

# Actuarial Report

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on the

## RETIREMENT COMPENSATION ARRANGEMENTS ACCOUNT

As at 31 December 1998



Office of the Superintendent  
of Financial Institutions

Office of the Chief Actuary

Bureau du surintendant  
des institutions financières

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Canada

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10 May 2001

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 the report on the actuarial review as at 31 December 1998 of the Retirement Compensation Arrangements Account established under the *Special Retirement Arrangements Act* and Retirement Compensation Arrangements Regulations.

Yours sincerely,

A handwritten signature in black ink that reads "Jean-Claude Ménard". The signature is written in a cursive style with a large initial 'J' and 'M'.

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



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## **I. Executive Summary**

### **A. Background Information on Retirement Compensation Arrangements**

The pension plans established under the *Public Service Superannuation Act*, the *Canadian Forces Superannuation Act*, and the *Royal Canadian Mounted Police Superannuation Act* are registered plans under the *Income Tax Act*. A registered plan has a tax-exempt status meaning that contributions and investment earnings are not subject to taxation until they become benefit payments. As a condition of registration, the benefits provided under these plans must not exceed certain limits as described in the *Income Tax Act*.

The *Income Tax Act* does allow for benefits in excess of the foregoing limits to be provided under retirement compensation arrangements, which differ from registered pension plans only in that contributions and investment earnings are subject to a 50% refundable tax. The refund to the plan by the Canada Customs and Revenue Agency (CCRA) occurs as a non-forfeitable tax credit equal to 50% of the benefit payments made from the RCA.

The Retirement Compensation Arrangements (RCA) Account is the funding vehicle for RCA No. 1 and RCA No. 2. Effective 15 December 1994, RCA No. 1 was established pursuant to the *Special Retirement Arrangements Act* (SRAA) to provide all pension benefits in excess of those that may, in accordance with the *Income Tax Act* restrictions on registered pension plans, be paid from the pension plans established under the *Public Service Superannuation Act*, the *Canadian Forces Superannuation Act* and the *Royal Canadian Mounted Police Superannuation Act*.

Effective 1 April 1995, RCA No. 2 was established by the RCA regulations as a program for certain Public Service employees declared surplus before 1 April 1998 as part of the Government's downsizing initiative. Participation was limited to individuals between ages 50 and 54 who met the conditions specified in the regulations. RCA No. 2 pays the difference between a pension unreduced for early retirement and the reduced pension payable from the Public Service Superannuation Account. It is funded entirely by the Government.

### **B. Purpose of this Actuarial Report**

This first actuarial report on the Retirement Compensation Arrangements Account established under the *Special Retirement Arrangements Act* and RCA Regulations was made as at 31 December 1998 pursuant to the *Public Pensions Reporting Act* (PPRA). The date of the next periodic review contemplated by the PPRA is 31 December 2001.

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

- the RCA balance sheet as at the valuation date, i.e. its assets, its liabilities, and the surplus or deficit as at that date;
- the annual amount to amortize over a period of years any surplus or deficit revealed as at the valuation date; and
- the projected costs for each of the next three calendar years following the valuation date.

This report has been prepared in accordance with the Canadian Institute of Actuaries' Standard of Practice for the Valuation of Pension Plans.

### C. Main Findings

The RCA plan shows a total deficit as at 31 December 1998 of \$586.0 million.

The deficit of \$586.0 million could be amortized in 15 equal annual instalments of \$56.0 million beginning 1 July 2001, based upon the yields shown in Appendix 2.

The government normal cost for the RCA as a percentage of pensionable payroll under the registered pension plans is as follows by calendar year:

	<u>1999</u>	<u>2000</u>	<u>2001</u>
Public Service	.80%	.76%	.69%
Canadian Forces	.66%	.64%	.62%
Royal Canadian Mounted Police	.49%	.48%	.47%



## II. Financial Position of the RCA Account

### A - Balance Sheet as at 31 December 1998

The following table presents the detailed balance sheet for the RCA plan as at 31 December 1998. Amounts are expressed in millions of dollars.

	RCA No. 1		RCMP	RCA No. 2	RCA Plan Total
	Public Service	Canadian Forces		Public Service	
<b><u>Assets</u></b>					
RCA Account	59.6	3.8	.8	700.9	765.1
Refundable Tax Credit	59.6	3.8	.7	700.9	765.0
Employer Contributions Outstanding	-	-	-	254.4	254.4
<b>Total Assets</b>	119.2	7.6	1.5	1,656.2	1,784.5
<b><u>Liabilities</u></b>					
Pensionable Excess Earnings					
• Active	220.9	49.8	16.1	-	286.8
• Pensioners	6.4	1.2	.1	-	7.7
Survivor Allowance					
• Active	261.0	32.0	2.7	-	295.7
• Pensioners	85.2	12.0	.7	-	97.9
Waiver of Pension Reduction	3.4	-	-	-	3.4
Former Deputy Heads	12.0	-	-	-	12.0
Early Retirement Incentive	-	-	-	1,667.0	1,667.0
<b>Total Liabilities</b>	588.9	95.0	19.6	1,667.0	2,370.5
<b>Surplus/(Deficit)</b>	(469.7)	(87.4)	(18.1)	(10.8)	(586.0)
<b>Annual amount to amortize deficit over 15 years</b>	44.9	8.4	1.7	1.0	56.0

Note: RCMP denotes the Royal Canadian Mounted Police.  
RCA denotes Retirement Compensation Arrangements.

## B - Cost Certificate

The normal costs under RCA No. 1 are shown below separately for calendar years 1999, 2000, and 2001. Amounts are expressed in millions of dollars unless noted otherwise.

	<b>Public Service</b>			<b>Canadian Forces</b>			<b>RCMP</b>		
	<u>1999</u>	<u>2000</u>	<u>2001</u>	<u>1999</u>	<u>2000</u>	<u>2001</u>	<u>1999</u>	<u>2000</u>	<u>2001</u>
<b>Normal Cost</b>									
Pensionable Excess Earnings	55.4	52.2	42.6	14.0	14.6	15.0	4.4	4.5	4.6
Survivor Allowance	43.0	40.9	32.2	4.8	4.6	4.4	.4	.4	.4
Deputy Heads	<u>1.2</u>	<u>1.0</u>	<u>.8</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>
<b>Total Normal Cost</b>	99.6	94.1	75.6	18.8	19.2	19.4	4.8	4.9	5.0
<b><u>Allocation of Normal Cost</u></b>									
<b>1. Member Contributions</b>									
Pension Earnings	3.8	4.0	2.6	.3	.8	1.0	.1	.1	.1
Deputy Heads	<u>.4</u>	<u>.3</u>	<u>.3</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>
<b>Total Member Contributions</b>	4.2	4.3	2.9	.3	.8	1.0	.1	.1	.1
<b>2. Government Cost</b>									
	95.4	89.8	72.7	18.5	18.4	18.4	4.7	4.8	4.9
As % total pensionable payroll of registered plan	.80%	.76%	.69%	.66%	.64%	.62%	.49%	.48%	.47%

The normal cost of the Public Service RCA decreases sharply from 1999 to 2001 because of the departure of the Canada Post Corporation on 1 October 2000. Having removed the members of Canada Post Corporation at the valuation date of the report that is 31 December 1998, the total normal cost for Public Service in 1999 would have been lower at \$75.0 million.

## C- Sensitivity to Variations in Assumptions

### Variations in salary increases

There is a potential for large differences between the projected and actual amounts of RCA pension arising from excess pensionable earnings. These differences would be due to either of two factors, as follows:

- The actual number of members who qualify for this benefit could differ materially from the expected number. This benefit applies only to members with average earnings at termination in excess of the maximum pensionable earnings (MPE) limit. The current salaries of many younger members of the registered plans are far less than the current MPE limit. Nevertheless, some proportion of them will eventually retire with an average salary in excess of the MPE limit at that time. The proportion is difficult to estimate because it depends on many factors acting over long periods of time.
- The actual average salary at termination could differ materially from the projected salary for members who qualify for this benefit. Recent salary increases for executive positions have reflected adjustments in salaries to be more competitive with the private sector, including performance pay incentives.

For example, suppose a member retires with 25 years of service at age 60. The following chart shows that a 10% error in projecting the salary results in a 110% error in the RCA pension.

	<u>Actual</u>	<u>Projected</u>	<u>Variance</u>
Average salary at retirement	\$132,000	\$120,000	10%
MPE limit at retirement	110,000	110,000	-
Amount of pension:			
- Registered	55,000	55,000	-
- RCA	<u>11,000</u>	<u>5,000</u>	<u>110%</u>
Total	\$66,000	\$60,000	10%

The following two measures were incorporated into the valuation:

- Introduced a valuation methodology (see Appendix 3.G) to recognize that the majority of members whose earnings will exceed the MPE limit will have much greater promotional salary increases than the promotional salary increase assumptions used in the registered plan's actuarial valuation. The latter is based on the average of the population. For the pension plan of the Public Service, there is

a large percentage of members whose earnings will exceed the MPE limit who will be hired from outside the Public Service and not be promoted from within or are in a professional category of employment such as doctors. These members were not separated out as was done for the two other plans. Therefore the RCA valuation for the members of the Public Service contains an implicit provision for adverse deviation.

- Provided an explicit provision for adverse deviation by increasing the general economic salary increase assumption by 0.5% per annum for the executive members of the Canadian Forces and the Royal Canadian Mounted Police.

The following table illustrates the effect of these measures on the liabilities for the pensionable earnings benefit of active members:

	<u>Public Service</u>		<u>Canadian Forces</u>		<u>RCMP</u>	
	<u>Liabilities</u> <u>(\$ M)</u>	<u>As %</u> <u>Total</u>	<u>Liabilities</u> <u>(\$ M)</u>	<u>As %</u> <u>Total</u>	<u>Liabilities</u> <u>(\$ M)</u>	<u>As %</u> <u>Total</u>
As shown in the balance sheet	220.9	100.0%	49.8	100.0%	16.1	100.0%
less effect of the valuation methodology	(91.3)	(41.3%)	+5.9	+11.8%	(6.4)	(39.8%)
less effect of explicit provision for adverse deviation	-	-	(12.5)	(25.1%)	(6.4)	(39.8%)
equal liabilities without above items	129.6	58.7%	43.2	86.7	3.3	20.4%

Note that service for RCA pensionable earnings dates from 15 December 1994 for Public Service members, from 1 May 1995 for Canadian Forces members and from 23 February 1995 for Royal Canadian Mounted Police members. Therefore the liabilities for this benefit under the RCA will grow as the service period increases. The percentage changes in normal cost are close to the percentage changes in liabilities.

