



Office of the Superintendent of  
Financial Institutions Canada

Bureau du surintendant des  
institutions financières Canada

Office of the Chief Actuary

Bureau de l'actuaire en chef



# ACTUARIAL REPORT

on the Pension Plan for the

## CANADIAN FORCES

Regular Force  
as at 31 March 2008

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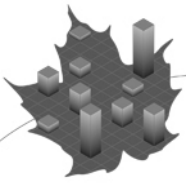
The Honourable Vic Toews, P.C., M.P.  
President of Treasury Board  
Ottawa, Canada  
K1A 0R5

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 2008 of the Canadian Forces - Regular 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 Canadian Forces-related benefits provided under the *Special Retirement Arrangements Act*.

Yours sincerely,

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



# ACTUARIAL REPORT

Pension Plan for the **CANADIAN FORCES – REGULAR FORCE**  
as at 31 March 2008

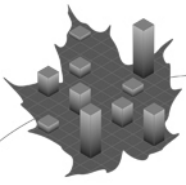
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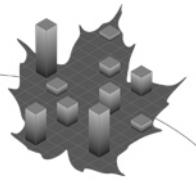


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## I. Executive Summary

This actuarial report on the pension plan for the Canadian Forces - Regular Forces (CF pension plan) was made pursuant to the *Public Pensions Reporting Act* (PPRA).

This actuarial valuation is as at 31 March 2008 and is in respect of pension benefits and contributions defined by Parts I, III, and IV of the *Canadian Forces Superannuation Act* (CFSA), the *Pension Benefits Division Act* (PBDA) and by the *Special Retirement Arrangements Act*, which covers the Retirement Compensation Arrangement (RCA).

The previous actuarial report was made as at 31 March 2005. The date of the next periodic review is scheduled to occur no later than 31 March 2011.

In the previous actuarial report, two new sections were added to examine the impact of alternative investment policies of the pension assets invested in capital markets and the impact of an alternative valuation approach. Only the section that discusses the impact of alternative investment policies on the pension assets invested in capital markets was kept for this valuation.

### A. Purpose of Actuarial Report

The purpose of this actuarial valuation is to determine the state of the Canadian Forces Superannuation Account, the Canadian Forces Pension Fund and Retirement Compensation Arrangements Account as well as to assist the President of the Treasury Board in making informed decisions regarding the financing of the government's pension benefit obligation.

### B. Valuation Basis

This report is based on pension benefit provisions enacted by legislation, summarized in Appendices 1 and 2.

The financial data on which this valuation is based are composed of tangible assets (Pension Fund) which the government has earmarked for the payment of benefits for service since 1 April 2000, the Superannuation account and the RCA No. 1 account established to track its pension benefit obligations for service prior to 1 April 2000. These pension assets are summarized in Appendix 3. The membership data is summarized in Appendix 4.

The valuation was prepared using accepted actuarial practices, methods and assumptions which are summarized in Appendices 5 to 7.

This valuation takes into account plan amendments and new salary agreements since the last valuation, which are as follows:

- Beginning in calendar year 2008, the applicable Canada Pension Plan (CPP) coordination factor of 0.7% in the pension benefit formula is reduced gradually until it reaches 0.625% in calendar year 2012;
- The latest modifications to the CFSA added Part I.1 to the Act which effectively created the Reserve Forces pension plan. The actuarial review of the Reserve Forces pension plan is not included in the current report and is the subject of a separate



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report. At the same time, Part I of the Act was also modified to allow full time members of the Reserve to be considered Regular Force members for purposes of Part I of the Act. As at 31 March 2008, a total of 3,062 Reserve Force members are participants to the Regular Force pension plan.

All actuarial assumptions used in this report are best-estimate assumptions. They are individually reasonable for the purposes of the valuation at the date of this report.

Actuarial assumptions used in the previous report were revised based on economic trends and demographic experience. A complete description of the assumptions is shown in Appendices 6 and 7. The changes to the economic assumptions are summarized as follows:

- the ultimate assumed level of inflation was revised from 2.5% to 2.4%;
- the short-term real rate of return on the Fund was lowered, from 4.3% to 4.0% for the first four years following valuation date;
- the assumed ultimate real rate of interest on the Account was revised from 2.85% to 2.80%;
- the ultimate real increase in average earnings was increased from 1.0% to 1.1%;

The Canadian Institute of Actuaries (CIA) has recently adopted a Revised Standards of Practice for Pension Commuted Values, effective 1 April 2009. The financial impact of the revised Standards is reflected in this valuation.

At the time of preparing this report, the global economy and financial markets were going through a difficult period. The significant deterioration and volatility of financial markets may result in a decline in the market value of the funds managed by the Public Sector Pension Investment Board (PSPIB). The impact of investment returns after the valuation date will be reflected in the next actuarial valuation which is set to occur no later than 31 March 2011.

### C. Main Findings

The proposed amounts to be credited to (or debited from) the Accounts and the Pension Fund are shown on a calendar year basis in this section beginning with calendar year 2010 which is the first calendar year that follows the expected tabling of this report. Valuation results on a plan year<sup>1</sup> basis are shown in Section II.

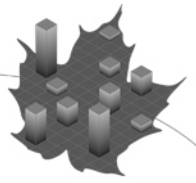
#### 1) CFSA – Service prior to 1 April 2000 (Superannuation Account)

As at 31 March 2008, the actuarial value of assets in respect of the Superannuation Account is \$44,194 million and the actuarial liability for service prior<sup>2</sup> to 1 April 2000 is \$42,433 million. The actuarial value of the assets is less than 110% of the corresponding actuarial liability; it is 104% of the actuarial liability. The surplus of the actuarial value of assets over the actuarial liabilities is \$1,761 million.

<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> The actuarial liability for service prior to 1 April 2000 refers to the actuarial liability for service accrued prior to that date except for service elections since 1 April 2000 that are deemed to be service accrued since that date.





**2) CFSA – Service since 1 April 2000 (Pension Fund)**

**a) Current Service Cost<sup>1</sup>**

The CFSA total normal cost, borne jointly by the contributors and the government, is \$964 million for calendar year 2010. The estimated members’ contributions are \$273 million and the estimated government contributions are \$691 million for calendar year 2010. The Pension Fund administrative expenses are \$4 million (included in the total current service cost) for calendar year 2010. The following table shows the projected current service cost expressed as a percentage of the expected pensionable payroll<sup>2</sup> for the three calendar years following the expected laying of this report. The ratio of government current service cost to the contributors current service cost is also shown.

**CFSA Current Service Cost on a Calendar Year Basis**

Calendar Year	Current Service Cost			Ratio of Government to Contributors Current Service Cost
	As a percentage of pensionable payroll			
	Contributors	Government	Total	
2010	6.29	15.94	22.23	2.53
2011	6.50	15.53	22.02	2.39
2012	6.70	15.10	21.80	2.25

**b) Financial position and amortization of actuarial surplus (deficit)**

As at 31 March 2008, the actuarial value of the assets in respect of the Pension Fund is \$8,011 million and the actuarial liability is \$7,699 million, resulting in an actuarial excess of \$312 million.

**c) Non-permitted actuarial surplus**

If there exists in the opinion of the President of the Treasury Board a non-permitted actuarial surplus<sup>3</sup> in the Pension Fund, any future contributions to the Fund may be reduced in a manner determined by the President or the non-permitted actuarial surplus may be paid out of the Fund and into the Consolidated Revenue Fund. As at 31 March 2008, a non-permitted actuarial surplus does not exist.

<sup>1</sup> Also called normal cost.

<sup>2</sup> Pensionable payroll means the aggregate of pensionable earnings of all contributors with less than 35 years of service.

<sup>3</sup> A non-permitted actuarial surplus exists when the amount by which the actuarial value of assets exceeds liabilities for service since 1 April 2000 is greater than the lesser of (a) and (b), where:

(a) is 20% of the amount of liabilities for service since 1 April 2000, and

(b) is the greater of (i) and (ii) where:

(i) is twice the estimated amount, for the calendar year following the date of that report, of the total of

(A) the current service cost contributions that would be required of contributors, and

(B) the current service cost contributions that would be required of the government, and

(ii) is 10% of the amount of liabilities for service since 1 April 2000.



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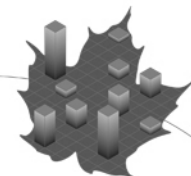
### 3) RCA No. 1 Account

As at 31 March 2008, the total of the amounts available for benefits payable under the Account is \$346 million and the actuarial liability is \$334 million resulting in an actuarial excess of \$12 million.

The total current service cost, borne jointly by the contributors and the government, is 1.68% of pensionable payroll for calendar year 2010 and is estimated to be 1.83% and 1.97% of pensionable payroll respectively for the following two plan years. The following table shows the projected current service costs for the three calendar years following the expected laying of this report.

#### **RCA No. 1 Current Service Cost on a Calendar Year Basis**

Calendar Year	Contributors (\$ millions)	Government (\$ millions)	Total (\$ millions)	Ratio of Government to Contributors Current Service Cost
2010	3	70	73	23.3
2011	4	78	82	19.5
2012	5	86	91	17.2



## II. Valuation Results

This report is based on pension benefit provisions enacted by legislation, summarized in Appendices 1 and 2, and the financial and membership data, summarized in Appendices 3 and 4. The valuation was prepared using accepted actuarial practices, methods and assumptions summarized in Appendices 5 to 7. Emerging experience, differing from the corresponding assumptions, will result in gains or losses to be revealed in subsequent reports.

Projections of the assets and liabilities are shown in respect of the Superannuation Account in Appendix 8 and of the Pension Fund in Appendix 9.

### A. CFSA – Financial Position

Beginning on 1 April 2000, employer and member contributions to the CFSA pension plan are no longer credited to the Canadian Forces Superannuation Account. Rather, they are now credited to the Canadian Forces Pension Fund, the net proceed of which is transferred to the PSPIB and invested in the financial markets. The valuation results of this section show the financial position for both CFSA financing arrangements as at 31 March 2008. The results of the previous valuation are also shown for comparison purposes.

**Table 1 Balance Sheet - Canadian Forces Superannuation account**  
(\$ millions)

	31 March 2008	31 March 2005
<b>Actuarial Value of Assets</b>		
Recorded balance in Superannuation Account	44,153	41,351
Present value of prior service contributions	41	58
Total assets	44,194	41,409
Actuarial Excess (Assets minus Liability)	1,761	2,988
	42,433	38,420
<b>Actuarial Liability for Service Prior to 1 April 2000</b>		
Active contributors	9,832	10,814
Retirement pensioners	29,456	24,778
Disability pensioners	374	382
Surviving dependents	2,616	2,271
Administrative expenses	155	175
<b>Total Actuarial Liability for Service Prior to 1 April 2000</b>	<b>42,433</b>	<b>38,420</b>



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**Table 2 Balance Sheet - Canadian Forces Pension Fund**  
(\$ millions)

	31 March 2008	31 March 2005
<b>Actuarial Value of Assets</b>		
Market value of assets	7,890	4,050
Actuarial smoothing adjustment	29	(201)
Present value of prior service contributions	92	125
Total assets	8,011	3,974
<b>Actuarial Liability for Service Since 1 April 2000</b>		
Active contributors	6,013	3,751
Retirement pensioners	1,671	523
Disability pensioners	5	3
Surviving dependents	10	4
Total Actuarial Liability for Service Since 1 April 2000	7,699	4,280
<b>Actuarial Surplus/(Deficit)</b>	<b>312</b>	<b>(306)</b>

### B. CFSA - Reconciliation of the Changes in Financial Position

This section reconciles the changes in the financial position in respect of the Superannuation Account and the Pension Fund shown in this valuation using the main elements responsible for the changes. The items shown are explained afterward.

**Table 3 Reconciliation of CFSA Financial position**  
(\$ millions)

	Superannuation Account Actuarial Excess	Pension Fund Actuarial Surplus
As at 31 March 2005	2,988	(306)
Unrecognized investment gains (losses) as at 31 March 2005	-	201
Change in data submission and corrections of population data	(92)	154
Expected interest on revised initial financial position	711	10
Pension benefit formula	(364)	(108)
Net experience gains and losses	(350)	504
Revision of actuarial assumptions	(1,106)	(117)
Change in the present value of administrative expenses	26	-
Change in the present value of prior service contributions	(10)	(8)
Reserve Force members participating to Part I of the CFSA	(42)	(47)
Unrecognized investment losses (gains) as at 31 March 2008	-	29
As at 31 March 2008	1,761	312



### **1) Unrecognized Investment Gains as at 31 March 2005**

An actuarial asset valuation method that minimizes the impact of short-term fluctuations in the market value of assets was used in the previous valuation report, causing the actuarial value of the Pension Fund assets to be \$201 million less than their market value.

### **2) Change in the submission and correction of population data**

The format of the valuation data provided by the Department of National Defence was changed for this valuation which required a greater understanding on the part of the Office of the Superintendent of Financial Institutions (OSFI) in its correction and validation process. OSFI also received an additional set of valuation data covering of former members of the Regular Force in receipt of a pension benefit from Public Works Government Service Canada (PWGSC). We have considered for the first time that the information provided by PWGSC to be more accurate than the DND information. The net impact of the data correction and the changes in the processing of the valuation data received from both DND and PWGSC has resulted in an increase of \$92 million in the Superannuation Account actuarial liabilities and a decrease of \$154 million in the Pension Fund actuarial liabilities.

### **3) Expected Interest on Initial Financial Position**

After factoring the data correction item mentioned previously, the expected interest to 31 March 2008 on the Account actuarial excess of \$2,896 million as at 31 March 2005 amounted to \$711 million. After recognizing both the data corrections and the unrecognized investment gains items, the expected interest to 31 March 2008 on the Pension Fund actuarial surplus of \$49 million as at 31 March 2005 amounted to \$10 million. These amounts of interest were based on the Account and Fund yields projected in the previous report for the three-year intervaluation period.

### **4) Pension Benefit Formula**

Beginning with calendar year 2008, the applicable coordination factor of 0.7% at age 65 in the pension benefit formula is revised and reduced gradually until the ultimate coordination factor of 0.625% is attained by calendar year 2012. This improvement to the pension benefit provisions has increased the Account actuarial liability by \$364 million and the Fund actuarial liability by \$108 million.

### **5) Experience Gains and Losses**

Since the previous valuation, experience gains and losses have decreased the Superannuation Account actuarial excess by \$350 million and have increased the Pension Fund actuarial surplus by \$504 million. The main items are described in the following table.



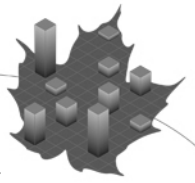
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**Table 4 Net Experience Gains and Losses**  
(\$ millions)

	Superannuation Account	Pension Fund
Demographic assumptions (i)		
Non-disabled pensioner deaths	(126)	0
Non-disabled pensioner terminations	79	4
Retirements	78	(68)
New members	(73)	34
Terminations with a return of contributions or a transfer value	66	2
Widow(er) deaths	15	0
Deaths with an annuity	6	2
Disabled pensioner deaths	(5)	0
Terminations with an annuity	2	0
Deaths with a return of contributions	0	2
Total	29	(65)
Investment earnings (ii)	53	499
Cost/contributions difference (iii)	24	100
Promotional and seniority increases (iv)	(422)	(79)
Amounts credited on basis of actuarial valuation (v)	0	45
Expected/actual disbursements (vi)	(91)	20
Economic salary increases (vii)	(51)	(17)
YMPE increases	(9)	(4)
Pension indexation (viii)	(31)	0
Miscellaneous	148	5
Experience Gains and Losses	(350)	504

- (i) The net impact of the demographic experience decreased the Superannuation Account actuarial liabilities by \$29 million and increased the Fund actuarial liabilities by \$65 million.
- Less than anticipated deaths amongst healthy pensioners resulted in a decrease of \$126 million of the Superannuation Account actuarial excess.
  - Lower than expected new members as well as a different demographic profile for these new entrants resulted in an increase of \$34 million of the Pension Fund actuarial liabilities. The release of the actuarial liabilities associated with the reenrolment of former members in receipt of a pension should produce a similar actuarial liability on the contributor side of the equation. The Superannuation Account actuarial liability decreased by \$79 million due to the release of the pensioner liabilities and was increased by \$73 million when these former members reenrolled.
  - Since the last valuation, the number of retirements was higher than anticipated. However, on the Superannuation Account side, the amounts of pension actually received by members were less than expected. Consequently, the Superannuation Account actuarial excess is increased by



\$78 million. For the Pension Fund a reduction of the actuarial surplus of \$68 million is observed.

