

Actuarial Report

on the

LIFE INSURANCE PLAN FOR THE PUBLIC SERVICE OF CANADA

As at 31 March 1999



Office of the Superintendent
of Financial Institutions

Office of the Chief Actuary

Bureau du surintendant
des institutions financières

Bureau de l'actuaire en chef

Canada

To obtain a copy of this report, please contact:
Office of the Chief Actuary
Office of the Superintendent of Financial Institutions
12th Floor, Kent Square Building
255 Albert Street
Ottawa, Ontario
K1A 0H2

Facsimile: (613) 990-9900

E-mail address: oca-bac@osfi-bsif.gc.ca

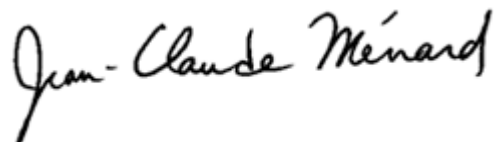
19 January 2001

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

Dear Minister:

Pursuant to section 59 of the *Public Service Superannuation Act* (PSSA), I am pleased to submit the report on the actuarial review as at 31 March 1999 of the life insurance plan established under Part II of the PSSA.

Yours sincerely,



Jean-Claude Ménard, F.S.A., F.C.I.A.
Chief Actuary
Public Sector Insurance and Pension Programs

TABLE OF CONTENTS

	Page
I- Executive Summary	5
A- Purpose of this Actuarial Report	5
B- Adjusted Valuation Date	5
C- Scope of the Report	5
D- Main Findings	6
II- Financial Position of the Plan	7
A- Balance Sheet as at 31 March 2000	7
B- Financial Position	7
C- Sensitivity of Valuation Results to Variations in Key Assumptions	7
III- Reconciliation of Results with Previous Report	9
IV- Legislated Contribution Rates	10
A- Paid-Up Insurance	10
B- Term Insurance	10
V- Actuarial Opinion	13
APPENDICES	14
Appendix 1 - Developments Occurring After 31 March 1999	14
Appendix 2 - Summary of Plan Provisions	15
Appendix 3 - Plan Assets	19
Appendix 4 - Participant Data	23
Appendix 5 - Methodology	28
Appendix 6 - Economic Assumptions	30
Appendix 7 - Demographic and Other Assumptions	31

I- Executive Summary

A- Purpose of this Actuarial Report

This actuarial report on the supplementary death benefit plan established under Part II of the Public Service Superannuation Act (PSSA) was made as at 31 March 1999 pursuant to section 59 of the PSSA, which states that for valuation purposes the plan shall be treated as if it were a pension plan subject to the Public Pensions Reporting Act (PPRA). The previous review was made as at 31 March 1996. The scheduled date of the next periodic review pursuant to section 59 is 31 March 2002.

In accordance with accepted actuarial practice and with the PPRA to which section 59 refers, the main purpose of this actuarial report is to show realistic long-term projections of the assets, liabilities and financial position of the plan to assess the adequacy of the legislated contribution rates.

B- Adjusted Valuation Date

This valuation report rests on the premise that the latest certified Public Service Death Benefit (PSDB) Account balance is the appropriate starting point for the long-term projections of assets, liabilities and surplus. The balance for the plan year¹ ended 31 March 2000 is available from the 2000-01 Accounts of Canada. We could have used the balance sheet for the plan year ended 31 March 1999 but we opted to use the most recent available information.

C- Scope of the Report

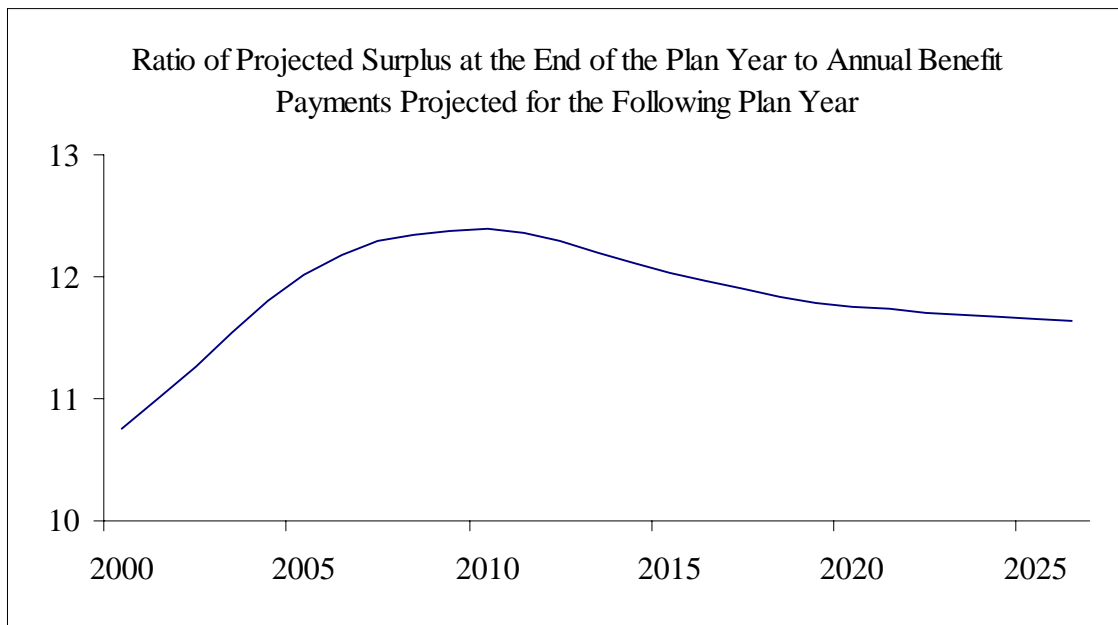
The previous valuation report was based on the plan provisions as they stood after the enactment of Bill C-31 on 20 June 1996. There were no further changes to the plan provisions until Bill C-78 was enacted on 14 September 1999. The significant plan changes brought about by this Bill are fully described in Appendix 1. This valuation report is based on the plan provisions shown in Appendix 2, which fully reflects the changes brought about by Bill C-78 even though the bill was enacted after the valuation date of 31 March 1999.

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

D- Main Findings

As at 31 March 2000, the plan had a surplus of \$1,298 million resulting from the difference between the assets of \$1,707 million and the liabilities of \$409 million.

The current surplus of \$1,298 million in the PSDB Account is projected to reach \$3,008 million at the end of plan year 2025 and to continue increasing thereafter. The following graph shows the ratio of projected surplus at the end of the plan year to annual benefit payments projected for the following plan year.



This ratio is expected to increase until plan year 2011 due to excess investment earnings, after which it should steadily decline as total death benefits continue to rise.

II- Financial Position of the Plan

A- Balance Sheet as at 31 March 2000

The following 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.

<u>Assets</u>	<u>\$ millions</u>
Total assets	1,707.0
<u>Liabilities</u>	
For paid-up life insurance on participants ages 65 and over	390.7
For incurred but unreported or pending claims	18.3
Total liabilities	<u>409.0</u>
<u>Surplus</u>	1,298.0

B- Financial Position

At 31 March 2000 the surplus totalled \$1,298 million, being 10.6 times the total amount of death benefits projected for plan year 2001. By comparison, the surplus as at 31 March 1996 under the previous report was \$1,033 million, which was 11.6 times the amount of death benefits paid during plan year 1997.

As shown in Appendix 3 and explained in section 4 below, the projected contributions to the plan are less than the projected benefits for all future plan years. However, total income exceeds total expenditures in every year of the projection period because investment earnings more than offset the excess of benefits over contributions.

