



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

# REGULAR FORCE DEATH BENEFIT ACCOUNT

as at 31 March 2010

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10 June 2011

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

Dear Minister:

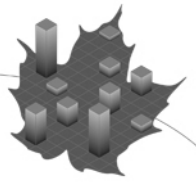
Pursuant to section 71 of the *Canadian Forces Superannuation Act*, I am pleased to submit the report on the actuarial review as at 31 March 2010 of the Regular Force Death Benefit Account established under Part II of this Act.

Yours sincerely,

A handwritten signature in black ink that reads "Jean-Claude Ménard". The signature is written in a cursive, flowing style.

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



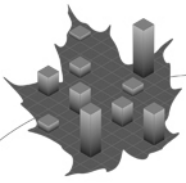


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## I. Executive Summary

This actuarial report on the Regular Force Death Benefit Account was made pursuant to Section 71 of the *Canadian Forces Superannuation Act* (CFSA) which states that “A valuation report on the state of the Regular Force Death Benefit Account shall be prepared in accordance with the *Public Pensions Reporting Act* and as if the supplementary death benefit plan established by this Part were a pension plan established under an Act referred to in subsection 3(1) of that Act”.

This actuarial valuation is as at 31 March 2010 and is in respect of the death benefits and contributions defined by Part II of the CFSA.

The previous actuarial report was made as at 31 March 2008. The date of the next periodic review is scheduled to occur no later than 31 March 2013.

### A. Purpose of this Actuarial Report

The purpose of this actuarial valuation is to determine the state of the Regular Force Death Benefit (RFDB) Account as well as to assist the President of the Treasury Board in making informed decisions regarding the financing of the government’s death benefit obligation. This is achieved by providing a best-estimate long-term projection of the RFDB Account based on the projected contributions and interest credited to the account and projected death benefits debited from the account.

### B. Valuation Basis

This valuation report is based on the supplementary death benefit (SDB) plan provisions enacted by legislation, summarized in Appendix 1. There have been no changes to the plan provisions since the last actuarial valuation report.

The financial data on which this valuation is based is the RFDB Account established to track contributions and benefits under the SDB plan provisions. The account data is summarized in Appendix 2.

This valuation is based on the participant data summarized in Appendix 3. The methods and assumptions used to validate and correct the participant data have been updated since the last report. The most significant change was to include members of the Reserve Force defined by Part I.1 of the *Canadian Forces Superannuation Act* and the *Pension Benefit Division Act* who were not included in the previous report. As a result, the number of elective participants is approximately 4,843 more than otherwise would have been.

This valuation was prepared using accepted actuarial practices, methods and assumptions which are summarized in Appendices 4 to 6.

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 5 and 6.



## ACTUARIAL REPORT

REGULAR FORCE Death Benefit Account  
as at 31 March 2010

Death benefits are paid out of the Consolidated Revenue Fund and charged against the RFDB Account. Contributions by participants and the government are credited to the RFDB Account. Based on the balance of the RFDB Account, interest credits are calculated in such manner and at such rates and credited at such times as the RFDB Regulations provide. Therefore, the fluctuations of returns, observed in financial markets in recent years, have no impact on the RFDB Account except insofar as long-term Government of Canada bond yields influence the interest credited by regulation.

### C. Main Findings

As at 31 March 2010, the plan has an actuarial excess of \$90 million resulting from the difference between the RFDB Account balance available for benefits of \$192 million and the liabilities of \$102 million.

The actuarial excess is projected to gradually vanish and become a deficit during plan year<sup>1</sup> 2021 because projected annual benefits paid exceed for each plan year the sum of legislated contributions and projected interest credits.

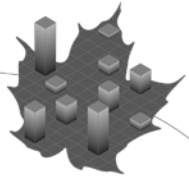
For the same reason, the RFDB Account is projected to become exhausted during plan year 2029.

Figure 1 shows the ratio of the projected actuarial excess at the end of the plan year to the annual benefit payments projected for the following plan year. This ratio is expected to decrease to zero by plan year 2021 as death benefits paid continue to exceed the combined projected contributions and interest credits for all future plan years.

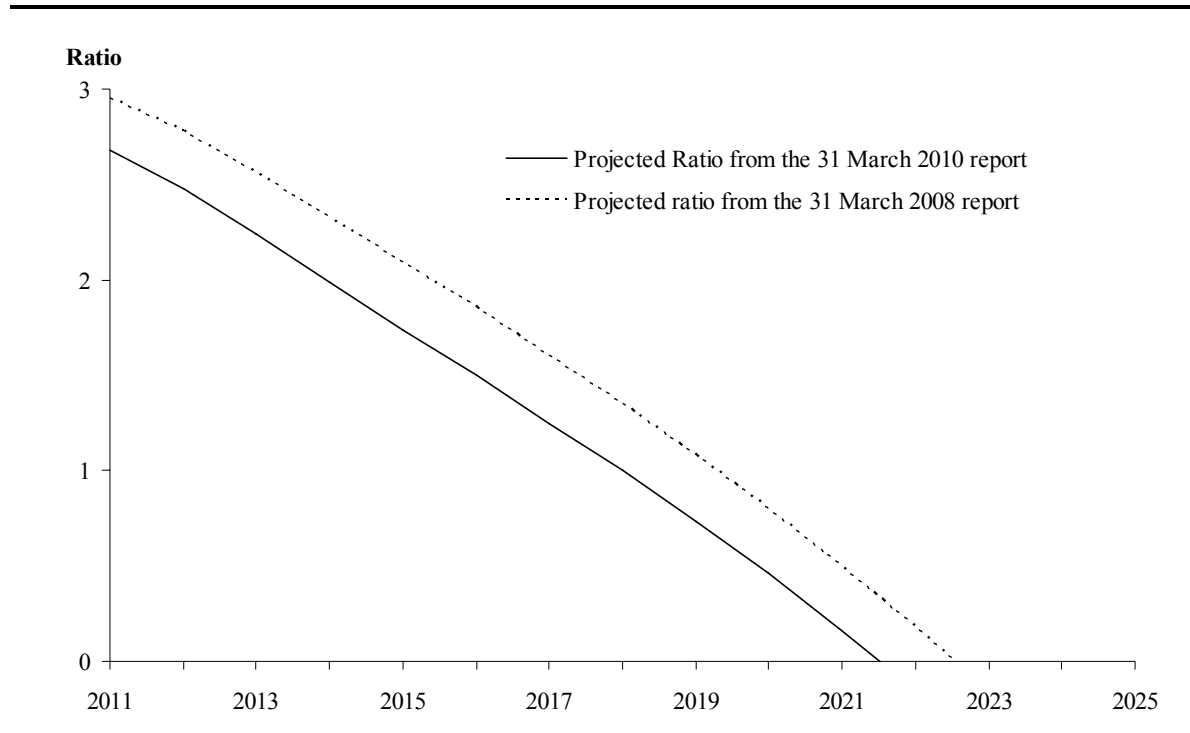
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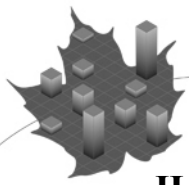
<sup>1</sup> Any reference to a given *plan year* in this report should be taken as the 12-month period ending 31 March of the given year.





**Figure 1 Projected Ratio of Actuarial Excess to Annual Benefit Payments**  
(Actuarial excess is measured at the end of the plan year and annual payments are those of the following plan year.)





# ACTUARIAL REPORT

REGULAR FORCE Death Benefit Account  
as at 31 March 2010

## II. Financial Position of the Plan

### A. Balance Sheet

The following balance sheet as at 31 March 2010 was prepared using the RFDB Account balance available for benefits described in Appendix 2, the data described in Appendix 3, the methodology described in Appendix 4, and the assumptions described in Appendices 5 and 6. The results of the previous valuation are shown for comparison purposes.