- Lower than anticipated termination with a return of contributions or a transfer value resulted in an increase of \$66 million of the Superannuation Account actuarial excess.
  - Higher than expected deaths amongst surviving spouses increased the Superannuation Account actuarial excess by \$15 million.
- (ii) The rates of interest credited to the Account were marginally greater than the corresponding projected Account yields in the previous valuation; consequently the experience gain was \$53 million. Except for plan year 2008, financial markets made significant gains in plan years 2006 and 2007. Over three years, the actual return was 12% more than expected and the Pension Fund gained \$499 million.
- (iii) A decrease of \$100 million to the Pension Fund actuarial deficit resulted from the actual government contributions in plan year 2006, 2007 and 2008 being more than the government portion of the current service cost shown in the cost certificate of the previous report.
- (iv) The experience of the last three years has shown that the promotional and seniority salary increases were higher than expected in the previous report. This resulted in an increase of \$422 million in the Account actuarial liabilities and a corresponding increase of \$79 million in the Fund actuarial liabilities.
- (v) The Pension Fund actuarial liability was reduced by \$45 million which corresponds to the government special payments made during plan years 2007 and 2008 to start the amortization of the Pension Fund actuarial deficit reported in the Pension Fund balance sheet of the previous report.
- (vi) An increase of \$20 million in the Fund actuarial surplus resulted mainly from lower than anticipated transfer value payments and returns of contributions to terminating members. The Superannuation Account actuarial excess was reduced by \$91 million due mainly to the recurring lump sum payments associated with marriage breakdown. Of all the Public Sector pension plans of the Canadian Government, the Canadian Forces pension plan is particularly impacted by the division of assets following a marriage breakdown.
- (vii) Higher than expected economic salary increases for plan year 2007 and 2008 resulted in an increase of \$51 million in the Superannuation Account actuarial liabilities and a corresponding increase of \$17 million in the Pension Fund actuarial liabilities.
- (viii) In the previous report, pension indexation was projected to be 2% as at 1 January 2007 and 2008. The actual indexation of pension was 2.3% as at 1 January 2007 and 1.8% as at 1 January 2008 which resulted in an increase of \$31 million in the Superannuation Account actuarial liabilities.



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## 6) Revision of Actuarial Assumptions

Actuarial assumptions were revised based on economic trends and demographic experience as described in Appendix 7. This revision has decreased the Superannuation Account actuarial excess by \$1,106 million and decreased the Pension Fund actuarial surplus by \$117 million. The impact of these revisions is described in the following table.

**Table 5 Revision of Actuarial Assumptions**  
(\$ millions)

Assumption	Superannuation Account	Pension Fund
Investment earnings	(1,140)	(306)
Pension indexation	760	132
Mortality improvement factors	(358)	(52)
Survivors mortality rates	(289)	(15)
Economic salary increases	256	184
Age difference between spouses	(78)	(6)
Pensionable retirements	(77)	(58)
Pensioners mortality rates	(69)	(16)
Seniority and promotional salary increases	(53)	(3)
Proportion married at death	(34)	(6)
Disabled retirements 3B	(17)	(17)
Removal of the temporary reduced annuity option	12	30
Annuity reduction factors	(12)	(9)
YMPE / MPE increases	(11)	(6)
Withdrawals	5	11
Contributors mortality rates	(3)	(1)
Assumptions related to children and students	(3)	(1)
New interest rate on Commuted Value	2	23
Net impact of revision	(1,106)	(117)

The net impact of the revision of the assumptions is mainly attributable to the new mortality improvements factors, the lower survivor mortality rates as well as the changes in economic assumptions. As described in Appendix 7, except for the assumed real rate of return on the Fund, all economic assumptions made in the previous valuation were revised, with the most important being as follows:

- ultimate level of inflation lowered from 2.5% to 2.4%;
- ultimate real increase in average earnings increased from 1.0% to 1.1%; and
- ultimate yield on the Account lowered from 5.35% to 5.2%.





## 7) Change in the Present Value of Administrative Expenses

The Superannuation Account actuarial excess has increased by \$26 million due mainly to a change in the methodology used to allocate total ongoing annual administration expenses between the Superannuation Account and the Pension Fund. Following the analysis of total administrative expenses charged to both the Account and the Fund over the last ten years, the annual administrative expense assumption of 0.35% of total pensionable payroll was increased by 0.05% to 0.40%.

In addition, the analysis revealed that the allocation of total administrative expenses between the Account and the Fund was showing a faster allocation to the Fund than what was previously assumed. For plan year 2009, 80% of total administrative expenses are being charged to the Account and it is now expected that the proportion charged to the Account will reduce at the rate of 2.8% per year, an increase of 0.8% per year from our previous assumption of 2.0%.

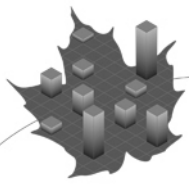
## 8) Reserve Force Member participating to Part I of the Act

The addition of Part I.1 to the CFSA officially sanctioned the coming into force of the Reserve Force pension plan as at 1 March 2007. This pension plan was created to provide a pension for members of the Reserve Force having irregular period of service. The Department of National Defence also recognized that full time members of the Reserve Force should not be treated differently than the member of the Regular Force for purposes of pension benefit entitlement. Part I of the Act was also modified to allow full time reservist access to the benefit provisions provided under Part I of the Act.

As at 31 March 2008, a total of 3,062 full time members of the Reserve Force are now considered Regular Force members for purpose of Part I of the Act. The net impact of introducing these full time members of the Reserve Force resulted in an increase of \$42 million of the Superannuation Account actuarial liabilities and an increase of \$47 million of the Pension Fund actuarial liabilities.

## 9) Unrecognized Investment Losses

The same actuarial asset valuation method described in the 2005 valuation report, which role is to minimize the impact of short-term fluctuations in the market value of assets (see Appendix 6) was used for this valuation. For this valuation, the method caused the actuarial value of the Pension Fund assets to be \$29 million more than their market value due to unrecognized investment losses.



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## C. CFSA - Cost Certificate

### 1) Current Service Cost

The details of the current service cost for plan year 2009 and reconciliation with the 2006 current service cost are shown below.

**Table 6 Current Service Cost for Plan Year 2009**  
(\$ millions)

Member required contributions	250
Government current service cost	689
Total current service cost	939
Expected pensionable payroll	4,194
Total current service cost as % of expected pensionable payroll	22.39%

**Table 7 Reconciliation of CFSA Current Service Cost**  
(Percentage of pensionable payroll)

For plan year 2006	22.50
Expected current service cost change	(0.04)
Change in demographics	(0.33)
Improved CPP coordination factors	0.47
Changes in assumptions	
Withdrawals	(0.03)
Pensionable retirements	0.18
Annuity reduction factors	0.03
Removal of the temporary reduced annuity option	(0.15)
Disabled retirements 3B	0.07
Pensioners mortality rates	0.05
Survivors mortality rates	0.05
Mortality improvement factors	0.18
Seniority and promotional salary increases	(0.30)
Proportion married at death	0.02
Age difference between spouses	0.02
Assumptions related to children and students	0.01
Pension indexation	(0.39)
Economic salary increases	(0.62)
Investment earnings	0.94
YMPE / MPE increases	0.02
New interest rate on Commuted Value	(0.14)
Reservist Part I members	(0.16)
Administration cost allocation	0.02
For plan year 2009	22.39



**2) Projection of Current Service Costs**

The following CFSA current service costs are expressed in dollar amount as well as in percentage of the projected pensionable payroll for each given plan year. The current service cost is borne jointly by the members and the government. The member contribution rate on salary up to the Year’s Maximum Pensionable Earnings (YMPE) of the Canada Pension Plan is 4.9% for calendar year 2008 and increases gradually to the ultimate rate of 6.4% first attained in calendar year 2013. The member contribution rate on salary above the YMPE is 8.4%.

Current service costs are shown below on a plan year basis; member contributions and the government current service costs are also shown on a calendar year basis in the Executive Summary.

**Table 8 Projection of Current Service Cost**

Plan Year	Current Service Cost (\$ millions)			Current Service Cost as a Percentage of Pensionable Payroll			Portion Borne by the Government
	Members	Government	Total	Members	Government	Total	
2009	250	689	939	5.96	16.43	22.39	73%
2010	263	690	953	6.15	16.12	22.26	72%
2011	276	692	968	6.34	15.88	22.22	71%
2012	294	693	988	6.55	15.41	21.96	70%
2013	314	697	1,011	6.75	15.00	21.74	69%
2018	379	808	1,187	6.84	14.59	21.43	68%
2023	450	973	1,423	6.78	14.67	21.45	68%

The decrease in the portion of the current cost borne by the government from plan year 2009 to 2013 mainly reflects increased plan contributions by contributors and the partial transition of economic assumptions from their select to ultimate values.

**3) Administrative Expenses**

Based upon the assumptions described in section C of Appendix 6, the Fund administrative expenses are included in the total current service costs and are estimated to be as follows:

Plan Year	
2009	\$3,355,350
2010	\$3,902,989
2011	\$4,462,569
2012	\$5,109,260

The Account administrative expenses have been capitalized and are shown as a liability in the balance sheet.



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### 4) Contributions for Prior Service Elections

Based upon the valuation data and the assumptions described in sections B and C of Appendix 6, member and government contributions for prior service elections were estimated as follows:

**Table 9 Estimated Contributions for Prior Service**  
(\$ millions)

Plan Year	Superannuation Account		Pension Fund	
	Member	Government	Member	Government
2009	2.4	2.4	3.8	10.4
2010	2.3	2.3	3.8	10.0
2011	2.1	2.1	3.9	9.7

### D. CFSA - Sensitivity to Variations in Key Assumptions

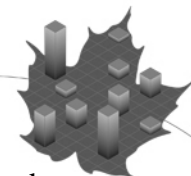
The following table measures the effect on the plan year 2009 current service cost, the liabilities for service prior to 1 April 2000 and for service since that date, if key economic assumptions are varied by one percentage point per annum from plan year 2009 onward.

**Table 10 Sensitivity of Valuation Results**

Assumption(s) Varied	Current Service Cost (%)		Actuarial Liability (\$ millions)			
	2009	Effect	Service prior to April 2000	Effect	Service since April 2000	Effect
None (i.e. current basis)	22.39	None	42,433	None	7,699	None
Investment yield						
- if 1% higher	17.69	(4.70)	37,169	(5,264)	6,341	(1,358)
- if 1% lower	28.93	6.55	49,123	6,690	9,529	1,830
Inflation						
- if 1% higher	26.02	3.63	47,924	5,491	8,829	1,130
- if 1% lower	19.59	(2.80)	37,997	(4,436)	6,817	(882)
Salary, YMPE and MPE						
- if 1% higher	24.13	1.74	42,782	349	8,059	360
- if 1% lower	20.80	(1.59)	42,109	(324)	7,370	(329)
All economic assumptions						
- if 1% higher	21.84	(0.54)	41,803	(630)	7,494	(205)
- if 1% lower	22.97	0.58	40,760	(1,673)	7,920	221

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 a key assumption to the extent that such effects are linear.

The following table shows the impact on the projected Pension Fund surplus as at 31 March 2011 (the expected date of the next actuarial review) if investment returns are different than assumed in this valuation. Projected actuarial surpluses are shown if



annual investment returns are 2% higher or lower than the best estimate assumption and if the investment return in plan year 2009 is negative 20% before returning to the best estimate assumption of 6% per annum for the following two plan years.

**Table 11 Sensitivity of Projected Pension Fund Surplus as at 31 March 2011**  
(\$ millions)

Assumption(s) Varied	Projected Actuarial Value of Assets	Projected Actuarial Value of Liability	Projected Actuarial Surplus
None (i.e. current basis)	11,918	11,541	377
Investment return			
- if 2% higher annually for next 3	12,170	11,541	629
- if 2% lower annually for next 3 years	11,672	11,541	131
- if minus 20% for plan year 2009	9,688	11,541	(1,853)

## E. RCA No. 1 - Valuation Results

The normal costs, assets and liabilities presented in this section were computed using the assets, data, methodology and assumptions described in Appendix 7.

### 1) Balance Sheets

**Table 12 RCA No. 1 - Balance Sheet**  
(\$ millions)

	31 March 2008	31 March 2005
<b>Assets</b>		
RCA No.1 Account	183	95
Refundable tax	163	75
Actuarial Excess (Assets minus Liability)	<u>12</u>	<u>1</u>
	334	169
<b>Actuarial Liability</b>		
Pensionable excess earnings		
• Active contributors	247	107
• Pensioners	46	20
Survivor Allowance		
• Active contributors	10	24
• Pensioners	31	17
<b>Total Actuarial Liability</b>	334	169

The sum of the assets in respect of the RCA No. 1 Account and the refundable tax is \$346 million; it exceeds the actuarial liability of \$334 million by 3.6% as at 31 March 2008. As at 31 March 2005, the sum of the assets was at par with the actuarial liability. This change in the RCA No. 1 financial position is due to the change in the methodology used to estimate the actuarial liability of the active member survivor allowance. The previous report methodology estimated the survivor benefit on the pension amount to be received by the member prior to age 65. In the current valuation, the methodology estimates the survivor benefit on the pension benefit to be received by the member at age 65.



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## 2) RCA No. 1 Current Service Cost

The projected current service cost, borne jointly by the members and the government, of 0.36% for plan year 2009 calculated in the previous valuation has increased by 1.03% to 1.39% of pensionable payroll in this valuation.

The RCA No. 1 current service cost for plan year 2009 is estimated to increase to 1.56% and 1.73% of pensionable payroll for plan years 2010 and 2011 respectively.

The following table shows the estimated RCA No. 1 current service cost for the next three plan years.

**Table 13 RCA No. 1 - Current Service Costs**  
(\$ millions)

	Plan Year		
	<u>2009</u>	<u>2010</u>	<u>2011</u>
<b>Total current service cost</b>			
Pensionable excess earnings	55.9	64.0	72.2
Survivor Allowance	<u>2.2</u>	<u>2.7</u>	<u>3.0</u>
Total	<u>58.1</u>	<u>66.7</u>	<u>75.2</u>
Member contributions	2.7	2.9	3.3
Government current service cost	55.4	63.8	71.9
Current service cost as % of total pensionable payroll	1.39%	1.56%	1.73%

The substantial increase in the current service cost from the previous report is due to the increase in the number of regular members having a salary above the MPE as well as the sharp increase in the salary for members considered specialists. In the previous report the total pensionable payroll in excess of the MPE projected for plan year 2009 was \$16 million. The comparable payroll reported in the current valuation is \$28 million, a 75% increase.

## F. Summary of Estimated Government Costs

The following table summarizes the estimated total government costs on a plan year basis.

**Table 14 Estimated Government Cost**  
(\$ millions)

Plan Year	Current Service Cost		Total Prior Service Contributions	Total Government Cost
	<u>CFSA</u>	<u>RCA No. 1</u>		
2009	689	55	13	757
2010	690	64	12	766
2011	692	72	12	776



### III. Actuarial Opinion

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

- the valuation input data on which the valuation is based are sufficient and reliable for the purposes of the valuation;
- the assumptions that have been used are, individually and in aggregate, appropriate for the purposes of determining the financial status as at 31 March 2008 of the Superannuation Account, Pension Fund and Retirement Compensation Arrangements Accounts No.1 of the Canadian Forces – Regular Member, and assisting the President of the Treasury Board in making informed decisions regarding the financing of the government's pension benefit obligation;
- the methodology employed is appropriate for the purposes of determining the financial status as at 31 March 2008 of the Superannuation Account, Pension Fund and Retirement Compensation Arrangements Account No.1 of the Canadian Forces – Regular Member, and assisting the President of the Treasury Board in making informed decisions regarding the financing of the government's pension benefit obligation; and
- this report has been prepared, and our opinions given, in accordance with accepted actuarial practice.

In particular, this report was prepared in accordance with the Standards of Practice (General Standards and Practice – Specific Standards for Pension Plans) published by the Canadian Institute of Actuaries.

At the time of preparing this report, the global economy and financial markets were going through a difficult period. Should the deterioration of financial markets continue, the impact on the Pension Fund will be reflected in the next actuarial valuation which is set to occur no later than 31 March 2011. To the best of our knowledge, after inquiring with the Department of National Defence and the Treasury Board of Canada Secretariat, there were no other subsequent events between the valuation date and the date of this report that would have a material impact on the results of this valuation.

The payment of accrued pension benefits being the responsibility of the government, the likelihood of the plan being wound-up and its obligation not being fulfilled is practically nonexistent; also the Act does not define the benefits payable upon wind-up. Therefore, a solvency valuation has not been performed.

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Daniel Hébert, F.S.A., F.C.I.A.  
Senior Actuary

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

Ottawa, Canada  
30 September 2009



### Appendix 1 – Summary of Pension Benefit Provisions

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 Regular Force under the *Special Retirement Arrangements Act*. Benefits may be modified in accordance with the *Pension Benefits Division Act* if there is a breakdown of a spousal union.

#### Changes since the last valuation

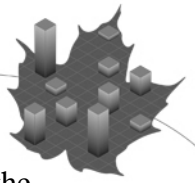
The previous valuation report was based on the pension benefit provisions as they stood as at 31 March 2005. Bill C-13, which received Royal Assent on 22 June 2006, amended the CFSA and improved the benefits payable by revising downward the coordination factor of 0.7%. Beginning with calendar year 2008, the applicable coordination factor is reduced gradually until the ultimate coordination factor of 0.625% is attained by calendar year 2012.

With the enactment of Bill C-78 on 14 September 1999, full time members of the Reserve Force are now covered under the amended Part I of the CFSA since 1 March 2007. To accommodate these full time reservists, Part I of the Act has been expanded to provide not only access to the current benefit provisions available to Regular Force member but also benefit entitlements similar to those found under the *Public Service Superannuation Act*. These new benefit provisions are also available to current Regular Force members.

One major aspect of the change to Part I is the introduction of the duality in qualifying for benefits as well as an extended definition of pensionable service. Members under Part I accumulate two types of service, “pensionable” and “qualifying”. The term “pensionable service” takes its usual form, that is, a period of service becomes pensionable to the extent that the member was eligible to contribute to the pension plan and that he/she made the required contributions. As such, service under the Canadian Forces, the Royal Canadian Mounted Police, the Public Service of Canada and the militaries of the Commonwealth of Nations may count toward pensionable service under Part I of the CFSA. The term “qualifying service” refers to period of paid service and/or enrolment periods with pay in the Canadian Forces. Even though very limited, certain types of service in the Canadian Forces are excluded. Regardless of event leading to a benefit entitlements (withdrawal, retirement, disability or death), the pensionable service is used to determine the amount of benefit to be received by a member.