C- Sensitivity of Valuation Results to Variations in Key Assumptions

The following supplementary estimates indicate the degree to which the valuation results depend on some of the key assumptions. These resulting differences 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. Projected Investment Yields

The valuation reflects a deemed investment policy of buying and holding until maturity 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 increase the surplus projected at the end of plan year 2025 from \$3,008 million to \$4,509 million, an increase of 50%.

On the opposite side, a decrease of one percentage point in the projected yields would decrease the surplus projected at the end of plan year 2025 from \$3,008 million to \$1,787 million, a decrease of 41%.

2. Mortality

If the assumed improvements in longevity after the 2001 plan year were disregarded, then the monthly benefit cost rate of 27.7 cents projected for 2025 would climb to 37.1 cents, an increase of 34%. The surplus projected at the end of plan year 2025 would decrease by 47% from \$3,008 million to \$1,598 million.

However, if the assumed improvements in longevity after the 2001 plan year were kept at the level of plan year 2001, resulting in greater improvements in longevity than those assumed in table 7H, then the monthly benefit cost rate of 27.7 cents projected for 2025 would decline to 23.9 cents, a decrease of 14%. This would correspond to an increase of 9% in the surplus projected at the end of plan year 2025, from \$3,008 million to \$3,289 million.

III- Reconciliation of Results with Previous Report

The following table indicates that the revised assumed longevity improvements and the postponement of the 10% benefit reduction to age 66 are the main reasons for the increase in the projected benefit cost rate from 18.8 cents shown in the previous report to that of 27.7 cents of this report.

<u>Projections for Plan Year 2025</u>	Monthly Cost per \$1,000 of Term Insurance (Cents)	Year End Surplus to Benefit Payments ¹ in Plan Year 2026 (Ratio)
As at 31 March 1996	18.8	36.3
Change in program and correction of errors	(0.2)	0.5
Intervaluation economic experience and change in population	0.5	(0.8)
Departure of participants covered by transfer agreements (Canada Post , EDC, FCC, ST-Laurence Seaway, etc.)	(0.2)	11.1
Provision of paid-up coverage for annual allowances occurring after 1 April 1995	0.0	(1.3)
Increase in paid-up coverage from \$5,000 up to \$10,000	(0.3)	(13.3)
Postponement of initial 10% annual benefit reduction from age 61 to age 66	7.6	(15.8)
Reduction of employee contribution rate from 20 cents to 15 cents per \$1,000 of coverage	0.0	(5.0)
Change in economic assumptions	0.0	1.0
Change in assumed mortality rates	0.0	(0.1)
Change in longevity improvement factors	1.7	(0.9)
Change in demographic assumptions other than mortality rate	(0.6)	0.4
Change in assumed proportion electing SDB at retirement	0.4	(0.6)
Removal of margin for adverse deviation	0.0	0.1
As at 31 March 2000	27.7	11.5

¹ Includes paid-up insurance as well as term insurance

IV- Legislated Contribution Rates

The aggregate amount of death benefit payments projected for plan year 2001 is \$122.4 million, which is made up of \$82.5 million in respect of the term insurance and \$39.8 million in respect of the paid-up insurance. In this report, *term insurance* means the basic coverage (two times salary) less the 10% per year reduction applicable from age 66 and the \$10,000 paid-up insurance also applicable from age 65.

A- Paid-Up Insurance

For plan year 2001, the estimated single premiums at age 65 for each \$10,000 of paid-up insured benefit are \$3,315 and \$2,682 for males and females, respectively. The corresponding legislated contribution rates for each \$10,000 of paid-up insured benefits are \$310 and \$291, respectively.

The assumed improvements in longevity cause the projected single premium for the paid-up insurance to decrease over time. However, the projected ultimate yield of 6.0% is lower than the yield of 8.99% projected for plan year 2001. This has the effect of gradually increasing the projected single premium over the years.

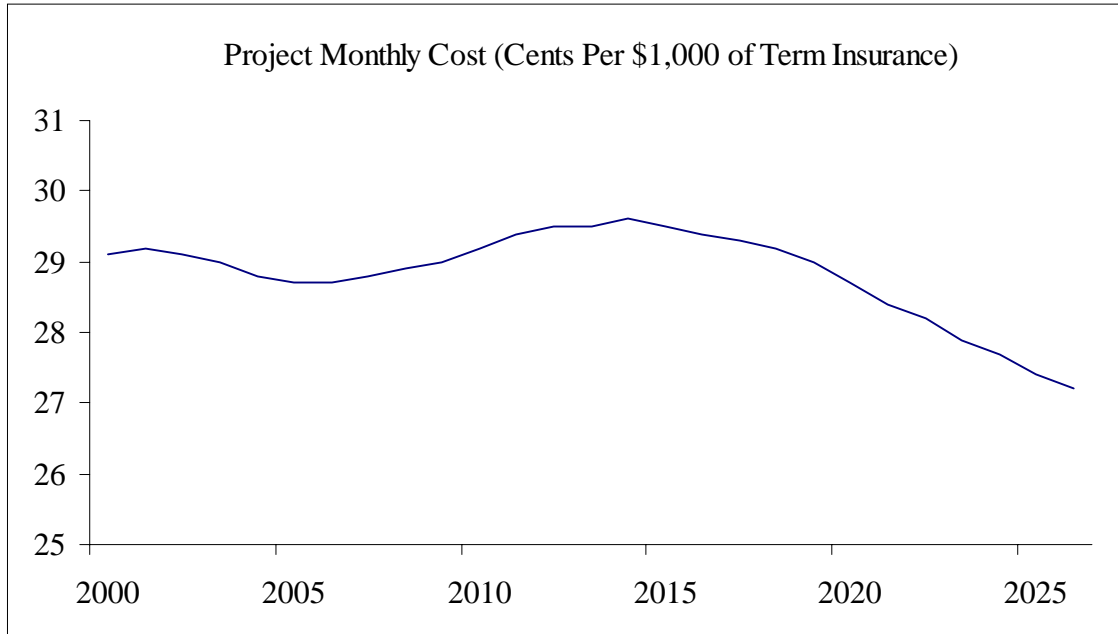
The net effect of longevity improvements and decreasing projected yields is to increase the projected single premiums at age 65 for each \$10,000 of paid-up insured benefit. A male participant's projected single premium increases from \$3,315 for plan year 2001 to \$3,710 for plan year 2025; for a female participant the increase is from \$2,682 to \$3,080. The corresponding legislated contribution rates for each \$10,000 of paid-up insured benefit are only \$310 and \$291, respectively.

B- Term Insurance

The total amount of term insurance proceeds projected to be payable during plan year 2001 is \$82.5 million. Given that the total amount of term insurance projected to be in force for plan year 2001 is \$23,651 million, the benefit cost rate projected for plan year 2001 is 29.1 cents per month per \$1,000 of term insurance.

Non-elective participants and elective participants in receipt of an immediate annuity or an annual allowance are required to contribute monthly 15 cents per \$1,000 of insured benefit. As a minimum, the Government contributes monthly an amount equal to one-twelfth of the actual total amount of term insurance proceeds payable during the month. For plan year 2001, the Government's monthly contribution is estimated at 2.4 cents per \$1,000 of insured benefit.

The total amount contributed by participants and the government is therefore 17.4 cents (15 cents plus 2.4 cents) per month per \$1,000 of term insurance benefit, i.e. significantly less than the estimated monthly cost of 29.1 cents per \$1,000 of term insurance benefit for plan year 2001.



As shown in the above graph, the monthly cost per \$1,000 of term insurance is projected to fluctuate between 28.7 cents and 29.6 cents in the first 15 years. Thereafter the monthly cost is projected to decrease gradually to 27.7 cents by plan year 2025. This 27.7 cents cost compares to the combined (Government and participants) legislated contribution rate of 17.3 cents (i.e. 15 cents for participants plus one-twelfth of 27.7 cents for Government) projected for plan year 2025.

