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ACTUARIAL REPORT

on the Pension Plan for the
**CANADIAN
FORCES**

Reserve Force
as at 31 March 2015

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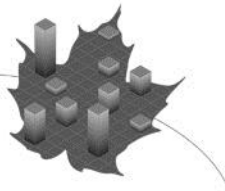
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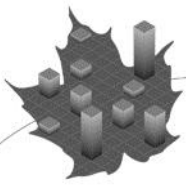
The Honourable Scott Brison, P.C., M.P.
President of Treasury Board
Ottawa, Canada
K1A 0R5

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 2015 of the Canadian Forces - Reserve Force pension plan. This plan is defined by Part I.1 of the *Canadian Forces Superannuation Act* and the *Pension Benefits Division Act*.

Yours sincerely,

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

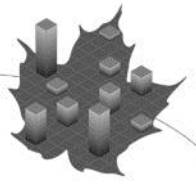


ACTUARIAL REPORT

Pension Plan for the **CANADIAN FORCES – RESERVE FORCE**
as at 31 March 2015

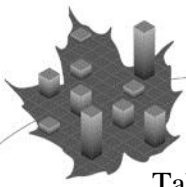
TABLE OF CONTENTS

	Page
I. Executive Summary	7
A. Purpose of Actuarial Report	7
B. Valuation Basis	7
C. Main Findings	7
II. Valuation Results	10
A. Financial Position	10
B. Reconciliation of the Changes in Financial Position	11
C. Cost Certificate	19
D. Sensitivity of Valuation Results to Variations in Longevity Improvement Factors	21
E. Sensitivity to Variations in Key Assumptions	22
F. Summary of Estimated Government Costs	23
III. Actuarial Opinion	24
Appendix 1 - Summary of Pension Benefit Provisions	25
Appendix 2 - Assets and Rates of Return	34
Appendix 3 - Membership Data	36
Appendix 4 - Valuation Methodology	39
Appendix 5 - Economic Assumptions	42
Appendix 6 - Demographic Assumptions	52
Appendix 7 - Reserve Force Pension Fund Projection	60
Appendix 8 - Detailed Information on Membership Data	61
Appendix 9 - Acknowledgements	70



TABLES

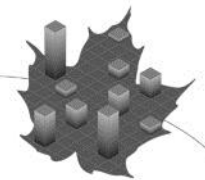
	Page
Table 1	Ultimate Best-Estimate Economic Assumptions 7
Table 2	Projection of Current Service Cost 9
Table 3	Balance Sheet - Reserve Force Pension Fund..... 10
Table 4	Reconciliation of RFPF Financial position..... 11
Table 5	Experience Gains and Losses..... 14
Table 6	Revision of Actuarial Assumptions 16
Table 7	Current Service Cost for Plan Year 2016..... 19
Table 8	Reconciliation of CFSA Current Service Cost 19
Table 9	Projection of Current Service Cost 20
Table 10	Estimated Contributions for Prior Service..... 21
Table 11	Sensitivity of Valuation Results to Variation in Longevity Improvement Factors 22
Table 12	Sensitivity of Valuation Results..... 22
Table 13	Estimated Government Cost 23
Table 14	Reconciliation of Balances in Pension Fund..... 34
Table 15	Reconciliation of Contributors..... 37
Table 16	Reconciliation of Pensioners..... 38
Table 17	Reconciliation of Spouse Survivors..... 38
Table 18	Reconciliation of Survivors - Children/Students 38
Table 19	Actuarial Value of Pension Fund Assets..... 39
Table 20	Asset Mix 45
Table 21	Real Rate of Return by Asset Type..... 47
Table 22	Rates of Return on Assets in Respect of the Pension Fund 49
Table 23	Transfer Value..... 50
Table 24	Economic Assumptions 51
Table 25	Sample of Assumed Seniority and Promotional Salary Increases 52
Table 26	Sample of Assumed Rates of Retirement 53
Table 27	Sample of Assumed Rates of Pensionable Disability 53
Table 28	Sample of Assumed Withdrawal Rates - Male Officer..... 54
Table 29	Sample of Assumed Withdrawal Rates - Male Other Rank..... 54
Table 30	Sample of Assumed Withdrawal Rates - Female Officer 54
Table 31	Sample of Assumed Withdrawal Rates - Female Other Rank 55
Table 32	Sample of Assumed Rates of Mortality 55
Table 33	Sample of Assumed Longevity Improvement Factors 56
Table 34	Assumptions for Survivor Spouse Allowances..... 56
Table 35	Assumptions for Survivor Children Allowances 57
Table 36	Wage Measure..... 58
Table 37	Pension Fund and Actuarial Liability Projection 60
Table 38	Male Officers 61
Table 39	Male Other Ranks 62
Table 40	Female Officers..... 63
Table 41	Female Other Ranks..... 64
Table 42	Officer Male - Retirement Pensioners..... 65



ACTUARIAL REPORT

Pension Plan for the **CANADIAN FORCES – RESERVE FORCE**
as at 31 March 2015

Table 43	Officer Female - Retirement Pensioners	65
Table 44	Other Rank Male - Retirement Pensioners	65
Table 45	Other Rank Female - Retirement Pensioners	66
Table 46	Officer Male - Disability Pensioners.....	66
Table 47	Other Rank Male - Disability Pensioners.....	66
Table 48	Other Rank Female - Disability Pensioners	67
Table 49	Deferred Annuitant - Officer Male	67
Table 50	Deferred Annuitant - Officer Female	67
Table 51	Deferred Annuitant - Other Rank Male	68
Table 52	Deferred Annuitant - Other Rank Female	68
Table 53	Surviving Spouses - Female.....	69
Table 54	Surviving Spouses - Male	69



I. Executive Summary

This Actuarial Report on the pension plan for the Canadian Forces - Reserve Force (Reserve Force pension plan) was made pursuant to the *Public Pensions Reporting Act* (PPRA).

This actuarial valuation is as at 31 March 2015 and is in respect of pension benefits and contributions defined by Part I.1 of the *Canadian Forces Superannuation Act* (CFSA) and the *Pension Benefits Division Act* (PBDA).

The date of the next periodic review is scheduled to be as at 31 March 2016.

A. Purpose of Actuarial Report

This report was prepared at the request of the President of Treasury Board and determines the state of the Reserve Force Pension Fund (RFPF) as at 31 March 2015. This actuarial valuation was sought to assist the Department of National Defence with an audit by the Office of the Auditor General of Canada. The next scheduled report as at March 2016 is expected to be used for this purpose.

B. Valuation Basis

There have been no changes to the plan provisions since the previous valuation. This report is based on pension benefit provisions enacted by legislation, summarized in Appendix 1.

The financial data on which this valuation is based are composed of tangible assets that the government has earmarked for the payment of benefits for service with respect to the Reserve Force pension plan. These pension assets are summarized in Appendix 2. The membership data is summarized in Appendices 3 and 8.

The valuation was prepared using accepted actuarial practices, methods and assumptions which are summarized in Appendices 4, 5 and 6.

Actuarial assumptions used in the previous report were revised based on economic trends. All actuarial assumptions are best-estimate assumptions and are, individually and in aggregate, reasonable for the purposes of the valuation at the date of this report.

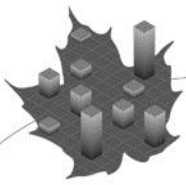
The following table presents a summary of the economic assumptions used in this report compared to those used in the previous report:

Table 1 Ultimate Best-Estimate Economic Assumptions

	31 March 2015	31 March 2013
Assumed level of inflation	2.0%	2.0%
Real increase in average pensionable earnings	0.9%	1.0%
Real rate of return	4.1%	4.1%

C. Main Findings

The proposed amounts to be credited to (or debited from) the Fund are shown on a calendar year basis in this section beginning with calendar year 2017, which is the first



ACTUARIAL REPORT

Pension Plan for the **CANADIAN FORCES – RESERVE FORCE**
as at 31 March 2015

calendar year that follows the expected tabling of this report. Valuation results on a plan year¹ basis are shown in Section II.

1) Financial position

As at 31 March 2015, the actuarial value of the assets in respect of the Fund is \$505.3 million and the actuarial liability is \$547.3 million, resulting in an actuarial deficit of \$42.0 million.

In accordance with section 87 of the *Reserve Force Pension Plan Regulations*, the actuarial deficit is amortized with equal annual instalments over a period of 15 years to meet the cost of the benefits payable under the Reserve Force pension plan.

Taking into account the special payment of \$1.9 million that was made on 31 March 2016, the actuarial deficit of \$42.0 million could be amortized in 15 equal annual payments of \$4.2 million beginning on 31 March 2017. However, the final time, manner and amount of any special payments are to be determined by the President of the Treasury Board.

2) Non-permitted actuarial surplus

If there exists in the opinion of the President of the Treasury Board a non-permitted actuarial surplus² in the Fund, no further government contributions are permitted.

Further, member contributions to the Fund may also be reduced in a manner determined by the Treasury Board or the non-permitted surplus may be paid out of the Fund and into the Consolidated Revenue Fund. The results of the valuation do not indicate the existence of a non-permitted surplus as at 31 March 2015.

3) Current Service Cost³

The estimated total current service cost, borne jointly by the contributors and the government, is \$48.0 million for calendar year 2017. The estimated member contributions are \$15.9 million and the estimated government contributions are \$32.1 million for calendar year 2017. The Fund administrative expenses are estimated at \$3.8 million (included in the total current service cost) for calendar year 2017.

The following table shows the projected current service cost expressed as a percentage of the expected pensionable payroll⁴ and in millions of dollars for the three calendar years following the expected laying of this report. The ratio of government current service cost to the members current service cost is also shown.

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

² A non-permitted actuarial surplus exists when the amount by which the assets exceeds the liabilities is greater than the lesser of (a) and (b), where:

(a) is 20% of the amount of liabilities, 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.

³ Also called normal cost.

⁴ *Pensionable payroll* is defined in Note 1 of Appendix 1-D.

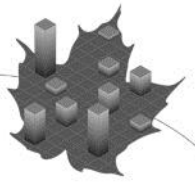
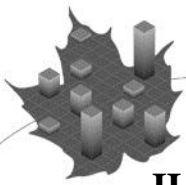


Table 2 Projection of Current Service Cost

Calendar Year	% of pensionable payroll			Current Service Cost (\$ millions)			Government to Contributors Ratio
	Contributors	Government	Total	Contributors	Government	Total	
2017	5.20	10.53	15.73	15.9	32.1	48.0	2.02
2018	5.20	10.58	15.78	16.7	33.9	50.6	2.03
2019	5.20	10.65	15.85	17.5	35.9	53.4	2.05



ACTUARIAL REPORT

Pension Plan for the **CANADIAN FORCES – RESERVE FORCE**
as at 31 March 2015

II. Valuation Results

This report is based on pension benefit provisions enacted by legislation, summarized in Appendix 1, and the financial and membership data, summarized in Appendices 2 and 3. The valuation was prepared using accepted actuarial practices, methods and assumptions summarized in Appendices 4, 5 and 6.

Emerging experience, differing from the corresponding assumptions, will result in gains or losses to be revealed in subsequent reports.

The projection of the Fund financial position is shown in Appendix 7.

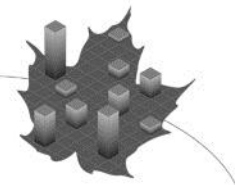
A. Financial Position

Member and government contributions to the Reserve Force pension plan are credited to the Fund, and the total amount of contributions net of benefits paid and administrative expenses is transferred to the Public Sector Pension Investment Board (PSPIB) and invested in the financial markets. The valuation results of this section show the financial position as at 31 March 2015. The results of the previous valuation are also shown for comparison purposes.

Table 3 Balance Sheet - Reserve Force Pension Fund
(\$ millions)

	31 March 2015	31 March 2013
Actuarial Value of Assets		
Market value of assets	549.8	414.9
Actuarial smoothing adjustment	(55.1)	(17.6)
Present value of prior service contributions	25.8	17.0
Remaining contributions for processed prior service	60.6	0.0
Remaining contributions for unprocessed prior service	34.5	47.3
Amount payable to Regular Force pension plan	<u>(110.3)</u>	<u>(105.4)</u>
Total assets	505.3	356.2
Actuarial Liability		
Active contributors	351.1	241.7
Contributors' unprocessed prior service	32.0	39.0
Retirement pensioners	130.2	77.3
Disability pensioners	3.1	0.0
Surviving dependents	2.2	1.5
Outstanding payments	14.5	7.1
Pension modernization cost	<u>14.2</u>	<u>25.7</u>
Total actuarial liability	547.3	392.3
Actuarial Surplus/(Deficit)	(42.0)	(36.1)

In accordance with section 87 of the *Reserve Force Pension Plan Regulations*, the actuarial deficit is amortized with equal annual instalments over a period of 15 years to meet the cost of the benefits payable under the Reserve Force pension plan. Taking into



account the special payment of \$1.9 million that was made on 31 March 2016, the actuarial deficit of \$42.0 million could be amortized in 15 equal annual payments of \$4.2 million beginning on 31 March 2017. The final time, manner and amount of any special payments are to be determined by the President of the Treasury Board.

The actuarial smoothing adjustment of \$55.1 million will disappear over the next five years as the unrecognized investment gains will be gradually recognized.

B. Reconciliation of the Changes in Financial Position

Table 4 shows the reconciliation of the changes in the financial position in respect of the Fund. Explanations of the elements largely responsible for the changes follow the table.

Table 4 Reconciliation of Financial Position
(\$ millions)

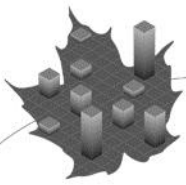
	Pension Fund Actuarial Surplus/(Deficit)
As at 31 March 2013	(36.1)
Recognized investment gains as at 31 March 2013	17.6
Retroactive changes due to processing of prior service	(70.0)
Retroactive changes to unprocessed prior service	2.6
Other retroactive changes to the population data	(6.7)
Methodology changes	17.7
Expected interest on revised initial financial position	(7.0)
Experience gains and losses	92.1
Revision of actuarial assumptions	(23.2)
Change in the present value of prior service contributions	4.7
Recognition of remaining contributions for processed prior service	60.6
Change in remaining contributions for unprocessed prior service	(38.4)
Change in amount payable to Regular Force pension plan	(4.9)
Change in outstanding payments	(7.4)
Change in capitalized value of pension modernization cost	11.5
Unrecognized investment gains as at 31 March 2015	<u>(55.1)</u>
As at 31 March 2015	<u>(42.0)</u>

1) Recognized Investment Gains as at 31 March 2013

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 Fund assets to be \$17.6 million less than their market value.

2) Retroactive Changes Due to Processing of Prior Service

As at 31 March 2013 there were 2,174 contributors with past earnings elections which were recognized in the previous valuation but which had not been processed by 31 March 2013. These elections have been processed and finalized by 31 March 2016. The total actuarial liability associated with these 2,174 contributors as at 31



ACTUARIAL REPORT

Pension Plan for the **CANADIAN FORCES – RESERVE FORCE**
as at 31 March 2015

March 2013 retroactively changed from \$75.4 million in the previous report to \$145.4 million an increase of \$70.0 million.