The duality in qualifying for benefits depends on the types of service, “pensionable” versus “qualifying”. To qualify for the early retirement benefit (after 25 years of service under the new terms of service) the qualifying service is used. Entitlement to an annual allowance would require two years of pensionable service with a minimum age of 50. A full immediate annuity would be available at the age of 55 with a minimum of 30 years of pensionable service. The relationship between the “pensionable” and “qualifying” service is not always straightforward. Depending on the type service within the Public Sector pension plans as well as the possible election or non-election of prior service period, total years of “qualifying” service may be either greater, equal or less than the total years of “pensionable” service. The best available benefit will depends on each member employment career choices.





All other reservists are covered under the new Part I.1 of the CFSA which effectively created the new pension plan with benefits provisions suited to these members' type of engagement. The reservists covered under Part I.1 of the CFSA are not under review in this report and are subject to a separate actuarial report.

### **Duality in qualifying for benefits – Valuation Methodology**

As at 31 March 2008, all Regular Force members (64,397) have cumulated as many years of pensionable service as years of qualifying service. With the exception of a few Reserve Force members (those members electing to buy back prior pensionable service), most of these members (3,062) have only accumulated a total of 13 months of pensionable service since they only became participant to Part I as at 1 March 2007. Under the current membership profile, opting for the qualifying service years as the valuation basis to determine future benefit entitlements provides the best estimate of the actuarial liability and normal cost. There would be an underreporting of the actuarial liability and current service cost for member with pensionable service in excess of qualifying service. The valuation data revealed some cases.

The financial results of this valuation are based on the use of the qualifying service years to the credit of each member as at 31 March 2008 to estimate future benefit entitlements and the number of years of pensionable service to determine the amounts of benefit available at the entitlement dates. Any differences between future projected benefits and actual benefits being paid will be the subject of a gains and losses analysis covering the intervaluation period of 1 April 2008 to 31 March 2011 and reported in the next actuarial valuation report scheduled as at 31 March 2011.

### **Summary of Pension Benefit Provisions**

Summarized in this Appendix are the pension benefits provided under the CFSA registered provisions which are in compliance with the *Income Tax Act*. The portion of the benefits in excess of the *Income Tax Act* limits for registered pension plans is provided under the retirement compensation arrangements described in Appendix 2.

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 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.

Members of the Reserve Force considered full time members became participants as at 1 March 2007.

A member of the Reserve Force is considered a participant,

- on March 1, 2007 if, on that date,
  - the member's total number of days of Canadian Forces service during any period of 60 months beginning on or after April 1, 1999 was no less than 1,674,



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- the member already was or became a member of the Canadian Forces during the first month of the period and remained a member of the Canadian Forces throughout the period without any interruption of more than 60 days,
- the member is not a person required to contribute to the Public Service Pension Fund or the Royal Canadian Mounted Police Pension Fund, and
- the member does not have any pensionable service to their credit under Part I of the Act;
- in any other case, on the first day of the month following a period of 60 months ending after March 1, 2007 if
  - the member’s total number of days of Canadian Forces service during the period was no less than 1,674,
  - the member already was or became a member of the Canadian Forces during the first month of the period and remained a member of the Canadian Forces throughout the period without any interruption of more than 60 days, and
  - the member does not have any pensionable service to their credit under Part I of the Act.

The general rule is that once a Reserve Force member is deemed a Regular Force member for purpose of Part I of the CFSA, and that the member does not fail to receive pensionable earnings in any 12 consecutive months, the member remains a participant to Part I of the CFSA. There are exceptions to the general rule previously described but for the purpose of this report, these were considered not material.

## B. Contributions

### 1. Members

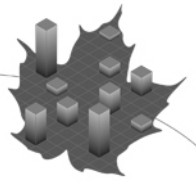
During the first 35 years of pensionable service, members contribute according to the rates shown in the following table. After 35 years of pensionable service, members contribute only 1% of pensionable earnings.

Calendar Year	2008	2009	2010	2011	2012	2013+
Contribution rates on earnings <b>up to</b> the maximum covered by the CPP	4.9%	5.2%	5.5%	5.8%	6.1%	6.4%
Contribution rates on any earnings <b>over</b> the maximum covered by the CPP	8.4%	8.4%	8.4%	8.4%	8.4%	8.4%

### 2. Government

#### a) Current Service

The government determines its normal monthly contribution as that amount, which when combined with the required contributions by members in respect of current service, is sufficient to cover the cost, as estimated by the President of the Treasury Board, of all future benefits that have accrued in respect of pensionable service during that month and the Fund administrative expenses incurred during that month.

**b) Elected Prior Service**

The government matches member contributions made to the Superannuation Account for prior service elections; however, it makes no contributions if the member is paying the double rate.

Government credits to the Pension Fund in respect of elected prior service are as described for current service; however, the government contributes only 87% of the member contribution if the member is paying the double rate for plan year 2009. The government rate will decrease thereafter to reach the level of 55% by plan year 2014 and remain constant thereafter.

**c) Excess Notional Assets and Actuarial Surplus**

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

- debit the excess of assets over the actuarial liabilities from the Superannuation Account subject to limitations, and
- deal with any actuarial surplus, subject to limitations, in the Pension Fund as they occur, either by reducing members and/or employer contributions or by making withdrawals.

**d) Actuarial Deficit**

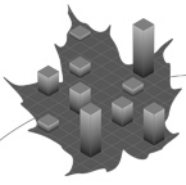
If an actuarial deficit is identified through a triennial statutory actuarial report, the Superannuation Account and/or the Pension Fund are to be credited with such annual amounts that in the opinion of the President of the Treasury Board will fully amortize the actuarial deficit over a period not exceeding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

**C. Summary Description of Benefits**

The objective of the CFSA pension plan is to provide an employment earnings-related lifetime retirement pension to eligible members. Benefits to members in case of disability and to the spouse and children in case of death are also provided.

Subject to coordination with the pensions paid by the Canada Pension Plan (CPP), 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 the qualifying service in the Canadian Forces or the pensionable service, as defined below in Notes 3 and 4 of section D below.

The new terms of service were effective in May 2005 for every new recruit. Current members serving under an indefinite period of service (IPS) are not affected by the change. Members currently serving under an IE20 may be offered the new IE25.



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

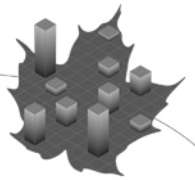
## 1. Benefit Entitlement on the basis of “Qualifying” Service

### a) Active Members

Type of Termination	Qualifying Service in the Canadian Forces (Note 3)	Benefit
Retirement because of age (Note 7)	Less than 2 years	Return of contributions (Note 8)
	2 years or more	Immediate annuity (Note 10)
Retirement on completion of short engagement (an officer 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) (Note 5)	Less than 2 years	Return of contributions (Note 8)
	At least 2 but less than 25 years (less than 20 years – old terms of service)	At option of member (1) deferred annuity (Note 11); or (2) transfer value if under age 50 (Note 12)
	25 years or more (20 years or more – old terms of service)	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 member was entitled upon completion of intermediate engagement increased to such extent as prescribed by regulation <sup>1</sup> (Note 13)
Retirement on completion of intermediate engagement (a member who has not reached retirement age and is not serving for an indefinite period of service) (Note 6)	25 years or more (20 years or more – old terms of service)	Immediate annuity (Note 10)
Compulsory retirement because of disability <sup>2</sup>	Less than 2 years	Return of contributions (Note 8)
	At least 2 but less than 10 years	At option of member (1) deferred annuity (Note 11); or (2) transfer value if under age 50 (Note 12)
	10 years or more	Immediate annuity

<sup>1</sup> The CFSA limits the annuity to the immediate annuity to which the active member would be entitled if retiring because of age or disability, and the formula in the CFS Regulations (Note 14) always produces less than the maximum.

<sup>2</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.



<b>Type of Termination</b>	<b>Qualifying Service in the Canadian Forces (Note 3)</b>	<b>Benefit</b>
Compulsory retirement to promote economy or efficiency	Less than 2 years	Return of contributions
	More than 2 but less than 10 years	At option of member (1) deferred annuity (Note 11); or (2) transfer value if under age 50 (Note 12)
	At least 10 but less than 25 years (less than 20 years – old terms of service)	At option of member (1) return of contributions; or (2) deferred annuity; or (3) transfer value if under age 50 (Note 12) (4) with consent of the Minister of National Defence, an immediate reduced annuity (Note 14)
	25 years or more (20 years or more – old terms of service)	Immediate annuity (Note 10)
Retirement for reasons other than those previously mentioned	Less than 2 years	Return of contributions (Note 8)
	At least 2 but less than 25 years (less than 20 years – old terms of service)	At option of member (1) deferred annuity (Note 11); or (2) transfer value if under age 50 (Note 12)
	(At least 20 but less than 25 years – old terms of service)	Immediate reduced annuity
	25 years or more	Officer: - immediate reduced annuity (Note 14); Other than officer: - immediate annuity (Note 10)



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## b) Benefits in Case of Death of an Active Member

Status at Death	Qualifying Service in the Canadian Forces (Note 3)	Benefit
Leaving no eligible spouse or children under 25 (Notes 15 and 16)	Less than 2 years	Return of contributions
	2 years or more	Five times the annual amount of retirement pension to which the member would have been entitled at the date of death
Leaving eligible spouse and/or children under 25	Less than 2 years	Return of contributions or an amount equal to one month's earnings of the deceased member for each year of credited pensionable service, whichever is the greater
	2 years or more	Annual allowance (Note 17)

## c) Benefits in Case of Death of a Pensioner

Status at Death	Benefit
Leaving no eligible spouse or children under 25	Minimum death benefit (Note 18)
Leaving eligible spouse and/or children under 25	Annual allowance (Note 17)

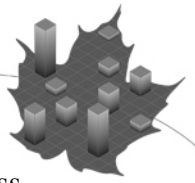
## 2. Benefit Entitlement on the basis of "Pensionable" Service

Member's Type of Termination	Benefit
<b>With two or more years of pensionable service; and</b>	
* Involuntary termination due to a work force reduction program and	Immediate annuity
- With 20 years of service or more	
- Age 50 or over and service 10 years of service or more	Deferred annuity or transfer value
* Leaving prior to age 50, except for death or disability	
* Leaving at age 50 or over, except for death or disability, and	Immediate annuity
- Age 60 or over, or age 55 or over and service 30 years or more	
- Otherwise	Deferred annuity or annual allowance

## 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 member.



Pensionable payroll means the aggregate pensionable earnings of all members 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. Qualifying Service in the Canadian Forces

For most purposes of the CFSA, qualifying service in the Canadian Forces means service for which a Regular or Reserve Force member is paid, and includes:

- days of service in the Regular Force for which pay was authorized, and authorized maternity and parental leaves;
- days of service in the Reserve Force for which pay was authorized, and authorized maternity and parental leaves:
  - days of training or duty of less than 6 hours = half-day
  - days of Class “A” service = 1.4 days
  - periods before 1 April 1999 (when duration of period is verifiable but not the number of days) = quarter time
  - during maternity and parental leaves, days of CF service are based on service in previous 12 months

## 4. Pensionable Service

Pensionable service includes any period of service in the regular force in respect of which an active member 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 an active member was paid a return of contributions or lump sum payment under the CFSA that he or she did elect to repay on subsequent enrolment. It also includes prior



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service in the Public Service of Canada, the Royal Canadian Mounted Police and the militaries of the Commonwealth of Nations they elected to count as pensionable service.

## 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 (IE20) of continuous service as a member of the regular force for members serving under an indefinite period of service (IPS) or serving under an IE20 and did not opt for the new intermediate engagement of 25 years of continuous service effective May 2005. All other regular members will have to complete the new IE25 in order to be eligible to an immediate unreduced annuity.

## 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 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 members 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.

	<u>Pre-1975 Retirement Age</u>		
	<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 members 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 members 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 qualifying 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 member 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 active member at date of termination multiplied by the number of years of pensionable service to the credit of the active member 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 active member 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.

<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.



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Upon the death of the pensioner, either a survivor allowance (Note 17) or a minimum death benefit (Note 18) 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 31) from date of termination to the commencement of annuity payments.

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

When a member, 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 member becomes entitled to a deferred annuity.

### 12. Transfer Value

Active members who, at their date of termination of pensionable service, are under age 50 and who are eligible for a deferred annuity may elect to transfer the commuted value of their benefits, determined in accordance with the regulations, to

- a locked-in Registered Retirement Savings Plan of the prescribed kind; or
- another pension plan registered under the *Income Tax Act*; or
- a financial institution for the purchase of a locked-in immediate or deferred annuity of the prescribed kind.

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

For an active member 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 member's rank; or
  - in the case of a member other than an officer, the age at the date of retirement is less than the retirement age applicable to the member's rank or the period of service in the regular force is less than 25 years, whichever is the lesser.



#### 14. Reduced Immediate Annuity

Reduced immediate 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, an active member 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 active member at the time of retirement is less than the retirement age applicable to the member's rank,
- whichever is the lesser.

An active member 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

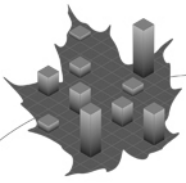
- (a) as an officer having served in the regular force for 20 years or more, to an immediate annuity reduced by 5% for each full year by which his or her age at the time of retirement is less than the retirement age applicable to his or her rank, or
- (b) as other than an officer having served in the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

#### 15. Eligible Surviving Spouse

Eligible surviving spouse means the surviving spouse of an active member or pensioner except if:

- (a) the active member or pensioner died within one year of marriage unless the Minister of National Defence is satisfied that the member'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 member again (in such cases, common-law unions are accepted), or



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- 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.

### 16. Eligible Surviving Children

Eligible surviving children includes all children of the active member or pensioner who are under age 18, and any child of the active member 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 active member or pensioner died, whichever occurred later.

### 17. Annual Allowance for Eligible Survivors

Annual allowance means, for the eligible surviving spouse and children of an active member 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 active member 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 18) is payable to the estate upon the death of the last survivor.

### 18. Minimum Death Benefit

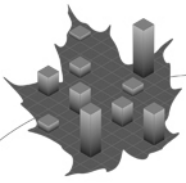
If upon the death of an active member there is no person to whom an allowance provided under the terms of the CFSA may be paid, or if the persons to whom such allowances may be paid die or cease to be entitled thereto and no other amount may be paid to them, there is paid to the estate of the active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



- (a) if the active member 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 active member;
- (b) if the active member 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 active member was or would have been entitled at the time of his or her death; or
- (c) if the active member 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 active member.

### **19. 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 an active member or pensioner. As at the transfer date, the maximum transferable amount is half the value of the retirement pension accrued by the active or former member 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 active member or pensioner are then reduced accordingly.



**Appendix 2 – RCA Benefit Provisions**

This Appendix describes the Canadian Forces - Regular Forces pension benefits financed through retirement compensation arrangements RCA No. 1 rather than through the CFSA registered provisions. As described below, RCAs are pension plans not subject to the benefit limitations of registered pension plans because they are taxed on a current rather than on a deferred basis.

Effective 1 May 1995, RCA No. 1 was established pursuant to the *Special Retirement Arrangements Act (SRAA)* to provide for all pension benefits in excess of those that may, in accordance with the *Income Tax Act* restrictions on registered pension plans, be paid under the CFSA registered provisions.

The following benefits have been provided under RCA No. 1 to the extent that they are in excess of the ITA limit.

<b>Benefit</b>	<b>CFSA Registered Provisions limit</b>
<p>Survivor allowance for service from 1 January 1992 onward (see Note 13 of Appendix 1)</p>	<p><u>Pre-retirement death</u></p> <ul style="list-style-type: none"> <li>• Maximum spouse allowance is two-thirds of greater of A and B; and</li> <li>• Maximum aggregate dependants' allowance is the greater of A and B, where                             <ul style="list-style-type: none"> <li>A is the amount of member annuity earned to date of death, and</li> <li>B is the hypothetical amount of member annuity earned to age 65 where the average annual salary is limited to 1.5 times the average YMPE</li> </ul> </li> </ul> <p><u>Post-retirement death</u></p> <p>The amount of spouse allowance 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.</p>
<p>Minimum lump sum death benefit (see Note 14 of Appendix 1)</p>	<p><u>Pre-retirement death</u></p> <p>The amount of pre-retirement death benefit if the member has no eligible dependants is limited to the greater of the member contributions with interest and the present value of the member's accrued benefits on the day prior to death.</p> <p><u>Post-retirement death</u></p> <p>If the member has no eligible dependants at retirement, then the minimum death benefit is limited to the member contributions with interest.</p>
<p>Excess pensionable earnings (provided since 1 May 1995 for service since then)</p>	<p>The highest average of pensionable earnings is subject to a prescribed yearly maximum that varies by calendar year and the registered plan's benefit formula. The calendar year 2008 Maximum Pensionable Earnings was \$130,700.</p>



## Appendix 3 – Assets and Rates of Return

### A. Assets

The pension promise to members of the Canadian Forces - Regular Forces enacted by legislation encompasses government assets, accounts and liabilities. The assets the government uses to finance the pension promise are composed of tangible assets (Canadian Forces Pension Fund) which the government has earmarked for the payment of benefits, the Canadian Forces Superannuation account and the RCA No. 1 account established to track its pension benefit obligations.