The following table illustrates the projected monthly costs per \$1,000 of term insurance death benefit for selected plan year and participant type.

Projected Monthly Cost
(Cents Per \$1,000 of Term Insurance)

	<u>PlanYear</u>			
<u>Participants</u>	<u>2001</u>	<u>2010</u>	<u>2020</u>	<u>2025</u>
Non-elective	14.1	14.2	12.6	12.2
Elective	<u>92.3</u>	<u>77.0</u>	<u>75.9</u>	<u>75.4</u>
All	29.1	29.0	29.0	27.7

For non-elective participants, the monthly cost projected for plan year 2025 is 87% of the monthly cost estimated for plan year 2001. This results mainly from the following two factors:

- There is a reduction in cost due to the assumed lower mortality for plan year 2025 in accordance with the longevity improvement factors shown in table 7H applied to the current mortality rates shown in table 7G.
- The distribution of non-elective participants in the plan year 2025 is weighted more heavily at the older ages than currently. This has the effect of increasing costs. However, this increase is more than offset by the effect of the assumed mortality improvements.

In respect of elective participants in receipt of an immediate annuity or an annual allowance, the monthly benefit cost rate projected for plan year 2025 is 82% of the monthly cost estimated for plan year 2001. This reduction is mostly the result of assumed mortality improvements.


For all plan participants in aggregate, the monthly cost projected for plan year 2025 is 95% of the monthly cost estimated for plan year 2001.

V- Actuarial Opinion

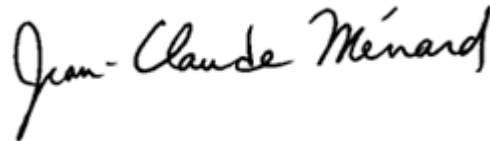
In our opinion, considering that this report was prepared pursuant to the Public Pensions Reporting Act per section 59 of the Public Service Superannuation Act,

- 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 exceeds 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 Recommendations of the Canadian Institute of Actuaries for Actuarial Advice given with respect to Self-Insured Employee Benefit Plans.



Daniel Hébert
Principal Actuary
Public Sector Insurance and Pension Programs
Fellow of the Canadian Institute of Actuaries
Fellow of the Society of Actuaries



Jean-Claude Ménard
Chief Actuary
Office of the Chief Actuary
Fellow of the Canadian Institute of Actuaries
Fellow of the Society of Actuaries

Ottawa, Canada
19 January 2001

APPENDICES

Appendix 1 - Developments Occurring After 31 March 1999

The following important developments occurred after the valuation date of 31 March 1999, but were appropriately taken into account in the determination of the accrued liabilities.

Bill C-78

Bill C-78, which received Royal Assent on 14 September 1999, includes the following provisions that became effective 1 October 1999:

- The basic coverage remained at two times the participant's annual salary but the rounding is now to the next multiple of \$1,000.
- Paid-up coverage was increased to \$10,000 from its previous value of \$5,000.
- Monthly contribution rate for participants was reduced from 20 cents to 15 cents per \$1,000 of coverage.
- The 10% annual benefit reduction applicable from ages 61 to 70 was deferred to ages 66 to 75.
- Elective participants retiring in receipt of an annual allowance after 1 April 1995 were provided with paid-up coverage.
- Elective participants retiring after 1 October 1999 in receipt of an annual allowance automatically retain coverage if the annual allowance is payable within 30 days of the termination date. The paid-up coverage of \$10,000 is also available to this group.
- Canada Post Corporation (CPC) was to leave from the *Public Service Superannuation Act* (PSSA) by 1 October 2000.
- Several public service corporations including Export Development Corporation, Farm Credit Corporation and St. Lawrence Seaway Authority were also to leave the PSSA and set up their own plans.

Appendix 2 - Summary of Plan Provisions

Following is a summary description of the main provisions of the life insurance plan established for public servants under Part II - *Supplementary Death Benefits* of the *Public Service Superannuation Act* (PSSA). This plan supplements the pension plan by providing a lump sum benefit upon the death of an insured participant.

I- Plan Participants

A- Non-Elective Participants

Non-elective participant includes all contributors to the pension plan established under the PSSA who are employed in the Public Service except employees of Crown corporations covered under other group life insurance plans.

B- Elective Participants

Elective participant means all participants who have ceased to be employed in the Public Service following disability or retirement and have opted for continuing their coverage under the Supplementary Death Benefit plan. Such right is limited to participants who, at the time they ceased to be employed in the Public Service, had completed at least two years of continuous service in the Public Service or two years of membership in the Supplementary Death Benefit plan.

A non-elective participant who ceases employment and becomes entitled to a PSSA immediate annuity or annual allowance automatically becomes an elective participant. During the first 30 days as elective participant, such individual has the right to opt out of the plan, effective on the 31st day.

II- Assets

The plan is financed through the Public Service Death Benefit (PSDB) Account, which forms part of the Accounts of Canada. The Account is credited with all contributions made by the participants and the Government, and charged with all benefit payments as they become due. The Account is also credited with investment earnings based on interest rates applying to the Public Service Superannuation Account.

III- Contributions

A- Non-Elective Participants, and Elective Participants in Receipt of an Immediate Annuity or an Annual Allowance

For non-elective participants as well as elective participants in receipt of an immediate annuity (disability or retirement) or an annual allowance, the rate of contribution is 15 cents per month for each \$1,000 of insured benefit. When these participants attain age 66 (or complete two years of service, if later), their contribution is reduced by \$1.50 per month in recognition of the fact that \$10,000 of insured death benefit becomes paid-up (by the Government) for the remaining lifetime of the participant.

B- Elective Participants Entitled to a Deferred Annuity

For elective participants entitled to a deferred annuity, the legislated contribution rate varies in accordance with the attained age of the participant, and the corresponding contributions become chargeable on the 30th day immediately following cessation of employment.

The legislated rates for selected ages are shown in the following table:

Age Last Birthday	Contribution per \$2,000 of Insured Benefit	
	Annual	Monthly
25	\$9.70	\$0.82
30	11.42	0.97
35	13.58	1.15
40	16.29	1.39
45	19.72	1.67
50	24.11	2.05
55	29.80	2.53
60	37.65	3.20

C- Government

The Government credits monthly to the Public Service Death Benefit (PSDB) Account an amount equal to one-twelfth of the total amount of term insurance death benefits paid in the month.

Crown corporations and public boards whose employees are participants contribute at the rate of one cent per month for each \$250 of insured benefit.

When a participant, other than one entitled to a deferred annuity, reaches age 65 (or completes two years of service, if later), the Government credits to the PSDB Account a single premium for the individual \$10,000 paid-up portion of insured benefit in respect of which contributions are no longer required from the participant.

The legislated amount of single premium for each such \$10,000 paid-up portion of insured benefit is shown in the following table and corresponds to one-twentieth of \$10,000 times the single premium rate for each dollar of insured benefit, computed on the basis of the Life Tables, Canada, 1950-1952 and interest at 4% per annum.

<u>Age Last Birthday</u>	<u>Single Premium per \$10,000 of Insured Benefit</u>	
	<u>Male</u>	<u>Female</u>
65	\$310	\$291
66	316	298
67	323	306
68	329	313
69	336	320
70	343	328
71	349	335
72	356	342
73	362	349
74	369	356
75	375	363

Under the statutes, if for whatever reason the PSDB Account were to become exhausted, the Government would then have to make special contributions to the Account in an amount at least equal to the death benefits then due but not paid by reason of such cash shortfall.

