275.9%	173.0%	98.7%	108.9%	111.5%	102.9%	106.4%	111.3%	118.3%	113.6%
2. Crude rate per 1,000 for individual years <sup>c</sup>												
2003 - 2004	84.2	4.4	16.1	11.1	9.5	17.6	30.5	42.2	68.1	110.5	180.6	286.2
2004 - 2005	84.4	1.6	7.4	16.8	11.3	18.9	28.4	40.7	67.7	110.4	179.4	289.2
2005 - 2006	82.0	5.1	10.7	5.7	10.6	17.3	27.9	41.9	65.1	104.1	174.6	271.8
3. Ratio Act./Exp. for individual years <sup>c</sup>												
2003 - 2004	113.2%	212.7%	395.7%	174.5%	89.8%	106.7%	117.0%	104.3%	108.4%	113.4%	119.8%	115.4%
2004 - 2005	112.4%	77.0%	181.5%	257.3%	106.4%	114.8%	109.1%	100.6%	107.3%	113.4%	119.0%	116.0%
2005 - 2006	108.3%	251.5%	261.1%	86.4%	100.0%	105.0%	107.3%	103.7%	103.2%	107.1%	115.9%	109.1%

<sup>a</sup> 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 1994 and 2006 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
1. Exposed										
Duration <sup>b</sup> 0	97,570	144	271	489	568	816	1,002	7,710	12,815	73,755
1	97,929	149	290	493	568	895	2,137	8,161	13,471	71,764
2	97,323	158	295	464	534	890	2,994	8,569	14,078	69,340
3	96,296	162	287	416	511	904	3,824	8,983	14,705	66,505
4	95,143	179	280	375	522	886	4,591	9,383	15,377	63,549
5 or more	1,841,723	139	668	1,751	2,099	3,423	6,395	50,331	113,633	1,663,286
2. Actual remarriages										
Duration <sup>b</sup> 0	134	c	c	c	c	c	c	35	26	64
1	311	c	c	c	c	c	17	64	76	129
2	306	c	c	c	c	c	19	66	85	104
3	271	c	c	c	c	c	31	60	70	78
4	253	c	c	c	c	c	42	66	51	74
5 or more	1,531	c	21	23	22	22	22	247	346	823
3. Crude remarriage rate per 1,000										
Duration <sup>b</sup> 0	1.37	c	c	c	c	c	c	4.54	2.03	0.87
1	3.18	c	c	c	c	c	7.95	7.84	5.64	1.80
2	3.14	c	c	c	c	c	6.35	7.70	6.04	1.50
3	2.81	c	c	c	c	c	8.11	6.68	4.76	1.17
4	2.66	c	c	c	c	c	9.15	7.03	3.32	1.16
5 or more	0.83	c	31.43	13.14	10.48	6.43	3.44	4.91	3.04	0.49
4. Ratio Act./Exp. <sup>d</sup>										
Duration <sup>b</sup> 0	86.7%	c	c	c	c	c	c	98.0%	76.2%	91.7%
1	92.2%	c	c	c	c	c	87.8%	91.8%	97.1%	92.7%
2	94.8%	c	c	c	c	c	67.1%	93.5%	114.7%	90.5%
3	99.5%	c	c	c	c	c	78.8%	92.3%	113.7%	108.9%
4	97.2%	c	c	c	c	c	92.0%	107.0%	83.9%	116.2%
5 or more	100.6%	c	139.3%	79.1%	90.2%	90.3%	96.0%	97.2%	105.2%	100.5%

<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> Expected based on 1997 RRB Remarriage Table.



Table S-27. Total termination experience of disabled children annuitants  
between anniversaries of retirement in 2003 and 2006

Age <sup>a</sup>	Exposed	Actual terminations	Ratio Act./Exp. <sup>b</sup>
Under 25	527	7	65.4%
25-29	609	8	92.0
30-34	912	7	74.9
35-39	1,514	20	131.7
40-44	2,698	31	96.9
45-49	3,585	55	103.8
50-54	3,872	95	130.0
55-59	3,892	115	119.7
60-64	3,588	147	125.5
65-69	2,693	119	99.8
70-74	2,161	169	128.8
75-79	1,780	145	97.4
80-84	1,054	131	108.2
85 & over	588	116	111.9
All ages	29,473	1,165	112.1%

<sup>a</sup> Age nearest birthday at beginning of the year of exposure.

<sup>b</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 2004-2006 are summarized in Tables S-28 through S-30. Table S-28 shows a comparison among crude retirement rates for 2004-2006, the 23<sup>rd</sup> valuation retirement rates, and the 24<sup>th</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 2004-2006 with the 23<sup>rd</sup> and 24<sup>th</sup> valuation standards. Table S-32 shows ratios of actual retirements in 2004-2006 to those expected by age and service.

Table S-33 shows percentages of disability retirements in 2004-2006 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 23rd valuation	Assumed rates 24th valuation	2004-2006 Crude rates	Assumed rates 23rd valuation	Assumed rates 24th valuation	2004-2006 Crude rates
60				0.64	0.62	0.621
61				0.50	0.49	0.486
62	0.16	0.10	0.102	0.45	0.40	0.406
63	0.13	0.09	0.084	0.41	0.40	0.381
64	0.10	0.09	0.094	0.40	0.40	0.408
65	0.43	0.23	0.227	0.46	0.43	0.429
66	0.32	0.38	0.381	0.35	0.33	0.331
67	0.30	0.25	0.251	0.35	0.33	0.337
68	0.25	0.25	0.240	0.35	0.30	0.282
69	0.25	0.25	0.212	0.30	0.30	0.295
70	0.25	0.25	0.235	0.25	0.30	0.319
71	0.25	0.25	0.149	0.25	0.30	0.315
72	0.25	0.25	0.236	0.25	0.25	0.169
73	0.25	0.25	0.262	0.25	0.25	c
74	0.25	0.25	c	0.25	0.25	c
75 & over	0.25	0.25	0.183	0.25	0.25	0.202