#### 1. Canadian Forces Superannuation Account

CFSA benefits earned up to 31 March 2000 are financed entirely through the Superannuation Account, which forms part of the Accounts of Canada.

The Account was credited with all CFSA contributions made by members and the government prior to 1 April 2000, as well as with prior service contributions for elections made prior to 1 April 2000 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 interest 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. Interest 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 15 Reconciliation of Balances in Superannuation Account**  
(\$ millions)

Plan Year	2006	2007	2008	2006-2008
Public Accounts opening balance	41,351	42,363	43,287	41,351
<b>INCOME</b>				
Interest earnings	3,146	3,123	3,088	9,357
Employer contributions	4	6	2	12
Member contributions	4	4	4	12
Transfers received	4	3	3	10
Actuarial liability adjustments	-	-	-	-
<i>Subtotal</i>	<i>3,158</i>	<i>3,136</i>	<i>3,097</i>	<i>9,391</i>
<b>EXPENDITURES</b>				
Annuities	2,084	2,149	2,173	6,406
Pension divisions	46	47	40	133
Return of contributions	-	-	-	-
Pension transfer value payments	-	-	-	-
Transfers to other pension plans	1	-	6	7
Minimum benefits	4	3	1	8
Administrative expenses	11	12	10	33
<i>Subtotal</i>	<i>2,146</i>	<i>2,212</i>	<i>2,230</i>	<i>6,589</i>
Public Accounts closing balance	42,363	43,287	44,153	44,153



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Since the last valuation, the Account balance has grown by \$3 billion (a 6.6% increase) to reach \$44 billion as at 31 March 2008.

### 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 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 since that date. The Fund is also credited with the net investment earnings generated by the capital assets managed by the PSPIB. It is debited with both the benefit payments made in respect of service earned and prior service elections made since 1 April 2000 and the allocated portion of the plan administrative expenses

**Table 16 Reconciliation of Balances in Pension Fund**  
(\$ millions)

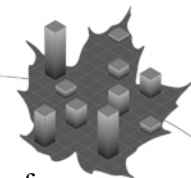
Plan Year	2006	2007	2008	2006-2008
Opening balance	4,050	5,650	7,096	4,050
<b>INCOME</b>				
Interest earnings	829	675	(55)	1,449
Employer contributions	639	623	708	1,970
Member contributions	190	210	236	636
Transfers received	-	-	-	-
Actuarial liability adjustments	-	22	22	44
<i>Subtotal</i>	<i>1,658</i>	<i>1,530</i>	<i>911</i>	<i>4,099</i>
<b>EXPENDITURES</b>				
Annuities	41	61	89	191
Pension divisions	5	7	9	21
Return of contributions	-	-	-	-
Pension transfer value payments	-	-	-	-
Transfers to other pension plans	-	-	10	10
Minimum benefits	11	14	10	35
Administrative expenses	1	2	2	5
<i>Subtotal</i>	<i>58</i>	<i>84</i>	<i>120</i>	<i>262</i>
Closing balance	5,650	7,096	7,890	7,890

Since the last valuation, the Fund balance has increased by \$4 billion (a 93% increase) to reach \$8 billion as at 31 March 2008.

### 3. Canadian Forces RCA No. 1 Account

The assets in respect of the RCA No. 1 account are composed of the recorded balance in the Retirement Compensation Arrangements Account, which forms part of the Accounts of Canada, and a refundable tax. Each calendar year, a cash transfer is made to the Canada Revenue Agency (CRA) such that in total roughly half the assets are held by the CRA as a refundable tax.





No formal debt instrument is issued to the Account by the government in recognition of the amounts therein. Interest 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 17 Reconciliation of Balances in RCA No.1 Account**  
(\$ millions)

Plan Year	2006	2007	2008	2006-2008
Public Accounts opening balance	94.9	129.7	149.6	94.9
<b>INCOME</b>				
Interest earnings	8.7	10.7	12.0	31.4
Employer contributions	42.4	39.1	48.8	130.3
Member contributions	2.4	2.4	2.3	7.1
Transfers received	0.0	0.0	0.0	0.0
Actuarial liability adjustments	11.4	0.0	0.0	11.4
<i>Subtotal</i>	<i>64.9</i>	<i>52.2</i>	<i>63.1</i>	<i>180.2</i>
<b>EXPENDITURES</b>				
Annuities	0.8	1.0	1.3	3.1
Pension divisions	0.0	0.2	0.1	0.3
Return of contributions	0.0	0.0	0.0	0.0
Pension transfer value payments	0.0	0.0	0.2	0.2
Transfers to other pension plans	0.0	0.0	0.0	0.0
Minimum benefits	0.0	0.0	0.0	0.0
Transfer to Canada Post Corporation	0.0	0.0	0.0	0.0
Amount transfer to CRA	29.3	31.2	27.8	.
<i>Subtotal</i>	<i>30.1</i>	<i>32.3</i>	<i>29.4</i>	<i>3.6</i>
Public Accounts closing balance	129.7	149.6	183.3	183.3
Refundable tax	104.4	135.6	163.4	163.4

Since the last valuation, the Account balance has grown by \$88 million (a 92.8% increase) to reach \$183 million as at 31 March 2008 and the refundable tax has increased by \$88 million (a 117.0% increase) to reach \$163 million.

**B. Rates of Interest (Return)**

The rates of interest in respect of the Superannuation Account were calculated using the foregoing entries. The Account yields are based on book values since the notional bonds are deemed to be held to maturity. The results were computed using the dollar-weighted approach and assume that cash flows occur in the middle of the plan year (except for actuarial liability adjustments, which occur on 31 March).

The Fund yields are those from the PSPIB 2008 Annual Report.

Plan Year	Superannuation Account	Pension Fund
2006	7.8%	19.1%
2007	7.6%	11.6%
2008	7.3%	(0.4%)



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### **C. Sources of Asset Data**

The Canadian Forces Superannuation Account, the RCA No. 1 Account and the Canadian Forces Pension Fund entries shown in Section A above were taken from the Public Accounts of Canada and the financial statements of the Public Sector Pension Investment Board.



## Appendix 4 – Membership Data

### A. Sources of Membership Data

The valuation input data required in respect of members, former members (pensioners) and survivors are provided by the Department of National Defence. Because DND does not administer the pension payments made to former members of the Canadian Forces - Regular Forces, the information received from DND on former members may not be as accurate since the information is not kept up to date. The former member information is kept internally at DND with the sole purpose of providing valuation data to OSFI. An additional set of valuation data on former members of the Canadian Forces - Regular Forces are extracted from master computer files maintained by the Superannuation Directorate of the Department of Public Works and Government Services Canada. This second set of valuation data on former member provides OSFI with the ability to cross verify the information provided by DND.

The main valuation data file supplied by the DND contained the historical status information on all members up to 31 March 2008. The valuation data file on former members of the Canadian Forces - Regular Forces provided by PWGSC covers the period of 1 April 2005 to 31 March 2008.

### B. Validation of Membership Data

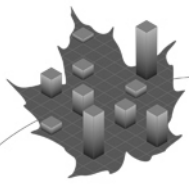
#### 1. Status-Related Tests

The following status tests were made on the main valuation data file:

- a consistency check that a status could be established for each record of a member. The status of a member may change over time but at a given point in time it can be only one of the following: contributor, outstanding termination, pensioner, deceased leaving an eligible survivor;
- a consistency check of the changes in status of a member during the intervaluation period; e.g.
  - if a contributor record indicated that the member retired, then a pensioner record should exist; and
  - if a contributor or pensioner record indicated that the member died leaving an eligible survivor, then a corresponding survivor record should exist;
- a reconciliation between the status of members as at 31 March 2008 from the current valuation data and the status of the members as at 31 March 2005 from the previous valuation data.

#### 2. Benefit-Related Tests

Consistency tests were made to ensure that all proper information to value the member benefits based on individual statuses as at 31 March 2008 was included, by verifying that



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### a) For Active Members

- the pensionable and qualifying service was reasonable in relation to the attained age;
- the salary was included and, if not, imputing a salary by updating a salary rate from a previous year with an average earnings increase or failing that, using the average salary rate for that sex.

### b) For Pensioners and Survivors in Receipt of an Annuity

- the amount of the annuity, including indexation, was included; and
- the benefits were indexed up to 1 January 2008.

### c) For Adjustments to Status and Benefit Data

- appropriate adjustments were made to the basic data, after consulting with the data providers, based on the omissions and discrepancies identified by the tests described herein and several additional tests.

## C. Membership Data

The following tables show the detailed reconciliation of membership data since the last valuation. Detailed membership data upon which this valuation is based are shown in Appendix 11.

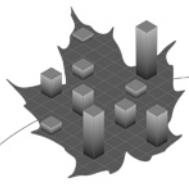
**Table 18 Reconciliation of Contributors**

	Male			Female			Total
	Officer	Other Rank	Total	Officer	Other Rank	Total	
<b>As at 31 March 2005</b>	<b>12,200</b>	<b>41,638</b>	<b>53,838</b>	<b>2,079</b>	<b>5,686</b>	<b>7,765</b>	<b>61,603</b>
Data corrections	239	(194)	45	21	8	29	74
New entrants	2,270	10,504	12,774	578	1,826	2,404	15,178
Rehired from cash-out	103	846	949	22	100	122	1,071
Rehired from pensioners	68	101	169	5	18	23	192
ROC or Transfer Value	(604)	(3,998)	(4,602)	(175)	(576)	(751)	(5,353)
Pensionable terminations							
Disability (3A)	(3)	(10)	(13)	-	-	-	(13)
Disability (3B)	(159)	(1,419)	(1,578)	(42)	(250)	(292)	(1,870)
Death	(32)	(152)	(184)	(4)	(8)	(12)	(196)
Other	<u>(1,432)</u>	<u>(4,228)</u>	<u>(5,660)</u>	<u>(130)</u>	<u>(440)</u>	<u>(570)</u>	<u>(6,230)</u>
Subtotal	(1,626)	(5,809)	(7,435)	(176)	(698)	(874)	(8,309)
New Reservists - CFSA Part I	645	1,206	1,851	234	918	1,152	3,003
<b>As at 31 March 2008</b>	<b>13,295</b>	<b>44,294</b>	<b>57,589</b>	<b>2,588</b>	<b>7,282</b>	<b>9,870</b>	<b>67,459</b>



**Table 19 Reconciliation of Pensioners**

	Male			Female			Total
	Officer	Other Rank	Total	Officer	Other Rank	Total	
<b>Retirement Pensioners</b>							
As at 31 March 2005	16,255	53,834	70,089	656	2,300	2,956	73,045
Data corrections	(123)	(452)	(575)	(14)	(33)	(47)	(622)
New entrants	1,435	4,229	5,664	127	439	566	6,230
Terminations							
Death	(1,127)	(3,381)	(4,508)	(23)	(29)	(52)	(4,560)
Other	(73)	(117)	(190)	(4)	(23)	(27)	(217)
Subtotal	(1,200)	(3,498)	(4,698)	(27)	(52)	(79)	(4,777)
As at 31 March 2008	16,367	54,113	70,480	742	2,654	3,396	73,876
<b>Disability Pensioners (3A)</b>							
As at 31 March 2005	207	2,758	2,965	16	75	91	3,056
Data corrections	(13)	(159)	(172)	-	(3)	(3)	(175)
New entrants	3	10	13	-	-	-	13
Terminations							
Death	(27)	(300)	(327)	-	(2)	(2)	(329)
Other	-	(1)	(1)	-	-	-	(1)
Subtotal	(27)	(301)	(328)	-	(2)	(2)	(330)
As at 31 March 2008	170	2,308	2,478	16	70	86	2,564
<b>Disability Pensioners (3B)</b>							
As at 31 March 2005	439	5,835	6,274	95	888	983	7,257
Data corrections	23	359	382	6	44	50	432
New entrants	160	1,418	1,578	42	250	292	1,870
Terminations							
Death	(15)	(185)	(200)	(1)	(4)	(5)	(205)
Other	(1)	(6)	(7)	(1)	(1)	(2)	(9)
Subtotal	(16)	(191)	(207)	(2)	(5)	(7)	(214)
As at 31 March 2008	606	7,421	8,027	141	1,177	1,318	9,345



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**Table 20 Reconciliation of Survivors**

	Spouses			Children and Students		
	Widows	Widowers	Total	Children	Students	Total
<b>As at 31 March 2005</b>	<b>22,339</b>	<b>74</b>	<b>22,413</b>	<b>423</b>	<b>214</b>	<b>637</b>
Data corrections	(312)	(8)	(320)	21	290	311
New survivors from contributors	81	4	85	109	15	124
New survivors from Pensioners	3,064	18	3,082	74	19	93
Spouse deaths	(2,902)	(7)	(2,909)	-	-	-
Eligible as student	-	-	-	(217)	217	-
Students terminating	-	-	-	-	(229)	(229)
<b>As at 31 March 2008</b>	<b>22,270</b>	<b>81</b>	<b>22,351</b>	<b>410</b>	<b>526</b>	<b>936</b>



## Appendix 5 – CFSA Valuation Methodology

### A. Plan Assets

#### 1. Canadian Forces Superannuation Account

Assets in respect of the Superannuation Account consist essentially of the recorded balance of the Superannuation Account in the Accounts of Canada. These assets are shown at the book value of the underlying notional bond portfolio described in Appendix 3. For consistency, the liabilities are determined using the projected Account yields, shown in Appendix 6, that reflect the interest credited to the Superannuation Account.

The only other Account-related asset consists of the discounted value of future member contributions and government credits in respect of prior service elections. The discounted value of future member contributions was calculated using the projected Account yields. The government is assumed to match these future member contributions when paid at a single rate but it makes no contributions if the member is paying the double rate.

#### 2. Canadian Forces Pension Fund

For valuation purposes, an adjusted market value method is used to determine the actuarial value of assets in respect of the Pension Fund. The method is unchanged from the previous valuation.

Under the adjusted market value method, the difference between the observed investment returns during a given plan year and the expected investment returns for that year based on the previous report assumptions, subject to a 10% corridor, 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 only other Fund-related asset consists of the discounted value of future member contributions and government credits in respect of prior service elections. The discounted value of future member contributions was calculated using the assumed yield on the Pension Fund. The government is assumed to contribute in the same proportion as for the CFSA current service cost when member contributions are paid at the single rate but it is assumed to contribute 75% of the member contributions when the member is paying the double rate.



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The actuarial value of the assets, determined as at 31 March 2008, under the adjusted market value method is \$8,011 million and was determined as follows:

**Table 21 Actuarial Value of Pension Fund Assets**  
(\$ millions)

Plan Year	2004	2005	2006	2007	2008
Actual net investment return (A)	517	271	830	676	(55)
Expected investment return (B)	134	213	288	380	473
Investment gains (losses) (A-B)	383	58	542	296	(528)
Gains (losses) recognized immediately	-	-	31	-	-
Investment gains (losses) to be amortized	383	58	511	296	(528)
Unrecognized percentage	0%	20%	40%	60%	80%
<i>Unrecognized investment gains (losses)</i>	-	12	204	178	(423)
Market value as at 31 March 2008					7,890
<b>Plus</b>					
Present value of prior service contributions					92
<b>Less</b>					
Total unrecognized investment gains (losses)					(29)
Actuarial value as at 31 March 2008					8,011

### B. Actuarial Cost Method

As benefits earned in respect of current service will not be payable for many years, the purpose of an actuarial cost method is to assign costs over the working lifetime of the members.

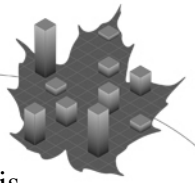
As in the previous valuations, the projected accrued benefit actuarial cost method (also known as the projected unit credit method) was used to determine the current service cost and actuarial liability. Consistent with this cost method; pensionable earnings are projected up to retirement using the assumed annual increases in average pensionable earnings (including seniority and promotional increases). The yearly maximum salary cap and other benefit limits under the *Income Tax Act* described in Appendix 2 were taken into account to determine the benefits payable under the CFSA and those payable under the RCA No. 1.

#### 1. Current Service Costs

Under the projected accrued benefit actuarial cost method, the current service cost, also called normal cost, computed in respect of a given year is the sum of the value, discounted in accordance with the actuarial assumptions for the Pension Fund, of all future payable benefits considered to accrue in respect of that year's service. The Pension Fund administrative expenses are deemed to be included in the total current service cost.

Under this method, the current service cost for an individual member will increase each year as the member approaches retirement. However, all other things being equal, the current service cost for the total population, expressed as a percentage of total pensionable payroll, can be expected to remain stable as long as the average age and





service of the total population remains constant. The government current service cost is the total current service cost reduced by the members' contributions.

## **2. Actuarial Liability**

The actuarial liability with respect to contributors corresponds to the value, discounted in accordance with the actuarial assumptions, of all future payable benefits accrued as at the valuation date in respect of all previous service. For pensioners and survivors, the actuarial liability corresponds to the value, discounted in accordance with the actuarial assumptions, of future payable benefits.

## **3. Actuarial Excess (Deficit)**

It is very unlikely that the actual experience will conform exactly to the assumptions that underlie the actuarial estimates. Thus a balancing item must be calculated under this cost method to estimate the necessary adjustments. Adjustments may also be necessary if the terms of the pension benefits enacted by legislation are modified or if assumptions need to be updated.