#### Variations in level of inflation

The sensitivity to variations in level of inflation will be examined separately for the following benefits:

- pensionable excess earnings
- survivor allowance
- early retirement incentive

If the pension indexing assumptions were reduced by one percentage point from plan year 2002 (e.g. from 3% to 2% ultimately), but the other economic assumptions remain unchanged, then the liabilities would decrease by the following percentages:

	<b><u>Public Service</u></b>	<b><u>RCA No. 1 Canadian Forces</u></b>	<b><u>Royal Canadian Mounted Police</u></b>	<b><u>RCA No. 2 Public Service</u></b>
Pensionable Excess Earnings	15.6%	15.0%	14.1%	-
Survivor Allowance	26.3%	32.0%	28.8%	-
Early Retirement Incentive	-	-	-	12.5%

If the pension indexing, YMPE and pensionable earnings assumptions (but not the investment yield), were reduced by one percentage point from plan year 2002, then the liabilities would decrease by the following percentages:

	<b><u>Public Service</u></b>	<b><u>RCA No. 1 Canadian Forces</u></b>	<b><u>Royal Canadian Mounted Police</u></b>	<b><u>RCA No. 2 Public Service</u></b>
Pensionable Excess Earnings	21.3%	26.4%	21.5%	-
Survivor Allowance	28.7%	33.2%	31.4%	-
Early Retirement Incentive	-	-	-	12.5%

The percentage changes in normal cost are close to the percentage changes in liabilities with the exception of the early retirement incentive program, which is closed and therefore has no further normal cost.

### III. Actuarial Opinion And Peer Review

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

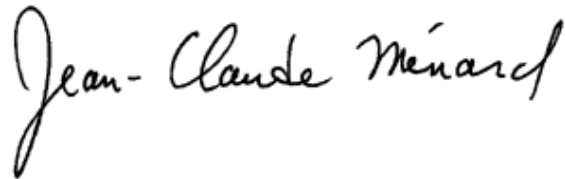
- the valuation input data on which it is based are sufficient and reliable;
- the assumptions that have been used are, in aggregate, appropriate; and
- the methodology employed is appropriate.

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.



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Elliot Trotter  
Principal Actuary  
Public Sector Insurance and Pension Programs  
Fellow of the Canadian Institute of Actuaries  
Fellow of the Society of Actuaries



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

#### Peer Review

I have reviewed this report, and believe that the actuarial assumptions are appropriate for the purposes of the valuation and the methods used are appropriate for the purposes of the valuation. In my opinion, the report has been prepared, and the actuaries' opinions given, in accordance with accepted actuarial practice.



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Michel Rapin  
Principal Actuary  
Public Sector Insurance and Pension Programs  
Fellow of the Canadian Institute of Actuaries  
Fellow of the Society of Actuaries

Ottawa, Canada  
10 May 2001

## Appendix 1 – Benefit Provisions under Retirement Compensation Arrangement No. 1

The following table and the ensuing subsections describe the six categories of RCA No. 1 benefit provisions, the registered pension plans to which these RCA provisions correspond, and those members and their applicable prescribed service affected:

RCA Benefit	Registered Plan	Benefits Affected for terminations from	Benefits earned for prescribed service from
Waiver of pension reduction	PSSA	20 November 1997	all service
	RCMPSA (civilians)	1 April 2001 (assumed)	all service
Survivor allowance	PSSA	20 November 1997	1 January 1992
	CFSA	1 April 2001 (assumed)	1 January 1992
	RCMPSA	1 April 2001 (assumed)	1 January 1992
Minimum death benefit	PSSA	20 November 1997	all service
Former deputy heads	PSSA	15 December 1994	15 December 1994
Elective service	PSSA	20 November 1997	pre 1990 service
Pensionable excess earnings	PSSA	15 December 1994	15 December 1994
	CFSA	01 May 1995	01 May 1995
	RCMPSA	23 February 1995	23 February 1995

PSSA: *Public Service Superannuation Act*  
RCMPSA: *Royal Canadian Mounted Police Superannuation Act*  
CFSA: *Canadian Forces Superannuation Act*

### A. Waiver of Pension Reduction on Involuntary Early Retirement

Under both the PSSA and RCMPSA plans, the Treasury Board may waive all or part of the annual allowance reduction for members who are involuntarily retired at ages 55 and over with at least 10 years of service (on a full-time basis in the Public Service or as a civilian member of the RCMP). These members would have otherwise been subject to a reduction of 5% times the lesser of:

- 60 minus the age when the allowance becomes payable, and

- 30 minus the number of years of pensionable service, if the member at date of termination of employment is at least 50 years old and has at least 25 years of pensionable service.

To be in conformance with the Income Tax Regulations (ITR), the reduction under the registered plan must be at least equal to 3% times the lesser of:

- 60 minus the age when the allowance becomes payable,
- 30 minus the number of years of pensionable service, and
- 80 minus the total of the member's age and years of pensionable service, all divided by 2.

If the pension payable after the full or partial waiver is granted exceeds the ITR maximum described above, then the excess is payable from the RCA.

## **B. Annual Allowance for Eligible Survivors**

Annual allowance means, for the eligible surviving spouse and children of a contributor or pensioner, an annuity that becomes payable immediately upon the death of that individual. The amount of the allowance is determined with reference to a *basic allowance* equal to 1% of the highest average of annual pensionable earnings of the contributor over six<sup>1</sup> consecutive years, multiplied by the number of years of pensionable service not exceeding 35.

The annual allowance for a spouse is equal to the basic allowance unless the spouse became eligible as a result of an optional survivor benefit election, in which case it is equal to the percentage of the basic allowance specified by the pensioner making the election.

The annual allowance for an eligible surviving child is equal to 20% of the basic allowance, subject to a reduction if there are more than four eligible surviving children in the same family. The annuity otherwise payable to an eligible surviving child is doubled if the child is an orphan.

If the annual allowance described above exceeds the tax-related limits described hereafter for registered plans, then the excess is payable from the RCA.

### **1. Tax-related limits on preretirement survivor benefits**

There are two conditions that limit the amount of annual allowance for eligible survivors of preretirement deaths under the registered plans, as follows:

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<sup>1</sup> If the number of years of pensionable service is less than six, then the averaging is over the entire period of pensionable service. Note that for members terminating employment after 16 June 1999 the six years become five.



- The amount of spouse's allowance is limited to a maximum of  $2/3 \times$  greater of (a, b), and
- The total amount of dependants' allowance provided under the registered plans is limited to a maximum of the greater of (a, b);

where

a = actual years of service  $\times$  [  $\{.02 \times$  average salary  $\} - \{.007 \times$  average YMPE  $\}$  ]

b = hypothetical service based on employment to age 65  $\times$   $\{.02 \times$  lesser of  $(1.5 \times$  average YMPE, average salary  $\}) - \{.007 \times$  average YMPE  $\}$

Note that service denotes pensionable service only from 1 January 1992 and YMPE denotes the Year's Maximum Pensionable Earnings under the Canada/Quebec Pension Plans.

## 2. Tax-related limits on postretirement survivor benefits

The amount of spouse's allowance provided under the registered plans is limited in any year to a maximum of two-thirds the retirement benefit that would have been payable to the member in that year.

Note that regulations limiting the benefits under the *Canadian Forces Superannuation Act* and the *Royal Canadian Mounted Police Superannuation Act* have not yet been made but are expected by 1 April 2001.

## C. Minimum Death Benefit

If a contributor or a pensioner dies leaving no eligible survivor, the lump sum normally paid is equal to five times the annual amount of the immediate annuity to which the contributor would have been entitled, or the pensioner was entitled (ignoring any offsets that might be in effect), at the time of death, less all amounts already paid to the pensioner. Indexation adjustments are excluded from these calculations.

The same formula is used to determine the lump sum payable upon the death of all eligible survivors, except that all amounts (excluding indexation adjustments) already paid to the survivors are also subtracted.

If the lump sum described above exceeds the tax-related limits described hereafter for registered plans, then the excess is payable from the RCA.

### 1. Tax-related limits on preretirement minimum death benefits

The amount of preretirement death benefit provided under the registered plans is limited to the greater of the member's contributions with interest and the present value of the member's accrued benefits on the day prior to death.

## **2. Tax-related limits on postretirement minimum death benefits**

If the member has eligible dependants at retirement, then the minimum death benefit is limited to the member's contributions with interest.

Note that regulations limiting the *Canadian Forces Superannuation Act* and *Royal Canadian Mounted Police Superannuation Act* benefits have not yet been made but are expected to be in the future.

### **D. Continued Benefit Accrual for Former Deputy Heads**

The PSSA provision that allowed deputy heads ceasing employment under age 60 to elect, for PSSA only purposes, to be deemed full-time employees absent from the Public Service on leave without pay up to age 60 was transferred to the RCA because it was not in conformance with the Income Tax Regulations.

### **E. Elective Service**

Where the obligation to credit pre-1990 elective service was entered into after 7 June 1990, the amount of lifetime retirement benefits that can be provided under a registered pension plan for each such year is limited to two-thirds of the defined benefit limit (see section on Pensionable Earnings) for the year in which the lifetime retirement benefits commence to be paid.

For years subsequent to the commencement year of lifetime retirement benefits, this amount can be adjusted to reflect increases in the Consumer Price Index.

This benefit limit does not apply if the member was restricted to the lower Registered Retirement Savings Plan contribution deduction limit in the year being credited as a result of membership in a registered pension plan or deferred profit sharing plan. It also does not apply if the pre-1990 year was previously credited as past service in any registered pension plan, as long as that crediting occurred before 8 June 1990.

Note that regulations limiting the *Canadian Forces Superannuation Act* and the *Royal Canadian Mounted Police Superannuation Act* benefits have not yet been made but are expected to be in the future.

### **F. Pensionable Excess Earnings**

A member's immediate annuity or an eligible surviving dependant's annual allowance is determined by the eligible service and the highest average of pensionable earnings of the member. The average is determined over a period of six consecutive years (for members terminating after 16 June 1999, the six years becomes five).

To be in conformance with the Income Tax Regulations, the highest average of pensionable earnings in the registered plans is limited to the following prescribed yearly maximum:

$$[\{A - (.013 \times B)\} \div .02] + B; \text{ rounded to next highest } \$100$$

where A is the defined benefit maximum as per the *Income Tax Act* (currently fixed at \$1,722.22 until 2005, and then increasing in line with the Industrial Aggregate), and

B is the Year's Maximum Pensionable Earnings for the Canada/Quebec Pension Plans.

