Actuarial Report

on the

Pension Plan for the Federally Appointed Judges

as at 31 March 2001

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28 June 2002

The Honourable Lucienne Robillard, 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 this report on the actuarial review as at 31 March 2001 of the pension plan established under the *Judges Act*.

Yours sincerely,

Jean-Claude Ménard, F.S.A., F.C.I.A.
Chief Actuary

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I. Executive Summary

This actuarial report on the pension plan established under the *Judges Act* was made as at 31 March 2001 pursuant to the *Public Pensions Reporting Act* (PPRA). The plan is financed through the Consolidated Revenue Fund (CRF) primarily on a current basis rather than being funded[1] as are the other pension plans sponsored by the government. The previous review was made as at 31 March 1998. The date of the next periodic review contemplated by the PPRA is 31 March 2004.

A. Purpose of the Report

The main practical purpose of this actuarial report is to show realistic estimates as at the valuation date of the contributions to be made in accordance with the actual financing arrangement in effect.

As well, the PPRA requires that the plan be valued as if it were a funded plan. Accordingly, this report shows theoretical estimates of the balance sheet, projected normal costs, and deficit-amortization payments.

B. Scope of the Report

The previous valuation report was based on the plan provisions as they stood after the enactment of Bill C-37 on 18 November 1998. There were no further changes to the plan provisions until Bill C-23 and Bill C-12 were enacted on 29 June 2000 and 14 June 2001, respectively. The significant plan changes resulting from these two bills are fully described in Appendix 1. This valuation report is based on the plan provisions shown in Appendix 2, which incorporate the changes brought about by Bill C-23 and Bill C-12.

C. Main Findings

- The combined contributions to be made by the government and the judges in the 2002 plan year[2] in accordance with the actual financing arrangement are estimated to be 27.65% of payroll, that is $58.7 million, with increases to 29.06% and 30.19% of payroll in the following two plan years.

- If the plan were funded in the same manner as the other major pension plans sponsored by the government, the normal cost estimated for the 2002 plan year

1 A pension plan is said to be *funded* if the contributions are made well in advance of the benefits payments they are intended to cover. A funded pension plan has a funding vehicle, i.e. a Pension Fund is established to earn investment returns.

2 In this report the 2002 plan year is the 12-month period ending 31 March 2002.

would be 27.45% of payroll that is $58.2 million, with increases to 27.59% and 27.62% of payroll in the following two plan years.

- As at 31 March 2001, the plan had a deficit of $1,054.3 million, being the difference between assets of $75.7 million and liabilities of $1,130.0 million.

II. Projected Contributions

Except for the minor Supplementary Retirement Benefits (SRB) Account component described in the next paragraph, the government finances the plan through the Consolidated Revenue Fund (CRF) on a current basis.

The plan's only funding vehicle is the SRB Account, into which certain minor prescribed contributions (less than 2% of total payroll – see Appendix 2) 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 anomaly[1].

Based on the data described in Appendix 4 and the assumptions described in Appendices 6 and 7, the projected plan contributions[2] (i.e. to the CRF and the SRB Account together) by the government and the judges combined are as follows:

Plan Year	% of Payroll	$ Million
2002	27.65	58.7
2003	29.06	64.3
2004	30.19	69.6
2005	31.40	74.8
2006	32.77	80.7
2011	37.30	110.7
2016	38.81	144.9
2021	40.48	193.2
2026	42.68	260.4

The projected pay-as-you-go contributions are all greater than the estimated normal costs (see Cost Certificate in Section III.B) that would be experienced if the plan were funded. The pay-as-you-go approach becomes progressively more expensive because the lack of investment income eventually overwhelms the other costing factors.

1 Practically the only events to trigger a payment from the Account are the death (with no survivor) or nonvested termination of a judge appointed after 16 February 1975. There were two such deaths and four such terminations during the triennium, with relatively few such events expected in future years. Moreover, when such a death or termination occurs, only the judge's own accumulated contributions are returned, leaving the government's matching contributions in the Account.

2 These long-term projections are shown for illustrative purposes only. Deviations from expected experience will occur, therefore more credibility should be given to the short-term figures.

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.

Plan Year	Government %	Judges %	Ratio
2002	22.42	5.23	4.29
2003	23.78	5.28	4.50
2004	24.80	5.39	4.60
2005	25.99	5.42	4.80
2006	27.33	5.44	5.02
2011	31.85	5.45	5.84
2016	33.72	5.09	6.62
2021	35.37	5.11	6.92
2026	37.44	5.24	7.15

The initial ratio of 4.29 rises gradually throughout the projection period as the cash requirements of the plan increase. By the 2006 plan year, the government is estimated to contribute 5.02 times as much as the judges.

Compared to the projections shown in the previous report, the government share of the cost has increased. This is mainly due to the decrease in judges' contributions brought about by Bill C-12 (contributions by a judge appointed after 16 February 1975 are reduced from 7% to 1 % of salary if the judge is eligible for a full annuity).

III. Actuarial Review of Pension Plan

As mentioned in the previous sections, the plan is financed primarily on a current basis. If it were funded in the same manner as the other major federal public service pension plans, a Pension Fund 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 Fund would be charged with all benefit payments made in accordance with the plan provisions.