The actuarial excess or deficit is the difference between the actuarial value of assets and the actuarial liability. A new actuarial deficit may be amortized over a period not exceeding 15 years through special payments and the disposition of any actuarial surplus is defined in the CFSA.

## **4. Government Contributions**

The recommended government contribution corresponds to the sum of:

- the government current service cost;
- the government contributions for prior service; and
- as applicable, special payments in respect of a deficit or as the case may be, actuarial surplus credits.

## **C. Projected Yields**

The projected yields (shown in Appendix 6) assumed for computing the present value of accrued benefits to be credited from the Canadian Forces Superannuation Account (i.e. the Account liability) 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 6);
- the expected future benefits payable in respect of all pension entitlements accrued up to 31 March 2000;
- the expected future contributions for prior service elections made up to 31 March 2000, and



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- the expected future administrative expenses,  
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 6) assumed for computing the present value of the benefits accrued or accruing to be credited to the Canadian Forces Pension Fund (i.e. the Fund liabilities and the current service cost) were developed on the basis that the Fund holds a diversified mix of assets.

### **D. Membership Data**

For valuation purposes, individual data on each member were used.

The member data shown in Appendix 4 and 11 were provided as at 31 March 2008. This valuation is based on the member data as at the valuation date.

The information in respect of the contributions for elected prior service was provided as at 31 March 2008. Future member contributions in respect of elected prior took into account only the payment streams that were still in effect at 31 March 2008. Only payments due after 31 March 2008 were included.



## Appendix 6 – CFSA Actuarial Assumptions

The payment of accrued pension benefits is the responsibility of the government, therefore the likelihood of the plan being wound-up and its obligation not being fulfilled is practically nonexistent, 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

##### a) Level of Inflation

Price increases, as measured by changes in the Consumer Price Index, tend to fluctuate from year to year. Based on the renewed commitment of the Bank of Canada and the Government to keep inflation between 1% and 3% until 2011, a rate of price increase of 2.0% has been assumed for plan years 2009 to 2011.

Recognizing past experience, the rate of price increase is assumed to increase from 2.0% for plan year 2012 to 2.4% for 2016. The ultimate rate of 2.4% is 0.1% lower than the assumed rate from the previous valuation.

##### b) Real<sup>1</sup> 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 of 1.1% per annum is 0.1% higher than the assumed ultimate rate from the previous valuation. One of the key elements underlying the productivity rate assumption is the expected labour shortage due to the aging of the Canadian population and the retirement of the baby boom generation between 2010 and 2030. A growing labour shortage, especially after 2010, is assumed to force higher real wage growth. Labour force growth will weaken as the working age population expands at a slower pace. Real increases in average earnings are assumed to rise gradually from 0.8% in plan year 2011 to reach the ultimate 1.1% per annum in 2013.

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

Recognizing recent experience, the real rate of return on long-term Government of Canada bonds was assumed to be 2.4% for plan years 2009 to 2012. The rate then increases by 0.1% in each of the next four years and reaches its ultimate rate of 2.8% per annum in 2016. The long-term Government of Canada return is based on historical returns and in the previous valuation, its ultimate rate was 2.85%.

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<sup>1</sup> 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 4.2% (derived from  $1.067/1.024$ ) rather than 4.3%.



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## d) Real Rate of Return on Fund

For PSPIB assets, it is assumed that the ultimate real rate of return on investments will be 4.3%, net of investment expenses (the ultimate level of inflation being 2.4%). The ultimate real rate of return is unchanged from the previous valuation. The real rate of return on PSPIB assets takes into account the assumed asset mix of investments as well as the assumed real rate of return for all categories of PSPIB assets. Based on this assumed asset mix, the real rate of return is 4.0% for the next four years, and increases gradually to reach the ultimate 4.3% per annum in plan year 2014.

For the period ending December 2007, the following table was prepared based on the Canadian Institute of Actuaries Report on Canadian Economic Statistics 1924-2007.

Period of Years Ending 2007	15	25	50
Level of Inflation	1.88%	2.77%	4.12%
Real Increases in Average Earnings	0.12%	0.16%	0.97%
Real Return on Long-Term Canada Bonds <sup>1</sup>	6.93%	7.39%	3.11%
Average Real Return on Diversified Portfolios	7.52%	7.40%	4.71% <sup>2</sup>

## 2. Derived Economic Assumptions

**Table 22 Economic Assumptions<sup>3</sup>**  
(As a percentage)

Plan Year	Inflation		Employment Earning Increases				Interest		
	CPI Increase	Pension Indexing <sup>4</sup>	IAAWE	YMPE <sup>4</sup>	Average Pensionable Earnings <sup>5</sup>	Maximum Pensionable Earnings <sup>4,6</sup>	New Money Rate	Yield Projected on Account	Yield Projected on Fund
2009	2.0	<b>2.5</b>	<b>3.0</b>	<b>3.1</b>	<b>2.0</b>	<b>4.8</b>	4.4	7.1	6.0
2010	2.0	2.0	2.7	2.6	<b>1.5</b>	2.6	4.4	6.8	6.0
2011	2.0	2.0	2.9	2.8	<b>1.5</b>	2.8	4.4	6.6	6.0
2012	2.0	2.0	3.1	3.0	3.0	3.0	4.4	6.1	6.0
2013	2.1	2.0	3.2	3.2	3.2	3.2	4.7	5.9	6.3
2014	2.2	2.1	3.4	3.3	3.3	3.3	5.0	5.7	6.5
2015	2.3	2.2	3.5	3.5	3.4	3.5	5.1	5.5	6.6
2016	2.4	2.3	3.6	3.6	3.5	3.6	5.2	5.3	6.7
2017	2.4	2.4	3.6	3.6	3.5	3.6	5.2	5.2	6.7
2018	2.4	2.4	3.6	3.6	3.5	3.6	5.2	5.1	6.7
2023	2.4	2.4	3.6	3.6	3.5	3.6	5.2	4.9	6.7
2028	2.4	2.4	3.6	3.6	3.5	3.6	5.2	4.9	6.7
2033	2.4	2.4	3.6	3.6	3.5	3.6	5.2	5.2	6.7
2038+	2.4	2.4	3.6	3.6	3.5	3.6	5.2	5.2	6.7

<sup>1</sup> Real returns were calculated after the level of inflation is removed geometrically before 1992.

<sup>2</sup> This average is over the last 48 years.

<sup>3</sup> Bold figures denote actual experience.

<sup>4</sup> Assumed to be effective as at 1 January.

<sup>5</sup> Assumed to be effective as at 1 April. Exclusive of seniority and promotional increases.

<sup>6</sup> Calendar year 2008 Maximum Pensionable Earnings is \$130,700



**a) Projected Yields on Superannuation Account**

These yields are required for the computation of present values of benefits to determine the liability for service prior to 1 April 2000. The methodology used to determine the projected yields on the Account is described in Appendix 5. This is the same methodology as was used in previous valuations.

**b) Projected Yields on Pension Fund**

These yields are derived from the assumed future level of inflation and the real return on the Fund which were both changed for this valuation. These yields are required for the computation of the present value of benefits to determine the current service cost and liability for service since 1 April 2000. The assumed yield of 6.0% per annum for plan year 2009 is assumed to increase gradually to the ultimate level of 6.7% per annum by plan year 2016. The assumed yield is net of investment expenses debited to the Pension Fund.

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

The YMPE is required in the valuation process because the plan is coordinated with the Canada Pension Plan. The assumed increase in the YMPE for a given year is 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 0.1% higher (beginning with plan year 2015) than the corresponding increase in average pensionable earnings. The YMPE increase was 0.2% higher than the corresponding increase in average pensionable earnings in the previous valuation.

**d) Maximum Pensionable Earnings (MPE)**

Because the plan is coordinated 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 \$2,333.33 for calendar year 2008 will increase to \$2,444.44 for 2009, in accordance with the 2005 Federal Budget; thereafter, the maximum annual pension accrual is assumed to increase in accordance with the assumed increase in the IAAWE which is 0.1% lower than in the previous valuation.

As described in Note 5 of Appendix 1, the coordination factor of 0.7% effective for plan years before 2008 will decrease by 0.015%/year to an ultimate coordination factor of 0.625% by plan year 2012. The *Canadian Forces Superannuation Regulations* specifies that the ultimate coordination factor of 0.625% is to be used for the determination of the maximum pensionable earnings. The MPE is \$130,700 for calendar year 2008.



## e) Increase in Pension Indexing Factor

The year's pension indexing factor is required 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 1, which relates to the assumed Consumer Price Index increases over successive 12-month periods ending on 30 September.

## f) Transfer Value Real Interest Rate

The Canadian Institute of Actuaries has recently adopted the Revised Standards of Practice for Pension Commuted Values, effective 1 April 2009. The financial impact of the Revised Standards has been reflected in this valuation. The real interest rates to be used for the computation of commuted values as at a particular date are as follows:

First 10 years:  $r_7 + 0.90\%$

After 10 years:  $r_L + 0.5 \times (r_L - r_7) + 0.90\%$

Where  $r_7 = r_L \times (i_7/i_L)$

$r_L$  is the long-term real-return Government of Canada bond yield, annualized

$i_L$  is the long-term Government of Canada benchmark bond yield, annualized and

$i_7$  is the 7-year Government of Canada benchmark bond yield<sup>1</sup>, annualized

The obtained rates of interest are rounded to the next multiple of 0.10%.

For example, for plan year 2010, the real rates of interest are 3.0% for the first 10 years and 3.4% thereafter. These rates were derived from the assumed 2010 CPI increase and the assumed 2010 long-term Government of Canada benchmark bond yield which corresponds to the new money rate in this valuation.

## B. Demographic Assumptions

Given the size of the population subject to the CFSA, the plan's own experience, except where otherwise noted, was deemed to be the best model to determine the demographic assumptions. Assumptions from the previous valuation were updated to reflect past experience to the extent it was deemed credible.

### 1. Seniority and Promotional Salary Increases

Seniority means length of service within a classification and promotion means moving to a higher paid classification.

The seniority and promotional increase assumption was revised to reflect the intervaluation experience. The assumed rate decreased by an average of 21% for officers with 10 or fewer years of completed service and increased by an average of 12% for officers with 11 to 30 years of completed service. The assumed rate decreased by an average of 25% for other ranks with 10 or fewer years of completed service and

<sup>1</sup> It was deemed to be equal to 90% of the long-term Government of Canada benchmark bond yield.



increased by an average of 21% for other ranks with 11 to 30 years of completed service.

**Table 23 Sample of Assumed Seniority and Promotional Salary Increases**  
(Percentage of annual earnings)

Completed Years of Pensionable Service	Officer	Other Rank
0	6.0	15.6
1	4.8	13.6
2	10.7	4.4
3	18.9	7.8
4	13.2	1.9
5	5.8	1.6
6	7.5	1.4
7	5.7	1.2
8	3.8	1.1
9	3.7	1.0
10	4.0	1.0
15	1.9	1.0
20	1.5	1.2
25	1.1	1.1
30	0.7	0.9

**2. New Contributors**

It was assumed that the distribution of new members by age and sex would be the same as that of members with less than one year of service at the valuation date. In the previous report, the level of the Regular Force membership was projected to reach 65,000 members during plan year 2010. This target is still effective in this valuation but in order to reach the 65,000 active membership level, the annual percentage increase in the number of new contributors was determined on the level of the membership reported as 31 March 2008.

**Table 24 Assumed Annual Increases in Number of Contributors**

Plan Year	Percentage
2009	0.47
2010	0.47
2011+	0.00

The initial salary of new members in a given age-sex cell in plan year 2009 is assumed to be the same as the corresponding experience in plan year 2008 with an economic salary increase for plan year 2009. Initial salary is assumed to increase in future years in accordance with the assumption for average earnings increases.



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## 3. Pensionable Retirement

In the previous valuation report the retirement assumption was determined on the basis of service and rank. In this report the retirement rate assumption is also determined on the basis of the terms of service the member is enrolled under. Old terms of service means IE20 and new terms of service means IE25.

The assumed rates of pensionable retirement were revised to reflect the intervaluation experience. For officers under the old terms of service the retirement rate assumption was increased by an average of 12% from the previous valuation. For officers under the new terms of service the retirement rate assumption was increased by an average of 3% from the previous valuation.

For other ranks under the old terms of service the retirement rate assumption was increased by an average of 9% from the previous valuation. For other ranks under the new terms of service the retirement rate assumption was increased by an average of 8% from the previous valuation.

The following tables provide sample rates of pensionable retirement.

**Table 25 Sample of Assumed Rates of Retirement**  
(Per 1,000 individuals)

Completed Years of Pensionable Service	Old Terms of Service		New Terms of Service	
	Officer	Other Rank	Officer	Other Rank
20	81	111	-	-
25	51	113	127	184
30	107	134	68	106
35	396	406	396	406
40	492	591	492	591

## 4. Disability Retirement

The disability incidence rate assumptions were revised to reflect the intervaluation experience. The assumed 3A (any occupation) disability incidence rate for males was decreased by an average of 19% from the previous valuation while the rate for females was left unchanged.

The assumed 3B (own occupation) disability incidence rate for male officers was decreased by an average of 31% from the previous valuation. The assumed 3B disability incidence rate for male other ranks was increased by an average of 9% from the previous valuation. The assumed 3B disability incidence rate for females was increased by an average of 48% from the previous valuation.





**Table 26 Sample of Assumed Rates of Pensionable Disability**  
(Per 1,000 individuals)

Age	Any Occupation (3A)		Own Occupation (3B)		
	Male	Female	Male Officer	Male Other Rank	Female
25	0.2	0.7	2.8	5.6	7.5
35	0.3	1.7	0.9	13.5	15.5
45	0.4	3.6	3.4	28.4	27.3
55	2.1	6.8	14.4	52.9	42.8
59	3.6	8.2	21.3	63.6	57.0

**5. Withdrawal**

Withdrawal means ceasing to be a member of the force for reasons other than death or retirement with an immediate annuity or an annual allowance. In the previous valuation report the withdrawal assumption was determined on the basis of service, sex, and rank. In this report the withdrawal rate assumption is also determined on the basis of the terms of service the member is enrolled under. Old terms of service means IE20 and new terms of service means IE25.

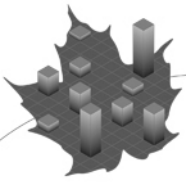
Under the old terms of service the assumed withdrawal rate for male officers was increased by an average of 4% from the previous valuation. The assumed withdrawal rate for female officers under the old terms of service was increased by an average of 3% from the previous valuation.

Under the new terms of service the assumed withdrawal rate for male officers was increased by an average of 37% from the previous valuation. The assumed withdrawal rate for female officers under the new terms of service was decreased by an average of 8% from the previous valuation.

Under the old terms of service the assumed withdrawal rate for non-officer males under the old terms of service was increased by an average of 29% from the previous valuation. The assumed withdrawal rate for non-officer females under the old terms of service was increased by an average of 25% from the previous valuation.

Under the new terms of service the assumed withdrawal rate for non-officer males was increased by an average of 23% from the previous valuation. The assumed withdrawal rate for non-officer females under the new terms of service was increased by an average of 4% from the previous valuation.

All the terminating contributors with more than two years of service are assumed to elect a transfer value rather than a deferred annuity.



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**Table 27 Sample of Assumed Withdrawal Rates**  
(Per 1,000 individuals)

Completed Years of Pensionable Service	Old Terms of Service				New Terms of Service			
	Officer		Other Rank		Officer		Other Rank	
	Male	Female	Male	Female	Male	Female	Male	Female
0	93	83	74	58	66	67	68	65
1	61	60	33	33	32	33	25	32
5	25	31	42	45	17	27	45	45
10	33	50	24	26	23	51	13	50
15	9	17	15	20	22	17	20	15
18	6	13	5	16	12	9	5	11
23	-	-	-	-	7	15	5	11

## 6. Mortality

The mortality rate assumptions were created by giving partial credibility to projected mortality rates from the previous report and partial credibility to the intervaluation experience.

For contributors and retirement pensioners the new base year mortality rates are lower at most ages. In particular, for ages 30 to 80 the assumed male mortality rates declined by an average of 13% for officers and 4% for other ranks. For the same age range the assumed female mortality rates declined by an average of 5%.

The assumed mortality rate for 3B (own occupation) disability pensioners is the same as the mortality assumption for contributors and retirement pensioners. The assumed mortality rate for 3A (any occupation) male disability pensioners between the ages of 30 and 80 declined by an average of 5% for officers and 9% for other ranks. For the same age range the assumed female mortality rates declined by an average of 3%.

The assumed mortality rates for spouse survivors were also revised based on intervaluation experience. The assumed mortality rate for ages 30 to 80 declined by an average of 4% for male survivors and 27% for female survivors as compared with the previous valuation report.