IV- Amount of Insured Death Benefit

Subject to the applicable reductions described below, the lump sum benefit payable upon the death of a participant is equal to twice the participant's current salary, the result being rounded to the next higher multiple of \$1,000 if not already equal to such a multiple. For this purpose, the current salary of an elective participant is defined as the annual rate of pay at the time of cessation of employment in the Public Service.

The amount of insurance described above is reduced by 10% a year starting at age 66 until it would normally vanish at age 75. However, the amount of insurance cannot at any time be reduced below a basic floor value of \$10,000 subject to the following exceptions:

- For those elective participants who had, upon cessation of employment prior to the enactment of Bill C-55, made an election to reduce their insured death benefit to \$500 and further had made a second election, within one year following the introduction of Bill C-55, to keep their insured death benefit at \$500, the floor value is \$500 instead of \$10,000. Such election is irrevocable.
- For non-elective participants, the amount of insurance cannot be reduced below the multiple of \$1,000 equal to or next above one-third of the participant's annual salary, even if the resulting amount is higher than \$10,000.
- All participants aged between 61 and 70 prior to the enactment of Bill C-78 may elect to retain the 10% a year reduction schedule starting at age 61.
- For elective participants entitled to a deferred annuity there is no coverage past age 75.

Upon ceasing to be employed in the Public Service, elective participants in receipt of an immediate annuity or in receipt of an annual allowance under the *Public Service Superannuation Act* may opt to reduce their amount of insured death benefit to \$10,000.

Appendix 3 - Plan Assets

Public Service Death Benefit Account

The plan is entirely financed through the Public Service Death Benefit Account, which forms part of the Accounts of Canada. The Account is:

- credited with all contributions made by participants and the Government;
- credited with investment earnings as though net cash flows were invested quarterly in 20-year Government of Canada bonds issued at prescribed interest rates and held to maturity;
- credited with investment earnings every three months on the basis of the actual average yield for the same period on the combined Superannuation Accounts of the Public Service, Canadian Forces and Royal Canadian Mounted Police pension plans
- charged with the death benefit payments when they become due;

The table below shows the reconciliation of assets in the Public Service Death Benefit Account from the last valuation date to the current valuation date¹. Since the last valuation, the Account balance has grown by \$475 million (i.e. a 39% increase) to reach \$1,707 million as at 31 March 2000. The net growth in the Account balance is to a large extent the result of interest credits made.

(in millions of dollars)					
Account Balance as at 31 March 1996					1,231.5
Plan year	<u>1997</u>	<u>1998</u>	<u>1999</u>	<u>2000</u>	<u>1997-2000</u>
Accounts of Canada opening balance	1,231.5	1,343.3	1,459.0	1,593.0	1,231.5
INCOME					
Employee contributions	61.6	61.0	62.6	60.5	245.7
Employer contributions					
- Term insurance	7.8	7.9	7.0	8.6	31.3
- Paid-up insurance	1.5	1.3	1.3	1.3	5.4
Investment earnings	<u>124.8</u>	<u>132.9</u>	<u>140.1</u>	<u>147.3</u>	<u>545.1</u>
Subtotal	195.6	203.0	211.0	217.7	827.3
EXPENDITURES					
Death claims					
- Term insurance	64.0	65.2	56.4	73.1	258.7
- Paid-up insurance	<u>19.8</u>	<u>22.0</u>	<u>20.7</u>	<u>30.6</u>	<u>93.1</u>
Subtotal	83.8	87.3	77.1	103.7	351.9
Accounts of Canada closing balance	1,343.3	1,459.0	1,593.0	1,707.0	1,707.0
Account Balance as at 31 March 2000				1,707.0	1,707.0

¹ Some totals in this page might err by a margin of \$0.1 million due to rounding.

Rates of Return

The following rates of return on the Public Service Death Benefit Account by plan year were calculated using the foregoing entries.

<u>Plan Year</u>	<u>Return</u>
1997	10.24 %
1998	10.02 %
1999	9.64 %
2000	9.44 %

Sources of Asset Data

The Account entries shown previously were taken from the Accounts of Canada. In accordance with section 8 of the *Public Pensions Reporting Act*, the Office of the Comptroller General of Canada provided a certification of the assets of the plan as at 31 March 2000.

Account Projection

The adjacent table shows a projection of the Public Service Death Benefit Account over 25 years commencing 1 April 2000.

Plan Year	Balance Sheet at the End of Plan Year			Ratio of Projected Surplus at the End of the Plan Year to Annual Benefit Payments Projected for the Following Plan Year
	Account	Liabilities	Surplus	
2000	1,707.0	409.0	1,298.0	10.6
2001	1,789.8	415.9	1,373.9	10.9
2002	1,872.7	420.9	1,451.7	11.1
2003	1,956.8	425.6	1,531.2	11.4
2004	2,041.2	428.9	1,612.3	11.7
2005	2,126.7	432.2	1,694.5	11.9
2006	2,212.8	435.3	1,777.5	12.0
2007	2,298.7	438.5	1,860.2	12.1
2008	2,384.9	442.7	1,942.2	12.2
2009	2,471.2	446.6	2,024.6	12.2
2010	2,556.8	450.8	2,106.0	12.2
2011	2,641.5	457.9	2,183.6	12.2
2012	2,725.1	470.3	2,254.8	12.1
2013	2,803.1	483.2	2,319.9	12.0
2014	2,879.0	494.8	2,384.2	12.0
2015	2,953.9	507.7	2,446.3	11.9
2016	3,028.1	521.8	2,506.2	11.8
2017	3,100.4	536.0	2,564.4	11.7
2018	3,172.0	550.6	2,621.5	11.7
2019	3,244.2	565.3	2,678.9	11.6
2020	3,318.8	580.3	2,738.5	11.6
2021	3,396.7	595.8	2,800.9	11.6
2022	3,478.0	611.3	2,866.7	11.5
2023	3,562.5	626.9	2,935.6	11.5
2024	3,650.1	642.3	3,007.8	11.5
2025	3,741.1	657.7	3,083.4	11.5

Income and Expenditure Projection

The Following table shows a projection of the income and expenditure which served as the basis of the projection of the Public Service Death Benefit Account over 25 years commencing with plan year 2001.

Income and Expenditure During the Plan Year (in million of \$)									
Plan Year	Contributions			Total	Benefit Payments			Investment Earnings	Net Cash Flow
	Participants	Government Term	Paid-Up		Term	Paid-Up	Total		
2001	42.1	6.9	1.1	50.0	82.5	39.8	122.4	155.1	82.8
2002	43.9	7.2	1.0	52.0	86.2	40.4	126.7	157.5	82.9
2003	45.8	7.5	1.0	54.3	89.8	40.9	130.7	160.6	84.1
2004	47.8	7.8	1.0	56.6	93.2	41.3	134.5	162.3	84.4
2005	50.0	8.1	1.1	59.1	96.7	41.7	138.4	164.8	85.5
2006	52.3	8.4	1.1	61.9	101.0	41.9	142.9	167.1	86.1
2007	54.8	8.8	1.2	64.9	105.8	42.1	147.9	169.0	86.0
2008	57.5	9.3	1.4	68.1	111.2	42.2	153.4	171.5	86.2
2009	60.3	9.8	1.4	71.4	117.1	42.3	159.4	174.2	86.3
2010	63.2	10.3	1.4	74.9	123.4	42.3	165.6	176.3	85.6
2011	66.3	10.8	1.7	78.8	130.0	42.2	172.2	178.2	84.8
2012	69.4	11.4	2.1	83.0	136.9	42.1	179.0	179.6	83.5
2013	72.7	12.0	2.2	86.9	143.8	42.2	186.0	177.1	78.0
2014	75.9	12.5	2.1	90.6	150.6	42.3	192.8	178.2	75.9
2015	79.3	13.1	2.2	94.6	157.3	42.2	199.5	179.9	74.9
2016	82.7	13.7	2.3	98.7	163.8	42.2	206.0	181.6	74.1
2017	86.1	14.2	2.3	102.6	170.1	42.3	212.4	182.1	72.3
2018	89.7	14.7	2.3	106.7	176.2	42.3	218.5	183.6	71.7
2019	93.2	15.2	2.3	110.7	182.2	42.4	224.7	186.1	72.2
2020	96.9	15.7	2.3	114.9	188.0	42.6	230.6	190.4	74.6
2021	100.6	16.1	2.3	119.0	193.6	42.8	236.5	195.3	77.9
2022	104.5	16.6	2.2	123.3	199.1	43.2	242.3	200.2	81.3
2023	108.5	17.1	2.2	127.8	204.7	43.6	248.3	205.1	84.5
2024	112.6	17.6	2.2	132.4	210.6	44.1	254.7	210.1	87.7
2025	116.9	18.0	2.1	137.0	216.6	44.8	261.3	215.3	91.0

