

2004

ACTUARIAL REPORT

ON THE

PENSION PLAN FOR THE  
CANADIAN FORCES

AS AT 31 MARCH 2002



Office of the Superintendent of  
Financial Institutions Canada

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13 February 2004

The Honourable Reg Alcock, 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 March 2002 of the Canadian Forces pension plan. This plan is defined by Parts I, III, and IV of the *Canadian Forces Superannuation Act*, the *Pension Benefits Division Act* and the *Special Retirement Arrangements Act*.

Yours sincerely,



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



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## Executive Summary

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### A. Introduction

The previous actuarial report on the Canadian Forces pension plan made as at 31 March 2000 was in respect of the plan defined by Parts I, III, and IV of the *Canadian Forces Superannuation Act* (CFSA) and by the *Pension Benefits Division Act*.

Beginning with this valuation, the Canadian Forces pension plan is considered to also include the Canadian Forces-related benefits defined by the *Special Retirement Arrangements Act*, which were last valued in the actuarial report on the Retirement Compensation Arrangements (RCA) Account as at 31 December 1998.

### B. Purpose of Actuarial Report

This actuarial report on the Canadian Forces pension plan was made as at 31 March 2002 pursuant to the *Public Pensions Reporting Act* (PPRA). The date of the next periodic review is 31 March 2005.

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

- the balance sheets of the pension plan as at the valuation date, i.e. its assets, its liabilities, and the actuarial surpluses or actuarial deficits as at that date;
- the annual amount required to amortize over a period of years any going-concern actuarial deficit revealed as at the valuation date, and
- the projected costs of the plan for each of the next three plan years<sup>1</sup> following the valuation date.

### C. Main Findings

- As at 31 March 2002 the CFSA portion of the plan had an actuarial surplus of \$3,896.6 million in the Superannuation Account and an actuarial deficit of \$5.2 million in the Pension Fund. These amounts are 11.2% and 0.4% of the corresponding liabilities, respectively.
- The Superannuation Account actuarial surplus exceeds 10% of the corresponding liabilities by \$416.7<sup>2</sup> million, which amount must be withdrawn from the Superannuation Account in accordance with the legislation. If the \$5.2 million Pension Fund actuarial deficit were to be amortized in 11<sup>3</sup> equal annual instalments beginning on 31 March 2004, the annual amount would be \$782,200.

---

<sup>1</sup> 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.

<sup>2</sup> \$198.0 million has been withdrawn as at 31 March 2003.

<sup>3</sup> The expected average remaining service life (EARSL) for active contributors is 11 years.

- The CFSA normal cost for the 2003 plan year is 21.33% of pensionable payroll<sup>1</sup>, that is \$660.5 million, and is estimated to change marginally to 21.35% and 21.34% for the following two plan years.

#### **D. RCA Results**

- As at 31 March 2002 the RCA portion of the plan had an actuarial deficit of \$80.5 million.
- The RCA actuarial deficit of \$80.5 million could be amortized, after taking into consideration the special payment of \$13.4 million made at the end of plan year 2003, in 11 equal annual instalments of \$7.9 million beginning on 31 March 2004.
- The RCA normal cost for the 2003 plan year is 0.76% of pensionable payroll, that is \$25.2 million, and is estimated to be 0.79% and 0.82% of pensionable payroll for each of the following two plan years respectively.

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<sup>1</sup> Pensionable payroll means the aggregate of pensionable earnings of all contributors with less than 35 years of service.



## Financial Position of the Plan

### A. CFSA Going-Concern Valuation Results

Beginning on 1 April 2000, employer and member contributions to the *Canadian Forces Superannuation Act* (CFSA) portion of the plan were no longer credited to the Canadian Forces Superannuation Account. Rather, they were deposited in the newly created Canadian Forces Pension Fund to be invested in the financial markets. The valuation results of this section show the financial position for both CFSA funding vehicles as at 31 March 2002. A projection of the runoff of the Superannuation Account is shown in Appendix 10.

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

**Table 1 Going-Concern Balance Sheet**  
as at 31 March 2002 (\$ millions)

	Superannuation Account	Pension Fund
<b>Assets</b>		
Actuarial value of assets	38,626.8	1,323.6
Arrears contributions <sup>1</sup>		
· Members	31.3	8.0
· Government	<u>37.5</u>	<u>27.9</u>
Total actuarial value of assets	38,695.6	1,359.4
<b>Actuarial liabilities</b>		
For benefits accrued to, and in respect of contributors	10,462.9	1,288.4
For benefits payable to, and in respect of:		
· Retirement pensioners	21,850.6	74.9
· Disability pensioners	405.1	0.8
· Surviving spouses	1,929.8	0.5
· Surviving children	6.3	0.1
Administrative expenses	<u>144.3</u>	<u>0.0</u>
Total actuarial liabilities	34,799.0	1,364.7
<b>Actuarial surplus/(deficit)</b>	3,896.6	(5.2)

<sup>1</sup> Present value of contributions to be made in respect of prior service and leave without pay elections made on or before 31 March 2002

## B. Reconciliation of CFSA Going-Concern Valuation Results

This section reconciles each financial position shown in this going-concern valuation with the corresponding item of the previous valuation. The items shown in the following table are explained afterward.

**Table 2 Reconciliation of Financial Position**  
(\$ millions)

	Superannuation Account	Pension Fund
As at 31 March 2000	15,419.8	-
Data corrections	(14.3)	-
Expected interest on actuarial surplus	2,852.9	-
Cost/contributions difference	35.9	8.0
Actuarial surplus withdrawals	(14,771.8)	-
Experience gains and losses	(316.7)	(113.5)
Unrecognized investment losses	-	52.2
Recognition of arrears contributions	-	15.8
Changes in assumptions and methodology	<u>690.8</u>	<u>32.3</u>
As at 31 March 2002	3,896.6	(5.2)

### 1. Data Corrections

The correction of data (such as status and pension amounts) upon which the 2000 report was based, resulted in a decrease in the actuarial surplus of \$14.3 million.

### 2. Expected Interest on Initial Actuarial Surplus

The expected interest to 31 March 2002 on the corrected actuarial surplus of \$15,405.5 million as at 31 March 2000 amounted to \$2,852.9 million, based on the Account yields projected in the previous report for the two-year intervalation period.

### 3. Cost/Contributions Difference

An increase in the Account actuarial surplus of \$35.9 million resulted mainly from prior service elections. An increase in the Fund actuarial surplus of \$8.0 million resulted from the actual government contributions in plan years 2001 and 2002 being more than the government portion of the normal cost shown in the cost certificate of the previous report. These amounts include interest accumulation on the differences to 31 March 2002.

### 4. Actuarial Surplus Withdrawals

Legislative provisions grant authority to debit some actuarial surplus from the Superannuation Account. A withdrawal of \$14.8 billion was made on 31 March 2002.

## 5. Unrecognized Investment Losses

An actuarial asset valuation method that minimizes the impact of short-term fluctuations in the market value of assets was used (see Appendix 6), causing the market value of the Pension Fund assets to be \$52.2 million more than their market value.

## 6. Experience Gains and Losses

Since the previous valuation, experience losses have decreased the Superannuation Account actuarial surplus by \$316.7 million (including one year of interest accumulation to 31 March 2002). Since its creation, the Pension Fund has incurred \$113.5 million (including one year of interest accumulation to 31 March 2002) in experience losses. The items (in \$ millions) are described in the following table.

	Superannuation Account	Pension Fund
Demographic assumptions (i)	(107.6)	(45.1)
Pension indexation (ii)	(211.1)	(0.2)
YMPE increases	(0.1)	0.0
Salary increases	9.6	1.4
Investment earnings (iii)	34.2	(78.4)
Administrative expenses	4.2	0.0
Miscellaneous	(45.9)	8.8
Net experience losses	(316.7)	(113.5)

- (i) The net impact of the demographic experience such as mortality, pensionable retirement and other elements decreased the Account actuarial surplus by \$107.6 million and the Fund actuarial surplus by \$45.1 million.
- (ii) The indexation of pensions exceeded the corresponding projected pension indexation, which decreased the Account actuarial surplus by \$211.1 million. The effect on the Fund actuarial surplus is marginal as very few pensions are paid from the Fund.
- (iii) The rates of interest credited to the Account exceeded the corresponding projected Account yields in the previous valuation, which resulted in an experience gain of \$34.2 million. Financial markets went through difficult times in 2001 and 2002. The 2002 Fund rate of return on a market value basis, using the dollar-weighted approach, was significantly lower than the projected annual yield of 6.25% in the previous valuation. The projected 2001 annual yield of 1.525% partly recognized the financial market difficulties but was still more than the realized 2001 fund rate of return. Consequently investment earnings covering both years were \$78.4 million less than expected.

## 7. Revision of Actuarial Assumptions

Actuarial assumptions were revised based on economic trends and demographic experience as described in Appendix 7. The figures (in \$ millions) are as follows.

Assumption	Superannuation Account	Pension Fund
Changes in new entrant methodology	(0.2)	(0.7)
Withdrawals	(30.9)	(10.5)
Pensionable retirements	56.6	6.8
Proportion electing an immediate reduced annuity	11.3	2.0
Pensionable disabilities	(56.6)	(9.8)
Mortality rates	9.0	(3.1)
Mortality improvement factors	83.7	0.8
Age of survivor and proportion married	(9.7)	1.6
Seniority and promotional	79.4	16.6
Economic salary increases	54.2	13.6
YMPE / MPE increases	(24.2)	(5.9)
Pension indexation	500.6	35.7
Interest rate	11.7	(35.0)
Changes in prior service methodology	6.4	20.0
Administrative expenses	(0.4)	-
Net impact of revisions	690.9	32.1

The net impact of the revision of the assumptions is mainly the result of the change in the pension indexation. As described in Appendix 7, all economic assumptions were revised, with the most important being as follows:

- ultimate level of inflation lowered from 3.0% to 2.7%;
- ultimate increase in average earnings lowered from 4.0% to 3.6%;
- ultimate yield on the Account lowered from 6.0% to 5.7%; and
- ultimate rate of return on the Fund lowered from 7.25% to 7.0%.

## C. CFSA Solvency Valuation Results

For the first time, a valuation was conducted on a solvency basis. A solvency liability attempts to measure the value of the benefits on a plan termination basis. A comparison of the solvency assets with the solvency liabilities measures the degree of funding.

The legislation governing the plan is silent on the benefits payable upon plan termination. For solvency valuation purposes, all members are assumed to be entitled to the same benefits as if they terminated employment. The following results are shown for illustration purposes only.

The following solvency balance sheet for the CFSA portion of the plan was prepared using the data described in Appendix 5 and the assets, the methodology and the assumptions described in Appendix 9.

**Table 3 Solvency Balance Sheet**  
as at 31 March 2002 (\$ millions)

	Superannuation Account	Pension Fund
<b>Actuarial value of assets</b>		
Market value <sup>1</sup> of assets	45,323.9	1,271.4
Arrears contributions <sup>2</sup>	<u>21.2</u>	<u>4.9</u>
Total actuarial value of assets	45,345.2	1,276.3
<b>Actuarial liabilities</b>		
For benefits accrued to, and in respect of contributors	10,021.2	1,082.7
For benefits payable to, and in respect of:		
· Retirement pensioners	24,265.6	83.0
· Disability pensioners	444.2	0.9
· Surviving spouses	2,115.7	0.5
· Surviving children	6.8	0.1
Termination expenses	<u>32.6</u>	<u>0.0</u>
Total actuarial liabilities	36,886.2	1,167.3
Solvency excess/(actuarial deficit)	8,459.0	109.1
Solvency ratio	123%	109%

#### D. CFSA Cost Certificate

The normal costs, assets and liabilities were computed for the CFSA portion of the plan using the assets described in Appendix 4, the data described in Appendix 5, the methodology described in Appendix 6, and the assumptions described in Appendix 7. Emerging experience, differing from the corresponding assumptions, will result in gains or losses to be revealed in subsequent reports.

##### 1. Normal Costs

The estimated value of the benefits that will accrue on behalf of the contributors and the estimated administrative expenses to be charged to the Fund for plan year 2003 is 21.33% of pensionable payroll. The following table shows the details of the normal cost for plan year 2003.

- 
- 1 The imputed market value of the notional Superannuation Account assets was calculated by discounting future cash flows using the 31 March 2002 yields on Government of Canada bonds of corresponding durations. The market value of the Pension Fund assets as at 31 March 2002 was used.
  - 2 Includes only the present value of member contributions to be made in respect of prior service and leave without pay elections made on or before 31 March 2002.

**Table 4 Normal Cost for Plan Year 2003**  
(\$ millions)

Total normal cost	660.5
Member required contributions	<u>153.0</u>
Government normal cost	507.5
Pensionable payroll	3,097.3
Total normal cost as % of pensionable payroll	21.33%
Ratio of government to member contributions	3.32

The following table reconciles the CFSA normal cost of this valuation with the corresponding item in the previous valuation.

**Table 5 Reconciliation of CFSA Normal Cost**  
(% of pensionable payroll)

For plan year 2001	22.27
Expected normal cost change	(0.29)
Data corrections	0.04
Change in demographics	(0.07)
Change in pensionable payroll	(0.14)
Changes in assumptions	<u>(0.48)</u>
For plan year 2003	21.33

As Table 5 shows, the net impact of all changes in assumptions was to decrease the normal cost by 0.48% of pensionable payroll. The two largest individual items were a decrease of 0.32% due to a reduction of the Other Rank's seniority and promotional salary increase assumption and a decrease of 0.45% due to changes in the economic assumptions.

## 2. Projection of Normal Costs

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

Plan Year	Percentage	\$ millions
2003	21.33	660.5
2004	21.35	673.9
2005	21.34	685.7
2006	21.30	697.8
2007	21.20	709.4
2013	20.35	800.3
2018	20.07	940.8

### 3. Allocation of Normal Costs

The foregoing projected normal costs are borne jointly by the contributors and the government. The member contribution rates are known with certainty only to 31 December 2003; beginning in calendar year 2004, the member contribution rates can be set as necessary by the Treasury Board subject to limitations (see Appendix 2). For projection purposes, the current member contribution rates of 4% up to the Year's Maximum Pensionable Earnings (YMPE) and 7.5% of salary above the YMPE were used.

Plan Year	Government (%)	Member (%)	Ratio
2003	16.38	4.94	3.32
2004	16.40	4.96	3.31
2005	16.37	4.98	3.29

### 4. Administrative Expenses of the Fund

Based upon the assumptions described in Appendix 2 the Fund administrative expenses were estimated as follows.

Plan Year	
2003	\$650,400
2004	\$883,600
2005	\$1,124,400

### 5. Contributions for Prior Service Elections and Leave Without Pay

Based upon the valuation data and the assumptions described in item B-8 of Appendix 7, member and government contributions for prior service and leave without pay elections were estimated as follows.

