

**Office of the Superintendent
of Financial Institutions**

**Bureau du surintendant
des institutions financières**

ACTUARIAL REPORT

as at 31 March 1998

Pension Plan

for

Federally Appointed Judges

Canada

7 April 1999

The Honourable Marcel Massé, P.C., M.P.
President of the Treasury Board
Ottawa, Canada
K1A 0R5

Dear Minister:

Pursuant to section 6 of the *Public Pensions Reporting Act* I am pleased to submit my report on the actuarial review as at 31 March 1998 of the pension plan established under the *Judges Act*.

Yours sincerely,

Michael Hafeman
Acting Chief Actuary
Public Insurance and Pension Programs

TABLE OF CONTENTS

	<u>Page</u>
I- Overview	1
II- Data	4
III- Methodology	7
IV- Assumptions	9
V- Valuation Results	17
A- Balance Sheet as at 31 March 1998	17
B- Cost Certificate	18
C- Sensitivity of Estimates to Variations in Key Assumptions	19
D- Reconciliation of Results with the Previous Report	20
VI- Projected Contributions	23
VII- Conclusions	25

APPENDICES

1. Summary of Plan Provisions	26
2. Sample Demographic Assumptions	32
3. Summaries of Membership Data	40

I- Overview

The pension plan established under the *Judges Act* is financed through the Consolidated Revenue Fund (CRF) primarily on a current basis rather than being funded through a Superannuation Account as are the other pension plans sponsored by the government. The financial soundness of the plan therefore rests on the continuance of the CRF contributions by the judges and the government.

A- Purpose of this Report

This actuarial review of the pension plan established under the *Judges Act* was made as at 31 March 1998 pursuant to the *Public Pensions Reporting Act* (PPRA). The previous review was made as at 31 March 1995. The date of the next periodic review contemplated under the PPRA is 31 March 2001.

In accordance with accepted actuarial practice, the main purpose of this actuarial report is to show realistic estimates of:

- C the balance sheet of the pension plan as at the valuation date, i.e. its assets, its liabilities, and the surplus or deficit;
- C the annual amount required to amortize over a period of years any surplus or deficit revealed as at the valuation date; and
- C the projected normal cost of the plan for each of the next three plan years following the valuation date.

As well, the report contains realistic estimates of the contributions to be made in accordance with the actual financing arrangement in effect (see section VI).

B- Main Findings

1. As at 31 March 1998, the plan had a deficit of \$820.7 million, being the difference between assets of \$55.0 million and liabilities of \$875.7 million.
2. If the \$820.7 million deficit were amortized as it would be in the other pension plans sponsored by the government, then the total contributions to the plan would be increased by \$94.5 million in each of the next 15 plan years. This annual increase corresponds to 52.73% of payroll for the 1999 plan year.
3. If the plan were funded in the same manner as the other pension plans sponsored by the government, the normal cost estimated for the 1999 plan year would be 27.31% of payroll, that is \$48.9 million, with increases to 28.53% and 29.83% of payroll in the following two plan years.

¹ Any reference to a given *plan year* in this report should be taken to mean the 12-month period ending 31 March of the given year.

4. The plan does not have a Superannuation Account and therefore cannot be funded in accordance with accepted actuarial practice. The foregoing deficit amortization and normal cost payments are therefore entirely theoretical in nature.
5. The combined contributions to be made by the government and the judges in the 1999 plan year in accordance with the actual financing arrangement are estimated to be 28.41% of payroll, that is \$50.9 million, with increases to 29.19% and 29.97% of payroll in the following two plan years.

C- Recent Developments

Certain plan provisions were materially amended by Bill C-37, which received Royal Assent on 18 November 1998. The Bill adds an early retirement provision to the plan; as well, it changes the salaries upon which the benefits are based. This valuation incorporates Bill C-37 because some of the amendments are retroactive to 1 April 1997.

1. Rule of 80

Before the enactment of Bill C-37, pensionable retirement was available only to judges at least age 65 who had completed at least 15 years of service. It is now available as soon as the sum of age and service (minimum of 15 years) is at least 80 years (i.e. the Rule of 80). The assumed rates of retirement were accordingly extended down to age 57, which is the earliest possible retirement age for the current population of judges. For convenience it was assumed that the pent-up demand for the Rule of 80 would be fully experienced in the 1999 plan year, with only the normal demand in subsequent years.

2. Salary Increases

As a result of Bill C-37, judicial salaries were increased by 4.1% retroactive to 1 April 1997 (over and above the regular increase of 2.1%) and a further 4.1% retroactive to 1 April 1998 (again over and above the regular increase of 2.1%).

The valuation in respect of active judges was based on the increased salary effective 1 April 1998. As well, the pensions of judges who retired from 1 April 1997 onward were increased accordingly.

3. Financial Impact

As shown in section V-D, the financial impact of Bill C-37 is substantial. The normal cost for the 1999 plan year has risen by 1.23% of payroll, of which 0.08% is attributable to the pent-up demand for early retirement; the long-term cost increase in respect of Bill C-37 is therefore 1.15% of payroll. As well, the liabilities as at the valuation date have increased by \$56.1million.

II- Data

A- Account

1. Reconciliation of Balances in the Judges-Related Portion of the SRB Account

Plan year	\$ million			
	<u>1996</u>	<u>1997</u>	<u>1998</u>	<u>1996-1998</u>
Opening balance	37.8	43.6	49.3	37.8
INCOME				
Investment earnings	3.0	2.9	2.9	8.8
Judges contributions	1.4	1.4	1.4	4.2
Government contributions	<u>1.4</u>	<u>1.4</u>	<u>1.4</u>	<u>4.2</u>
Subtotal	5.8	5.7	5.7	17.2
EXPENDITURES				
Benefit payments	0.0	0.0	0.0	0.0
Closing balance	43.6	49.3	55.0	55.0

The above table shows the reconciliation of assets in the judges-related portion of the Supplementary Retirement Benefits (SRB) Account from the last valuation date to the current valuation date. Since the last valuation, the Account balance has grown by \$17,200,000 (i.e. a 45.5% increase) to reach \$55,000,000 as at 31 March 1998. The net growth in the Account balance results almost as much from contributions as from interest credits.

2. Rates of Return

The following rates of return on the Account by plan year were calculated using the foregoing entries, assuming a uniform distribution of cash flows during the plan year.

1996	7.6 %
1997	6.5
1998	<u>5.7</u>
Average	6.6 %

3. Sources of Asset Data

In accordance with section 8 of the PPRA, the Office of the Comptroller General of Canada provided a certification of the assets of the plan as at 31 March 1998. The Account entries shown in item 1 above were also provided by that Office.

B- Membership

1. Highlights

The data in respect of judges, pensioners, and eligible survivors were provided as at 31 March 1997, and are shown in the summaries of data in Appendix 3. These data were projected to the 31 March 1998 valuation date on the basis of the demographic assumptions of the 1995 valuation and the actual economic experience (a salary increase of 6.2% for judges and a 1.9% indexation increase for pensioners and eligible survivors) during the projection period of one year.

(a) Judges

There were 989 judges active as at 31 March 1997, of whom 83% were male. The average age last birthday was 58.8 years and the average last anniversary of service was 10.4 years. The aggregate annual salary was \$154.9 million (average was \$156,600). Tables 3D and 3E of Appendix 3 show detailed information by sex on the age and service of judges.

(b) Pensioners

There were 280 pensioners as at 31 March 1997, of whom 96% were male. The average age last birthday was 76.7 years; at date of retirement or disability, it was 70.9 years. Their aggregate annual pension entitlements were \$29.5 million (average was \$105,382). Table 3F of Appendix 3 shows detailed information on the benefits in course of payment to pensioners.