<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 2004-2006

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	3,493	357	102.2	63.9%	102.2%
63	2,594	219	84.4	64.9	93.8
64	1,835	173	94.3	94.3	104.8
65	1,310	297	226.7	52.7	98.6
66	826	315	381.4	119.2	100.4
67	430	108	251.2	83.7	100.5
68	263	63	239.5	95.8	95.8
69	170	36	211.8	84.7	84.7
70-74	315	67	212.7	85.1	85.1
75 & over	115	21	182.6	73.0	73.0
All ages	11,351	1,656	145.9	73.5	98.2

<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 62.

<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 23rd and 24th 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 2004-2006

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	13,742	8,538	621.3	97.1%	100.2%
61	4,943	2,403	486.1	97.2	99.2
62	2,811	1,140	405.5	90.1	101.4
63	1,885	718	380.9	92.9	95.2
64	1,330	542	407.5	101.9	101.9
65	885	380	429.4	93.3	99.9
66	538	178	330.9	94.5	100.3
67	374	126	336.9	96.3	102.1
68	259	73	281.9	80.5	94.0
69	173	51	294.8	98.3	98.3
70-74	348	89	255.7	102.3	91.4
75 & over	129	26	201.6	80.6	80.6
All ages	27,417	14,264	520.3	96.2	99.8

<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 23rd and 24th 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			20-24 years of service			25-29 years of service			30 or more years of service		
	Assumed rates 23rd valuation	Assumed rates 24th valuation	2004-2006 Crude rates	Assumed rates 23rd valuation	Assumed rates 24th valuation	2004-2006 Crude rates	Assumed rates 23rd valuation	Assumed rates 24th valuation	2004-2006 Crude rates	Assumed rates 23rd valuation	Assumed rates 24th valuation	2004-2006 Crude rates
Under 35	0.0010	0.0012	0.0012	0.0060	0.0046	d	0.0060	0.0026	d	0.0049	0.0026	d
35	0.0013	0.0015	d	0.0066	0.0054	d	0.0066	0.0030	d	0.0053	0.0030	d
36	0.0017	0.0017	0.0020	0.0072	0.0063	d	0.0072	0.0035	d	0.0058	0.0035	d
37	0.0020	0.0020	0.0029	0.0079	0.0073	d	0.0079	0.0041	d	0.0064	0.0041	d
38	0.0024	0.0024	0.0018	0.0087	0.0084	d	0.0087	0.0047	d	0.0070	0.0047	d
39	0.0029	0.0027	0.0023	0.0095	0.0096	d	0.0095	0.0053	d	0.0077	0.0053	d
40	0.0034	0.0032	0.0024	0.0105	0.0109	d	0.0105	0.0060	d	0.0085	0.0060	d
41	0.0039	0.0036	0.0029	0.0114	0.0123	d	0.0114	0.0068	d	0.0092	0.0068	d
42	0.0046	0.0041	0.0024	0.0125	0.0139	0.0094	0.0125	0.0077	d	0.0101	0.0077	d
43	0.0052	0.0047	0.0044	0.0137	0.0155	0.0120	0.0137	0.0086	d	0.0111	0.0086	d
44	0.0060	0.0053	0.0032	0.0149	0.0173	0.0139	0.0149	0.0096	d	0.0121	0.0096	d
45	0.0068	0.0060	0.0050	0.0163	0.0192	0.0187	0.0163	0.0112	0.0077	0.0132	0.0112	d
46	0.0078	0.0068	0.0061	0.0177	0.0213	0.0175	0.0177	0.0127	0.0119	0.0143	0.0127	d
47	0.0088	0.0076	0.0054	0.0193	0.0235	0.0196	0.0193	0.0143	0.0090	0.0156	0.0143	d
48	0.0099	0.0086	0.0084	0.0210	0.0259	0.0194	0.0210	0.0159	0.0124	0.0170	0.0159	d
49	0.0112	0.0096	0.0064	0.0229	0.0284	0.0267	0.0229	0.0176	0.0136	0.0185	0.0176	0.0100
50	0.0126	0.0108	0.0087	0.0250	0.0312	0.0355	0.0250	0.0192	0.0193	0.0202	0.0192	0.0195
51	0.0142	0.0120	0.0106	0.0272	0.0342	0.0382	0.0272	0.0210	0.0254	0.0220	0.0210	0.0251
52	0.0159	0.0135	0.0133	0.0295	0.0374	0.0359	0.0295	0.0227	0.0234	0.0239	0.0227	0.0253
53	0.0178	0.0150	0.0124	0.0321	0.0409	0.0374	0.0321	0.0245	0.0209	0.0260	0.0245	0.0240
54	0.0199	0.0168	0.0135	0.0350	0.0447	0.0382	0.0350	0.0263	0.0187	0.0283	0.0263	0.0256
55	0.0223	0.0187	0.0219	0.0380	0.0487	0.0438	0.0380	0.0282	0.0261	0.0308	0.0282	0.0246
56	0.0249	0.0209	0.0225	0.0413	0.0531	0.0535	0.0413	0.0301	0.0267	0.0334	0.0301	0.0298
57	0.0277	0.0232	0.0180	0.0449	0.0578	0.0473	0.0449	0.0320	0.0270	0.0364	0.0320	0.0279
58	0.0309	0.0259	0.0267	0.0488	0.0628	0.0470	0.0488	0.0340	0.0287	0.0360	0.0340	0.0342
59	0.0345	0.0288	0.0217	0.0530	0.0683	0.0674	0.0530	0.0360	0.0273	0.0329	0.0360	0.0314
60	0.0384	0.0501	0.0436	0.0576	0.0742	0.0692	0.0576	0.0380	0.0347	0.0186	0.0184	0.0159
61	0.0423	0.0493	0.0542	0.0625	0.0805	0.0635	0.0625	0.0401	0.0437	0.0000	0.0148	0.0122
62	0.0437	0.0473	0.0507	0.0679	0.0862	0.0744	0.0679	0.0566	0.0505	0.0000	0.0114	0.0103
63	0.0397	0.0427	0.0519	0.0685	0.0825	0.0761	0.0685	0.0529	0.0505	0.0000	0.0082	0.0101
64	0.0242	0.0321	0.0333	0.0561	0.0718	0.0601	0.0561	0.0422	0.0417	0.0000	0.0054	d
65	0.0059	0.0077	d	0.0152	0.0405	0.0466	0.0152	0.0109	0.0197	0.0000	0.0028	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 2004-2006