**Table 1 Balance Sheet**  
(\$ millions)

	As at 31 March 2010	As at 31 March 2008
<b>Recorded Balance Available for Benefits</b>	192	197
<b>Liabilities</b>		
Paid-up death benefit <sup>1</sup>	97	86
IBNR <sup>2</sup>	5	6
<b>Total Liabilities</b>	102	92
<b>Actuarial Excess</b>	90	105

### B. Financial Position

At 31 March 2010 the actuarial excess totals \$90 million, being 2.7 times the total amount of death benefits projected for plan year 2011. By comparison, the actuarial excess as at 31 March 2008 under the previous report was \$105 million, which was 3.1 times the amount of death benefits that were projected for plan year 2009.

As shown in Appendix 2 and explained in section IV below, the projected contributions to the plan are less than the projected death benefits for all future plan years. This projected annual shortfall is greater than the projected annual interest credits on the RFDB Account and accordingly entails a continuously decreasing actuarial excess. The actuarial excess is therefore projected to become an actuarial deficit during plan year 2021, while the RFDB Account is projected to become exhausted in plan year 2029.

### C. Sensitivity of Valuation Results to Variations in Key Assumptions

The following supplementary estimates indicate the degree to which the valuation results depend on some of the key assumptions. These resulting differences can also serve as a basis for approximating the effect of other numerical variations in a key assumption, to the extent that such effects are indeed linear.

<sup>1</sup> The \$5,000 portion of the basic benefit for which monthly contributions are no longer required from either the participant or the government. See Appendix 4 – F.1.

<sup>2</sup> Incurred but not reported claims. See Appendix 4 – F.2



## **1. Projected Interest Yields**

As a measure of sensitivity, an increment of one percentage point in the projected yields would change from 2021 to 2024 the plan year during which the actuarial excess is projected to become exhausted as well as change from 2029 to 2032 the plan year during which the RFDB Account is projected to become exhausted.

On the opposite side, a decrease of one percentage point in the projected yields would change from 2021 to 2019 the plan year during which the actuarial excess is projected to become exhausted as well as change from 2029 to 2027 the plan year during which the RFDB Account is projected to become exhausted as well.

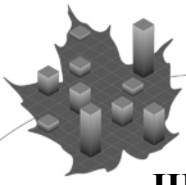
## **2. Mortality**

If the assumed improvements in longevity after the 2011 plan year were disregarded, then the monthly benefit cost rate<sup>1</sup> of 12.1 cents projected for 2035 would climb to 16.9 cents, an increase of 40%. The RFDB Account would become exhausted by plan year 2024 instead of 2029.

However, if the assumed improvements in longevity after the 2011 plan year were kept at the level of plan year 2011, resulting in greater improvements in longevity than those assumed in Table 22, then the monthly benefit cost rate of 12.1 cents projected for 2035 would decline to 10 cents, a decrease of 17%. The RFDB Account would become exhausted by plan year 2031 instead of 2029.

---

<sup>1</sup> The expression *monthly benefit cost rate* is defined as the ratio of the total expected monthly *term insurance* payments over the total amount of expected monthly term insurance benefit coverage, where coverage is expressed per thousand dollars. In this report, *term insurance benefit* means the basic benefit excluding the \$5,000 paid-up death benefit applicable from age 65.



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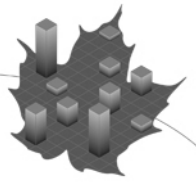
## III. Reconciliation of Results with Previous Report

Table 2 illustrates the impact of the updated assumptions, intervaluation economic experience, and population changes since the last valuation report as at 31 March 2008. The projected monthly cost for plan year 2035 fell 0.5 cents from 12.6 cents as at 31 March 2008 to 12.1 cents as at 31 March 2010.

**Table 2 Reconciliation of Projected Results**

	Monthly Cost per \$1,000 of Term Insurance in Specified Projection Year (Cents)
<b><u>Projection Year 2033</u></b>	
<b>Projection as at 31 March 2008</b>	<b>13.3</b>
<b><u>Projection Year 2035</u></b>	
<b>Projection as at 31 March 2008</b>	<b>12.6</b>
Intervaluation economic experience and change in population	0.2
Inclusion of Reservists Part I.1	(0.1)
Change in assumed mortality rates for plan year 2011	0.3
Change in longevity improvement factors	(0.6)
Change in demographic assumptions other than mortality	<u>(0.3)</u>
<b>Projection as at 31 March 2010</b>	<b>12.1</b>

The primary source of the decrease is due to the new longevity improvement factors which have the effect of substantially reducing future mortality rates. This reduction in the projected monthly cost has been mitigated by higher than expected mortality rates at ages below 50. This is mainly the result of the more prominent role taken by the Canadian Forces since the deployment of the Canadian troops in Afghanistan.



## IV. Legislated Contribution Rates

The aggregate amount of death benefit payments projected for plan year 2011 is \$33.5 million, which is made up of \$25.9 million in respect of the term insurance and \$7.6 million in respect of the paid-up insurance. In this report, *term insurance* means the basic coverage (two times salary rounded to next \$250) less the 10% per year reduction applicable from age 61 and less the \$5,000 paid-up insurance applicable from age 65.

### A. Paid-Up Insurance

For plan year 2011, the estimated single premium at age 65 for each \$5,000 of paid-up insured benefit is \$2,019 and \$1,782 for males and females, respectively. The corresponding legislated contribution rates for each \$5,000 of paid-up insured benefit are \$310 and \$291, respectively. The legislated contributions are determined on the basis of the original \$500 of paid-up insured benefit and were not readjusted on 5 October 1992 when Part II of the CFSA was amended to increase the paid-up insured benefit from \$500 to \$5,000.

The assumed improvements in longevity cause the projected single premium for the paid-up death benefit to decrease over time. However, the projected ultimate yield of 5.10% is lower than the yield of 6.50% projected for plan year 2011. This has the effect of gradually increasing the projected single premium over the years.

The net effect of longevity improvements and decreasing projected yields resulted in a decrease in the projected single premiums at age 65 for each \$5,000 of paid-up insured benefit. A male participant's projected single premium decreases from \$2,019 for plan year 2011 to \$1,979 for plan year 2035; for a female participant the decrease is from \$1,782 to \$1,763.

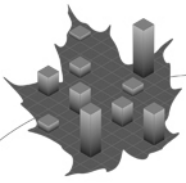
### B. Term Insurance

The total amount of term insurance proceeds projected to be payable during plan year 2011 is 25.9 million. Given that the total amount of term insurance projected to be in force for plan year 2011 is \$14,097 million, the benefit cost rate projected for plan year 2011 is 15.3 cents per month per \$1,000 of term insurance.

Non-elective participants and elective participants in receipt of an immediate annuity are required to contribute monthly 20 cents per \$1,000 of salary or, 9.96<sup>1</sup> cents per \$1,000 of term insurance. As a minimum, the Government contribution credited monthly to the RFDB Account is equal to one-twelfth of the total amount of term insurance proceeds payable during the month. For plan year 2011, the Government's monthly contribution is estimated at 1.3 cents per \$1,000 of term insurance.

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<sup>1</sup> If it were not for the rounding to the next lower multiple of \$250 of salary involved in the computation of contributions and the rounding to the next higher multiple of \$250 involved in the computation of the amount of death benefit, the legislated contribution rate would be \$0.10 (i.e. \$0.20 divided by two) instead of \$0.0996.