This actuarial review was conducted assuming that a Pension Fund is established and that all contributions to the plan are deposited in the Pension Fund to be invested in the financial markets, as has been the case for the other major federal public service pension plans since 1 April 2000. This scenario differs from the previous report where it was assumed that contributions were invested in long-term Government of Canada bonds.

Another feature that differs from the other major public service plans is that the plan benefits generally do not vary by length of service. To allow use of the projected accrued benefit actuarial cost method (used for the actuarial valuations of the other public service plans), it was necessary to express each judge's projected benefit in unit credit terms, for each type of benefit. The method used is fully described in Appendix 5.

The following results and normal costs are purely hypothetical because the plan lacks a true funding vehicle to accept and accumulate contributions. However, the normal costs can be used to fairly compare the cost of the plan with other public sector and private pension plans.

A. Balance Sheet as at 31 March 2001

The balance sheet was prepared using the assets described in Appendix 3, the data described in Appendix 4, the methodology described in Appendix 5, and the assumptions described in Appendices 6 and 7.

Assets		$ Million
Balance in SRB Account		75.7
Total Assets		75.7
Liabilities		
For benefits accrued by, and in respect of, judges		596.4
For benefits payable to, and in respect of:		
• Retirement pensioners	360.3	
• Disability pensioners	47.6	
• Surviving dependants	125.7	
		533.6
Total Liabilities		1,130.0
Surplus (Deficit)		(1,054.3)

B. Cost Certificate

The normal costs, assets and liabilities were computed using the assets described in Appendix 3, the data described in Appendix 4, the methodology described in Appendix 5, and the assumptions described in Appendices 6 and 7. 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[1] are expressed as a dollar amount as well as a percentage of the projected payroll in each given plan year.

Plan Year	% of Payroll	$ Million
2002	27.45	58.2
2003	27.59	61.0
2004	27.62	63.7
2005	27.82	66.3
2006	28.01	69.0
2011	28.80	85.5
2016	28.95	108.1
2021	29.04	138.6
2026	29.37	179.2

2. Summary Balance Sheet

The assets of the plan were $75.7 million as at 31 March 2001. The total liabilities as at the same date are estimated at $1,130.0 million, leaving a deficit of $1,054.3 million. If this deficit were amortised over 15 years it would involve annual instalments of $109 million (payable monthly and corresponding to 51% of payroll for the 2002 plan year), which was estimated using the projected yields of the Fund shown in Table 9 of Appendix 6.

1 These long-term projections are shown for illustrative purposes only. Deviations from expected experience will occur, therefore more credibility should be given to the short-term figures.

C. Sensitivity of Normal Costs to Variations in Key Assumptions

The results below measure the effect on the 2002 normal cost of 27.45% of payroll if key economic assumptions are varied by one percentage point per annum from that year onward. As well, the effect of varying the level of mortality by one-tenth and of ignoring future mortality improvements is shown.

The supplementary estimates shown 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.

Assumption(s) Varied	2002 Normal Cost % of payroll	Effect of Variation % of payroll
None (i.e. current basis)	27.45	None
Investment yield		
- if 1% higher	23.25	(4.20)
- if 1% lower	32.74	5.29
Inflation		
- if 1% higher	30.02	2.57
- if 1% lower	25.22	(2.23)
Salary increases		
- if 1% higher	29.94	2.49
- if 1% lower	25.25	(2.20)
Mortality		
- if one-tenth higher	26.79	(0.66)
- if one-tenth lower	28.17	0.72
- If no improvement	26.34	(1.11)
All economic assumptions set to ultimate levels from 2002 onward	28.08	0.63

D. Reconciliation of Results with Previous Report

The main items of the following reconciliation are explained in the following pages.

		Surplus (Deficit) $ million		Normal Cost % of payroll
As at 31 March 1998		(821)		27.31
Data corrections		7		(0.05)
Interest on initial surplus (deficit)		(247)		
Expected normal cost change		-		3.73
Benefit payments borne by CRF		172		-
Cost/contributions difference		(171)		-
Experience gains (losses)				
Salary increases	17		-	
Retirements and disabilities	8		(0.05)	
Interest rates	(8)		-	
Pension indexing	(7)		-	
New entrants	3		0.30	
Nonvested terminations	2		0.03	
Mortality	1		(0.07)	
Minor items	1		-	
Residual items	2		-	
Subtotal		19		0.21
Revision of valuation assumptions				
Salary increases	34		(2.27)	
Pension indexation	29		(0.56)	
Mortality	26		(0.80)	
Minor items	8		(0.23)	
Subtotal		97		(3.86)
Revision of valuation methodology				
Valuation interest rate		(31)		(0.57)
Plan amendments				
Salary increases	(76)		0.49	
Early retirement	(2)		0.14	
Same–sex survivor benefits	(1)		0.04	
Reduced contribution rate	-		(0.02)	
Minor items	-		0.01	
Subtotal		(79)		0.66
Refinement of valuation methodology		-		0.02
As at 31 March 2001		(1,054)		27.45

Explanations of the Foregoing Reconciliation

1. Interest on Initial Surplus (Deficit)

The interest to 31 March 2001 on the deficit of $821 million as at 31 March 1998 amounted to $247 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 1998 to 2001 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 $172 million.