	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	124,183	37,707	28,659	24,603	17,986	10,472	4,756	1,216	1,033	908	694	511	394
Actual retirements	956	66	87	153	207	231	212	53	56	46	36	17	f
Crude rate per 1,000 <sup>c</sup>	7.7	1.8	3.0	6.2	11.5	22.1	44.6	43.6	54.2	50.7	51.9	33.3	f
Ratio Act./Exp. <sup>d</sup>	82.7%	99.9%	66.1%	70.5%	73.0%	80.9%	123.0%	113.5%	128.2%	115.9%	130.7%	137.5%	f
Ratio Act./Exp. <sup>e</sup>	90.3%	96.8%	73.0%	81.3%	86.1%	96.5%	104.0%	87.0%	110.0%	107.1%	121.5%	103.6%	f
2. 20-24 years of service													
Exposed	55,798	157	7,047	20,424	16,403	8,504	3,263	882	724	632	473	316	236
Actual retirements	1,756	0	83	418	606	429	220	61	46	47	36	19	11
Crude rate per 1,000 <sup>c</sup>	31.5	0.0	11.8	20.5	36.9	50.4	67.4	69.2	63.5	74.4	76.1	60.1	46.6
Ratio Act./Exp. <sup>d</sup>	113.8%	0.0%	86.5%	104.5%	126.6%	114.5%	114.2%	120.1%	101.7%	109.5%	111.1%	107.2%	306.6%
Ratio Act./Exp. <sup>e</sup>	90.8%	0.0%	76.3%	85.7%	100.1%	89.1%	88.2%	93.2%	78.9%	86.3%	92.3%	83.7%	115.1%
3. 25-29 years of service													
Exposed	113,762	0	1,115	34,978	45,994	23,437	8,238	2,303	1,853	1,584	1,148	792	558
Actual retirements	2,383	f	f	407	998	633	343	80	81	80	58	33	11
Crude rate per 1,000 <sup>c</sup>	20.9	f	f	11.6	21.7	27.0	41.6	34.7	43.7	50.5	50.5	41.7	19.7
Ratio Act./Exp. <sup>d</sup>	66.3%	f	f	56.9%	74.2%	61.5%	70.3%	60.3%	69.9%	74.4%	73.8%	74.3%	129.7%
Ratio Act./Exp. <sup>e</sup>	89.5%	f	f	75.9%	97.0%	86.0%	97.5%	91.4%	109.0%	89.2%	95.5%	98.7%	180.9%
4. 30 or more years of service													
Exposed	168,721	0	0	3,901	55,733	83,531	25,556	13,712	4,936	2,808	1,885	1,330	885
Actual retirements	4,200	f	f	34	1,360	2,471	335	218	60	29	19	f	f
Crude rate per 1,000 <sup>c</sup>	24.9	f	f	8.7	24.4	29.6	13.1	15.9	12.2	10.3	10.1	f	f
Ratio Act./Exp. <sup>d</sup>	92.3%	f	f	47.9%	97.9%	87.1%	131.4%	85.5%	g	g	g	g	g
Ratio Act./Exp. <sup>e</sup>	94.8%	f	f	50.5%	103.9%	92.5%	87.6%	86.4%	82.1%	90.6%	122.9%	f	f

<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 23rd valuation disability rates.

<sup>e</sup> Expected based on 24th valuation disability rates.

<sup>f</sup> Insufficient data.

<sup>g</sup> Expected rate is zero.