**Table 6 Estimated Contributions for Prior Service**  
(dollars)

Plan Year	Superannuation Account		Pension Fund	
	Member	Government	Member	Government
2003	3,641,000	4,369,200	1,160,000	4,071,600
2004	3,399,000	4,078,800	1,439,000	5,050,900
2005	3,217,000	3,860,400	1,655,000	5,809,100

## 6. Special Payments

Based upon the Pension fund yields described in Appendix 7, the \$5.2 million Pension Fund actuarial deficit could be amortized over the expected average remaining service lifetime of the contributors in 11 equal annual instalments of \$782,200 beginning on 31 March 2004.

## E. Sensitivity to Variations in Key Assumptions

The results below measure the effect on the plan year 2003 normal cost and actuarial surplus for the CFSA if the key economic assumptions are varied one percentage point per annum from plan year 2003 onward.

Assumption(s) Varied	Normal Cost		Superannuation Account		Pension Fund	
	2003 (%)	Effect (%)	Actuarial Surplus (\$ millions)	Effect (\$ millions)	Actuarial Surplus (\$ millions)	Effect (\$ millions)
Current basis	21.33	None	3,897	None	(5)	None
Investment yield						
- if 1% higher	17.92	(3.40)	8,285	4,388	209	214
- if 1% lower	27.39	6.07	(1,702)	(5,598)	(376)	(371)
Inflation						
- if 1% higher	24.67	3.34	(557)	(4,454)	(215)	(210)
- if 1% lower	19.80	(1.53)	7,507	3,610	98	103
Salary increases						
- if 1% higher	23.62	2.29	3,269	(627)	(143)	(138)
- if 1% lower	20.49	(0.84)	4,475	578	50	55
Inflation and salaries						
- if both are 1% higher	26.56	5.24	(1,293)	(5,190)	(332)	(326)
- if both are 1% lower	18.49	(2.84)	8,015	4,118	179	184
Investment yield, inflation and salaries						
- if all are 1% higher	21.30	(0.03)	4,220	323	(6)	0
- if all are 1% lower	22.65	1.32	3,565	(332)	(78)	(73)

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



## F. RCA Valuation Results

The previous valuation results for the RCA portion of the CFSA pension plan were shown in the report on the Retirement Compensation Arrangements Account as at 31 December 1998. Beginning with this valuation, the RCA valuation results are shown in the same report as the CFSA valuation results.

The normal costs, assets and going-concern liabilities presented in this section were computed using the assets, data, methodology and assumptions described in Appendix 8. The solvency liabilities were computed using the valuation methodology and assumptions described in Appendix 9.

### 1. Going-Concern Valuation Results

The following balance sheet was prepared using the assets, methodology, and actuarial assumptions described in Appendix 8.

**Table 7 RCA Balance Sheet**  
as at 31 March 2002 (\$ millions)

<b>Assets</b>	
Account	37.2
Refundable tax	<u>20.6</u>
Total assets	57.7
<b>Actuarial liabilities</b>	
Pensionable excess earnings	
Contributors	87.4
Pensioners	3.9
Survivor Allowance	
Contributors	35.8
Pensioners	<u>11.1</u>
Total actuarial liabilities	138.2
<b>Actuarial surplus/(deficit)</b>	<u>(80.5)</u>

Since the last RCA valuation, the actuarial deficit has decreased by \$6.9 million to \$80.5 million as at 31 March 2002. The increase in the actuarial deficit is the net result of three factors, as follows:

- increase due to plan members with salaries in excess of the maximum pensionable earnings receiving salary increases greater than expected.
- decrease due to the 2003 Federal Budget that increases the currently frozen maximum annual pension accrual of \$1,722 payable from a registered pension plan to \$1,833 for calendar year 2004 and to \$2,000 for calendar year 2005.
- decrease due to changes in economic assumptions.

The actuarial deficit could be amortized, after taking into consideration the special payment of \$13.4 million made at the end of plan year 2003, in 11 equal instalments of \$7.9 million beginning 31 March 2004, based upon half the yield projected on the Superannuation Account shown in Appendix 7.

## 2. Government RCA Normal Costs

The normal costs were computed for the RCA portion of the plan in the same manner as for the CFSA portion of the plan, as described in Appendix 6, except that the RCA actuarial assumptions described in Appendix 8 were used.

**Table 8 Government RCA Normal Costs**  
(\$ millions)

	Plan Year		
	<u>2003</u>	<u>2004</u>	<u>2005</u>
Total Normal Cost			
Pensionable excess earnings	21.3	22.7	24.2
Survivor allowance	<u>3.9</u>	<u>3.8</u>	<u>3.8</u>
Total	25.2	26.5	28.0
Member Contributions	1.5	1.6	1.5
Government Normal Cost	23.6	24.9	26.5
Normal cost as % of total pensionable payroll	0.76%	0.79%	0.82%

Since the last RCA valuation as at 31 December 1998, the projected government normal cost for plan year 2003 has increased by 0.16%, from 0.60% to 0.76%. This is mainly due to the specialist group (doctors, dentists, etc) who have received relatively large salary increases, which almost doubled the aggregate payroll in excess of the current maximum pensionable earnings.

### 3. Solvency Valuation Results

The following balance sheet was prepared using the assets, methodology, and actuarial assumptions described in Appendix 9.

**Table 9 RCA Solvency Balance Sheet**  
as at 31 March 2002 (\$ millions)

<b>Assets</b>	
RCA Account	37.2
Refundable tax	<u>20.6</u>
Total assets	57.7
<b>Actuarial liabilities</b>	
Pensionable excess earnings	
Contributors	39.7
Pensioners	4.2
Survivor allowance	
Contributors	83.1
Pensioners	<u>12.2</u>
Total actuarial liabilities	139.3
Solvency excess/(actuarial deficit)	(81.6)
Solvency ratio	41%

## Actuarial Opinion

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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.

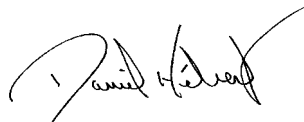
Based on the results of this valuation, we hereby certify that, as at 31 March 2002, the total government cost for the following three years is as follows:

**Table 10 Total Government Cost**  
(\$ millions and % of pensionable payroll)

Plan Year	Normal Cost			Total Cost	
	CFSA	RCA	Other Contributions <sup>1</sup>		
2003	507.5	23.6	21.8	552.9	17.85%
2004	517.5	24.9	17.8	560.2	17.75%
2005	525.8	26.5	18.3	570.6	17.76%

If the plan were to be wound up on the valuation date, the value of the assets in both Superannuation Account and Fund would be greater than the corresponding liabilities of the Superannuation Account and Fund and the value of the RCA Account assets would be less than the RCA Account liabilities.

This report has been prepared, and our opinions given, in accordance with accepted actuarial practice, and particularly with the Canadian Institute of Actuaries' Consolidated Standards of Practice.



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Daniel Hébert  
Senior Actuary  
Office of the Chief Actuary  
Fellow of the Canadian Institute of Actuaries



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

Ottawa, Canada  
13 February 2004

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<sup>1</sup> Includes government contributions for prior service and both CFSA and RCA special payments. Fund administrative expenses are included in the normal cost.

## **Appendix 1 - Developments Occurring After Valuation Date**

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### **A. Pension Fund Rate of Return for Plan Year 2003**

The equity markets suffered substantial losses in plan year 2003 and so the Pension Fund rate of return (-12.2%, based on the method described in Appendix 4-B) fell short of the 6.5% return assumed for it herein. The long-term real rate of return assumed in this valuation is not influenced by the events of a single year unless a fundamental change in the investment environment is identified, which was not the case in plan year 2003. Emerging experience, differing from the assumptions, will result in gains or losses to be revealed in the next valuation.

## Appendix 2 - Summary of Plan Provisions

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Pensions for members of the Canadian Forces (the *regular force*) were first provided under the Militia Pension Act of 1901, when in 1950 it became the *Defence Services Pension Act* until the *Defence Services Pension Continuation Act* and the *Canadian Forces Superannuation Act* (CFSA) were enacted in 1959. Benefits are also provided to members of the Canadian Regular Forces under the *Special Retirement Arrangements Act*. Benefits are modified if the *Pension Benefits Division Act* is applicable.

The current plan provisions are summarized in this appendix without distinguishing between the benefits provided under the CFSA, which is a registered pension plan under the *Income Tax Act*, and those provided under retirement compensation arrangements (RCAs), which differ from registered pension plans only in that taxation of contributions and investment earnings is current rather than deferred. The portion of the plan benefits in excess of the *Income Tax Act* limits for registered pension plans is provided under the RCAs described in Appendix 3.

The legislation shall prevail if there is a discrepancy between it and this summary.

### A. Membership

Membership in the plan is compulsory for all active members of the Canadian Forces. It includes the forces known before 1 February 1968 as the regular forces of the Canadian Forces and the forces known before 1 February 1968 as the Royal Canadian Navy, the Canadian Army Active Force, the Permanent Active Militia, the Permanent Militia Corps, the permanent staff of the Militia, the Royal Canadian Air Force (Regular) and the permanent Active Air Force.

### B. Contributions

#### 1. Members

During the first 35 years of pensionable service, members contribute 4% of pensionable earnings up to the YMPE and 7.5% of salary above it. After 35 years of pensionable service, contributors make required contributions of 1% of pensionable earnings. If eligible, a member may elect to contribute for prior service.

#### 2. Government

##### a) Current Service

The Government determines its normal monthly contribution as that amount, which when combined with the required contributions by contributors in respect of current service, is sufficient to cover the cost of all future benefits that have accrued in respect of pensionable service during that month. This cost is estimated by the President of the Treasury Board in consultation with the Minister of National Defence.

**b) Elected Prior Service**

For prior service elections made before 1 April 2000 the government contributes 1.2 times as much as the resulting member contributions to the Superannuation Account. For prior service elections made on or after 1 April 2000 the government contributes 3.51 times as much as the resulting member contributions to the Pension Fund.

**c) Fund Administrative Expenses**

The government contributes the necessary amount to cover the administrative expenses incurred by the Pension Fund.

**d) Actuarial Surpluses**

Bill C-78, which received Royal Assent on 14 September 1999, gives the government the authority to:

- debit surpluses from the Canadian Forces (CF) Superannuation Account in instalments over a period of up to 15 years; and,
- deal with any surpluses in the new CF Pension Fund as they occur, either by reducing employee and/or employer contributions, by withdrawing amounts from the Fund or by modifying benefits.

**e) Unfunded Liability**

If an unfunded actuarial liability is identified through a triennial statutory actuarial report, the CF Superannuation Account and/or the CF Pension Fund are to be credited with such annual amounts that in the opinion of the President of the Treasury Board will fully amortise these deficits over a period not exceeding 15 years.

**C. Summary Description of Benefits**

The pension plan established under the *Canadian Forces Superannuation Act* mainly aims at providing an employment earnings-related lifetime retirement pension to the eligible members of the Canadian Forces. The plan also provides benefits to members in case of disability and to the spouse and children in case of death.

Subject to its integration with the pensions paid by the Canada Pension Plan, the initial rate of retirement pension is equal to 2% of the highest average of annual pensionable earnings over any period of five consecutive years, multiplied by the number of years of pensionable service not exceeding 35. The pension is indexed annually with the Consumer Price Index and the accumulated indexation may be payable at the earliest of age 55 as defined in Note 2 of section D below. Entitlement to benefits depends on either service in the Force or pensionable service, as defined below in Notes 3 and 4 of section D below.

Detailed notes on the following overview are provided in section D.

## 1. Contributors<sup>1</sup>

Type of Termination	Service in the Regular Force <i>(Note 3)</i>	Benefit
Retirement because of age <i>(Note 7)</i>	3 years or less	Return of contributions <i>(Note 8)</i>
	More than 3 but less than 10 years	Return of contributions or cash termination allowance <i>(Note 9)</i> , whichever is the greater
	10 years or more	Immediate annuity <i>(Note 10)</i>
Retirement on completion of short engagement (an officer contributor other than a subordinate officer who has not reached retirement age and is not serving on an intermediate engagement or for an indefinite period of service) <i>(Note 5)</i>	Less than 10 years	Return of contributions <i>(Note 8)</i>
	At least 10 but less than 20 years	At option of contributor (1) return of contributions; or (2) deferred annuity <i>(Note 11)</i>
	20 years or more	See “Retirement for reasons other than those previously mentioned”
Retirement during an indefinite period of service after having completed an intermediate engagement and prior to reaching retirement age, for reasons other than disability or, to promote economy or efficiency	Any length	Immediate annuity to which contributor was entitled upon completion of intermediate engagement increased to such extent as prescribed by regulation <sup>2</sup> <i>(Note 12)</i>
Retirement on completion of intermediate engagement (a contributor who has not reached retirement age and is not serving for an indefinite period of service) <i>(Note 6)</i>	20 years or more	Immediate annuity <i>(Note 10)</i>

1 Pursuant to the CFSA, contributors include persons no longer required to contribute to the CFS Fund.

2 The CFSA limits the annuity to the immediate annuity to which the contributor would be entitled if retiring because of age or disability, and the formula in the CFS Regulations (note 13) always produces less than the maximum.



<b>Type of Termination</b>	<b>Service in the Regular Force</b> <i>(Note 3)</i>	<b>Benefit</b>
Compulsory retirement because of disability <sup>1</sup>	Less than 10 years	Return of contributions or cash termination allowance, whichever is greater
	10 years or more	Immediate annuity
Compulsory retirement to promote economy or efficiency	3 years or less	Return of contributions
	More than 3 but less than 10 years	Return of contributions or cash termination allowance, whichever is greater
	At least 10 but less than 20 years	At option of contributor (1) return of contributions; or (2) deferred annuity; or (3) with consent of the Minister of National Defence, an immediate reduced annuity <i>(Note 13)</i>
	20 years or more	Immediate annuity
Retirement for reasons other than those previously mentioned	Less than 10 years	Return of contributions
	At least 10 but Less than 20 years	At option of contributor: return of contributions; or deferred annuity
	At least 20 but Less than 25 years	Immediate reduced annuity
	25 years or more	Officer contributor - immediate reduced annuity <i>(Note 13)</i> ; Other than officer contributor: - immediate annuity <i>(Note 10)</i>

<sup>1</sup> Any condition rendering a member of the regular force mentally or physically unfit to perform his or her duties. A member is discharged under Q. R. & O. 15.01 Article 3B when he or she is unable to perform the duties of his or her own occupation. A member is discharged under Q.R. & O. 15.01 Article 3A when he or she is unable to perform any occupation.