(c) Eligible Survivors

There were 280 surviving spouses as at 31 March 1997, all of whom were female. The average age last birthday was 78.2 years; at date of widowhood, it was 65.8 years. Their aggregate annual spousal allowance entitlements were \$13.2 million (average was \$47,243). Table 3G of Appendix 3 shows detailed information on the benefits in course of payment to eligible survivors, including children.

2. Sources of Membership Data

The Office of the Registrar of the Supreme Court of Canada provided relevant valuation input data on Supreme Court judges and on the corresponding pensioners and survivors. The Office of the Commissioner for Federal Judicial Affairs provided similar data for all other federally appointed judges and for the corresponding pensioners and survivors.

With respect to the collection of data, the co-operation and able assistance received from the offices of the Registrar of the Supreme Court of Canada, the Commissioner for Federal Judicial Affairs, and the Comptroller General deserve to be acknowledged.

C- Validation of Membership Data

The principal validation tests applied to the valuation input data were as follows:

- C reconciling the membership data with that published in the previous valuation report (see tables 3A, 3B, and 3C of Appendix 3);
- C checking that the salary of a judge was within a certain range and reasonable in comparison with the salary of that judge in the previous valuation data;
- C verifying that the length of service of a judge was reasonable in relation to attained age; and
- C comparing the initial pension of each judge retiring during the intervaluation period with the expected pension based on the 31 March 1994 valuation data.

Based on the omissions and discrepancies identified by these and other tests, appropriate adjustments were made to the basic data after consulting with the data providers.

III- Methodology

C- Assets

The plan's assets are deemed equal to the sum of the individual balances in the SRB Account in respect of the judges. The Account

- C consists of notional assets, meaning that no debt instrument has been issued to the Account by the government in recognition of the amounts therein;
- C is the only account set up for the plan; and
- C is maintained only in respect of a portion of the indexation provision.

These assets are shown at book value, as opposed to market value, because the government securities in the SRB Account are entirely notional.

B- Normal Costs

Although the plan provides benefits that do not vary by length of service, the projected accrued benefit (also known as the projected unit credit) actuarial cost method was used to compute normal costs. Under this method, the normal cost computed in respect of a given year corresponds to the value, discounted in accordance with the assumed interest rates described in section D below, of all future benefits considered to accrue in respect of that year's service. Consistent with this cost method, salaries are projected up to retirement using the assumed annual increases in average salaries.

To allow use of the projected accrued benefit actuarial cost method, it was necessary to express each judge's projected benefit in unit credit terms, for each type of benefit. To do so, the benefit projected in respect of a given judge was considered to have accrued uniformly from the date of the judge's appointment to the commencement date of that benefit. For example, a retirement pension commencing at age 75 was deemed to accrue at the following rates, expressed as a percentage of salary throughout a judge's career.

<u>Age at Appointment</u>	<u>Annual Accrual</u>
40	1.9 %
45	2.2
50	2.7
55	3.3
60	4.4
65	6.7

C- Liabilities

1. Judges

Consistent with the projected unit credit actuarial cost method employed to estimate normal costs, the plan's liabilities in respect of active judges as at the valuation date correspond to the value, discounted in accordance with the assumed interest rates, described in section D below, of all future benefits considered to have accrued as at that date in respect of all prior years' service.

2. Pensioners and Survivors

Consistent with accepted actuarial practice and standards, the plan's liabilities as at the valuation date in respect of pensioners and survivors correspond to the value, discounted in accordance with the assumed interest rates, described in section D below, of all periodic benefits already in pay as at the valuation date.

D- Assumed Interest Rates

The rates of interest (see section IV-C) assumed in computing the present value of benefits involved in the projection of the normal costs and liabilities mentioned in sections B and C above are the projected fund yields that would be used for the statutory actuarial valuation of the plans established under the Public Service, Canadian Forces, and Royal Canadian Mounted Police Superannuation Acts. These three plans were deemed to be the most appropriate model for any future funding arrangement to replace the current financing arrangement, which amounts to a pay-as-you-go basis (see section VI). As in the previous valuation, the yields were determined using the open-group approach, meaning that expected future contributions are taken into account in projecting the annual yield on the combined Superannuation Accounts of the three plans.

The open-group approach was retained in accordance with the plan provision, common to the three above-mentioned plans, stipulating that the average yield on the combined accounts is to be used in allocating aggregate investment earnings to each of the three accounts.

The projected fund yields were determined by an iterative process involving the notional assets of the three accounts as at the valuation date, the assumed future new money interest rates (also shown in section IV-C), and all future contributions as well as all future expected benefits payable in respect of pension entitlements either accrued before the valuation date or accruing thereafter.

IV- Assumptions

A- Basic Economic Assumptions

The following basic assumptions in respect of each future year are not used directly in the valuation. However, the valuation is based on the economic assumptions derived therefrom (see the following subsection).

1. Interest Rate on New Money

The ultimate real rate of return on the investment of future net cash flows in long-term (at least 20 years to maturity) Government of Canada bonds is projected to be 3% per annum. This real rate is unchanged from the previous valuation.

Over the last 60 years, the real-return differential on long Government of Canada bonds has often been less than 3% per annum. In fact, negative differentials were not uncommon until the early 1980s. It is only in the last 15 years that high real-return differentials (as much as 8% per annum) have prevailed. The current expectations in the capital markets, as measured by the pricing of long Government of Canada real-return bonds, are that the differentials will average 4% per annum for the next three decades. Taking all of these factors into account, the assumed ultimate differential of 3% per annum seems reasonable.

The real-return differential is expected to decrease annually from 4.9% in the 1999 plan year until the ultimate level of 3% per annum is first attained in the 2004 plan year.

2. Price Increase

Price increases, as measured by changes in the Consumer Price Index (CPI), tend to fluctuate from year to year. Over the last 50 years, the trend was generally upward until the early 1980s and downward since then. For example, the average annual increases in the CPI for the 50-, 25- and 10-year periods ending in 1997 were 4.44%, 5.83% and 2.80%, respectively.

Based on these trends as well as judgement regarding the long-term outlook for inflation, an ultimate annual rate of price increase of 3% has been assumed. This is the same ultimate price increase assumption used in the previous valuation. The rates of price increase are assumed to increase annually from 0.7% in the 1999 plan year until the ultimate level of 3% per annum is first attained in the 2004 plan year.

¹ Note that all of the real rates of return referred to in this report are actually real-return differentials, i.e. the difference between the effective annual coupon yield on long Government of Canada bonds and the rate of increase in prices. This differs from the technical definition of the real rate of return, which, in the case of the ultimate new money rate assumption, would be 2.91% (derived from $1.06/1.03$) rather than 3%.

3. Average Canadian Wage Increase

The Industrial Aggregate index maintained by Statistics Canada measures the average earnings of employed Canadians. The real-wage differential for Canada is then the excess of the Industrial Aggregate increase over the price increase.

Historically, the real-wage differential has fluctuated significantly from year to year. The trend was generally downward through the late 1980s, with some improvement since then; for example, the 10-year average annual real-wage differential was -0.59% for the period ending 1987 and 0.32% for the period ending 1997. Over the longer term, the annual real-wage differential averaged 1.52% for the 50-year period ending 1997.