For calendar year 2000, the prescribed yearly maximum pensionable earnings was \$99,300, which was obtained as  $[\{\$1,722.22 - (.013 \times \$37,600)\} \div .02] + \$37,600$ .

A member's average earnings at retirement in excess of the foregoing prescribed yearly maximum are pensionable under the RCA.

From 2005, the prescribed yearly maximum will increase by the same percentage as the Year's Maximum Pensionable Earnings for the Canada/Quebec Pension Plans.

## Appendix 2 – Asset Valuation Methodology and Economic Assumptions

The assets are composed of the recorded balance in the Retirement Compensation Arrangements Account, which forms part of the Public Accounts of Canada, and a refundable tax. Each calendar year, a cash transfer is made to the Canada Customs and Revenue Agency (CCRA) such that in total half of the RCA assets are held by the CCRA as a refundable tax (see Section I.A).

The RCA Account is not invested in marketable securities. Instead, the Government borrows the plan assets. Investment earnings are credited every three months to the Account 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.

The actuarial value used for these assets are their book values. The interest discount rate used to determine the present value of liabilities is one-half of the yield projected on the combined Superannuation Accounts except for Canada Post liabilities, which are based on one-half of the transfer interest rate.

The table below is a summary of the economic assumptions used except for Canada Post, which is based on the economic assumptions used for the transfer.

<u>Plan Year</u> <sup>2</sup>	<u>Pension Indexing</u> <sup>3</sup> %	<u>YMPE</u> <sup>3</sup> %	<u>Pensionable Earnings</u> <sup>1</sup>				<u>Projected Yield on Accounts</u> %
			<u>Public Service</u> %	<u>Canadian Forces</u>		<u>RCMP</u> %	
				<u>Officers</u> %	<u>Other Ranks</u> %		
1999	n/a	n/a	2.0	n/a <sup>4</sup>	n/a <sup>4</sup>	4.4 <sup>5</sup>	9.64 <sup>5</sup>
2000	1.5 <sup>5</sup>	0.5 <sup>5</sup>	2.0	11.7 <sup>6</sup>	6.9 <sup>5</sup>	3.8 <sup>5</sup>	9.28 <sup>5</sup>
2001	2.5 <sup>5</sup>	1.9 <sup>5</sup>	2.4	3.4 <sup>7</sup>	3.3 <sup>5</sup>	5.8 <sup>5</sup>	8.99
2002	2.0	2.1	2.6	3.0	3.0	4.8	8.69
2003	2.0	2.2	2.6	2.6	2.6	3.8	8.37
2004	2.0	2.3	2.7	2.7	2.6	2.7	8.15
2005	2.0	2.4	2.7	2.8	2.7	2.8	7.89
2006	2.0	2.5	2.8	2.9	2.8	2.9	7.63
2007	2.1	2.7	2.9	3.0	2.9	3.0	7.42
2008	2.2	2.9	3.1	3.2	3.0	3.2	7.24
2009	2.3	3.1	3.2	3.3	3.2	3.3	7.04
2010	2.4	3.3	3.3	3.4	3.3	3.4	6.85
2011	2.5	3.5	3.5	3.5	3.5	3.5	6.67
2012	2.6	3.6	3.6	3.6	3.6	3.6	6.33
2013	2.7	3.7	3.7	3.7	3.7	3.7	6.18
2014	2.8	3.8	3.8	3.8	3.8	3.8	6.06
2015	2.9	3.9	3.9	3.9	3.9	3.9	5.95
2016	3.0	4.0	4.0	4.0	4.0	4.0	5.82
2035	3.0	4.0	4.0	4.0	4.0	4.0	6.00

<sup>1</sup> Exclusive of seniority and promotional increases and with respect to Canadian Forces and RCMP assumed effective as at 1 April and 1 January respectively.

<sup>2</sup> Plan year means the 12-month period ending 31 March of the given year.

<sup>3</sup> Assumed to be effective as at 1 January.

<sup>4</sup> Data gathered as at 1 April 1999.

<sup>5</sup> These figures reflect actual experience.

<sup>6</sup> Officers, captains and above received an increase of 11.35%.

<sup>7</sup> Senior officers received an increase of 6.4% and doctors, dentists, and pilots an increase of 13.7%.

## Appendix 3 – Liability Valuation Methodology and Demographic Assumptions

Described in this appendix are the liability valuation methodologies used and any differences in demographic assumptions from those used in the following actuarial reports:

- Pension plan for the Public Service of Canada as at 31 March 1999,
- Pension plan for the Canadian Forces as at 31 March 1997, and
- Pension plan for the Royal Canadian Mounted Police as at 31 March 1999.

### A. Early Retirement Incentive (ERI) Program

The ERI program is now closed and so the normal cost is zero. The liability in respect of the RCA benefits accrued in connection with ERI is included in the valuation.

### B. Waiver of Pension Reduction on Compulsory Early Retirement

This RCA benefit is being terminally funded (i.e. not prefunded but on an occurrence basis).

### C. Annual Allowance for Eligible Survivors

#### 1. RCA preretirement survivor benefits

This benefit is being terminally funded (i.e. not prefunded but on an occurrence basis) since it is uncommon. There are two reasons for this, as follows:

- An RCA spouse's allowance becomes payable only when the average salary is less than 1.4 times the Year's Maximum Pensionable Earnings and the member was close to attaining either age 65 or 35 years of service, and
- The total limit with respect to all eligible survivors of 166.7% of the individual limit is never expected to be reached (after first limiting the spouse's allowance). This is because children receive 20% of the spouse's pension and the assumption for the number of children is less than two.

#### 2. RCA postretirement survivor benefits

The limit on the amount of spouse's annual allowance that can be provided under the registered plans decreases at the same time as the member's pension would have reduced due to the Canada/Quebec Pension Plan (C/QPP) offset, usually at the age that the member would have turned 65.

This benefit was valued conservatively by assuming the registered plans' limit is always reduced by the C/QPP offset. The liability overstatement is minor because the probability of the former contributor dying prior to age 65 is small. (This overstatement tends to be offset by the understatement of accrued liability caused

by terminally funding the preretirement survivor's benefit). The projected accrued benefit cost method was used to estimate the liabilities and normal costs for this RCA benefit.

**D. Minimum Death Benefit**

**1. RCA preretirement minimum death benefits**

This benefit is being terminally funded (i.e. not prefunded but on an occurrence basis) since it is of little financial significance. This benefit is expected to occur only with respect to deaths at younger ages (at most age 35 for male and 30 for female) where both the probability of death and the RCA benefit are small.

**2. RCA postretirement minimum death benefits**

This benefit is being terminally funded (i.e. not prefunded but on an occurrence basis).

**E. Continued Benefit Accrual for Former Deputy Heads**

All former deputy heads accruing benefits (or who accrued benefits under this provision) are included. In the case of former deputy heads accruing benefits, it was assumed that they would cease to accrue benefits when they are first eligible for an immediate annuity.

**F. Elective Service**

The RCA benefit is being terminally funded (i.e. not prefunded but on an occurrence basis).

**G. Pensionable Excess Earnings**

The populations of the registered plans were subdivided and either Valuation Method 1 or 2 applied, as follows:

Registered Plan	Population Subgroup	Valuation Method
Public Service	Canada Post	Method 2
	Others	Method 2
Canadian Forces	Officers, professionals such as doctors, dentists	Method 1
	Officers, others	Method 2
Royal Canadian Mounted Police	Civilian Members	Method 1
	Regular Members	Method 2

Valuation Methods 1 and 2 both use the projected accrued benefit cost method to estimate plan liabilities and normal costs for this RCA benefit. Valuation Method 2 differs from Valuation Method 1 in two ways, as follows:

1. Instead of using a merit or promotional salary increase scale, the expected salary of a member at termination of employment, expressed in current dollars, is based on the assumed rank that the member has attained by that time. For members currently in a certain age/service/rank cell (where rank is defined by salary range for PSSA members) a probability distribution is developed for the rank at termination of employment. Members in the cell are arbitrarily assigned a rank at termination such that the probability of terminating at a certain rank is approximately equal to the number of members assigned that rank divided by the total number of members in the cell.
2. The rates of termination for reasons other than death or disability have been modified. For members who are assumed to have a higher rank at termination, we assume that the member will not terminate for a fixed number of years. Rates are increased after this fixed period so that the expected number of terminations for a cell remains approximately the same as prior to the termination rate modification.

Termination rates are modified as follows:

Projected salary level increases to termination	Modification in termination rates <sup>1</sup> for years following valuation				
	1-2	3-6	7-10	11-14	15+
None	150%	113%	104%	101%	100%
One	0%	113%	104%	101%	100%
Two	0%	0%	104%	101%	100%
Three	0%	0%	0%	101%	100%
Four or more	0%	0%	0%	0%	100%

A provision for adverse deviation was provided by increasing the general economic salary increase assumption by 0.5% per annum for executives of the Canadian Forces and the Royal Canadian Mounted Police only.

## H. Administrative Expenses

To compute the liabilities and normal costs, no provision was made regarding the expenses incurred for the administration of the RCA.

<sup>1</sup> RCA valuation rate equals registered plan valuation rate times the percentage shown.

**I. Crown Corporations Leaving the Pension Plan of the Public Service**

For St. Lawrence Seaway, Export Development Corporation, and Farm Credit Corporation we used the same demographic assumptions as for the main population of the Public Service.

For Canada Post Corporation, we used the same economic and demographic assumptions as the transfer basis.



#### **Appendix 4 – Membership Data**

All the data required to value the RCA benefits (with one exception) were derived from the data provided for actuarial reports for the three registered pension plans. These reports were (or are being) prepared and data collected at the following dates:

<b>Registered Plan</b>	<b>Valuation Date</b>	<b>Data Collected</b>
Public Service	31 March 1999	31 March 1998
Canadian Forces	31 March 2000 (being prepared)	31 March 1999
Royal Canadian Mounted Police	31 March 1999	31 March 1998

The data to value the continued benefit accrual for former deputy heads was provided as at 31 December 1998 by the Superannuation Directorate of the Department of Public Works and Government Services Canada.