Appendix 4 - Participant Data

Source of Participant Data

The valuation input data required in respect of all participants are extracted from master computer files maintained by the Superannuation Directorate of the Department of Public Works and Government Services Canada.

The main valuation data file supplied by the Superannuation Directorate contained all the status information of a participant during the period from 1 April 1996 to 31 March 1998.

These data were projected to 31 March 2000 generally using the demographic assumptions of the current valuation and the actual economic experience (2% per year for general pay increases for non-elective participants) for the relevant two-year projection period.

Participants Data Summary

Tables 4A to 4E on the following pages show the detailed participants data upon which this valuation is based.

Table 4A

**Non-Elective Participants¹ as at 31 March 1998
(Excludes Crown Corporations leaving the Plan)²**

<u>Age</u> ³	<u>Number</u>			<u>Insured Benefits (\$ thousands)</u>		
	<u>Male</u>	<u>Female</u>	<u>Total</u>	<u>Male</u>	<u>Female</u>	<u>Total</u>
15-19	30	43	73	1,832	2,203	4,035
20-24	1,300	1,888	3,188	86,183	114,367	200,550
25-29	5,633	7,814	13,447	420,167	539,654	959,821
30-34	11,091	14,800	25,891	921,974	1,101,971	2,023,945
35-39	16,639	21,508	38,147	1,465,065	1,634,243	3,099,308
40-44	21,134	24,237	45,371	1,957,090	1,892,374	3,849,464
45-49	23,803	21,151	44,954	2,359,339	1,696,503	4,055,842
50-54	15,881	11,123	27,004	1,684,176	870,986	2,555,162
55-59	7,726	4,928	12,654	823,260	365,614	1,188,874
60-64	2,440	1,402	3,842	259,289	99,692	358,981
65-69	<u>449</u>	<u>228</u>	<u>677</u>	<u>43,611</u>	<u>15,887</u>	<u>59,498</u>
Total	106,126	109,122	215,248	10,021,986	8,333,494	18,355,480

<u>Average</u>	<u>Male</u>	<u>Female</u>	<u>Total</u>
Age ³	44.3	41.5	43.0
Service ³	15.9	13.0	14.6
Insured Benefit (\$)	94,435	76,369	85,276

¹ Include Correctional Service Canada participants in operational service.

² Canada Post Corporation, Farm Credit Corporation, Export Development Corporation, St-Laurence Seaway Authority.

³ Expressed in completed years calculated at the beginning of the plan year.

Table 4B

Elective Participants in Receipt of a Disability Pension as at 31 March 1998

<u>Age</u> ¹	<u>Number</u>			<u>Insured Benefits (\$ thousands)</u>		
	<u>Male</u>	<u>Female</u>	<u>Total</u>	<u>Male</u>	<u>Female</u>	<u>Total</u>
25- 29	0	2	2	0	123	123
30- 34	13	24	37	774	1,588	2,361
35- 39	56	104	160	3,580	6,747	10,326
40- 44	199	315	514	13,603	20,166	33,769
45- 49	473	470	943	33,256	29,787	63,042
50- 54	744	597	1,341	55,858	39,138	94,995
55- 59	993	718	1,711	71,814	45,159	116,973
60- 64	1,188	764	1,952	81,481	42,146	123,627
65- 69	1,089	557	1,646	48,799	21,539	70,338
70- 74	933	449	1,382	12,283	5,073	17,356
75- 79	819	375	1,194	8,181	3,750	11,931
80- 84	271	203	474	2,710	2,030	4,740
85- 89	54	61	115	540	610	1,150
90- 94	<u>8</u>	<u>14</u>	<u>22</u>	<u>80</u>	<u>140</u>	<u>220</u>
Total	6,840	4,653	11,493	332,957	219,847	552,804

<u>Average</u>	<u>Male</u>	<u>Female</u>	<u>Total</u>
Age ¹	58.3	55.6	57.2
Insured Benefit (\$)	48,556	46,723	47,938

¹ Expressed in completed years calculated at the beginning of the plan year.

Table 4C

**Elective Retirement Participants in Receipt of an Immediate Annuity
 or an Annual Allowance¹ as at 31 March 1998**

<u>Age²</u>	<u>Number</u>			<u>Insured Benefits (\$ thousands)</u>		
	<u>Male</u>	<u>Female</u>	<u>Total</u>	<u>Male</u>	<u>Female</u>	<u>Total</u>
45- 49	9	0	9	985	0	985
50- 54	3,954	2,185	6,139	405,699	173,377	579,077
55- 59	5,659	1,981	7,640	585,107	151,848	736,954
60- 64	9,839	3,243	13,082	958,925	228,459	1,187,385
65- 69	13,969	4,678	18,647	984,348	247,428	1,231,775
70- 74	15,642	5,544	21,186	362,344	99,611	461,955
75- 79	15,028	4,641	19,669	150,280	46,410	196,690
80- 84	7,804	2,978	10,782	78,031	29,780	107,811
85- 89	2,805	1,510	4,315	28,050	15,091	43,141
90- 94	728	533	1,261	7,280	5,330	12,610
95- 99	94	101	195	940	1,010	1,950
100-104	16	28	44	160	280	440
105-109	<u>0</u>	<u>1</u>	<u>1</u>	<u>0</u>	<u>10</u>	<u>10</u>
Total	75,547	27,423	102,970	3,562,148	998,634	4,560,782

<u>Average</u>	<u>Male</u>	<u>Female</u>	<u>Total</u>
Age ²	63.7	63.5	63.6
Insured Benefit (\$)	46,947	36,313	44,292

¹ Participants who retired after April 1, 1995.

² Expressed in completed years calculated at the beginning of the plan year.

Table 4D

**Elective Participants Who Retired Before¹ 1 April 1995
in Receipt of an Annual Allowance as at 31 March 1998**

<u>Age²</u>	<u>Number</u>			<u>Insured Benefits (\$ thousands)</u>		
	<u>Male</u>	<u>Female</u>	<u>Total</u>	<u>Male</u>	<u>Female</u>	<u>Total</u>
50- 54	1,097	610	1,707	114,164	47,988	162,152
55- 59	1,845	1,014	2,859	194,193	75,883	270,076
60- 64	453	343	796	46,605	22,165	68,770
65- 69	17	5	22	1,143	257	1,401
70- 74	<u>10</u>	<u>3</u>	<u>13</u>	<u>153</u>	<u>67</u>	<u>220</u>
Total	3,422	1,975	5,397	356,258	146,360	502,618

<u>Average</u>	<u>Male</u>	<u>Female</u>	<u>Total</u>
Age ²	56.1	56.2	56.1
Insured Benefit (\$)	104,108	74,106	93,129

Table 4E

Elective Participants Entitled to a Deferred Annuity³ as at 31 March 1998

<u>Number</u>	<u>Insured Benefits (\$ thousands)</u>
37	1,261

¹ Participants who retired before 1 April 1995 and are not covered by the \$10,000 Paid-Up insurance upon attaining age 65.