4. Cost/Contributions Difference

In accordance with the previous cost certificate, the normal cost for the intervaluation period of three years was $183 million. However, the contributions and credits made to the sole funding vehicle (i.e. the SRB Account) amounted to only $12 million. This cost/contributions difference accumulated with interest caused the deficit to rise by $171 million.

5. Salary Increases

In the previous valuation the plan year 2002 salary was projected to be 11.1% higher than the plan year 1999 salary. Were it not for Bill C-12 (discussed below), the actual increase would have been 8.3%. This shortfall relative to the projection is advantageous to the plan, reducing the deficit by $17 million.

The assumed annual salary increases for the plan years 2002 to 2016, inclusive, average 0.8% lower than in the previous valuation. This material revision of the salary increase assumption caused the deficit to fall by $34 million and the normal cost to fall by 2.27% of payroll.

As discussed in Appendix 1, Bill C-12 has substantially raised judicial salaries. As a result, the deficit increased by $76 million and the normal cost increased by 0.49% of payroll.

6. Valuation Interest Rates

The methodology was changed in that the plan assets are now assumed to be invested in the financial markets rather than in long-term Government of Canada bonds as has been the case for the other major federal public service pension plans since 1 April 2000. The projected fund yields are materially different than the corresponding figures in the previous valuation. For the plan years 2002 to 2016, inclusive, they average 0.4% lower and thereafter they are 1.25% higher than in the previous valuation. As a result, the deficit increased by $31 million and the normal cost decreased by 0.57% of payroll. Using these valuation interest rates facilitates the comparison of the cost with the other public service pension plans.

7. Mortality

Both components of the mortality basis, namely the rates assumed for the 2002 plan year and the improvement factors applying to those rates in subsequent years, were revised in this valuation. As a result, the deficit decreased by $26 million and the normal cost decreased by 0.80% of payroll, with most of the increase being attributable to the revision of the assumed 2002 female mortality rates.

8. Pension Indexation

The revised pension indexation assumption for plan years 2002 to 2016, inclusive, averages 0.4% per annum lower than was assumed for those years in the previous valuation. As a result, the deficit decreased by $29 million and the normal cost decreased by 0.56% of payroll.

IV. Actuarial Opinion

In our opinion, considering that this report was prepared pursuant to the *Public Pensions Reporting Act*,

- 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 assets is less than the wind-up liabilities at the valuation date.

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

Mario Mercier
Actuary
Office of the Chief Actuary
Fellow of the Canadian Institute of Actuaries
Fellow of the Society of Actuaries

Jean-Claude Ménard
Chief Actuary
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Ottawa, Canada
28 June 2002

Appendix 1 – Recent Plan Amendments

The following developments occurred in and just after the intervaluation period and were appropriately taken into account (unless noted otherwise) in the determination of both the accrued liabilities and the normal costs.

A. Bill C-23

Bill C-23, which received Royal Assent on 29 June 2000, includes the following provisions:

- The amended plan permits payment of survivor benefits to a same-sex survivor as if that person were an opposite-sex partner in a common-law relationship.

- The lump sum equal to one-sixth of the yearly salary of the judge payable to a new survivor spouse is now extended to the estate or succession when there is no survivor.

B. Bill C-12

Bill C-12, which received Royal Assent on 14 June 2001, includes the following provisions:

- Puisne judges' salaries were increased to $198,000 (from $179,200) as of 1 April 2000. Effective 1 April of 2001, 2002 and 2003, these judges will receive $2,000 plus statutory indexing. Other judges' salaries were also increased to maintain the proportionate relationship between their salary and that of puisne judges.

- Contributions of judges appointed after 16 February 1975 are reduced from 7% to 1% of salary if the judge is eligible for an immediate unreduced annuity.

- An early retirement option was introduced for judges who have served at least 10 years. If such a judge retires at age 60 or later, an immediate annuity prorated on the basis of service is payable. If retirement occurs between ages 55 and 60, the judge can elect either a reduced prorated immediate annuity or a prorated deferred annuity payable at age 60.

- Judges can now elect a higher survivor benefit of up to 75% of the judge's pension as actuarially reduced to fund this enhanced survivor benefit.

- A judge to whom an annuity has been granted may elect to reduce his annuity so that an annuity may be paid to a survivor who became a spouse or began to cohabit with the judge in a conjugal relationship after the judge ceased to hold office.

Appendix 2 – Summary of Plan Provisions

This summary describes the provisions in force as at 31 March 2001 of the pension plan established under the *Judges Act* ("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. This summary includes changes brought about by Bills C-23 and C-12. 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. Contributions

1. Judges

- Judges appointed before 17 February 1975 contribute
  - 1.5% of salary to the CRF.

- All other judges contribute
  - 1% of salary to the SRB Account, and
  - if not eligible for a full annuity, 6% of salary to the CRF.

2. Government

- The government contributes
  - to the CRF the excess of the plan benefits paid from the CRF over the contributions by judges thereto, and
  - 1% of salary to the SRB Account for judges appointed after 16 February 1975.