Many factors have influenced the real rates of increase in average annual wages, including general productivity improvements, the move to a service economy and decreases in the average hours worked. Considering these factors, together with the historical trends and judgement regarding the long-term course of the economy, an ultimate real-wage differential of 1% per annum has been assumed for plan year 2004 and thereafter. This ultimate differential is unchanged from the assumption used in the previous report. Combined with the price increase assumption already described, it results in assumed nominal annual increases in Canadian wages of 4% in the plan year 2004 and thereafter. Before then, the real-wage differential is assumed to vary from year to year, the average being close to the ultimate differential.

B- Derived Economic Assumptions

The following assumptions were derived from the basic economic assumptions.

1. Valuation Interest Rate

The valuation interest rate is the projected fund yield. It is required for the computation of present values of benefits involved to determine the plan's liabilities and normal costs. The methodology used to determine the projected fund yields is described in section III-D.

2. Pension Indexing Factor

The pension indexing factor is involved in the valuation process by virtue of its role in the annual inflation adjustments made to all annuities payable under the plan. It was derived by applying the indexation formula described in Appendix 1, which relates to assumed CPI increases over successive 12-month periods ending on 30 September.

3. Judicial Salary Increase

The judicial salary increase is a key assumption in determining the estimated initial amount of annuity payable to a pensioner or survivor. Judicial salaries are expected to follow much the same pattern of increase as the Industrial Aggregate (see

foregoing discussion of average Canadian wage increase assumption) to which they are indexed with a lag of several months. However, the 1 April 1998 increase includes an additional 4.1% increase attributable to Bill C-37. As in previous valuations, a promotional salary increase scale was not included because elevation to a higher court or to such positions as Chief Justice or Associate Chief Justice occurs only rarely.

C- Summary of Basic and Derived Economic Assumptions
(annual percentages)

Plan Year	Interest		Inflation		Employment Earnings	
	New Money Rate	Valuation Rate	Price Increase	Pension Indexing ¹	Industrial Aggregate Increase	Judicial Salary Increase ²
1999	5.6	9.61	0.7	0.9 ³	2.6	6.2 ³
2000	5.6	9.27	1.5	0.9	2.2	2.5
2001	5.7	8.92	1.9	1.5	2.7	2.1
2002	5.8	8.56	2.3	1.9	3.2	2.4
2003	5.9	8.17	2.8	2.3	3.7	2.9
2004	6.0	7.91	3.0	2.8	4.0	3.4
2005	6.0	7.68	3.0	3.0	4.0	3.8
2006	6.0	7.45	3.0	3.0	4.0	4.0
2007	6.0	7.28	3.0	3.0	4.0	4.0
2008	6.0	7.12	3.0	3.0	4.0	4.0
2009	6.0	6.96	3.0	3.0	4.0	4.0
2010	6.0	6.81	3.0	3.0	4.0	4.0
2011	6.0	6.66	3.0	3.0	4.0	4.0
2012	6.0	6.42	3.0	3.0	4.0	4.0
2013	6.0	6.31	3.0	3.0	4.0	4.0
2014	6.0	6.22	3.0	3.0	4.0	4.0
2015	6.0	6.15	3.0	3.0	4.0	4.0
2016	6.0	6.05	3.0	3.0	4.0	4.0
2017	6.0	5.99	3.0	3.0	4.0	4.0
2018	6.0	5.96	3.0	3.0	4.0	4.0
2019	6.0	5.96	3.0	3.0	4.0	4.0
2020	6.0	5.97	3.0	3.0	4.0	4.0
2021	6.0	5.98	3.0	3.0	4.0	4.0
2022	6.0	5.99	3.0	3.0	4.0	4.0
2023+	6.0	6.00	3.0	3.0	4.0	4.0

¹ Assumed to be effective as at 1 January.

² Assumed to be effective as at 1 April.

³ Bold figures reflect actual experience. The 6.2% salary increase for judges includes 4.1% attributable to Bill C-37.

D- Margins Against Adverse Fluctuations

Actuarial valuations prepared for private employers' pension plans normally include safety margins. This is done mainly to ensure that on plan wind-up there would be, taking into account possible future fluctuations in economic and demographic factors, sufficient funds for the payment of all future benefits accrued as at the wind-up date. Such rationale does not appear to apply to the judges' plan because the plan sponsor is the Government of Canada.

There is an implicit margin in the liabilities to the extent that the assumed ultimate real rate of return (i.e. 3% per annum) is considered to be on the low side. If the plan were funded conventionally, this margin would tend to produce surpluses in future valuations. In practice the plan's pay-as-you-go financing precludes the possibility of such a margin.

E- Demographic Assumptions

Except where otherwise noted, all demographic assumptions were determined from the plan's own experience as was done in the past. Assumptions of the previous valuation were updated to reflect the experience of April 1994 to March 1997 to the extent that it was deemed credible.

1. New Entrants

To estimate the normal costs shown in the cost certificate (section V-B), assumptions were made as to the number, sex, age, and initial salary of future new judges. It was assumed that the number and sex of the new judges would be such that the population of male judges remains level whereas that of female judges rises by 15% in the 1999 plan year with smaller increases thereafter until the ultimate increase of 2% is first attained in the 2014 plan year. For each sex, the age distribution of the future new judges was based on that of the actual new judges in the April 1994 to March 1997 period. The initial salary of new judges was assumed to be \$175,800 for the 1999 plan year, with increases in future plan years in accordance with the assumption for judges' salary increases.

2. Judges

Table 2A of Appendix 2 shows the assumed rates of decrement arising from pensionable disabilities (judge becomes *disability pensioner* entitled to an immediate disability pension). Unlike the previous valuation, the assumed rates of pensionable disability are sex-distinct. In aggregate the assumed rates are only marginally lower than those of the previous valuation.

Tables 2B.1 and 2B.2 show the assumed rates of pensionable retirement (judge becomes a *retirement pensioner* entitled to an immediate retirement pension) for the 1999 plan year and for all subsequent plan years, respectively. The rates in the two tables vary not only by age as in the previous report but also by years of service. As well,

the rates have been expanded to cover ages 57 to 63 inclusive to recognize early retirement under the Rule of 80 (see section I-C). The rates in Table 2B.1 are higher than those in Table 2B.2 at ages 65 and under to recognize the pent-up demand for early retirement in the 12 months immediately following the Rule of 80 amendment. At most ages the rate in each table is roughly double the corresponding age-based rate in the previous report.

Table 2C.1 of Appendix 2 shows the assumed rates of mortality for the 1999 plan year. The rates of mortality deemed applicable to male judges in the 1999 plan year are as much as 11% lower than the rates assumed for that year in the previous valuation, whereas the corresponding rates for female judges are virtually unchanged.

Mortality rates for years subsequent to the 1999 plan year are obtained by applying the longevity improvement factors shown in Table 2C.2 of Appendix 2 to the rates assumed for 1999. The improvement factors are equal to Projection Scale AA (published by the Society of Actuaries in 1994) increased by 0.25% per annum to reflect the mortality experience under the Public Service pension plan from 1987 to 1995. Virtually all of the improvement factors for males at the contributor ages are 50% higher than their counterparts in the previous valuation, as opposed to a corresponding 50% decrease for females.

As in the previous valuation, it was assumed that no judge would step down with only a return of contributions.

3. Pensioners

The mortality basis deemed to apply to Judges (see section 2 above) is also assumed to apply to retirement pensioners. Mortality rates for male retirement pensioners in the 1999 plan year are in aggregate little changed from the rates assumed for that year in the previous valuation, whereas the corresponding rates for female retirement pensioners at the key ages are on average 10% lower than previously assumed. The mortality improvement factors were increased by about 20% for males at the key pensioner ages, as opposed to a corresponding 33% decrease for females.