² Expressed in completed years calculated at the beginning of the plan year.

³ Due to their negligible effect on costs and liabilities, these participants were not taken into consideration for the purpose of this valuation.

Appendix 5 - Methodology

I- Assets

The assets of the plan consist essentially of the recorded balance in the Public Service Death Benefit (PSDB) Account, which forms part of the Accounts of Canada. These assets are shown at the book value of the underlying notional bond portfolio described in Appendix 3.

The Account balance corresponds to the excess of past contributions and investment earnings over past benefit payments. Assets are accordingly projected to the end of a given plan year by adding to the Account at the beginning of that plan year the net income (i.e. the excess of contributions and investment earnings over benefits) projected as described below for that plan year. Administration expenses are ignored because they are not charged to the Account.

II- Contributions

Participants' annual contributions are projected for a given plan year by multiplying

- the legislated annual contribution rate of \$1.80 per \$1,000 of coverage (equivalent to the monthly rate of 15 cents per \$1,000 of coverage)

by

- the aggregate of two times the salaries of participants projected for that plan year on an open-group basis, less
- the 10% a year reduction from age 66 if applicable, and
- the \$10,000 paid-up coverage after age 65, if applicable.

Non-elective participants' salaries are projected for a given plan year using the assumed rates of increase described in Appendix 6 below. Elective participants' salaries are frozen at time of retirement or disability and are not subject to further increases.

The Government's annual contribution is projected for a given plan year as the sum of

- one-twelfth of the amount of term insurance death benefits projected to be paid during that plan year, and
- the legislated single premiums in respect of relevant participants 65 years of age (or participants completing two years of service, if older).

III- Investment Earnings

Annual investment earnings are projected for a given plan year as the product of the yield projected for that plan year (Appendix 6) and the projected average Account balance in that plan year.

IV- Benefits

The total amount of death benefits (term and paid-up insurance) for a given plan year is projected as the total amount of insurance in force during that plan year multiplied by the mortality rates assumed to apply during that plan year. The amount of insurance in force depends on the salary projected to time of death. Salaries are projected for this purpose using the assumed rates of increase in salaries and the number of participants projected on an open-group basis as described in Appendix 7 below.

V- Liabilities

A- Paid-up Reserve

At the end of a given plan year, the liabilities associated with the individual \$10,000 paid-up insurance in force correspond to the amount which, together with interest at the projected yields, is sufficient to pay for each individual \$10,000 paid-up death benefit projected payable on the basis of the assumed mortality rates.

B- IBNR and Pending Claims Reserves

On the basis of the plan's experience, the reserve at the end of a given plan year for claims incurred but not reported (IBNR), and for pending claims is set equal to one-sixth of the projected annual benefits paid on average during the six previous plan years.

C- Extension of Coverage

Due to the negligible effect of the 30-day extension of insurance upon termination of coverage and to the nature of term insurance paid for on a monthly basis, no liability is deemed to exist in respect of that term insurance provision.

Appendix 6 - Economic Assumptions

The following key economic assumptions are required for valuation purposes:

Increases in Average Earnings

The assumed increase in non-elective participants' annual salary would normally, for any year, be the same as the assumed increase in the Industrial Aggregate of Average Weekly Earnings. However, it was adjusted for the first year to reflect current contract settlements in the Public Service.

Projected Yields on Account

These yields are required for the estimates of the long-term projection of the assets, liabilities and surplus/deficit. The methodology used to determine the projected yields on the Account is described in Appendix 5.

Summary of Key and Derived Economic Assumptions

<u>Plan Year</u>	<u>Average Salary Increase¹ (Non-Elective Participants)</u>	<u>Projected Yield</u>
2001	2.4%	8.99%
2002	2.8	8.75
2003	3.2	8.46
2004	3.6	8.23
2005	4.0	8.01
2006	4.0	7.78
2007	4.0	7.60
2008	4.0	7.44
2009	4.0	7.27
2010	4.0	7.10
2011	4.0	6.93
2012	4.0	6.62
2013	4.0	6.48
2014	4.0	6.36
2015	4.0	6.26
2016	4.0	6.12
2017	4.0	6.03
2018	4.0	5.98
2019	4.0	5.98
2020	4.0	5.99
2021+	4.0	6.00

¹ Exclusive of seniority and promotional increases

Appendix 7 - Demographic and Other 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 (usually April 1996 to March 1998). Described below are the assumptions related to causes of termination (employment or participation):

Description	Basis	Comments	Tables
Non-elective Service less than 2 years			
All causes	Service	Rates were increased 15% from the previous valuation, giving partial credibility to the intervaluation experience.	7B
Non-elective Service from 2 years			
Other than disability or mortality			
Age less than 50	Sex, Service		
Main group		Rates were increased 30% for males and 15% for females from the previous valuation, giving partial credibility to the intervaluation experience.	7C
Operational service (o/s)		Special rates, no change from previous valuation.	7C
Age from 50	Age, Sex and Service		
Main group		No select period rates since ERI program has expired. Some minor changes to previous male assumption were made to graduate more smoothly with the termination rates below age 50.	7D&E
Operational service (o/s)		Special rates, no change from previous valuation.	7D&E
Disability	Age, Sex	The definition of disability has changed as of 1 January 1996 under the <i>Public Service Superannuation Act</i> . The disability incidence rates were revised to reflect the intervaluation period experience from 1996 to 1998.	7F
Mortality	Age, Sex and Year	To be consistent with recent mortality studies by the Society of Actuaries and others, the base year table was extended for this valuation to age 114 and set to a maximum mortality of 50% per annum until that age and 100% at age 115.	7G
		Mortality improvement was based on a 25-year select period with an ultimate mortality improvement of 0.5% at all ages. The first year was based on annual Canadian mortality improvement experience since 1985.	7H

Description	Basis	Comments	Tables
Elective Participants opting to continue coverage after termination of employment	Age, Sex	The new proportions were developed on the basis of the 1993-1998 PSDB experience. These assumed proportions are about 10% higher than in the previous valuation report.	7J
Mortality of Elective participants			
Normal Retirement	Age, Sex and Year	Same rates as mortality-in-service. Mortality improvement was the same as for mortality-in-service.	7G 7H
Disability Retirement	Age, Sex and Year	Female base rates were projected from previous valuation base rates and male rates were only projected one year.	7G
		The base year table was extended to age 115 and is similar to mortality-in-service. Mortality improvement was the same as for mortality-in-service.	7H

Other Demographic Assumptions

Option to Reduce Coverage to \$10,000

The valuation data indicates that the proportion of elective participants opting to reduce their insured death benefit to \$10,000 is negligible. Accordingly, no elective participants were assumed to make such an option.

Option to Continue the Annual 10% Reduction from age 61

Bill C-78 introduced this option to participants effective 1 October 1999. Election of this option by participants would have a positive effect on the plan's surplus. It is very difficult at this point in time to determine an appropriate assumption for the election rate since there is no experience. Accordingly, no participants were assumed to make such an election. This assumption will be reviewed in the next valuation report.

Seniority and Promotional Salary Increases

The rates were revised based on the experience for plan years 1997 and 1998. Canada Post was excluded from the experience study. The graduated rates were set back two years to reflect the two year suspension in seniority increases with no retroactive catch-up when the suspension ceased in 1996. The assumptions for seniority and promotional increases, broken down by years of service, are shown in table 7A.