C. 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.

All annuities are indexed annually to the Consumer Price Index (CPI). They are payable in equal monthly instalments in arrears until the end of the month in which the pensioner or the survivor dies or otherwise loses eligibility. If applicable, either a survivor annuity (Note 12) or a residual benefit (Note 13) is payable upon the death of the pensioner, and a residual benefit (Note 13) is payable to the estate upon the death of the last survivor.

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

1. Judges

Type of Termination	Benefit
Normal pensionable retirement (Note 1)	Immediate annuity (Note 3), reduced pro-rata if under 10 years of service at normal retirement age
Early pensionable retirement (Note 2)	Deferred annuity (Note 4), or Reduced immediate annuity (Note 5)
Pensionable disability	Immediate annuity
Nonvested termination (Note 7)	Return of contributions (Note 8)
Death leaving no eligible survivor(s) (Notes 9 and 10)	Return of contributions, and Lump sum (Note 11)
Death leaving eligible survivor(s)	Annuity to eligible survivor(s) (Note 12), and Lump sum

2. Pensioners

Type of Termination	Benefit
Death leaving no eligible survivor(s)	Residual benefit (Note 13), if applicable
Death leaving eligible survivor(s)	Annuity to eligible survivor(s)

D. Explanatory Notes

1. Normal Pensionable Retirement

Normal pensionable retirement means ceasing to hold judicial office on reaching normal retirement age of 75 years (70 years for certain judges appointed prior to 1 March 1987) or 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.

An immediate annuity is payable upon retirement, except when a judge who has attained the normal retirement age has held judicial office for less than 10 years, in which case a prorated portion of the immediate annuity is payable.

2. Early Pensionable Retirement

Early pensionable retirement means ceasing to hold judicial office and becoming entitled to a deferred annuity or a reduced immediate annuity before normal retirement by satisfying the requirement that age be at least 55 years with service of 10 years or more.

3. Immediate Annuity[1]

Immediate annuity means an annuity that becomes payable immediately upon a normal pensionable retirement or a disability retirement. 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.

4. Deferred Annuity

Deferred annuity means an annuity that becomes payable to a former judge who reaches age 60. The amount of deferred annuity is calculated by multiplying two-thirds of the judge's salary at the time of the early retirement election, or of the then current salary applicable to a higher judicial office if such higher office was formerly held, by a fraction calculated as the number of years of service divided by the total number of years of service necessary to become eligible for a full pension.

[1] For purposes of this summary, immediate annuity also includes the return of contributions (Note 8) 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.

5. Reduced Immediate Annuity

Reduced immediate annuity means a reduced annuity that becomes payable immediately upon early pensionable retirement. The initial annual amount of the annuity is equal to the amount of deferred annuity but is reduced by 5% for every year that the annuity commences in advance of age 60.

6. 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.

7. Nonvested Terminations

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

8. 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 the one applied under the *Income Tax Act* in respect of refunds of overpayments of tax.

9. Eligible Surviving Spouse

The spouse of a judge is eligible for a survivor annuity when the judge dies. An annuity may also be granted to a survivor who became a spouse or began to cohabit with the judge in a conjugal relationship after the judge ceased to hold office if the former judge elects to reduce his annuity so that an annuity may be paid to that person.

10. 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 18 or, if more recent, since the death of the judge or pensioner.

11. Lump Sum

If a judge dies, a lump sum equal to one-sixth of the yearly salary of the judge is paid to the surviving spouse or, if there is no survivor, to the estate or succession of the judge.

12. Annuities to Eligible Survivor(s)

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.

Judges can elect an enhanced surviving spouse benefit up to 75% of the judge’s pension as actuarially reduced to fund the enhancement.

13. Residual Benefit

Residual benefit is 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.

14. 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 3 – Plan Assets

A. 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. No formal debt instrument is issued to the Account by the government in recognition of the amounts therein.

B. 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. The credited rates have been as follows:

Plan Year	Rate
1999	4.92%
2000	5.47
2001	5.66

C. 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 accumulated SRB contributions (1% of salary) if there are no survivors or if a judge appointed after 16 February 1975 terminates and is entitled only to a return of contributions.

Appendix 4 – Membership Data

A. 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 of Federal Judicial Affairs provided similar data for all other federally appointed judges and for the corresponding pensioners and survivors.

B. Validation of Membership Data

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

- reconciling the membership data with the data used in the previous valuation report (see Tables 1, 2 and 3);
- 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;
- verifying that the length of service of a judge was reasonable in relation to attained age; and
- comparing the initial pension of each judge retiring during the intervaluation period with the expected pension based on valuation data as at 31 March 1998.

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.

C. Reconciliation of Membership

The following tables, derived from the basic data, show pertinent statistics concerning judges, pensioners, and survivors during the period from April 1997 to March 2001 inclusive. Further details on reconciliations, by sex and type, of the contributors and the pensioners are also shown.