## 2. Benefits in Case of Death of a Contributor

Status at Death	Service in the Regular Force <i>(Note 3)</i>	Benefit
Leaving no eligible spouse or children under 25 <i>(Notes 14 and 15)</i>	Less than 10 years	Return of contributions or cash termination allowance, whichever is greater
	10 years or more	Five times the annual amount of retirement pension to which the contributor would have been entitled at the date of death
Leaving eligible spouse and/or children under 25	Less than 5 years	Return of contributions or an amount equal to one month's earnings of the deceased contributor for each year of credited pensionable service, whichever is the greater
	5 years or more	Annual allowance <i>(Note 16)</i>

## 3. Benefits in Case of Death of a Pensioner

Status at Death	Benefit
Leaving no eligible spouse or children under 25	Minimum death benefit <i>(Note 17)</i>
Leaving eligible spouse and/or children under 25	Annual allowance <i>(Note 16)</i>

## D. Explanatory Notes

### 1. Pensionable Earnings

*Pensionable earnings* means the salary at the annual rate prescribed by the regulations made pursuant to the *National Defence Act* together with the allowances representing medical-dental care costs prescribed by the Canadian Forces Superannuation Regulations to a contributor.

*Pensionable payroll* means the aggregate pensionable earnings of all contributors with less than 35 years of pensionable service.

### 2. Indexation

#### a) Level of Indexation Adjustments

All immediate and deferred annuities (pensions and allowances) are adjusted every January to the extent warranted by the increase, as at 30 September of the previous year, in the 12-month average Consumer Price Index. If the indicated adjustment is

negative, annuities are not decreased for that year; however, the next following adjustment is diminished accordingly.

**b) First Indexation Adjustment**

Indexation adjustments accrue from the end of the month in which employment terminates. The first annual adjustment following termination of employment is prorated accordingly.

**c) Commencement of Indexation Payments**

The indexation portion of a retirement, disability or survivor pension normally starts being paid when the pension is put into pay. However, regarding a retirement pension, the pensioner must be at least 55 years old provided also the sum of age and pensionable service is at least 85; otherwise the retirement pensioner must be at least 60 years old.

**3. Service in the Regular Force**

For most purposes of the CFSA, “service in the regular force” means service in the regular force of the Canadian Forces or its predecessors excluding any service for which a contributor was paid a return of contributions or lump sum payment under the CFSA that he or she did not elect to repay on subsequent enrolment.

**4. Pensionable Service**

Pensionable service includes any period of service in the regular force in respect of which a contributor either (1) made contributions that remain in the Account or Fund or (2) elected to contribute. It also includes any period of prior service for which a contributor was paid a return of contributions or lump sum payment under the CFSA that he or she did elect to repay on subsequent enrolment.

**5. Short Engagement**

Short engagement means a continuous period of service as a commissioned officer in the regular force for a period not exceeding nine years.

**6. Intermediate Engagement**

Intermediate engagement means 20 years of continuous service as a member of the regular force.

**7. Retirement Because of Age**

Retirement because of age means ceasing to be a member of the regular force at or after the prescribed retirement age for any reason other than disability, misconduct or death. A retirement age of 55 applies for all members serving under the career programs adopted in 1975.

For those members enrolled prior to the introduction of the 1975 programs and not subject to their provisions, the previous rules for retirement age continue to apply. These

rules, effective 1 February 1968, applicable to contributors who enrolled on or after that date, or to those serving on that date that elected to be subject to such rules, are shown in the table on the next page.

	Pre-1975 Retirement Age		
	<u>General Service</u>	<u>Specialist Service</u>	<u>Commissioned From Rank</u>
Brigadier-General and above	55	60	55
Colonel	55	58	55
Lieutenant-Colonel	51	55	50
Major	47	55	50
Captain and Lieutenant	45	50	50
Others Ranks above Corporal	50		
Corporal and below	44		

For those contributors serving on 1 February 1968 who did not elect to have these rules apply to them, the retirement age is as in the table above but varies slightly by rank and by branch of the Forces.

For those contributors to whom the above rules would normally apply, the regulations also prescribe, for purposes of compulsory retirement under certain conditions or voluntary retirement, that the retirement age will be deemed to have been reached only upon completion of the following periods of full-time paid service in any of Her Majesty's Forces, if the resulting date of retirement is earlier.

	<u>Years of Service</u>
Colonel and above	30
Officers below Colonel	28
Other Ranks above Corporal	30
Corporal and below	25

## 8. Return of Contributions

Return of contributions means the payment of an amount equal to the accumulated current and prior service contributions paid or transferred by the contributor into the Account and/or into the Fund. Interest is credited at the quarterly Fund rate each quarter on the accumulated contributions with interest as at the end of the previous quarter.

## 9. Cash Termination Allowance

Cash termination allowance means the payment of an amount equal to one month's employment earnings at the rate authorized to be paid to the contributor at date of

termination multiplied by the number of years of pensionable service to the credit of the contributor minus the total reduction in employee contributions to the CFS Account by virtue of the integration of the plan with the CPP.

## 10. Immediate Annuity

Immediate annuity means an unreduced pension that becomes payable immediately upon a pensionable retirement or a pensionable disability. The annual amount is equal to 2% of the highest average of annual pensionable earnings (calculated without reference to the yearly maximum described in Note 1) of the contributor over any period of five<sup>1</sup> consecutive years, multiplied by the number of years of pensionable service not exceeding 35. However, if such highest five-year earnings average exceeds the yearly maximum prescribed for the calendar year in which service is terminated, then the annual amount is reduced by 2% of such excess, multiplied by the number of years of pensionable service after April 1995.

When a pensioner attains age 65 or becomes entitled to a disability pension from the CPP, the annual amount of pension is reduced by 0.7% of the indexed CPP annual pensionable earnings<sup>2</sup> (or, if lesser, the indexed five-year average earnings on which the immediate annuity is based), multiplied by the years of CPP pensionable service<sup>3</sup>.

Annuities are payable in equal monthly instalments in arrears until the end of the month in which the pensioner dies or when the disability pensioner recovers from disability. Upon the death of the pensioner, either a survivor allowance (Note 16) or a minimum death benefit (Note 17) may be payable.

## 11. Deferred Annuity

Deferred annuity means an annuity that normally becomes payable to a retirement pensioner when he/she reaches age 60. The annual payment is determined like that of an immediate annuity (see note 10 above) but is adjusted to reflect the indexation (see page 26) from date of termination to the commencement of annuity payments.

When a contributor entitled to a deferred annuity becomes disabled before reaching age 60, the contributor ceases to be entitled to that deferred annuity and becomes entitled to an immediate annuity.

When a contributor, being entitled while still under age 60 to an immediate annuity in respect of a disability, recovers from that disability, the disability annuity payments are terminated and the contributor becomes entitled to a deferred annuity.

<sup>1</sup> If the number of years of pensionable service is less than five, then the average is over the entire period of pensionable service.

<sup>2</sup> Indexed CPP annual pensionable earnings means the average of the YMPE, as defined in the CPP, over the last five years of pensionable service, increased by indexation proportionate to that accrued in respect of the immediate annuity.

<sup>3</sup> Years of CPP pensionable service, means the number of years of pensionable service after 1965 or after attaining age 18, whichever is later, but not exceeding 35.

## **12. Annuity Payable upon Retirement During an Indefinite Period of Service**

For a contributor who has not reached retirement age and ceases to be a member of the regular force while on an indefinite period of service after completing an intermediate engagement for any reason other than disability, or to promote economy or efficiency, Canadian Forces Superannuation Regulations prescribe an annuity that is equal to the greater of:

- (a) an immediate annuity based on the pensionable service to the date of completion of the intermediate engagement only and the highest five-year earnings average at date of retirement, and
- (b) an immediate annuity based upon the total pensionable service to the date of retirement and the highest five-year employment earnings average at that date reduced by 5% of such amount of annuity for each full year by which:
  - in the case of an officer, the age at the date of retirement is less than the retirement age applicable to the contributor's rank; or
  - in the case of a contributor other than an officer, the age at the date of retirement is less than the retirement age applicable to the contributor's rank or the period of service in the regular force is less than 25 years, whichever is the lesser.

## **13. Immediate Reduced Annuity**

Immediate reduced annuity means an immediate annuity for which the annual amount of the annuity as determined in note 10 is reduced as stated below.

With the consent of the Minister of National Defence, a contributor who is required to terminate to promote economy or efficiency and has between 10 and 20 years of service in the regular force may choose an immediate annuity reduced, until attainment of age 65 but not thereafter, by 5% for each full year not exceeding six by which:

- (a) the period of service in the regular force is less than 20 years; or
- (b) the age of the contributor at the time of retirement is less than the retirement age applicable to the contributor's rank,

whichever is the lesser.

A contributor who, not having reached retirement age, ceases to be a member of the regular force for any reason other than disability, or to promote economy or efficiency, or while on an indefinite period of service is entitled

- (a) as an officer having served in the regular force for 20 years or more, to an immediate annuity reduced by 5% for each full year by which his or her age at the time of retirement is less than the retirement age applicable to his or her rank, or

- (b) as other than an officer having served in the regular force for 20 years or more but less than 25 years, to an immediate annuity reduced by 5% for each full year by which:
- the period of service in the regular force is less than 25 years, or
  - the age at the time of retirement is less than the retirement age applicable to the contributor's rank,

whichever is the lesser.

When a pensioner in receipt of an immediate reduced annuity becomes disabled before reaching age 60, the pensioner ceases to be entitled to that immediate reduced annuity and becomes entitled to an immediate annuity adjusted in accordance with regulations to take into account the amount of any immediate reduced annuity which the pensioner may have received prior to becoming disabled.

#### **14. Eligible Surviving Spouse**

Eligible surviving spouse means the surviving spouse of a contributor or pensioner except if:

- (a) the contributor or pensioner died within one year of marriage unless the Minister of National Defence is satisfied that the contributor's health at the time of the marriage justified an expectation of surviving for at least one year; or
- (b) the pensioner married at age 60 or over, unless after such marriage the pensioner either:
- became a contributor again (in such cases, common-law unions are accepted), or
  - made an optional survivor benefit election within 12 months following marriage to accept a reduced pension so that the new spouse would be eligible for a survivor benefit. This reduction is reversed if and when the new spouse predeceases the pensioner or the spousal union is terminated for reason other than death; or
- (c) the pensioner is a female who retired before 20 December 1975 and did not make an optional survivor benefit election within the one-year period ending 6 May 1995.

#### **15. Eligible Surviving Children**

Eligible surviving children includes all children of the contributor or pensioner who are under age 18, and any child of the contributor or pensioner who is age 18 or over but under 25, in full-time attendance at a school or university, having been in such attendance substantially without interruption since he or she reached age 18 or the contributor or pensioner died, whichever occurred later.

## **16. 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 five consecutive years, multiplied by the number of years of pensionable service not exceeding 35. If such highest five-year earnings average exceeds the yearly maximum prescribed for the calendar year in which service is terminated, then the annual amount is reduced by 2% of such excess, multiplied by the number of years of pensionable service after April 1995.

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.

Annual allowances are not integrated with the CPP and are payable in equal monthly instalments in arrears until the end of the month in which the survivor dies or otherwise loses eligibility. If applicable, a residual benefit (Note 17) is payable to the estate upon the death of the last survivor.

## **17. Minimum Death Benefit**

If upon the death of a contributor there is no person to whom an allowance provided under the terms of the CFSA may be paid, or if the persons to whom such allowances may be paid die or cease to be entitled thereto and no other amount may be paid to them, there is paid to the estate of the contributor or to the named beneficiary under CFSA Part II, if any exist:

- (a) if the contributor was not a member of the regular force upon or after 20 December 1975, any amount by which the amount of return of contributions exceeds the aggregate of all amounts paid to those persons and to the contributor;
- (b) if the contributor was a member of the regular force upon or after 20 December 1975, an amount similar to the above except that the return of contributions is taken as at least equal to five times the basic annuity to which the contributor was or would have been entitled at the time of his or her death; or
- (c) if the contributor was retired and entitled to an immediate annuity from which a deduction had been made as a result of integration with the CPP, the amount payable in (a) or (b) above cannot be less than the amount by which the cash termination allowance (see Note 9 above) exceeds the aggregate of all amounts already paid to those persons and to the contributor.



## **18. Division of Pension in Case of Spousal Union Breakdown**

In accordance with the *Pension Benefits Division Act*, upon the breakdown of a spousal union (including common-law), a lump sum can be transferred by court order or by mutual consent from the plan assets to the credit of the former spouse of a contributor or pensioner. As at the transfer date, the maximum transferable amount is half the value of the retirement pension accrued by the contributor or pensioner during the period of cohabitation. If the member's benefits are not vested, the maximum transferable amount corresponds to half the member's contributions made during the period subject to division, accumulated with interest at the rate applicable on a refund of contributions. The benefits of the contributor or pensioner are then reduced accordingly.

## Appendix 3 - RCA Benefit Provisions

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This Appendix describes the Canadian Forces pension plan benefits funded through a retirement compensation account (RCA) rather than through the registered CFSA plan. As described in Appendix 2, RCAs are pension plans not subject to the benefit limitations of registered pension plans because they are less tax-advantaged.

### A. Annual Allowance for Eligible Survivors

If the annual allowance for an eligible survivor described in Note 16 of section D of Appendix 2 exceeds the tax-related limits described hereafter for registered plans, then the excess in respect of service only from 1 January 1992 is payable from the RCA.

#### 1. Tax-related limits on pre-retirement survivor benefits

The total of all pre-retirement survivor pensions payable in respect of a deceased member may not exceed the member's projected lifetime retirement benefit and the amount of spouse allowance may not exceed two-thirds of the projected lifetime retirement benefit.

The member's projected lifetime retirement benefit is the greater of:

- a) the deceased member's accrued pension reduced by the CPP offset; and
- b) the lesser of:
  - i) the member's projected retirement benefit at age 65 based on current salary history, and
  - ii) 1.5 times the YMPE in effect in the year of the member's death.

#### 2. Tax-related limits on post-retirement survivor benefits

The amount of spouse allowance provided under the plan 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.

### B. Excess Pensionable Earnings

The highest average of pensionable earnings under a registered defined benefit pension plan is subject to a prescribed yearly maximum. Because the plan is integrated with the pensions paid by the Canada Pension Plan, the prescribed maximum is derived from both the maximum annual pension benefit (\$1,722.22 for calendar year 2002) payable from a registered defined benefit pension plan and the YMPE. The maximum was \$99,800 for the 2002 calendar year.

To the extent that a member's average earnings at retirement exceed the prescribed yearly maximum, the corresponding excess pension, in respect of service from 1 May 1995, is payable from the RCA.