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

Age <sup>b</sup>	10-19 years of service			20-24 years of service			25-29 years of service			30 or more years of service		
	Assumed rates 23rd valuation	Assumed rates 24th valuation	2004-2006 Crude rates	Assumed rates 23rd valuation	Assumed rates 24th valuation	2004-2006 Crude rates	Assumed rates 23rd valuation	Assumed rates 24th valuation	2004-2006 Crude rates	Assumed rates 23rd valuation	Assumed rates 24th valuation	2004-2006 Crude rates
Under 35	99.1%	98.5%	100.0%	38.1%	36.3%	c	38.1%	36.3%	c	38.1%	36.3%	c
35	99.1	98.5	c	38.1	36.3	c	38.1	36.3	c	38.1	36.3	c
36	99.1	98.5	100.0	38.1	36.3	c	38.1	36.3	c	38.1	36.3	c
37	99.1	98.5	100.0	38.2	36.3	c	38.2	36.3	c	38.2	36.3	c
38	99.1	98.5	100.0	38.2	36.3	c	38.2	36.3	c	38.2	36.3	c
39	99.1	98.5	100.0	38.3	36.4	c	38.3	36.4	c	38.3	36.4	c
40	99.1	98.5	92.9	38.5	36.4	c	38.5	36.4	c	38.5	36.4	c
41	99.1	98.5	100.0	38.7	36.5	c	38.7	36.5	c	38.7	36.5	c
42	99.1	98.5	100.0	38.9	36.6	c	38.9	36.6	c	38.9	36.6	c
43	99.1	98.5	100.0	39.2	36.8	41.7%	39.2	36.8	c	39.2	36.8	c
44	99.1	98.5	94.1	39.7	37.0	30.0	39.7	37.0	c	39.7	37.0	c
45	99.1	98.5	96.2	40.3	37.4	42.4	40.3	37.4	52.6%	40.3	37.4	c
46	99.1	98.5	100.0	41.1	37.9	33.3	41.1	37.9	30.9	41.1	37.9	c
47	99.1	98.5	92.6	42.2	38.7	32.9	42.2	38.7	39.4	42.2	38.7	c
48	99.1	98.5	100.0	43.7	39.9	44.2	43.7	39.9	43.7	43.7	39.9	c
49	99.1	98.5	100.0	45.7	41.6	42.5	45.7	41.6	48.3	45.7	41.6	48.4%
50	99.1	98.5	97.3	48.4	44.3	53.8	48.4	44.3	47.1	48.4	44.3	46.2
51	99.1	98.5	97.6	52.0	48.2	43.5	52.0	48.2	47.5	52.0	48.2	41.8
52	99.1	98.5	100.0	57.0	54.1	50.8	57.0	54.1	58.3	57.0	54.1	47.4
53	99.1	98.5	100.0	63.7	62.9	58.7	63.7	62.9	59.9	63.7	62.9	62.4
54	99.1	98.5	100.0	72.8	76.1	81.1	72.8	76.1	73.3	72.8	76.1	78.4
55	99.1	98.5	100.0	85.0	89.5	84.5	85.0	89.5	87.9	85.0	89.5	88.1
56	99.1	98.5	94.2	87.6	89.5	91.3	87.6	89.5	88.3	87.6	89.5	89.0
57	99.1	98.5	97.4	87.6	89.5	86.9	87.6	89.5	87.4	87.6	89.5	88.8
58	99.1	98.5	100.0	87.6	89.5	82.4	87.6	89.5	91.1	87.6	89.5	90.1
59	99.1	98.5	100.0	87.6	89.5	89.6	87.6	89.5	90.5	87.6	89.5	89.4
60	90.2	91.9	96.2	87.6	89.5	95.1	87.6	89.5	96.3	87.6	89.5	92.7
61	90.2	91.9	89.1	87.6	89.5	89.1	87.6	89.5	96.3	87.6	89.5	98.3
62	90.2	91.9	95.7	87.6	89.5	76.6	87.6	89.5	92.5	87.6	89.5	93.1
63	90.2	91.9	88.9	87.6	89.5	88.9	87.6	89.5	87.9	87.6	89.5	100.0
64	90.2	91.9	82.4	87.6	89.5	89.5	87.6	89.5	87.9	87.6	89.5	c
65	90.2	91.9	c	87.6	89.5	100.0	87.6	89.5	100.0	87.6	89.5	c

<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> Age attained in calendar year of exposure.

<sup>c</sup> Insufficient data.



## WITHDRAWAL STUDIES

Table S-34 shows the select withdrawal experience for the years 2002-2005. The actual withdrawals are shown net of re-entrants into the industry for 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 24<sup>th</sup> valuation standard, which was retained from the 23<sup>rd</sup> valuation.

Table S-34. Withdrawal experience of railroad employees during calendar years 2002-2005, 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	15,286	2,683	17.6	89.6%	26,382	3,542	13.4	90.7%	17,986	3,012	16.7	94.6%
1	8,232	1,184	14.4	84.1	19,610	1,767	9.0	77.7	13,217	1,445	10.9	95.1
2	4,226	378	8.9	92.2	14,995	1,020	6.8	78.2	10,342	719	7.0	90.3
3	2,499	181	7.2	100.6	14,528	796	5.5	76.1	10,336	582	5.6	95.4
4	1,636	94	5.7	92.7	16,864	758	4.5	72.5	12,330	586	4.8	91.4
5	701	24	3.4	63.4	16,990	646	3.8	70.4	13,300	514	3.9	84.0
6	132	e	e	e	14,979	550	3.7	74.9	13,102	444	3.4	80.7
7	17	e	e	e	12,491	372	3.0	67.7	12,467	375	3.0	79.2
8	4	e	e	e	9,389	279	3.0	72.5	10,999	353	3.2	91.7
9	1	e	e	e	7,106	192	2.7	71.1	10,046	317	3.2	98.6
10	1	e	e	e	5,304	161	3.0	84.3	9,663	289	3.0	99.7
11	1	e	e	e	3,714	69	1.9	54.6	8,785	233	2.7	94.7
12	-	e	e	e	2,429	70	2.9	90.1	7,952	163	2.0	78.8
13	-	e	e	e	1,565	40	2.6	85.2	7,985	186	2.3	97.1
14	-	e	e	e	925	17	1.8	65.6	7,756	160	2.1	89.7
15	-	e	e	e	390	e	e	e	7,067	147	2.1	99.1
16	-	e	e	e	67	e	e	e	5,826	83	1.4	75.0
17	-	e	e	e	2	e	e	e	4,732	62	1.3	77.1
18	-	e	e	e	1	e	e	e	4,144	58	1.4	87.5
19	-	e	e	e	-	e	e	e	3,783	53	1.4	100.1
20	-	e	e	e	-	e	e	e	3,604	39	1.1	83.2
21	-	e	e	e	-	e	e	e	3,544	31	0.9	79.5
22	-	e	e	e	-	e	e	e	3,587	25	0.7	69.7
23	-	e	e	e	-	e	e	e	3,650	32	0.9	97.4
24	-	e	e	e	-	e	e	e	3,178	25	0.8	98.3
25	-	e	e	e	-	e	e	e	1,966	16	0.8	101.7
26	-	e	e	e	-	e	e	e	556	e	e	e
27	-	e	e	e	-	e	e	e	10	e	e	e
28	-	e	e	e	-	e	e	e	1	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	32,736	4,551	13.9	88.5	167,731	10,282	6.1	79.6	211,914	9,951	4.7	91.6