For the first time, the mortality assumption applicable to a disability pensioner was expressed as a multiple of that applicable to a judge or retirement pensioner (see footnote to Table 2C.1 in Appendix 2). Up to age 70, disability pensioners are assumed to experience roughly double the mortality assumed in the previous valuation; at the more advanced ages, the current rates are only half of the previous rates.

4. Surviving Spouses

Tables 2D and 2E of Appendix 2 show the proportion of judges and pensioners assumed to leave, upon death, a spouse eligible for a survivor pension under the plan. The assumed probability of a male leaving a widow is on average somewhat lower than in the previous valuation. The assumed probability of a female age 80 or over leaving an eligible widower is marginally higher than under the previous assumption.

Tables 2D and 2E of Appendix 2 also show the assumed age difference between the surviving spouse and the deceased judge or pensioner. The widow of a male aged 60 to 75 years is assumed to be one year older than in the previous valuation whereas the widow of a very old pensioner is now expected to be one year younger than previously assumed. The widower of a female at least 80 years old is expected to be one year younger than previously assumed.

As in the last valuation, it was assumed that surviving spouses are subject to the same mortality as judges and retirement pensioners of the same age and sex.

5. Surviving Children

It was assumed that the number of eligible children surviving a judge or pensioner would be in accordance with Tables 2D and 2E of Appendix 2, which also show the assumed average age of those survivors. To determine the value of pensions payable to children, the rates of pension termination were assumed to be zero if age 17 had not yet been attained, and 12% per annum thereafter until expiry of the benefit on the 25th birthday. All of these assumptions are materially the same as in the previous valuation.

F- Other Assumptions

1. Reversals and Recoveries

It was assumed that no pensioners, current or future, would return to the bench.

2. Minimum Death Benefit

This valuation does not take into account the minimum death benefit, described in Note 10 of section G of Appendix 1, in respect of deaths occurring after retirement. The resulting understatement of accrued liability and normal cost is immaterial because relatively few pensioners in the early years of retirement die without leaving an eligible survivor.

3. Special Retirement Provisions

Certain plan provisions (see Note 1 of section G of Appendix 1) allow judges to retire on a full pension before satisfying the normal requirement that the sum of age and service (minimum of 15 years) be at least 80 years. These provisions have been ignored in the valuation because only a handful of judges will retire thereunder.

V- Valuation Results**A- Balance Sheet as at 31 March 1998**

The following balance sheet was prepared using the data described in section II, the methodology described in section III, and the assumptions described in section IV.

<u>Assets</u>	<u>\$ Millions</u>
Balance in SRB Account	55.0
<u>Liabilities</u>	
For benefits accrued to, and in respect of, judges	485.1
For benefits payable to, and in respect of:	
C Retirement pensioners	225.9
C Disability pensioners	44.1
C Surviving spouses	120.3
C Surviving children	<u>0.3</u>
	<u>390.6</u>
Total Liabilities	875.7
<u>Surplus (Deficit)</u>	(820.7)

B- Cost Certificate

The normal costs, assets and liabilities were computed using the data described in section II, the methodology described in section III, and the assumptions described in section IV. Emerging experience, differing from the corresponding assumptions, will result in gains or losses to be revealed in subsequent reports.

1. Normal Costs

The following normal costs in each given plan year are expressed as both a percentage of the projected payroll and a dollar amount.

<u>Plan Year</u>	<u>% of Payroll</u>	<u>\$ Million</u>
1999	27.31	48.9
2000	28.53	53.8
2001	29.83	59.1
2002	31.03	64.6
2003	32.08	70.6
2004	32.92	76.8
2005	33.54	83.0
2006	34.08	89.5
2007	34.60	96.1
2008	35.02	102.5
2013	36.37	135.0
2018	36.78	172.6
2023	36.93	219.5

The relatively large annual increases in the normal costs from 1999 to 2004 reflect mainly the partial transition of all economic assumptions from their current to their ultimate values. The more moderate annual increases thereafter reflect mainly the balance of the transition from the current high assumed investment yield (e.g. 9.61% for the 1999 plan year) to the lower ultimate yield (6% per annum) projected for the 2023 plan year and thereafter.

The foregoing normal costs are purely hypothetical because the plan lacks a true funding vehicle such as a Superannuation Account to accept and accumulate contributions. However, the normal costs can be used to fairly compare the cost of the plan with that of other plans.

2. Summary Balance Sheet

The assets of the plan were \$55.0 million as at 31 March 1998. The total liabilities as at the same date are estimated at \$875.7 million, leaving a deficit of \$820.7 million. Amortizing this deficit over 15 years would correspond to a level annual amount of \$94.5 million (payable monthly and corresponding to 52.73% of pensionable payroll for the 1999 plan year), which was estimated using the yields described in section III-D and shown in section IV-C.

C- Sensitivity of Normal Costs to Variations in Key Assumptions

The supplementary estimates shown below indicate the degree to which the valuation results shown in the Cost Certificate depend on some of the key assumptions. The differences between the results below and those shown in the Cost Certificate can also serve as a basis for approximating the effect of other numerical variations in a key assumption, to the extent that such effects are indeed linear.

1. Productivity

If the assumed real rate of increase in average salaries (i.e. productivity) were reduced by one percentage point in all years (e.g. from 1% to 0% ultimately), then the 1999 normal cost would decrease by 2.34% of payroll (from 27.31% to 24.97%).

2. Investment Yields

The valuation reflects a deemed investment policy of buying and holding long-term Government of Canada bonds. If the investment portfolio also included a significant equity component, it would be appropriate to project higher rates of return. As a measure of sensitivity, an increment of one percentage point in the projected yields would decrease the 1999 normal cost by 4.48% of payroll (from 27.31% to 22.83%).

3. Pension Indexing

If the pension indexation assumption were reduced by one percentage point in all years (e.g. from 3% to 2% ultimately), then the 1999 normal cost would decrease by 2.43% of payroll (from 27.31% to 24.88%).

4. Mortality

If the mortality rates assumed in each future year were reduced by one-tenth, then the 1999 normal cost would increase by 0.77% of payroll (from 27.31% to 28.08%).

If the assumed improvements in longevity after the 1999 plan year were disregarded, then the 1999 normal cost would decrease by 1.62% of payroll (from 27.31% to 25.69%).

D- Reconciliation of Results with Previous Report

This section describes the various factors reconciling the surplus (deficit) and normal cost of this valuation with those of the previous valuation. Figures in brackets indicate negative amounts. The main items in the table are explained in the following pages.

	<u>Surplus (Deficit)</u>	<u>Normal Cost</u>
	\$ million	% of payroll
As at 31 March 1995	(573)	21.90
Interest on initial surplus (deficit)	(192)	-
Expected normal cost change	-	3.17
Benefit payments borne by CRF	143	-
Cost/contributions difference	(113)	-
Experience gains (losses)		
Pensionable retirements	(20)	0.11
Salary increases	11	-
Mortality	(7)	(0,03
Interest rates	(5)	-
New entrants	-	(0,12
Minor items	7	(0,01
Residual items	<u>(7)</u>	<u>0.04</u>
Subtotal	(21)	(0,01
Revision of valuation assumptions		
Pensionable retirements	(39)	2.15
Pension indexation	27	(0,19
Salary increases	23	(1,53
Mortality	(15)	0.21
Interest rates	(14)	0.62
Proportion married at death	4	(0,13
New entrants	-	0.04
Minor items	<u>1</u>	<u>(0,02</u>
Subtotal	(13)	1.15
Plan amendments		
Salary increases	(35)	-
Rule of 80	<u>(21)</u>	<u>1.23</u>
Subtotal	(56)	1.23
Refinements of valuation procedures	<u>4</u>	<u>(0,13</u>

As at 31 March 1998

(821)

27.31

Explanations of the Foregoing Reconciliation

1. Interest on Initial Surplus (Deficit)

The interest to 31 March 1998 on the deficit of \$573 million as at 31 March 1995 amounted to \$192 million, based on the interest rates assumed in the previous report for the three-year intervaluation period.