Table 1 - Reconciliation of Membership

	Judges	Retirement Pensioners	Disability Pensioners	Surviving Spouses	Surviving Children
At 31 March 1997	989	239	41	280	7
Data corrections	-	-	-	(19)	-
New entrants	213	-	-	-	-
Pensionable retirements	(140)	140	-	-	-
Pensionable disabilities	(10)	-	10	-	-
Non vested terminations	(5)	-	-	-	-
New survivors	-	-	-	65	6
Deaths	(20)	(61)	(10)	(73)	-
Loss of eligibility	-	-	-	-	(3)
At 31 March 2001	1,027	318	41	253	10

Table 2 - Reconciliation of Judges by Sex

	Males	Females	Total
At 31 March 1997	817	172	989
New entrants	133	80	213
Pensionable retirements	(135)	(5)	(140)
Pensionable disabilities	(8)	(2)	(10)
Nonvested terminations	(4)	(1)	(5)
Deaths	(17)	(3)	(20)
At 31 March 2001	786	241	1,027

Table 3 - Reconciliation of Pensioners

A – Retirement Pensioners

	Males	Females	Total
At 31 March 1997	233	6	239
New pensioners	135	5	140
Deaths	(60)	(1)	(61)
At 31 March 2001	308	10	318

B – Disability Pensioners

	Males	Females	Total
At 31 March 1997	37	4	41
New pensioners	8	2	10
Deaths	(8)	(2)	(10)
At 31 March 2001	37	4	41

Table 4 - Number of Male Judges as at 31 March 2001

Age Last	Completed Years of Service							All
Birthday	0-4	5-9	10-14	15-19	20-24	25-29	30-34	Durations
40-44	1	1	-	-	-	-	-	2
45-49	27	8	0	-	-	-	-	35
50-54	55	48	14	5	-	-	-	122
55-59	52	61	26	17	1	-	-	157
60-64	18	56	37	38	12	1	-	162
65-69	4	28	45	48	41	22	1	189
70-74	-	4	19	37	30	25	4	119
All Ages	157	206	141	145	84	48	5	786

Average age last birthday: 61.4 years

Average last anniversary of service: 11.6 years

Average salary: $199,000[1]

Total payroll: $156,446,300

1 Includes six 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 2001 but include salary increases effective 1 April 2000 attributable to Bill C-12.

Table 5 - Number of Female Judges as at 31 March 2001

Age Last Birthday	Completed Years of Service 0-4	5-9	10-14	15-19	20-24	25-29	All Durations
40-44	5	4	-	-	-	-	9
45-49	44	27	4	-	-	-	75
50-54	35	35	23	4	-	-	97
55-59	10	10	6	7	2	-	35
60-64	2	3	5	2	2	1	15
65-69	-	0	0	3	1	1	5
70-74	-	-	0	2	1	2	3
All Ages	96	76	38	18	6	4	241

Average age last birthday: 52.1 years

Average last anniversary of service: 7.0 years

Average salary: $198,000[1]

Total payroll: $47,926,300

1 The average salary and total payroll both exclude the salary increase effective 1 April 2001 but include salary increases effective 1 April 2000 attributable to Bill C-12.

Table 6 - Male Pensioners as at 31 March 2001

	Retirement Pensioners			Disability Pensioners		
		Annual Pension			Annual Pension	
Age Last Birthday	Number	Average ($)	Total ($)	Number	Average ($)	Total ($)
50-54	-	-	-	1	122,000	122,000
55-59	-	-	-	2	118,500	237,000
60-64	5	121,800	609,000	2	117,000	234,000
65-69	20	124,100	2,482,000	12	118,800	1,425,000
70-74	61	119,700	7,299,000	7	114,600	802,000
75-79	119	119,900	14,268,000	6	118,700	712,000
80-84	63	116,200	7,319,000	5	96,200	481,000
85-89	31	112,700	3,494,000	2	95,000	190,000
90-94	7	95,900	671,000	-	-	-
95-99	2	105,500	211,000	-	-	-
All Ages	308	118,000	36,353,000	37	113,600	4,203,000

Average age last birthday

At 31 March 2001: 77.5 years
At retirement: 71.9 years

Average age last birthday

At 31 March 2001: 71.6 years
At disability: 61.1 years

Table 7 - Female Pensioners as at 31 March 2001

	Retirement Pensioners			Disability Pensioners		
		Annual Pension			Annual Pension	
Age Last Birthday	Number	Average ($)	Total ($)	Number	Average ($)	Total ($)
55-59	-	-	-	1	115,000	115,000
60-64	1	133,000	133,000	1	113,000	113,000
65-69	1	132,000	132,000	1	111,000	111,000
70-74	1	122,000	122,000	-	-	-
75-79	6	122,700	736,000	1	117,000	117,000
80-84	1	114,000	114,000	-	-	-
All Ages	10	123,700	1,237,000	4	114,000	456,000

Average age last birthday

At 31 March 2001: 75.0 years
At retirement: 70.7 years

Average age last birthday

At 31 March 2001: 66.5 years
At disability: 62.0 years

Table 8 - Eligible Survivors as at 31 March 2001

Age Last Birthday	Number	Annualized Amount Average ($)	Annualized Amount Total ($)
40-44	1	67,000	67,000
45-49	1	56,000	56,000
50-54	6	58,000	348,000
55-59	6	58,200	349,000
60-64	11	58,400	642,000
65-69	19	58,700	1,116,000
70-74	50	55,600	2,778,000
75-79	52	54,700	2,842,000
80-84	41	51,500	2,111,000
85-89	34	49,600	1,686,000
90-94	22	49,500	1,088,000
95-99	9	42,800	385,000
100-104	-	-	-
105-109	1	34,000	34,000
Widows[1]	253	53,400	13,502,000
Children	10	11,500	115,000

Average age last birthday of spouses

At 31 March 2001: 77.7 years
At death of member: 66.4 years

[1] All but three surviving spouses are widows.