<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 24th 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	7,618	1,583	20.8	99.9%	1,318	320	24.3	90.3%	68,590	11,140	16.2	92.7%
1	5,910	612	10.4	97.7	1,282	188	14.7	126.4	48,251	5,196	10.8	86.9
2	4,770	332	7.0	96.7	1,163	104	8.9	81.3	35,496	2,553	7.2	85.6
3	4,969	262	5.3	90.9	1,310	87	6.6	64.5	33,642	1,908	5.7	84.5
4	5,985	231	3.9	82.1	1,449	99	6.8	73.5	38,264	1,768	4.6	80.2
5	6,713	260	3.9	99.3	1,360	60	4.4	53.8	39,064	1,504	3.9	77.5
6	6,611	231	3.5	109.2	1,348	91	6.8	95.1	36,172	1,323	3.7	82.8
7	6,364	218	3.4	122.3	1,328	43	3.2	54.0	32,667	1,008	3.1	78.6
8	5,611	169	3.0	125.5	1,240	48	3.9	79.0	27,243	849	3.1	87.9
9	5,294	119	2.2	102.2	1,335	50	3.7	93.6	23,782	678	2.9	89.0
10	5,328	126	2.4	112.6	1,388	28	2.0	63.0	21,684	604	2.8	94.8
11	5,235	89	1.7	85.0	1,396	44	3.2	116.7	19,131	435	2.3	84.5
12	4,964	101	2.0	107.1	1,385	32	2.3	100.5	16,730	366	2.2	89.1
13	5,144	76	1.5	82.1	1,483	40	2.7	134.9	16,177	342	2.1	94.8
14	5,517	74	1.3	78.9	1,573	39	2.5	130.5	15,771	290	1.8	88.4
15	5,577	80	1.4	89.7	1,598	30	1.9	104.3	14,632	260	1.8	94.0
16	5,608	53	0.9	63.0	1,551	15	1.0	56.9	13,052	151	1.2	67.8
17	5,662	49	0.9	61.8	1,562	13	0.8	49.0	11,958	124	1.0	66.6
18	6,245	59	0.9	72.7	1,605	12	0.7	46.7	11,995	129	1.1	74.5
19	7,189	61	0.8	65.3	1,779	24	1.3	84.3	12,751	138	1.1	78.9
20	8,638	58	0.7	56.0	2,071	33	1.6	106.2	14,313	130	0.9	71.6
21	10,227	60	0.6	53.3	2,369	23	1.0	69.3	16,140	114	0.7	61.7
22	12,700	71	0.6	55.9	2,874	19	0.7	47.2	19,161	115	0.6	56.6
23	16,653	111	0.7	74.1	3,710	38	1.0	78.8	24,013	181	0.8	78.4
24	20,466	110	0.5	59.7	4,706	37	0.8	65.5	28,350	172	0.6	64.6
25	24,224	106	0.4	54.7	5,647	33	0.6	53.1	31,837	155	0.5	57.1
26	26,615	136	0.5	73.0	6,525	25	0.4	38.3	33,696	163	0.5	63.8
27	25,681	98	0.4	54.5	6,957	21	0.3	30.2	32,648	119	0.4	47.7
28	26,111	93	0.4	59.4	8,053	18	0.2	24.8	34,165	111	0.3	48.4
29	25,315	71	0.3	56.1	9,234	11	0.1	14.9	34,549	82	0.2	40.9
30 & over	78,766	593	0.8	53.8	101,016	1,344	1.3	60.5	179,782	1,937	1.1	58.3
All years	391,710	6,292	1.6	83.1	181,615	2,969	1.6	67.7	985,706	34,045	3.5	83.3

<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 24th 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 2004 and 2007 active censuses is shown in Table S-37.

Tables S-38 and S-39 provide a census of beneficiaries on December 31, 2007. 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 2003-2005 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 2007 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 2003-2006 is shown in Table S-42, as is the distribution for 2000-2003.

Table S-43 presents family characteristics of railroad employees who died in the period 2003-2006 with a current connection.

Table S-44 provides selected employment and benefit statistics for 2004 and 2007.

Table S-35. Distribution of 2007 active employees<sup>a</sup> by age and completed years of service

Age in 2007	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	258,214	18,241	19,142	41,905	39,640	29,073	17,662	13,354	27,967	32,845	16,653	1,732
Under 20	642	514	124	4	0	0	0	0	0	0	0	0
20-24	10,820	3,775	3,304	3,607	134	0	0	0	0	0	0	0
25-29	22,146	3,864	4,413	9,575	4,133	161	0	0	0	0	0	0
30-34	27,515	2,947	3,486	8,525	8,503	3,960	94	0	0	0	0	0
35-39	31,764	2,561	2,947	7,147	8,777	7,650	2,604	78	0	0	0	0
40-44	28,649	2,013	2,156	5,480	6,656	6,163	4,558	1,546	77	0	0	0
45-49	32,306	1,393	1,494	4,027	5,209	4,831	4,006	4,088	6,426	832	0	0
50-54	46,505	734	747	2,204	3,469	3,403	3,330	4,110	11,929	15,391	1,188	0
55-59	45,462	305	352	999	1,894	1,996	2,024	2,445	6,755	14,924	13,192	576
60-64	10,573	99	91	266	698	769	867	910	2,450	1,495	2,121	807
65-69	1,537	28	25	52	144	122	153	156	289	177	128	263
70 & over	295	8	3	19	23	18	26	21	41	26	24	86

<sup>a</sup> Employees alive and not retired at the end of 2007 with some railroad service in 2007.