**Table 4A**

**Royal Canadian Mounted Police Membership at 31 March 1998 by Current and Projected Rank**

Current Rank	Earnings Range	Projected Rank	Years of Service								
			0 - 3	4 - 8	9 - 12	13 - 17	18 - 21	22 - 26	27 - 30	31+	
Constable	\$40K-\$50K	D. Commissioner	1	1							
		A. Commissioner	2	4	4						
		Superintendent	13	23	23	16					
		Inspector	27	49	49	35	25				
		Staff/Sergeant	57	102	102	74	52	44			
		Sergeant	133	238	238	171	120	102	13		
		Corporal	231	412	413	297	208	177	23	4	
		Constable	<u>767</u>	<u>1,367</u>	<u>1,370</u>	<u>987</u>	<u>687</u>	<u>588</u>	<u>78</u>	<u>17</u>	
		Total	1,231	2,196	2,199	1,580	1,092	911	114	21	
		Corporal	\$54K-\$59K	A. Commissioner			1	3			
Superintendent					5	14	17				
Inspector					10	31	36	68			
Staff/Sergeant	1			1	22	65	75	143	43		
Sergeant	2			2	51	150	175	332	99	23	
Corporal	<u>4</u>			<u>3</u>	<u>89</u>	<u>260</u>	<u>304</u>	<u>577</u>	<u>172</u>	<u>41</u>	
Total	7			6	178	523	607	1,120	314	64	
Sergeant	\$59K-\$62K			A. Commissioner				1	2		
		Superintendent				4	10	38			
		Inspector			1	9	22	81	59		
		Staff/Sergeant			2	18	46	170	123	54	
		Sergeant	<u>1</u>		<u>5</u>	<u>43</u>	<u>106</u>	<u>395</u>	<u>285</u>	<u>145</u>	
		Total	1		8	75	186	684	467	199	
Staff/Sergeant	\$62K-\$68K	A. Commissioner					1	4			
		Superintendent				1	5	25	33		
		Inspector				2	10	53	71	58	
		Staff/Sergeant	<u>1</u>		<u>1</u>	<u>3</u>	<u>22</u>	<u>110</u>	<u>149</u>	<u>155</u>	
		Total	1		1	6	38	192	253	213	
Inspector	\$68K-\$80K	D. Commissioner						2			
		A. Commissioner				1	1	8	5		
		Superintendent				3	8	45	27	14	
		Inspector				<u>6</u>	<u>19</u>	<u>98</u>	<u>59</u>	<u>37</u>	
		Total				10	28	153	91	51	
Superintendent	\$80K-\$94K	D. Commissioner						1	2		
		A. Commissioner						3	7	11	
		Superintendent					<u>3</u>	<u>16</u>	<u>37</u>	<u>75</u>	
		Total					3	20	46	86	
A. Commissioner	\$94K-\$116K	D. Commissioner						1	1	3	
		A. Commissioner						<u>2</u>	<u>2</u>	<u>18</u>	
		Total						3	3	21	
D. Commissioner	\$116K-\$130K	D. Commissioner							1	7	
Commissioner	\$130K+	Commissioner								1	

**Table 4B**

**Canada Post Membership at 31 March 1998 by Current and Projected Salary**

Current Level	Earnings Range	Projected Level	Years of Service										
			0-3	4-7	8-11	12-15	16-19	20-22	23-25	26+			
1	\$50K - \$60K	7	1	2									
		6	2	3	10	6							
		5	5	5	20	11	13						
		4	7	8	31	17	21	18					
		3	15	17	65	36	43	37	43				
		2	16	18	68	38	46	39	45	25			
		1	<u>71</u>	<u>83</u>	<u>306</u>	<u>168</u>	<u>204</u>	<u>172</u>	<u>201</u>	<u>318</u>			
	Total		117	136	500	276	327	266	289	343			
2	\$60K - \$70K	7	1	1	4								
		6	2	1	7	4	4						
		5	4	3	13	7	7	6					
		4	6	4	21	11	11	10	11				
		3	12	9	44	23	23	20	22	15			
		2	<u>12</u>	<u>10</u>	<u>47</u>	<u>24</u>	<u>25</u>	<u>21</u>	<u>23</u>	<u>39</u>			
		Total			37	28	136	69	70	57	56	54	
3	\$70K - \$80K	7	1	1	5	4							
		6	1	1	9	7	5	5					
		5	2	2	17	13	9	10	10				
		4	3	3	27	20	14	16	16	10			
		3	<u>7</u>	<u>7</u>	<u>56</u>	<u>42</u>	<u>29</u>	<u>34</u>	<u>34</u>	<u>58</u>			
		Total			14	14	114	86	57	65	60	68	
		4	\$80K - \$100K	7		1	4	5	2				
6	1			1	7	9	3	4	5				
5	1			2	13	18	6	7	10	9			
4	<u>2</u>			<u>3</u>	<u>20</u>	<u>28</u>	<u>9</u>	<u>11</u>	<u>16</u>	<u>34</u>			
Total					4	7	44	60	20	22	31	43	
5	\$100K - \$120K			7	2	1	3	6	3	1			
				6	3	3	5	11	6	2	6	4	
		5	<u>7</u>	<u>5</u>	<u>10</u>	<u>22</u>	<u>11</u>	<u>4</u>	<u>13</u>	<u>17</u>			
		Total			12	9	18	39	20	7	19	21	
		6	\$120K - \$170K	7		2	4	6	3	2	2	2	
				6	<u>1</u>	<u>5</u>	<u>7</u>	<u>11</u>	<u>6</u>	<u>5</u>	<u>3</u>	<u>16</u>	
				Total			1	7	11	17	9	7	5
7	\$170K +			7	5	8	3	7	3		5	9	

**Table 4C**

**Public Service Membership (w/o Canada Post) at 31 March 1998 by Current and Projected Salary**

Current Level	Earnings Range	Projected Level	Years of Service								
			0-3	4-7	8-11	12-15	16-19	20-22	23-25	26+	
1	\$40K - \$50K	6 - 9	206	242	182	87					
		5	209	270	264	219	246				
		4	481	620	606	503	565	390			
		3	1042	1343	1314	1090	1223	846	894		
		2	1734	2234	2185	1812	2035	1407	1487	838	
		1	<u>3816</u>	<u>4917</u>	<u>4809</u>	<u>3988</u>	<u>4478</u>	<u>3097</u>	<u>3273</u>	<u>3889</u>	
		Total	7488	9626	9360	7699	8547	5740	5654	4727	
2	\$50K - \$60K	7 - 10	61	129	122	70					
		6	41	88	97	96	93				
		5	103	221	244	241	233	169			
		4	237	507	560	553	535	389	438		
		3	514	1098	1214	1198	1158	842	948	588	
		2	<u>855</u>	<u>1827</u>	<u>2019</u>	<u>1991</u>	<u>1926</u>	<u>1402</u>	<u>1578</u>	<u>2354</u>	
		Total	1811	3870	4256	4149	3945	2802	2964	2942	
3	\$60K - \$70K	7 - 10	43	103	131	144	85				
		6	28	66	89	115	116	92			
		5	70	167	224	288	292	231	288		
		4	161	383	514	663	670	530	661	408	
		3	<u>348</u>	<u>828</u>	<u>1112</u>	<u>1436</u>	<u>1452</u>	<u>1146</u>	<u>1433</u>	<u>1759</u>	
		Total	650	1547	2070	2646	2615	1999	2382	2167	
4	\$70K - \$80K	7 - 10	27	71	101	154	154	78			
		6	18	45	65	105	122	106	139		
		5	46	114	164	264	307	268	350	224	
		4	<u>105</u>	<u>262</u>	<u>378</u>	<u>606</u>	<u>706</u>	<u>615</u>	<u>803</u>	<u>1023</u>	
		Total	196	492	708	1129	1289	1067	1292	1247	
5	\$80K - \$90K	9 - 10	11	10	14	21	18				
		8	19	17	23	37	44	49			
		7	26	24	33	52	62	69	108		
		6	36	33	45	71	85	94	147	118	
		5	<u>90</u>	<u>81</u>	<u>112</u>	<u>180</u>	<u>213</u>	<u>235</u>	<u>368</u>	<u>685</u>	
		Total	182	165	227	361	422	447	623	803	
6	\$90K - \$100K	9 - 10	10	8	11	17	21	14			
		8	17	14	20	30	36	35	54		
		7	24	20	28	42	51	49	75	68	
		6	<u>31</u>	<u>28</u>	<u>39</u>	<u>56</u>	<u>68</u>	<u>67</u>	<u>102</u>	<u>250</u>	
		Total	82	70	98	145	176	165	231	318	
7	\$100K - \$110K	10	3	3	3	4	6	6			
		9	8	8	7	12	16	17	26		
		8	19	19	18	28	39	41	64	54	
		7	<u>26</u>	<u>25</u>	<u>25</u>	<u>40</u>	<u>55</u>	<u>58</u>	<u>91</u>	<u>221</u>	
		Total	56	55	53	84	116	122	181	275	
8	\$110K - \$130K	10	4	3	3	4	7	7	14		
		9	11	8	9	11	17	19	36	35	
		8	<u>28</u>	<u>18</u>	<u>21</u>	<u>26</u>	<u>43</u>	<u>48</u>	<u>88</u>	<u>213</u>	
		Total	43	29	33	41	67	74	138	248	
9	\$130K - \$150K	10	10	4	4	5	6	6	13	12	
		9	<u>25</u>	<u>11</u>	<u>10</u>	<u>12</u>	<u>17</u>	<u>16</u>	<u>34</u>	<u>90</u>	
		Total	35	15	14	17	23	22	47	102	
10	\$150K +	10	15	10	4	5	8	14	21	11	