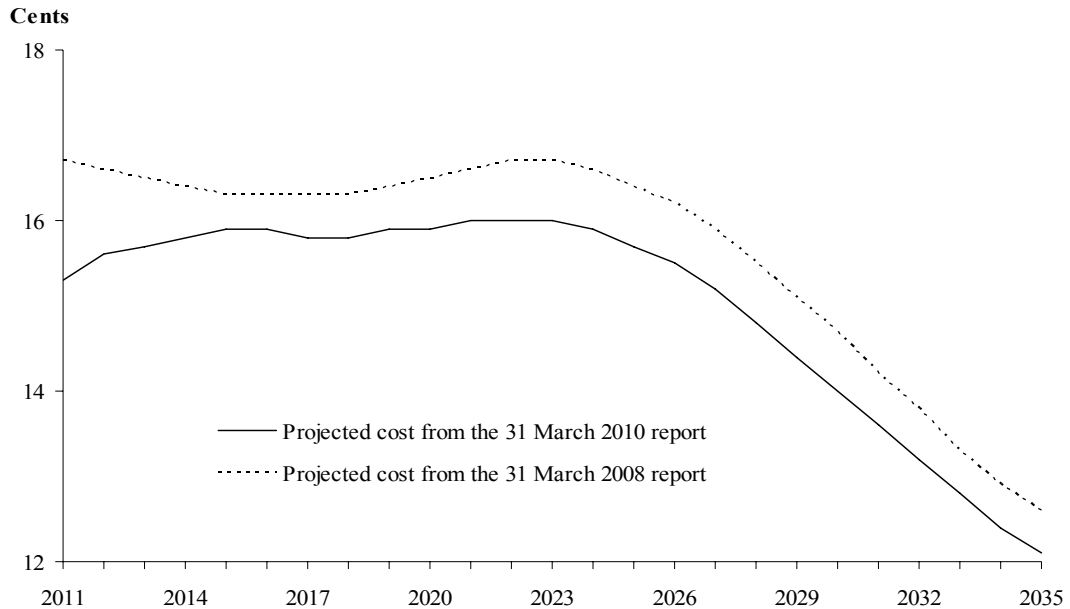


# ACTUARIAL REPORT

REGULAR FORCE Death Benefit Account  
as at 31 March 2010

The total amount credited to the RFDB Account resulting from participants and government contributions in plan year 2011 is therefore 11.3 cents (9.96 cents plus 1.3 cents) per month per \$1,000 of term insurance, i.e. significantly less than the estimated monthly cost of 15.3 cents per \$1,000 of term insurance for plan year 2011.

**Figure 2 Projected Monthly Cost**  
(cents per \$1,000 of term insurance)

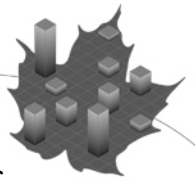


As shown in Figure 2, the monthly cost per \$1,000 of term insurance is projected to first increase from 15.3 cents to 15.9 cents in the first four years and then decrease slightly to 15.7 cents by plan year 2025. Thereafter the monthly cost is projected to decrease gradually to 12.1 cents by plan year 2035. In comparison, the combined contribution rate in 2035 is projected to be 11.0 cents (i.e. 9.96 cents for participants plus one-twelfth of 12.1 cents for Government).

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

**Table 3 Projected Monthly Cost**  
(cents per \$1,000 of term insurance)

<u>Participants</u>	<u>2011</u>	<u>2015</u>	<u>2020</u>	<u>2025</u>	<u>2030</u>	<u>2035</u>
Non-elective	8.3	7.8	7.3	6.9	6.9	6.9
Elective	29.2	31.0	33.5	37.0	37.7	33.5
All	15.3	15.9	15.9	15.7	14.0	12.1

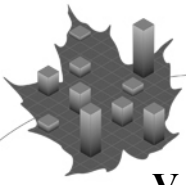


For non-elective participants, the monthly cost projected for plan year 2035 is 83% of the monthly cost estimated for plan year 2011. This results mainly from the following two factors:

- There is a reduction in cost due to the assumed lower mortality for plan year 2035 in accordance with the longevity improvement factors shown in Table 22 applied to the current mortality rates shown in Table 21.
- The distribution of non-elective participants in the plan year 2035 is weighted more heavily at the older ages than currently. This has the effect of increasing costs. However, this increase is more than offset by the effect of the assumed mortality improvements.

In respect of elective participants in receipt of an immediate annuity or an annual allowance, the monthly benefit cost rate projected for plan year 2035 is 115% of the monthly cost projected for plan year 2011. This increase is due to the expected aging of the elective population as the trend in the regular force towards older retirement ages continues.

For all plan participants in aggregate, the monthly cost projected for plan year 2035 is 79% of the monthly cost projected for plan year 2011.



## ACTUARIAL REPORT

REGULAR FORCE Death Benefit Account  
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### V. Actuarial Opinion

In our opinion, considering that this report was prepared pursuant to the *Public Pensions Reporting Act* per Section 71 of the *Canadian Forces Superannuation 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 2010 of the Regular Force Death Benefit Account and assisting the President of the Treasury Board in making informed decisions regarding the financing of the government's death benefit obligation;
- the methodology employed is appropriate for the purposes of determining the financial status as at 31 March 2010 of the Regular Force Death Benefit Account and assisting the President of the Treasury Board in making informed decisions regarding the financing of the government's death 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 (Standard of Practice – General Standards) published by the Canadian Institute of Actuaries.

To the best of our knowledge there were no subsequent events between the valuation date and the date of this report that would have a material impact on the results of this valuation.

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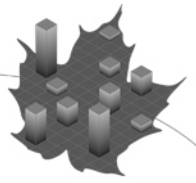
Daniel Hébert, F.S.A., F.C.I.A.  
Senior Actuary

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

Ottawa, Canada  
10 June 2011





## APPENDICES

### Appendix 1 - Summary of Plan Provisions

Following is a summary description of the main provisions of the Supplementary Death Benefit (SDB) plan established for the members of the regular force under Part II - *Supplementary Death Benefits* of the *Canadian Forces Superannuation Act* (CFSA). This plan supplements benefits payable under the pension plan by providing a lump sum benefit upon the death of a plan participant.

#### A. Plan Participants

##### 1. Non-Elective Participants

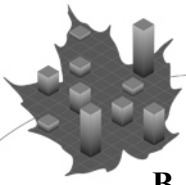
The term *non-elective participant* means a member of the regular force, or a member of the reserve force who is, with the approval of the Chief of the Defence Staff, on full-time service in a position in a regular force establishment or as a supernumerary to a regular force establishment.

##### 2. Elective Participants

The term *elective participant* means all previously non-elective participants who have ceased to be employed in the Canadian Forces by reason of disability or retirement (i.e. when they become entitled to an immediate retirement or disability annuity) and have opted to continue their coverage under the SDB plan. Such right is limited to members who, at the time they cease to be employed in the Canadian Forces, have completed at least five years of continuous service in the Canadian Forces or five years of membership in the SDB plan.

Elective participants entitled to a deferred annuity under the CFSA upon cessation of employment may elect to continue their coverage in the SDB plan; otherwise their membership and coverage is discontinued. This election must be made within the 13 month period running from one year before to the 30th day following cessation of employment. The basic benefit is extended for 30 days after the date of cessation whether or not a participant exercises the right of election for continuous coverage.

An elective participant who becomes a participant in the SDB plan established under Part II of the *Public Service Superannuation Act* (PSSA) automatically ceases to be a participant in the SDB plan established under the CFSA. Any such person, who subsequently ceases to be a participant in the SDB plan under the PSSA, without entitlement to an immediate annuity under the PSSA, is deemed thereupon to regain the status of elective participant in the SDB plan established under the CFSA.



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REGULAR FORCE Death Benefit Account  
as at 31 March 2010

## B. RFDB Account Balance Available for Benefits

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

## C. Contributions

### 1. Non-Elective Participants, and Elective Participants in Receipt of an Immediate Annuity

For non-elective participants as well as elective participants in receipt of an immediate annuity (disability or retirement) under Part I of the CFSA or the *Defence Services Pension Continuation Act*, the legislated contribution rate is 5 cents per month for each \$250 of salary (for this purpose the salary is in practice rounded to the next lower multiple of \$250 if not already equal to such a multiple). When these participants attain age 65, their contribution is reduced by 50 cents per month in recognition of the fact that \$5,000 of basic benefit becomes paid-up (by the Government) for the remaining lifetime of the participant.

### 2. Elective Participants Entitled to a Deferred Annuity

For elective participants entitled to a deferred annuity, the contribution rate is set by regulation and varies in accordance with the attained age of the participant, and the corresponding contributions become chargeable on the 30th day immediately following cessation of employment. The contribution rates for selected ages are shown in the following table:

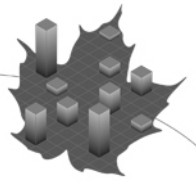
**Table 4 Contribution per \$2,000 of Death Benefit**

Age Last Birthday	Annual	Monthly
25	\$9.70	\$0.82
30	11.42	0.97
35	13.58	1.15
40	16.29	1.39
45	19.72	1.67
50	24.11	2.05
55	29.80	2.53
60	37.65	3.20

### 3. Government

The Government credits monthly to the RFDB Account an amount equal to one-twelfth of the total amount of term insurance death benefit paid in the month.