Table S-36. Census of vested<sup>a</sup> inactive employees<sup>b</sup> in 2007 by age and completed years of service

Age in 2007	Completed years of service						
	Total	5-9	10-14	15-19	20-24	25-29	30 & over
Total	57,483	6,628	28,601	12,265	5,810	2,323	1,856
Under 35	1,430	1,342	88	0	0	0	0
35-39	2,446	1,709	690	47	0	0	0
40-44	2,774	1,256	1,259	242	17	0	0
45-49	5,784	1,074	3,150	1,104	382	71	3
50-54	14,080	650	8,023	3,212	1,511	511	173
55-59	19,621	401	9,749	4,710	2,244	977	1,540
60-64	10,414	176	5,112	2,739	1,552	706	129
65 & over	934	20	530	211	104	58	11

<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 2007 with no railroad work in 2007.

Table S-37. Comparison between 2007 and 2004 of selected characteristics of active<sup>a</sup> railroad employees

	2007	2004	<u>Change from 2004 to 2007</u>	
			Number	Percent
Number alive and not retired	258,214	251,067	7,147	2.8%
Percent with 5 or more years of service	69.3%	77.1%	b	b
Number age 60 or over	12,405	10,101	2,304	22.8%
Number age 65 or over	1,832	1,396	436	31.2%
Number age 60-64 with 30 or more years of service	4,423	3,459	964	27.9%
Average age on December 31	44.7	45.5	-0.8	b
Median age on December 31	46.3	47.8	-1.5	b
Average years of service				
All employees	15.4	17.0	-1.6	b
Employees under age 45	6.1	6.6	-0.5	b
Employees age 45-49	14.9	18.7	-3.8	b
Employees age 60 or over	26.6	26.7	-0.1	b
Employees age 65 or over	26.1	26.6	-0.5	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, 2007<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	27,815	\$ 49,907,372	\$ 28,327,914	\$ 7,243	\$ 745,072
65-69	31,094	48,710,047	24,044,095	129,922	673,931
70-74	29,904	38,029,669	19,578,875	508,967	590,408
75-79	34,857	40,554,727	19,477,377	1,051,647	687,529
80-84	37,406	41,049,524	17,386,601	1,798,518	763,412
85-89	21,618	23,197,129	7,220,302	1,280,071	476,757
90-94	7,971	8,551,153	2,003,411	459,988	182,916
95 & over	1,896	1,393,055	329,507	104,929	43,839
Total	192,561	\$ 251,392,676	\$ 118,368,082	\$ 5,341,285	\$ 4,163,864
<b>2. Employee disability annuitants</b>					
Under 40	202	\$ 316,340	\$ 26,646	\$ -	\$ -
40-44	348	547,265	91,654	-	-
45-49	1,839	3,055,950	867,684	-	-
50-54	9,448	16,143,050	5,623,264	-	-
55-59	18,500	30,953,399	11,840,927	-	-
60-64	19,122	30,463,097	11,689,725	8,285	195,503
65-69	12,565	18,417,233	7,081,328	65,723	207,572
70-74	8,701	11,608,986	4,342,030	169,964	162,956
75-79	7,419	9,208,507	3,170,410	246,097	162,851
80-84	5,222	5,888,883	1,597,121	269,781	113,156
85-89	2,111	2,133,965	388,214	112,883	40,114
90-94	623	517,947	81,033	33,052	10,281
95 & over	133	96,661	13,244	5,765	2,955
Total	86,233	\$ 129,351,283	\$ 46,813,280	\$ 911,550	\$ 895,388
<b>3. Spouse annuitants</b>					
Under 60	1,207	\$ 998,878	\$ 500,214	\$ -	\$ -
60-64	25,694	17,583,437	11,154,361	-	-
65-69	31,085	13,023,226	9,947,786	-	-
70-74	27,952	10,088,836	7,769,228	-	-
75-79	26,116	9,622,554	6,311,971	-	-
80-84	17,788	6,524,162	3,744,427	117	-
85-89	7,352	2,615,275	1,271,558	68,013	-
90-94	1,375	383,212	202,294	67,269	-
95 & over	159	27,152	20,556	8,495	-
Total	138,728	\$ 60,866,732	\$ 40,922,395	\$ 143,894	\$ -

<sup>a</sup> Includes annuities which were in withheld status as of December 31, 2007. Therefore, these figures may disagree with other published data.

<sup>b</sup> Amounts shown reflect benefits paid in January 2008.

<sup>c</sup> Age attained in 2007.