**Table 28 Sample of Assumed Rates of Mortality**  
(Per 1,000 individuals)

Age	Contributors and Retirement Pensioners			Disability (3A) Pensioners			Surviving Spouses	
	Male		Female	Male		Female	Male	Female
	Officer	Other Rank		Officer	Other Rank			
30	0.5	0.8	0.4	0.7	3.7	0.5	1.1	0.2
40	0.6	0.9	0.5	1.2	4.6	1.1	1.5	0.5
50	1.3	2.7	1.3	7.2	6.4	2.8	3.4	2.4
60	3.9	9.1	3.9	16.6	17.3	7.5	9.6	5.6
70	15.2	26.1	12.4	31.4	43.5	18.9	25.5	13.6
80	58.8	69.1	37.4	70.8	86.8	49.8	66.0	32.0
90	148.7	156.7	112.2	146.6	160.6	130.9	167.5	103.3
100	315.1	328.6	287.3	312.6	288.4	287.2	340.1	331.9
110	500.0	500.0	492.4	500.0	500.0	492.4	500.0	500.0

## 7. Family Composition

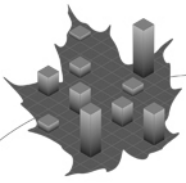
The assumptions regarding spouse survivors were revised based on the intervaluation experience. The probability of leaving, upon death, a spouse eligible for a survivor pension was increased from the previous valuation by an average of 4% for males and increased by an average of 53% for females. The assumed age of the spouse survivor was decreased from the previous valuation by an average of 1.1 years for widow with no modification for widower.

**Table 29 Assumptions for Survivor Spouse Allowances<sup>1</sup>**

Age	Male		Female	
	Probability of an Eligible Spouse at Death of Member	Spouse Age Difference	Probability of an Eligible Spouse at Death of Member	Spouse Age Difference
30	0.63	(1)	0.49	1
40	0.75	(1)	0.51	2
50	0.80	(2)	0.52	1
60	0.80	(3)	0.52	0
70	0.74	(3)	0.49	(1)
80	0.62	(4)	0.43	(1)
90	0.40	(6)	0.26	(5)
100	0.16	(9)	0.01	-

The assumptions regarding the average number of eligible children were revised based on the intervaluation experience. Between the ages of 30 and 54 the average number children assumed to be eligible for a survivor allowance increased between 0% and 13% with the majority of the increase attributable to female members. For females under the age of 26 the assumed number of children was lowered by 20% to 50%. The assumption

<sup>1</sup> Survivor pensions are not payable if the deceased member has less than two years of pensionable service.



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regarding the average age of eligible children was changed from the previous report by one year at select ages. As in the previous valuation, to determine the value of pensions payable to eligible children, the rates of pension termination were assumed to be zero prior to age 17 and 16% per annum thereafter until expiry of the benefit on the 25<sup>th</sup> birthday.

The revision to family composition assumptions has a negligible impact on the valuation results.

**Table 30 Assumptions for Survivor Children Allowances <sup>1</sup>**

Age Last Birthday at Death	Male		Female	
	Average Number of Children	Average Age of Children	Average Number of Children	Average Age of Children
30	0.7	5	0.7	5
40	1.0	11	0.8	13
50	0.7	16	0.3	17
60	0.1	18	0.0	-
70	0.0	-	0.0	-

## C. Other Assumptions

### 1. Pension Benefits Division/Optional Survivor Benefit/Leave Without Pay

The division of pension benefits has almost no effect on the valuation results because the liability is reduced, on average, by approximately the amount paid to the credit of the former spouse. Consequently, no future pension benefits divisions were assumed in estimating the current service cost and liability. However, past pension benefits divisions were fully reflected in the liability. 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.

### 2. Minimum Post-Retirement Death Benefit

This valuation does not take into account the minimum death benefit described in Note 18 of Appendix 1 –D.18, with respect of deaths occurring after retirement. The resulting understatement of the accrued liability and current service cost is not material since the majority of the relatively few pensioners who die in the early years of retirement leave an eligible survivor.

### 3. Administrative Expenses

Following the analysis of total administrative expenses charged to both the Account and the Fund over the last ten years, the annual administrative expense assumption of 0.35% of total pensionable payroll was increased by 0.05% to 0.4%.

In addition, the analysis revealed that the allocation of total administrative expenses between the Account and the Fund was showing a faster allocation to the Fund than what was previously assumed. For plan year 2009, 80% of total administrative expenses are being charged to the Account and it is now expected that the proportion charged to the Account will reduce at the rate of 2.8% per year, an increase of 0.8% per year from our previous assumption of 2.0%.

**4. Financing of Elected Prior Service**

The assumed future government credits in respect of prior service elections vary according to the vehicle (i.e. Account or Fund) into which the contributions are deposited. The government matches member contributions made to the Superannuation Account for prior service elections; however, it makes no contributions if the member is paying the double rate. Government credits to the Pension Fund in respect of elected prior service are as described for current service.

**5. Outstanding Terminations**

The information provided by DND does not allow us to make an appropriate estimate of the amounts paid from 1 April 2008 onward for terminations that occurred prior to that date. Payments owing to former active members as at 31 March 2008 were ignored in this valuation. A more in-depth analysis will be conducted in the next valuation report scheduled for 31 March 2011.

**6. Disability Incidence Rates for Pensioners Under Age 60**

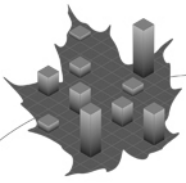
Both deferred pensioners and pensioners receiving an annual allowance while under age 60 were assumed to have a 0% disability rate. The resulting understatement of liability and current service cost is negligible.

**7. Recovery Rates for Disability Pensioners**

No recoveries are assumed for disability pensioners. The resulting overstatement of liability and current service cost is negligible.

**8. Sex of Surviving Spouses**

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



## Appendix 7 – RCA Valuation Methodology and Assumptions

### A. Valuation of Assets

The assets comprise the recorded balance in the Retirement Compensation Arrangements Account (RCA No. 1), which forms part of the Accounts of Canada, and a refundable tax. Each calendar year a cash transfer is made to the Canada Revenue Agency (CRA) such that in total half of the assets are held by the CRA as a refundable tax.

Interest is credited every three months in accordance with the actual average yield on a book value 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 economic assumptions from those used in the CFSA valuation.

#### 1. Terminally Funded RCA Benefits

The following RCA benefits are being terminally funded (i.e. not prefunded but on an occurrence basis):

- pre-retirement survivor benefits
- minimum death benefit

The above benefits are terminally funded 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. As well, the minimum death benefit is expected to occur only with deaths at younger ages where the probability of death is small.

#### 2. Post-retirement Survivor Benefits

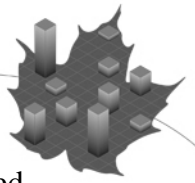
The limit on the amount of spousal annual allowance that can be provided under the CFSA decreases at the same time the member's pension reduces due to the CPP offset, usually at age 65.

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 No. 1 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).

This valuation applies the same valuation methodology that was used in the previous report. Officers are divided into specialists (doctors, dentists, etc) and non-specialists.



Officers with salary as at 31 March 2008 in excess of the 2009 MPE were also included amongst the specialist group. The specialists, who represent more than 70% of the RCA No. 1 liabilities, are valued using the actuarial assumptions described in Appendix 6, as was the case in the previous report.

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

To compute the liabilities and normal costs, no provision was made regarding the expenses incurred for the administration of the RCA No. 1 Account. These expenses, which are not debited to the RCA No. 1 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 6 were used without any modifications, except that the interest discount rate used to determine the present value of the RCA No. 1 liabilities and RCA No. 1 current service cost is one-half of the yield projected on the combined Superannuation Accounts.

#### **D. Valuation Data**

The RCA No. 1 pension benefits in payment were provided as at 31 March 2008. RCA No. 1 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 4 and shown in Appendix 11.



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### Appendix 8 – Canadian Forces Superannuation Account Projection

Prior to 1 April 2000, the CFSA was entirely financed through the Superannuation Account. The Account is now debited only with benefit payments made in respect of service earned before that date and administrative expenses; and it is credited with prior service contributions related to elections made prior to 1 April 2000 and interest earnings.

The results of the following projection were computed using the assets described in Appendix 3, the data described in Appendices 4 and 11, the methodology described in Appendix 5 and the assumptions described in Appendix 6.

The projection shows the expected cash flows and balance of the Superannuation Account if all assumptions are realized. If the Account balance exceeds 110% of the liability, an actuarial excess reduction is triggered to bring the balance down to 110% and is reflected in this projection. Emerging experience, differing from the corresponding assumptions, will result in gains or losses to be revealed in subsequent valuation reports.

**Table 31 Superannuation Account Projection**  
(\$ millions)

Plan Year	Beginning Account Balance	Beginning Liability	Beginning Actuarial Excess	Actuarial Excess Reduction <sup>1</sup>	Net Payments <sup>2</sup>	Interest Earnings
2009	44,194	42,433	1,761	0	2,359	2,938
2010	44,773	43,182	1,591	0	2,417	2,855
2011	45,211	43,617	1,595	0	2,441	2,801
2012	45,572	43,971	1,601	0	2,451	2,613
2013	45,733	44,125	1,608	0	2,476	2,537
2014	45,794	44,178	1,617	0	2,508	2,456
2015	45,742	44,114	1,627	0	2,538	2,367
2016	45,570	43,930	1,641	0	2,570	2,273
2017	45,273	43,616	1,657	0	2,603	2,215
2018	44,885	43,210	1,675	0	2,636	2,153
2020	43,822	42,107	1,715	0	2,691	2,058
2025	39,976	38,138	1,838	0	2,729	1,793
2030	35,184	33,192	1,992	0	2,619	1,627
2040	25,005	22,806	2,199	141	2,205	1,167
2050	13,496	12,293	1,203	133	1,565	639

<sup>1</sup> The actuarial excess reduction is calculated using the liabilities and Account balance at the end of the plan year.

<sup>2</sup> Benefit payments plus administrative expenses minus prior service contributions.





## Appendix 9 – Canadian Forces Pension Fund Projection

Starting 1 April 2000, the CFSA is financed through the Canadian Forces Pension Fund. The Fund is credited with employer and members contributions, investment earnings and with prior service contributions for elections since 1 April 2000. The Fund is debited with benefit payments made in respect of service earned since that date and administrative expenses.

The results of the following projection were computed using the data described in Appendices 4 and 11, the methodology described in Appendix 5 and the assumptions described in Appendix 6. The actuarial value of assets was \$8,011 million at the beginning of plan year 2009. As a large portion of the assets, earmarked for the payment of accrued pension benefits financed through the Pension Fund are invested in the volatile capital markets, the assets are set equal to the liability for projection purposes.

The projection shows the expected growth of the Pension Fund if all assumptions are realized. Emerging experience, differing from the corresponding assumptions, will result in gains or losses to be revealed in subsequent valuation reports.

**Table 32 Pension Fund Projection**  
(\$ millions)

Plan Year	Beginning Assets	Beginning Liability	Contributions <sup>1</sup>	Benefit Payments	Investment Earnings
2009	7,762	7,762	950	244	482
2010	8,950	8,950	961	259	556
2011	10,208	10,208	975	276	634
2012	11,541	11,541	992	311	715
2013	12,937	12,937	1,013	359	837
2014	14,428	14,428	1,041	413	960
2015	16,016	16,016	1,073	470	1,079
2016	17,698	17,698	1,107	533	1,207
2017	19,479	19,479	1,143	600	1,326
2018	21,348	21,348	1,182	671	1,450
2020	25,365	25,365	1,269	832	1,718
2025	37,160	37,160	1,515	1,348	2,504
2030	51,740	51,740	1,830	2,000	3,476
2040	89,583	89,583	2,517	4,204	5,987
2050	137,124	137,124	3,540	7,260	9,145

<sup>1</sup> Total current service cost plus prior service contributions.



## **Appendix 10 – Investment Risk of a Diversified Portfolio**

### **A. Investment Assumption**

#### **1. Investment Strategy**

Since 1 April 2000, tangible assets resulting from government and employee contributions are invested in capital markets through the PSPIB. The PSPIB invests funds according to its own investment policies, which take into account the needs of contributors and beneficiaries, as well as financial market constraints. The investments have been grouped into three broad categories: equity, fixed income securities and real return assets. Equities consist of Canadian, U.S. and foreign equities. Fixed income securities consist of bonds which are usually a mix of federal, provincial, corporate and real return bonds. Real return assets include such categories as real estate and infrastructure.

As at 31 March 2008, the PSPIB’s asset mix consisted of 61% equity, 25% fixed income securities, including inflation-linked bonds, and 14% real return assets. The assumed asset mix for plan year 2009 consists of 58% equity, 25% fixed income securities and 17% real return assets. The short-term asset mix of the Plan is assumed to consist of 55% equity, 25% fixed income securities and 20% real return assets and will be maintained for plan years 2010 through 2012. The 55% equity component consists of 25% Canadian equity and 30% U.S. and foreign equity.

As the Plan matures and plan members age and as the government and plan members become more risk averse, it is assumed that the Plan will increase its fixed income securities component. For this reason, the long-term assumed asset mix is 50% equity, 30% fixed income and 20% real return assets. It is assumed that the 50% invested in equity is composed of 20% Canadian equity and 30% U.S. and foreign equity. The long-term asset mix is achieved in plan year 2014 and is preceded by a two-year transition from the short-term asset mix.

When deriving the future assumed PSPIB asset mix, consideration was given to the asset mix policies of other major Canadian pension plans and how they have evolved over the last five years. Table 33 shows the assumed asset mix at the end of the year throughout the projection period.

**Table 33 Asset Mix**  
(in percentage)

Plan Year	Fixed Income Securities	Canadian Equity	U.S. and Foreign Equity	Real Estate & Infrastructure
2009	25	28	30	17
2010	25	25	30	20
2011	25	25	30	20
2012	25	25	30	20
2013	27	23	30	20
2014+	30	20	30	20



## 2. Real rates of Return

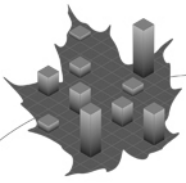
Real rates of return are required for the projection of revenue arising from invested assets. They are assumed for each year in the projection period and for each of the main asset categories in which pension assets are invested. All of the real rates of return described in this subsection are net of PSPIB expenses, which include both operating expenses and external investment management fees. Over the last three plan years, expenses have been, on average, equal to about 0.35% of average net assets.

As discussed earlier, PSPIB assets are invested in three broad categories of investments: fixed income securities, equity and real return assets. In determining the annual real rates of return for each asset category, consideration was given to the current economic environment, its future outlook, as well as historical experience. The future outlook is based on the fact that real interest rates are currently lower than their long-term average values. It is expected that these rates will increase slightly in the short-term and return to a level closer to the long-term average. The projected real rates of return for different types of investments also reflect that projections are over a time horizon of more than 75 years and thus, should generally be consistent with the long-term averages of real rates of return.

### a) Fixed Income Securities

Currently, the PSPIB has 25% of its investment portfolio invested in fixed income securities, including Canadian fixed income, world government bonds, world inflation-linked bonds and cash. Over time, it is assumed that the proportion invested in fixed income securities will slightly increase in order to attain more stability in investment income and decrease the portfolio's potential for loss. This may be achieved by implementing an investment strategy with lower risk. Thus it is assumed that by plan year 2014, 30% of the portfolio will be invested in fixed income securities. After 2030, net cash flows (contributions less expenditures) are expected to become negative and a portion of investment income will therefore be required to cover benefits. Changes to the assumed asset mix may be required in the future to further reduce pension risks and to take into account the maturity of the plan.

It is assumed that the PSPIB's fixed income portfolio consists of federal, provincial, corporate and inflation-linked bonds. Federal long-term bonds are used as a proxy for the risk-free rate. The new money rate is the nominal yield on long-term Government of Canada bonds and is set for each year in the projection period. The risk-free rate, or the real yield on federal bonds, is equal to the new money rate less the assumed rate of inflation and is used to determine yields on the other bond types. Federal long-term bonds are assumed to yield 2.4% real for the first four years of the projection and then increase by 0.2% in each of the next two years to reach 2.8% in 2014. The rate is then held constant in all subsequent plan years.



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The spread over the federal bond yield is assumed to be 40 basis points for provincial bonds and 100 basis points for corporate bonds. Inflation-linked bonds, on the other hand, yield less than long-term federal bonds since the real return is guaranteed and will not vary with inflation. Thus, the yield on real return bonds is assumed to be -40 basis points. The fixed investment portfolio has an assumed mix of 20% federal, 40% provincial, 30% corporate and 10% real return bonds. The real rate of return for the fixed income portfolio is calculated for each year using the proportion invested in each bond type and the bond yield. A long-term real rate of return of 3.2% is assumed for the fixed investment portfolio.

### **b) Equity**

Most PSPIB assets are currently invested in equity, specifically in developed world equity. In the derivation of the real rates of return for these equity investments, consideration was given to the long-term real rates of return of the S&P/TSX, S&P 500 and MSCI World (excluding U.S.) stock indices.

The equity risk premium is assumed to be constant over the entire projection period at a rate of 2.3%. It is added to the risk-free rate and corresponds to a real return on equity of 4.7% for the first four years of the projection. The real return is then assumed to increase annually by 0.2% until the ultimate rate of 5.1% is reached in 2014. The rate is then held constant for the duration of the projection period.

In comparison, the 35-year historical average annual real rate of return of the S&P/TSX total return index ending 31 December 2008 is 4.7% compared to 6.0% for the S&P 500. When considering the 50-year period ending 31 December 2008, the historical average annual real return is 5.1% for the S&P/TSX and 5.5% for the S&P 500.

### **c) Real Return Assets**

Real return assets such as real estate and infrastructure are considered to be a hybrid of debt and equity, usually in equal proportions. If these assets are considered to be an equal split between debt and equity, then the assumed risk premium should be 50% of that assumed for pure equity. Thus, an equity risk premium of 1.2% for real return assets is added to the risk-free rate. This corresponds to an assumed real return of 3.6% for the first four years of the projection period. The real return is then assumed to increase annually by 0.2% until the ultimate rate of 4.0% is reached in plan year 2014. The rate is then held constant for the duration of the projection. The ICREIM / IPD Canadian Annual Property Index earned an average annual real rate of return of 6.8% over the 36-year period ended 31 December 2008.