The earnings history associated with unprocessed elections is often either unreliable or unavailable, especially for years prior to 1999. When the past earnings are missing the valuation methodology generates assumed past earnings. However given the unpredictable nature of earnings in the Reserve Force a large gain or loss upon the processing of the election would be expected.

Nevertheless two key data issues in the previous valuation made this retroactive increase in liability much larger than it would have been had the data issues been handled differently. Both data issues prevented the previous valuation from taking into account all of the available or assumed past earnings for members with unprocessed elections. By regulation, a past earnings election must be for all of a member's past earnings.

3) Retroactive Changes to Unprocessed Prior Service

Both of the data issues mentioned in the previous section have been addressed in the current valuation which now takes account of all available or assumed past earnings for members with unprocessed elections. In addition, improvements were made to the methodology which generates the assumption for the unavailable past earnings which also had the effect of increasing the actuarial liability.

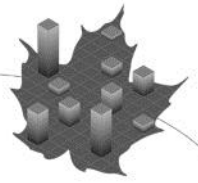
As at 31 March 2013 there were 443 contributors with past earnings elections which were recognized in the previous valuation but which had not been processed by 31 March 2013. These elections remain unprocessed as at 31 March 2016. The total actuarial liability associated with these 443 contributors as at 31 March 2013 was retroactively increased by \$14.4 million. At the same time the remaining member and government contributions associated with these 443 contributors retroactively increased by \$16.9 million. The net impact was to decrease the actuarial deficit by \$2.5 million.

Some unprocessed past earnings elections were not included in the previous valuation due to missing data in the election record. After consultation with DND it was decided that many of these elections were valid and could be recognized in the valuation. As a result, as at 31 March 2013, there were 184 contributors for which no past earnings election was recognized in the previous valuation but for which an unprocessed past earnings election is recognized in the current valuation. This caused the total actuarial liability for these 184 contributors to retroactively increase by \$8.6 million. At the same time there was an associated increase in remaining member and government contributions of \$8.7 million leading to a net impact of \$0.1 million.

In total the net impact of retroactive changes related to the backlog of unprocessed past earnings elections was to decrease the actuarial deficit by \$2.6 million.

4) Other Retroactive Changes to the Population Data

As at 31 March 2013 there were 257 contributors with no past earnings election recognized in the previous valuation but for whom a processed past earnings election



is recognized in the current valuation. This caused the total actuarial liability for these 257 contributors to retroactively increase by \$7.2 million.

Of these 257 contributors 136 signed their election between the coming into force of the plan and the cut-off date of 1 March 2011¹ and 121 signed after the cut-off date. In principle the 136 elections signed by the cut-off date should have had their election recognized in the previous valuation as part of the liability for unprocessed service. Of the 136 contributors, 98 were included in the list of unprocessed elections supplied by DND but were excluded from recognition in the previous valuation due to missing data in the record.

After consultation with DND it was decided that certain still unprocessed elections from the DND list that were excluded from the previous valuation should be recognized in this valuation. The impact of this was discussed in the previous section.

All other retroactive data changes had the net effect of decreasing the actuarial deficit by \$0.5 million.

In total the other retroactive changes to the population data increased the actuarial deficit by \$6.7 million.

5) Methodology Changes

Significant changes were made to the process which compiles the valuation population files from the raw data extracts received from DND and Public Services and Procurement Canada (PSPC). It was realized that the previous valuation had double counted pensionable payment in lieu of leave (PILL) amounts and the new process corrects this issue.

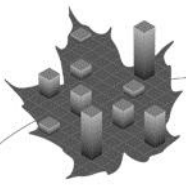
The new process also produces a more accurate history of pensionable earnings for those contributors with no past earnings election who began to participate to the plan sometime after the coming into force of the plan. For such members, only the earnings subsequent to the date the member became a participant count as pensionable earnings. However, the previous valuation treated all of a member's earnings during the year in which they began to participate as pensionable. The new process handles this situation correctly, including in the pensionable earnings history only those earnings that occurred after the participation start date.

The net effect of all these type of changes as at 31 March 2013 was to decrease the actuarial deficit by \$17.7 million.

6) Expected Interest Financial Position

After recognizing all the changes explained in items one through five, the expected interest to 31 March 2015 on the resulting actuarial deficit of \$74.9 million as at

¹ According to section 13 of the *Reserve Force Pension Plan Regulations* the right to make a past earnings election expires no later than the later of one year after the date of written notice advising the participant that they have become entitled to make the election, and 1 March 2011. In effect, 1 March 2011 was the deadline to sign a past earnings election for those participants who became participants on 1 March 2007.



ACTUARIAL REPORT

Pension Plan for the **CANADIAN FORCES – RESERVE FORCE**
as at 31 March 2015

31 March 2013 amounted to \$7.0 million. The expected interest amount was based on the Fund yields projected in the previous report for the two year valuation period.

7) Experience Gains and Losses

Since the previous valuation, the Fund actuarial deficit has decreased by \$92.1 million due to the experience gains and losses. The main items are described in the following table:

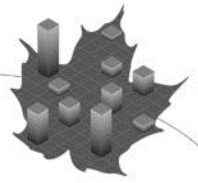
Table 5 Experience Gains and Losses
(\$ millions)

	Pension Fund
Demographic experience (i)	
Lump sum terminations	43.5
Retirements	11.4
Terminations with an annuity	5.6
New participants	(1.2)
Disability retirements	0.5
Rehired pensioner members	<u>(0.5)</u>
Total	59.3
Investment earnings (ii)	95.1
Expected/actual disbursements (iii)	(87.1)
Cost/contributions difference (iv)	37.7
Administrative expenses (v)	(20.1)
Expected/Actual earnings (vi)	6.8
Amounts credited on basis of actuarial valuation	1.9
Change in service and past earnings	(0.8)
Pension indexation	(0.4)
Miscellaneous	<u>(0.3)</u>
Experience Gains and Losses	92.1

(i) The net impact of the demographic experience decreased the Fund actuarial liability by \$59.3 million. The demographic assumptions having a large impact are as follows:

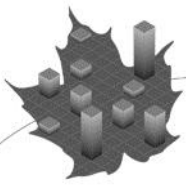
- A large number of vested participants rolled over¹ during the valuation period. Those participants who rolled over tended to have a significantly larger associated liability than typical participants. This was especially true of members who rolled over by virtue of the completion of a minimum of 55 months of Canadian Forces service within a period of 60 consecutive months. There were 490 such rollovers to Reserve - Part I status during the valuation period. If these had not occurred the actuarial deficit would have

¹ Rollovers are described in Appendix 1D.19



decreased by only \$12.1 million instead of \$43.5 million. If no vested participants rolled over during the valuation period the actuarial deficit would have increased by \$1.0 million instead of decreasing by \$43.5 million.

- During the valuation period there were 519 retirements which corresponds to those vested members over the age 50 who ceased to participate in the Reserve Force plan for reasons other than rollover. Of these 519 retirements, only 30 retirements resulted in an unreduced immediate annuity commencing prior to age 60. The lower than expected number of retirements taking advantage of the plan's early retirement provisions explains the \$11.4 million decrease in the Fund actuarial liability.
 - This evaluation assumes there will be a lump sum payment made based on the commuted value of the accrued pensions deferred to age 60 in respect of all vested members who cease to participate to the Reserve Force pension plan before the age of 50. However, during the valuation period, it was observed that there were 1,946 such terminations which were not rollover terminations and for which the member has not opted to receive a transfer value. Such members are recognized in this valuation as deferred annuitants. As at 31 March 2015, the actuarial liability held for these members as deferred annuitants is less than the corresponding actuarial liability held for these members as contributors. This resulted in a decrease of \$5.6 million in the Fund actuarial liability.
 - During the valuation period, the number of new participants was greater than anticipated which resulted in an increase of \$1.2 million in the Fund actuarial liability.
- (ii) Financial markets performed strongly over the two-year valuation period. The Fund rates of return for plan years 2014 and 2015 were 16.3% and 14.5% compared to expected returns of 4.3% and 4.9%. Consequently, the Fund experienced an investment gain of \$95.1 million.
- (iii) Expected disbursements for lump sum terminations and annuity benefit payments during the valuation period were \$21.9 million. The expected disbursements do not include any amounts that would have been paid prior to March 31, 2013 if there were no processing delay. Actual disbursements for annuity benefits and lump sum payments during the valuation period were \$105.5 million. After accounting for expected interest, the net impact was to increase the actuarial deficit by \$87.1 million. Approximately 88% of the net impact is attributable to lump sum payments made during the valuation period in respect of terminations that occurred prior to March 31, 2013.
- (iv) The actuarial deficit decreased by \$37.7 million as a result of actual member and government contributions being more than projected. The main reason for the excess contributions was the large number of past earnings elections which DND processed during the valuation period.
- (v) Administrative expenses over the valuation period were \$20.1 million more



ACTUARIAL REPORT

Pension Plan for the **CANADIAN FORCES – RESERVE FORCE**
as at 31 March 2015

than expected. This was mainly due to the cost associated with the pension modernization project. In addition, ongoing administrative expenses as a percentage of pensionable payroll were significantly greater than the assumed rate of 1.25% of pensionable payroll.

- (vi) The valuation model expects that a member’s earnings over the first projection year are their current year earnings increased by an economic factor and an age and rank based seniority and promotional factor. There is an implicit assumption each member will work the same number of days as in the next year that they did in the previous year. In aggregate the actual pensionable earnings during the two year valuation period were lower than expected. On average the actual pensionable earnings were lower than expected at most ages and for both officers and non-officers but the difference was greatest for members in their twenties. Differences between actual pensionable earnings and expected pensionable earnings within the two-year valuation period decreased the actuarial deficit by \$6.8 million.

8) Revision of Actuarial Assumptions

Actuarial assumptions were revised based on economic trends as described in Appendix 5. These revisions have increased the Fund actuarial deficit by \$23.2 million. The impact of these revisions is described in the following table.

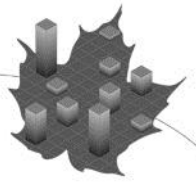
Table 6 Revision of Actuarial Assumptions
(\$ millions)

Economic Assumptions	Pension Fund
Pension Indexation	1.7
Increase in average pensionable earnings	7.2
Rates of return	<u>(32.1)</u>
Net impact of revision	<u>(23.2)</u>

The following revisions were made to the economic assumptions used in the previous report:

- The pension indexation assumption for the first two years following the valuation date is lower than the assumption for the corresponding years in the previous report. The ultimate rate of 2% remains unchanged from the previous report.
- The ultimate real rate of increase in average earnings decreased from 1.0% to 0.9%.
- The projected real rates of return over the first nine years of the projection are on average 0.4% lower than assumed for the corresponding years in the previous valuation. The ultimate real rate of return of 4.1% remains unchanged from the previous report.

Details of the changes in economic assumptions are described in Appendix 5.



9) Change in Present Value of Prior Service Contributions

The increase in the present value of prior service contributions of \$4.7 million corresponds to the present value of future member and matching future government contributions in respect of installment schedules which commenced sometime after March 31, 2013 and were still in effect as at March 31, 2015.

10) Recognition of Remaining Contributions for Processed Prior Service

According to section 17 of the *Reserve Force Pension Plan Regulations*, past earnings elections with a cost to the member of more than \$500 are to be paid by way of monthly installments. Section 21 of the *Reserve Force Pension Plan Regulations* gives members, at any time, the option to pre-pay any amount that remains unpaid in respect of a past earnings election. Many members have exercised this pre-payment option.

In normal circumstances the time elapsed between the processing of a past earnings election and the creation of a monthly installment schedule is minimal. If a member has a processed election but there is no installment schedule in effect, it would normally be assumed that the election was fully paid.

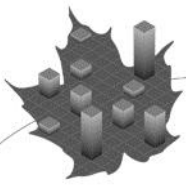
However, many members have been identified who have a processed past earnings election but who have neither an installment schedule nor any record of having made a lump sum payment. Discussions with DND have confirmed that there are many installment schedules which are considered incomplete in their system. Therefore it was decided to estimate and recognize the expected future contributions for all members having a processed past earnings election but no installment schedule in effect as of the valuation date.

Given the unknown reliability of the installment schedule which are incomplete and the tendency of members to make lump sum payments, the expected future contributions are valued as if members will make an immediate lump sum payment for the estimated unpaid amount of their past earnings election. Unpaid amounts were estimated by estimating the cost to the member of the past earnings election and deducting from that cost the sum of all contributions received up to the valuation date. Unpaid amounts are subject to interest from the date the member is notified of the finalized cost of their past earnings election.

As of the valuation date the total unpaid amount was estimated to be \$30.3 million. When these amounts are paid they will be matched by the government. Therefore the total remaining contributions for processed past earnings elections not on an installment schedule is \$60.6 million and the recognition of this amount reduces the Fund deficit by the same amount.

11) Change in Remaining Contributions for Unprocessed Prior Service

The remaining member and government contributions in respect of unprocessed past earnings elections was \$47.3 million as at 31 March 2013 in the previous report. The changes described in note 3 on page 12 retroactively increased this asset by \$25.6 million to a total of \$72.9 million. In this report the remaining member and government contributions in respect of unprocessed past earnings elections is



ACTUARIAL REPORT

Pension Plan for the **CANADIAN FORCES – RESERVE FORCE**
as at 31 March 2015

\$34.5 million as at 31 March 2015. The decrease in the value of this asset caused a \$38.4 million increase in the actuarial deficit.

12) Change in Amount Payable to Regular Force Pension Plan

Rollovers are described in Appendix 1D.19. In normal circumstances, the time elapsed between the rollover date and the date of the transfer of assets between the plans is minimal. However, given the delays in the processing of past earnings elections and other challenges associated with a relatively new pension plan, a significant backlog of outstanding asset transfers had accumulated by 31 March 2013. DND processed a large number of these outstanding asset transfers during the valuation period. However, the impact of the large number of processed payments was offset by the large number of rollovers which occurred during the valuation period.

In this report a total of 2,146 members have been identified as members who have rolled over to the Regular Force pension plan by the valuation date but whose assets had not been transferred by the valuation date. From the current data which was provided as at 31 March 2016 we know that 1,570 of the 2,146 outstanding asset transfers were processed between 1 April 2015 and 31 March 2016 and that the actual amount transferred in respect of these 1,570 roll-overs was \$75.8 million. The outstanding asset transfers in respect of the remaining 576 roll-overs were estimated at \$34.5 million for a total amount payable of \$110.3 million as of the valuation date.

The amount payable to Regular Force Pension Plan increased by \$4.9 million from \$105.4 million as at 31 March 2013 to \$110.3 million as at 31 March 2015.

13) Change in Outstanding Payments

The total amount for outstanding payments as at 31 March 2015 was \$14.5 million. This was composed of three parts. The largest part, \$12.8 million, is for 423 former participants who terminated prior to the valuation date and were paid a transfer value between 1 April 2015 and 31 March 2016. This value is the sum of the actual payment amounts.

The next largest part, \$1.3 million, is an estimate of the total amount of pension payments in arrears as of the valuation date. This amount represents the sum of the monthly pension payments that should have been received up to the valuation date in respect of members who should be immediate annuitants as of the valuation date but whose pension was not yet in pay as of the valuation date. There were 117 such cases identified. As of 31 March 2016, 57 of these 117 pensions have been put into pay. All of these members' future pension payments are recognized in the usual way as part of the overall actuarial liability for retirement pensioners.