## Appendix 4 - Plan Assets and Rates of Return

### A. Plan Assets

#### 1. Canadian Forces Superannuation Account

CFSA benefits earned up to 31 March 2000 are entirely financed through the Canadian Forces Superannuation Account, which forms part of the Public Accounts of Canada. The Account was credited with all CFSA contributions made by members and the government up to 31 March 2000, as well as with prior service contributions for elections made prior to 1 April 2000 and leave without pay contributions for periods before 1 April 2000 but remitted after that date. It is charged with both the benefit payments made in respect of service earned under the Account and the allocated portion of the plan administrative expenses.

The Account is 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. No formal debt instrument is issued to the Account by the government in recognition of the amounts therein. Investment earnings are credited every three months on the basis of the average yield for the same period on the combined Superannuation Accounts of the Public Service, Canadian Forces and RCMP pension plans.

**Table 11 Reconciliation of Balances in Superannuation Account**  
(\$ millions)

Plan year	2001	2002	2001-2002
Public Accounts opening balance	48,410.2	50,882.4	48,410.2
<b>INCOME</b>			
Investment earnings	4,287.4	4,387.0	8,674.4
Employer contributions	13.7	16.6	30.3
Employee contributions	7.6	8.2	15.8
Transfers received	4.5	4.6	9.1
Actuarial liability adjustments	<u>0.0</u>	<u>(14,771.8)</u>	<u>(14,771.8)</u>
Subtotal	4,313.2	(10,355.4)	(6,042.2)
<b>EXPENDITURES</b>			
Annuities	1,780.8	1,844.3	3,625.1
Pension divisions	35.8	36.2	72.0
Return of contributions	18.0	0.0	18.0
Transfers to other pension plans	0.0	0.4	0.4
Minimum benefits	0.0	12.1	12.1
Administrative expenses	<u>6.3</u>	<u>7.3</u>	<u>13.6</u>
Subtotal	1,840.9	1,900.3	3,741.2
Public Accounts closing balance	50,882.5	38,626.7	38,626.8

The foregoing table shows the reconciliation of the assets in the Canadian Forces Superannuation Account between the last valuation date and the current valuation date. Since the last valuation, the Account balance has decreased by \$9,783 million (a 20% reduction) to reach \$38,627 million as at 31 March 2002.

## 2. Canadian Forces Pension Fund

Since 1 April 2000 CFSA contributions (except for prior service elections made prior to 1 April 2000) have been credited to the Canadian Forces Pension Fund. The Fund is invested in the financial markets with a view to achieving maximum rates of return without undue risk.

The Fund has been credited with all CFSA contributions since 1 April 2000, as well as with prior service contributions in respect of elections made after 31 March 2000 and leave without pay contributions for periods after 31 March 2000. The Fund is also credited with the net investment earnings generated by its capital assets. It is charged with both the benefit payments made in respect of service earned under the Fund and the allocated portion of the plan administrative expenses.

**Table 12 Reconciliation of Balances in Pension Fund**  
(\$ millions)

Plan year	2001	2002	2001-2002
Opening balance	0.0	589.0	0.0
INCOME			
Investment earnings	(48.6)	29.6	(19.0)
Employer contributions	497.3	512.2	1,009.5
Employee contributions	141.7	145.9	287.6
Transfers received	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
Subtotal	590.4	687.7	1,278.1
EXPENDITURES			
Annuities	0.4	2.6	3.0
Pension divisions	0.0	0.1	0.1
Return of contributions	0.8	0.0	0.8
Transfers to other pension plans	0.0	0.0	0.0
Minimum benefits	0.0	2.5	2.5
Administrative expenses	<u>0.1</u>	<u>0.2</u>	<u>0.3</u>
Subtotal	1.3	5.4	6.7
Closing Balance	589.1	1,271.3	1,271.4

The foregoing table shows the reconciliation of the assets (market value) in the Canadian Forces Pension Fund from its inception to the current valuation date.

**B. Rates of Return**

The following CFSA rates of return by plan year were calculated using the foregoing entries. The Account yields are based on book values because the notional bonds are considered held to maturity. The Fund yields are based on market values to measure its actual performance. The results were computed using the dollar-weighted approach, assuming a uniform distribution of cash flows during the plan year (except for actuarial liability adjustments, which occurred on 31 March) by imputing to them one-half year of interest.

Plan Year	Superannuation Account	Pension Fund
2000	9.31%	n/a
2001	9.03%	-15.05%
2002	8.78%	3.41%

**C. Sources of Asset Data**

The Account and Fund entries shown in section A above were taken from the Public 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 2002.

## Appendix 5 - Membership Data

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### A. Sources of Membership Data

The individual data in respect of contributors, pensioners, and eligible survivors were provided by the Department of National Defence as at 31 March 2002, and are shown in the summaries of data in this Appendix.

### B. Validation of Membership Data

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

- reconciling the membership data with the data used in the previous valuation report (see tables 13, 14 and 15);
- comparing the membership with that published in the Report on the Administration of the Canadian Forces Superannuation Account for the year ending 31 March 2002;
- checking that the salary of a contributor is within a certain range reasonably consistent with the salary of that contributor in the previous valuation report;
- verifying that the pensionable service of a contributor is reasonably consistent with the attained age; and
- comparing the initial pension of each contributor retiring during the period with the expected pension based on the 31 March 2002 valuation data, taking into account any changes arising from service after 31 March 1999.

Based on the omissions and discrepancies identified by these and other tests, appropriate adjustments were made to the basic data after consulting with the Department of National Defence who provided them.

### C. Reconciliation of Membership Data

The following tables, derived from the basic data, shows pertinent statistics concerning contributors, pensioners, and survivors during the period from April 1999 to March 2002 inclusive.

**Table 13 Reconciliation of Contributors**

	<u>Male</u>			<u>Female</u>			<u>Total</u>
	<u>Officers</u>	<u>Other Ranks</u>	<u>Total</u>	<u>Officers</u>	<u>Other Ranks</u>	<u>Total</u>	
Contributors as at 31 March 1999	11,368	41,692	53,060	1,584	4,899	6,483	59,543
Data corrections <sup>1</sup>	457	(361)	96	64	(3)	61	157
New entrants <sup>2</sup>	1,553	7,088	8,641	464	1,362	1,826	10,467
Terminations							
Annuity benefits							
Death	(12)	(60)	(72)	(2)	(5)	(7)	(79)
Disabled 3A	(5)	(44)	(49)	(1)	(27)	(28)	(77)
Disabled 3B	(116)	(1,170)	(1,286)	(28)	(253)	(281)	(1,567)
Other <sup>3</sup>	<u>(1,017)</u>	<u>(3,769)</u>	<u>(4,786)</u>	<u>(57)</u>	<u>(396)</u>	<u>(453)</u>	<u>(5,239)</u>
Subtotal	(1,150)	(5,043)	(6,193)	(88)	(681)	(769)	(6,962)
Lump sum benefits							
Death	(5)	(31)	(36)	0	(5)	(5)	(41)
Disabled 3A	(1)	(2)	(3)	0	(2)	(2)	(5)
Disabled 3B	(33)	(146)	(179)	(16)	(26)	(42)	(221)
Other <sup>3</sup>	<u>(681)</u>	<u>(2,381)</u>	<u>(3,062)</u>	<u>(171)</u>	<u>(322)</u>	<u>(493)</u>	<u>(3,555)</u>
Subtotal	(720)	(2,560)	(3,280)	(187)	(355)	(542)	(3,822)
Total terminations	(1,870)	(7,603)	(9,473)	(275)	(1,036)	(1,311)	(10,784)
Contributors as at 31 March 2002	11,508	40,816	52,324	1,837	5,222	7,059	59,383

<sup>1</sup> On this line, contributors who had other rank status on 31 March 1999 and who attained officer status between April 1999 and March 2002 are shown as officers rather than other ranks.

<sup>2</sup> Excludes 1,084 contributors, entitled to a lump sum, who were released from the Forces during their year of entry.

<sup>3</sup> Compulsory retirements because of age, promotion of economy or efficiency, and all retirements for other reasons.

**Table 14 Reconciliation of Pensioners**

	<u>Male</u>			<u>Female</u>			<u>Total</u>
	<u>Officers</u>	<u>Other Ranks</u>	<u>Total</u>	<u>Officers</u>	<u>Other Ranks</u>	<u>Total</u>	
<b>Retirement Pensioners<sup>1</sup></b>							
Entitled as at 31 March 1999	16,622	54,114	70,736	538	1,644	2,182	72,918
Data corrections	(21)	(38)	(59)	0	(10)	(10)	(69)
New entitlements	1,017	3,769	4,786	57	396	453	5,239
Terminations							
Death	(1,073)	(3,223)	(4,296)	(14)	(22)	(36)	(4,332)
Other <sup>2</sup>	<u>(59)</u>	<u>(139)</u>	<u>(198)</u>	<u>(5)</u>	<u>(28)</u>	<u>(33)</u>	<u>(231)</u>
Subtotal	(1,132)	(3,362)	(4,494)	(19)	(50)	(69)	(4,563)
Entitled as at 31 March 2002	16,486	54,483	70,969	576	1,980	2,556	73,525
<b>Disability Pensioners (3A)</b>							
Entitled as at 31 March 1999	264	3,557	3,821	18	44	62	3,883
Data corrections	(1)	(1)	(2)	0	0	0	(2)
New entitlements	5	44	49	1	27	28	77
Death	(38)	(425)	(463)	(1)	(1)	(2)	(465)
Entitled as at 31 March 2002	230	3,175	3,405	18	70	88	3,493
<b>Disability Pensioners (3B)</b>							
Entitled as at 31 March 1999	222	3,125	3,347	30	309	339	3,686
Data corrections	3	(4)	(1)	0	(1)	(1)	(2)
New entitlements	116	1,170	1,286	28	253	281	1,567
Terminations							
Death	(8)	(92)	(100)	(1)	0	(1)	(101)
Other <sup>2</sup>	<u>0</u>	<u>(1)</u>	<u>(1)</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>(1)</u>
Subtotal	(8)	(93)	(101)	(1)	0	(1)	(102)
Entitled as at 31 March 2002	333	4,198	4,531	57	561	618	5,149

<sup>1</sup> Includes 92 former contributors as at 31 March 2002 whose pension benefits are deferred to age 60.

<sup>2</sup> Includes re-enrolments in the regular force and transfers to other Superannuation plans.



**Table 15 Reconciliation of Survivors**

	<u>Widows</u>	<u>Widowers</u>	<u>Total</u>	<u>Children Under 18</u>	<u>Students 18 to 24</u>	<u>Total</u>
Entitled as at 31 March 1999	18,880	39	18,919	481	523	1,004
Data corrections	2	0	2	(158)	(109)	(267)
New entitlements	3,223	14	3,237	99	10	109
Terminations	<u>(1,669)</u>	<u>0</u>	<u>(1,669)</u>	<u>(10)</u>	<u>(2)</u>	<u>(12)</u>
Entitled as at 31 March 2002	20,436	53	20,489	412	422	834

## Appendix 6 - CFSA Going-Concern Valuation Methodology

### A. Plan Assets

#### 1. Superannuation Account

The Superannuation Account assets consist essentially of the recorded balance in the Public Accounts of Canada. These assets are shown at the book value of the underlying notional bond portfolio described in Appendix 4. For consistency the liabilities are determined using the projected Account yields, shown in Appendix 7, that fully reflect the earning power of the assets.

The only other Account-related asset consists of the discounted value of future member contributions and government credits in respect of prior service elections and leave without pay service. The discounted value of the future contributions and credits was calculated using the projected Account yields.

#### 2. Pension Fund

For valuation purposes, we used an adjusted market value method to determine the actuarial value of the Pension Fund assets. Under the method, the difference between all investment returns accrued during a given plan year and the expected investment returns for that year based on the previous report assumptions is spread over five years.

As a result the actuarial value of assets is a five-year smoothed market value where the appreciation of investment gains or losses is recognized at the rate of 20% per year. The value produced by this method is related to the market value of the assets, but is more stable than the market value.

The actuarial value of the assets determined under the adjusted market value method is \$1,323.6 million as at 31 March 2002. This value was determined as follows:

**Table 16 Actuarial Value of Pension Fund Assets**  
as at 31 March 2002 (\$ millions)

Plan Year	2001	2002	
Actual net investment return	(47.9)	31.2	
Expected investment return	4.8	56.9	
Investment gains (losses)	(52.7)	(25.7)	
Unrecognized percentage	60%	80%	
Unrecognized investment gains (losses)	(31.6)	(20.5)	
Market value as at 31 March 2002			1,271.4
<i>Less</i>			
Unrecognized investment gains (losses)			(52.1)
Actuarial value as at 31 March 2002			1,323.5

The only other Fund-related asset consists of the discounted value of future member and government contributions in respect of prior service elections and leave without pay service. The discounted value of the future contributions and credits was calculated using the assumed yield on the Pension Fund.

## **B. Normal Costs and Liabilities**

To determine the CFSA normal costs and liabilities, the cost effect of the yearly maximum salary cap and other benefit limits under the *Income Tax Act* described in Appendix 3 are applied as an offset to the liabilities and normal costs calculated without consideration thereof. The method to calculate the offset is fully described in Appendix 8 discussing the RCA valuation methodology.

### **1. Normal Costs**

The projected accrued benefit actuarial cost method (also known as the projected unit credit method) was used to compute normal costs. Under this method the normal cost computed in respect of a given year is the sum of

- the value, discounted in accordance with the projected Fund yields shown in Appendix 7, of all future benefits considered to accrue in respect of that year's service, and
- the estimated administrative expenses to be charged to the Fund in that year.

Consistent with this cost method, pensionable earnings are projected up to retirement using the assumed annual increases in average pensionable earnings (including seniority and promotional increases).

### **2. Liabilities**

#### **a) Contributors**

Consistent with the projected accrued benefit actuarial cost method employed to estimate normal costs, the liabilities in respect of contributors as at the valuation date correspond to the value, discounted in accordance with the projected yields on the Account or the Fund described below and shown in Appendix 7, of all future benefits accrued as at that date in respect of all previous service.

#### **b) Pensioners and Survivors**

Consistent with accepted actuarial practice and standards, the liabilities as at the valuation date in respect of pensioners (including deferred annuitants) and survivors correspond to the value, using the projected yields on the Account or the Fund described in section C below and shown in Appendix 7, of all future benefits.

## **C. Projected Yields**

The projected yields (shown in Appendix 7) assumed in computing the present value of benefits accrued under the Superannuation Account (i.e. the Account liabilities) are the

projected annual yields on the combined book value of the Superannuation Accounts of the Public Service, Canadian Forces, and RCMP pension plans.