Appendix 5 - Methodology

A. 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

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

Age at Appointment	Annual Accrual
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 Appendix 6) 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 Pension 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 the most appropriate model for any future funding arrangement to replace the current financing arrangement, which amounts to a pay-as-you-go basis.

E. Membership Data

The methodology used differs from the previous actuarial review where the data one year earlier than the valuation date was used and projected to the valuation date. For this valuation, the member data shown in Appendix 4 were provided as at 31 March 2001, which corresponds to the valuation date of this report. Individual data on each member were used.

Appendix 6 - Economic Assumptions

A. Key Economic Assumptions

1. Level of Inflation

The ultimate level of inflation was assumed at 3% per annum. Given the prospects of stable, moderate inflation for the foreseeable future and the average Canadian experience over the last 75[1] years (3.17 % per annum), this seems appropriate. Current lower levels of inflation were assumed to trend to 3% per annum over a 15-year select period.

2. Average Canadian Wage Increase

The assumed ultimate productivity rate (i.e. real increase in average employment earnings in excess of inflation) was assumed at 1% per annum. This lies between the average Canadian experience of the past 25[1] years (0.10% per annum) and 75[1] years (1.51 % per annum). Low current real increases in average earnings were assumed to rise gradually over a 15-year select period to reach the ultimate level of 1% per annum.

3. Real Rate of Return

On the basis of the hypothetical Pension Fund holding a diversified mixture of assets, its real return was assumed at 4.25% per annum. This real rate was derived on the basis of the average experience over 25 years for diversified portfolios of Canadian pension plans (7.13% per annum) and current real rate of return assumptions used in actuarial reports of other Canadian pension plans.

Note that all of the real rates of return referred to in this report are actually real-return differentials. This differs from the technical definition of the real rate of return, which, in the case of the ultimate real rate of return assumption, would be (1.0725 ÷ 1.03) – 1 = 4.13% rather than 4.25%. A summary is shown in the next table.

Period of Years Ending 2001	25	50	75
Level of Inflation	4.77%	4.10%	3.17%
Real[1] Increases in Average Earnings	0.10%	1.40%	1.51%
Average Real[1] Return on Diversified Portfolios	7.13%	4.66%[2]	N/A

1 These real rates are calculated after the level of inflation is removed geometrically.

2 Averaged over the last 40 years.

B. Derived Economic Assumptions

1. Projected Yields on the Fund

These yields are required for the computation of present values of benefits to determine the plan's normal costs and they are derived from the assumed future level of inflation and the real return on the hypothetical Fund. The assumed yield of 6.25% per annum for plan year 2003 is expected to increase gradually to 7.25% per annum by plan year 2016.

2. 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 projected increases for 1 April of 2001, 2002 and 2003 take into account the additional $2,000 granted in addition to the statutory indexing, in accordance with Bill C-12. 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.

3. Increase in Pension Indexing Factor

The year's pension indexing factor is involved in the valuation process by virtue of its role in the pension inflation adjustments. It was derived by applying the indexation formula described in Appendix 2, which relates to the assumed Consumer Price Index increases over successive 12-month periods ending on 30 September.

C. Margins Against Adverse Fluctuations

The economic assumptions used in this valuation contain a measure of prudence, as is the norm for other pension plans in Canada.

Table 9 - Summary of Economic Assumptions

	Inflation		Employment Earnings Increase		Interest
Plan Year	CPI Increase %	Pension Indexing[1] %	Industrial Aggregate %	Judicial salaries[2] %	Valuation Rate %
2002[3]	**2.6**	**3.0**	**2.0**	**3.3**	7.25
2003	2.0	2.0	2.2	3.3	6.25
2004	2.0	2.0	2.3	3.2	6.25
2005	2.0	2.0	2.4	2.3	6.25
2006	2.0	2.0	2.5	2.4	6.25
2007	2.1	2.1	2.7	2.5	6.35
2008	2.2	2.2	2.9	2.6	6.45
2009	2.3	2.3	3.1	2.8	6.55
2010	2.4	2.4	3.3	3.0	6.65
2011	2.5	2.5	3.5	3.2	6.75
2012	2.6	2.6	3.6	3.4	6.85
2013	2.7	2.7	3.7	3.6	6.95
2014	2.8	2.8	3.8	3.7	7.05
2015	2.9	2.9	3.9	3.8	7.15
2016	3.0	3.0	4.0	3.9	7.25
2017+	3.0	3.0	4.0	4.0	7.25

[1] Assumed to be effective as at 1 January.

[2] Assumed to be effective as at 1 April.