Finally, there is an estimated \$0.4 million of outstanding return of contribution payments.

The total outstanding payments increased by \$7.4 million from \$7.1 million as at 31 March 2013 to \$14.5 million as at 31 March 2015.



14) Change in Pension Modernization Cost

DND continues to expect this project to be completed in plan year 2017. The cost associated with this project will be debited directly from the Fund. The \$14.2 million liability recorded on the balance sheet as at 31 March 2015 is the present value of the charges DND expects to make in plan year 2016 and 2017.

The capitalized value of the pension modernization project decreased by \$11.5 million from \$25.7 million as at 31 March 2013 to \$14.2 million as at 31 March 2015.

15) Unrecognized Investment Gains

The actuarial asset valuation method used in this valuation is the same as that described in the 2013 valuation report. The purpose of the actuarial asset valuation method is to minimize the impact of short-term fluctuations in the market value of assets (see Appendix 4). For this valuation, the method resulted in an actuarial value of Fund assets that is \$55.1 million less than their market value, due to unrecognized investment gains.

C. Cost Certificate

1) Current Service Cost

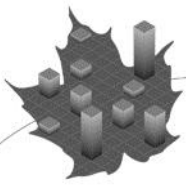
The details of the current service cost for plan year 2016 and reconciliation with the plan year 2014 current service costs are shown in the following tables.

Table 7 Current Service Cost for Plan Year 2016
(\$ millions)

Member required contributions	14.4
Government current service cost	29.7
Total current service cost	44.1
Expected pensionable payroll	277.4
Total current service cost as % of expected pensionable payroll	15.90%

Table 8 Reconciliation of CFSA Current Service Cost
(Percentage of pensionable payroll)

For plan year 2014	15.06
Use correct seniority and promotional salary scale	(0.27)
Retroactive changes to the population data	0.20
Expected current service cost change	0.27
Experience gains	(0.18)
Changes in economic assumptions	
Increase in average pensionable earnings	(0.40)
Rates of return	1.21
Unexplained Changes	<u>0.01</u>
For plan year 2016	15.90



ACTUARIAL REPORT

Pension Plan for the **CANADIAN FORCES – RESERVE FORCE**
as at 31 March 2015

As this report was being prepared it was realized that the assumed seniority and promotional earnings increases did not correspond to the scale reported in Appendix 6A. If we had used the scale reported in Appendix 6A the current service cost reported for plan year 2014 would have been 14.79% of pensionable payroll instead of 15.06%, a decline of 0.27%. The effect of retroactive changes to the population data is to increase the current service cost by 0.20%. This is caused by a large increase in the population’s average pensionable service as at 31 March 2013. The increase in average pensionable service is the result of increased pensionable service from past earnings elections as described in sections B.2) to B.4). Taking into account both the seniority and promotional scale and the retroactive data changes the expected increase in current service cost over the two year period was 0.27%. The majority of the projected increase in current service cost was not realized because the average age and service of the population as at 31 March 2015 was less than projected. This is shown in Table 8 as a decrease of 0.18% due to experience gains and losses.

2) Projection of Current Service Costs

The current service cost is borne jointly by the plan members and the government. The member contribution rate on pensionable earnings is 5.2% at the valuation date and there are no scheduled changes to this rate.

The current service costs, expressed in percentage of the projected pensionable payroll as well as in dollar amount, are shown on a plan year basis in the following table. Member contributions and the government current service costs are also shown on a calendar year basis in the Executive Summary in Table 2 of page 9.

Table 9 Projection of Current Service Cost

Plan Year	Percentage of Pensionable Payroll			\$ millions			Portion Borne by the Government
	Members	Government	Total	Members	Government	Total	
2016	5.20	10.70	15.90	14.4	29.7	44.1	67%
2017	5.20	10.56	15.76	15.3	31.0	46.3	67%
2018	5.20	10.54	15.74	16.1	32.5	48.6	67%
2019	5.20	10.58	15.78	16.9	34.3	51.2	67%
2020	5.20	10.67	15.87	17.7	36.4	54.1	67%

Until the pension plan reaches its maturity the current service cost as a percentage of pensionable payroll is expected to increase gradually. Since the member contribution rate is set at a maximum of 5.2% of pensionable payroll the government is expected to absorb the future increase in the current service cost.



3) Administrative Expenses (Pension Modernization Cost Included)

Pension Fund assets have been earmarked to cover the cost of the Pension Modernization Cost up to plan year 2017 and are shown in the following table. Based upon the assumptions described in Appendix 6H.4, the Fund administrative expenses are included in the total current service costs and are estimated to be as follows:

Plan Year	Ongoing (\$ millions)	Pension Modernization (\$ millions)
2016	3.5	8.5
2017	3.7	6.3
2018	3.9	-
2019	4.1	-

4) Contributions for Prior Service

Based upon the valuation data, the assumptions described in sections B and C of Appendix 5 and recent statistical information provided by the Department of National Defence, members and government contributions for prior service elections were estimated in the following table:

Table 10 Estimated Contributions for Prior Service
(\$ millions)

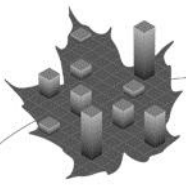
Plan Year	Member	Government
2016	13.2	13.2
2017	13.2	13.2
2018	13.1	13.1
2019	13.0	13.0
2020	2.0	2.0

D. Sensitivity of Valuation Results to Variations in Longevity Improvement Factors

This valuation assumes that the current mortality rates applicable to members of the Canadian Forces - Reserve Force will improve over time. This assumption is based on the longevity improvement assumption¹ contained in the 26th Canada Pension Plan actuarial report.

Table 11 measures the effect on the plan year 2016 current service cost and the liabilities under various longevity improvement assumptions. The current longevity improvement assumption is described in Table 33 of page 56, Appendix 6.

¹ In this report ‘longevity improvement assumption’ is equivalent to the ‘mortality improvement assumption’ discussed in the 26th Actuarial Report on the Canada Pension Plan.



ACTUARIAL REPORT

Pension Plan for the **CANADIAN FORCES – RESERVE FORCE**
as at 31 March 2015

Table 11 Sensitivity of Valuation Results to Variation in Longevity Improvement Factors

	Current Service Cost as a percentage of pensionable payroll		Actuarial Liability (\$ millions)		Age 65 Life Expectancy in 2015 (Age nearest in years)		
	<u>2016</u>	<u>Effect</u>	<u>2016</u>	<u>Effect</u>	Male	Male	Female
					Officer	Other Rank	
<u>Longevity improvement factors</u>							
Current basis	15.90	None	547.3	None	22.8	20.4	24.0
- if 0%	15.23	(0.67)	528.3	(19.0)	21.1	18.6	22.6
- if ultimate 50% higher	16.13	0.23	553.5	6.2	23.2	20.8	24.3
- if ultimate 50% lower	15.71	(0.19)	542.7	(4.6)	22.6	20.2	23.7
- if kept at 2017 level	16.49	0.59	563.1	15.8	24.0	21.6	24.8

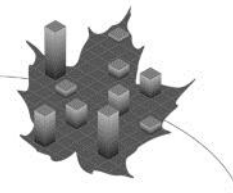
E. Sensitivity to Variations in Key Assumptions

The information required by statute, which is presented in the main report, has been derived using best-estimate assumptions regarding future demographic and economic trends. The key best-estimate assumptions, i.e. those for which changes within a reasonable range have the most significant impact on the long-term financial results, are described in Appendices 5 and 6. Both the length of the projection period and the number of assumptions required ensure that actual future experience will almost certainly not develop precisely in accordance with the best-estimate assumptions. Individual sensitivity tests have been performed, projecting the pension plan's financial status using alternative assumptions.

The following table measures the effect on the plan year 2016 current service cost and liabilities, if key economic assumptions are varied by one percentage point per annum from plan year 2016 onward.

Table 12 Sensitivity of Valuation Results

<u>Assumption(s) Varied</u>	Current Service Cost (Percentage of Pensionable Payroll)		Actuarial Liability (\$ millions)	
	<u>2016</u>	<u>Effect</u>	<u>2016</u>	<u>Effect</u>
None (i.e. current basis)	15.90	None	547.3	None
Investment yield				
- if 1% higher	11.94	(3.96)	441.7	(105.6)
- if 1% lower	21.81	5.91	695.1	147.8
Pension Indexation				
- if 1% higher	18.77	2.87	636.6	89.3
- if 1% lower	13.75	(2.15)	477.8	(69.5)
Salary, YMPE and MPE				
- if 1% higher	18.28	2.38	594.4	47.1
- if 1% lower	13.98	(1.92)	507.9	(39.4)
All economic assumptions				
- if 1% higher	15.72	(0.18)	544.8	(2.5)
- if 1% lower	16.09	0.19	549.8	2.5



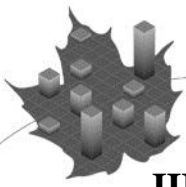
The differences between the results above and those shown in the valuation can also serve as a basis for approximating the effect of other numerical variations in a key assumption to the extent that such effects are linear.

F. Summary of Estimated Government Costs

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

Table 13 Estimated Government Cost
(\$ millions)

Plan Year	Current Service Cost	Total Prior Service Contributions	Total Government Cost
2016	29.7	13.2	42.9
2017	31.0	13.2	44.2
2018	32.5	13.1	45.6
2019	34.3	13.0	47.3
2020	36.4	2.0	38.4



ACTUARIAL REPORT

Pension Plan for the **CANADIAN FORCES – RESERVE FORCE**
as at 31 March 2015

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 the valuation;
- the methodology employed is appropriate for the purposes of the valuation; 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.

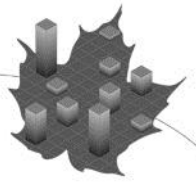
To the best of our knowledge, after inquiring with the Department of National Defence, there were no subsequent events between the valuation date and the date of this report that would have a material impact on the results of this valuation.

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.

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

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

Ottawa, Canada
30 September 2016



Appendix 1 - Summary of Pension Benefit Provisions

The enactment of Bill C-78 on 14 September 1999 gave authority to create a pension plan for the Canadian Forces - Reserve Force. The Reserve Force pension plan was established on 1 March 2007 and provides pension benefits to part-time members of the Reserve Force who meet the threshold requirements for becoming plan members. The benefit eligibility rules under this plan are the same as the rules that apply to Regular Force members starting on 1 March 2007.

One major aspect of the change to the CFSA was the introduction of the duality in qualifying for benefits as well as an extended definition of pensionable service. Canadian Forces members accumulate two types of service, pensionable and qualifying. *Pensionable service* is a period during which the member was eligible to contribute to the pension plan and made the required contributions. *Qualifying service* is a period of paid service or enrolment period with pay in the Canadian Forces. Although very limited, certain types of service in the Canadian Forces are excluded. Regardless of event leading to a benefit entitlement (withdrawal, retirement, disability or death) or the basis on which the member qualifies (pensionable or qualifying service), the benefit to be received under Part I.1 is based on career average pensionable earnings.

The duality in qualifying for benefits depends on the type of service, pensionable versus qualifying. To qualify for an early retirement benefit, qualifying service is used. An annual allowance is available from age 50 with the completion of two years of pensionable service. A member terminating with at least two years of pensionable service will be entitled to a full immediate annuity at the age of 55 with a minimum of 30 years of pensionable service, or when the member becomes disabled or reaches the age of 60.

Valuation Methodology

This valuation is based on the use of the pensionable service years credited to each member as at 31 March 2015 to estimate future benefit entitlements. In contrast to the previous valuation, this valuation no longer recognizes that certain members will be entitled to an immediate annuity after the completion of a total of 25 years of qualifying service. The impact of this change in valuation methodology was measured and found to be immaterial to the valuation results. This change in valuation methodology has allowed us to significantly reduce the complexity of our valuation data processing.

Summary of Pension Benefit Provisions

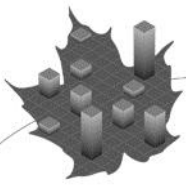
Summarized in this appendix are the pension benefits provided under Part I.1 of the CFSA registered provisions, which are in compliance with the *Income Tax Act*.

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

A. Membership

A member of the Reserve Force is deemed to become a member in the Reserve Force pension plan, defined under Part I.1 of the CFSA, if,

- a) during each of any two consecutive periods of 12 months beginning on or after



ACTUARIAL REPORT

Pension Plan for the **CANADIAN FORCES – RESERVE FORCE**
as at 31 March 2015

1 April 1999 and ending no later than 1 March 2007, the earnings that the member was entitled to receive were at least 10 per cent of the Annual Earnings Threshold¹, provided that the member already was or became a member of the Canadian Forces during the first month of the first period and remained a member of the Canadian Forces, without any interruption of more than 60 days, until 1 March 2007; or

- b) in any other case, on the first day of the month following two consecutive periods of 12 months, the second of which ending after 1 March 2007 and during each of which the earnings that they were entitled to receive were at least 10 per cent of the Annual Earnings Threshold, provided that the member already was or became a member of the Canadian Forces during the first month of the first period and remained a member of the Canadian Forces, without any interruption of more than 60 days, throughout those two periods.

B. Contributions

1. Members

During the first 35 years of pensionable service, members contribute 5.2% on all earnings up to 2/3 of the Maximum Pensionable Earnings (MPE) as defined under the Income Tax Regulations. After 35 years of pensionable service, members contribute only 1% of pensionable earnings.

2. Government

a) Current Service

The government determines its normal monthly contribution as that amount which, when combined with the required member contributions in respect of current service and expected interest earnings, is sufficient to cover the cost, as estimated by the President of the Treasury Board, of all future payable 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

Consistent with the previous valuation, this valuation assumes that the government will match member contributions for prior service elections.

c) Actuarial Surplus

The regulations under Part I.1 of the act give the government the authority to deal with any actuarial surplus, subject to limitations, in the Fund as it occurs by reducing employer contributions.

d) Actuarial Deficit

If an actuarial deficit is identified through a triennial statutory actuarial report, the Fund is to be credited with such annual amounts that, in the opinion of the President

¹ Annual Earnings Threshold is equal to the sum of 1/12 of the Year's Maximum Pensionable Earnings over any 12 month period.



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 Reserve Force pension plan is to provide an employment earnings–related lifetime retirement pension to eligible members. Benefits to eligible members in case of disability and to the spouse and children in case of death are also provided.

The rate of retirement pension is equal to 1.5% of the greater of the member’s total pensionable earnings and total updated pensionable earnings over the most recent 35 years of pensionable service (i.e. Updated Career Average Plan). The plan also provides a bridge benefit equal to 0.5% of the greater of the pensioner’s total bridge benefit earnings and total updated bridge benefit earnings over the most recent 35 years of pensionable service. The pension and bridge benefits are indexed annually with the Consumer Price Index and the accumulated indexation may be payable at age 55 at the earliest, as defined in Note 6 of section D below.

Entitlement to benefits depends on either qualifying service in the Canadian Forces or pensionable service, as defined in Notes 7 and 8 of section D below.

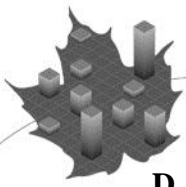
Detailed notes on the following overview are provided in the following section.