2. Expected Normal Cost Change

The gradual increase in the normal cost from 1995 to 1998 projected in the previous report mainly reflected a partial transition from the current to the ultimate economic assumptions and, to a minor degree, the expected changes in the demographic characteristics of the judges.

3. Benefit Payments Borne by Consolidated Revenue Fund

The Consolidated Revenue Fund bears the cost of all benefits paid to or in respect of a member, except for the negligible amounts charged to the SRB Account. Because the plan's only funding vehicle (i.e. the SRB Account) was charged with virtually none of the benefits paid during the intervaluation period, the deficit decreased by \$143 million.

4. Cost/Contributions Difference

In accordance with the previous cost certificate, the normal cost for the intervaluation period of three years was \$123 million. However, the contributions and credits made to the sole funding vehicle (i.e. the SRB Account) amounted to only \$10 million. This cost/contributions difference accumulated with interest caused the deficit to rise by \$113 million.

5. Pensionable Retirements

During the three years since the last valuation, there were more than twice as many pensionable retirements as expected at ages 65 to 74. Altogether the plan suffered a loss of \$20 million and a normal cost increase of 0.11% of payroll as a result of this experience.

The revised rates of pensionable retirement at ages 64 and over are roughly double the previously assumed rates, causing substantial increases in the deficit (up \$39 million) and the normal cost (up 2.15% of payroll). The effects of introducing the Rule of 80 are discussed in item 10 below.

6. Salary Increases

In the previous valuation the 1 April 1998 salary was projected to be 6.8% higher than the 1 April 1995 salary. Were it not for Bill C-37, the actual increase would have been 4.2%. This shortfall relative to the projection is advantageous to the plan, reducing the deficit by \$11 million. The effects of the Bill C-37 salary increases are discussed in item 10 below.

The assumed annual salary increases for the plan years 2000 to 2005, inclusive, average 1.15% lower than in the previous valuation. This material revision of the salary increase assumption caused the deficit to fall by \$23 million and the normal cost to fall by 1.53% of payroll.

7. Interest Rates

For the plan years 2000 to 2018, inclusive, the projected fund yields are materially lower (0.16% per annum on average) than the corresponding projected fund yields of the previous valuation. As a result, the deficit increased by \$14 million and the normal cost increased by 0.62% of payroll.

8. Mortality

Both components of the mortality basis, namely the rates assumed for the 1999 plan year and the improvement factors applying to those rates in subsequent years, were revised in this valuation. As a result the deficit rose by \$15 million and the normal cost rose by 0.21% of payroll, with most of the increase being attributable to the revision of the assumed 1999 mortality rates.

9. Pension Indexation

The revised pension indexation assumption for the six plan years following the valuation date averages 1.17% per annum lower than was assumed for those years in the previous valuation. As a result the deficit decreased by \$27 million and the normal cost decreased by 0.19% of payroll.

10. Plan Amendments

As discussed in section I-C, Bill C-37 added an early retirement provision (Rule of 80) to the plan and raised judicial salaries, both of which had a material effect on this valuation. The Rule of 80 caused the deficit to increase by \$21 million and the normal cost for the 1999 plan year to increase by 1.23% of payroll. The higher salaries affected only the deficit, increasing it by \$35 million.

VI- Projected Contributions

Except for the minor SRB Account component described in the paragraph hereafter, the government finances the plan through the Consolidated Revenue Fund (CRF) on a current basis. It makes periodic CRF credits which, when combined with the CRF contributions made by the judges, are equivalent to the benefits paid out in accordance with the terms of the plan.

The plan's only funding vehicle is the Supplementary Retirement Benefits (SRB) Account, into which certain minor prescribed contributions (less than 2% of total payroll - see Appendix 1) are deposited. The deposits would normally finance a material portion of the cost of the benefit indexation provision but in practice are effectively locked in the Account by a legislative anomaly¹.

Based on the data described in section II and the assumptions described in section IV, the projected plan contributions (i.e. to the CRF and the SRB Account together) by the government and the judges combined are as follows.

<u>Plan Year</u>	<u>% of Payroll</u>	<u>\$ Million</u>
1999	28.41	50.9
2000	29.19	55.1
2001	29.97	59.3
2002	30.69	63.9
2003	31.27	68.8
2004	31.70	73.9
2005	32.01	79.3
2006	32.60	85.6
2007	33.23	92.3
2008	33.83	99.0
2013	35.91	133.3
2018	38.04	178.5
2023	41.19	244.8

For the first 15 years, the projected pay-as-you-go contributions are generally slightly less than the estimated normal costs (see the Cost Certificate) that would be experienced if

¹ Practically the only event to trigger a payment from the Account is the death of a judge appointed after 16 February 1975 who leaves no survivor. There were no such deaths during the triennium, with very few expected in future years. Moreover, when such a death occurs, only the judge's own accumulated contributions are returned, leaving the government's matching contributions in the Account.

the plan were funded. However, by the plan year 2023 the pay-as-you-go approach becomes significantly more expensive (41.19% of payroll versus only 36.93%) because the lack of investment income eventually overwhelms the other costing factors.

The judges make required contributions in accordance with a prescribed formula (see Appendix 1), with the government contributions being the balance needed to finance the plan as described above. The following table shows the allocation of the projected contributions expressed as a percentage of payroll, as well as the ratio of the government contributions to the judges' contributions.

<u>Plan Year</u>	<u>Projected Contributions</u>		<u>Ratio</u>
	<u>Government %</u>	<u>Judges %</u>	
1999	21.79	6.62	3.29
2000	22.49	6.70	3.36
2001	23.20	6.77	3.43
2002	23.87	6.82	3.50
2003	24.40	6.87	3.55
2004	24.80	6.90	3.59
2005	25.08	6.93	3.62
2006	25.65	6.95	3.69
2007	26.27	6.96	3.77
2008	26.85	6.98	3.85
2013	28.91	7.00	4.13
2018	31.04	7.00	4.43
2023	34.19	7.00	4.88

The judges' contributions rise in the near future as judges contributing 1.5% of salary (namely, those appointed before 17 February 1975) retire and are replaced by new judges contributing 7% of salary. By the plan year 2013, all judges are assumed to be contributing 7% of salary.

The initial ratio of 3.29 rises gradually throughout the projection period as the cash requirements of the plan increase. By the 2023 plan year, the government is estimated to contribute 4.88 times as much as the judges.

VII- Conclusions

A- Financing of the Plan

If accepted actuarial practice for funding pension plans were followed, the plan would be financed as the major federal public sector pension plans are financed. A Superannuation Account would be established and credited with:

- Ⓒ normal cost contributions, determined in accordance with the most recent Cost Certificate;
- Ⓒ deficit amortization payments, determined in accordance with the most recent Cost Certificate; and
- Ⓒ the plan's notional assets, which would be transferred from the SRB Account.

The new Account would be charged with all benefit payments made in accordance with the plan provisions.