[3] Bold figures denote actual experience.

Appendix 7 - Demographic Assumptions

Except where otherwise noted, all demographic assumptions were determined from the plan's own experience as was done in the past. Where applicable, assumptions of the previous valuation were updated to reflect the available intervaluation experience of April 1997 to March 2001. Assumptions related to types of termination of employment are described in the following table:

Type of Termination	Comments	Benefit	Table
Nonvested	Nonvested termination rates are introduced for the first time. Duration-based rates were derived from the 1994-2001 experience.	Return of contributions	10
Pensionable retirement	Pensionable retirement rates were extended to cover age/service combinations at which early pensionable retirement is now available as a result of Bill C-12.	Pension commencing immediately	12
Pensionable disability	Some pensionable disability rates have been decreased slightly.	Disability pension	11
Mortality	Rates for males under age 75 are on average 4% lower at key ages than those projected for the 2002 plan year in the previous valuation; the opposite is true for female judges. Mortality improvement was based on a 25-year select period with an ultimate mortality improvement of 0.5% at all ages. The first year, starting with year 2000, was based on annual Canadian mortality improvement experience since 1985. They were revised comparing the 85-87 Canadian Life Table to the 95-97.	Annuity to eligible survivor(s) or return of contributions, as applicable. Lump sum to surviving spouse.	13 14

Assumptions related to benefits are described in the table below:

Benefit	Related Assumptions	Comments	Table
Retirement and Widow/er Pension	Mortality	The mortality basis deemed to apply to judges is also assumed to apply to retirement pensioners and widow(er)s. Rates for male pensioners are slightly lower at early retirement ages but slightly higher thereafter than the rates assumed for those ages in the previous valuation, whereas the corresponding rates for females are on average 10% higher than previously assumed.	13
		Mortality improvement is the same as for judges.	14
Disability pension	Mortality	The rates for disability pensioners are a multiple of assumed mortality rates for healthy members, 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. The multiples are unchanged from the previous valuation.	13
Annuity to Surviving Spouse	Probability of judge or pensioner having an eligible surviving spouse at death	The assumed probability of a male leaving a widow is marginally lower than under the previous valuation at ages after retirement. The assumed probability of a female leaving a widower is slightly higher than under the previous valuation.	15, 16
		This benefit has been extended to same-sex couples. As a result, the valuation rates were increased by 1.5% up to age 60 and by 0.5% after age 60.	
	Average age of spouse at death of judge or pensioner	The assumed age difference between the surviving spouse and the deceased judge or pensioner was marginally changed.	
Annuity to Surviving Children	Average number of children at death of judge or pensioner	The assumed number of eligible children surviving a judge or a pensioner is materially the same as in the previous valuation.	15, 16
	Average age of children at death of judge or pensioner	No change in rates from previous valuation.	
	Proportion of children remaining eligible at age 18+	No change in rates from previous valuation.	

Other Assumptions

1. It is assumed that the population of male judges decreases by 1% a year whereas that of female judges rises by 7.5% in 2002, with smaller increases thereafter until the ultimate increase of 1% is first attained in the 2022 plan year. The proportion of female judges increased from 17% in 1998 to 23% in 2002. Under these assumptions, it is expected that there will be an equal proportion of male and female judges from 2022 onward. The projected number of judges is 1,150 for plan year 2012 and 1,250 for plan year 2022. There were 989 judges as of April 1997 and 1,027 judges as of April 2001.

For each sex, the age distribution of the future new judges was based on that of the actual new judges in the April 1997 to March 2001 period. The initial salary of new judges was assumed to be $204,600 for the 2002 plan year, with increases in future plan years in accordance with the assumption for judges' salary increases.

2. Reversals and Recoveries

It is assumed that no pensioners will return to the bench.

3. Minimum Death Benefit

This valuation does not take into account the minimum death benefit 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.

4. Special Retirement Provisions

Certain plan provisions 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.

5. Early Retirement Provisions

It is assumed that judges retiring under the early retirement provisions will choose a reduced immediate annuity.

6. Enhanced Survivor Benefit

It is assumed that all judges will elect a surviving spouse benefit of 50% of their pension.

Table 10 - Assumed Rates of Nonvested Termination

(per 1,000 judges)

Pensionable Service[1]	Nonvested Termination
0	5
1	4
2	3
3	2
4	1
5	1
6	1
7	1
8	1
9	1

1 Expressed in completed years.

Table 11 - Assumed Rates of Pensionable Disability[1]

(per 1,000 judges)

Age Last Birthday	Male	Female
35	0.4	0.6
40	0.7	1.1
45	1.1	1.7
50	2.0	3.0
55	3.5	5.2
60	6.1	9.2
61	6.7	10.3
62	7.5	11.6
63	8.5	12.9
64	9.6	14.7
65	10.9	16.5
66	12.3	18.6
67	13.9	21.0
68	15.7	23.6
69	17.7	26.7
70	19.9	30.2
71	22.4	34.1
72	25.3	38.4
73	28.4	42.9
74	31.9	48.4

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 12 - Assumed Rates of Pensionable Retirement[1]

(per 1,000 judges)