1. Benefit Entitlement on the basis of “Pensionable” Service

Member’s Type of Termination	Benefit
With less than two years of pensionable service	Return of contributions
With two or more years of pensionable service; and	
*Involuntary termination due to a work force reduction program and	
- With 20 years of service or more	Immediate annuity
- Age 50 or over and 10 years of service or more	
*Leaving prior to age 50, except for death, and	
- Because of disability	Immediate annuity
- Otherwise	Deferred annuity or Transfer Value
*Leaving at age 50 or over, except for death or disability, and	
- Age 60 or over, or age 55 or over and service 30 years or more	Immediate annuity
- Otherwise	Deferred annuity or annual allowance

2. Benefit Entitlement on the basis of “Qualifying” Service

Member’s Type of Termination	Benefit
Retirement on completion of 25 years or more of Canadian Forces service (Note 7)	Immediate annuity (Note 10)



ACTUARIAL REPORT

Pension Plan for the **CANADIAN FORCES – RESERVE FORCE**
as at 31 March 2015

D. Explanatory Notes

1. Earnings

Earnings means pay earned by a member of the Canadian Forces at the rates prescribed by the regulations made pursuant to the *National Defence Act* together with premiums in lieu of leave.

Pensionable earnings means the earnings of a member with less than 35 years of pensionable service, who has completed the required two-year waiting period.

Pensionable payroll means the aggregate pensionable earnings of all members.

2. Wage measure

Wage measure is

- (a) for a calendar year prior to 2017 , the corresponding rate of pay shown in Table 36 of this report; and
- (b) for a calendar year after 2016 , the greater of
 - a. the standard basic rate of pay for a period of duty or training of six hours or more, before any retroactive adjustment, that was prescribed or established under the *National Defence Act*, to be paid on October 1 of the preceding year to a member at the rank of Corporal (class A), and
 - b. the wage measure of the previous year.

3. Updated Pensionable Earnings

The updated pensionable earnings for a calendar year are the member's pensionable earnings for that year, subject to the *Income Tax Act* limits, times A/B, rounded to the nearest fourth decimal place, where

A = the average of the wage measures for five years consisting of the year the member most recently ceased to be a member and the most recent years during which the member was a member and, if necessary, the years preceding all of those years, and

B = the wage measure for that calendar year.

4. Bridge Benefit Earnings

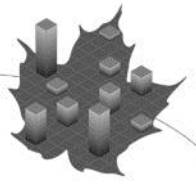
Bridge benefit earnings for a calendar year are the lesser of

- (a) the member's pensionable earnings for that year, and
- (b) the Year's Maximum Pensionable Earnings (YMPE) for that year.

5. Updated Bridge Benefit Earnings

Updated bridge benefit earnings for a calendar year are the lesser of

- (a) the member's updated pensionable earnings for that year, and
- (b) the average of the YMPE for five years consisting of the year the member most recently ceased to be a member and the preceding four years.



6. 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 participation in the plan terminates. The first annual adjustment following termination of employment is prorated accordingly.

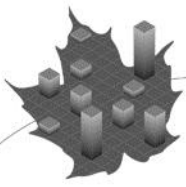
c) Commencement of Indexation Payments

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

7. Qualifying Service in the Canadian Forces

For most purposes of the CFSA, qualifying service in the Canadian Forces means service for which a 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
 - excluding any service for which a member was paid a return of contributions or lump sum payment under the CFSA that he or she did not elect to repay on subsequent enrolment;
- days of service in the Reserve Force for which pay was authorized and authorized absences for maternity and parental purposes:
 - 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.



ACTUARIAL REPORT

Pension Plan for the **CANADIAN FORCES – RESERVE FORCE**
as at 31 March 2015

8. Pensionable Service

Pensionable service includes any period of service in the Reserve Force in respect of which a member either made contributions that remain in the Pension Fund or elected to contribute. It also includes any period of prior service for which a 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 service in the Public Service of Canada, the Royal Canadian Mounted Police and the militaries of the Commonwealth of Nations that the member elected to count as pensionable service.

9. 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 Fund together with interest. Interest is calculated at the quarterly Fund rate each quarter on the accumulated contributions with interest as at the end of the previous quarter.

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 1.5% of the greater of the member's total pensionable earnings and total updated pensionable earnings over the most recent 35 years of pensionable service, plus an additional bridge benefit equal to 0.5% of the greater of the member's total bridge benefit earnings and total updated bridge benefit earnings.

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

11. Deferred Annuity

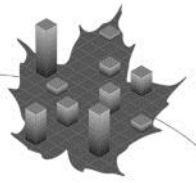
Deferred annuity means an annuity that becomes payable to a retirement pensioner when he or she reaches age 60. The annual payment is determined as for an immediate annuity (see Note 10 above) but is adjusted to reflect the indexation (see page 29) from the date of termination to the commencement of annuity payments.

The deferred annuity becomes an immediate annuity during any period of disability beginning before age 60. If the disability ceases before age 60, the immediate annuity reverts to the original deferred annuity.

12. Transfer Value

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. Annual Allowance for Member

Annual allowance means an annuity payable immediately on retirement or upon attaining age 50, if later. The amount of the allowance is equal to the amount of the deferred annuity to which the member would otherwise be entitled, reduced by 5% multiplied by the difference between 60 and the age when the allowance becomes payable.

However, if the member is at least 50 years old at termination, and has at least 25 years of pensionable service, then the difference is reduced (subject to the above as a maximum) to the greater of

- 55 minus the age, and
- 30 minus the number of years of pensionable service.

When a member in receipt of an annual allowance becomes disabled before reaching age 60, the annual allowance becomes an immediate annuity adjusted in accordance with regulations to take into account the amount of any annual allowance received prior to becoming disabled.

14. Eligible Surviving Spouse or Common-law Partner

Eligible surviving spouse means the surviving spouse or common-law partner of a member or pensioner except where

- (a) the 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 or began a common-law partnership at age 60 or over, unless after such marriage or partnership the pensioner either
 - became a member of the plan again, or
 - made an optional survivor benefit election within 12 months following the marriage to accept a reduced pension so that the new spouse would be eligible for a survivor pension. This reduction is reversed if and when the new spouse predeceases the pensioner or the spousal union is terminated for reason other than death.

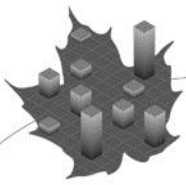
15. Eligible Surviving Children

Eligible surviving children are all children of the active member or pensioner who are either under age 18 or age 18 or over but under 25 and in full-time attendance at a school or university.

16. Annual Allowance for Eligible Survivors

Annual allowance means, for the eligible surviving spouse or common-law partner and children of a member or pensioner, an annuity that becomes payable immediately upon the death of that individual. The amount of the annual allowance, called a basic allowance, is equal to

- (a) 1% of the greater of the pensioner's total pensionable earnings and total updated



ACTUARIAL REPORT

Pension Plan for the **CANADIAN FORCES – RESERVE FORCE**
as at 31 March 2015

- pensionable earnings; or,
- (b) if the member was in receipt of an annual allowance at the time of death, an amount equal to $A \times B / C$ where:
- A = the amount calculated under paragraph (a),
 - B = the amount of the annual allowance, and
 - C = the amount of the deferred annuity to which the pensioner was entitled.
- (c) Each eligible surviving child of a member is entitled to receive,
- if the member died leaving an eligible surviving spouse, an allowance equal to 1/4 of the basic allowance or, if there are more than two children, to an annual allowance equal to 1/2 of the basic allowance divided by the number of children; or
 - if the member died without leaving an eligible surviving spouse, and
 - there are fewer than four children, an annual allowance equal to 1/2 of the basic allowance, or
 - there are more than three children, an annual allowance equal to 1.5 times the basic allowance divided by the number of children.
 - The proportion of the basic allowance that constitutes the annual allowance shall be revised when the number of children who are entitled changes.

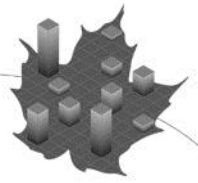
17. Minimum Death Benefit

If upon the death of a 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 member or to the named beneficiary under CFSA Part II, if any exist, an amount equal to A minus B where

- A is the greater of a return of contributions and an amount equal to five times the total of the initial annuity plus the bridge benefit (see Notes 9 and 10 above); and
- B is the aggregate of all amounts paid to a survivor or child and to the member or pensioner.

18. Division of Pension in Case of Spousal Union Breakdown

In accordance with the *Pension Benefits Division Act*, upon the breakdown of a spousal union (including common-law partnership), a lump sum can be transferred upon application supported by a court order or by mutual consent agreement from the amounts in the Fund to the credit of a member or pensioner. As at the transfer date, the maximum transferable amount is half the value of the retirement pension accrued by the 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 member or pensioner are then reduced accordingly.



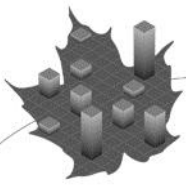
19. Rollovers

Certain members who cease to participate in the Reserve Force pension plan subsequently become participants in the Regular Force pension plan. As described section 10.2 of the *Canadian Forces Superannuation Regulations*, any period of pensionable service which is to a member's credit under the Reserve Force pension plan on the day before the day on which that member becomes a contributor to the Regular Force pension plan is rolled over to the Regular Force pension plan. Whenever a rollover occurs, the actuarial liability associated with the member under the Reserve Force pension plan is immediately extinguished and a new actuarial liability is immediately established under the Regular Force pension plan.

There are two main scenarios in which a rollover of service from the Reserve Force pension plan to the Regular Force pension plan would arise. In the first scenario a member of Reserve Force makes a successful application to join the Regular Force. The member's transfer from the Reserve Force to the Regular Force triggers the rollover of service.

In the second scenario the member begins to contribute to the Regular Force pension plan by virtue of meeting the criteria described in section 8.1(1) (d) of the *Canadian Forces Superannuation Regulations*. This occurs upon the completion of a minimum of 55 months of Canadian Forces service within a period of 60 consecutive months. The member remains in the Reserve Force but is considered to be a member of the Regular Force for the purposes of Part I of the *Canadian Forces Superannuation Act* and the *Canadian Forces Superannuation Regulations*.

Each time there is a rollover actuarial liability is removed from Reserve Force pension plan and created under the Regular Force pension plan. Therefore a transfer of assets from the Reserve Force pension plan to the Regular Force pension plan must follow. For members who are not vested when the rollover occurs DND calculates the amount to transfer between the pension plans in the same manner as a return of contributions. For members who are vested when the rollover occurs DND calculates the amount to transfer between the pension plans as the commuted value of the accrued pension at age 60.



ACTUARIAL REPORT

Pension Plan for the **CANADIAN FORCES – RESERVE FORCE**
as at 31 March 2015

Appendix 2 - Assets and Rates of Return

A. Assets

The government has a statutory obligation to fulfill the pension promise enacted by legislation to members of the Canadian Forces – Reserve Force. The government has earmarked invested assets (the Fund) to meet the cost of pension benefits.

1. Fund

Since 1 March 2007, contributions (for current and prior service) have been credited to the Reserve Force Pension Fund (the 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 contributions as well as with the net investment returns generated by the capital assets managed by the Public Sector Pension Investment Board (PSPiB). It is debited with benefit payments and plan administrative expenses.

Table 14 Reconciliation of Balances in Pension Fund
(\$ millions)

Plan Year	2014	2015	2014-2015
Opening Balance	414.9	466.9	414.9
INCOME			
Net investment earnings	63.7	67.9	131.6
Employer contributions	12.9	65.2	78.1
Member contributions	27.3	28.3	55.6
Transfers received	-	-	-
Actuarial liability adjustments	-	1.9	1.9
<i>Subtotal</i>	<i>103.9</i>	<i>163.3</i>	<i>267.2</i>
EXPENDITURES			
Annuities	4.5	5.2	9.7
Pension divisions	-	-	-
Return of contributions	0.1	0.1	0.2
Pension transfer value payments	11.8	12.9	24.7
Transfers to other pension plans	22.5	48.4	70.9
Minimum benefits	-	0.1	0.1
Administrative expenses	13.0	13.7	26.7
<i>Subtotal</i>	<i>51.9</i>	<i>80.4</i>	<i>132.3</i>
Closing Balance	466.9	549.8	549.8

Since the last valuation, the Fund balance has increased by \$134.9 million (a 33% increase) to reach \$549.8 million as at 31 March 2015.

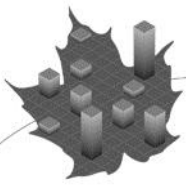
**B. Rates of Return**

The Fund yields are those from the Public Sector Pension Investment Board PSPIB 2015 Annual Report.

Plan Year	Pension Fund
2014	16.3%
2015	14.5%

C. Sources of Asset Data

The Fund entries shown above in Section A were taken from the Public Accounts of Canada and the financial statements of the Public Sector Pension Investment Board.



Appendix 3 - 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 (DND). Because DND does not administer the pension payments made to members of the Canadian Forces - Reserve Force, the information received from DND on former members may not be accurate since the information is not kept up to date. The pensioner information is kept internally at DND with the sole purpose of providing valuation data to the Office of the Superintendent of Financial Institutions (OSFI). An additional set of valuation data on Reserve Force pensioners is extracted from master computer files maintained by Public Services and Procurement Canada (PSPC). This second set of valuation data on pensioners provides OSFI with the ability to verify the information provided by DND.

The main valuation data file supplied by DND contains the historical status information on all members up to 31 March 2016. The valuation data file on former members of the Canadian Forces - Reserve Force provided by PSPC covers the period of 31 March 2013 to 31 March 2015.

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; and,
- 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 2015 from the current valuation data and the status of the members as at 31 March 2013 from the previous valuation data.



2. Benefit-Related Tests

Consistency tests were performed to ensure that all information required to value the member benefits based on individual statuses as at 31 March 2015 was included, by verifying that

a) For Active Members

- the earnings were included and, if not, imputing earnings by updating earnings from a previous year with an average earnings increase or failing that, using the average earnings 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 2015.

c) For Adjustments to Status and Benefit Data

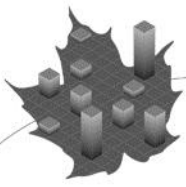
- appropriate adjustments were made to the basic data, after consulting with the data providers, based on the omissions and discrepancies identified by the tests described herein and other additional tests.

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 8.