When a participant, other than one entitled to a deferred annuity, reaches age 65, the Government credits to the RFDB Account a single premium for the \$5,000 paid-up



insured benefit in respect of which contributions are no longer required from the participant.

The legislated amount of single premium for each such \$5,000 paid-up insured benefit is shown in the following table and corresponds to one-tenth of \$5,000 times the single premium rate for each dollar of death benefit, computed on the basis of the Life Tables, Canada, 1950-1952 and interest at 4% per annum.

**Table 5 Legislated Single Premium per \$5,000 of Paid-up Benefit**

Age Last Birthday	Male	Female
65	\$310	\$291
66	316	298
67	323	306
68	329	313
69	336	320

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

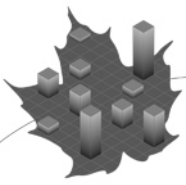
**D. Amount of Basic Benefit**

Subject to the applicable reductions described below, the lump sum benefit payable upon the death of a participant is equal to twice the participant’s current salary, the result being rounded to the next higher multiple of \$250 if not already equal to such a multiple. For this purpose, the current salary of an elective participant is defined as the annual rate of pay at the time of cessation of employment in the Canadian Forces.

The amount of basic benefit described above is reduced by 10% a year starting at age 61 until it would normally vanish at age 70. However, the amount of basic benefit cannot at any time be reduced below a basic floor value of \$5,000 subject to the following exceptions:

- For those elective participants who had, upon cessation of employment prior to 5 October 1992, made an election to reduce their basic benefit to \$500 and further had made a second election prior to 5 October 1993, to keep their basic benefit at \$500, the floor value is \$500 instead of \$5,000. Such election is irrevocable. The plan administrator has advised OSFI that all members whom have opted to reduce their paid-up coverage to \$500 will nonetheless be receiving a minimum death benefit of \$5,000 upon death.
- For elective participants entitled to a deferred annuity there is no coverage past age 70.

Upon ceasing to be employed in the Canadian Forces, elective participants in receipt of an immediate annuity under Part I of the CFSA or the *Defence Services Pension Continuation Act* may opt to reduce their amount of basic benefit to \$5,000.



**Appendix 2 - RFDB Account Balance Available for Benefits**

**A. Regular Force Death Benefit Account**

The plan is entirely financed through the RFDB Account, which forms part of the Accounts of Canada. The RFDB Account consists of notional assets. No formal debt instrument has been issued to the Account by the government in recognition of the amounts therein. The RFDB Account is:

- credited with all contributions made by participants and the Government;
- credited with interest earnings every three months on the basis of the actual average yield for the same period on the combined Superannuation Accounts of the Public Service, Canadian Forces and Royal Canadian Mounted Police pension plans. These accounts generate 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; and
- debited with annual benefit payments when they become due.

Table 6 shows the reconciliation of the balance of the RFDB Account from the last valuation date to the current valuation date. Since the last valuation, the RFDB Account balance has decreased by \$4.6 million. As at 31 March 2010, the Account balance is reported at \$192 million. The net reduction in the Account balance is due to actual death benefit payments exceeding the total of contributions and interest earnings over the observation period.

**Table 6 Regular Force Death Benefit Account**  
(\$ millions)

<b>Plan Year</b>	<b>2009</b>	<b>2010</b>	<b>2009 - 2010</b>
<b>Opening balance</b>	<b>196.7</b>	<b>192.6</b>	<b>196.7</b>
Income			
Employee contributions	15.1	16.6	31.7
Employer contributions			
- Term insurance	2.3	2.1	4.4
- Paid-up insurance	0.6	0.5	1.1
Interest earnings	<u>13.4</u>	<u>12.7</u>	<u>26.1</u>
Subtotal	31.3	32.0	63.3
Expenditures			
Benefit claims	35.4	32.5	67.9
<b>Closing balance</b>	<b>192.6</b>	<b>192.1</b>	<b>192.1</b>

**B. Rates of Interest**

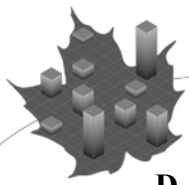
The following effective rates of interest on the RFDB Account by plan year were calculated using the foregoing entries.

**Table 7 Rates of Interest**

Plan Year	Interest
2009	7.10%
2010	6.85%

**C. Sources of Financial Data**

The Account entries shown previously were taken from the Public Accounts of Canada.



# ACTUARIAL REPORT

REGULAR FORCE Death Benefit Account  
as at 31 March 2010

## D. Account and Liabilities Projection

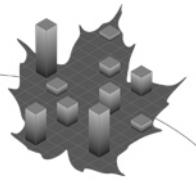
The following table shows a projection of the RFDB Account and liabilities over 25 years commencing 1 April 2010.

**Table 8 Account and Liabilities Projection**

(\$ millions)

Plan Year	Balance Sheet at the End of Plan Year			Ratio of Projected Actuarial Excess at the End of the Plan Year to Annual Benefit Payments Projected for the Following Plan Year
	Account	Liabilities	Surplus / Deficit	
2010	<b>192.1<sup>1</sup></b>	102.2	89.9	2.7
2011	190.1	104.0	86.1	2.5
2012	186.5	106.3	80.2	2.2
2013	181.8	108.5	73.3	2.0
2014	175.9	110.3	65.6	1.7
2015	169.0	111.4	57.5	1.5
2016	161.0	111.7	49.2	1.3
2017	152.0	111.9	40.1	1.0
2018	142.3	112.0	30.3	0.8
2019	131.6	112.0	19.6	0.5
2020	120.1	112.4	7.7	0.2
2021	107.7	113.2	(5.5)	-
2022	94.4	114.4	(19.9)	-
2023	80.5	116.1	(35.6)	-
2024	65.7	117.7	(52.0)	-
2025	50.4	119.7	(69.3)	-
2026	34.7	122.0	(87.2)	-
2027	18.9	124.8	(105.9)	-
2028	2.9	127.8	(124.9)	-
2029	0.0	130.7	(130.7)	-
2030	0.0	133.0	(133.0)	-
2031	0.0	134.3	(134.3)	-
2032	0.0	135.3	(135.3)	-
2033	0.0	136.1	(136.1)	-
2034	0.0	136.8	(136.8)	-
2035	0.0	137.3	(137.3)	-

<sup>1</sup> Bold figures denote actual experience.



**E. Income and Expenditure Projection**

The following table shows a projection of the income and expenditure which served as the basis of the projection of the RFDB Account over 25 years commencing with plan year 2011.

**Table 9 Income and Expenditure Projection**  
(\$ millions)

Plan Year	Contributions								
	Participants	Government			Benefit Payments			Interest Credits	Net Credits
		Term	Paid-Up	Total	Term	Paid-Up	Total		
2011	16.9	2.2	0.5	19.5	25.9	7.6	33.6	12.0	(2.0)
2012	17.3	2.3	0.6	20.2	27.0	7.7	34.7	11.0	(3.6)
2013	17.7	2.3	0.6	20.7	28.0	7.8	35.8	10.4	(4.7)
2014	18.2	2.4	0.6	21.2	28.8	7.9	36.8	9.7	(5.9)
2015	18.6	2.5	0.5	21.6	29.6	8.0	37.6	9.1	(6.9)
2016	19.0	2.5	0.4	22.0	30.3	8.1	38.3	8.4	(8.0)
2017	19.5	2.6	0.5	22.5	30.9	8.1	39.0	7.6	(8.9)
2018	19.9	2.6	0.5	23.0	31.6	8.2	39.8	7.0	(9.8)
2019	20.3	2.7	0.5	23.5	32.4	8.2	40.6	6.4	(10.7)
2020	20.8	2.8	0.6	24.1	33.3	8.2	41.5	5.9	(11.5)
2021	21.3	2.8	0.6	24.8	34.1	8.3	42.4	5.2	(12.4)
2022	21.8	2.9	0.7	25.4	34.9	8.3	43.2	4.6	(13.3)
2023	22.2	3.0	0.8	26.0	35.6	8.4	43.9	4.0	(14.0)
2024	22.6	3.0	0.8	26.4	36.0	8.5	44.5	3.3	(14.8)
2025	23.0	3.0	0.9	26.9	36.3	8.5	44.8	2.6	(15.3)
2026	23.4	3.0	0.9	27.4	36.3	8.6	44.9	1.9	(15.7)
2027	23.8	3.0	1.0	27.8	36.2	8.7	44.8	1.2	(15.8)
2028	24.2	3.0	1.0	28.2	35.9	8.8	44.6	0.5	(16.0)
2029	24.5	16.0	1.0	41.5	35.5	8.8	44.4	-	(2.9)
2030	24.9	18.1	0.9	43.9	35.1	8.9	44.0	-	-
2031	25.4	17.5	0.7	43.6	34.6	9.0	43.6	-	-
2032	25.9	16.7	0.6	43.3	34.2	9.1	43.2	-	-
2033	26.4	15.9	0.6	43.0	33.9	9.1	43.0	-	-
2034	27.1	15.2	0.6	42.9	33.7	9.2	42.9	-	-
2035	27.8	14.6	0.6	43.0	33.7	9.2	42.9	-	-