Table 34 summarizes the assumed real rates of return by asset type throughout the projection period.

**Table 34 Real Rate of Return by Asset Type**  
(in percentage)

Plan Year	Fixed Income Securities	Canadian Equity	U.S. and Foreign Equity	Real Estate & Infrastructure
2009	2.8	4.7	4.7	3.6
2010	2.8	4.7	4.7	3.6
2011	2.8	4.7	4.7	3.6
2012	2.8	4.7	4.7	3.6
2013	3.0	4.9	4.9	3.8
2014+	3.2	5.1	5.1	4.0

## B. Overall Rate of Return

The best-estimate rate of return on total assets was derived from the weighted average assumed rate of return on all types of assets, using the assumed asset mix proportions as weights. The resulting rates are shown in the following table.

**Table 35 Rates of Return on Assets in Respect of the Pension Fund**  
(in percentage)

Plan Year	Nominal	Real
2009	6.0	4.0
2010	6.0	4.0
2011	6.0	4.0
2012	6.0	4.0
2013	6.3	4.2
2014	6.5	4.3
2015	6.6	4.3
2016+	6.7	4.3

## C. Investment Risk of a Diversified Portfolio

Having described in the previous sections the best-estimate investment portfolio for the Canadian Forces pension plan, this section examines the financial impact of an alternative asset mix. In this appendix, assets refer solely to service since 1 April 2000 corresponding to the date when funds started to be transferred to the PSPIB for investments in capital markets.

### 1. Investing in Risky Assets

A major risk all pension plans face is funding risk – the risk that assets backing the liabilities are insufficient to meet pension obligations. If funding deficiencies or surpluses continue for an extended period of time, risk is transferred from one generation to another and may ultimately take the form of an increase or a decrease in the contribution rate.

The Canadian Forces pension plan is inflation indexed, meaning that benefits increase in line with the CPI in order to maintain their purchasing power. From a risk point of



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view, the PSPIB's funds would be invested only in securities that exhibit high risk-free real returns in excess of the CPI. However, only the Government of Canada Long-Term Real Return Bond guarantees a risk-free inflation protected return. The yield on this bond is below the required real return on assets of 4.3% that is needed to sustain the legislated pension benefit provisions at the current contribution rate.

By investing solely in risk-free real return bonds, all financing risk could be eliminated with, however, an excessive cost and at the detriment of current and future contributors who would have to pay more unless benefits were decreased. If the PSPIB were to switch from the current portfolio of fixed and variable income securities to a portfolio that consisted only of long-term Government of Canada bonds, the current service cost associated with the current benefit provisions would have to increase substantially in order to maintain the current financing status or benefits would have to be reduced. Neither of these options is desirable.

The current service cost can be reduced by investing in securities that offer a higher rate of return than risk-free real return bonds, but that also have a higher degree of risk or volatility. That is, funds can be invested in a mix of investments, such as equities and bonds, with the expected rate of return equal to the liabilities financing requirements. By investing in riskier assets, investors hope to realize the equity risk premium as their reward for taking on additional risk. An equity risk premium is the difference between the expected return on the risky asset (equity) and the expected return on a risk-free asset, such as the Government of Canada Long-Term Real Return Bond mentioned above.

The Government created the PSPIB to invest the proceeds resulting from pension contributions in excess of benefits and expenses with the purpose of maximizing investment returns without undue risk of loss. The current service cost is less than it would have been if the investment policy had been restricted to long-term government bonds. Diversifying the portfolio into a mix of fixed and variable income securities accomplishes this goal. Thus, the government undertakes some risks in order to increase the probability of achieving the long-term investment target of CPI + 4.3%.

Of course, these higher returns are expected but not guaranteed, creating the very real possibility that the market will not perform as expected and liabilities will grow at a faster rate than investments for an extended period of time. This is known as market risk. Since investing solely in risk-free real return bonds will not produce a return sufficient to maintain the plan at status quo, it is necessary to take some risk in order to increase the probability of earning a sufficient return. Even if investment returns materialize as expected, other assumptions may not, causing liabilities to grow at a faster rate than underlying assets. An example of this is if salaries increase at a higher rate than expected. The amount of risk that the plan sponsor is willing to take depends on many factors, including the current financing status and economic outlook, among other things. Thus, the investment policy must balance the sponsor's desire for a high real rate of return with its tolerance and capacity for taking risk.



The following table shows the impact that various asset mixes would have on the current service cost and the financing ratio, as well as their relative volatility.

**Table 36 Investment Policy Impact on Liability Financing**

	Assets Mixed			Ultimate Real Rate of Return	Standard Deviation		Pension Assets Financing Ratio as at 31 March 2008	Required Current Service Cost to Maintain Full Funding
	Fixed Income	Equity	Real Return		1 year	3 years		
Portfolio #1	100%	0%	0%	2.8%	10.2%	5.9%	76%	31.74%
Portfolio #2	100%	0%	0%	3.2%	10.4%	6.0%	83%	28.78%
Portfolio #3	80%	15%	5%	3.5%	9.8%	5.6%	89%	26.80%
Portfolio #4	55%	35%	10%	4.0%	10.3%	5.9%	98%	23.92%
Best-Estimate Portfolio	30%	50%	20%	4.3%	11.3%	6.5%	104%	22.39%
Portfolio #5	15%	65%	20%	4.6%	12.9%	7.4%	110%	21.01%
Portfolio #6	0%	80%	20%	4.9%	14.4%	8.3%	116%	19.74%

Portfolio #1 is invested in long-term federal bonds assuming the ultimate assumption is reached in plan year 2014. This portfolio does not result in a feasible scenario due to its prohibitive cost; however, its volatility is low when compared to the other portfolios considered. Portfolio #2 is invested in a marketable bond portfolio consisting of federal, provincial, corporate and real return bonds. Although this portfolio produces a higher real rate of return compared to Portfolio #1, it is still not sufficient to ensure 100% pension assets financing while maintaining an acceptable current service cost. This is also a low risk, low return portfolio. Thus, a more risky portfolio is required in order to achieve an average annual real return of CPI + 4.3%.

The rest of the portfolios discussed are diversified portfolios that consist of equity, fixed income securities and real return assets, such as real estate and infrastructure. Portfolio #3 and Portfolio #4 are more diversified than the first two portfolios and are invested 15% and 35%, respectively, in equity. This diversification increases the real rate of return earned on these portfolios and reduces their volatility compared to the first two portfolios since the three broad asset categories are not perfectly correlated. However, despite an increased real return and lower risk, these portfolios are still not sufficient to maintain the current financing ratio. Thus, an increase in the current service cost would be required with both portfolios. Since the best-estimate real rate of return of 4.3% corresponds to the sponsor’s current risk tolerance objective, it is necessary to invest in a slightly more risky portfolio in order to attain the desirable objective.

Portfolios #5 and #6 are considered more risky portfolios because they are highly invested in equity (65% and 80%, respectively) which has much more volatile returns than fixed income. Both portfolios are likely to result in higher than necessary returns, resulting in either an improvement to the financing ratio or a decrease to the current service cost. However, the volatility in these portfolios is quite high. By investing in a



less risky portfolio, the plan's best-estimate real rate of return can still be achieved along with lower volatility.

The best-estimate portfolio is invested 30% in fixed income securities, 50% in equity and 20% in real return assets in the long-term. Such a portfolio produces an annual real return of 4.3% with a three-year standard deviation of 6.5%. By observing the volatility of each of the portfolios in Table 36, it can be concluded that a certain degree of risk must be undertaken in order to earn a sufficient return. Thus, an asset allocation such as the best-estimate portfolio shows that an average real return of 4.3% can be achieved with a moderate degree of risk. More risky portfolios, such as Portfolios #5 and #6, may produce a higher real return, on average, but with a higher degree of risk. Thus, investing in a more volatile portfolio is not necessary in order to achieve the required real return of 4.3%.

### **2. Analysis of Extreme Outcomes for the Best-Estimate Portfolio**

Having determined that the best-estimate portfolio is the most appropriate in terms of risk, this section focuses on the volatility present in that portfolio and the extreme outcomes that may result.

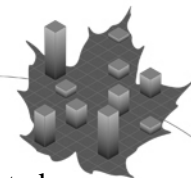
The best-estimate portfolio has an expected annual return of 4.3% real and a three-year standard deviation of 6.5%. The 90% confidence interval for real investment returns over three consecutive years is bounded by the range of -6.4% to 15.0%. That is, the probability of the three-year average real return being less than or equal to -6.4% is 5%, while the probability of the three-year average real return being greater than or equal to 15.0% is 5%. If the average real return earned by the PSPIB over the period 2009-2011 was -6.4%, the pension assets financing ratio would decrease from 104% to 86%, creating an actuarial deficit of \$1,582 million as at 31 March 2011. Conversely, if the average real return earned by the PSPIB over the period 2009-2011 was 15.0%, the financing ratio would increase from 104% to 122%, creating an actuarial surplus of \$2,496 million as at the same date.

The probability of this extreme scenario occurring varies depending on how the PSPIB assets are invested. For example, if the assets were invested according to Portfolio #5 rather than the best-estimate, the probability of earning an average three-year real return of -6.4% increases from 5% to 7%. Conversely, the probability of earning an average three-year real return of 15.0% also increases, from 5% to 8%. With a less risky portfolio, such as Portfolio #4, the probability of earning an average three-year real return of -6.4% decreases to 4%. However, the probability of earning an average three-year real return of 15.0% also decreases, from 5% to 3%. Thus, as portfolio risk increases, the probability of earning an extreme average return, either good or bad, also increases, while less risky portfolios will decrease the probability of earning an extreme average return.

### **3. Impact on Assets in Respect of the Pension Fund of Investing in Riskier Assets**

This section highlights in dollar value the cumulative impact of PSPIB active asset management decisions since 1 April 2000 compared to fictitious investments in risk-free bonds during the same period. The following table shows the impact of investment decisions on PSPIB assets. Specifically, the table shows in lines (A) to (D) the





hypothetical value of the fund and of the investment earnings had the fund been invested entirely in long-term Government of Canada bonds throughout its life. Those figures are compared to the actual PSPIB results – lines (E) to (I) – to obtain the net value of the decision to invest in capital markets, in lines (J) and (K).

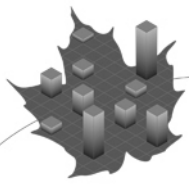
Even though investment earnings may not be positive each and every year, one can reasonably expect investment earnings above the risk-free rate to be positive in the long-term due to investment decisions, such as asset allocation in line (F) and active management in line (G). The cumulative net impact of investment decisions – line (K) in 2008 – is positive, meaning that since the inception of the Fund, it has been more profitable to invest a portion of the Fund in equities rather than investing solely in risk-free bonds.

**Table 37 Cumulative Impact of Investment Decision on PSPIB Assets**

As at 31 March 2008  
(\$ millions)

	Pension Fund			
	2001-05	2006	2007	2008
<b>Hypothetical Risk-Free Portfolio (100% Government Long-Term Bonds)</b>				
Fictitious Value of Assets, beginning of year (A)	-	3,958	4,915	5,915
Net Contributions Less Disbursements (B)	3,481	770	770	849
Return on Risk-Free Portfolio (C)	477	187	230	276
Fictitious Value of Assets, end of year (D) = (A)+(B)+(C)	3,958	4,915	5,915	7,040
<b>Risky Assets Portfolio (PSPIB Actual Figures)</b>				
Market Value of Assets, beginning of year (E)	-	4,050	5,650	7,096
Net Contributions Less Disbursements (B)	3,481	770	770	849
Return on Risky Assets Portfolio				
Selecting Fund's Actual Asset Allocation Policy (F)	533	768	591	63
Active management (over the benchmark) (G)	36	62	85	(118)
Total Return on Risky Assets Portfolio (H) = (F)+(G)	569	830	676	(55)
Market Value of Assets, end of year (I) = (E)+(B)+(H)	4,050	5,650	7,096	7,890
<b>Net Impact of Investment Decisions</b>				
Annual (J) = (H)-(C)	92	643	446	(331)
Cumulative (K) = (I)-(D)	92	735	1,181	850
<b>Investment Actuarial Gains and Losses</b>				
Expected Investment Earnings <sup>1</sup> (L)	514	288	380	473
Total Return on Risky Assets Portfolio (H)	569	830	676	(55)
Gains/Losses				
Annual (M) = (H)-(L)	55	542	296	(528)
Cumulative (N) = (N) <sub>prior year</sub> +(M)	55	597	893	365

<sup>1</sup> In 2008, the \$473 million is based on an expected nominal return of 6.3% (4.2% real plus 2.1% CPI).



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## Appendix 11 – Detailed Information on Membership Data

**Table 38 Male Officers**  
Number and Average Annual Earnings<sup>1</sup> as at 31 March 2008

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	402								402
	\$18,179								\$18,179
20-24	998	270							1,268
	\$36,458	\$53,241							\$39,970
25-29	831	700	197						1,728
	\$62,521	\$79,549	\$74,576						\$71,171
30-34	589	493	635	200					1,917
	\$70,298	\$101,782	\$88,271	\$90,793					\$89,085
35-39	411	312	234	895	201				2,053
	\$88,376	\$98,929	\$103,769	\$111,522	\$103,073				\$100,901
40-44	294	126	80	561	988	235			2,284
	\$101,922	\$94,924	\$110,191	\$123,020	\$126,079	\$113,524			\$111,786
45-49	164	93	31	174	621	879	175		2,137
	\$103,804	\$101,609	\$95,263	\$113,264	\$123,992	\$140,568	\$123,138		\$116,000
50-54	116	32	14	45	119	287	507		1,196
	\$113,383	\$99,170	\$117,448	\$111,404	\$116,972	\$126,768	\$124,247		\$115,997
55-59	56	8	5	11	18	34	83	71	286
	\$117,151	\$107,714	\$112,411	\$98,467	\$111,690	\$107,285	\$122,271	\$118,339	\$114,503
>59 <sup>3</sup>	18	0	0	0	0	3	2	1	24
	\$107,981	\$	\$	\$	\$	\$117,160	\$110,901	\$88,860	\$108,872
All Ages	3,879	2,034	1,196	1,886	1,947	1,438	767	148	13,295
	\$82,151	\$95,138	\$99,168	\$113,259	\$120,621	\$127,548	\$122,893	\$117,705	\$102,442

	31 March 2008	31 March 2005
Average age <sup>2</sup> :	37.9	37.1
Average pensionable service <sup>2</sup> :	13.9	15.3
Annualized pensionable payroll <sup>4</sup> :	\$1,079,881,825	\$901,510,074
Total PBDA <sup>5</sup> indexed reduction to basic annuity:	\$2,784,490	\$2,450,238
Total PBDA <sup>5</sup> indexed reduction adjustment:	\$588,721	\$510,896

<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> As at 31 March 2008 these members are treated as pensioners.

<sup>4</sup> The aggregate pensionable earnings of all contributors with less than 35 years of pensionable service.

<sup>5</sup> PBDA means the *Pension Benefits Division Act*.



**Table 39 Male Other Ranks**  
Number and Average Annual Earnings<sup>1</sup> as at 31 March 2008

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	1,171								1,171
	\$34,867								\$34,867
20-24	6,239	607							6,846
	\$44,168	\$53,798							\$46,736
25-29	4,187	3,582	234						8,003
	\$47,431	\$55,054	\$56,906						\$52,169
30-34	1,946	2,352	2,097	166					6,561
	\$50,238	\$56,099	\$58,192	\$62,008					\$55,430
35-39	1,034	976	1,440	3,694	494				7,638
	\$52,882	\$56,828	\$58,636	\$61,258	\$63,325				\$57,830
40-44	565	429	456	1,722	3,665	671			7,508
	\$54,543	\$57,069	\$58,958	\$60,744	\$64,329	\$68,027			\$59,348
45-49	247	143	137	309	1,290	2,280	413		4,819
	\$55,253	\$57,547	\$57,972	\$60,243	\$62,982	\$67,886	\$72,483		\$60,355
50-54	104	39	21	35	101	414	702		1,516
	\$53,753	\$56,602	\$57,952	\$62,291	\$63,377	\$66,660	\$74,040		\$62,963
55-59	37	7	2	7	7	25	58	78	221
	\$62,361	\$55,677	\$55,128	\$61,446	\$67,907	\$68,496	\$72,890	\$75,972	\$68,802
>59 <sup>3</sup>	2	0	0	0	0	7	1	1	11
	\$62,991	\$	\$	\$	\$	\$79,071	\$70,950	\$83,035	\$75,769
All Ages	15,532	8,135	4,387	5,933	5,557	3,397	1,174	179	44,294
	\$51,460	\$56,376	\$58,348	\$61,033	\$63,770	\$68,443	\$73,334	\$76,364	\$59,245

	31 March 2008	31 March 2005
Average age <sup>2</sup> :	34.7	34.7
Average pensionable service <sup>2</sup> :	11.5	13.0
Annualized pensionable payroll <sup>4</sup> :	\$2,437,492,217	\$2,154,401,910
Total PBDA <sup>5</sup> indexed reduction to basic annuity:	\$5,501,040	\$4,622,113
Total PBDA <sup>5</sup> indexed reduction adjustment:	\$1,670,614	\$1,401,474

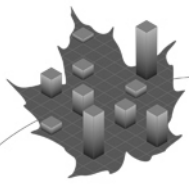
<sup>1</sup> As defined in Note 1 of Appendix 2-D.