Table 15 Reconciliation of Contributors

	Male			Female			Total
	Officer	Other Rank	Total	Officer	Other Rank	Total	
31 March 2013	4,620	11,732	16,352	2,201	2,274	4,475	20,827
Data corrections	30	(631)	(601)	(35)	(125)	(160)	(761)
New participants	665	2,521	3,186	362	451	813	3,999
Rehired	139	220	359	90	43	133	492
Lump sum terminations							
Return of contributions	(109)	(740)	(849)	(46)	(104)	(150)	(999)
Transfer value	(134)	(600)	(734)	(78)	(128)	(206)	(940)
Transfer to Res. Part I	(86)	(241)	(327)	(46)	(117)	(163)	(490)
Transfer to Reg Force	<u>(79)</u>	<u>(516)</u>	<u>(595)</u>	<u>(25)</u>	<u>(59)</u>	<u>(84)</u>	<u>(679)</u>
Subtotal	(408)	(2,097)	(2,505)	(195)	(408)	(603)	(3,108)
Pensionable terminations							
Disability	(3)	(4)	(7)	-	-	-	(7)
Death	(12)	(12)	(24)	(2)	-	(2)	(26)
Retirement	<u>(599)</u>	<u>(1,361)</u>	<u>(1,960)</u>	<u>(259)</u>	<u>(245)</u>	<u>(504)</u>	<u>(2,464)</u>
Subtotal	(614)	(1,377)	(1,991)	(261)	(245)	(506)	(2,497)
31 March 2015	4,432	10,368	14,800	2,162	1,990	4,152	18,952



ACTUARIAL REPORT

Pension Plan for the **CANADIAN FORCES – RESERVE FORCE**
as at 31 March 2015

Table 16 Reconciliation of Pensioners

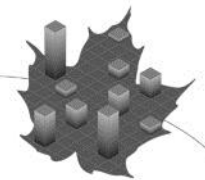
	Male			Female			Total
	Officer	Other Rank	Total	Officer	Other Rank	Total	
Retirement Pensioners							
31 March 2013	988	2,158	3,146	415	521	936	4,082
Data corrections	18	(181)	(163)	(28)	(70)	(98)	(261)
New pensioners	599	1,361	1,960	259	245	504	2,464
Terminations							
Death	(6)	(6)	(12)	-	(1)	(1)	(13)
Rehired	(143)	(245)	(388)	(90)	(47)	(137)	(525)
31 March 2015	1,456	3,087	4,543	556	648	1,204	5,747
Disability Pensioners							
31 March 2013	13	15	28	1	7	8	36
Data corrections	2	(10)	(8)	-	(2)	(2)	(10)
New pensioners	3	4	7	-	-	-	7
Death	(1)	-	(1)	(1)	-	(1)	(2)
Rehired	-	(1)	(1)	-	-	-	(1)
31 March 2015	17	8	25	-	5	5	30

Table 17 Reconciliation of Spouse Survivors

	Widows	Widowers	Total
31 March 2013	25	3	28
Data corrections	2	-	2
New from contributors	10	3	13
New from pensioners	7	1	8
Spouse deaths	-	-	-
31 March 2015	44	7	51

Table 18 Reconciliation of Survivors - Children/Students

	Children	Students	Total
31 March 2013	22	3	25
Data corrections	-	1	1
New from contributors	9	1	10
Eligible as student	(2)	2	-
Termination of benefits	(4)	(1)	(5)
31 March 2015	25	6	31



Appendix 4 - Valuation Methodology

A. Reserve Force Pension Fund

For valuation purposes, an adjusted market value method is used to determine the actuarial value of assets in respect of the 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.

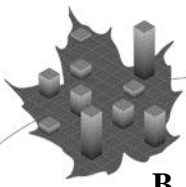
The only other Fund related asset consists of the discounted value of future member contributions and government credits in respect of prior service elections¹. The discounted value of future member contributions and government credits was calculated using the assumed rate of return on the Fund.

The actuarial value of the assets determined as at 31 March 2015 under the adjusted market value method is \$505.3 million and was determined as follows.

Table 19 Actuarial Value of Pension Fund Assets
(\$ millions)

Plan Year	2011	2012	2013	2014	2015
Actual net investment return (A)	38.2	10.0	37.5	63.7	67.9
Expected investment return (B)	16.3	21.4	23.3	17.6	23.2
Investment gains (losses) (A-B)	21.9	(11.4)	14.2	46.1	44.7
Gains (losses) recognized immediately	-	-	-	-	14.7
Investment gains (losses) to be amortized	21.9	(11.4)	14.2	46.1	30.0
Unrecognized percentage	0%	20%	40%	60%	80%
<i>Unrecognized investment gains (losses)</i>	-	(2.3)	5.7	27.7	24.0
Market value as at 31 March 2015					549.8
Plus					
Present value of prior service contributions					25.8
Remaining contributions for processed prior service					60.6
Remaining contributions for unprocessed prior service					34.5
Less					
Amount payable to Regular Force pension plan					110.3
Total unrecognized investment gains (losses)					55.1
Actuarial value as at 31 March 2015					505.3

¹ As defined in Appendix 1B.2.b) Elected Prior Service



ACTUARIAL REPORT

Pension Plan for the **CANADIAN FORCES – RESERVE FORCE**
as at 31 March 2015

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 valuation, 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* were taken into account to determine the benefits payable under Part I.1 of the CFSA.

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 expenses¹ are deemed to be included in the total current service cost.

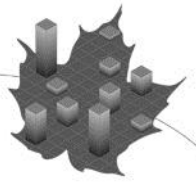
Under this method, the current service cost for an individual member will increase each year as the member approaches retirement. However, all other things being equal, the current service cost for the total population, expressed as a percentage of total pensionable payroll, can be expected to remain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

As at the valuation date, the Reserve Force pension plan has been in operation for a total of six years and one month. With the recognition of current and prior/backlog pensionable service election made by members as at 31 March 2015 the average age and pensionable service are respectively 33.1 and 6.7 years. Being a young pension plan, the Reserve Force pension plan current service cost is expected to increase over the years. In addition, the pension plan's own experience is limited and projecting when the current service cost for the total population will become stable is still unknown at this time.

2. Actuarial Liability

The actuarial liability with respect to members 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 to the credit of members. For pensioners and survivors, the actuarial liability corresponds to the value, discounted in accordance with the actuarial assumptions, of future payable benefits.

¹ As defined in Appendix 6H.4 Administrative Expenses



3. Actuarial Surplus (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 surplus or deficit is the difference between the actuarial value of assets and the actuarial liability. A new actuarial deficit is amortized over a period of 15 years through special payments and the disposition of any actuarial surplus is defined in Part I.1 of 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 5) assumed for computing future interest earnings credited to the Fund were developed on the basis that the Fund holds a diversified mix of assets.

The interest discount rate used in the determination of the actuarial liability and the current service is set equal to the expected future interest earnings on plan assets.

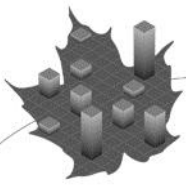
D. Membership Data

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

The member data shown in Appendices 3 and 8 are based on data provided as at 31 March 2016. 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 2016. Future member contributions in respect of elected prior service took into account the payment streams that were in effect at 31 March 2015. Only payments due after 31 March 2015 are included in the present value of prior service contributions.

The information regarding unprocessed prior service is taken from a supplementary spreadsheet which was provided by DND. Any elected prior service which is reported both in the supplemental spreadsheet and also in the data provided as at 31 March 2016 is valued on the basis of the data provided as at 31 March 2016. The liability for unprocessed prior service is due to elections which were signed by the March 1, 2011 deadline and remained unprocessed as at 31 March 2016. As at 31 March 2015 there were a total of 621 Reserve Force pension plan members with such elections.



Appendix 5 - Economic 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 of 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 and do not include margins.

A. Inflation-Related Assumptions

1. Level of Inflation

Price increases, as measured by changes in the Consumer Price Index (CPI), tend to fluctuate from year to year. In 2011, the Bank of Canada and the Government renewed their commitment to keep inflation between 1% and 3% until the end of 2016. However, with the level of inflation currently much lower than the 2% target, it is assumed that the level of inflation will increase from 1.3% in 2016 to 1.7% in 2017 before reaching its ultimate rate of 2.0% in 2018. The ultimate rate of 2.0% is unchanged from the previous valuation.

2. 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.

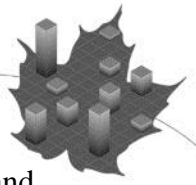
B. Employment Earnings Increases

1. Increase in the Year's Maximum Pensionable Earnings (YMPE)

The YMPE is required in the valuation process because the plan provides a bridge benefit based on career earnings up to the YMPE. The assumed increase in the YMPE for a given calendar year is derived, in accordance with the Canada Pension Plan, to correspond to the increase in the average weekly earnings (AWE), as calculated by Statistics Canada, over successive 12 month periods ending on 30 June. The AWE, and thus the YMPE, is deemed to include a component for seniority and promotional increases. The YMPE is equal to \$54,900 for calendar year 2016. Future increases in the YMPE correspond to the assumed real increase¹ in the AWE plus assumed increases in the CPI.

The real-wage differential is developed taking into account historical trends, a possible labour shortage and an assumed moderate economic growth for Canada. A real-wage differential of 0.3% is assumed for 2017, and is assumed to gradually increase to the ultimate assumption of 1.1% by 2022 (1.2% by 2021 in the previous valuation). The ultimate real-wage differential assumption combined with the ultimate price increase

¹ Note that all of the real rates presented in this report are actually differentials, i.e. the difference between the effective annual rate and the rate of increase in prices. This differs from the technical definition of a real rate of return, which, for example in the case of the ultimate Fund assumption would be 4.0% (derived from 1.061/1.020) rather than 4.1%.



assumption results in an assumed annual increase in nominal wages of 3.1% in 2022 and thereafter. The ultimate rate of increase for the YMPE is 3.1%, resulting from a 1.1% increase in the real AWE and a 2.0% increase in the CPI.

2. Increase in Average Pensionable Earnings

Average pensionable earnings are applicable to plan members only, whereas the YMPE applies to the general working population in Canada. In addition, increases in average pensionable earnings are exclusive of seniority and promotional increases, which are considered under a separate demographic assumption. The annual increase in average pensionable earnings is assumed to be 0.2% lower than the corresponding increase in the YMPE. In the previous valuation the annual increase in average pensionable earnings was also assumed to be 0.2% lower than the corresponding increase in the YMPE, except for years 2016 to 2018 where the annual increase in average pensionable earnings was assumed to be 0.6%, 0.5% and 0.3% lower than the corresponding increase in the YMPE. The ultimate increase in average pensionable earnings is 2.9%.

3. Increase in Maximum Pensionable Earnings (MPE)

Since the plan is not coordinated with the Canada Pension Plan, the tax-related maximum pensionable earnings were derived from the maximum annual pension accrual under a registered defined benefit plan. The maximum annual pension accrual of \$2,818.89 for 2015 will increase to \$2,890.00 for 2016, in accordance with Income Tax Regulations. Thereafter, the maximum annual pension accrual increases in accordance with the increase in the YMPE, which is the same as the assumed increase in the AWE.

The MPE is \$192,700 for calendar year 2016. As at 31 March 2015, no member had earnings in excess of \$192,700.

C. Investment-Related Assumptions

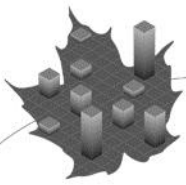
1. New Money Rate

The new money rate is the nominal yield on 10-year-plus Government of Canada bonds and is set for each year in the projection period. The real yield on 10-year-plus federal bonds is equal to the new money rate less the assumed rate of inflation.

Recognizing recent experience, the real yield on 10-year-plus federal bonds is assumed to be 0.9% in plan year 2016 before increasing gradually to its ultimate level of 2.8% first attained in plan year 2024. This increase is consistent with the average of private sector forecasts. The real yield on 10-year-plus bonds is based on historical yields. The ultimate real yield is unchanged from the previous valuation. The real new money rates over the first eight years of the projection are on average 0.9% lower than assumed for the corresponding years in the previous valuation.

2. Rate of Return on the Fund

The expected annual nominal rates of return on the Fund are required for the computation of present values of benefits to determine the liability and the current service cost. The following sections describe how the rates of return on the Fund are determined.



a) **Investment Strategy**

Invested assets resulting from transferred amount equal to the government and employee contributions, net of benefit payments and administrative expenses, are invested in capital markets through the Public Sector Pension Investment Board (PSPIB). PSPIB invests funds to maximize returns without undue risk of loss according to the investment policy set and approved by its Board of Directors that take into account the needs of contributors and beneficiaries, as well as financial market constraints. For the purpose of this report, the investments have been grouped into three broad categories: equities, fixed income securities and real return assets. Equities consist of Canadian, foreign developed market and emerging market 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. For presentation purposes, PSPIB includes real return bonds (also referred to as world inflation-linked bonds) as part of real return assets. However, for the purpose of this report, real return bonds are allocated to fixed income securities.

As at 31 March 2015, PSPIB assets consisted of 59.2% equity, 20.3% fixed income securities (including world inflation-linked bonds) and 20.5% real return assets. PSPIB has developed a long-term target Policy Portfolio (approved by its Board of Directors on 1st April 2015 and subject to an annual review), which consists of 54% equity, 18% fixed income securities and 28% real return assets. The Policy Portfolio asset mix weights represent long-term targets. Therefore, the initial asset mix is based on the actual investments reported by PSPIB as at 31 March 2015.

PSPIB Policy Portfolio reflects long-term expectations. Considering the uncertainty related to those expectations, it is assumed that the asset mix of the Plan portfolio will converge slowly toward the Policy Portfolio, but without reaching the ultimate weights. For the purpose of this report, the ultimate asset mix is reached in plan year 2020 and consists of 55% equity, 20% fixed income securities and 25% real return assets. Net cash flows (contributions less expenditures, disregarding special payments) are expected to become negative during plan year 2044 and a portion of investment income will therefore be required to pay benefits. Changes to the assumed asset mix may be required in the future to reduce funding risks and to take into account the maturity of the plan.

Table 20 shows the assumed asset mix for each plan year throughout the projection period.



Table 20 Asset Mix
(in percentage)

Plan Year	Fixed Income Securities	Cash	Canadian Equity	U.S. and Foreign Equity	Emerging Market Equity	Real Return Assets
2016	18	2	17	34	9	20
2017	18	2	17	33	9	21
2018	18	2	17	32	9	22
2019	18	2	17	31	9	23
2020+	18	2	17	29	9	25

b) Real Rates of Return by Asset Type

Real rates of return are required in order to discount benefits payable in the future for the determination of the actuarial liability and current service cost. They are assumed for each year of the projection period and for each of the main asset categories in which Fund assets are invested. All real rates of return described in this section are shown before reduction for assumed investment expenses. Subsection c) describes how the returns are adjusted for investment expenses.

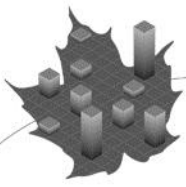
In addition, the assumed real rate of return for each asset class includes an allowance for rebalancing and diversification to take into account the beneficial effect of reduced volatility that comes from diversification within a portfolio. If the expected rates of return for each asset class were not increased to reflect their respective share of this allowance, then the expected long-term portfolio rate of return calculated as the weighted average rate of return of each asset class would be underestimated.

The real rates of return were developed by looking at historical returns (expressed in Canadian dollars) and adjusting the returns upward or downward to reflect expectations that differ from the past. Future currency variations will impact the real rates of return over the projection period, creating gains and losses. However, as the projection period is long, these gains and losses are expected to offset each other over time. Hence, it is assumed that currency variations will not have an impact on the long-term real rates of return.

With the exception of fixed income securities and cash, real rates of return for all asset classes are generally assumed to be constant for the entire projection period. The current context of extremely low yields and the general expectations that yield will increase over the coming years are reflected in the expected fixed income securities’ short-term real rates of return. A constant real rate of return is assumed for more volatile asset classes, reflecting the difficulty to predict yearly market returns.