## Appendix 3 - Participant Data

### A. Source of Participant Data

As it was done in the previous valuation report, the Department of National Defence (DND) provides OSFI with multiple files reflecting the summarized raw data as it exists in their system based on mutually agreed data specifications. In addition, Public Works and Government Services Canada (PWGSC) provides OSFI with data on regular force annuitants.

The data provided contains all required information in respect of contributors, pensioners and survivors. In particular, the data shows the historical progression of members during period from 31 March 2008 to 31 March 2010 required for reconciliation and experience studies.

Subsequently, OSFI validates and corrects, as necessary, the data before transforming it into a structure amenable to analysis, interpretation, and valuation.

### B. Participant Data Summary

Tables 10 to 14 on the following pages show the detailed participant data upon which this valuation is based.



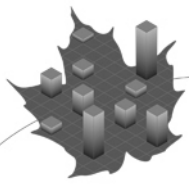


**Table 10 Non-Elective Officers**  
As at 31 March 2010

Age <sup>1</sup>	Number			Basic Benefit (\$ thousands)		
	Male	Female	Total	Male	Female	Total
15-19	418	108	526	15,273	3,836	19,109
20-24	1,448	396	1,844	99,549	27,558	127,107
25-29	2,020	545	2,565	253,195	70,520	323,715
30-34	2,146	539	2,685	340,412	86,044	426,456
35-39	2,222	502	2,724	394,256	88,069	482,325
40-44	2,210	371	2,581	427,156	68,104	495,260
45-49	2,340	307	2,647	479,707	59,366	539,073
50-54	1,400	152	1,552	308,138	30,667	338,805
55-59	<u>418</u>	<u>52</u>	<u>470</u>	<u>88,288</u>	<u>11,024</u>	<u>99,311</u>
Total	14,622	2,972	17,594	2,405,972	445,187	2,851,160

	<u>Average</u>	<u>Male</u>	<u>Female</u>	<u>Total</u>
<b>As at 31 March 2008</b>	Age <sup>1</sup>	37.4	33.6	36.8
	Service <sup>1</sup>	14.5	9.9	13.7
	Basic Benefit (\$)	163,092	145,526	160,336
<b>As at 31 March 2010</b>	Age <sup>1</sup>	37.7	34.8	37.2
	Service <sup>1</sup>	13.9	10.5	13.3
	Basic Benefit (\$)	164,545	149,794	162,053

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



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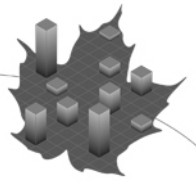
REGULAR FORCE Death Benefit Account  
as at 31 March 2010

**Table 11 Non-Elective Other Ranks**  
As at 31 March 2010

Age <sup>1</sup>	Number			Basic Benefit (\$ thousands)		
	Male	Female	Total	Male	Female	Total
15-19	1,494	115	1,609	106,709	8,170	114,879
20-24	9,519	915	10,434	832,597	80,327	912,924
25-29	10,381	1,433	11,814	1,056,545	143,916	1,200,460
30-34	8,069	1,476	9,545	891,951	156,745	1,048,696
35-39	6,987	1,510	8,497	837,445	170,339	1,007,784
40-44	6,689	1,318	8,007	855,624	157,451	1,013,076
45-49	5,464	1,045	6,509	736,363	128,788	865,151
50-54	1,950	358	2,308	276,736	43,682	320,418
55-59	<u>325</u>	<u>75</u>	<u>400</u>	<u>44,499</u>	<u>9,355</u>	<u>53,854</u>
Total	50,878	8,245	59,123	5,638,469	898,772	6,537,241

	<u>Average</u>	<u>Male</u>	<u>Female</u>	<u>Total</u>
<b>As at 31 March 2008</b>	Age <sup>1</sup>	34.6	35.4	34.7
	Service <sup>1</sup>	11.8	9.5	11.5
	Basic Benefit (\$)	110,420	105,975	109,849
<b>As at 31 March 2010</b>	Age <sup>1</sup>	33.7	35.8	34.0
	Service <sup>1</sup>	10.8	9.9	10.7
	Basic Benefit (\$)	110,823	109,008	110,570

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



**Table 12 Elective Disabled (3A) Participants**  
As at 31 March 2010

Age <sup>1</sup>	Number			Term and Paid-up Insurance (\$)		
	Male	Female	Total	Male	Female	Total
35-39	2	1	3	201	98	298
40-44	19	8	27	1,862	727	2,589
45-49	70	26	96	6,510	2,199	8,709
50-54	69	17	86	6,191	1,489	7,680
55-59	41	16	57	3,402	1,389	4,791
60-64	109	8	117	6,026	697	6,723
65-69	235	3	238	6,269	233	6,502
70-74	384	1	385	1,920	5	1,925
75-79	514	0	514	2,570	0	2,570
80-84	302	2	304	1,510	10	1,520
85-89	126	2	128	630	10	640
90-94	32	0	32	160	0	160
95-99	3	0	3	15	0	15
100-104	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Total	1,906	84	1,990	37,265	6,857	44,121

	<u>Average</u>	<u>Male</u>	<u>Female</u>	<u>Total</u>
<b>As at 31 March 2008</b>	Age <sup>1</sup>	71.4	51.6	70.6
	Term and Paid-up Insurance (\$)	16,708	79,655	19,156
<b>As at 31 March 2010</b>	Age <sup>1</sup>	73.4	54.2	72.5
	Term and Paid-up Insurance (\$)	19,551	81,625	22,171

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



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**Table 13 Elective Retired and Disabled (3B) Participants**  
As at 31 March 2010

Age <sup>1</sup>	Number			Term and Paid-up Insurance (\$)		
	Male	Female	Total	Male	Female	Total
25-29	3	0	3	335	0	335
30-34	109	12	121	12,648	1,496	14,144
35-39	686	138	824	81,305	16,778	98,083
40-44	3,365	547	3,912	417,949	66,161	484,109
45-49	8,875	1,350	10,225	1,046,449	150,365	1,196,815
50-54	8,976	1,285	10,261	999,434	132,318	1,131,752
55-59	7,026	619	7,645	810,988	66,115	877,103
60-64	8,938	361	9,299	921,204	37,913	959,118
65-69	9,054	127	9,181	652,305	9,317	661,622
70-74	8,846	90	8,936	44,230	450	44,680
75-79	7,075	62	7,137	35,375	310	35,685
80-84	3,876	36	3,912	19,380	180	19,560
85-89	2,318	11	2,329	11,590	55	11,645
90-94	754	16	770	3,770	80	3,850
95-99	117	4	121	585	20	605
100-104	<u>10</u>	<u>1</u>	<u>11</u>	<u>50</u>	<u>5</u>	<u>55</u>
Total	70,028	4,659	74,687	5,057,597	481,563	5,539,159

	<u>Average</u>	<u>Male</u>	<u>Female</u>	<u>Total</u>
<b>As at 31 March 2008</b>	Age <sup>1</sup>	62.3	50.7	61.6
	Term and Paid-up Insurance (\$)	59,718	95,365	61,785
<b>As at 31 March 2010</b>	Age <sup>1</sup>	63.3	52.4	62.6
	Term and Paid-up Insurance (\$)	72,222	103,362	74,165

**Table 14 Elective Participants Entitled to a Deferred Annuity<sup>2</sup>**  
As at 31 March 2010

<u>Number</u>	<u>Term Insurance Benefit (\$ thousands)</u>
210	23,354

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

<sup>2</sup> Due to their negligible effect on costs and liabilities, these participants were not taken into consideration for the purpose of this valuation.