Age Last Birthday	Completed Years of Service										
	9-13	14	15	16	17	18	19	20	21	22	23+
54	4	4	4	4	4	4	4	4	4	4	4
55	4	4	4	4	4	4	4	4	4	4	4
56	4	4	4	4	4	4	4	4	4	4	4
57	4	4	4	4	4	4	4	4	144	147	150
58	4	4	4	4	4	4	4	131	154	5	11
59	4	4	4	4	4	4	118	141	9	9	18
60	4	4	4	4	4	106	128	12	12	22	25
61	4	4	4	4	93	116	15	15	28	28	32
62	4	4	4	80	103	18	18	34	34	34	39
63	4	4	67	90	22	22	40	40	40	40	46
64	4	54	77	25	25	46	46	46	46	46	53
65	4	64	28	28	52	52	52	52	52	52	60
66	4	73	31	58	58	58	58	58	58	58	67
67	4	83	34	64	64	64	64	64	64	64	73
68	4	92	37	70	70	70	70	70	70	70	80
69	4	102	40	75	75	75	75	75	75	75	87
70	4	114	43	81	81	81	81	81	81	81	93
71	4	123	47	87	87	87	87	87	87	87	100
72	4	134	50	93	93	93	93	93	93	93	107
73	4	143	53	98	98	98	98	98	98	98	113
74	4	152	56	104	104	104	104	104	104	104	120
75[2]	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000

1 Rates shown for duration 9 and age 54 are halved in practice to recognize that pensionable retirement can occur only after 10 years of service have been completed or age 55 attained, respectively.

2 Retirement becomes compulsory on the 75th birthday.

Table 13 - Assumed Rates of Mortality for 2002 Plan Year

(per 1,000 individuals)

Age Last Birthday[1]	Male	Female
35	0.9	0.5
40	1.1	0.7
45	1.4	0.9
50	2.3	1.3
55	3.9	2.1
60	6.7	4.2
65	11.4	8.1
70	18.8	13.5
75	31.1	22.2
80	55.3	38.5
85	95.7	67.2
90	155.5	116.2
95	236.2	187.5
100	327.8	280.6
105	425.9	387.0
110	486.5	457.5
115	1,000.0	1,000.0

1 Rates apply to judges, retirement pensioners, and survivors. Rates for disability pensioners are a multiple of the tabular 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 14 - Assumed Mortality Improvement Factors

Age Last Birthday	Annual % Mortality Rate Reductions[1]			
	Male		Female	
	2000	2025	2000	2025
20	3.00	0.50	2.00	0.50
25	2.50	0.50	1.75	0.50
30	1.50	0.50	1.25	0.50
35	0.75	0.50	1.25	0.50
40	1.00	0.50	1.25	0.50
45	1.75	0.50	1.75	0.50
50	2.50	0.50	2.00	0.50
55	2.75	0.50	1.75	0.50
60	2.75	0.50	1.50	0.50
65	2.50	0.50	1.50	0.50
70	2.00	0.50	1.50	0.50
75	1.50	0.50	1.25	0.50
80	1.25	0.50	1.00	0.50
85	0.75	0.50	0.75	0.50
90	0.50	0.50	0.50	0.50
95	0.25	0.25	0.25	0.25
100	0.25	0.25	0.25	0.25
105+	0.00	0.00	0.00	0.00

1 The mortality rate reduction applicable during any year within the 25-year select period is found by linear interpolation between the figures for 2000 and 2025.

Table 15 - Assumptions for Survivor Benefits in Respect of Male Judges or Pensioners

Age Last Birthday at Death	Proportion Married at Death	Widow Age Difference[1]	Eligible Children Number	Eligible Children Average Age
35	0.82	(2)	2.94	8
40	0.90	(2)	3.07	12
45	0.94	(3)	2.71	16
50	0.95	(3)	1.98	18
55	0.99	(3)	0.80	18
60	0.98	(3)	0.47	20
65	0.94	(3)	0.13	21
70	0.88	(3)	0.03	21
75	0.82	(4)	-	-
80	0.74	(4)	-	-
85	0.62	(5)	-	-
90	0.47	(6)	-	-
95	0.31	(7)	-	-
100	0.17	(9)	-	-
105	0.08	(12)	-	-
110	0.03	(16)	-	-
115	0.01	(21)	-	-

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

Table 16 - Assumptions for Survivor Benefits in Respect of Female Judges or Pensioners

Age Last Birthday at Death	Proportion Married at Death	Widower Age Difference[1]	Eligible Children: Number	Eligible Children: Average Age
35	0.86	3	1.54	9
40	0.90	3	1.54	14
45	0.91	3	1.24	18
50	0.90	3	0.74	20
55	0.90	3	0.29	21
60	0.83	3	0.07	22
65	0.73	2	0.01	23
70	0.61	2	-	-
75	0.46	1	-	-
80	0.35	0	-	-
85	0.24	(1)	-	-
90	0.14	(2)	-	-
95	0.06	(4)	-	-
100	0.02	(7)	-	-
105	0.01	(11)	-	-

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

Appendix 8 - Acknowledgements

The Office of the Comptroller General of Canada provided a certification of the assets of the plan as at 31 March 2001.

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.

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