The projected Account yields were determined by an iterative process involving the following:

- the combined notional bond portfolio of the three Accounts as at the valuation date;
- the assumed future new money interest rates (also shown in Appendix 7);
- the future expected benefits payable in respect of all pension entitlements accrued up to 31 March 2002;
- the expected future contributions for prior service elections;
- the expected future administrative expenses, and
- always taking into account that each quarterly interest credit to an Account is calculated as if the principal at the beginning of a quarter remains unchanged during the quarter.

The projected yields (shown in Appendix 7) assumed in computing the present value of the benefits accrued or accruing under the Pension Fund (i.e. the Fund liabilities and the normal cost) were developed on the basis of the Fund holding a diversified mixture of assets.

#### **D. Membership Data**

For valuation purposes, individual data on each member were used. The member data shown in Appendix 4 were provided as at 31 March 2002.

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## Appendix 7 - CFSA Going-Concern Actuarial Assumptions

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The likelihood of the plan being wound-up with insufficient assets is practically nonexistent because the government sponsors the plan. Consequently all the assumptions used in this report are best-estimate assumptions, i.e. they reflect our best judgement of the future long-term experience of the plan.

### A. Economic Assumptions

#### 1. Key Economic Assumptions

The following key economic assumptions are required for valuation purposes. These assumptions are generally lower than those used in the previous valuation.

##### a) Level of Inflation

Price increases, as measured by changes in the Consumer Price Index, tend to fluctuate from year to year. Based on historical trends, the renewed commitment of the Bank of Canada and the government to keep inflation between 1% and 3% over the next five years and judgement about the long-term outlook for inflation, an ultimate rate of price increase of 2.7% was assumed for 2014 and thereafter. Recognizing recent experience, the rate of price increase is assumed at 2.2% for plan year 2003 and 2.0% for years 2004 to 2007. From 2008 the rate is then uniformly increased to its ultimate level of 2.7% in 2014. In the previous valuation the ultimate rate of price increase was assumed to be 3.0%.

##### b) Real Increases in Average Earnings

Salary increases consist of a combination of inflation, productivity growth (i.e. real increase in average employment earnings in excess of inflation) and seniority and promotional increase. Seniority and promotion is strongly service-based and is therefore considered to be a demographic assumption rather than an economic assumption.

The assumed ultimate productivity rate was 0.9% per annum. This is closer to the average Canadian experience of the past 50 years (1.43% per annum) than that of the past 25 years (-0.06% per annum). Real increases in average earnings were assumed to rise gradually over a 15-year select period to reach the ultimate 0.9% per annum in plan year 2016. In the previous valuation an ultimate productivity rate of 1.0% was used.

##### c) Real Rate of Return on Long-Term Government of Canada Bonds

The ultimate real rate of return on long-term Government of Canada bonds was assumed at 3% per annum based on historical trends; this is unchanged from the previous valuation.

##### d) Real Rate of Return on Fund

For the assets invested by the Public Sector Pension Investment Board (PSPIB), it is assumed that the real rate of return on investments will be 4.3% net of investment expenses (the ultimate level of inflation being 2.7%). The assumed long-term real

rate of return on PSPIB assets takes into account the distribution of investments by category. In the previous valuation, an ultimate real rate of return of 4.25% was used (the ultimate level of inflation being 3.0%).

Note that all of the real rates of return presented in this report are actually real-return differentials, i.e., the difference between the effective annual rate of return on investments and the rate of increase in prices. This differs from the technical definition of the real rate of return, which, in the case of the ultimate Fund assumption, would be 4.19% (derived from 1.07/1.027) rather than 4.30%.

For the period ending December 2001, the following table was prepared based on the Canadian Institute of Actuaries Report on Canadian Economic Statistics 1924-2001.

Period of Years Ending 2001	15	25	50
Level of Inflation	2.54%	4.56%	3.91%
Real Increases in Average Earnings <sup>1</sup>	0.16%	(0.06%)	1.43%
Real Return on Long-Term Canada Bonds <sup>1</sup>	7.61%	5.64%	2.90%
Average Real Return on Diversified Portfolios <sup>1</sup>	7.30%	6.87%	4.29% <sup>2</sup>

## 2. Derived Economic Assumptions

The following assumptions were derived from the key economic assumptions:

### a) Projected Yields on Superannuation Account

These yields are required for the computation of present values of benefits to determine the Superannuation Account liabilities. The methodology used to determine the projected yields on the Account is described in Appendix 6.

### b) Projected Yields on Pension Fund

These yields are derived from the assumed future level of inflation and the real return on the Fund. These yields are required for the computation of present values of benefits to determine the Fund liabilities and the normal costs. The assumed yield of 6.3% per annum for plan year 2004 is assumed to increase gradually to 7.0% per annum by plan year 2014.

### c) Increase in the Year's Maximum Pensionable Earnings (YMPE)

The YMPE is involved in the valuation process because the plan is integrated with the Canada Pension Plan. The assumed increase in the YMPE for a given year was derived, in accordance with the *Canada Pension Plan*, to correspond to the increase in the assumed Industrial Aggregate of Average Weekly Earnings (IAAWE) over successive 12-month periods ending on 30 June. The IAAWE is deemed to include a component for seniority and promotional increases; consequently the ultimate increase in the YMPE is assumed to be 0.2% higher than the corresponding increase in average pensionable earnings.

<sup>1</sup> These real rates are calculated after the level of inflation is removed geometrically.

<sup>2</sup> This average is over the last 40 years.

**d) Maximum Pensionable Earnings**

Because the plan is integrated with the Canada Pension Plan, the tax-related maximum pensionable earnings were derived from both the maximum annual pension accrual under a registered defined benefit plan and the YMPE. The maximum annual pension accrual of \$1,722 for calendar years 2002 and 2003 will increase to \$1,833 for 2004 and to \$2,000 for 2005 in accordance with the 2003 Federal Budget; thereafter, the maximum annual pension accrual is assumed to increase in accordance with the assumed increase in the IAAWE.

**e) Increase in Pension Indexing Factor**

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

### 3. Summary of Key and Derived Economic Assumptions

**Table 17 Economic Assumptions**  
(Percentage)<sup>1</sup>

Plan Year	Inflation		Employment Earning Increases				New Money Rate	Interest	
	CPI Increase	Pension Indexing <sup>2</sup>	Industrial Aggregate	YMPE <sup>2</sup>	Average Pensionable Earnings <sup>2,3</sup>	Maximum Pensionable Earnings <sup>2,4</sup>		Yield on Account	Yield on Fund
2003	<b>2.2</b>	<b>1.6</b>	2.1	2.0	<b>4.5/4.0</b>	<b>0.3</b>	5.2	8.43	6.5
2004	1.8	<b>3.3</b>	2.2	2.2	<b>2.5</b>	<b>5.9</b>	5.0	8.30	6.3
2005	2.0	2.0	2.3	2.3	2.3	<b>8.1</b>	5.0	8.06	6.3
2006	2.0	2.0	2.4	2.4	2.4	2.4	5.0	7.81	6.3
2007	2.0	2.0	2.6	2.5	2.5	2.5	5.0	7.60	6.3
2008	2.1	2.1	2.8	2.6	2.6	2.6	5.1	7.42	6.4
2009	2.2	2.2	3.0	2.8	2.7	2.8	5.2	7.21	6.5
2010	2.3	2.3	3.2	3.0	2.9	3.0	5.3	7.01	6.6
2011	2.4	2.4	3.3	3.2	3.1	3.2	5.4	6.81	6.7
2012	2.5	2.5	3.4	3.4	3.2	3.4	5.5	6.42	6.8
2013	2.6	2.6	3.5	3.5	3.3	3.5	5.6	6.23	6.9
2014	2.7	2.7	3.6	3.6	3.4	3.6	5.7	6.09	7.0
2015	2.7	2.7	3.7	3.7	3.5	3.7	5.7	5.96	7.0
2016	2.7	2.7	3.8	3.8	3.6	3.8	5.7	5.76	7.0
2017	2.7	2.7	3.8	3.8	3.6	3.8	5.7	5.62	7.0
2018	2.7	2.7	3.8	3.8	3.6	3.8	5.7	5.52	7.0
2019	2.7	2.7	3.8	3.8	3.6	3.8	5.7	5.50	7.0
2020	2.7	2.7	3.8	3.8	3.6	3.8	5.7	5.50	7.0
2021	2.7	2.7	3.8	3.8	3.6	3.8	5.7	5.47	7.0
2022	2.7	2.7	3.8	3.8	3.6	3.8	5.7	5.46	7.0
2023	2.7	2.7	3.8	3.8	3.6	3.8	5.7	5.45	7.0
2024	2.7	2.7	3.8	3.8	3.6	3.8	5.7	5.44	7.0
2025	2.7	2.7	3.8	3.8	3.6	3.8	5.7	5.47	7.0
2026	2.7	2.7	3.8	3.8	3.6	3.8	5.7	5.50	7.0
2027	2.7	2.7	3.8	3.8	3.6	3.8	5.7	5.54	7.0
2028	2.7	2.7	3.8	3.8	3.6	3.8	5.7	5.57	7.0
2029	2.7	2.7	3.8	3.8	3.6	3.8	5.7	5.60	7.0
2030	2.7	2.7	3.8	3.8	3.6	3.8	5.7	5.63	7.0
2031	2.7	2.7	3.8	3.8	3.6	3.8	5.7	5.65	7.0
2032	2.7	2.7	3.8	3.8	3.6	3.8	5.7	5.68	7.0
2033+	2.7	2.7	3.8	3.8	3.6	3.8	5.7	5.70	7.0

- 1 Bold denotes actual.
- 2 Assumed to be effective as at 1 January.
- 3 Exclusive of seniority and promotional increases.
- 4 Calendar year 2002 Maximum Pensionable Earnings were \$99,800.



## B. Demographic Assumptions

### 1. Termination of Service

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 valuation experience of April 1999 to March 2002. Assumptions related to causes of termination of service are described in the following table:

Termination Cause	Rate Basis	Comments		
Terminations (withdrawals or retirement), Other than for Disability, with less than 20 Years of Service	Service, Rank, Sex	Giving partial credibility to the experience data of the 2000-2002 plan years, the rates were modified from the previous valuation as follows:	<b>Table 32</b>	
		Male Officers		- 12% decrease
		Male Other Ranks		- 12% decrease
		Female Officers		- 15% decrease
		Female Other Ranks	- 18% decrease	
Pensionable termination with 20 or more years of service	Service, Rank	Giving partial credibility to the experience data of the 2000-2002 plan years, the rates were modified from the previous valuation as follows:	<b>Table 34</b>	
		Officers		- 8% decrease
		Other Ranks		- 3% increase
Disability	Occupation Age, Rank, Sex	Rates for disability releases 3A (any occupation) were not modified.	<b>Table 36</b>	
		Disability releases 3B (own occupation). Giving partial credibility to the experience data of the 2000-2002 plan years, the rates were modified from the previous valuation as follows:		
		Male Officers		- 47% increase
		Male Other Ranks		- 26% increase
		Female		- 17% increase
Mortality	Age, Rank, Sex, Year	Giving partial credibility to the experience data of the 2000-2002 plan years, the rates were modified from the previous valuation as follows:	<b>Table 37</b>	
		Male Officers		- 19% decrease (ages 20 to 60)
		Male Other Ranks		- 22% decrease (ages 20 to 60)
		Female		Not modified
		The mortality improvement assumption was based on a 25-year select period with an ultimate mortality improvement of 0.5% at all ages. The first-year improvement factors (i.e. for year 2000) were revised to reflect the mortality improvement of the 1995-97 Life Table for Canada relative to the 1985-87 Table. The intermediate factors were obtained by linear interpolation between the first-year and ultimate factors.	<b>Table 39</b>	

## 2. Assumptions related to benefits

Benefit	Related Assumptions	Rate Basis	Comments
<b>Pension</b>	Mortality	Age, Rank, Sex, Year	Giving partial credibility to the experience data of the 2000-2002 plan years, the rates were modified from the previous valuation as follows:
			Male Officers - 9% decrease (ages 30 and above) <b>Table 37</b>
			Male Other Ranks - 6% decrease (ages 30 and above)
			Female Not modified
			Longevity improvements as mortality in service. <b>Table 39</b>
<b>Pension</b>	Proportion of contributors with 10 to 19 years of service electing an immediate annuity	Service, Rank	Giving partial credibility to the experience data of the 2000-2002 plan years, the overall proportions of members stayed the same as in the previous valuation but the proportions starts with a higher value at duration 10 followed by larger decreases through duration 19. <b>Table 33</b>
	Reduction factors applicable to immediate annuity for Contributors terminating with 20 or more years of service	Service, Rank	On the basis of the experience data of the 2000-2002 plan years, the reduction factors were unchanged from the previous report. <b>Table 35</b>
<b>Disability pension</b>	Disabled life mortality (3A release)	Age, Rank Sex, Year	On the basis of the experience data of the 2000-2002 plan years, the mortality rates were unchanged from the previous report. <b>Table 38</b>
			Longevity improvements as mortality in service. <b>Table 39</b>
			Canada Pension Plan/ Disability benefit payable immediately.
	Disabled life mortality (3B release)	Age, Rank Sex, Year	These members have been released under cause 3B, and are unable to perform the duties of their own occupations. The mortality assumption for these pensioners is set equal to the mortality assumption of healthy pensioners. <b>Table 37</b>
Longevity improvements as mortality in service. <b>Table 39</b>			
		Canada Pension Plan/ Retirement benefit deferred to age 65.	

Benefit	Related Assumptions	Rate Basis	Comments	Table
<b>Surviving Spouse Annual Allowance</b>	Probability that a member will have an eligible surviving spouse at death	Member's Age, Sex	Giving partial credibility to experience data of the 2000-2002 plan years, the male probabilities were marginally increased between the ages of 35 to 95. The female probabilities remained unchanged from the previous report.	<b>Table 40</b>
	Average age of spouse at death of member	Member's Age, Sex	Giving partial credibility to the experience data of the 2000-2002 plan years, the average age of a male's spouse was modified slightly whereas the average age of a female spouse was unchanged from the previous report.	
	Spouse mortality		Member's Age, Sex, Year	On the basis of the plan's experience, the rates assumed in the previous valuation for 1999 were maintained but projected three years to account for longevity improvements from 1999 to 2001.
			Longevity improvements as mortality in service.	<b>Table 39</b>
<b>Surviving children Annual allowance</b>	Average number of children at death of member	Member's Age, Sex	No change in rates from the previous valuation.	<b>Table 41</b>
	Average age of children at death of member	Member's Age, Sex	No change in rates from the previous valuation.	
	Proportion of children remaining eligible for allowances over age 17	Age of Child	These proportions are set to those reported in the actuarial report as at 31 March 2002 on the pension plan for the Public Service of Canada	

### **3. Other Demographic Assumptions**

Considering their negligible effect on liabilities and normal costs, the following rates were assumed to be zero:

- disability incidence rates for non-disabled pensioners; and
- recovery rates for disabled pensioners.