New Participants

It was assumed that the distribution of new participants by age, sex and initial salary rate would be the same as that of participants with less than one year of service at the valuation date.

It was also assumed that the number of new entrants would be equal to the year's number of terminations.

Other Assumptions

Administrative Expenses

In the projection of the Account, no assumption was made regarding the expenses incurred for the administration of the plan. These expenses, which are not charged to the PSDB Account, are borne by the Government and are commingled with all other government expenses.

Table 7A

Assumed Seniority and Promotional Salary Increases

<u>Service</u> ¹	<u>Male</u> (%)	<u>Female</u> (%)
0	5.20	5.80
1	4.60	5.00
2	4.00	4.25
3	3.45	3.55
4	3.00	3.00
5	2.60	2.70
6	2.25	2.50
7	2.00	2.30
8	1.85	2.15
9	1.70	2.00
10	1.55	1.90
11	1.45	1.80
12	1.35	1.70
13	1.25	1.60
14	1.20	1.55
15	1.15	1.50
16	1.10	1.45
17	1.05	1.40
18	1.00	1.35
19	0.95	1.30
20	0.90	1.25
21	0.90	1.20
22	0.85	1.20
23	0.80	1.15
24	0.80	1.10
25	0.80	1.05
26	0.80	1.00
27	0.80	1.00
28	0.80	1.00
29+	0.80	1.00

¹ Expressed in completed years calculated as at the beginning of the plan year.

Table 7B

**Assumed Rates of Termination without Right to a Pension
(per 1,000 of people)**

<u>Service</u> ¹	<u>Main Group</u> ²		<u>CSC</u> ³ (o/s)	
	<u>Male</u>	<u>Female</u>	<u>Male</u>	<u>Female</u>
0	207	230	135	150

Table 7C

**Assumed Rates of Termination
(for Reasons Other than Disability and Death)
Prior to Age 50 with Right to a Pension
(per 1,000 people)**

<u>Service</u> ¹	<u>Main Group</u> ²		<u>CSC</u> ³ (o/s)	
	<u>Male</u>	<u>Female</u>	<u>Male</u>	<u>Female</u>
1	137	144	79	94
2	104	104	60	68
3	85	83	49	54
4	72	71	41	47
5	60	63	35	41
6	52	56	30	37
7	46	51	26	33
8	40	46	23	30
9	35	41	20	27
10	30	38	17	25
11	26	35	15	23
12-18	18	29	11	19
19+	18	29	14	25

¹ Expressed in completed years calculated at the beginning of the plan year.

² Excludes Canada Post Corporation, St. Lawrence Seaway Authority, Export Development Corporation and Farm Credit Corporation.

³ Correctional Service Canada participants in operational service.

Table 7D
Assumed Rates of Retirement (for Reasons Other than Disability and Death)
at Age 50 and Over with Right to a Pension (per 1,000 people)
Male Participants - Main Group¹

Age ²	Years of Service ²												
	1-3	4-8	9-13	14-18	19-23	24-28	29	30	31	32	33	34	35+
49	100	40	30	20	15	25	40	50	50	50	60	120	100
50	100	40	30	20	15	30	45	55	55	60	65	140	100
51	100	40	30	20	15	35	65	65	65	75	85	140	140
52	100	40	30	20	15	40	70	70	80	90	120	170	170
53	100	40	30	25	15	45	80	100	120	120	150	200	200
54	100	40	30	25	20	45	270	270	270	350	350	600	550
55	120	60	30	30	20	40	250	250	250	270	320	550	500
56	120	60	30	30	30	40	250	250	250	270	320	500	450
57	140	80	40	30	30	45	250	250	250	270	320	500	450
58	140	80	40	40	40	50	250	250	250	270	320	500	450
59	190	190	210	210	210	310	410	410	410	370	350	600	500
60	190	190	210	210	210	310	350	350	370	340	320	550	450
61	180	180	180	180	220	280	310	310	310	310	310	500	410
62	200	200	200	200	240	280	340	360	380	380	380	500	410
63	250	250	250	250	270	310	350	350	370	370	370	600	480
64	500	500	500	500	600	600	600	600	650	650	650	700	600
65	400	400	400	400	450	450	500	500	500	500	500	650	480
66	400	400	400	400	400	400	500	500	500	500	500	650	480
67	400	400	400	400	400	400	500	500	500	500	500	650	650
68	400	400	400	400	400	400	500	500	500	500	500	650	480
69	400	400	400	400	400	400	500	500	500	500	500	650	480

Male Participants - CSC Participants in Operational Service

Age ²	Years of Service ²												
	1-3	4-8	9-13	14-18	19-23	24-28	29	30	31	32	33	34	35+
49	60	25	15	11	15	50	80	80	80	80	80	190	170
50	60	25	15	11	15	60	80	80	80	80	80	190	170
51	60	25	15	11	20	70	90	90	90	90	90	190	170
52	60	25	15	11	20	80	120	120	120	120	120	190	170
53	60	25	15	11	30	100	150	150	150	150	150	255	185
54	80	40	20	20	50	125	240	240	240	240	240	650	550
55	90	60	20	25	60	145	320	320	320	320	320	650	550
56	90	60	30	25	60	160	320	320	320	320	320	650	550
57	110	80	40	25	70	170	320	320	320	320	320	650	550
58	110	80	40	35	70	185	320	320	320	320	320	650	550
59	190	190	210	210	210	310	410	410	410	370	350	600	500
60	190	190	210	210	210	310	350	350	370	340	320	550	450
61	180	180	180	180	220	280	310	310	310	310	310	500	410
62	200	200	200	200	240	280	340	360	380	380	380	500	410
63	250	250	250	250	270	310	350	350	370	370	370	600	480
64	500	500	500	500	600	600	600	600	650	650	650	700	600
65	400	400	400	400	450	450	500	500	650	500	500	650	480
66	400	400	400	400	400	400	500	500	500	500	500	650	480
67	400	400	400	400	400	400	500	500	500	500	500	650	480
68	400	400	400	400	400	400	500	500	500	500	500	650	480
69	400	400	400	400	400	400	500	500	500	500	500	650	480

¹ Excludes Canada Post Corporation, St. Lawrence Seaway Authority, Export Development Corporation and Farm Credit Corporation.

² Expressed in completed years calculated at the beginning of the plan year.

Table 7E
Assumed Rates of Retirement (for Reasons Other than Disability and Death)
at Age 50 and Over with Right to a Pension (per 1,000 people)
Female Participants - Main Group¹

Age ²	Years of Service ²												
	1-3	4-8	9-13	14-18	19-23	24-28	29	30	31	32	33	34	35+
49	100	40	30	30	25	40	60	60	60	65	70	140	110
50	120	45	35	35	25	40	70	70	70	75	80	150	120
51	120	45	35	35	25	40	70	80	80	85	90	160	130
52	120	45	35	35	30	50	70	80	80	85	90	160	130
53	120	45	35	35	35	55	90	90	90	95	100	200	160
54	130	50	40	40	40	70	300	300	300	300	300	600	450
55	140	55	50	50	50	80	270	270	270	270	230	500	400
56	140	55	50	50	50	80	270	270	270	270	230	500	400
57	140	55	50	50	50	80	270	270	270	270	230	500	400
58	140	60	60	60	60	90	300	300	300	300	260	500	400
59	150	150	200	230	290	360	380	380	380	380	300	640	440
60	150	150	200	230	290	330	330	330	330	330	330	580	350
61	150	150	200	230	290	330	330	330	330	330	330	580	350
62	150	150	200	230	290	330	330	330	330	330	330	580	350
63	150	150	200	230	290	330	330	330	330	330	330	580	350
64	500	500	600	600	600	600	600	600	600	600	600	700	500
65	400	400	400	400	420	420	480	480	480	480	480	600	480
66	300	300	350	350	350	350	350	350	400	400	400	600	400
67	300	300	350	350	350	350	350	350	400	400	400	600	400
68	300	300	350	350	350	350	350	350	400	400	400	600	400
69	300	300	350	350	350	350	350	350	400	400	400	600	400