Fixed Income Securities

PSPIB currently has 20% of its portfolio invested in fixed income securities, including Canadian fixed income, world government bonds, world inflation-linked bonds and cash. It is assumed that the proportion invested in fixed income securities will remain at 20% of Fund assets for the entire projection period.



ACTUARIAL REPORT

Pension Plan for the **CANADIAN FORCES – RESERVE FORCE**
as at 31 March 2015

It is assumed that, excluding cash, fixed income securities consist of 42% federal bonds, 15% provincial bonds, 15% corporate bonds and 28% inflation-linked bonds.

The assumed real yield on 10-year-plus federal bonds is 0.5% at the beginning of plan year 2016, and is expected to increase to an ultimate of 2.8% at the end of plan year 2024. This increase in real yield is consistent with the average private sector forecasts. The initial spreads over the 10-year-plus federal bond real yield are assumed to be 80 basis points for long-term provincial bonds and 150 basis points for corporate bonds. These spreads are higher than the historical average and reflect the current economic environment. The ultimate spreads for provincial and corporate bonds are assumed to be 55 basis points and 90 basis points, respectively, and are reached at the end of plan year 2024. Corporate bond spreads are net of the expected default rate. Real return bonds, on the other hand, usually have a lower real yield than 10-year-plus federal bonds, since the real return is guaranteed and will not vary with inflation. Thus, the spread on inflation-linked bonds is assumed to be -70 basis points initially and will reach its ultimate value of -40 basis points at the end of plan year 2018.

Since the current PSPIB policy portfolio and its long-term target Policy Portfolio is composed of universe bonds, it is assumed that fixed income securities are composed of universe bonds for the entire projection period. Due to their shorter duration, the yield on universe bonds is lower than the yield on long-term bonds. The spread between the 10-year-plus federal bonds and the universe of federal bonds is assumed to decrease from 85 basis points at the beginning of plan year 2016 to 50 basis points at the beginning of plan year 2024. Spreads between universe federal bonds and universe provincial, or universe corporate bonds are assumed to be similar to spreads between long-term bonds.

The expected real rates of return for individual bonds take into account the coupons and market value fluctuations due to the expected movement of their respective yield rates. As the economy continues to strengthen (following the 2008-2009 economic downturn), the 10-year-plus federal bond yield is assumed to increase between plan years 2016 and 2024 and to stabilize at the end of plan year 2024. Therefore, bond returns are quite low for the first nine years of the projection. The assumed ultimate real rate of return for 10-year-plus federal bonds is 2.8% starting in plan year 2025. An ultimate fixed income real rate of return of 2.7% is assumed for 2025 and thereafter.

Equity

Currently, the assets of the Fund are mostly invested in equity, specifically in developed world equity and emerging markets equity. In the derivation of the real rates of return for these equity investments, consideration was given to the long-term equity risk premiums for these equity classes. The rates of return also include dividends from the equities and market value fluctuations. No distinction is made between realized and unrealized capital gains.

Consistent with the assumption that risk taking must be rewarded, equity returns are developed by adding an equity risk premium to the long-term federal bond real rate



of return. The historical equity risk premium over bonds for 21 countries, representing almost 90% of global stock market value, for the 115-year period starting in 1900 was 3.2% (3.5% for Canada)¹. Historical equity risk premiums were higher than expected due to several non-repeatable factors (mainly diversification and globalization). As a result, the long-term expected equity risk premium is assumed to be lower than what was realized in the past 115 years. However, the equity risk premium is assumed to be higher for the first nine years of the projection, reflecting assumed low bonds return over the same period, before reaching its ultimate rate of 2.2% for Canadian and foreign developed markets. The equity risk premium for emerging market equities is expected to be 100 basis points higher than for Canadian and foreign developed market equities, reflecting the additional risk inherent with investments in emerging countries.

As described in the previous section, the 10-year-plus federal bond real rate of return is set at 2.8% for plan years 2025 and thereafter. The real rates of return are thus projected at 5.0% for developed market equities and 6.0% for emerging markets equities.

Real Return Assets

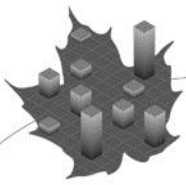
Real return assets such as real estate and infrastructure are considered to be a hybrid of corporate bonds and equity. If these assets are considered to behave 75% like corporate bonds and 25% like developed market equities, then the assumed return should be composed of 75% of the return on corporate bonds and 25% of the return on developed market equities. Considering the inherent difficulties in modelling short-term returns for volatile assets, real return assets are projected at 3.9% throughout the projection period.

Table 21 summarizes the assumed real rates of return by asset type throughout the projection period, prior to reduction for investment expenses.

Table 21 Real Rate of Return by Asset Type
(in percentage)

Plan Year	Fixed Income Securities	Cash	Canadian Equity	U.S. and Foreign Equity	Emerging Market Equity	Real Return Assets
2016	(4.6)	(0.7)	5.0	5.0	6.0	3.9
2017	(3.9)	(0.5)	5.0	5.0	6.0	3.9
2018	(3.8)	(0.4)	5.0	5.0	6.0	3.9
2019	(1.4)	0.1	5.0	5.0	6.0	3.9
2020	(1.0)	0.4	5.0	5.0	6.0	3.9
2021	0.1	0.6	5.0	5.0	6.0	3.9
2022	0.4	0.8	5.0	5.0	6.0	3.9
2023	0.5	0.9	5.0	5.0	6.0	3.9
2024	2.1	1.0	5.0	5.0	6.0	3.9
2025+	2.7	1.0	5.0	5.0	6.0	3.9

¹ Source: Elroy Dimson, Paul Marsh and Mike Staunton, Credit Suisse Global Investment Returns Yearbook 2015.



ACTUARIAL REPORT

Pension Plan for the **CANADIAN FORCES – RESERVE FORCE**
as at 31 March 2015

c) Investment Expenses

Over the last three plan years, PSPIB’s operating and asset management expenses have averaged 0.58% of average net assets. It is assumed that going forward PSPIB investment expenses will average 0.60% of average net assets. The majority of those investment expenses were incurred through active management decisions.

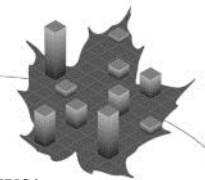
The active management objective is to generate returns in excess of those from the policy portfolio, after reduction for additional expenses. Thus, the additional returns from a successful active management program should equal at least the cost incurred to pursue active management. In eight of the past ten years, PSPIB’s additional returns from active management exceeded related expenses. For the purpose of this valuation, it is assumed that additional returns due to active management will equal additional expenses related to active management. Those expenses are assumed to be the difference between total investment expenses of 0.6% and the assumed expenses of 0.2% that would be incurred for passive management of the portfolio considering that part of the portfolio is invested in real estate and infrastructure.

The next section shows the overall rate of return on the fund net of investment expenses.

d) Overall Rate of Return on assets of the Fund

The best-estimate rate of return on total assets is derived from the weighted average assumed rate of return on all types of assets, using the assumed asset mix proportions as weights. The best-estimate rate of return is further increased to reflect additional returns due to active management and reduced to reflect all investment expenses. The ultimate real rate of return is developed as follows:

	<u>Nominal</u>	<u>Real</u>
Weighted average rate of return	6.3%	4.3%
Additional returns due to active management	0.4%	0.4%
Expected investment expenses		
Expenses due to passive management	(0.2%)	(0.2%)
Additional expenses due to active management	<u>(0.4%)</u>	<u>(0.4%)</u>
Total expected investment expenses	(0.6%)	(0.6%)
Net rate of return	6.1%	4.1%



The resulting nominal and real rates of return for each projection year are as follows:

Table 22 Rates of Return on Assets in Respect of the Fund
(in percentage)

Plan Year	Nominal	Real
2016	4.1	2.8
2017	4.6	2.9
2018	5.0	3.0
2019	5.4	3.4
2020	5.4	3.4
2021	5.6	3.6
2022	5.7	3.7
2023	5.7	3.7
2024	6.0	4.0
2025+	6.1	4.1
2016-2020	4.9	3.1
2016-2025	5.4	3.5
2016-2035	5.7	3.8

It is assumed that the ultimate real rate of return on investments will be 4.1%, net of all investment expenses. This is unchanged from the previous valuation. The real rates of return over the first nine years of the projection are on average 0.4% lower than assumed in the previous valuation. The real rate of return on assets takes into account the assumed asset mix as well as the assumed real rate of return for all categories of assets. The nominal returns projected for the Fund are simply the sum of the assumed level of inflation and the real return.

Using the rates of return on assets in respect of the Fund shown in Table 22 to determine the actuarial liability of the Fund is equivalent to valuing the actuarial liability at a flat nominal discount rate of 5.8% (3.8% real).

3. Transfer Value Real Interest Rate

Commuted values are calculated in accordance with the Standards of Practice published by the Canadian Institute of Actuaries. In particular, 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 $r_7 = r_L \times (i_7/i_L)$

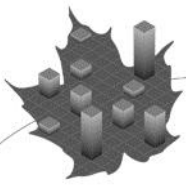
r_L is the long-term real-return Government of Canada bond yield, annualized

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, annualized

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

For example, for plan year 2018, the assumed real rates of interest are 1.7% for the first 10 years and 2.2% thereafter. The rates are derived from the assumed CPI increase, the



ACTUARIAL REPORT

Pension Plan for the **CANADIAN FORCES – RESERVE FORCE**
as at 31 March 2015

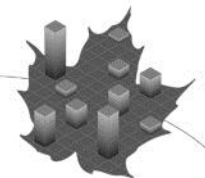
assumed 10-year-plus Government of Canada benchmark bond yield which corresponds to the new money rate in this valuation and the assumed spreads¹ between the new money rate and the long-term real-return Government of Canada bond yield, the long-term Government of Canada benchmark bond yield and the 7-year Government of Canada benchmark bond yield.

The following table shows the assumed transfer value real interest rates used in this report:

Table 23 Transfer Value
(As a percentage)

Plan Year	r_L	i_L	i_7	r_7	Real Interest Rates	
					First 10 Years	After 10 Years
2016	0.86	2.33	1.17	0.43	1.30	2.00
2017	0.92	2.81	1.73	0.57	1.50	2.00
2018	1.09	3.30	2.29	0.75	1.70	2.20
2019	1.56	3.78	2.86	1.18	2.10	2.70
2020	1.84	4.07	3.19	1.44	2.30	2.90
2021	2.03	4.27	3.42	1.62	2.50	3.10
2022	2.21	4.46	3.64	1.80	2.70	3.30
2023	2.40	4.65	3.86	2.00	2.90	3.50
2024+	2.59	4.85	4.08	2.18	3.10	3.70

¹ The spreads for the first year are based on the October 2015 actual spreads of -3, 13 and -102 basis points between 10-year-plus Government of Canada bond yield and the bonds underlying r_L , i_L and i_7 respectively. The ultimate spreads of -18, 5 and -70 basis points, starting in fiscal year 2024, are based on the average spreads over the last 10 years. An interpolation reflecting the variation in new money rates is applied for intermediate years.



4. Summary of Economic Assumptions

The economic assumptions used in this report are summarized in the following table.

Table 24 Economic Assumptions¹
(As a percentage)

Plan Year	Inflation		Employment Earning Increases			Interest	
	CPI Increase ²	Pension Indexing ³	YMPE ³	Average Pensionable Earnings ⁴	Maximum Pensionable Earnings ^{3,5}	New Money Rate	Projected Return on Fund
2016	1.3	1.3	2.5	2.3	2.5	2.2	4.1
2017	1.7	1.4	2.0	1.8	2.0	2.7	4.6
2018	2.0	2.0	2.3	2.1	2.3	3.2	5.0
2019	2.0	2.0	2.5	2.3	2.5	3.7	5.4
2020	2.0	2.0	2.7	2.5	2.7	4.0	5.4
2021	2.0	2.0	2.9	2.7	2.9	4.2	5.6
2022	2.0	2.0	3.1	2.9	3.1	4.4	5.7
2023	2.0	2.0	3.1	2.9	3.1	4.6	5.7
2024	2.0	2.0	3.1	2.9	3.1	4.8	6.0
2025	2.0	2.0	3.1	2.9	3.1	4.8	6.1
2030	2.0	2.0	3.1	2.9	3.1	4.8	6.1
2035	2.0	2.0	3.1	2.9	3.1	4.8	6.1
2040	2.0	2.0	3.1	2.9	3.1	4.8	6.1
2045+	2.0	2.0	3.1	2.9	3.1	4.8	6.1

As a reference, for periods ending December 2014, the following table was prepared based on the Canadian Institute of Actuaries Report on Canadian Economic Statistics 1924-2014.

Period of Years Ending 2014	15	25	50
Level of Inflation	1.9%	2.0%	4.1%
Real Increases in Average Earnings	0.6%	0.5%	0.9%
Real Yield of Long-Term Canada Bonds	2.2%	3.6%	3.2%
Real Return on Long-Term Canada Bonds	5.5%	6.8%	3.9%
Average Real Return on Diversified Portfolios	4.5%	6.2%	4.4%

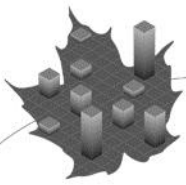
¹ Bold figures denote actual experience.

² Assumed to be effective during the Plan Year.

³ Assumed to be effective as at 1 January.

⁴ Assumed to be effective as at 1 April. Exclusive of seniority and promotional increases.

⁵ Calendar year 2016 Maximum Pensionable Earnings is \$192,700



Appendix 6 - Demographic Assumptions

The Reserve Force pension plan is a young plan, with little experience, providing little predictable information for establishing appropriate demographic assumptions. Except where otherwise noted, the experience of the Regular Force members covered under Part I of the CFSA was deemed to be the best source of data to determine the demographic assumptions.

A. Seniority and Promotional Increases

Seniority means length of service within a classification and promotion means moving to a higher paid classification. The assumption remains the same as the assumption used to produce the Actuarial Report on the Pension Plan for the Canadian Forces – Reserve Force as at 31 March 2013.

The following table provides sample rates of seniority and promotional increases.

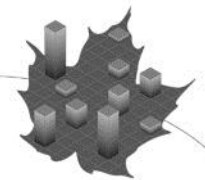
Table 25 Sample of Assumed Seniority and Promotional Salary Increases
(Percentage of annual earnings)

Age Last Birthday	Officer	Other Rank
17	1.8	5.3
18	1.8	5.3
19	1.8	5.3
20	4.5	5.9
21	56.0	6.4
22	40.9	6.1
23	12.0	5.3
24	10.1	4.4
25	8.8	3.8
26	6.7	3.3
30	4.8	2.1
40	2.0	1.5
50	1.1	0.9

B. New Participants

It was assumed that the distribution of new participants by age and sex will be the same as that of participants with less than one year of participating service at the valuation date. The total Reserve Force membership under Part I.1 of the CFSA was assumed to remain at the 31 March 2015 level.

The initial earnings of new male and female participants in a given age range in plan year 2016 were assumed to be the same as the corresponding experience in plan year 2015 with an economic salary increase for plan year 2016. The initial earnings were assumed to increase in future years in accordance with the assumption for average earnings increases.