#### **a) Seniority and Promotional Salary Increases**

The assumed rates of both Officers and Other Ranks were revised on the experience for plan years 1999 to 2002. The assumed rates for Officers were increased by approximately 1% while the Other Ranks were reduced by approximately 14%.

#### **b) New Members**

It was assumed that the distribution of new members by age, sex and initial salary rate would be the same as that of members with less than one year of service at the valuation date. The number of new entrants was assumed to be equal to the year's number of terminations.

#### **c) Sex of Surviving Spouses**

Each eligible surviving spouse is assumed to be of the opposite sex.

### **4. Other Assumptions**

#### **a) Pension Benefits Division / Optional Survivor Benefit / Leave Without Pay**

Pension benefits divisions have almost no effect on the valuation results because the plan liabilities are reduced on average by roughly the amount paid to the credit of the former spouse. Consequently, no future pension benefits divisions were assumed in estimating normal costs and liabilities. However, past pension benefits divisions were fully reflected in liabilities.

Two other provisions, namely the optional survivor benefit and the suspension of membership while on leave without pay, were also treated like pension benefits divisions for the same reason.

#### **b) Minimum Death Benefit**

This valuation does not take into account the minimum death benefit, described in Note 17 of Appendix 2, in respect of deaths occurring after retirement. The resulting understatement of accrued liability and normal cost is not material because a majority of the relatively few pensioners who die in the early years of retirement do leave an eligible survivor.

**c) Administrative Expenses**

It is estimated that administrative expenses will be 0.35% of pensionable payroll, which is 0.05% greater than in the previous valuation. The allocation of the expenses has also been revised. In plan year 2003 the Account is assumed to be charged with 94% of the total expenses, reducing by 2% each year thereafter.

The future expenses expected to be charged to the Account have been capitalized and shown as a liability on the balance sheet whereas the expenses to the Fund have been added to the normal cost as they occur.

**d) Funding of Elected Prior Service and Leave Without Pay Service**

The assumed future government credits in respect of prior service elections and leave without pay service vary according to the vehicle (i.e. Account or Fund) into which the contributions are deposited. The government credits 1.2 and 3.51 times the relevant member contributions to the Account and Fund respectively.

**e) Outstanding Terminations**

Payments owing to former contributors as at 31 March 2002 were ignored in this valuation. The consequent understatement of liability is negligible because there were very few such cases and the average amounts owing were modest.

## **Appendix 8 - RCA Going-Concern Valuation Methodology and Assumptions**

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### **A. Valuation of Assets**

The assets comprise the recorded balance in the Retirement Compensation Arrangement 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 assets are held by the CCRA as a refundable tax.

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

### **B. Valuation of Liabilities**

Described in this Appendix are the liability valuation methodologies used and any differences in demographic assumptions from those used in the CFSA valuation.

#### **1. Terminally Funded RCA Pre-retirement Survivor Benefits**

These benefits are terminally funded (i.e. not pre-funded but on an occurrence basis) because they are uncommon or of little financial significance. The pre-retirement survivor benefit becomes payable only when the average salary is less than 1.4 times the YMPE.

#### **2. RCA Postretirement Survivor Benefits**

The limit on the amount of spousal annual allowance that can be provided under the CFSA decreases at the same time the member's pension reduces due to the CPP offset, usually at age 65.

This benefit was valued conservatively by assuming the plan limit is always reduced by the CPP 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 pre-retirement survivor benefit. The projected accrued benefit cost method was used to estimate the liabilities and normal costs for this RCA benefit.

#### **3. Excess Pensionable Earnings**

The projected accrued benefit cost method was used to estimate plan liabilities and normal costs for benefits in excess of the Maximum Pensionable Earnings (MPE).

In the previous RCA valuation report, members (officers) expected to terminate with salaries in excess of the MPE were divided into specialists (doctors, dentists, etc) and

non-specialists. The specialists, who represent close to 70% of the RCA liabilities, are valued using the actuarial assumptions described in Appendix 7, as was the case in the previous RCA valuation.

In the previous RCA valuation report, the methodology used to value the non-specialists consisted of the creation of a fast-trackers population that were expected to exceed the maximum pensionable earnings. The methodology also involved modifications to the termination and retirement assumptions as well as the removal of the seniority and promotional salary increases. In this valuation, tests have shown that a higher liability resulted when the non-specialists were valued using the same methodology as specialists. Consequently, non-specialists are valued without any modifications to the actuarial assumptions described in Appendix 7.

#### **4. Administrative Expenses**

To compute the liabilities and normal costs, no provision was made regarding the expenses incurred for the administration of the RCA. These expenses, which are not charged to the RCA Account, are borne entirely by the government and are commingled with all other government expenses.

### **C. Actuarial Assumptions**

The valuation economic assumptions described in Appendix 7 were used without any modifications, except that the interest discount rate used to determine the present value of the RCA liabilities and normal cost is one-half of the yield projected on the combined Superannuation Accounts.

### **D. Valuation Data**

The RCA pension benefits in payment were provided as at 31 March 2002. RCA benefits expected to be paid in respect of contributors and accrued spousal allowances of current retired members were all derived from the membership data described in Appendix 5 and shown in Appendix 11.

## Appendix 9 - Solvency Valuation Methodology and Assumptions

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### A. Valuation of Assets

For the Superannuation Account, a market-related asset value was calculated by discounting future cash flows using 31 March 2002 yields on Government of Canada bonds of corresponding durations. For the Pension Fund, the market value of the assets as at 31 March 2002 was used. For the RCA Account, the book value of the assets was used. Member contributions being made in respect of prior service and leave without pay elections were valued as if they were immediate annuities.

### B. Valuation of Liabilities

All members were assumed to be vested in respect of their accrued benefits. The following table describes the termination benefit associated with the number of years of service at termination:

<u>Years of service at termination</u>	<u>Termination benefit</u>
3 years or less	Return of contributions
More than 3 but less than 10 years	Return of contributions or cash termination allowance, whichever is the greater
At least 10 but less than 20 years	Deferred annuity to age 60
20 years or more	Immediate annuity

The solvency liability was calculated as the actuarial value of the estimated accrued benefits as at 31 March 2002 on the basis of the actuarial assumptions described in section C. The actuarial value of all immediate and deferred annuities, including pensions already in payment, was the estimated cost of purchasing the appropriate life annuities.



## C. Assumptions

The following table summarizes the actuarial assumptions used for solvency valuation purposes.

### Table 18 Solvency Actuarial Assumptions

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#### Interest rates

Immediate and deferred annuities

Immediately indexed benefit

CFSA: 3.75% per year for the first 15 years, 3.00% per year thereafter

RCA: 0.625% per year for the first 15 years, 0.00% per year thereafter

Deferred indexed benefit

During the non-indexed period

CFSA: 6.25% per year for the first 15 years, 6.00% per year thereafter

RCA: 3.125% per year for the first 15 years, 3.00% per year thereafter

During the indexed period

CFSA: 3.75% per year for the first 15 years, 3.00% per year thereafter

RCA: 0.625% per year for the first 15 years, 0.00% per year thereafter

#### Final average earnings

Calculated using valuation pensionable earnings, actual rates of increase in earnings and assumed seniority and promotional salary increases.

#### Mortality

Same as for going-concern valuation.

#### Family composition

Same as for going-concern valuation.

#### Termination expenses

\$32.6 million in aggregate for the Superannuation Account, the Pension Fund and the RCA Account.

## Appendix 10 - Superannuation Account Projection

Until 31 March 2000 the CFSA was entirely financed through the Canadian Forces Superannuation Account. The Account is now charged only with benefit payments made in respect of service earned before 1 April 2000 and administrative expenses; it is credited with prior service and leave without pay contributions made for elections made prior to 1 April 2000 and interest earnings. The legislation allows maintaining an actuarial surplus equal to 10% of the liabilities at the end of the period.

The results of the following projection were computed using the assets described in Appendix 4, the data described in Appendix 5, the methodology described in Appendix 6, and the assumptions described in Appendix 7.

The projection shows the expected development of the Superannuation Account actuarial surplus if all assumptions are realized. Emerging experience, differing from the corresponding assumptions, will result in gains or losses to be revealed in subsequent reports.

**Table 19 Superannuation Account Projection**  
(\$ millions)

Plan Year	Beginning Account Balance	Beginning Liabilities	Beginning Actuarial Surplus	Actuarial Surplus Reduction	Payments	Investment Earnings
2003	38,696	34,799	3,896	198 <sup>1</sup>	1,936	3,167
2004	39,729	35,718	4,011	683	1,991	3,215
2005	40,270	36,609	3,661	214	2,059	3,164
2006	41,162	37,420	3,742	218	2,111	3,133
2007	41,966	38,151	3,815	226	2,160	3,109
2008	42,690	38,809	3,881	230	2,209	3,085
2009	43,336	39,397	3,940	234	2,256	3,044
2010	43,891	39,901	3,990	238	2,302	2,999
2011	44,350	40,318	4,032	243	2,348	2,941
2012	44,701	40,637	4,064	246	2,390	2,793
2017	44,389	40,353	4,035	265	2,575	2,424
2022	41,473	37,703	3,770	277	2,704	2,191

<sup>1</sup> Actual actuarial surplus reduction as at 31 March 2003.

## Appendix 11 - Detailed Information on Membership Data

**Table 20 Male Officers**  
Number and Average Annual Pensionable Earnings<sup>1</sup> as at 31 March 2002

Age <sup>2</sup>	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35+	All Years of Service <sup>2</sup>
15-19	322	-	-	-	-	-	-	-	322
	\$14,339	-	-	-	-	-	-	-	\$14,339
20-24	787	179	-	-	-	-	-	-	966
	\$23,071	\$42,438	-	-	-	-	-	-	\$26,660
25-29	480	721	262	-	-	-	-	-	1,463
	\$44,014	\$54,978	\$63,048	-	-	-	-	-	\$52,826
30-34	248	193	1,003	243	-	-	-	-	1,687
	\$49,341	\$64,821	\$69,390	\$71,483	-	-	-	-	\$66,221
35-39	89	68	594	1,330	364	1	-	-	2,446
	\$56,881	\$68,578	\$74,158	\$74,906	\$78,249	\$77,940	-	-	\$74,392
40-44	71	18	127	705	1,062	255	-	-	2,238
	\$62,859	\$70,376	\$77,684	\$80,457	\$81,872	\$84,751	-	-	\$80,821
45-49	36	12	39	107	286	764	167	-	1,411
	\$82,205	\$78,211	\$77,550	\$86,332	\$87,226	\$86,856	\$91,480	-	\$86,989
50-54	29	6	11	15	31	205	464	132	893
	\$78,489	\$96,466	\$89,414	\$80,982	\$96,066	\$89,476	\$90,350	\$92,465	\$90,147
55-59	5	1	5	3	4	10	32	21	81
	\$81,804	\$73,620	\$94,910	\$110,112	\$77,388	\$98,367	\$88,887	\$89,508	\$90,183
60-64	-	-	-	-	-	1	-	-	1
	-	-	-	-	-	\$166,502	-	-	\$166,502
All Ages	2,067	1,198	2,041	2,403	1,747	1,236	663	153	11,508
	\$34,498	\$56,149	\$70,806	\$76,779	\$82,235	\$87,007	\$90,564	\$92,059	\$68,902

Average age<sup>2</sup>: 36.7

Average pensionable service<sup>2</sup>: 15.3 years

Annualized pensionable payroll<sup>3</sup>: \$778,839,456

Total PBDA<sup>4</sup> indexed reduction to basic annuity: \$1,718,165

Total PBDA<sup>4</sup> indexed reduction adjustment: \$368,182

<sup>1</sup> As defined in Note 1 of Appendix 2-D.

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

<sup>3</sup> The aggregate pensionable earnings of all contributors with less than 35 years of pensionable service.

<sup>4</sup> PBDA means the Pension Benefits Division Act.

**Table 21 Male Other Ranks**  
Number and Average Annual Pensionable Earnings<sup>1</sup> as at 31 March 2002

Age <sup>2</sup>	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35+	All Years of Service <sup>2</sup>
15-19	926	-	-	-	-	-	-	-	926
	\$26,195	-	-	-	-	-	-	-	\$26,195
20-24	4,117	365	-	-	-	-	-	-	4,482
	\$32,567	\$43,658	-	-	-	-	-	-	\$33,471
25-29	2,356	2,553	513	1	-	-	-	-	5,423
	\$36,823	\$44,535	\$46,363	\$51,744	-	-	-	-	\$41,359
30-34	729	1,179	5,347	960	-	-	-	-	8,215
	\$37,846	\$45,001	\$46,736	\$47,990	-	-	-	-	\$45,844
35-39	279	289	2,033	6,287	1,992	-	-	-	10,880
	\$38,648	\$44,824	\$46,881	\$48,652	\$50,723	-	-	-	\$48,342
40-44	123	58	220	1,637	4,442	772	-	-	7,252
	\$40,847	\$45,221	\$46,659	\$48,796	\$51,895	\$55,737	-	-	\$51,205
45-49	44	32	29	58	635	1,565	222	-	2,585
	\$43,861	\$46,578	\$46,991	\$49,512	\$52,131	\$57,418	\$60,313	-	\$55,709
50-54	8	10	7	7	22	170	664	125	1,013
	\$46,308	\$48,362	\$52,514	\$50,811	\$53,439	\$57,435	\$60,074	\$62,272	\$59,418
55-59	-	2	1	2	1	1	15	18	40
	-	<u>\$44,376</u>	<u>\$44,376</u>	<u>\$50,928</u>	<u>\$44,376</u>	<u>\$68,544</u>	<u>\$59,722</u>	<u>\$64,759</u>	<u>\$60,235</u>
All Ages	8,582	4,488	8,150	8,952	7,092	2,508	901	143	40,816
	\$33,884	\$44,637	\$46,752	\$48,615	\$51,591	\$56,906	\$60,127	\$62,585	\$46,038

Average age<sup>2</sup>: 34.5

Average pensionable service<sup>2</sup>: 13.4 years

Annualized pensionable payroll<sup>3</sup>: \$1,870,125,091

Total PBDA<sup>4</sup> indexed reduction to basic annuity: \$3,461,975

Total PBDA<sup>4</sup> indexed reduction adjustment: \$1,068,047

<sup>1</sup> As defined in Note 1 of Appendix 2-D.

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

<sup>3</sup> The aggregate pensionable earnings of all contributors with less than 35 years of pensionable service.

<sup>4</sup> PBDA means the Pension Benefits Division Act.