Female Participants - CSC Participants in Operational Service

Age ²	Years of Service ²												
	1-3	4-8	9-13	14-18	19-23	24-28	29	30	31	32	33	34	35+
49	90	35	25	19	25	50	80	80	80	80	80	190	170
50	90	35	25	19	25	60	80	80	80	80	80	190	170
51	90	35	25	19	25	70	90	90	90	90	90	190	170
52	90	35	25	19	30	80	120	120	120	120	120	190	170
53	90	35	25	19	35	100	150	150	150	150	150	255	185
54	100	45	30	25	50	125	240	240	240	240	240	650	550
55	110	50	40	40	60	145	320	320	320	320	320	650	550
56	110	50	40	40	60	160	320	320	320	320	320	650	550
57	110	50	40	40	70	170	320	320	320	320	320	650	550
58	110	55	50	40	70	185	320	320	320	320	320	650	550
59	150	150	200	230	290	360	380	380	380	380	300	640	440
60	150	150	200	230	290	330	330	330	330	330	330	580	350
61	150	150	200	230	290	330	330	330	330	330	330	580	350
62	150	150	200	230	290	330	330	330	330	330	330	580	350
63	150	150	200	230	290	330	330	330	330	330	330	580	350
64	500	500	600	600	600	600	600	600	600	600	600	700	500
65	400	400	400	400	420	420	480	480	480	480	480	600	480
66	300	300	350	350	350	350	350	350	400	400	400	600	400
67	300	300	350	350	350	350	350	350	400	400	400	600	400
68	300	300	350	350	350	350	350	350	400	400	400	600	400
69	300	300	350	350	350	350	350	350	400	400	400	600	400

¹ Excludes Canada Post Corporation, St. Lawrence Seaway Authority, Export Development Corporation and Farm Credit Corporation.

² Expressed in completed years calculated at the beginning of the plan year.

Table 7F

**Assumed Rates of Termination with Right to a Disability Pension¹
(per 1,000 people)**

<u>Age²</u>	<u>Male</u>	<u>Female</u>
25 (and under)	0.3	0.1
26	0.3	0.2
27	0.3	0.2
28	0.3	0.4
29	0.3	0.4
30	0.3	0.5
31	0.3	0.6
32	0.4	0.6
33	0.4	0.7
34	0.5	0.8
35	0.6	1.0
36	0.8	1.2
37	1.0	1.4
38	1.2	1.6
39	1.3	1.8
40	1.4	2.0
41	1.5	2.1
42	1.7	2.3
43	1.8	2.5
44	2.0	2.8
45	2.2	3.1
46	2.3	3.4
47	2.5	3.8
48	3.0	4.3
49	3.5	4.8
50	4.0	5.3
51	4.5	5.9
52	5.0	6.5
53	5.5	7.2
54	6.0	8.0
55	6.7	8.9
56	7.5	9.9
57	8.5	10.9
58	9.5	12.0

¹ For ages 55 and over, the rates are applicable only if service is less than 30 years.

² Expressed in completed years calculated at the beginning of the plan year.

Table 7G

**Sample of Assumed Mortality Rates for 2000 Plan Year
(per 1,000 people)**

<u>Age¹</u>	<u>Non-Elective Participants and Elective Participants who Retired Normally</u>		<u>Elective Participants who retired on Disability</u>	
	<u>Male</u>	<u>Female</u>	<u>Male</u>	<u>Female</u>
20	0.4	0.2	3.1	6.6
25	0.5	0.3	6.2	7.1
30	0.7	0.4	9.3	7.7
35	0.9	0.4	12.3	8.1
40	1.2	0.6	15.0	8.6
45	1.6	1.1	17.7	9.5
50	2.3	1.7	20.1	11.0
55	3.9	2.6	22.6	13.4
60	8.2	5.0	27.5	16.5
65	15.5	8.9	37.6	21.5
70	26.1	14.7	54.1	29.4
75	43.4	24.0	71.9	42.6
80	72.2	44.0	97.2	66.8
85	112.3	79.5	137.3	114.9
90	172.0	130.2	208.3	181.1
95	254.9	194.6	315.0	283.4
100	354.7	318.3	475.1	443.9
105	500.0	500.0	500.0	500.0
114	500.0	500.0	500.0	500.0
115	1000.0	1000.0	1000.0	1000.0

¹ Expressed in completed years calculated at the beginning of the plan year.

Table 7H

Sample of Assumed Longevity Improvement Factors

<u>Age</u> ²	<u>Annual Mortality Reduction</u> ¹			
	<u>Male</u>		<u>Female</u>	
	<u>2001</u>	<u>2026+</u>	<u>2001</u>	<u>2026+</u>
20	2.50 %	0.50 %	1.50 %	0.50 %
25	1.50	0.50	1.25	0.50
30	0.50	0.50	1.00	0.50
35	0.25	0.50	1.25	0.50
40	1.00	0.50	1.25	0.50
45	2.00	0.50	1.50	0.50
50	2.50	0.50	1.25	0.50
55	2.25	0.50	1.50	0.50
60	2.25	0.50	1.00	0.50
65	2.00	0.50	1.25	0.50
70	2.00	0.50	1.50	0.50
75	1.75	0.50	1.25	0.50
80	1.25	0.50	1.25	0.50
85	1.00	0.50	1.00	0.50
90	0.75	0.50	0.75	0.50
95	0.50	0.50	0.50	0.50
100	0.25	0.50	0.25	0.50
105+	0.00	0.00	0.00	0.00

¹ Mortality improvement is based on a 25-year select period with an ultimate annual mortality improvement of 0.5% at all ages. During the select period, the annual mortality reduction is linearly interpolated between 2001 and 2026.

² Expressed in completed years calculated at the beginning of the plan year.

Table 7J

**Proportion of Non-Elective Participants
Choosing to become Elective Participants at Retirement**

<u>Age</u> ²	<u>Pensionable Retirements</u> ¹		<u>Disability Retirements</u>	
	<u>Males</u>	<u>Females</u>	<u>Males</u>	<u>Females</u>
15 - 43	0.00	0.00	1.00	1.00
44	0.53	0.61	1.00	1.00
45	0.57	0.62	1.00	1.00
46	0.61	0.64	1.00	1.00
47	0.63	0.64	1.00	1.00
48	0.66	0.65	1.00	1.00
49	0.67	0.65	1.00	1.00
50	0.69	0.64	1.00	1.00
51	0.70	0.64	1.00	1.00
52	0.71	0.63	1.00	1.00
53	0.72	0.63	1.00	1.00
54	0.73	0.63	1.00	1.00
55	0.74	0.64	1.00	1.00
56	0.76	0.66	1.00	1.00
57	0.78	0.69	1.00	1.00
58	0.81	0.73	1.00	1.00
59	0.84	0.78	1.00	1.00
60	0.87	0.83	1.00	1.00
61	0.90	0.87	1.00	1.00
62	0.92	0.91	1.00	1.00
63	0.94	0.95	1.00	1.00
65	0.96	0.99	1.00	1.00
66	0.96	1.00	1.00	1.00
67	0.96	1.00	1.00	1.00
68	0.96	1.00	1.00	1.00
69	0.96	1.00	1.00	1.00
70+	1.00	1.00	1.00	1.00

¹ A pensionable retirement is a retirement resulting in either an immediate annuity for reasons other than disability or an annual allowance.

² Expressed in completed years calculated at the beginning of the plan year.