## Appendix 4 - Methodology

### A. RFDB Account Balance Available for Benefits

The account balance available for benefits of the plan consists essentially of the recorded balance in the RFDB Account, which forms part of the Accounts of Canada. The account is considered notional assets, meaning that no debt instrument has been issued to the RFDB Account by the government in recognition of the amounts therein. These assets are shown at the book value of the underlying notional bond portfolio described in Appendix 2.

The RFDB Account balance corresponds to the cumulative historical excess of contributions and interest credits over past benefit payments. The RFDB Account balance is projected to the end of a given plan year by adding to the RFDB Account balance at the beginning of that plan year the net income (i.e. the excess of contributions and interest credits over benefits) projected as described below for that plan year. Administration expenses are ignored because they are not debited from the RFDB Account.

### B. Contributions

#### 1. Participants

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

- the legislated annual contribution rate of 60 cents per \$250 of salary (equivalent to the monthly rate of 5 cents per \$250 of salary)

by

- the projected participants' rounded salaries for that plan year on an open-group basis, reduced by 10% a year from age 61 if applicable, (the legislation expresses the annual reduction of 10% a year on the total amount of coverage)

less

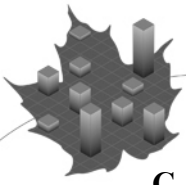
- \$6.00 annually corresponding to the \$5,000 paid-up coverage after age 65, if applicable (i.e. death benefit coverage of \$5,000 corresponds to an annual salary of \$2,500, hence an annual contribution of 60 cents per \$250 of salary would produce a contribution of \$6.00 annually).

Non-elective participants' salaries are projected for a given plan year using the assumed rates of increase described in Appendix 5 and by the assumed Seniority and Promotional salary increases given in Table 16. Elective participants' salaries are frozen at time of retirement or disability and are not subject to further increases.

#### 2. Government

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

- one-twelfth of the amount of term insurance death benefits projected to be paid during that plan year, and
- the legislated single premiums in respect of relevant participants 65 years of age.



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### C. Discount Rates

The rates used to calculate the present value of actuarial liabilities in respect of paid-up death benefit are the same as the yields described and shown in Appendix 5.

### D. Interest Credits

Annual interest credits are projected for a given plan year as the product of the yield projected for that plan year (Appendix 5) and the projected average RFDB Account balance in that plan year.

### E. Benefit Payments

The total amount of annual benefits (term and paid-up insurance) for a given plan year is projected as the sum of the participant annual benefits in force during that plan year multiplied by the mortality rates applicable to each participants during that plan year. The amount of annual benefit in force depends on the salary projected to time of death. Elective participants' salaries are frozen at time of retirement or disability and are not subject to further increases. Salaries are projected for this purpose using the assumed rates of increase in salaries and the number of participants projected on an open-group basis as described in Appendix 6.

### F. Liabilities

#### 1. Paid-up Reserve

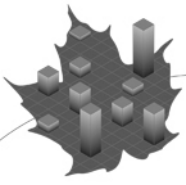
At the end of a given plan year, the liabilities associated with the individual \$5,000 paid-up death benefit in force correspond to the amount which, together with interest at the projected yields, is sufficient to pay for each individual \$5,000 paid-up death benefit projected payable on the basis of the assumed mortality rates. With the exception of elective participants entitled to a deferred annuity, this valuation assumes that the paid-up benefit of \$5,000 will be paid to all elective participants when it becomes available to them.

#### 2. IBNR and Pending Claims Reserves

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

#### 3. Extension of Coverage

Due to the negligible financial impact of the 30-day extension of the basic benefit upon termination of coverage and to the nature of basic benefit paid for on a monthly basis, no explicit liability was calculated in respect of that basic benefit provision.



## Appendix 5 - Economic Assumptions

The following economic assumptions are required for valuation purposes:

### A. Increases in Average Earnings

Salary increases consist of a combination of inflation, productivity growth (i.e. real<sup>1</sup> increase in average employment earnings (AEE) 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.

Price increases (inflation), as measured by changes in the Consumer Price Index (CPI), tend to fluctuate from year to year. In 2006, the Bank of Canada and the Government renewed their commitment to keep inflation between 1% and 3% until the end of 2011. It is assumed that this commitment will be renewed for another five years following 2011. Therefore, a price increase rate of 2.0% is assumed for plan years 2011 to 2017. For plan years 2018 to 2020, the CPI is assumed to increase from 2.0% to 2.3% and remain at 2.3% thereafter. The ultimate rate of 2.3% is 0.1% lower than the assumed rate from the previous valuation.

The assumed increase in average employment earnings<sup>2</sup> is 1.5% for plan year 2011 based on approved contracts which apply to the all non-elective participants. The assumed increase in average earnings<sup>2</sup> for plan year 2012 and thereafter was calculated as the sum of assumed CPI and assumed productivity growth.

A real increase in the AEE differential of 0.1% is assumed for plan year 2012, and is assumed to gradually increase to the ultimate assumption of 1.2% by plan year 2021. The ultimate real increase in the AEE differential assumption combined with the ultimate price increase assumption results in an assumed annual increase in nominal wages of 3.5% in plan year 2021 and thereafter. Thus, the ultimate rate of increase in average earnings is 3.5%, resulting from a 1.2% increase in the real AEE and a 2.3% increase in the CPI. The resulting assumed increases in AEE<sup>2</sup> are shown in Table 15.

### B. Projected Yields on RFDB Account

These yields are required for the long-term projection of the actuarial assets, liabilities and excess or deficit. The projected yields on the RFDB Account are the projected annual yields on the combined book value of the Superannuation Accounts of the Public Service, Canadian Forces, and Royal Canadian Mounted Police pension plans. The methodology is unchanged from previous valuations.

<sup>1</sup> The real rates in this report are differentials, i.e. the difference between the effective annual rate and the inflation rate.

<sup>2</sup> Exclusive of seniority and promotional increases.



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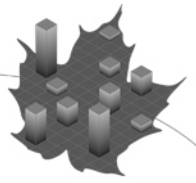
REGULAR FORCE Death Benefit Account  
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**Table 15 Summary of Economic Assumptions**  
(percentage)

Plan Year	Average Salary Increase <sup>1</sup> of Non-Elective Participants	Projected Yield
2011	<b>1.50</b>	6.50
2012	2.10	6.00
2013	2.40	5.80
2014	2.60	5.60
2015	2.70	5.40
2016	2.80	5.20
2017	2.90	5.00
2018	3.00	4.90
2019	3.20	4.80
2020	3.40	4.80
2021	3.50	4.70
2022	3.50	4.70
2023	3.50	4.70
2024	3.50	4.60
2025	3.50	4.60
2026	3.50	4.60
2027	3.50	4.60
2028	3.50	4.70
2029	3.50	4.70
2030	3.50	4.80
2031	3.50	4.80
2032	3.50	5.00
2033	3.50	5.00
2034	3.50	5.10
2035	3.50	5.10
2036+	3.50	5.10

<sup>1</sup> Exclusive of seniority and promotional increases.





## Appendix 6 - Demographic and Other Assumptions

Except where otherwise noted, all demographic assumptions were determined from the plan’s own experience as was done in the past. Where applicable, assumptions of the previous valuation were updated to reflect the intervaluation experience.