**Table 4D**

**Canadian Forces Membership at 31 March 1999 by Current and Projected Rank**

Current Rank	Earnings Range	Projected Rank	Years of Service								
			0 - 3	4 - 8	9 - 12	13 - 17	18 - 21	22 - 26	27 - 30	31+	
Captain	\$45K-\$63K	Lt-Gen & Gen		1	2						
		Major-General		2	3	3					
		Brigadier-Gen	1	3	8	7	3				
		Colonel	4	21	49	43	17	10			
		Lt-Col	12	72	166	146	57	34	10		
		Major	41	239	553	485	187	113	35	29	
		Captain	<u>86</u>	<u>504</u>	<u>1,166</u>	<u>1,023</u>	<u>398</u>	<u>238</u>	<u>74</u>	<u>70</u>	
			144	842	1,947	1,707	662	395	119	99	
Major	\$59K-\$76K	Lt-Gen & Gen				2					
		Major-General				3	3				
		Brigadier-Gen			1	7	8	7			
		Colonel		1	7	48	50	42	18		
		Lt-Col		3	23	161	168	143	59	37	
		Major	<u>1</u>	<u>8</u>	<u>77</u>	<u>538</u>	<u>561</u>	<u>475</u>	<u>196</u>	<u>155</u>	
	1	12	108	759	790	667	273	192			
Lt-Col	\$73K-\$80K	Lt-Gen & Gen					1				
		Major-General				1	2	5			
		Brigadier-Gen				1	4	10	7		
		Colonel				8	29	67	46	30	
		Lt-Col		<u>2</u>	<u>2</u>	<u>25</u>	<u>96</u>	<u>226</u>	<u>153</u>	<u>126</u>	
		2	2	35	132	308	206	156			
Colonel	\$80K-\$88K	Lt-Gen & Gen						2			
		Major-General					1	4	5		
		Brigadier-Gen					1	8	11	9	
		Colonel				<u>2</u>	<u>8</u>	<u>52</u>	<u>72</u>	<u>75</u>	
					2	10	66	88	84		
Brigadier-Gen	\$84K-\$99K	Lt-Gen & Gen						1	2		
		Major-General						2	3	5	
		Brigadier-Gen						<u>6</u>	<u>6</u>	<u>14</u>	
							9	11	19		
Major-General	\$94K-\$118K	Lt-Gen & Gen							1	4	
		Major-General							<u>3</u>	<u>9</u>	
								4	13		
Lt-Gen & Gen	\$111K-\$133K	Lt-Gen & Gen							<u>2</u>	<u>7</u>	
									2	7	
Professionals	\$63K-\$144K	Professionals	4	108	60	69	40	33	6	4	

**Table 4E**  
**Retired Male Members<sup>1</sup>**

Age	Canadian Forces Pensionable Excess Earnings		RCMP <sup>2</sup> Pensionable Excess Earnings		Public Service Pensionable Excess Earnings		Public Service Early Retirement Incentive		Public Service Waiver of Pension Reduction	
	Number	Average Pension <sup>3</sup>	Number	Average Pension <sup>3</sup>	Number	Average Pension <sup>3</sup>	Number	Average Pension <sup>3</sup>	Number	Average Pension <sup>3</sup>
35-39	5	\$38	-	-	-	-	-	-	-	-
40-44	33	\$189	-	-	2	\$37	-	-	-	-
45-49	26	\$263	-	-	1	\$685	202	\$6,713	-	-
50-54	29	\$425	-	-	71	\$475	5,115	\$6,832	7	\$1,158
55-59	26	\$338	4	\$339	157	\$781	1,680	\$4,324	101	\$607
60-64	-	-	-	-	108	\$762	-	-	-	-
65-69	-	-	-	-	31	\$504	-	-	-	-
70-74	-	-	-	-	8	\$155	-	-	-	-
All ages	119	\$289	4	\$339	378	\$678	6,997	\$6,227	108	\$642

**Retired Female Members<sup>1</sup>**

Age	Canadian Forces Pensionable Excess Earnings		RCMP <sup>2</sup> Pensionable Excess Earnings		Public Service Pensionable Excess Earnings		Public Service Early Retirement Incentive		Public Service Waiver of Pension Reduction	
	Number	Average Pension <sup>3</sup>	Number	Average Pension <sup>3</sup>	Number	Average Pension <sup>3</sup>	Number	Average Pension <sup>3</sup>	Number	Average Pension <sup>3</sup>
35-39	1	\$213	-	-	-	-	-	-	-	-
40-44	2	\$401	-	-	-	-	-	-	-	-
45-49	4	\$305	-	-	-	-	138	\$5,725	-	-
50-54	1	\$1,091	-	-	12	\$364	3,230	\$5,683	3	\$634
55-59	1	\$703	-	-	19	\$1,064	1,003	\$3,882	125	\$571
60-64	-	-	-	-	4	\$205	-	-	-	-
All ages	9	\$448	-	-	35	\$726	4,371	\$5,271	128	\$572

<sup>1</sup> Deferred annuitants and disabled are included above. Data as at 31 March 1999 for Canadian Forces, otherwise as at 31 March 1998. For Early Retirement Incentive (ERI) and Waiver of Pension Reduction, it includes members who retired under ERI program after 31 March 1998 until program termination in 1998.

<sup>2</sup> RCMP denotes Royal Canadian Mounted Police.

<sup>3</sup> Average pension shown is an annualized amount.

**Table 4F**  
**Retired Members Accrued RCA Spouse's Allowance**  
**1. Retired Public Service Members as at 31 March 1998**

Age	Male Non-disabled		Male Disabled		Female Non-disabled		Female Disabled	
	Number	Average Pension	Number	Average Pension	Number	Average Pension	Number	Average Pension
20 - 24	-	-	-	-	1	\$207	-	-
25 - 29	22	\$155	1	\$196	18	\$209	2	\$233
30 - 34	69	\$179	11	\$164	62	\$195	22	\$185
35 - 39	115	\$171	43	\$182	117	\$174	93	\$175
40 - 44	206	\$189	146	\$177	238	\$206	241	\$160
45 - 49	572	\$552	284	\$166	522	\$456	306	\$174
50 - 54	6,564	\$978	405	\$163	4,318	\$1,025	379	\$158
55 - 59	6,403	\$362	445	\$134	4,224	\$437	415	\$151
60 - 64	4,985	\$159	311	\$103	3,882	\$170	267	\$120
65 - 69	3,501	\$109	19	\$33	2,404	\$125	17	\$113
70 - 74	661	\$72	-	-	536	\$82	-	-
75 - 79	38	\$72	-	-	40	\$82	-	-
80-84	-	-	-	-	1	\$161	-	-
All Ages	23,136	\$448	1,665	\$145	16,363	\$464	1742	\$155

**2. Retired Canadian Forces Members as at 31 March 1999**

Age	Male Non-disabled		Male Disabled		Female Non-disabled		Female Disabled	
	Number	Average Pension	Number	Average Pension	Number	Average Pension	Number	Average Pension
25 - 29	6	\$234	-	-	4	\$276	-	-
30 - 34	451	\$151	9	\$208	106	\$148	2	\$176
35 - 39	2,108	\$142	32	\$146	466	\$147	11	\$157
40 - 44	4,534	\$151	35	\$124	705	\$160	7	\$150
45 - 49	3,587	\$97	8	\$116	288	\$122	3	\$47
50 - 54	2,427	\$59	10	\$65	105	\$86	2	\$47
55 - 59	532	\$30	4	\$44	14	\$53	-	-
60 - 64	24	\$11	1	\$3	-	-	-	-
All ages	13,669	\$114	99	\$128	1,688	\$144	25	\$135
Officers	12,902	\$113	98	\$128	108	\$100	0	\$0
Other	767	\$134	1	\$42	1580	\$147	25	\$135

Note: Average pension shown is an annualized amount.

Spouse's allowance shown in these tables has not been reduced for members with no eligible spouse.

**Table 4F (continued)**

**Retired Royal Canadian Mounted Police Members as at 31 March 1998**

Age	Male Non-disabled		Male Disabled		Female Non-disabled		Female Disabled	
	Number	Average Pension	Number	Average Pension	Number	Average Pension	Number	Average Pension
25 – 29	-	-	-	-	-	-	2	\$137
30 – 34	-	-	3	\$165	2	\$1,055	-	-
35 – 39	3	\$191	2	\$193	3	\$488	4	\$134
40 – 44	91	\$385	6	\$96	10	\$405	5	\$65
45 – 49	126	\$253	12	\$95	7	\$424	5	\$169
50 – 54	49	\$359	7	\$83	5	\$532	3	\$141
55 – 59	38	\$136	3	\$31	14	\$338	-	-
60 – 64	42	\$65	3	\$49	21	\$77	-	-
65 – 69	22	\$52	1	\$176	11	\$88	-	-
70 – 74	3	\$60	-	-	2	\$40	-	-
All ages	374	\$252	37	\$97	75	\$275	19	\$127
Regular	298	\$280	22	\$102	21	\$493	2	\$82
Civilian	76	\$141	15	\$90	54	\$191	17	\$132

Note: Average pension shown is an annualized amount.

Spouse's allowance shown in this table has not been reduced for members with no eligible spouse.



**Appendix 5 – Sample Public Service Demographic Assumptions<sup>1</sup>**

**Table 5A**  
**Public Service Assumed Seniority and Promotional Salary Increases**

<u>Service</u> <sup>2</sup>	<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
30	0.80	1.00
31	0.80	1.00
32	0.80	1.00
33	0.80	1.00
34	0.80	1.00
35	0.80	1.00
36	0.80	1.00
37	0.80	1.00
38+	0.80	1.00

<sup>1</sup> For Canada Post Corporation, the demographic assumptions used in the previous valuation were maintained except for the negotiated Canada Post Corporation termination and retirement rates for reasons other than mortality or disability.

<sup>2</sup> Expressed in completed years, as calculated at the beginning of the year.

**Table 5B**

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

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

**Table 5C  
 Public Service  
 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> <sup>2</sup>	<u>Main Group</u> <sup>3</sup>		<u>ATC<sup>1</sup> and CSC<sup>1</sup> (o/s)</u>	
	<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

<sup>1</sup> Air Traffic Controllers and Correctional Service Canada members in operational service.

<sup>2</sup> Expressed in completed years, as calculated at the beginning of the year.

<sup>3</sup> Excludes Canada Post Corporation.

**Table 5D**

**Public Service**  
**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 Members – Main Group<sup>1</sup>

Age <sup>2</sup>	Years of Service <sup>2</sup>												
	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	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

Male Members - CSC and ATC Members in Operational Service

Age <sup>2</sup>	Years of Service <sup>2</sup>												
	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

<sup>1</sup> Excludes Canada Post Corporation.

<sup>2</sup> Expressed in completed years, as calculated at the beginning of the year.

**Table 5E**

**Public Service**  
**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 Members – Main Group<sup>1</sup>

Age <sup>2</sup>	Years of Service <sup>2</sup>												
	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 Members - CSC and ATC Members in Operational Service

Age <sup>2</sup>	Years of Service <sup>2</sup>												
	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

<sup>1</sup> Excludes Canada Post Corporation.

<sup>2</sup> Expressed in completed years, as calculated at the beginning of the year.

**Table 5F**

**Public Service Assumed Rates of Termination with Right to a Disability Pension<sup>1</sup>  
(per 1,000 people)**

<u>Age</u> <sup>2</sup>	<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

Assumptions above are not applicable to members employed by Canada Post Corporation.