C. Pensionable Retirement

As previously described, members of the Canadian Forces may qualify for retirement using either their total qualifying Canadian Forces service or the pensionable service to their credit. As at 31 March 2015, the demographic profile of the Reserve Force membership indicates that the majority of members will be qualifying for a retirement benefit based on their pensionable service.

For this valuation report the retirement rates of the previous report were left unchanged.

The following table provides sample rates of pensionable retirement.

Table 26 Sample of Assumed Rates of Retirement
(Per 1,000 individuals)

Completed Years of Pensionable Service	Age - Male			Age - Female		
	49	54	59	49	54	59
5	21	44	142	28	45	115
10	15	27	157	14	31	153
15	8	18	169	11	27	197
25	7	13	245	13	28	322
30	15	232	307	19	281	342
35	35	577	417	35	530	307

D. Disability Retirement

The assumption remains the same as the assumption used to produce the Actuarial Report on the Pension Plan for the Canadian Forces – Reserve Force as at 31 March 2013.

Table 27 Sample of Assumed Rates of Pensionable Disability
(Per 1,000 individuals)

Age Last Birthday	Male	Female
25	0.2	0.7
35	0.3	1.7
45	0.4	3.6
55	2.1	6.8
59	3.6	8.2

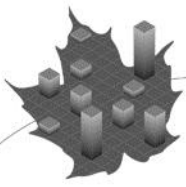
E. Withdrawal

Withdrawal means ceasing to be a member of the Reserve Force for reasons other than death or retirement with an immediate annuity or an annual allowance.

The assumption remains the same as the assumption used to produce the Actuarial Report on the Pension Plan for the Canadian Forces – Reserve Force as at 31 March 2013.

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

Table 28 to 31 provide sample rates of withdrawal.



ACTUARIAL REPORT

Pension Plan for the **CANADIAN FORCES – RESERVE FORCE**
as at 31 March 2015

Table 28 Sample of Assumed Withdrawal Rates - Male Officer
(Per 1,000 individuals)

Age Last Birthday	Completed Years of Pensionable Service						
	0	1	2	5	10	15	20+
20	17	29	20	20	-	-	-
25	22	28	20	20	18	-	-
30	18	30	22	22	18	11	-
35	21	26	23	23	18	11	9
40	17	26	21	21	18	11	9
45	18	27	20	20	18	11	9
50	18	-	-	-	-	-	-
55	36	-	-	-	-	-	-

Table 29 Sample of Assumed Withdrawal Rates - Male Other Rank
(Per 1,000 individuals)

Age Last Birthday	Completed Years of Pensionable Service						
	0	1	2	5	10	15	20+
20	46	55	43	43	-	-	-
25	48	66	42	42	18	-	-
30	36	54	39	39	18	11	-
35	24	43	31	31	18	11	9
40	24	35	26	26	18	11	9
45	18	31	24	24	18	11	9
50	22	-	-	-	-	-	-
55	38	-	-	-	-	-	-

Table 30 Sample of Assumed Withdrawal Rates - Female Officer
(Per 1,000 individuals)

Age Last Birthday	Completed Years of Pensionable Service						
	0	1	2	5	10	15	20+
20	14	25	48	29	-	-	-
25	16	27	46	29	18	-	-
30	18	29	37	29	18	11	-
35	21	27	32	29	18	11	9
40	14	27	27	27	18	11	9
45	12	27	26	26	18	11	9
50	18	-	-	-	-	-	-
55	23	-	-	-	-	-	-

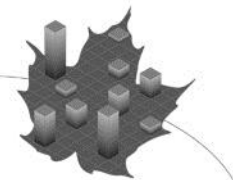


Table 31 Sample of Assumed Withdrawal Rates - Female Other Rank
(Per 1,000 individuals)

Age Last Birthday	Completed Years of Pensionable Service						
	0	1	2	5	10	15	20+
20	35	47	46	46	-	-	-
25	44	51	48	48	18	-	-
30	45	53	44	44	18	11	-
35	24	53	38	38	18	11	9
40	21	54	34	34	18	11	9
45	26	54	32	32	18	11	9
50	23	-	-	-	-	-	-
55	22	-	-	-	-	-	-

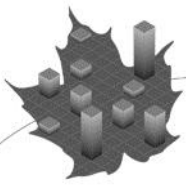
F. Mortality

Mortality rates for all members, former members and all surviving spouses are as projected in the previous valuation.

Table 32 Sample of Assumed Rates of Mortality
For 2016 Plan Year (Per 1,000 individuals)

Age Last Birthday	Contributors and Retirement Pensioners			Disability Pensioners			Surviving Spouses	
	Male		Female	Male		Female	Male	Female
	Officer	Other Rank		Officer	Other Rank			
30	0.5	0.6	0.4	0.6	3.1	0.5	0.9	0.2
40	0.6	0.9	0.5	1.0	4.2	1.0	1.4	1.7
50	1.1	2.4	1.2	6.4	7.2	2.5	3.2	4.0
60	3.9	7.5	3.6	14.2	11.3	6.5	8.7	6.7
70	11.2	19.1	11.2	26.4	29.4	16.2	22.5	17.8
80	42.2	59.2	33.9	61.4	65.5	43.8	59.1	42.3
90	139.4	156.0	106.5	136.0	149.1	121.9	156.1	116.3
100	308.3	321.6	283.1	305.9	282.2	281.0	333.0	327.0
110	497.7	497.7	490.2	497.7	497.7	490.2	497.7	497.7

As in the previous valuation report, the projected mortality rates are reduced in accordance with the same longevity improvement assumption used in the 26th Actuarial Report on the Canada Pension Plan. Factors shown in the 26th Actuarial Report of the Canada Pension Plan are based on calendar years. These factors have been interpolated to obtain plan year longevity improvement factors.



ACTUARIAL REPORT

Pension Plan for the **CANADIAN FORCES – RESERVE FORCE**
as at 31 March 2015

A sample of assumed longevity improvement factors is shown in the following table.

Table 33 Sample of Assumed Longevity Improvement Factors

Age Last Birthday	Initial and Ultimate Plan Year Mortality Reductions (%)			
	Male		Female	
	2017	2031+	2017	2031+
30	2.13	0.80	1.07	0.80
40	1.70	0.80	1.34	0.80
50	1.34	0.80	1.07	0.80
60	1.95	0.80	1.53	0.80
70	2.23	0.80	1.53	0.80
80	2.25	0.80	1.53	0.80
90	1.30	0.48	1.15	0.48
100	0.53	0.30	0.53	0.30
110+	0.20	0.23	0.20	0.23

G. Family Composition

The assumptions regarding spouse survivors are the same as the assumptions used to produce the Actuarial Report on the Pension Plan for the Canadian Forces – Regular Force as at 31 March 2013.

Table 34 Assumptions for Survivor Spouse Allowances¹

Age Last Birthday	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	0.50	(1)	0.49	1
40	0.69	(1)	0.51	2
50	0.73	(2)	0.52	1
60	0.76	(3)	0.52	0
70	0.75	(3)	0.49	(1)
80	0.61	(4)	0.43	(1)
90	0.40	(6)	0.26	(5)
100	0.17	(9)	0.01	(6)

The assumptions regarding child survivors are the same as the assumptions used to produce the Actuarial Report on the Pension Plan for the Canadian Forces – Regular Force as at 31 March 2013.

To determine the value of pensions payable to eligible children, the rates of pension termination are assumed to be zero prior to age 17 and 16% per annum thereafter until expiry of the benefit on the 25th birthday.

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

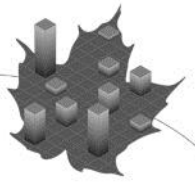
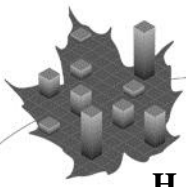


Table 35 Assumptions for Survivor Children Allowances

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	4	0.7	5
40	1.3	10	0.8	13
50	0.5	16	0.3	17
60	0.1	17	0.0	-
70	0.0	-	0.0	-



ACTUARIAL REPORT

Pension Plan for the **CANADIAN FORCES – RESERVE FORCE**
as at 31 March 2015

H. Other Assumptions

1. Wage Measure

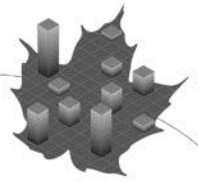
Under Part I.1 of the CFSA, the retirement benefit is based on the career average of the updated earnings. Past earnings are updated using the wage measure as defined in the schedule of the Reserve Force pension plan regulations. The regulations also prescribe the wage measures for calendar year 2007 and later as the greater of:

- the standard basic rate of pay for a period of duty or training of six hours or more, before any retroactive adjustment, that was prescribed or established under the *National Defence Act* to be paid on October 1 of the preceding year to a member at the rank of Corporal (class A), and
- the wage measure of the previous year.

The wage measure for calendar years up to 2016 is shown in the following table.

Table 36 Wage Measure

Calendar Year	Rate of Pay (\$)	Calendar Year	Rate of Pay (\$)
2016	131.74	1987	43.90
2015	131.74	1986	41.50
2014	131.74	1985	40.00
2013	129.16	1984	38.25
2012	125.08	1983	36.25
2011	125.08	1982	33.25
2010	123.24	1981	29.25
2009	121.42	1980	25.75
2008	116.70	1979	25.75
2007	113.70	1978	24.50
2006	113.70	1977	21.00
2005	104.18	1976	21.00
2004	104.18	1975	17.37
2003	101.64	1974	12.20
2002	97.72	1973	12.20
2001	89.52	1972	12.10
2000	89.52	1971	10.50
1999	83.42	1970	10.10
1998	80.82	1969	7.17
1997	61.68	1968	7.17
1996	60.36	1967	7.17
1995	60.36	1966	7.17
1994	60.36	1965	6.50
1993	60.36	1964	6.50
1992	58.60	1963	6.50
1991	58.60	1962	6.23
1990	54.50	1961	6.23
1989	50.80	1960	5.67
1988	47.27		



2. 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 division was 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 division for the same reason.

3. Minimum Post-Retirement Death Benefit

This valuation does not take into account the minimum death benefit described in Note 17 of Appendix 1D, with respect to 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.

4. Administrative Expenses

The operating expenses of the PSPIB continue to be recognized implicitly in this report. All other pension plan administrative expenses are charged to the Fund. Beside the additional administration cost associated with the Pension Modernization, ongoing administrative expenses are assumed to be 1.25% of pensionable payroll.

5. Financing of Elected Prior Service

As with the previous valuation report, this valuation assumed that the government would match members' contributions for elected prior service.

6. Disability Incidence Rates for Pensioners Under Age 60

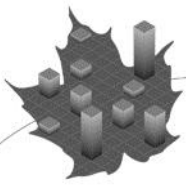
Both deferred pensioners and pensioners receiving an annual allowance while under age 60 were assumed to have a 0% disability rate. The resulting understatement of liability and current service cost is negligible.

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

The sex of each eligible surviving spouse is assumed to be the opposite of the deceased member's.



ACTUARIAL REPORT

Pension Plan for the **CANADIAN FORCES – RESERVE FORCE**
as at 31 March 2015

Appendix 7 - Reserve Force Pension Fund Projection

Since the inception of the Reserve Force pension plan on 1 March 2007, the plan has been financed through the Fund (the Fund). Government and employee contributions, investment earnings and prior service contributions are added to the Fund. Benefit payments and administrative expenses are subtracted from the Fund.

The results of the following projection were computed using the data described in Appendix 8, the methodology described in Appendix 4 and the assumptions described in Appendices 5 and 6.

The projection shows the expected growth of the Fund if all assumptions are realized. The projection indicates a negative cash flow in plan year 2016 followed by positive cash flows until plan year 2045. The projected net investment earnings assume that no funds are withdrawn from the PSPIB in plan year 2016. Emerging experience that differs from the corresponding assumptions will result in gains or losses to be revealed in subsequent valuation reports.

Table 37 Pension Fund and Actuarial Liability Projection
(\$ millions)

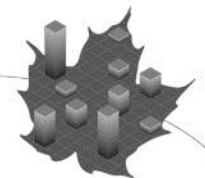
Plan Year	Beginning Market Value of Assets	Present value of prior service contributions	Beginning Actuarial Value of Assets	Contributions ¹	Payments ²	Net Investment Earnings	Special Payment at End of Plan Year	Beginning Actuarial Liability
2016	549.8	25.8	505.3	142.2 ³	152.6 ⁴	22.5	1.9	547.3
2017	563.8	23.8	548.3	49.2	27.4	25.9	4.2	559.1
2018	615.7	21.9	616.4	51.4	21.7	31.5	4.2	594.0
2019	681.1	20.1	695.2	53.9	23.2	37.6	4.2	647.3
2020	753.6	18.4	772.0	56.7	24.6	41.5	4.2	706.9
2021	831.4	16.7	848.1	59.8	26.2	47.5	4.2	771.1
2022	916.7	15.1	931.8	63.3	27.8	53.2	4.2	841.6
2023	1009.6	13.4	1,023.0	66.8	29.7	58.6	4.2	918.7
2024	1109.5	11.6	1,121.1	70.6	32.5	67.7	4.2	1,001.6
2025	1219.5	9.9	1,229.4	74.7	35.3	75.6	4.2	1,093.2
2026	1338.7	8.0	1,346.7	79.1	38.4	82.9	4.2	1,192.4
2027	1466.5	6.2	1,472.7	83.7	41.8	90.7	4.2	1,298.8
2028	1603.3	4.4	1,607.7	88.1	45.3	99.1	4.2	1,412.8
2029	1749.4	2.9	1,752.3	92.9	48.9	108.0	4.2	1,535.1
2030	1905.6	2.0	1,907.6	98.2	52.7	117.6	4.2	1,666.2
2035	2858.3	0.8	2,859.1	130.9	74.7	176.0	-	2,480.6
2040	4181.4	0.3	4,181.7	167.8	112.5	256.7	-	3,619.3
2045	5845.2	0.0	5,845.2	186.8	199.5	356.6	-	5,025.5
2050	7508.7	0.0	7,508.7	192.4	339.9	458.0	-	6,325.2

¹ Total current service cost plus prior service contributions.

² Includes the annual administration expenses of 1.25% of the pensionable payroll and the pension modernization costs.

³ Includes \$60.6 million of remaining contributions for processed prior service and \$34.5 million of remaining contributions for unprocessed prior service at at 31 March 2015.

⁴ Includes \$110.3 million payable to the Regular Force pension plan and \$14.5 million in outstanding payments as at 31 March 2015.



Appendix 8 - Detailed Information on Membership Data

In this appendix, the ‘Age’ and/or ‘Service’ nomenclature refers to completed years calculated at the beginning of the plan year.