B- Actuarial Standards

In my opinion, considering that this report was prepared pursuant to the PPRA,

- Ⓒ the valuation input data on which it is based are sufficient and reliable;
- Ⓒ the assumptions that have been used are, in aggregate, appropriate;
- Ⓒ the methodology employed is appropriate; and
- Ⓒ the value of the assets would be less than the liabilities if the plan were to be wound up at the valuation date.

This report has been prepared, and my opinion given, in accordance with accepted actuarial practice, and particularly with the Canadian Institute of Actuaries' Standard of Practice for the Valuation of Pension Plans.

Michael Hafeman, F.S.A., F.C.I.A.
Acting Chief Actuary
Public Insurance and Pension Programs

Ottawa, Canada
7 April 1999

APPENDIX 1

**Summary of Provisions,
in Force as at 31 March 1998,
of the Pension Plan Established under the *Judges Act*
and Modified under the *Supplementary Retirement Benefits Act***

The first federal statute dealing with pensions for judges was enacted in 1868, with many subsequent amendments. The plan provisions as at 31 March 1998, together with the Rule of 80 plan amendment enacted on 18 November 1998, are summarized in this Appendix. However, the Act shall prevail if there is a discrepancy between the summary and the Act.

A- Membership

Membership in the plan is compulsory for all judges appointed to federal or provincial courts by the Government of Canada.

B- Assets

The only assets of the plan are the individual balances held in the SRB Account in respect of judges appointed after 16 February 1975. Each such balance is the cumulative excess of the prescribed interest credits and SRB contributions over the benefits charged to the SRB Account, as described in sections C, D, and E hereafter. No formal debt instrument is issued to the Account by the government in recognition of the amounts therein.

C- Contributions**1. Judges**

- Ⓒ Judges appointed before 17 February 1975 contribute to:
 - < the CRF at 1.5% of salary.
- Ⓒ All other judges contribute to:
 - < the CRF at 6% of salary, and
 - < the SRB Account at 1% of salary.

2. Government

- Ⓒ The government contributes to:
 - < the CRF to the extent that the plan benefits paid therefrom exceed the contributions by judges thereto, and
 - < the SRB Account at 1% of salary for judges appointed after 16 February 1975.

D- Investment Earnings

Interest is credited quarterly on the minimum monthly balances in the SRB Account at the monthly rate corresponding to the effective annual yield, reduced by 0.125%, available at the end of the month on 5-year Government of Canada bonds.

E- Benefits

Virtually all benefits under the plan are borne by the CRF when they become due, including all indexation-related payments to pensioners and survivors. Only some minor benefits are charged to the SRB Account, notably the full or partial return of a judge's past SRB contributions (1% of salary) if there are no survivors.

F- Summary Description of Benefits

The pension plan established under the *Judges Act* mainly aims at providing an earnings-related lifetime retirement pension to eligible members of the judiciary. The plan also provides pensions to judges in case of disability and to their spouses and children in case of death. The initial rate of retirement pension is equal to two-thirds of the final salary. Once in pay, the pension is indexed annually to the CPI.

The explanatory notes referred to in this summary description are given in section G.

1. Judges

<u>Type of Termination</u>	<u>Benefit</u>
Normal pensionable retirement (Note 1)	Immediate annuity (Note 2) reduced pro-rata if under 10 years of service (Note 3)
Early pensionable retirement (Note 1)	Immediate annuity
Pensionable disability	Immediate annuity
Nonvested termination (Note 4)	Return of contributions (Note 5)
Death leaving no eligible survivor (Notes 6 and 7)	Return of contributions. Also, lump sum to an ineligible surviving spouse (Note 8)
Death leaving eligible survivor(s)	Annuity to eligible survivor(s) (Note 9). Also, lump sum to a surviving spouse (Note 8)

2. Pensioners

<u>Type of Termination</u>	<u>Benefit</u>
Death leaving no eligible survivor	Residual benefit (Note 10), if applicable, to estate
Death leaving eligible survivor(s)	Annuity to eligible survivor(s)

G- Explanatory Notes

1: Normal Retirement Age and Pensionable Retirement

Normal pensionable retirement means ceasing to hold judicial office on reaching *normal retirement age* of 75 years. If at least 10 years of service have then been completed, a full pension is payable; otherwise, a prorated portion of the full pension is payable. These provisions are also available as early as age 70 to certain judges appointed prior to 1 March 1987.

Early pensionable retirement means ceasing to hold judicial office and becoming entitled to a full pension before normal retirement age by satisfying the requirement that the sum of age and service (minimum of 15 years) be at least 80 years or, in respect only of a judge of the Supreme Court of Canada, that age be at least 65 years with service of ten years or more. A full pension is also payable in the exceptional circumstance of a retirement deemed to be conducive to the better administration of justice or to be in the national interest, provided only that at least 15 years of service have been completed.

2: Immediate Annuity

Immediate annuity means an annuity that becomes payable immediately upon a pensionable retirement or disability. The initial annual amount of the annuity is equal to two-thirds of the judge's annual salary at the time of ceasing to hold office, or of the then current salary applicable to a higher judicial office, if such higher office was formerly held.

For purposes of this summary *immediate annuity* also includes the *return of contributions* (Note 5) payable when a pensioner who was appointed as a judge prior to 17 February 1975 first confirms that no survivor annuity would arise in the event of death.

Annuities are fully indexed to inflation (Note 11). They are payable in equal monthly instalments in arrears until the end of the month in which the pensioner dies. If applicable, either a survivor annuity (Note 9) or a residual benefit (Note 10) is payable upon the death of the pensioner.

3: Service

Service means holding the office of judge of a superior or county court or of the Tax Court of Canada, and includes the office of a person who is a deputy judge by virtue of section 60 of the *Federal Court Act*. Superior court is interpreted to include the Supreme Court of Canada; county court includes any district court.

4: Nonvested Termination

Nonvested termination means ceasing to hold judicial office under any circumstance other than pensionable retirement, pensionable disability, or death.

5: Return of Contributions

Return of contributions means the payment of an amount equal to the accumulated contributions paid into the plan by a judge. Interest is credited at the specified rate each 31 December on the accumulated contributions as at the preceding 31 December. The specified rate is currently the rate applied under the *Income Tax Act* in respect of refunds of overpayments of tax; before 1997, it was 4% per annum.

6: Eligible Surviving Spouse

The spouse of a judge is eligible for a survivor annuity when the judge dies, unless the spouse is already in receipt of an annuity under the plan. The spouse of a pensioner is likewise eligible if the marriage was in effect when judicial office was last held.

7: Eligible Surviving Children

Eligible surviving children of a judge or pensioner include each child under age 18 and any child under age 25 who is in full-time attendance at a school or university, having been in attendance substantially without interruption since reaching age 18 or, if more recent, since the date of death of the judge or pensioner.

8: Lump Sum for Surviving Spouse

If a judge dies, a lump sum equal to one-sixth of the yearly salary of the judge is paid to the surviving spouse.

9: Annuities to Eligible Survivors

Annuities to the eligible surviving spouse and children of a judge or pensioner become payable immediately upon the death of that individual. The annuity to the eligible surviving spouse is equal to one-third of the annual salary of the judge or to one-half of the pensioner's annuity, as applicable at the time of death. An eligible child receives an annuity equal to 20% of the surviving spouse's annuity, subject to reduction if there are more than four eligible children in the same family. The annuity otherwise payable to an eligible child is doubled if that child is an orphan.

Annuities are payable in equal monthly instalments in arrears until the end of the month in which the survivor dies or otherwise loses eligibility. If applicable, a residual benefit (Note 10) is payable to the estate upon the death of the last survivor.