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

<sup>2</sup> Expressed in completed years, as calculated at the beginning of the year.

**Table 5G**

**Sample of Public Service Assumed Mortality Rates for 2000 Plan Year<sup>1</sup>  
 (per 1,000 people)**

<u>Age</u> <sup>2</sup>	Current and Former Contributors (other than disabled)		Former Contributors (disabled)		Surviving Spouses	
	<u>Male</u>	<u>Female</u>	<u>Male</u>	<u>Female</u>	<u>Male</u>	<u>Female</u>
20	0.4	0.2	3.1	6.6	0.9	0.3
25	0.5	0.3	6.2	7.1	1.1	0.4
30	0.7	0.4	9.3	7.7	1.2	0.5
35	0.9	0.4	12.3	8.1	1.5	0.7
40	1.2	0.6	15.0	8.6	1.7	0.9
45	1.6	1.1	17.7	9.5	2.6	1.5
50	2.3	1.7	20.1	11.0	3.9	2.5
55	3.9	2.6	22.6	13.4	6.7	4.2
60	8.2	5.0	27.5	16.5	11.5	6.6
65	15.5	8.9	37.6	21.5	18.6	10.8
70	26.1	14.7	54.1	29.4	28.9	16.5
75	43.4	24.0	71.9	42.6	46.2	26.9
80	72.2	44.0	97.2	66.8	75.4	46.3
85	112.3	79.5	137.3	114.9	118.4	78.9
90	172.0	130.2	208.3	181.1	178.5	132.6
95	254.9	194.6	315.0	283.4	257.1	210.0
100	354.7	318.3	475.1	443.9	355.3	318.5
105	500.0	500.0	500.0	500.0	500.0	500.0
114	500.0	500.0	500.0	500.0	500.0	500.0
115	1,000.0	1,000.0	1,000.0	1,000.0	1,000.0	1,000.0

Assumptions above are not applicable to members employed by Canada Post Corporation.

<sup>1</sup> 2000 plan year means the period from 1 April 1999 to 31 March 2000.

<sup>2</sup> Expressed in completed years, as calculated at the beginning of the year.

**Table 5H**

**Sample of Public Service Assumed Longevity Improvement Factors**

<u>Age</u> <sup>2</sup>	<u>Annual % of Mortality Reduction</u> <sup>1</sup>			
	Male		Female	
	<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	0	0	0

Assumptions above are not applicable to members employed by Canada Post Corporation.

<sup>1</sup> 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.

<sup>2</sup> Expressed in completed years, as calculated at the beginning of the year.  
 Plan years shown, where for example 2001 means the period from 1 April 2000 to 31 March 2001.

**Table 5I**

**Public Service**  
**Assumed Number of Married Members at Death (per 1,000 people)**  
**And Assumed Average Age of Surviving Spouse**

<u>Age<sup>1</sup> of Deceased Member</u>	<u>Number of Married Members</u>		<u>Average Age<sup>1</sup> of Surviving Spouse</u>	
	<u>Male</u>	<u>Female</u>	<u>Male</u>	<u>Female</u>
25	340	565	26	24
30	429	565	31	29
35	483	565	37	34
40	569	565	43	39
45	665	565	47	43
50	742	565	53	47
55	785	565	58	52
60	799	515	63	57
65	793	467	67	63
70	767	401	71	67
75	716	317	75	71
80	642	222	80	75
85	534	128	84	79
90	396	56	87	83
95	248	18	89	88
100	97	1	94	92
105	6	0	99	-
109	6	0	103	-
110	0	0	-	-

Assumptions above are not applicable to members employed by Canada Post Corporation.

<sup>1</sup> Expressed in completed years, as calculated at the beginning of the year.



**Table 5J**

**Public Service  
 Assumed Average Number of Children (per 1,000 people) and  
 Average Age of Children at Death of Member**

<u>Age<sup>1</sup> of Deceased Contributor</u>	<u>Average Number of Children</u>		<u>Average Age<sup>1</sup> of Children</u>	
	<u>Male Members</u>	<u>Female Members</u>	<u>Male Members</u>	<u>Female Members</u>
25	271	438	2	1
30	670	702	5	5
35	925	794	8	10
40	1,020	726	11	13
45	927	538	14	16
50	665	311	16	17
55	358	129	17	18
60	136	28	18	19
65	36	0	19	21
70	11	0	21	23
75	6	0	23	-
80	0	0	-	-

**Public Service Assumed Number of Children  
 Remaining Eligible (on account of school attendance)  
 for Allowances Throughout the Following Year  
 (per 1000 children)**

<u>Age<sup>1</sup></u>	<u>Number</u>
17 – 23	840
24	0

Assumptions above are not applicable to members employed by Canada Post Corporation.

<sup>1</sup> Expressed in completed years, as calculated at the beginning of the year.

## Appendix 6 – Sample Canadian Forces Demographic Assumptions

**Table 6A1**  
**Canadian Forces**  
**Assumed Annual Seniority and Promotional Salary Increases**  
**For Officers**

<u>Pensionable Service<sup>1</sup></u>	<u>(%)</u>	<u>Pensionable Service<sup>1</sup></u>	<u>(%)</u>
0	13.4	20	1.4
1	16.6	21	1.3
2	18.0	22	1.2
3	19.7	23	1.1
4	16.5	24	1.0
5	12.3	25	0.9
6	8.6	26	0.9
7	6.2	27	0.8
8	5.1	28	0.7
9	4.1	29	0.7
10	3.6	30	0.7
11	3.4	31	0.7
12	3.1	32	0.7
13	2.7	33	0.6
14	2.3	34	0.6
15	2.0	35	0.6
16	1.7	36	0.6
17	1.6	37	0.5
18	1.5	38	0.4
19	1.5	39	0.3
		40+	0.0

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<sup>1</sup> Expressed in completed years, as calculated at the beginning of the year.

**Table 6A2**

**Canadian Forces  
 Assumed Annual Seniority and Promotional Salary Increases  
 For Other Ranks**

<u>Pensionable Service<sup>1</sup></u>	<u>(%)</u>	<u>Pensionable Service<sup>1</sup></u>	<u>(%)</u>
0	19.2	20	1.2
1	15.8	21	1.2
2	12.7	22	1.2
3	10.0	23	1.1
4	7.8	24	1.1
5	5.9	25	1.1
6	4.4	26	1.0
7	3.2	27	1.0
8	2.3	28	1.0
9	1.7	29	1.0
10	1.3	30	1.0
11	1.0	31	0.9
12	1.0	32	0.9
13	0.9	33	0.9
14	1.0	34	0.9
15	1.1	35	0.8
16	1.1	36	0.8
17	1.2	37	0.7
18	1.2	38	0.6
19	1.2	39	0.5
		40+	0.0

<sup>1</sup> Expressed in completed years, as calculated at the beginning of the year.

**Table 6B**  
**Canadian Forces**  
**Assumed Annual Rates of Termination for Contributors With**  
**Less Than 20 Years of Service<sup>1</sup>**  
**(per 1,000 people)**

<u>Service<sup>1</sup></u>	<u>Officers</u>		<u>Other Ranks</u>	
	<u>Male</u>	<u>Female</u>	<u>Male</u>	<u>Female</u>
0	82	94	21	38
1	65	74	52	69
2	48	60	119	90
3	33	49	90	86
4	24	49	61	76
5	27	60	56	72
6	42	76	51	68
7	54	86	45	63
8	55	86	36	59
9	45	76	30	55
10	34	61	28	51
11	27	49	24	46
12	23	39	20	39
13	19	33	16	32
14	15	27	13	24
15	13	23	11	18
16	14	20	8	14
17	17	18	6	12
18	24	17	2	12
19+	n/a	n/a	n/a	n/a

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<sup>1</sup> Expressed in completed years, as calculated at the beginning of the year.

**Table 6C**

**Canadian Forces Assumed Annual Proportions of Contributors  
 With 10 to 19 Years of Service  
 Electing an Immediate Reduced Annuity  
 (per 1,000 people)**

<u>Service</u>	<u>Officers</u>	<u>Other Ranks</u>
0 to 8	0	0
9	8	14
10	26	21
11	39	21
12	44	21
13	49	26
14	68	45
15	122	87
16	224	162
17	385	281
18	624	490
19	1,000	1,000
20 +	n/a	n/a

**Table 6D**

**Canadian Forces Assumed Annual Rates of Termination for Contributors  
 With 20 or More Years of Service  
 (per 1,000 people)**

<u>Service</u>	<u>Officers</u>	<u>Other Ranks</u>
15 to 18	n/a	n/a
19	43	57
20	56	57
21	62	53
22	61	58
23	58	97
24	59	137
25	64	132
26	76	116
27	91	120
28	103	138
29	111	175
30	115	207
31	121	226
32	146	240
33	202	274
34	278	342
35	338	420
36	381	507
37	407	604
38+	417	604

**Table 6E**

**Canadian Forces Assumed Reduction Factors Applying to  
 Immediate Annuities for Retiring Contributors  
 (With 20 or More Years of Service)**

<u>Service</u>	<u>Officers</u>	<u>Other Ranks</u>
15 to 18	n/a	n/a
19	0.94	0.88
20	0.94	0.89
21	0.94	0.93
22	0.93	0.94
23	0.93	0.99
24	0.94	1.00
25	0.94	1.00
26	0.98	1.00
27+	1.00	1.00

**Table 6F**

**Sample of Canadian Forces Assumed Annual Rates of Termination due to Disability<sup>1</sup>  
 (per 1,000 people)**

Age Last Birthday	Male		Female
	Officers	Other Ranks	Officers / Other Ranks
15	0.4	11.7	2.1
20	3.2	6.3	4.5
25	2.0	3.8	4.5
30	0.9	2.7	3.7
35	0.6	3.2	3.9
40	0.9	5.4	5.3
45	1.4	8.6	7.5
50	3.5	14.2	10.8
55	5.1	22.7	15.6
59	5.1	31.3	20.6

**Table 6G**

**Sample of Canadian Forces Assumed Annual Mortality Rates Deemed Applicable  
 in Plan Year 1998<sup>2</sup> in Respect of Contributors  
 (per 1,000 people)**

Age Last Birthday	Male	Female
15	0.4	0.2
20	0.4	0.2
25	0.5	0.3
30	0.7	0.4
35	0.9	0.4
40	1.2	0.6
45	1.7	1.2
50	2.4	1.8
55	4.1	2.7
59	7.4	4.5

<sup>1</sup> Disability is assumed to be permanent with no recovery possible.