As in the previous report the service used to determine length of participation in the Canadian Forces and the eligibility to certain benefit under the *Canadian Forces Superannuation Act* is the “qualifying” service. We have been advised that the “qualifying” service to the credit of a member represents the sum of the qualifying service during all enrolment periods of a member whether or not the service may have been surrendered over the years. Consequently, the demographic assumptions based on service have been derived by giving full credibility to the experience of the plan over the period of April 2006 to December 2010. Described below are the assumptions related to causes of termination (employment or participation):

Termination Cause	Rate Basis	Comments															
Giving full credibility to the experience data of the 2007-2010 plan years, the rates were modified from the previous valuation as follows:																	
Withdrawal	Service, Rank, Sex, Terms of Service	<table border="1"> <thead> <tr> <th></th> <th>Old Terms (service 0 to 18)</th> <th>New Terms (service 0 to 23)</th> </tr> </thead> <tbody> <tr> <td>Male Officers</td> <td>41% decrease</td> <td>8% decrease</td> </tr> <tr> <td>Male Other Ranks</td> <td>26% decrease</td> <td>16% increase</td> </tr> <tr> <td>Female Officers</td> <td>52% decrease</td> <td>29% decrease</td> </tr> <tr> <td>Female Other Ranks</td> <td>63% decrease</td> <td>40% decrease</td> </tr> </tbody> </table>		Old Terms (service 0 to 18)	New Terms (service 0 to 23)	Male Officers	41% decrease	8% decrease	Male Other Ranks	26% decrease	16% increase	Female Officers	52% decrease	29% decrease	Female Other Ranks	63% decrease	40% decrease
			Old Terms (service 0 to 18)	New Terms (service 0 to 23)													
		Male Officers	41% decrease	8% decrease													
		Male Other Ranks	26% decrease	16% increase													
		Female Officers	52% decrease	29% decrease													
Female Other Ranks	63% decrease	40% decrease															
Table 17																	
Giving full credibility to the experience data of the 2007-2010 plan years, the rates were modified from the previous valuation as follows:																	
Pensionable Retirement	Service, Rank, Terms of Service	<table border="1"> <thead> <tr> <th></th> <th>Old Terms (service 19-38)</th> <th>New Terms (service 24-38)</th> </tr> </thead> <tbody> <tr> <td>Officers</td> <td>4% increase</td> <td>13% increase</td> </tr> <tr> <td>Other Ranks</td> <td>9% decrease</td> <td>3% decrease</td> </tr> </tbody> </table>		Old Terms (service 19-38)	New Terms (service 24-38)	Officers	4% increase	13% increase	Other Ranks	9% decrease	3% decrease						
			Old Terms (service 19-38)	New Terms (service 24-38)													
		Officers	4% increase	13% increase													
Other Ranks	9% decrease	3% decrease															
Table 19																	
Disability <sup>1</sup>	Occupation Age, Rank, Sex	Disability releases 3A (any occupation). Giving partial (50%) credibility to the experience data of the 2007-2010 plan years, the rates for males were reduced by 43% from the previous valuation. The rates for females were reduced by 47% from the previous valuation															
		Disability releases 3B (own occupation). Giving full credibility to the experience data of the 2007-2010 plan years, the rates were modified from the previous valuation as follows:															

<sup>1</sup> Disability 3A refers to the inability to perform any occupations while 3B refers to the inability to perform his/her own occupation.



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Male Officers	106%	increase
Male Other Ranks	17%	increase
Female	23%	increase

Giving partial (50%) credibility to the experience data of the 2009-2010 plan years, the rates were modified from the previous valuation as follows:

Mortality (ages 20 to 60)	Age, Rank, Sex, Year	Male Officers	3%	increase	Table 21
		Male Other Ranks	4%	increase	
		Female	3%	decrease	

The mortality improvement factors are those reported in Table 40 of the latest Canada Pension Plan Actuarial Report (25<sup>th</sup>). The ultimate improvement factors for plan year 2029 onward are 17% higher than those used in the previous valuation.

Table 22

Description	Basis	Comments
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### Elective retired participants

Mortality (ages 40 to 90)	Age, Rank, Sex, Year	Giving partial (50%) credibility to the experience data of the 2009-2010 plan years, the rates were modified from the previous valuation as follows:			Table 21
		Male Officers	6%	decrease	
		Male Other Ranks	4%	decrease	
		Female	2%	decrease	

Same longevity improvements as for non-elective participants. Table 22

### Elective disabled participant

Disabled (3A) Mortality (ages 30 to 80)	Age, Rank, Sex, Year	Giving partial credibility to the experience data of the 2007-2010 plan years, the rates were modified from the previous valuation as follows:			Table 21
		Male Officers	4%	decrease	
		Male Other Ranks	12%	decrease	
		Female	4%	decrease	

Same longevity improvements as for non-elective participants. Table 22

Disabled (3B) Mortality	Age, Rank, Sex, Year	These members have been released under cause 3B, and are unable to perform the duties of their own occupations. The mortality assumption for these pensioners is set equal to the mortality assumption of healthy pensioners.			Table 21
		Same longevity improvements as for non-elective participants.			

Table 22



## A. Other Assumptions

### 1. Option to Reduce Coverage to \$5,000

The valuation data indicates that the proportion of elective participants opting to reduce their basic benefit to \$5,000 is negligible. Accordingly, no elective participants were assumed to make such an option.

### 2. Non-Elective Participants Choosing to Become Elective Participants at Retirement

The assumed proportion of new retirees choosing to continue their coverage under the SDB plan was revised in the last report and was determined on the basis of service and rank. These assumed proportions remain unchanged and are shown in Table 18.

### 3. Seniority and Promotional Salary Increases

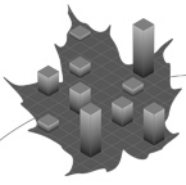
Over the recent years, the Canadian Forces reported higher than anticipated terminations with an annuity amongst Officers and Non-Commission members. Consequently, the higher than expected observed salary increases due to promotions and seniority are believed to be temporary. Accordingly, partial (25%) credibility was given to the experience data of plan years 2008 to 2010 and the resulting assumed rates of seniority and promotional salary increases increased by approximately 8% for officers and approximately 4% for all other ranks. The assumed rates of seniority and promotional salary increases are determined on the basis of service and rank and are shown in Table 16.

### 4. New Participants

It was assumed that the distribution of new members by age, sex and initial salary rate would be the same as that of members with less than one year of service at the valuation date. Initial salary is assumed to increase in future plan years in accordance with the assumption for average earnings increase. It is assumed that the number of new participants would be such that the total number of non-elective participants would remain the same over the projection period of 35 years.

### 5. Administrative Expenses

In the projection of the RFDB Account, no assumption was made regarding the expenses incurred for the administration of the plan. These expenses, which are not debited to the RFDB Account, are commingled with all other government charges.



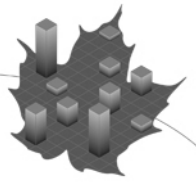
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**Table 16 Assumed Seniority and Promotional Salary Increases**  
(percentage)

<u>Service<sup>1</sup></u>	<u>Officer</u>	<u>Other Rank</u>
0	6.2	16.7
1	5.3	14.8
2	11.0	4.8
3	19.7	8.0
4	13.5	2.1
5	6.1	1.9
6	7.4	1.7
7	5.7	1.4
8	3.9	1.2
9	4.0	1.0
10	4.1	1.0
11	3.9	1.0
12	3.6	1.0
13	3.2	1.1
14	2.7	1.1
15	2.2	1.2
16	1.9	1.2
17	1.7	1.2
18	1.6	1.2
19	1.6	1.2
20	1.5	1.2
21	1.5	1.2
22	1.4	1.2
23	1.3	1.2
24	1.2	1.2
25	1.1	1.2
26	1.0	1.2
27	1.0	1.1
28	0.9	1.1
29	0.8	1.0
30	0.8	0.9
31	0.7	0.8
32	0.6	0.7
33	0.5	0.7
34	0.4	0.6
35+	0.4	0.0

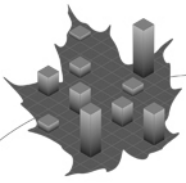
<sup>1</sup> Expressed in completed years calculated at the beginning of the plan year.