10: Residual Benefit

Residual benefits equal to the amount, if any, by which the return of contributions exceeds the aggregate of all amounts paid to and in respect of a pensioner until the death of the pensioner or, if applicable, until the subsequent death or loss of eligibility of the last survivor entitled to an annuity.

11: Indexation

All annuities payable under the plan are adjusted every January to the extent warranted by the increase, as at 30 September of the previous year, in the 12-month average CPI. If the indicated adjustment is negative, annuities are not decreased for that year; however, the next following positive adjustment is diminished accordingly. Moreover, the first annual adjustment is prorated to reflect the number of whole months since the date of termination of service.

APPENDIX 2

Sample Demographic Assumptions

Table 2A

Assumed Rates¹ of Pensionable Disability

<u>Age Last Birthday</u>	<u>Male</u>	<u>Female</u>
35	.0005	.0007
40	.0007	.0010
45	.0011	.0017
50	.0020	.0030
55	.0035	.0053
60	.0061	.0092
61	.0069	.0104
62	.0077	.0116
63	.0086	.0129
64	.0098	.0147
65	.0110	.0165
66	.0124	.0186
67	.0140	.0210
68	.0157	.0236
69	.0178	.0267
70	.0201	.0302
71	.0227	.0341
72	.0256	.0384
73	.0286	.0429
74	.0322	.0483

¹ The rate is set to zero for each plan year in which the sum of the judge's age last birthday and service last anniversary (minimum of 15 years), both calculated at the beginning of the year, is at least 79 years. As well, it is set to zero for half of the plan year, if any, in which that sum is 78 years or in which that sum is at least 79 years but service last anniversary is only 14 years.

Table 2B.1

Assumed Rates¹ of Pensionable Retirement for 1999 Plan Year

Age Last	Service Last									
	14	15	16	17	18	19	20	21	22	23+
57	-	-	-	-	-	-	-	.164	.167	.170
58	-	-	-	-	-	-	.151	.154	.157	.160
59	-	-	-	-	-	.138	.141	.144	.147	.150
60	-	-	-	-	.126	.128	.131	.134	.137	.140
61	-	-	-	.113	.116	.118	.121	.124	.127	.130
62	-	-	.100	.103	.106	.108	.111	.114	.117	.120
63	-	.087	.090	.093	.096	.098	.101	.104	.107	.110
64	.074	.077	.080	.083	.086	.088	.091	.094	.097	.100
65	.084	.028	.028	.028	.028	.028	.028	.028	.028	.032
66	.093	.031	.058	.058	.058	.058	.058	.058	.058	.067
67	.103	.034	.064	.064	.064	.064	.064	.064	.064	.073
68	.112	.037	.070	.070	.070	.070	.070	.070	.070	.080
69	.122	.040	.075	.075	.075	.075	.075	.075	.075	.087
70	.132	.043	.081	.081	.081	.081	.081	.081	.081	.093
71	.141	.047	.087	.087	.087	.087	.087	.087	.087	.100
72	.151	.050	.093	.093	.093	.093	.093	.093	.093	.107
73	.160	.053	.098	.098	.098	.098	.098	.098	.098	.113
74	.170	.056	.104	.104	.104	.104	.104	.104	.104	.120
75 ²	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000

¹ The rate is applied in full for the plan year during which the judge first become eligible for pensionable retirement.

² Retirement becomes compulsory on the 75th birthday.

Table 2B.2

**Assumed Rates¹ of Pensionable Retirement for 2000 Plan Year
and Later**

Age Last	Service Last									
	14	15	16	17	18	19	20	21	22	23+
57	-	-	-	-	-	-	-	.164	.167	.170
58	-	-	-	-	-	-	.151	.154	.005	.011
59	-	-	-	-	-	.138	.141	.009	.009	.018
60	-	-	-	-	.126	.128	.012	.012	.022	.025
61	-	-	-	.113	.116	.015	.015	.028	.028	.032
62	-	-	.100	.103	.018	.018	.034	.034	.034	.039
63	-	.087	.090	.022	.022	.040	.040	.040	.040	.046
64	.074	.077	.025	.025	.046	.046	.046	.046	.046	.053
65	.084	.028	.028	.052	.052	.052	.052	.052	.052	.060
66	.093	.031	.058	.058	.058	.058	.058	.058	.058	.067
67	.103	.034	.064	.064	.064	.064	.064	.064	.064	.073
68	.112	.037	.070	.070	.070	.070	.070	.070	.070	.080
69	.122	.040	.075	.075	.075	.075	.075	.075	.075	.087
70	.132	.043	.081	.081	.081	.081	.081	.081	.081	.093
71	.141	.047	.087	.087	.087	.087	.087	.087	.087	.100
72	.151	.050	.093	.093	.093	.093	.093	.093	.093	.107
73	.160	.053	.098	.098	.098	.098	.098	.098	.098	.113
74	.170	.056	.104	.104	.104	.104	.104	.104	.104	.120
75 ²	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000

¹ The rate is applied in full for the plan year during which the judge first become eligible for pensionable retirement.

² Retirement becomes compulsory on the 75th birthday

Table 2C.1

Assumed Rates of Pensionable Mortality for 1999 Plan Year

<u>Age Last Birthday¹</u>	<u>Male</u>	<u>Female</u>
35	.0009	.0005
40	.0011	.0007
45	.0015	.0009
50	.0025	.0013
55	.0042	.0022
60	.0073	.0042
65	.0126	.0080
70	.0207	.0133
75	.0338	.0211
80	.0586	.0347
85	.0983	.0571
90	.1564	.0986
95	.2368	.1659
100	.3266	.2578
105	.4217	.3673
110	.4817	.4555
115	.5000	.5000

¹ Rates apply only to judges and retirement pensioners. Rates for disability pensioners are a multiple of these rates, being 7.0 up to age 60, then grading uniformly to 3.0 at age 70 and then to 1.0 at age 90 and over.

Table 2C.2

Assumed Longevity Improvement Factors

<u>Age Last Birthday</u>	<u>Annual % Reduction in Assumed Mortality Rates after 1999 Plan Year</u>	
	<u>Male</u>	<u>Female</u>
35	.8	1.3
40	1.1	1.7
45	1.6	1.8
50	2.1	1.9
55	2.2	1.0
60	1.9	.7
65	1.7	.7
70	1.8	.7
75	1.7	1.0
80	1.3	.9
85	1.0	.8
90	.7	.5
95	.5	.4
100	.4	.3

Table 2D

**Assumptions for Survivor Benefits
in Respect of Male Judges or Pensioners**

<u>Age Last Birthday at Death</u>	<u>Proportion Married at Death</u>	<u>Widow Age Difference¹</u>	<u>Eligible Children</u>	
			<u>Number</u>	<u>Average Age</u>
35	.81	(2)	2.94	8
40	.89	(2)	3.07	12
45	.92	(3)	2.71	16
50	.94	(3)	1.98	18
55	.97	(3)	.80	19
60	.97	(3)	.47	20
65	.93	(3)	.13	21
70	.87	(3)	.03	21
75	.82	(4)	.01	22
80	.75	(5)	-	-
85	.64	(5)	-	-
90	.51	(6)	-	-
95	.36	(7)	-	-
100	.21	(8)	-	-
105	.10	(11)	-	-
110	.04	(15)	-	-
115	.01	(20)	-	-

¹ Age of widow less age of judge or pensioner, both calculated at death of judge or pensioner.