<sup>2</sup> Plan year 1998 means the period from 1 April 1997 to 31 March 1998.



**Table 6H**

**Sample of Canadian Forces Assumed Mortality Rates Deemed Applicable  
 in Plan Year 1998<sup>1</sup> in Respect of Retirement Pensioners  
 (per 1,000 people)**

Age Last Birthday	Male		Female
	Officers	Other Ranks	Officers / Other Ranks
20	0.4	0.4	0.3
25	0.4	0.6	0.3
30	0.5	0.9	0.4
35	0.7	1.2	0.5
40	1.1	2.0	0.7
45	1.7	2.5	1.0
50	3.0	4.2	1.4
55	4.8	7.4	2.4
60	8.5	12.0	4.7
65	14.2	19.7	9.1
70	21.0	32.5	14.4
75	37.9	50.4	23.6
80	64.4	73.9	41.1
85	101.8	108.3	70.8
90	153.5	161.5	122.8
95	226.0	233.8	197.3
100	319.8	326.4	293.9
105	495.7	495.7	415.2
110	1,000.0	1,000.0	492.4

<sup>1</sup> Plan year 1998 means the period from 1 April 1997 to 31 March 1998.

**Table 6I**

**Sample of Canadian Forces Assumed Mortality Rates Deemed Applicable  
 in Plan Year 1998<sup>1</sup> in Respect of Disability Pensioners  
 (per 1,000 people)**

Age Last Birthday	Male		Female	
	Officers	Other Ranks	Officers	Other Ranks
15	0.8	0.4	0.4	0.5
20	0.8	0.4	0.4	0.5
25	0.8	0.8	0.4	0.6
30	0.8	2.7	0.5	0.7
35	1.0	4.7	0.7	0.9
40	1.3	6.6	1.0	1.3
45	3.4	8.2	1.8	2.3
50	9.0	9.8	3.0	3.8
55	15.3	13.9	4.8	6.2
60	21.2	21.2	7.6	9.7
65	28.0	31.6	11.9	15.1
70	37.9	51.1	18.9	24.1
75	55.4	75.1	31.1	39.5
80	87.7	98.1	52.4	66.7
85	141.3	131.1	91.0	115.9
90	221.0	188.8	156.1	198.6
95	328.1	274.9	255.7	325.5
100	462.2	389.6	368.6	469.1
105	628.0	500.0	932.1	1,000.0
110	1,000.0	500.0	1,000.0	1,000.0

<sup>1</sup> Plan year 1998 means the period from 1 April 1997 to 31 March 1998.

**Table 6J**

**Sample of Canadian Forces Assumed Mortality Rates Deemed Applicable  
 in Plan Year 1998<sup>1</sup> in Respect of Survivors  
 (per 1,000 people)**

<u>Age Last Birthday</u>	<u>Male</u>	<u>Female</u>
15	0.6	0.1
20	1.2	0.2
25	1.3	0.3
30	1.2	0.4
35	1.3	0.5
40	1.7	0.6
45	2.6	1.0
50	4.3	1.7
55	7.4	3.5
60	12.2	5.7
65	19.6	9.4
70	30.8	14.0
75	47.8	23.2
80	74.4	40.3
85	115.3	65.8
90	175.4	108.8
95	262.0	182.9
100	347.9	306.7
105	728.3	516.9
110	1,000.0	1,000.0

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<sup>1</sup> Plan year 1998 means the period from 1 April 1997 to 31 March 1998.

**Table 6K**

**Sample of Canadian Forces Assumed Improvements in Longevity  
 After Plan Year 1998<sup>1</sup>**

<u>Age Last Birthday</u>	<u>Annual Percentage Reduction in Plan Year 1998 Assumed Mortality Rates</u>	
	<u>Male</u>	<u>Female</u>
15	2.15	1.85
20	2.15	1.85
25	1.25	1.65
30	0.75	1.25
35	0.75	1.35
40	1.05	1.75
45	1.55	1.85
50	2.05	1.95
55	2.15	1.05
60	1.85	0.75
65	1.65	0.75
70	1.75	0.75
75	1.65	1.05
80	1.25	0.95
85	0.95	0.85
90	0.65	0.55
95	0.45	0.45
100	0.35	0.35
105+	0.00	0.00

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<sup>1</sup> Plan year 1998 means the period from 1 April 1997 to 31 March 1998.

**Table 6L**

**Sample of Canadian Forces Assumed Proportions  
 of Members Married at Death  
 and Assumed Average Age Difference Between Spouses**

Age of Deceased Member	<u>Sex of Deceased Member</u>			
	<u>Male</u>		<u>Female</u>	
	<u>Married at Death</u>	<u>Age Difference Between Spouses</u>	<u>Married at Death</u>	<u>Age Difference Between Spouses</u>
20	306	0	140	1
25	610	(1)	350	1
30	786	(1)	480	2
35	887	(1)	520	2
40	923	(1)	520	2
45	893	(1)	520	2
50	866	(2)	510	3
55	846	(2)	500	3
60	843	(3)	470	3
65	817	(3)	420	2
70	775	(3)	360	2
75	715	(3)	290	1
80	614	(4)	210	1
85	406	(4)	130	0
90	328	(5)	70	(2)
95	186	(6)	30	(4)
100	72	(8)	10	(6)
105	0	(11)	0	(4)

**Table 6M**

**Sample of Canadian Forces Assumed Average Number (per 1,000 people) and Average Age<sup>1</sup> of Children at Death of Member or Pensioner**

Age of Member <sup>1</sup> at Death	Average Number of Children (according to sex of member)		Average Age <sup>1</sup> of Children (according to sex of member)	
	Male	Female	Male	Female
20	72	2	0	1
25	271	438	2	1
30	670	702	5	5
35	925	794	8	10
40	1,020	726	11	13
45	927	538	14	16
50	665	311	16	17
55	358	129	17	18
60	136	28	18	19
65	36	0	19	21
70	11	0	21	23
75	6	0	23	n/a
80	0	0	n/a	n/a

**Table 6N**

**Assumed Proportions of Children  
 Remaining Eligible (on account of school attendance) for Allowances  
 Throughout the Following Year (per 1,000 children)**

<u>Age<sup>1</sup></u>	<u>Proportion</u>
Under 18	1000
18 to 23	800
24 and over	0

<sup>1</sup> Expressed in completed years, as calculated at the beginning of the year.

**Appendix 7 – Sample Royal Canadian Mounted Police Demographic Assumptions**

**Table 7A**  
**Royal Canadian Mounted Police**  
**Assumed Seniority and Promotional Salary Increases**  
**(Expressed as a percentage of annual earnings)**

Pensionable Service <sup>1</sup>	Regular Members <sup>2</sup>			Civilian Members
	<u>2000<sup>3</sup></u>	<u>2001</u>	<u>2002+</u>	
0	23.5%	23.5%	23.5%	4.6%
1	12.3	12.3	12.3	4.1
2	6.6	6.6	6.6	3.6
3	1.3	1.3	1.3	2.5
4	0.9	1.1	1.0	2.2
5	0.7	0.8	0.7	1.9
6	0.6	4.5	4.4	1.7
7	0.4	4.1	0.3	1.6
8	0.4	3.9	0.3	1.4
9	0.5	4.0	0.5	1.3
10	2.2	3.5	0.3	1.2
11	0.3	1.8	0.3	1.1
12	0.5	1.9	0.4	1.0
13	0.7	2.0	0.4	0.9
14	0.8	2.2	0.6	0.8
15	0.7	1.9	0.5	0.8
16	0.7	1.9	0.5	0.7
17	0.7	1.8	0.6	0.7
18	0.7	1.7	0.6	0.7
19	0.8	1.9	0.8	0.7
20	0.7	1.6	0.6	0.7
21	0.7	1.5	0.6	0.6
22	0.7	1.4	0.6	0.6
23	0.7	1.3	0.6	0.6
24	0.8	1.5	0.8	0.6
25	0.7	1.1	0.7	0.6
26	0.7	1.0	0.7	0.6
27	0.7	1.0	0.7	0.6
28	0.7	1.0	0.7	0.6
29	0.8	1.3	0.9	0.6
30	0.7	1.1	0.7	0.6
31	0.7	1.1	0.7	0.6
32	0.7	1.1	0.7	0.6
33	0.7	1.1	0.7	0.6
34	0.8	1.3	0.9	0.6
35+	0.7	1.1	0.7	0.6

<sup>1</sup> Expressed in completed years, as calculated at the beginning of the plan year.

<sup>2</sup> Includes 0.2% attributable to service pay allowance increases on every fifth anniversary of engagement and 3.8% at duration six for Senior Constable allowances.

<sup>3</sup> 2000 plan year means from the period 1 April 1999 to 31 March 2000.

**Table 7B**

**Royal Canadian Mounted Police  
 Assumed Rates of Termination with Nonvested Rights<sup>1</sup>  
 (per 1,000 people)**

Pensionable Service <sup>2</sup>	Regular Members <sup>3</sup>		Civilian Members <sup>4</sup>	
	Male	Female	Male	Female
0	37	55	45	68
1	22	34	29	50
2	15	28	27	44
3	14	27	26	44
4	14	26	26	43
5	13	23	24	37
6	9	21	16	30
7	8	19	13	26
8	8	18	11	25
9	7	16	9	24
10	7	16	9	23
11	6	16	7	22
12	5	15	6	20
13	5	13	6	18
14	4	9	5	14
15	3	6	3	9
16	2	5	2	7
17	2	3	2	4
18	1	2	1	3
19	1	2	1	2
20	1	1	1	2
21	-	1	-	1

<sup>1</sup> Includes all terminations resulting in a lump sum payment, other than deaths leaving no eligible survivor(s) and occurring after at least five years of pensionable service.

<sup>2</sup> Expressed in completed years, as calculated at the beginning of the year.

<sup>3</sup> Rates at durations ten and over do not apply from age 56 onward.

<sup>4</sup> Rates at durations five and over do not apply from age 50 onward.

Note: Rates are halved for the year in which footnote 3 or 4 first appear.