**Table 22 Female Officers**  
Number and Average Annual Pensionable Earnings<sup>1</sup> as at 31 March 2002

Age <sup>2</sup>	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35+	All Years of Service <sup>2</sup>
15-19	112	-	-	-	-	-	-	-	112
	\$14,194	-	-	-	-	-	-	-	\$14,194
20-24	263	68	-	-	-	-	-	-	331
	\$21,766	\$42,312	-	-	-	-	-	-	\$25,987
25-29	107	192	72	-	-	-	-	-	371
	\$50,209	\$56,051	\$61,243	-	-	-	-	-	\$55,374
30-34	67	42	158	24	-	-	-	-	291
	\$47,937	\$74,781	\$66,239	\$71,005	-	-	-	-	\$63,651
35-39	29	16	102	153	22	-	-	-	322
	\$49,031	\$68,047	\$78,639	\$73,987	\$78,678	-	-	-	\$73,238
40-44	14	5	21	91	85	12	-	-	228
	\$58,250	\$75,574	\$86,483	\$83,950	\$77,425	\$79,250	-	-	\$79,742
45-49	8	1	8	25	34	38	-	-	114
	\$57,233	\$62,040	\$73,856	\$79,240	\$78,918	\$89,187	-	-	\$80,387
50-54	1	-	2	2	17	31	8	-	61
	\$73,620	-	\$74,298	\$81,852	\$82,977	\$82,900	\$88,531	-	\$83,191
55-59	-	-	2	-	-	1	3	1	7
	-	-	<u>\$111,672</u>	-	-	<u>\$123,684</u>	<u>\$87,260</u>	<u>\$105,011</u>	<u>\$101,974</u>
All Ages	601	324	365	295	158	82	11	1	1,837
	\$31,060	\$56,508	\$70,343	\$77,316	\$78,518	\$85,777	\$88,185	\$105,011	\$57,689

Average age<sup>2</sup>: 32.1

Average pensionable service<sup>2</sup>: 10.2 years

Annualized pensionable payroll<sup>3</sup>: \$105,868,910

Total PBDA<sup>4</sup> indexed reduction to basic annuity: \$3,228

Total PBDA<sup>4</sup> indexed reduction adjustment: \$722

<sup>1</sup> As defined in Note 1 of Appendix 2-D.

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

<sup>3</sup> The aggregate pensionable earnings of all contributors with less than 35 years of pensionable service.

<sup>4</sup> PBDA means the Pension Benefits Division Act.

**Table 23 Female Other Ranks**  
Number and Average Annual Pensionable Earnings<sup>1</sup> as at 31 March 2002

Age <sup>2</sup>	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35+	All Years of Service <sup>2</sup>
15-19	82	-	-	-	-	-	-	-	82
	\$26,402	-	-	-	-	-	-	-	\$26,402
20-24	485	34	-	-	-	-	-	-	519
	\$32,836	\$43,848	-	-	-	-	-	-	\$33,557
25-29	375	192	83	-	-	-	-	-	650
	\$35,567	\$44,313	\$45,738	-	-	-	-	-	\$39,449
30-34	254	126	730	79	-	-	-	-	1,189
	\$35,561	\$44,784	\$46,018	\$47,303	-	-	-	-	\$43,739
35-39	189	53	350	752	187	-	-	-	1,531
	\$34,933	\$43,824	\$45,887	\$47,685	\$49,686	-	-	-	\$45,810
40-44	69	21	86	244	451	46	-	-	917
	\$37,292	\$44,259	\$45,812	\$47,811	\$50,324	\$54,737	-	-	\$48,334
45-49	17	5	15	21	102	129	1	-	290
	\$36,836	\$46,709	\$45,370	\$47,521	\$51,360	\$56,000	\$44,376	-	\$51,881
50-54	-	-	2	1	7	17	15	-	42
	-	-	\$44,376	\$53,712	\$50,127	\$52,840	\$56,822	-	\$53,428
55-59	-	-	-	-	1	1	-	-	2
	-	-	-	-	\$54,204	\$53,988	-	-	\$54,096
All Ages	1,471	431	1,266	1,097	748	193	16	-	5,222
	\$34,169	\$44,379	\$45,939	\$47,688	\$50,309	\$55,410	\$56,045	-	\$43,869

Average age<sup>2</sup>: 34.4

Average pensionable service<sup>2</sup>: 11.5 years

Annualized pensionable payroll<sup>3</sup>: \$229,084,075

Total PBDA<sup>4</sup> indexed reduction to basic annuity: \$27,578

Total PBDA<sup>4</sup> indexed reduction adjustment: \$8,790

<sup>1</sup> As defined in Note 1 of Appendix 2-D.

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

<sup>3</sup> The aggregate pensionable earnings of all contributors with less than 35 years of pensionable service.

<sup>4</sup> PBDA means the Pension Benefits Division Act.

**Table 24 Male Retirement Pensioners**  
Number and Total Annual Pension<sup>1</sup> as at 31 March 2002

Age <sup>2</sup>	Number	Registered Plan			RCA	
		Pension Without Indexing	Pension With Indexing	Spouse Allowance <sup>3</sup>	Pension	Spouse Allowance <sup>3</sup>
25-29	2	\$5,281	-	\$8,362	-	-
30-34	54	\$321,797	-	\$248,715	-	-
35-39	1,253	\$14,835,468	-	\$9,000,961	-	-
40-44	5,064	\$80,852,192	-	\$45,999,628	\$30,736	\$15,990
45-49	5,410	\$100,430,127	-	\$57,620,389	\$15,350	\$8,526
50-54	6,832	\$147,818,204	-	\$87,743,009	\$14,159	\$7,717
55-59	9,328	\$58,405,563	\$182,489,061	\$135,741,529	\$42,434	\$21,544
60-64	10,341	-	\$270,066,806	\$139,075,285	\$4,770	\$2,385
65-69	11,163	-	\$226,785,257	\$132,131,171	-	-
70-74	9,015	-	\$184,372,753	\$102,504,512	-	-
75-79	6,535	-	\$139,005,258	\$73,558,657	-	-
80-84	4,405	-	\$93,187,020	\$47,960,151	-	-
85-89	1,365	-	\$26,982,482	\$13,601,641	-	-
90-94	186	-	\$3,266,483	\$1,634,432	-	-
95-99	16	-	\$138,117	\$69,058	-	-
All ages	70,969	\$402,668,632	\$1,126,293,237	\$846,897,500	\$107,449	\$56,162

Average age<sup>2</sup> at 31 March 2002: 62.6

Average age<sup>2</sup> at retirement: 45.4

Total annual pensions payable as at 31 March 2002 from:

CF Superannuation Account: \$1,525,791,899

CF Pension Fund: \$3,169,970

<sup>1</sup> The total annual pension excludes 81 deferred annuities to age 60, includes PBDA reductions, and CPP offsets only if they are in effect at valuation date.

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

<sup>3</sup> The spouse allowance includes accrued indexation (even if not due) to 1 January 2002 and is still contingent on there being an eligible spouse.

**Table 25 Female Retirement Pensioners**  
Number and Total Annual Pension<sup>1</sup> as at 31 March 2002

Age <sup>2</sup>	Number	Registered Plan			RCA	
		Pension Without Indexing	Pension With Indexing	Spouse Allowance <sup>3</sup>	Pension	Spouse Allowance <sup>3</sup>
30-34	20	\$128,788	-	\$94,179	-	-
35-39	254	\$2,534,186	-	\$1,613,905	-	-
40-44	777	\$10,877,952	-	\$6,264,568	\$553	\$298
45-49	632	\$10,622,392	-	\$6,023,144	\$663	\$367
50-54	349	\$6,946,849	-	\$4,006,098	\$2,406	\$1,271
55-59	148	\$1,920,277	\$1,470,076	\$1,942,058	\$4,123	\$2,061
60-64	110	-	\$2,702,969	\$1,374,513	\$754	\$377
65-69	85	-	\$1,657,884	\$989,293	-	-
70-74	67	-	\$1,280,856	\$725,461	-	-
75-79	40	-	\$779,406	\$428,531	-	-
80-84	36	-	\$663,274	\$343,159	-	-
85-89	30	-	\$466,463	\$234,677	-	-
90-94	6	-	\$86,854	\$43,427	-	-
95-99	<u>2</u>	<u>-</u>	<u>\$25,325</u>	<u>\$12,662</u>	<u>-</u>	<u>-</u>
All ages	2,556	\$33,030,444	\$9,133,107	\$24,095,675	\$8,499	\$4,374

Average age<sup>2</sup> at 31 March 2002: 49.2

Average age<sup>2</sup> at retirement: 41.1

Total annual pensions payable as at 31 March 2002 from:

CF Superannuation Account: \$41,870,459

CF Pension Fund: \$293,092

<sup>1</sup> The total annual pension exclude 11 deferred annuities to age 60, includes PBDA reductions and CPP offsets only if they are in effect at valuation date.

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

<sup>3</sup> The spouse allowance includes accrued indexation (even if not due) to 1 January 2002 and is still contingent on there being an eligible spouse.



**Table 26 Male Disability (3A) Pensioners**  
Number and Total Annual Pension<sup>1</sup> as at 31 March 2002

<u>Age</u> <sup>2</sup>	<u>Number</u>	<u>Registered Plan</u>		<u>RCA</u>	
		<u>Pension With Indexing</u>	<u>Spouse Allowance</u> <sup>3</sup>	<u>Pension</u>	<u>Spouse Allowance</u> <sup>3</sup>
30-34	6	\$36,889	\$27,373	-	-
35-39	36	\$326,076	\$233,881	-	-
40-44	62	\$636,800	\$457,532	-	-
45-49	48	\$539,745	\$377,566	-	-
50-54	76	\$783,066	\$540,068	-	-
55-59	230	\$1,967,612	\$1,249,516	-	-
60-64	448	\$4,317,546	\$2,527,011	-	-
65-69	758	\$7,665,303	\$4,237,333	-	-
70-74	871	\$9,441,381	\$5,083,861	-	-
75-79	539	\$6,528,155	\$3,373,818	-	-
80-84	277	\$3,658,066	\$1,857,283	-	-
85-89	51	\$716,008	\$359,706	-	-
90-94	<u>3</u>	<u>\$25,304</u>	<u>\$12,652</u>	=	=
All Ages	3,405	\$36,641,951	\$20,337,600	-	-

Average age<sup>2</sup> at 31 March 2002: 68.6

Average age<sup>2</sup> at retirement: 38.9

Total annual pensions payable as at 31 March 2002 from:

CF Superannuation Account: \$36,610,961

CF Pension Fund: \$30,990

<sup>1</sup> The total annual pension includes PBDA reductions, and CPP offsets only if they are in effect at valuation date.

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

<sup>3</sup> The spouse allowance includes accrued indexation (even if not due) to 1 January 2002, and is still contingent on there being an eligible spouse.

**Table 27 Female Disability (3A) Pensioners**  
Number and Total Annual Pension<sup>1</sup> as at 31 March 2002

<u>Age</u> <sup>2</sup>	<u>Number</u>	<u>Registered Plan</u>		<u>RCA</u>	
		<u>Pension With Indexing</u>	<u>Spouse Allowance</u> <sup>3</sup>	<u>Pension</u>	<u>Spouse Allowance</u> <sup>3</sup>
25-29	1	\$6,147	\$4,476	-	-
30-34	4	\$26,121	\$19,350	-	-
35-39	11	\$89,505	\$65,939	-	-
40-44	25	\$235,546	\$172,271	-	-
45-49	15	\$169,790	\$119,163	-	-
50-54	12	\$158,156	\$104,533	-	-
55-59	5	\$83,298	\$55,183	-	-
60-64	1	\$8,688	\$5,201	-	-
65-69	3	\$42,653	\$23,854	-	-
70-74	6	\$48,472	\$25,707	-	-
75-79	3	\$23,744	\$11,872	-	-
80-84	1	\$13,787	\$6,894	-	-
85-89	<u>1</u>	<u>\$5,933</u>	<u>\$2,966</u>	-	-
All Ages	88	\$911,840	\$617,409	-	-

Average age<sup>2</sup> at 31 March 2002: 49.0

Average age<sup>2</sup> at retirement: 38.2

Total annual pensions payable as at 31 March 2002 from:

CF Superannuation Account: \$899,147

CF Pension Fund: \$12,693

<sup>1</sup> The total annual pension includes PBDA reductions, and CPP offsets only if they are in effect at valuation date.

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

<sup>3</sup> The spouse allowance includes accrued indexation (even if not due) to 1 January 2002 and is still contingent on there being an eligible spouse.

**Table 28 Male Disability (3B) Pensioners**  
Number and Total Annual Pension<sup>1</sup> as at 31 March 2002

<u>Age</u> <sup>2</sup>	<u>Number</u>	<u>Registered Plan</u>			<u>RCA</u>	
		<u>Pension Without Indexing</u>	<u>Pension With Indexing</u>	<u>Spouse Allowance</u> <sup>3</sup>	<u>Pension</u>	<u>Spouse Allowance</u> <sup>3</sup>
25-29	10	-	\$81,213	\$40,606	-	-
30-34	155	-	\$1,467,675	\$733,838	-	-
35-39	632	\$16,475	\$7,913,098	\$3,967,298	\$1,444	\$722
40-44	1,040	\$406,395	\$15,692,887	\$8,120,626	-	-
45-49	754	\$857,304	\$12,548,986	\$6,887,265	-	-
50-54	697	\$1,781,318	\$13,224,307	\$7,955,148	\$1,953	\$977
55-59	650	\$2,394,953	\$12,540,231	\$8,275,113	\$3,634	\$1,817
60-64	377	-	\$8,891,649	\$4,494,566	\$1,662	\$831
65-69	184	-	\$3,691,736	\$2,177,011	-	-
70-74	<u>32</u>	<u>-</u>	<u>\$697,117</u>	<u>\$405,046</u>	<u>-</u>	<u>-</u>
All ages	4,531	\$5,456,445	\$76,748,899	\$43,056,517	\$8,693	\$4,347

Average age<sup>2</sup> at 31 March 2002: 48.4

Average age<sup>2</sup> at retirement: 40.6

Total annual pensions payable as at 31 March 2002 from:

CF Superannuation Account: \$81,395,581

CF Pension Fund: \$809,763

<sup>1</sup> The total annual pension includes PBDA reductions, and CPP offsets only if they are in effect at valuation date.

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

<sup>3</sup> The spouse allowance includes accrued indexation (even if not due) to 1 January 2002 and is still contingent on there being an eligible spouse.