Table S-39. Census of survivor annuitants on December 31, 2007<sup>a</sup>

Age <sup>c</sup>	Number	Monthly benefits <sup>b</sup>		
		Tier 1	Tier 2	Vested dual
1. Aged widows and widowers <sup>d</sup>				
60-64	5,072	\$ 6,252,207	\$ 1,818,352	\$ -
65-69	9,545	10,270,781	2,935,777	-
70-74	14,971	14,549,448	4,342,826	-
75-79	25,746	25,014,922	6,590,909	-
80-84	33,177	31,336,728	6,995,341	-
85-89	30,847	28,902,801	4,990,154	24,086
90-94	16,560	12,618,829	2,214,306	92,935
95 & over	6,503	4,089,966	794,704	48,128
Total	142,421	\$ 133,035,682	\$ 30,682,369	\$ 165,149
2. Other survivors <sup>e</sup>				
0-4	66	\$ 68,209	\$ 4,380	\$ -
5-9	292	301,010	23,136	-
10-14	781	844,892	74,646	-
15-19	1,259	1,397,186	151,523	-
20-24	116	122,775	12,860	-
25-29	200	211,173	23,201	-
30-34	285	267,548	31,995	-
35-39	473	431,139	65,989	-
40-44	832	723,765	113,036	-
45-49	1,302	1,111,658	204,925	-
50-54	1,793	1,465,118	304,143	-
55-59	2,217	1,804,405	403,008	-
60-64	2,318	1,768,251	347,935	-
65-69	1,790	1,308,752	205,272	-
70-74	1,384	962,022	137,136	-
75-79	1,123	728,166	112,469	1,605
80-84	817	487,132	88,815	4,767
85-89	495	276,729	53,681	6,603
90-94	163	89,417	17,885	1,627
95 & over	26	13,078	2,497	95
Total	17,732	\$ 14,382,425	\$ 2,378,532	\$ 14,697

<sup>a</sup> Includes annuities which were in withheld status as of December 31, 2007. Therefore, these figures may disagree with other published data.

<sup>b</sup> Amounts shown reflect benefits paid in January 2008.

<sup>c</sup> Age attained in 2007.

<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 2003-2005 with assumptions used in the 24th valuation  
(For employees not separated in the year)

Years of service <sup>a</sup>	Service months by attained age						Service months by calendar year				24th valuation assumption
	Under 25	25-34	35-44	45-54	55 & over	Total	2003	2004	2005	Total	
0	6.4	6.7	6.7	6.7	6.6	6.6	6.3	6.5	6.9	6.6	6.6
1	11.2	11.6	11.6	11.6	11.3	11.5	11.4	11.5	11.7	11.5	11.5
2	11.5	11.6	11.6	11.5	11.5	11.6	11.4	11.6	11.7	11.6	11.6
3	11.6	11.6	11.6	11.5	11.4	11.6	11.5	11.6	11.7	11.6	11.6
4	11.7	11.6	11.5	11.5	11.6	11.6	11.5	11.6	11.7	11.6	11.6
5	11.7	11.6	11.6	11.6	11.6	11.6	11.6	11.6	11.7	11.6	11.6
6	11.6	11.7	11.7	11.6	11.6	11.7	11.6	11.7	11.7	11.7	11.7
7	11.1	11.7	11.7	11.6	11.6	11.7	11.6	11.7	11.7	11.7	11.7
8		11.8	11.7	11.6	11.6	11.7	11.6	11.7	11.8	11.7	11.7
9		11.8	11.7	11.6	11.6	11.7	11.7	11.7	11.7	11.7	11.7
10		11.8	11.7	11.6	11.6	11.7	11.6	11.7	11.7	11.7	11.7
11		11.8	11.7	11.6	11.5	11.7	11.6	11.7	11.8	11.7	11.7
12		11.8	11.7	11.6	11.6	11.7	11.7	11.7	11.7	11.7	11.7
13		11.8	11.8	11.6	11.6	11.7	11.7	11.7	11.7	11.7	11.7
14		11.8	11.8	11.6	11.6	11.7	11.7	11.7	11.7	11.7	11.7
15		11.8	11.8	11.7	11.7	11.8	11.7	11.8	11.7	11.8	11.7
16		11.9	11.8	11.7	11.7	11.8	11.7	11.8	11.8	11.8	11.7
17			11.9	11.7	11.7	11.8	11.7	11.8	11.8	11.8	11.7
18			11.8	11.7	11.6	11.7	11.7	11.7	11.8	11.7	11.8
19			11.8	11.7	11.7	11.7	11.7	11.7	11.8	11.7	11.8
20			11.8	11.7	11.7	11.7	11.7	11.7	11.7	11.7	11.8
21			11.8	11.8	11.8	11.8	11.8	11.8	11.8	11.8	11.8
22			11.9	11.8	11.7	11.8	11.8	11.8	11.8	11.8	11.8
23			11.9	11.8	11.8	11.8	11.8	11.8	11.8	11.8	11.8
24			11.9	11.8	11.8	11.8	11.8	11.8	11.8	11.8	11.8
25			11.9	11.9	11.8	11.8	11.9	11.8	11.8	11.8	11.8
26			11.9	11.9	11.8	11.9	11.8	11.9	11.8	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	11.8	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	11.9	11.9	11.9	11.9	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 2007

Years of service <sup>b</sup>	Tier 1	Tier 2
0	\$3,257	\$3,220
1	3,891	3,837
2	4,246	4,161
3	4,633	4,514
4	4,961	4,767
5	5,145	4,861
6	5,169	4,854
7	5,166	4,863
8	5,308	4,968
9	5,437	5,086
10	5,577	5,146
11	5,519	5,102
12	5,668	5,187
13	5,688	5,185
14	5,459	5,008
15	5,375	4,980
16	5,419	4,964
17	5,505	5,063
18	5,586	5,081
19	5,579	5,078
20	5,613	5,065
21	5,611	5,063
22	5,591	5,060
23	5,640	5,103
24	5,477	5,021
25	5,507	5,055
26	5,615	5,116
27	5,619	5,111
28	5,753	5,199
29	5,859	5,259
30	5,899	5,285

<sup>a</sup> Maximum creditable annual compensation during 2007 was \$97,500 and \$72,600 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 2003-2006  
and comparison with assumptions of the 23rd valuation