**Table 7C**

**Royal Canadian Mounted Police  
 Assumed Rates<sup>1</sup> of Pensionable Disability  
 (per 1,000 people)**

Age Last Birthday <sup>2</sup>	Regular Members		Civilian Members	
	Male	Female	Male	Female
28	.2	.2	.3	.4
29	.2	.5	.3	.4
30	.2	.8	.3	.5
31	.2	1.1	.3	.6
32	.3	1.4	.4	.6
33	.5	2.0	.4	.7
34	.6	2.7	.5	.8
35	.9	3.6	.6	1.1
36	1.1	4.1	.8	1.3
37	1.2	4.4	1.1	1.5
38	1.4	5.0	1.3	1.7
39	1.5	5.4	1.4	1.9
40	1.7	6.0	1.5	2.1
41	2.0	6.5	1.6	2.2
42	2.3	6.9	1.8	2.4
43	2.7	7.4	1.9	2.6
44	3.2	8.0	2.1	2.9
45	3.8	8.6	2.3	3.3
46	4.2	9.0	2.4	3.6
47	4.7	9.5	2.6	4.0
48	5.3	10.1	3.2	4.5
49	5.9	10.5	3.7	5.0
50	6.6	11.1	4.2	5.6
51	7.7	12.2	4.7	6.2
52	8.7	13.4	5.3	6.8
53	10.1	14.6	5.8	7.6
54	11.6	15.9	6.3	8.4
55	13.2	17.4	7.0	9.3
56	15.0	19.2	7.9	10.4
57	17.0	21.2	8.9	11.4
58	19.4	23.4	10.0	12.6
59	21.9	25.8	11.1	13.9

<sup>1</sup> Rates apply only if at least ten years of pensionable service have been completed (five years, if a Civilian Member), but not if the sum of the age (minimum 55 years) and the years of pensionable service is at least 85. Rates are halved for the plan year in which these criteria are first met or ceased to be met.

<sup>2</sup> As calculated at the beginning of the year.

**Table 7D**

**Royal Canadian Mounted Police  
 Assumed Annual Rates<sup>1</sup> of Pensionable Retirement for Regular Members  
 (per 1,000 people)**

Age Last Birthday <sup>2</sup>	Completed Years of Pensionable Service <sup>2</sup>							
	9-18	19	20-22	23	24-28	29-33	34	35+
37	-	2	-	-	-	-	-	-
38	-	3	4	-	-	-	-	-
39	-	8	9	-	-	-	-	-
40	-	11	14	-	-	-	-	-
41	-	14	18	42	-	-	-	-
42	-	16	21	48	46	-	-	-
43	-	19	24	53	52	-	-	-
44	-	21	28	57	54	-	-	-
45	-	22	28	63	56	-	-	-
46	-	23	30	69	56	-	-	-
47	-	25	33	73	61	65	-	-
48	-	26	33	75	64	68	-	-
49	-	28	36	82	80	78	-	-
50	-	29	38	88	78	83	-	-
51	-	33	41	99	89	94	-	-
52	-	39	50	120	112	113	196	-
53	-	54	68	166	151	153	294	198
54	-	78	103	243	221	198	398	313
55	82	192	128	297	275	258	476	355
56	10	201	124	302	286	247	506	368
57	20	190	116	292	267	241	499	359
58	31	181	113	277	259	242	471	347
59+	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000

<sup>1</sup> Rates shown for duration 19 up to age 54 and for duration 9 are halved in practice to recognise that pensionable retirement can occur only after 20 or 10 years of service, respectively, have been completed.

<sup>2</sup> As calculated at the beginning of the year.

**Table 7E**

**Royal Canadian Mounted Police  
Assumed Annual Rates<sup>1</sup> of Pensionable Retirement for Civilian Members  
(per 1,000 people)**

Age Last Birthday <sup>2</sup>	Completed Years of Pensionable Service <sup>2</sup>							
	4-8	9-13	14-18	19-23	24-28	29-33	34	35+
49	4	9	13	13	9	33	-	-
50	4	9	13	13	9	33	-	-
51	4	9	13	13	11	49	-	-
52	4	9	13	13	13	64	95	-
53	4	9	13	13	13	84	96	112
54	21	42	62	63	61	260	567	834
55	21	43	62	63	62	102	328	551
56	21	42	62	63	63	203	381	556
57	21	42	64	64	63	307	429	561
58	21	43	62	62	62	406	472	556
59	287	287	285	295	703	716	716	716
60	193	190	191	195	473	478	478	478
61	97	97	95	96	239	239	239	239
62	97	96	97	99	239	241	239	239
63	239	239	239	241	592	597	597	597
64	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000

<sup>1</sup> Rates shown for duration 4 and for age 49 are halved in practice to recognise that pensionable retirement can occur only after 5 years of service have been completed or age 50 has been attained according to the previous report, respectively

<sup>2</sup> As calculated at the beginning of the year.

**Table 7F**

**Royal Canadian Mounted Police  
 Assumed Rates of Mortality for Plan Year 2000<sup>1</sup>  
 (per 1,000 people)**

<u>Age Last Birthday<sup>2</sup></u>	<u>Regular Members<sup>3</sup></u>		<u>Civilian Members<sup>3</sup></u>		<u>Surviving Spouses</u>	
	<u>Male</u>	<u>Female</u>	<u>Male</u>	<u>Female</u>	<u>Male</u>	<u>Female</u>
20	.5	.2	.7	.2	1.0	.3
25	.6	.3	.8	.3	1.0	.3
30	.7	.3	1.0	.3	1.3	.4
35	.8	.4	1.0	.5	1.6	.6
40	1.1	.6	1.3	.7	1.8	1.0
45	1.5	.8	1.8	.9	2.4	1.5
50	2.4	1.2	2.8	1.4	3.7	2.4
55	4.0	1.9	4.9	2.3	6.3	4.0
60	7.2	3.6	9.1	4.4	10.9	6.4
65	12.9	7.0	16.3	7.9	17.9	10.0
70	21.6	11.2	26.9	13.5	28.4	16.1
75	35.2	18.5	43.6	22.5	45.7	26.2
80	57.5	32.4	72.1	38.9	75.2	44.9
85	92.4	56.0	116.9	67.0	119.4	78.0
90	143.3	97.9	186.0	114.3	180.0	132.4
95	210.0	157.1	281.2	184.6	258.5	210.2
100	287.3	234.0	372.3	276.2	358.6	318.5
105	371.2	327.7	425.8	382.7	454.9	432.4
110	439.9	412.1	459.1	467.9	493.0	484.4
115	500.0	500.0	500.0	500.0	500.0	500.0

<sup>1</sup> Plan year 2000 is the period from 1 April 1999 to 31 March 2000.

<sup>2</sup> As calculated at the beginning of the year.

<sup>3</sup> Rates apply only to contributors and retirement pensioners. Rates for disability pensioners are a multiple of these rates, grading uniformly from 3.4 at age 30 to 1.4 at age 70 and then to 1.0 at age 90.

**Table 7G**

**Royal Canadian Mounted Police  
 Sample of Assumed Longevity Improvement Factors**

Age Last Birthday <sup>2</sup>	Annual % of Mortality Reduction <sup>1</sup>			
	Male		Female	
	2001	2026+	2001	2026+
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	1.00	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	0.50	0	0.50

<sup>1</sup> 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.

<sup>2</sup> Expressed in completed years, as calculated at the beginning of the year. Plan years shown, where for example 2001 means the period from 1 April 2000 to 31 March 2001.

**Table 7H**

**Royal Canadian Mounted Police  
 Assumed Probability<sup>1</sup> a Member will have an Eligible Surviving Spouse<sup>2</sup> at Death**

Age Last Birthday at Death	Regular Member		Civilian Member	
	<u>Male</u>	<u>Female</u>	<u>Male</u>	<u>Female</u>
25	.42	.36	.34	.57
30	.70	.49	.43	.57
35	.84	.53	.48	.57
40	.90	.53	.57	.57
45	.92	.53	.67	.57
50	.93	.52	.74	.57
55	.94	.51	.79	.57
60	.94	.48	.80	.52
65	.89	.42	.79	.47
70	.83	.36	.77	.40
75	.77	.29	.72	.32
80	.69	.21	.64	.22
85	.57	.13	.53	.13
90	.43	.07	.40	.06
95	.27	.03	.25	.02
100	.14	.01	.10	.00
105	.06	.00	.01	.00
110	.02	.00	.00	.00

<sup>1</sup> Does not apply if the deceased member was a contributor with less than five years of pensionable service.

<sup>2</sup> Assumed to be of the opposite sex.

**Table 7I**

**Royal Canadian Mounted Police  
 Assumptions for Survivor Allowances<sup>1</sup> in Respect of Female Members**

<u>Age Last Birthday at Death</u>	<u>Eligible Spouse Age Difference<sup>2</sup></u>	<u>Eligible Children</u>	
		<u>Average Number</u>	<u>Average Age</u>
25	1	0.12	2
30	2	0.76	3
35	2	1.09	7
40	2	1.15	11
45	2	1.01	15
50	3	0.61	19
55	3	0.24	21
60	3	0.06	23
65	2	0.02	24
70	2	-	-
75	1	-	-
80	1	-	-
85	0	-	-
90	(2)	-	-
95	(4)	-	-
100	(6)	-	-

<sup>1</sup> Payable unless the deceased member was a contributor with less than five years of pensionable service.

<sup>2</sup> Age of spouse less age of member, both calculated at death of member.

**Table 7J**

**Royal Canadian Mounted Police  
 Assumptions for Survivor Allowances<sup>1</sup> in Respect of Male Members**

<u>Age Last Birthday at Death</u>	<u>Eligible Spouse</u>	<u>Eligible Children</u>	
	<u>Age Difference<sup>2</sup></u>	<u>Average Number</u>	<u>Average Age</u>
25	(1)	0.23	3
30	(1)	1.18	4
35	(1)	1.61	8
40	(1)	1.63	12
45	(1)	1.52	16
50	(2)	1.00	19
55	(2)	0.40	20
60	(3)	0.18	21
65	(3)	0.06	22
70	(3)	0.03	23
75	(3)	0.02	24
80	(4)	-	-
85	(4)	-	-
90	(5)	-	-
95	(6)	-	-
100	(8)	-	-
105	(11)	-	-
110	(14)	-	-
115	(18)	-	-

<sup>1</sup> Payable unless the deceased member was a contributor with less than five years of pensionable service.

<sup>2</sup> Age of spouse less age of member, both calculated at death of member.



## **Appendix 8 - Acknowledgements**

The following people assisted in the preparation of this report. They deserve our gratitude for their exceptional efforts.

Michel Germain, A.S.A.

Daniel Hébert, F.C.I.A., F.S.A.

John Kmetic, A.S.A.

Lyse Lacourse

Claude Lelièvre, A.S.A.

Steve McCleave, A.S.A.

Mario Mercier, F.C.I.A., F.S.A.

Alan Montgomery

Arek Rydel, A.S.A.