Table 2E

**Assumptions for Survivor Benefits
in Respect of Female Judges or Pensioners**

<u>Age Last Birthday at Death</u>	<u>Proportion Married at Death</u>	<u>Widower Age Difference¹</u>	<u>Eligible Children</u>	
			<u>Number</u>	<u>Average Age</u>
35	.85	3	1.54	9
40	.89	3	1.55	14
45	.89	3	1.24	18
50	.89	3	.74	20
55	.89	3	.29	21
60	.82	3	.07	22
65	.73	2	.01	23
70	.60	2	-	-
75	.45	1	-	-
80	.35	0	-	-
85	.23	(1)	-	-
90	.13	(2)	-	-
95	.06	(4)	-	-
100	.02	(7)	-	-
105	.01	(10)	-	-

¹ Age of widower less age of judge or pensioner, both calculated at death of judge or pensioner.

APPENDIX 3

Summaries of Data

Table 3A

Reconciliation of Membership

The following table derived from the basic data shows pertinent statistics concerning judges, pensioners, and survivors during the period from April 1994 to March 1997 inclusive. Tables 3B and 3C show further details on reconciliations, by sex and type, of the judges and pensioners.

	<u>Judges</u>	<u>Retirement Pensioners</u>	<u>Disability Pensioners</u>	<u>Surviving Spouses</u>	<u>Surviving Children</u>
At 31 March 1994	922	186	36	265	12
Data corrections	1	3	0	(4)	0
New entrants	183	-	-	-	-
Pensionable retirements	(88)	88	-	-	-
Pensionable disabilities	(9)	-	9	-	-
Nonvested terminations	(2)	-	-	-	-
Deaths	(18)	(38)	(4)	(22)	0
New survivors	-	-	-	41	1
Loss of eligibility	—	—	—	—	(6)
At 31 March 1997	989	239	41	280	7

Table 3B

Reconciliation of Judges by Sex

	<u>Males</u>	<u>Females</u>	<u>Total</u>
At 31 March 1994	807	115	922
Data correction	1	0	1
New entrants	121	62	183
Pensionable retirements	(86)	(2)	(88)
Pensionable disabilities	(6)	(3)	(9)
Nonvested terminations	(2)	0	(2)
Deaths	<u>(18)</u>	<u>0</u>	<u>(18)</u>
At 31 March 1997	817	172	989

Table 3C

Reconciliation of Pensioners by Sex

A- Retirement Pensioners

	<u>Males</u>	<u>Females</u>	<u>Total</u>
At 31 March 1994	182	4	186
Data corrections	3	0	3
New pensioners	86	2	88
Deaths	<u>(38)</u>	<u>0</u>	<u>(38)</u>
At 31 March 1997	233	6	240

B- Disability Pensioners

	<u>Males</u>	<u>Females</u>	<u>Total</u>
At 31 March 1994	35	1	36
New pensioners	6	3	9
Deaths	<u>(4)</u>	<u>0</u>	<u>(4)</u>
At 31 March 1997	37	4	41

Table 3D

Number of Male Judges as at 31 March 1997

Age Last Birthday	Completed Years of Service							All Durations
	<u>0-4</u>	<u>5-9</u>	<u>10-14</u>	<u>15-19</u>	<u>20-24</u>	<u>25-29</u>	<u>30-34</u>	
35-39	1	-	-	-	-	-	-	1
40-44	5	0	-	-	-	-	-	5
45-49	53	12	4	-	-	-	-	69
50-54	65	37	16	3	-	-	-	121
55-59	40	48	32	17	6	-	-	143
60-64	28	45	52	40	25	7	-	197
65-69	5	24	49	45	45	9	0	177
70-74	<u>-</u>	<u>6</u>	<u>21</u>	<u>22</u>	<u>32</u>	<u>15</u>	<u>8</u>	<u>104</u>
All Ages	197	172	174	127	108	31	8	817

Average age last birthday: 60.6 years

Average last anniversary of service: 11.3 years

Average salary: \$156,600

Total payroll: \$127,967,900

¹ Includes five judges whose salary for valuation purposes was deemed to be the salary applicable to the higher judicial office formerly held. The average salary and total payroll both exclude the salary increase effective 1 April 1997.

Table 3E

Number of Female Judges as at 31 March 1997

Age Last Birthday	Completed Years of Service						All Durations
	<u>0-4</u>	<u>5-9</u>	<u>10-14</u>	<u>15-19</u>	<u>20-24</u>	<u>25-29</u>	
35-39	2	-	-	-	-	-	2
40-44	26	5	-	-	-	-	31
45-49	37	27	3	-	-	-	67
50-54	12	12	10	4	-	-	38
55-59	3	5	4	2	1	-	15
60-64	1	1	2	3	1	0	8
65-69	0	0	3	3	2	0	8
70-74	<u>-</u>	<u>1</u>	<u>0</u>	<u>1</u>	<u>0</u>	<u>1</u>	<u>3</u>
All Ages	81	51	22	13	4	1	172

Average age last birthday: 50.0 years

Average last anniversary of service: 6.2 years

Average salary: \$156,600

Total payroll: \$26,915,600

¹ Includes one judge whose salary for valuation purposes was deemed to be the salary applicable to the higher judicial office formerly held. The average salary and total payroll both exclude the salary increase effective 1 April 1997.

Table 3F

Pensioners¹ as at 31 March 1997

Age Last Birthday	Retirement Pensioners			Disability Pensioners		
	<u>Number</u>	<u>Average</u> Annual Pension (\$)	<u>Total</u> Annual Pension (\$)	<u>Number</u>	<u>Average</u> Annual Pension (\$)	<u>Total</u> Annual Pension (\$)
50-54	0	-	0	1	107,000	107,000
55-59	0	-	0	2	106,000	212,000
60-64	0	-	0	9	109,100	982,000
65-69	23	104,900	2,412,000	10	106,600	1,066,000
70-74	40	108,900	4,354,000	8	110,500	884,000
75-79	89	108,300	9,635,000	5	87,000	435,000
80-84	48	107,700	5,168,000	5	96,400	482,000
85-89	23	93,800	2,157,000	1	97,000	97,000
90-94	14	94,000	1,316,000	0	-	0
95-99	<u>2</u>	<u>100,000</u>	<u>200,000</u>	<u>0</u>	<u>-</u>	<u>0</u>
All Ages	239	105,615	25,242,000	41	104,024	4,265,000

Average age last birthday

At 31 March 1997: 77.9 years
At retirement: 72.5 years

Average age last birthday

At 31 March 1997: 69.4 years
At disability: 61.6 years

¹ All pensioners are males, except for six retirement pensioners and four disability pensioners.

Table 3G

Eligible Survivors as at 31 March 1997

<u>Age Last Birthday</u>	<u>Number</u>	<u>Yearly Amounts</u>	
		<u>Average</u> (\$)	<u>Total</u> (\$)
40-44	1	52,000	52,000
45-49	1	56,000	56,000
50-54	4	53,500	214,000
55-59	4	54,000	216,000
60-64	12	51,700	620,000
65-69	35	50,900	1,783,000
70-74	47	49,700	2,334,000
75-79	47	49,400	2,321,000
80-84	46	46,200	2,127,000
85-89	44	43,700	1,921,000
90-94	25	40,800	1,020,000
95-99	9	43,200	389,000
100-104	<u>5</u>	<u>35,000</u>	<u>175,000</u>
Widows ¹	280	47,243	13,228,000
Children	7	12,000	84,000

Average age last birthday of spouses

At 31 March 1997: 78.2 years
 At death of member: 65.8 years

¹ All surviving spouses are widows.