**Table 17 Assumed Rates of Withdrawal**  
(per 1,000 individuals)

Service <sup>1</sup>	Old Terms of Service				New Terms of Service			
	Officer		Other Rank		Officer		Other Rank	
	Male	Female	Male	Female	Male	Female	Male	Female
0	21.5	41.6	74.0	2.3	97.6	85.9	125.9	123.8
1	21.6	29.8	32.8	6.6	40.8	27.6	29.9	35.5
2	21.6	21.4	125.7	11.0	24.3	34.6	73.4	26.8
3	21.8	17.3	57.9	15.4	20.0	15.8	49.2	23.1
4	22.1	15.3	45.7	19.8	17.7	22.3	38.6	23.4
5	22.8	8.5	46.3	24.1	16.4	13.4	39.2	23.0
6	24.1	5.4	43.6	28.5	13.3	9.7	31.2	18.9
7	28.4	17.2	28.9	20.8	13.9	12.9	26.0	13.8
8	30.6	52.4	17.7	16.2	11.3	7.3	20.8	8.2
9	20.1	53.4	22.9	13.4	10.5	5.4	16.8	5.9
10	16.9	37.7	18.6	12.1	10.2	51.1	12.8	8.6
11	12.5	31.9	17.2	13.2	10.7	55.4	6.6	6.9
12	13.6	26.0	13.4	13.4	14.2	9.8	4.4	6.2
13	10.7	20.2	8.5	9.0	18.9	12.3	6.7	4.8
14	5.8	14.4	8.7	3.5	22.3	8.5	14.9	4.3
15	2.8	1.5	6.6	1.4	24.2	18.4	28.6	7.5
16	1.0	1.6	3.6	1.9	26.7	11.9	23.6	12.5
17	3.3	1.6	4.2	1.4	30.3	8.7	23.9	11.0
18	5.6	5.2	2.5	19.9	30.0	8.7	25.1	11.0
19	-	-	-	-	96.0	8.7	27.7	11.0
20	-	-	-	-	78.0	8.7	30.4	11.0
21	-	-	-	-	56.8	8.7	38.6	11.0
22	-	-	-	-	37.4	8.7	44.0	11.0
23	-	-	-	-	20.3	15.3	47.3	11.0

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



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**Table 18 Proportion of non-elective participants choosing to become elective participants at retirement**  
(per 1,000 individuals)

<u>Service</u> <sup>2</sup>	<u>Pensionable Retirement</u> <sup>1</sup>		<u>Disability Retirement</u>	
	<u>Officer</u>	<u>Other Rank</u>	<u>Officer</u>	<u>Other Rank</u>
19	850	860	1,000	1,000
20	850	850	1,000	1,000
21	840	850	1,000	1,000
22	840	840	1,000	1,000
23	830	840	1,000	1,000
24	830	840	1,000	1,000
25	820	840	1,000	1,000
26	820	840	1,000	1,000
27	810	840	1,000	1,000
28	810	840	1,000	1,000
29	810	840	1,000	1,000
30	810	840	1,000	1,000
31	810	840	1,000	1,000
32	810	840	1,000	1,000
33	810	840	1,000	1,000
34	820	850	1,000	1,000
35+	820	850	1,000	1,000

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

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



**Table 19 Assumed Rates of Retirement**  
(per 1,000 individuals)

<u>Service<sup>1</sup></u>	<u>Old Terms of Service</u>		<u>New Terms of Service</u>	
	<u>Officer</u>	<u>Other Rank</u>	<u>Officer</u>	<u>Other Rank</u>
19	96	102	-	-
20	78	106	-	-
21	57	77	-	-
22	37	69	-	-
23	20	74	-	-
24	55	102	55	51
25	71	100	71	50
26	84	94	84	106
27	89	86	89	103
28	93	92	93	112
29	96	107	96	127
30	108	113	108	134
31	114	146	114	146
32	141	175	141	175
33	214	189	214	189
34	340	334	340	334
35	396	406	396	406
36	454	468	454	468
37	492	516	492	516
38	492	558	492	558

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



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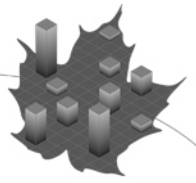
**Table 20 Assumed Rates of Termination due to Disability<sup>1</sup>**  
(per 1,000 individuals)

<u>Age<sup>2</sup></u>	<u>Any Occupation (3A)</u>		<u>Own Occupation (3B)</u>		
	<u>Male</u>	<u>Female</u>	<u>Male Officer</u>	<u>Male Other Rank</u>	<u>Female</u>
20	0.2	0.2	1.7	2.3	5.5
25	0.1	0.4	3.4	5.3	6.8
30	0.1	0.6	1.5	7.7	7.3
35	0.2	0.9	2.2	12.9	15.3
40	0.3	1.3	5.8	28.9	28.5
45	0.2	1.8	9.3	37.8	39.8
50	0.5	2.5	15.6	46.6	51.7
55	1.2	3.3	40.3	77.9	65.9
59	1.7	4.8	32.6	77.9	69.1

<sup>1</sup> Disability 3A refers to the inability to perform any occupations while 3B refers to the inability to perform his/her own occupation.

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





**Table 21 Assumed Rates of Mortality**  
(per 1,000 individuals)

Age <sup>1</sup>	Elective and Non-Elective Participants			Elective Disabled (3A) Participants		
	Male		Female	Male		Female
	Officer	Other Rank		Officer	Other Rank	
20	0.5	0.8	0.4	0.6	3.2	0.4
25	0.5	0.8	0.4	0.6	3.3	0.4
30	0.5	0.7	0.4	0.6	3.5	0.5
35	0.6	0.9	0.4	0.8	3.9	0.7
40	0.7	1.0	0.5	1.1	4.6	1.1
45	0.8	1.6	0.8	2.8	6.1	1.7
50	1.2	2.6	1.3	6.9	7.9	2.7
55	2.1	4.8	2.2	11.5	9.4	4.5
60	3.8	8.9	3.8	15.9	12.7	7.2
65	7.2	14.4	6.9	21.4	19.7	11.1
70	14.5	22.5	12.1	30.0	30.6	18.1
75	27.1	40.7	21.1	45.7	42.9	30.1
80	46.8	68.3	36.6	68.5	63.6	48.1
85	95.5	103.1	64.1	104.6	103.8	79.8
90	147.0	154.9	111.4	144.9	158.7	129.3
95	221.3	227.0	192.6	219.5	215.1	191.6
95	221.3	227.0	192.6	219.5	215.1	191.6
100	315.0	328.6	287.3	312.6	288.3	287.2
105	495.4	495.4	415.0	495.3	495.3	414.9
110	500.0	500.0	492.4	500.0	500.0	492.4

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



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**Table 22 Assumed Longevity Improvement Factors**  
(effective at the end of plan year)

<u>Age</u> <sup>2</sup>	Initial and Ultimate Plan Year Mortality Reductions (%) <sup>1</sup>			
	Male		Female	
	<u>2011</u>	<u>2029+</u>	<u>2011</u>	<u>2029+</u>
20	2.43	0.80	1.05	0.80
25	2.53	0.80	1.34	0.80
30	2.87	0.80	1.59	0.80
35	2.68	0.80	1.49	0.80
40	2.18	0.80	1.34	0.80
45	1.84	0.80	1.24	0.80
50	1.89	0.80	1.28	0.80
55	2.13	0.80	1.34	0.80
60	2.38	0.80	1.41	0.80
65	2.63	0.80	1.47	0.80
70	2.58	0.80	1.49	0.80
75	2.33	0.74	1.49	0.74
80	2.08	0.70	1.49	0.70
85	1.69	0.58	1.19	0.58
90	1.19	0.44	0.70	0.44
95	0.70	0.34	0.35	0.34
100	0.35	0.30	0.10	0.30

<sup>1</sup> The mortality rate reduction applicable during any plan year within the 20-year select period is found by linear interpolation between the figures for plan years 2011 and 2029.

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



## **Appendix 7 - Acknowledgements**

The Department of National Defence provided relevant valuation data on participants. Public Works and Government Services Canada also provided additional information in respect of elective participants.

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

The following individuals were instrumental in the preparation of this report:

Cornell Carter  
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Alice Chiu, A.S.A.