Age at entry <sup>a</sup>	Year of entry					23rd Val.
	2003	2004	2005	2006	2003-06 <sup>b</sup>	2000-03
All ages						
Number	12,699	21,983	22,424	23,204	80,310	47,664
Percent	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Under 20	2.5%	2.4%	2.6%	2.8%	2.6%	3.1%
20-24	20.3	18.6	20.5	20.6	20.0	20.4
25-29	20.5	20.9	21.6	21.5	21.2	20.1
30-34	17.2	18.1	17.3	17.1	17.4	17.4
35-39	14.2	14.8	13.7	14.7	14.4	14.3
40-44	12.3	12.1	11.7	10.8	11.7	11.3
45-49	7.3	7.7	7.4	7.1	7.4	7.3
50-54	3.7	3.5	3.5	3.6	3.6	3.8
55 & over	1.9	1.9	1.8	1.8	1.8	2.3
Average age at entry	32.8	33.1	32.6	32.5	32.7	32.8
Median age at entry	31.4	31.7	31.0	30.9	31.2	31.2

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

<sup>b</sup> Used in 24th valuation.

Table S-43. Family characteristics of railroad employees who died in 2003-2006 with a current connection

Age of employee <sup>a</sup>	Number of deaths <sup>b</sup>	Percent married								
		Total	Widow age 62 & over	Widow age 60-61	Widow under age 60	Widow under 60 with eligible child			Percent with eligible child	
						Youngest child under 16	Youngest child age 16-17	Youngest child disabled	Minor child	Disabled child
Under 35	41	68.3	-	-	68.3	56.1	-	-	87.8	-
35 - 39	68	70.6	-	-	70.6	58.8	4.4	-	89.7	-
40 - 44	96	72.9	-	-	72.9	52.1	8.3	-	81.3	3.1
45 - 49	346	70.2	1.0	-	69.2	27.4	10.4	0.3	51.7	1.4
50 - 54	938	66.8	1.6	0.6	64.6	14.6	4.5	0.6	26.8	1.3
55 - 59	1,635	66.8	3.4	2.8	60.6	4.9	2.2	1.2	11.0	1.7
60 - 64	2,206	70.4	18.4	15.3	36.7	2.1	0.6	0.6	4.9	1.9
65 - 69	2,769	71.5	52.0	7.5	12.0	0.7	0.4	0.2	2.0	1.0
70 - 74	4,350	70.5	64.5	2.1	3.9	0.3	0.1	-	0.9	1.0
75 - 79	8,747	66.6	64.0	0.8	1.8	0.2	-	-	0.5	1.0
80 - 84	11,596	60.5	59.4	0.3	0.8	0.1	-	-	0.2	0.8
85 - 89	10,999	50.2	49.6	0.1	0.5	-	-	-	0.1	0.7
90 & over	9,368	33.2	32.8	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	31.9	31.5	e	e	4.8	6.0	e	2.2
35 - 39	e	e	35.8	35.6	e	e	6.3	8.3	e	2.2
40 - 44	e	e	41.5	40.3	e	e	9.4	11.0	e	1.8
45 - 49	e	e	45.9	43.4	47.6	e	10.1	11.7	e	1.6
50 - 54	64.4	e	50.0	46.4	47.9	e	11.8	11.9	23.9	1.5
55 - 59	65.1	60.9	53.7	48.1	49.9	53.6	11.9	12.8	28.7	1.4
60 - 64	65.0	60.9	55.7	49.9	53.4	54.7	11.8	12.5	29.8	1.3
65 - 69	66.5	61.0	55.9	49.7	53.6	e	12.7	11.8	35.0	1.3
70 - 74	70.0	61.0	54.9	47.5	e	e	11.1	12.6	40.8	1.4
75 - 79	74.4	60.9	54.0	43.0	e	e	11.3	10.4	42.1	1.4
80 - 84	78.7	61.0	53.9	45.3	e	e	11.4	12.1	47.3	1.5
85 - 89	82.4	61.2	54.7	e	e	e	e	12.0	50.5	1.6
90 & over	86.2	e	54.7	e	e	e	e	e	56.4	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 2004 and 2007

	2004	2007	Percentage change
<b>1. Membership (thousands of employees)</b>			
Average employment for the year	227	237	4.4%
Active census, Dec. 31	251	258	2.8
Retired, Dec. 31	289	279	-3.5
Nonretired employees with vested rights <sup>b</sup> , total			
Active census, Dec. 31	194	179	-7.7
Inactive census, Dec. 31	63	57	-9.5
Employees in active census with 30 or more years of service			
	50	51	+2.0
<b>2. Number of beneficiaries (thousands), Dec. 31, total<sup>c</sup></b>			
Retired employees	289	279	-3.5
Spouses	145	139	-4.1
Survivors	180	160	-11.1
<b>3. Average monthly benefits paid in December</b>			
Retired employees	\$1,708.84	\$1,980.60	+15.9
Spouses	632.80	734.77	+16.1
Survivors	991.87	1,128.04	+13.7
<b>4. Amount of monthly benefit payments for the year (millions), total</b>			
Retired employees and their spouses	6,853	7,624	+11.3
Survivors	2,129	2,159	+1.4
<b>5. Miscellaneous information</b>			
Tier 1 taxable payroll as a percentage of total payroll	94.9%	92.9%	
Benefit payments in year as a percentage of tier 1 taxable payroll	64.8%	62.7%	
Number of beneficiaries per 100 full-time employees	265	241	
Percentage distribution of amount of monthly benefit payments in year			
Retired employees	64.3%	65.9	
Spouses	12.0	12.0	
Survivors	23.7	22.1	

<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.