**Table 29 Female Disability (3B) Pensioners**  
Number and Total Annual Pension<sup>1</sup> as at 31 March 2002

<u>Age</u> <sup>2</sup>	<u>Number</u>	<u>Registered Plan</u>			<u>RCA</u>	
		<u>Pension Without Indexing</u>	<u>Pension With Indexing</u>	<u>Spouse Allowance</u> <sup>3</sup>	<u>Pension</u>	<u>Spouse Allowance</u> <sup>3</sup>
25-29	2	-	\$16,696	\$8,348	-	-
30-34	38	-	\$360,597	\$180,299	-	-
35-39	135	\$17,666	\$1,610,756	\$816,620	-	-
40-44	234	\$103,211	\$3,279,701	\$1,708,941	-	-
45-49	130	\$67,125	\$2,229,572	\$1,163,757	-	-
50-54	61	\$86,799	\$1,133,796	\$634,737	\$1,169	\$584
55-59	16	\$36,007	\$332,407	\$194,859	-	-
60-64	<u>2</u>	<u>-</u>	<u>\$68,549</u>	<u>\$34,275</u>	<u>-</u>	<u>-</u>
All ages	618	\$310,808	\$9,032,074	\$4,741,836	\$1,169	\$584

Average age<sup>2</sup> at 31 March 2002: 42.8

Average age<sup>2</sup> at retirement: 38.2

Total annual pensions payable as at 31 March 2002 from:

CF Superannuation Account: \$9,188,810

CF Pension Fund: \$154,072

<sup>1</sup> The total annual pension includes PBDA reductions, and CPP offsets only if they are in effect at valuation date.

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

<sup>3</sup> The spouse allowance includes accrued indexation (even if not due) to 1 January 2002 and is still contingent on there being an eligible spouse.

**Table 30 Surviving Spouses**  
Number and Total Annual Allowance as at 31 March 2002

<u>Age</u> <sup>1</sup>	<u>Registered Plan</u>		<u>RCA</u>
	<u>Number</u> <sup>2</sup>	<u>Pension With Indexing</u>	<u>Pension With Indexing</u>
20-24	1	\$4,096	-
25-29	8	\$53,318	-
30-34	42	\$221,322	\$26
35-39	111	\$610,354	\$312
40-44	185	\$1,324,010	\$1,335
45-49	328	\$2,822,815	\$1,385
50-54	544	\$5,159,246	\$1,090
55-59	984	\$9,881,816	\$579
60-64	1,808	\$17,418,144	\$113
65-69	2,954	\$27,251,742	\$142
70-74	3,711	\$34,176,848	\$34
75-79	4,521	\$42,504,067	-
80-84	3,561	\$33,403,262	-
85-89	1,403	\$12,499,307	-
90-94	288	\$2,366,932	-
95-99	36	\$229,483	-
100+	4	\$23,289	-
All Ages	20,489	\$189,950,051	\$5,016

Average age<sup>1</sup> at 31 March 2002: 72.4

Average age<sup>1</sup> at retirement: 59.5

Total annual pensions payable as at 31 March 2002 from:

CF Superannuation Account: \$189,926,017

CF Pension Fund: \$24,034

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

<sup>2</sup> 53 of the surviving spouses are widowers.

## Appendix 12 - Detailed Demographic Assumptions

**Table 31 Assumed Annual Seniority and Promotional Salary Increases**  
(percentages)

<u>Service</u> <sup>1</sup>	<u>Officer</u>	<u>Other Rank</u>	<u>Service</u> <sup>1</sup>	<u>Officer</u>	<u>Other Rank</u>
0	5.4	17.4	20	1.3	0.8
1	7.0	17.3	21	1.4	0.9
2	12.6	11.0	22	1.1	0.9
3	44.5	10.1	23	1.1	0.9
4	24.2	5.0	24	0.9	0.9
5	10.5	3.7	25	0.9	0.9
6	9.5	2.7	26	0.7	0.9
7	7.1	2.3	27	0.7	0.6
8	4.9	2.0	28	0.7	0.9
9	4.2	1.3	29	0.4	0.7
10	3.7	0.9	30	0.4	0.7
11	3.3	0.9	31	0.5	0.3
12	3.1	0.8	32	0.3	0.3
13	2.7	0.7	33	0.4	0.3
14	2.4	0.7	34	0.6	0.2
15	2.2	0.9	35	0.8	0.2
16	1.9	0.9	36	0.7	0.2
17	1.7	1.1	37	0.5	0.0
18	1.6	0.8	38	0.3	0.0
19	1.5	0.8	39+	0.0	0.0

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

**Table 32 Assumed Annual Rates of Termination**  
Contributors With Less Than 19 Years of Service  
(per 1,000 individuals)

<u>Service</u> <sup>1</sup>	<u>Officers</u>		<u>Other Ranks</u>	
	<u>Male</u>	<u>Female</u>	<u>Male</u>	<u>Female</u>
0	51	79	43	48
1	47	56	38	46
2	46	54	123	107
3	38	43	62	68
4	27	42	47	62
5	28	49	45	72
6	30	56	55	68
7	34	64	39	56
8	78	88	33	45
9	66	72	31	43
10	47	65	30	39
11	45	67	25	34
12	39	54	23	36
13	28	40	16	22
14	19	30	13	20
15	15	25	11	18
16	14	19	9	13
17	9	17	8	11
18	9	16	7	11

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

**Table 33 Assumed Proportions Electing an Immediate Reduced Annuity**  
Contributors With 10 to 19 Years of Service  
(per 1,000 individuals)

<u>Service</u> <sup>1</sup>	<u>Officers</u>	<u>Other Ranks</u>
9	35	22
10	50	25
11	60	61
12	74	65
13	119	69
14	165	96
15	235	180
16	236	216
17	332	314
18	506	389
19	1,000	1,000

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



**Table 34 Assumed Rates of Retirement**  
Contributors With 19 or More Years of Service  
(per 1,000 individuals)

<u>Service</u> <sup>1</sup>	<u>Officers</u>	<u>Other Ranks</u>
19	99	103
20	83	110
21	59	83
22	57	74
23	49	94
24	41	117
25	43	105
26	68	104
27	80	107
28	91	116
29	87	141
30	85	148
31	106	159
32	129	184
33	165	204
34	283	339
35	375	445
36	459	492
37	446	676
38	453	614

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

**Table 35 Assumed Immediate Annuity Reduction Factors**  
Retiring Contributors With 19 or More Years of Service

<u>Service</u> <sup>1</sup>	<u>Officers</u>	<u>Other Ranks</u>
	(%)	(%)
19	96.2	93.4
20	96.5	96.4
21	95.3	96.8
22	94.0	96.7
23	92.7	96.9
24	92.9	99.1
25	93.5	99.8
26	96.0	100.0
27+	100.0	100.0

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

**Table 36 Assumed Rates of Terminations due to Disability**  
(per 1,000 individuals)

<u>Age<sup>3</sup></u>	<u>Any Occupation<sup>1</sup></u>		<u>Own Occupation<sup>2</sup></u>		
	<u>Male</u>	<u>Female</u>	<u>Male Officers</u>	<u>Male Other Ranks</u>	<u>Female Officers / Other Ranks</u>
17	0.4	0.4	1.0	2.3	3.9
18	0.4	0.4	1.2	2.6	4.3
19	0.4	0.4	2.4	2.7	4.7
20	0.4	0.4	3.2	3.0	5.1
21	0.4	0.4	4.0	3.2	5.6
22	0.4	0.3	4.7	3.4	6.0
23	0.5	0.3	4.6	3.5	6.0
24	0.6	0.3	4.1	3.8	6.1
25	0.7	0.2	3.3	4.1	6.1
26	0.8	0.2	2.6	4.6	6.2
27	1.0	0.2	1.9	5.1	6.3
28	1.1	0.2	1.6	5.7	6.8
29	1.2	0.2	1.5	6.3	7.4
30	1.3	0.2	1.4	7.1	8.2
31	1.3	0.2	1.5	7.8	8.9
32	1.4	0.2	1.5	8.4	9.9
33	1.5	0.2	1.6	9.4	11.0
34	1.6	0.3	1.9	10.4	12.0
35	1.7	0.4	2.0	10.9	13.1
36	1.8	0.5	2.1	11.2	14.1
37	2.0	0.6	2.3	11.2	15.1
38	2.1	0.6	2.3	11.6	15.9
39	2.3	0.6	2.4	12.2	16.5
40	2.5	0.6	2.6	12.8	17.2
41	2.7	0.6	2.8	13.3	17.7
42	2.9	0.6	3.0	13.7	18.1
43	3.1	0.6	3.3	13.9	18.2
44	3.3	0.6	3.6	14.0	18.4
45	3.6	0.4	3.8	14.2	18.5
46	3.8	0.4	4.1	14.7	18.6
47	4.1	0.4	4.3	15.3	18.9
48	4.4	0.5	5.4	15.9	19.1
49	4.7	0.6	6.6	16.6	19.3
50	5.0	1.1	7.9	17.5	19.5
51	5.4	1.3	9.1	18.3	19.7
52	5.7	1.5	10.5	19.2	20.0
53	6.1	1.7	11.3	19.6	19.6
54	6.4	2.0	12.1	20.2	19.2
55	6.8	2.6	13.2	20.5	18.7
56	7.1	2.9	14.1	20.9	18.3
57	7.5	3.3	15.0	21.3	17.7
58	7.9	3.8	15.5	22.1	18.1
59	8.2	4.2	16.3	23.0	18.5

<sup>1</sup> Any occupation is defined as severe disability and it is assumed to be permanent with no recovery possible.

<sup>2</sup> The requirement of “combat readiness” under the Forces may render a member unable to fulfill the requirements of his or her own occupation. Disability is assumed to be permanent with no recovery possible.

<sup>3</sup> Expressed in completed years calculated at the beginning of the plan year.

**Table 37 Assumed Mortality Rates**  
Plan Year 2003 (per 1,000 individuals)

Age <sup>1</sup>	<u>Active Contributors, Healthy and Disability (3B) Pensioners</u>				
	<u>Male</u>		<u>Female</u>	<u>Surviving Spouses</u>	
	<u>Officers</u>	<u>Other Ranks</u>	<u>Officers / Other Ranks</u>	<u>Male</u>	<u>Female</u>
20	0.4	0.4	0.3	1.0	0.3
25	0.5	0.5	0.3	1.2	0.4
30	0.6	0.6	0.4	1.1	0.5
35	0.7	0.8	0.5	1.3	0.7
40	0.8	1.2	0.7	1.7	0.9
45	1.2	1.9	0.9	2.4	1.6
50	1.9	3.3	1.2	3.8	2.5
55	3.1	6.2	2.2	6.5	4.7
60	5.7	10.7	4.4	10.9	6.5
65	10.7	18.5	8.6	17.7	11.8
70	19.7	30.1	13.6	28.0	18.0
75	34.5	47.3	22.3	44.2	24.5
80	62.8	72.1	39.1	70.0	45.0
85	99.9	106.3	68.1	110.6	72.1
90	151.5	159.4	119.7	170.5	106.9
95	224.0	231.7	194.0	257.7	177.2
100	317.6	324.1	289.6	342.9	319.0
105	495.7	495.7	415.2	500.0	500.0
110	500.0	500.0	492.4	500.0	500.0
115	1,000.0	1,000.0	1,000.0	1,000.0	1,000.0

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

**Table 38 Assumed Mortality Rates for Disability (3A) Pensioners**  
Plan Year 2003 (per 1,000 individuals)

<u>Age<sup>1</sup></u>	<u>Male</u>		<u>Female</u>
	<u>Officers</u>	<u>Other Ranks</u>	<u>Officers / Other Ranks</u>
20	0.7	1.1	0.5
25	0.7	1.1	0.5
30	0.8	2.6	0.6
35	1.0	4.5	0.8
40	1.3	6.3	1.2
45	3.1	7.5	1.9
50	8.0	8.7	3.1
55	13.5	12.3	5.1
60	18.8	18.8	8.2
65	25.2	28.4	12.7
70	34.5	46.5	20.3
75	51.3	69.5	33.3
80	75.1	84.6	52.3
85	110.3	111.2	83.8
90	149.2	157.0	133.0
95	222.3	230.0	194.0
100	315.2	321.7	289.6
105	495.7	495.7	415.2
110	500.0	500.0	492.4
115	1,000.0	1,000.0	1,000.0

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

**Table 39 Assumed Improvements in Longevity  
After Plan Year 2003**

Age <sup>1</sup>	Annual Percentage of Mortality Reduction			
	Male		Female	
	2002	2026+	2002	2026+
20	2.70	0.50	1.82	0.50
25	2.26	0.50	1.60	0.50
30	1.38	0.50	1.16	0.50
35	0.72	0.50	1.16	0.50
40	0.94	0.50	1.16	0.50
45	1.60	0.50	1.60	0.50
50	2.26	0.50	1.82	0.50
55	2.48	0.50	1.60	0.50
60	2.48	0.50	1.38	0.50
65	2.26	0.50	1.38	0.50
70	1.82	0.50	1.38	0.50
75	1.38	0.50	1.16	0.50
80	1.16	0.50	0.94	0.50
85	0.72	0.50	0.72	0.50
90	0.50	0.50	0.50	0.50
95	0.25	0.25	0.25	0.25
100	0.25	0.25	0.25	0.25
105+	0.00	0.00	0.00	0.00

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

**Table 40 Assumptions for Survivor Allowance to Spouse**  
Probability a member will have an eligible spouse at death  
(per 1,000 member deaths)

<u>Age of Deceased Member<sup>1</sup></u>	Sex of Deceased Member			
	Male		Female	
	<u>Number</u>	<u>Age Difference Between Spouses</u>	<u>Number</u>	<u>Age Difference Between Spouses</u>
20	306	0	140	1
25	610	(1)	350	1
30	736	(1)	480	1
35	795	(1)	520	2
40	822	(2)	520	3
45	818	(2)	520	2
50	802	(3)	510	3
55	790	(2)	500	3
60	804	(3)	470	3
65	788	(3)	420	2
70	744	(3)	360	0
75	695	(3)	290	1
80	635	(4)	210	(1)
85	461	(5)	130	(3)
90	371	(6)	70	(4)
95	193	(7)	30	(6)
100	72	(9)	10	(6)

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

**Table 41 Assumptions for Survivor Allowances to Children**  
(per 1,000 member deaths)

Age of Member at Death <sup>1</sup>	Average Number of Children (according to sex of member)		Average Age 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	0
70	11	0	21	0
75	6	0	23	0
80	0	0	0	0

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

Age <sup>1</sup>	Proportion
under 17	1000
17 to 23	840
24 and over	0

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



## **Appendix 13 – Acknowledgements**

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The Comptrollership Branch of the Treasury Board Secretariat provided a certification of the assets of the plan as at 31 March 2002.

The Department of National Defence provided relevant valuation input data on contributors, pensioners and survivors. Public Works and Government Services Canada also provided additional information in respect of pensioners and survivors.

The co-operation and able assistance received from the above-mentioned data providers deserve to be acknowledged.

The following individuals assisted in the preparation of this report:

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