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

<sup>3</sup> As at 31 March 2008 these members are treated as pensioners.

<sup>4</sup> The aggregate pensionable earnings of all contributors with less than 35 years of pensionable service.

<sup>5</sup> PBDA means the *Pension Benefits Division Act*.



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**Table 40 Female Officers**  
Number and Average Annual Earnings<sup>1</sup> as at 31 March 2008

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	125								125
	\$18,148								\$18,148
20-24	250	90							340
	\$33,117	\$53,736							\$37,018
25-29	201	232	69						502
	\$59,045	\$73,402	\$72,114						\$66,890
30-34	134	112	148	57					451
	\$70,556	\$100,343	\$80,141	\$105,318					\$86,835
35-39	129	79	36	128	27				399
	\$91,173	\$89,554	\$104,518	\$95,316	\$114,066				\$94,910
40-44	102	53	18	91	91	10			365
	\$88,187	\$90,001	\$102,740	\$121,512	\$115,376	\$100,262			\$104,558
45-49	67	22	9	19	68	47	5		237
	\$101,626	\$89,977	\$100,225	\$124,607	\$114,207	\$104,021	\$96,771		\$106,399
50-54	42	5	7	9	19	29	21		132
	\$110,229	\$84,084	\$89,047	\$93,564	\$108,848	\$110,443	\$115,035		\$105,904
55-59	11	1	0	1	4	4	9	2	32
	\$103,100	\$52,260	\$	\$249,946	\$94,200	\$100,257	\$110,819	\$100,494	\$106,706
>59 <sup>3</sup>	5	0	0	0	0	0	0	0	5
	\$110,192	\$	\$	\$	\$	\$	\$	\$	\$110,192
All Ages	1,066	594	287	305	209	90	35	2	2,588
	\$74,860	\$87,555	\$90,471	\$112,177	\$112,790	\$105,798	\$110,937	\$100,494	\$91,707

	<u>31 March 2008</u>	<u>31 March 2005</u>
Average age <sup>2</sup> :	34.5	32.7
Average pensionable service <sup>2</sup> :	9.3	10.5
Annualized pensionable payroll <sup>4</sup> :	\$193,357,881	\$134,077,732
Total PBDA <sup>5</sup> indexed reduction to basic annuity:	\$26,296	\$21,797
Total PBDA <sup>5</sup> indexed reduction adjustment:	\$3,883	\$3,589

<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> As at 31 March 2008 these members are treated as pensioners.

<sup>4</sup> The aggregate pensionable earnings of all contributors with less than 35 years of pensionable service.

<sup>5</sup> PBDA means the *Pension Benefits Division Act*.



**Table 41 Female Other Ranks**  
Number and Average Annual Earnings<sup>1</sup> as at 31 March 2008

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	117								117
	\$35,263								\$35,263
20-24	607	83							690
	\$44,102	\$52,890							\$46,130
25-29	759	432	19						1,210
	\$48,161	\$54,754	\$57,026						\$52,083
30-34	615	438	139	12					1,204
	\$49,806	\$55,418	\$57,905	\$58,088					\$54,217
35-39	571	340	112	474	39				1,536
	\$52,047	\$56,225	\$58,482	\$60,044	\$62,792				\$56,707
40-44	374	251	74	279	384	62			1,424
	\$52,327	\$56,047	\$58,934	\$59,043	\$62,930	\$66,807			\$57,778
45-49	206	98	40	93	178	176	14		805
	\$53,404	\$55,743	\$58,452	\$58,747	\$62,263	\$65,680	\$73,383		\$59,249
50-54	93	26	3	25	21	49	40		258
	\$55,656	\$54,957	\$57,552	\$61,703	\$62,792	\$66,889	\$70,506		\$61,979
55-59	26	0	0	2	1	0	5	2	36
	\$57,419	\$	\$	\$56,208	\$56,208	\$	\$65,681	\$75,222	\$61,243
>59 <sup>3</sup>	2	0	0	0	0	0	0	0	2
	\$51,516	\$	\$	\$	\$	\$	\$	\$	\$51,516
All Ages	3,370	1,668	387	885	623	287	59	3	7,282
	\$50,479	\$55,477	\$58,412	\$59,574	\$62,549	\$66,288	\$70,435	\$77,144	\$56,881

	31 March 2008	31 March 2005
Average age <sup>2</sup> :	36.0	34.9
Average pensionable service <sup>2</sup> :	8.7	11.0
Annualized pensionable payroll <sup>4</sup> :	\$393,147,769	\$281,891,429
Total PBDA <sup>5</sup> indexed reduction to basic annuity:	\$55,009	\$24,792
Total PBDA <sup>5</sup> indexed reduction adjustment:	\$16,244	\$7,885

<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> As at 31 March 2008 these members are treated as pensioners.

<sup>4</sup> The aggregate pensionable earnings of all contributors with less than 35 years of pensionable service.

<sup>5</sup> PBDA means the *Pension Benefits Division Act*.



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**Table 42 Male Retirement Pensioners**  
Number, Total Annual Pension<sup>1</sup> and Total Annual Allowance<sup>2</sup> as at 31 March 2008

Age <sup>3</sup>	Registered Plan			RCA		
	Number (#)	Pension Without Indexing (\$)	Pension With Indexation (\$)	Spouse Allowance (\$)	Pension (\$)	Spouse Allowance (\$)
25-29	1	12,279	-	-	-	-
30-34	28	309,857	-	165,151	-	-
35-39	258	5,156,325	-	2,668,962	4,139	2,240
40-44	3,091	65,654,936	-	35,602,707	46,615	24,468
45-49	7,446	159,980,454	-	90,114,672	203,958	109,408
50-54	7,300	176,104,447	-	101,461,105	255,037	133,815
55-59	7,398	86,734,821	134,990,841	124,186,213	368,344	186,196
60-64	9,010	-	314,564,114	152,246,984	186,024	92,994
65-69	9,597	-	350,405,313	149,022,908	19,510	9,751
70-74	9,792	-	306,657,131	134,981,740	-	-
75-79	7,961	-	233,970,422	106,217,205	-	-
80-84	4,938	-	133,798,791	63,219,128	-	-
85-89	2,889	-	75,626,825	37,428,706	-	-
90-94	691	-	16,166,629	8,080,193	-	-
95-99	80	-	1,786,180	892,051	-	-
All Ages	70,480	493,953,119	1,567,966,246	1,006,293,911	1,083,627	558,872

	31 March 2008	31 March 2005
Average age	64.4 years	63.6 years
Average age at retirement	45.2 years	45.3 years
<u>Total annual pensions payable from</u>		
CF Superannuation Account	\$1,995,766,723	\$1,609,942,963
CF Pension Fund	\$66,146,452	\$20,206,499

<sup>1</sup> Include deferred annuity to age 60, annual allowance adjustments, PBDA reductions and CPP offsets whether or not they are in effect at the valuation date.

<sup>2</sup> The amounts of spouse allowance are contingent on there being an eligible spouse.

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



**Table 43 Female Retirement Pensioners**  
Number, Total Annual Pension<sup>1</sup> and Total Annual Allowance<sup>2</sup> as at 31 March 2008

Age <sup>3</sup>	Registered Plan			RCA		
	Number (#)	Pension Without Indexing (\$)	Pension With Indexation (\$)	Spouse Allowance (\$)	Pension (\$)	Spouse Allowance (\$)
25-29	4	21,977	-	-	-	-
30-34	2	19,679	-	10,635	-	-
35-39	43	776,257	-	414,319	1,545	826
40-44	406	7,458,515	-	4,231,357	21,490	11,313
45-49	1,056	18,776,293	-	11,131,367	22,508	12,219
50-54	905	18,318,325	-	10,987,594	10,881	5,727
55-59	445	6,416,370	4,829,764	6,526,145	32,031	16,275
60-64	183	-	5,729,312	2,801,423	6,148	3,073
65-69	129	-	4,367,996	1,835,453	4,683	2,341
70-74	79	-	2,594,572	1,120,331	-	-
75-79	63	-	1,736,956	773,127	-	-
80-84	36	-	1,010,363	467,782	-	-
85-89	20	-	501,886	248,577	-	-
90-94	23	-	383,717	191,853	-	-
95-99	2	-	32,185	16,092	-	-
All Ages	3,396	51,787,416	21,186,751	40,767,101	99,286	51,774

	31 March 2008	31 March 2005
Average age	52.5 years	50.9 years
Average age at retirement	41.9 years	41.4 years
<u>Total annual pensions payable from</u>		
CF Superannuation Account	\$66,611,351	\$51,953,158
CF Pension Fund	\$6,362,241	\$2,060,982

<sup>1</sup> Include deferred annuity to age 60, annual allowance adjustments, PBDA reductions and CPP offsets whether or not they are in effect at the valuation date.

<sup>2</sup> The amounts of spouse allowance are contingent on there being an eligible spouse.

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



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**Table 44 Male Disability (3A) Pensioners**

Number, Total Annual Pension<sup>1</sup> and Total Annual Allowance<sup>2</sup> as at 31 March 2008

Age <sup>3</sup>	Registered Plan		RCA		
	Number (#)	Pension With Indexation (\$)	Spouse Allowance (\$)	Pension (\$)	Spouse Allowance (\$)
35-39	2	19,372	9,686	-	-
40-44	44	673,905	338,265	-	-
45-49	73	1,370,005	676,601	-	-
50-54	64	1,362,889	674,427	5,117	2,558
55-59	66	1,277,448	638,703	-	-
60-64	162	2,407,684	1,137,923	-	-
65-69	342	4,796,358	2,108,945	-	-
70-74	565	7,795,676	3,575,918	-	-
75-79	654	9,133,221	4,293,699	-	-
80-84	343	4,956,296	2,396,530	-	-
85-89	147	2,253,836	1,118,694	-	-
90-94	14	181,265	90,629	-	-
95-99	2	20,952	10,476	-	-
All Ages	2,478	36,248,907	17,070,496	5,117	2,558

	31 March 2008	31 March 2005
Average age	72.2 years	70.4 years
Average age at retirement	38.1 years	38.6 years
<u>Total annual pensions payable from</u>		
CF Superannuation Account	\$35,988,722	\$33,992,382
CF Pension Fund	\$260,139	\$144,146

<sup>1</sup> Include deferred annuity to age 60, annual allowance adjustments, PBDA reductions and CPP offsets whether or not they are in effect at the valuation date.

<sup>2</sup> The amounts of spouse allowance are contingent on there being an eligible spouse.

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





**Table 45 Female Disability (3A) Pensioners**

Number, Total Annual Pension<sup>1</sup> and Total Annual Allowance<sup>2</sup> as at 31 March 2008

Age <sup>3</sup>	Registered Plan			RCA	
	Number (#)	Pension With Indexation (\$)	Spouse Allowance (\$)	Pension (\$)	Spouse Allowance (\$)
35-39	5	54,104	27,052	-	-
40-44	9	114,068	57,031	-	-
45-49	28	460,493	230,241	-	-
50-54	16	316,853	158,424	-	-
55-59	15	287,371	143,682	-	-
60-64	6	127,917	63,956	-	-
65-69	1	13,764	5,908	-	-
70-74	2	45,618	21,679	-	-
75-79	1	5,959	2,979	-	-
80-84	1	18,607	8,651	-	-
85-89	2	29,309	14,654	-	-
All Ages	86	1,474,063	734,257	-	-

	<u>31 March 2008</u>	<u>31 March 2005</u>
Average age	52.1 years	49.8 years
Average age at retirement	38.5 years	38.4 years
<u>Total annual pensions payable from</u>		
CF Superannuation Account	\$1,434,223	\$1,018,119
CF Pension Fund	\$39,830	\$26,700

<sup>1</sup> Include deferred annuity to age 60, annual allowance adjustments, PBDA reductions and CPP offsets whether or not they are in effect at the valuation date.

<sup>2</sup> The total amounts of spouse allowance are contingent on there being an eligible spouse.

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



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as at 31 March 2008

**Table 46 Male Disability (3B) Pensioners**  
Number, Total Annual Pension<sup>1</sup> and Total Annual Allowance<sup>2</sup> as at 31 March 2008

Age <sup>3</sup>	Registered Plan			RCA		
	Number (#)	Pension Without Indexing (\$)	Pension With Indexation (\$)	Spouse Allowance (\$)	Pension (\$)	Spouse Allowance (\$)
25-29	2	-	20,569	-	-	-
30-34	72	16,542	863,313	440,033	-	-
35-39	570	29,090	8,226,078	4,115,272	-	-
40-44	1,599	69,490	30,042,147	14,989,086	15,428	7,713
45-49	2,232	50,179	49,452,598	24,549,063	33,448	16,724
50-54	1,343	53,157	34,516,129	17,156,182	25,565	12,782
55-59	931	69,096	28,343,285	14,178,735	15,896	7,948
60-64	660	-	20,462,686	9,920,719	12,377	6,188
65-69	394	-	12,991,260	5,430,540	1,943	971
70-74	180	-	5,537,528	2,402,545	-	-
75-79	39	-	1,196,195	533,187	-	-
80-84	5	-	207,633	96,057	-	-
<b>All Ages</b>	<b>8,027</b>	<b>287,554</b>	<b>191,859,421</b>	<b>93,821,703</b>	<b>104,657</b>	<b>52,326</b>

	<u>31 March 2008</u>	<u>31 March 2005</u>
Average age	50.1 years	48.8 years
Average age at retirement	41.3 years	40.8 years
<u>Total annual pensions payable from</u>		
CF Superannuation Account	\$170,923,899	\$119,271,331
CF Pension Fund	\$21,220,798	\$7,231,363

<sup>1</sup> Include deferred annuity to age 60, annual allowance adjustments, PBDA reductions and CPP offsets whether or not they are in effect at the valuation date.

<sup>2</sup> The amounts of spouse allowance are contingent on there being an eligible spouse.

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



**Table 47 Female Disability (3B) Pensioners**

Number, Total Annual Pension<sup>1</sup> and Total Annual Allowance<sup>2</sup> as at 31 March 2008

Age <sup>3</sup>	Registered Plan			RCA		
	Number (#)	Pension Without Indexing (\$)	Pension With Indexation (\$)	Spouse Allowance (\$)	Pension (\$)	Spouse Allowance (\$)
25-29	1	-	14,888	-	-	-
30-34	14	12,625	195,779	104,285	10,130	5,065
35-39	135	6,925	1,952,954	980,289	-	-
40-44	340	48,299	6,126,429	3,088,961	28,870	14,434
45-49	455	13,742	9,387,734	4,698,485	49,114	24,556
50-54	253	26,429	5,908,337	2,966,300	-	-
55-59	81	-	2,000,254	1,000,104	-	-
60-64	36	-	1,085,840	539,524	1,334	667
65-69	2	-	61,157	25,448	-	-
70-74	1	-	56,010	24,175	-	-
All Ages	1,318	108,020	26,789,382	13,435,015	89,448	44,722

	31 March 2008	31 March 2005
Average age	46.5 years	44.3 years
Average age at retirement	39.8 years	39.0 years
<u>Total annual pensions payable from</u>		
CF Superannuation Account	\$22,860,212	\$15,665,610
CF Pension Fund	\$4,036,730	\$1,446,097

<sup>1</sup> Include deferred annuity to age 60, annual allowance adjustments, PBDA reductions and CPP offsets whether or not they are in effect at the valuation date.

<sup>2</sup> The amounts of spouse allowance are contingent on there being an eligible spouse.

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



# ACTUARIAL REPORT

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as at 31 March 2008

**Table 48 Surviving Spouses**  
Number and Total Allowance as at 31 March 2008

Age <sup>1</sup>	Registered Plan		RCA No. 1			
	Number (#)	Allowance (\$)	Allowance on Service Since 1992		Maximum Earnings Limit on Service Since 1994	
			Number (#)	Allowance (\$)	Number (#)	Allowance (\$)
25- 29	12	40,784	0	0	2	376
30- 34	37	235,385	0	0	6	502
35- 39	65	491,965	0	0	7	857
40- 44	131	1,065,943	1	6,472	13	1,837
45- 49	267	2,551,799	0	0	59	5,918
50- 54	426	4,788,553	0	0	80	5,670
55- 59	697	8,406,054	1	4,992	68	3,190
60- 64	1,338	16,343,085	0	0	53	2,666
65- 69	2,315	27,278,674	0	0	16	865
70- 74	3,533	39,079,454	0	0	6	200
75- 79	4,189	45,645,344	0	0	0	0
80- 84	4,587	50,921,958	0	0	0	0
85- 89	3,497	38,562,040	0	0	1	41
90- 94	1,081	10,836,222	0	0	0	0
95- 99	154	1,339,050	0	0	0	0
100-104	22	118,305	0	0	0	0
<b>All Ages</b>	<b>22,351</b>	<b>247,704,615</b>	<b>2</b>	<b>11,464</b>	<b>311</b>	<b>22,122</b>

	<u>31 March 2008</u>	<u>31 March 2005</u>
Average age	75.9 years	74.3 years
Average age at retirement	61.2 years	60.6 years
<u>Total annual pensions payable from</u>		
CF Superannuation Account	\$247,224,414	\$225,286,136
CF Pension Fund	\$480,087	\$181,788

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



## **Appendix 12 – Acknowledgements**

The Department of National Defence provided relevant valuation input data on active members, 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.

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