Table 38 Male Officers
Number and Average Annual Earnings¹ as at 31 March 2015

Age	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35+	All Years of Service
15-19	4 \$15,311								4 \$15,311
20-24	381 \$13,259	9 \$29,699							390 \$13,639
25-29	434 \$14,957	325 \$16,728	12 \$29,137						771 \$15,924
30-34	146 \$12,971	352 \$14,529	93 \$18,965	16 \$18,178					607 \$14,930
35-39	113 \$12,126	286 \$11,171	33 \$20,226	88 \$18,359	15 \$18,203				535 \$13,310
40-44	114 \$10,581	243 \$11,404	20 \$17,540	32 \$17,188	87 \$19,908	37 \$20,734			533 \$13,841
45-49	127 \$11,275	244 \$13,813	11 \$19,184	13 \$21,342	32 \$13,856	88 \$23,738	18 \$20,941		533 \$15,385
50-54	101 \$9,048	213 \$11,318	10 \$28,664	19 \$15,272	17 \$15,939	26 \$28,837	68 \$21,499	21 \$17,075	475 \$14,195
55-59	63 \$8,748	181 \$13,574	20 \$19,242	12 \$22,357	14 \$24,502	17 \$23,176	17 \$17,942	56 \$22,222	380 \$15,651
60+ ²	32 \$6,595	123 \$8,695	12 \$11,494	8 \$18,182	3 \$2,706	2 \$4,913	10 \$11,970	14 \$9,575	204 \$8,998
All Ages	1,515 \$12,661	1,976 \$13,204	211 \$19,678	188 \$18,286	168 \$18,277	170 \$23,586	113 \$20,032	91 \$19,089	4,432 \$14,428

	<u>31 March 2015</u>	<u>31 March 2013</u>
Average age:	39.5	39.6
Average pensionable service:	9.0	6.0
Annualized pensionable payroll ³ :	\$62,207,459	\$68,524,496

¹ As defined in Note 1 of Appendix 1-D.

² As at 31 March 2015 these members are treated as pensioners.

³ The aggregate pensionable earnings of all contributors with less than 35 years of pensionable service.



ACTUARIAL REPORT

Pension Plan for the **CANADIAN FORCES – RESERVE FORCE**
as at 31 March 2015

Table 39 Male Other Ranks

Age	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35+	All Years of Service
15-19	281 \$15,891								281 \$15,891
20-24	3,022 \$15,387	398 \$17,242							3,420 \$15,603
25-29	1,040 \$14,716	1,690 \$16,304	110 \$14,983						2,840 \$15,672
30-34	308 \$14,114	799 \$13,355	222 \$15,205	76 \$15,724					1,405 \$13,942
35-39	189 \$11,854	303 \$13,450	36 \$20,621	132 \$15,450	42 \$14,345				702 \$13,818
40-44	121 \$11,053	237 \$9,622	11 \$13,995	31 \$18,094	130 \$15,730	75 \$13,686			605 \$12,238
45-49	111 \$9,699	189 \$10,278	11 \$7,176	13 \$13,013	25 \$14,982	97 \$15,685	33 \$15,888		479 \$11,874
50-54	80 \$9,814	150 \$11,746	10 \$16,542	8 \$21,719	18 \$13,125	9 \$17,182	50 \$16,142	29 \$16,200	354 \$12,864
55-59	40 \$8,306	82 \$10,080	9 \$10,435	9 \$6,513	7 \$17,252	15 \$15,570	7 \$22,407	30 \$14,408	199 \$11,331
60+ ²	51 \$5,447	30 \$6,579			1 \$8,533			1 \$50,998	83 \$6,442
All Ages	5,243 \$14,623	3,878 \$14,485	409 \$15,301	269 \$15,602	223 \$15,191	196 \$14,980	90 \$16,536	60 \$15,884	10,368 \$14,666

	31 March 2015	31 March 2013
Average age:	30.0	28.9
Average pensionable service:	6.3	4.5
Annualized pensionable payroll ³ :	\$151,104,029	\$166,186,539

¹ As defined in Note 1 of Appendix 1-D.

² As at 31 March 2015 these members are treated as pensioners.

³ The aggregate pensionable earnings of all contributors with less than 35 years of pensionable service.

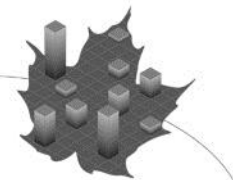


Table 40 Female Officers
Number and Average Annual Earnings¹ as at 31 March 2015

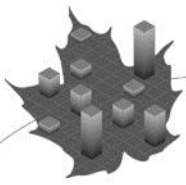
Age	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35+	All Years of Service
15-19	0 \$								0 \$
20-24	224 \$9,353	3 \$7,284							227 \$9,326
25-29	249 \$9,194	217 \$10,603	11 \$23,183						477 \$10,158
30-34	88 \$11,477	248 \$8,776	39 \$13,307	8 \$9,513					383 \$9,873
35-39	67 \$10,671	160 \$10,020	11 \$10,028	37 \$13,364	3 \$3,499				278 \$10,552
40-44	60 \$10,604	125 \$10,795	2 \$16,469	12 \$18,567	23 \$23,515	8 \$10,996			230 \$12,479
45-49	57 \$10,262	106 \$9,849	3 \$2,236	4 \$15,942	9 \$22,526	17 \$25,948	4 \$35,644		200 \$12,429
50-54	52 \$9,573	77 \$11,620	8 \$15,113	5 \$4,050	4 \$10,004	6 \$22,235	11 \$15,645	4 \$10,761	167 \$11,511
55-59	25 \$8,502	85 \$9,076	4 \$11,677	6 \$7,045	4 \$4,845	2 \$16,276	2 \$7,604	7 \$16,963	135 \$9,325
60+ ²	12 \$5,263	40 \$8,898	3 \$12,267	4 \$8,617	1 \$2,693	2 \$1,180	1 \$18,100	2 \$3,421	65 \$8,005
All Ages	834 \$9,717	1,061 \$9,913	81 \$13,930	76 \$12,554	44 \$18,549	35 \$19,926	18 \$19,332	13 \$12,971	2,162 \$10,516

	<u>31 March 2015</u>	<u>31 March 2013</u>
Average age:	37.0	36.6
Average pensionable service:	7.1	5.1
Annualized pensionable payroll ³ :	\$22,565,976	\$28,206,683

¹ As defined in Note 1 of Appendix 1-D.

² As at 31 March 2015 these members are treated as pensioners.

³ The aggregate pensionable earnings of all contributors with less than 35 years of pensionable service.



ACTUARIAL REPORT

Pension Plan for the **CANADIAN FORCES – RESERVE FORCE**
as at 31 March 2015

Table 41 Female Other Ranks
Number and Average Annual Earnings¹ as at 31 March 2015

Age	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35+	All Years of Service
15-19	27 \$18,479								27 \$18,479
20-24	491 \$16,910	68 \$18,200							559 \$17,066
25-29	207 \$17,452	354 \$15,154	21 \$13,510						582 \$15,912
30-34	61 \$23,682	158 \$16,255	69 \$17,814	15 \$5,991					303 \$17,597
35-39	49 \$17,000	71 \$12,836	3 \$5,960	44 \$11,743	12 \$15,340				179 \$13,760
40-44	38 \$20,142	41 \$18,622	3 \$26,555	9 \$14,046	15 \$19,698	6 \$21,231			112 \$19,266
45-49	33 \$20,538	33 \$16,410	1 \$7,394	5 \$21,587	3 \$47,554	15 \$18,693	6 \$15,621		96 \$19,285
50-54	24 \$16,005	26 \$17,488	5 \$22,530	1 \$9,872	3 \$10,322	7 \$26,254	12 \$16,467	3 \$19,333	81 \$17,675
55-59	13 \$23,053	17 \$10,095	3 \$29,085	3 \$21,252		2 \$24,681	2 \$16,420	5 \$7,341	45 \$16,471
60+ ²	2 \$9,773	4 \$4,553							6 \$6,293
All Ages	945 \$17,818	772 \$15,585	105 \$17,312	77 \$11,877	33 \$19,793	30 \$21,364	20 \$16,209	8 \$11,838	1,990 \$16,741

	31 March 2015	31 March 2013
Average age:	30.7	29.9
Average pensionable service:	6.5	5.0
Annualized pensionable payroll ³ :	\$33,220,034	\$38,475,409

¹ As defined in Note 1 of Appendix 1-D.

² As at 31 March 2015 these members are treated as pensioners.

³ The aggregate pensionable earnings of all contributors with less than 35 years of pensionable service.

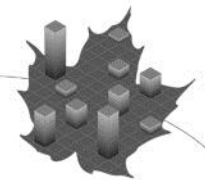


Table 42 Officer Male - Retirement Pensioners
Number and Average Annual Pension as at 31 March 2015

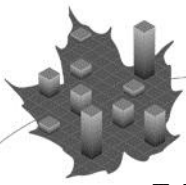
Age	Number	Average
50-54	12	\$8,478
55-59	56	11,446
60-64	247	6,488
65-69	244	3,222
70-74	<u>38</u>	<u>2,466</u>
All Ages	597	\$5,402
	<u>31 March 2015</u>	<u>31 March 2013</u>
Average age	64.2	63.7
Average age at retirement	60.7	61.2

Table 43 Officer Female - Retirement Pensioners
Number and Average Annual Pension as at 31 March 2015

Age	Number	Average
50-54	7	\$1,821
55-59	14	8,044
60-64	47	5,979
65-69	61	2,856
70-74	<u>6</u>	<u>2,757</u>
All Ages	135	\$4,423
	<u>31 March 2015</u>	<u>31 March 2013</u>
Average age	63.9	63.3
Average age at retirement	60.8	61.0

Table 44 Other Rank Male - Retirement Pensioners
Number and Average Annual Pension as at 31 March 2015

Age	Number	Average
45-49	1	\$5,980
50-54	14	3,696
55-59	44	7,457
60-64	115	4,881
65-69	18	2,604
70-74	7	282
75+	1	277
All Ages	200	\$4,981
	<u>31 March 2015</u>	<u>31 March 2013</u>
Average age	61.3	61.0
Average age at retirement	58.3	58.4



ACTUARIAL REPORT

Pension Plan for the **CANADIAN FORCES – RESERVE FORCE**
as at 31 March 2015

Table 45 Other Rank Female - Retirement Pensioners
Number and Average Annual Pension as at 31 March 2015

Age	Number	Average
50-54	11	\$13,319
55-59	16	4,458
60-64	20	7,391
65-69	<u>2</u>	<u>1,754</u>
All Ages	49	\$7,534
		<u>31 March 2015</u>
		<u>31 March 2013</u>
Average age	58.9	58.5
Average age at retirement	55.7	56.5

Table 46 Officer Male - Disability Pensioners
Number and Average Annual Pension as at 31 March 2015

Age	Number	Average
45-49	2	\$7,094
50-54	2	\$3,572
55-59	2	8,220
60-64	10	1,279
65-69	<u>1</u>	<u>422</u>
All Ages	17	\$2,999
		<u>31 March 2015</u>
		<u>31 March 2013</u>
Average age	58.9	58.9
Average age at retirement	55.1	55.7

Table 47 Other Rank Male - Disability Pensioners
Number and Average Annual Pension as at 31 March 2015

Age	Number	Average
30-34	1	8,409
45-49	1	4,740
50-54	1	9,335
55-59	2	8,053
60-64	<u>3</u>	<u>4,774</u>
All Ages	8	\$6,614
		<u>31 March 2015</u>
		<u>31 March 2013</u>
Average age	49.5	55.8
Average age at retirement	46.0	52.7

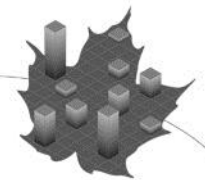


Table 48 Other Rank Female - Disability Pensioners
Number and Average Annual Pension as at 31 March 2015

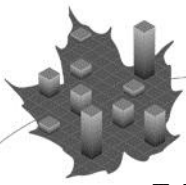
Age	Number	Average
40-44	1	\$14,152
50-54	1	8,689
55-59	3	13,027
All Ages	5	\$12,385
	<u>31 March 2015</u>	<u>31 March 2013</u>
Average age	53.9	54.9
Average age at retirement	48.8	51.4

Table 49 Deferred Annuitant - Officer Male
Number and Average Annual Pension as at 31 March 2015

Age	Number	Average
To 29	106	\$700
30-34	162	955
35-39	134	1,131
40-44	103	1,875
45-49	112	1,931
50-54	114	3,881
55-59	<u>128</u>	<u>3,651</u>
All Ages	859	\$1,978
	<u>31 March 2015</u>	<u>31 March 2013</u>
Average age	42.2	41.5
Average age at retirement	39.4	39.6

Table 50 Deferred Annuitant - Officer Female
Number and Average Annual Pension as at 31 March 2015

Age	Number	Average
To 29	72	\$460
30-34	127	578
35-39	56	960
40-44	46	1,547
45-49	40	2,526
50-54	37	1,835
55-59	<u>43</u>	<u>2,772</u>
All Ages	421	\$1,234
	<u>31 March 2015</u>	<u>31 March 2013</u>
Average age	39.0	38.0
Average age at retirement	36.0	35.9



ACTUARIAL REPORT

Pension Plan for the **CANADIAN FORCES – RESERVE FORCE**
as at 31 March 2015

Table 51 Deferred Annuitant - Other Rank Male
Number and Average Annual Pension as at 31 March 2015

Age	Number	Average
To 29	1,486	\$723
30-34	653	1,140
35-39	304	1,474
40-44	192	2,218
45-49	99	2,764
50-54	77	4,325
55-59	<u>76</u>	<u>2,956</u>
All Ages	2,887	\$1,221
		<u>31 March 2015</u>
		<u>31 March 2013</u>
	Average age	32.1
	Average age at retirement	29.3
		31.1
		29.1

Table 52 Deferred Annuitant - Other Rank Female
Number and Average Annual Pension as at 31 March 2015

Age	Number	Average
To 29	254	\$789
30-34	141	1,117
35-39	81	1,649
40-44	50	2,461
45-49	30	4,274
50-54	22	7,178
55-59	<u>21</u>	<u>2,775</u>
All Ages	599	\$1,601
		<u>31 March 2015</u>
		<u>31 March 2013</u>
	Average age	33.9
	Average age at retirement	30.8
		32.3
		30.3

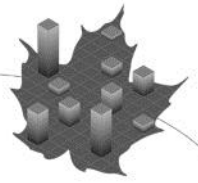


Table 53 Surviving Spouses - Female
Number and Average Annual Allowance as at 31 March 2015

<u>Age</u>	<u>Number</u>	<u>Average</u>
To 29	1	\$2,238
30-34	4	2,111
35-39	5	1,612
40-44	3	2,564
45-49	6	1,949
50-54	7	1,881
55-59	9	4,065
60-64	4	1,539
65-69	2	1,994
70-74	<u>3</u>	<u>1,739</u>
All Ages	44	\$2,346

	<u>31 March 2015</u>	<u>31 March 2013</u>
Average age	50.7	47.7
Average age at death of member	48.0	45.8

Table 54 Surviving Spouses - Male
Number and Average Annual Allowance as at 31 March 2015

<u>Age</u>	<u>Number</u>	<u>Average</u>
35-39	1	\$1,817
45-49	1	991
50-54	2	360
60-64	2	5,697
<u>65-69</u>	<u>1</u>	<u>479</u>
All Ages	7	\$2,200

	<u>31 March 2015</u>	<u>31 March 2013</u>
Average age	54.6	44.0
Average age at death of member	52.2	42.4



ACTUARIAL REPORT

Pension Plan for the **CANADIAN FORCES – RESERVE FORCE**
as at 31 March 2015

Appendix 9 - Acknowledgements

The Department of National Defence provided relevant valuation input data on active members, pensioners and survivors. The Superannuation Directorate of Public Services and Procurement 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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