ACTUARIAL REPORT

as at 31 March 1996

on the

Pension Plan for the

PUBLIC SERVICE OF CANADA

3 April 1998

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

Dear Minister:

Pursuant to section 6 of the *Public Pensions Reporting Act*, I am pleased to submit my report on the actuarial review as at 31 March 1996 of the pension plan established under the *Public Service Superannuation Act*.

Yours sincerely,

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Chief Actuary
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APPENDICES

I- Overview

The financial soundness of the pension plan established under the *Public Service Superannuation Act* (PSSA) rests on the balance in the PSS Account which forms part of the public debt of Canada. The plan is not funded through investments in marketable securities. Instead, the plan's assets are borrowed by the government.

A- Raison d'être of this Actuarial Review

This actuarial review of the pension plan established under the PSSA was made as at 31 March 1996 pursuant to the *Public Pensions Reporting Act* (PPRA). The previous review was made as at 31 December 1992. The report is thus the first to be based on fiscal years rather than calendar years. The date of the next periodic review contemplated by the PPRA is 31 March 1999.

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

- the balance sheet of the pension plan as at the valuation date, i.e. its assets, its liabilities, and the surplus or deficit as at that date;
- the annual amount required to amortize over a period of years any surplus or deficit revealed as at the valuation date; and
- the projected cost of the plan for each of the next three plan years[1] following the valuation date.

B- Main Findings

1. As at 31 March 1996, the plan had a surplus of $9.87 billion resulting from the difference between the assets of $66.13 billion and the liabilities of $56.26 billion as at that date.

2. The statutes governing the operation of the plan do not address the disposition of a surplus. However, if the $9.87 billion surplus were amortized as a deficit would be, then the total contributions to the plan would be reduced by $1.18 billion in each of the next 15 plan years. This annual reduction corresponds to 10.4% of pensionable payroll for the 1997 plan year.

3. The normal cost of the plan estimated for the 1997 plan year is 15.43% of pensionable payroll, that is $1.74 billion, and is estimated to increase to 16.33% and 17.08% of pensionable payroll respectively for the following two plan years. This gradual increase in costs mainly reflects a partial transition from current to ultimate economic assumptions. Taking into account the changes to the plan since the last valuation date, the rate of 15.43% for the 1997 plan year closely corresponds to the projection of the previous report.

C- Developments Since the Previous Report's Date

[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.

Although demographic and short-term economic assumptions on which this report is based have changed from those of the previous report, the key long-term economic assumptions have not changed, i.e. a new money interest rate of 6%, and annual rates of increases in the Consumer Price Index (CPI) and in average employment earnings of 3% and 4%, respectively.

Among the developments having taken place since the previous report's date, those that do or could materially affect the valuation results are described below. The effect of each of the following developments on the plan's surplus and normal cost is indicated in section V-D. In aggregate, they represent an increase of 0.60% in the normal cost for the 1997 plan year and of $1.14 billion in the liabilities as at 31 March 1996.

1. Measures to Deal with Downsizing in the Federal Public Service

In April 1995, the Government of Canada embarked on a significant effort to downsize the Public Service over the next three years. The following two major financial assistance programs, which increase by 0.07% of pensionable payroll the normal cost for the 1997 plan year and by $0.48 billion the liabilities as at 31 March 1996, were used for affected employees.

(a) The Early Retirement Incentive (ERI) program is available to all surplus terminated employees age 50 or over with at least 10 years of federal employment and for whom the Treasury Board, or certain other government agencies, is the employer. These members will receive a pension not subject to an early retirement actuarial reduction. If the member is age 55 or over at termination, this supplementary benefit is payable through the PSSA, otherwise it is payable through a Retirement Compensation Arrangement (RCA).

(b) The Early Departure Incentive (EDI) program is available to surplus terminated Public Service employees in a department designated as *most-affected*. This measure offers these surplus employees a cash payment. Where eligible, surplus employees in most-affected departments may choose between the ERI and EDI programs but cannot benefit from both.

2. Privatization of Certain Transport Employees

Approximately 6,000 positions at Transport Canada (including most Air Traffic Controller positions) are being privatized under an arrangement with NAVCAN. This arrangement, which became effective 1 November 1996, reduces by 0.08% of pensionable payroll the normal cost for the 1997 plan year but increases by $0.15 billion the liabilities as at 31 March 1996. The affected employees must choose by 31 December 1997 to either retain their accrued (up to the effective date) PSSA pension benefits or transfer to the NAVCAN pension plan the greater of the present value of their PSSA benefits and two times employee contributions with interest at the actual yields on the Account. Employees who leave their accrued benefits in the PSSA will have their service with NAVCAN count for purposes of determining threshold entitlements such as eligibility for unreduced early retirement benefits.

3. Changes to the Plan Provisions

This report is based on the plan provisions, described in Appendix 1, which incorporate the following changes having become effective since the date of the previous valuation. In aggregate, they increase by 0.61% the normal cost for the 1997 plan year and the liabilities by $0.50 billion as at 31 March 1996. These changes were made pursuant to:

- Bill C-55 which received Royal Assent on 29 September 1992, and which, at a later date, amended certain Acts relating to pensions, including the PSSA, and also enacted the *Special Retirement Arrangements Act* (SRAA) and the *Pension Benefits Division Act* (PBDA); and

- Bill C-31, which received Royal Assent 20 June 1996 and also included amendments to the PSSA.

(a) Pensionable Rights After Two Years

Pensionable rights, which previously applied after completion of at least five years of pensionable service, now applies after at least only two years. Furthermore, effective 20 June 1998, terminating members who qualify for benefits worth more than a return of contributions, such as a deferred annuity, will no longer have the option to choose a return of contributions.

This change, which became effective on 20 June 1996 as a result of the legislative authority under Bill C-31, has a material effect on the valuation as it increases by 0.68% of pensionable payroll the normal cost for the 1997 plan year and by $0.46 billion the liabilities as at 31 March 1996.

(b) Early Retirement Program for Correctional Service Canada (CSC)
This new program increases by 0.03% the normal cost for the 1997 plan year and by $0.06 billion the liabilities as at 31 March 1996. Effective 18 March 1994, both the age and service requirements for subsidized early retirement for CSC employees in operational service (o/s) were reduced by five years. The full accrued pension benefit is now accordingly payable as early as age 50 if at least 25 years of operational service have been completed at retirement, and a reduced pension benefit is payable upon retirement at any time in the five preceding years. However, receipt of indexation payments on these subsidized pensions does not commence before age 55 at the earliest, provided age plus service total at least 85. In any case, indexation payments do not commence beyond age 60. The amount of the indexation payments is not affected by their delayed commencement, meaning that they continue to be based on the entire inflation experience since the date of retirement.

Operational employees (i.e. CSC employees other than those engaged in Staff Colleges or national or regional headquarters) are required to contribute an extra 1.25% of pensionable earnings for this enhanced early retirement benefit.

(c) Compliance with the *Income Tax Act*
Under the amending tax-related legislation, the PSSA regulations prescribe the yearly maximum pensionable earnings in respect of service from 15 December 1994 onward. The maximum is $98,600 for calendar year 1996, with scheduled increases for each calendar year thereafter. The resulting limits on contributions and benefits are taken into account in this valuation; they reduce by only 0.10% of pensionable payroll the normal cost for the 1997 plan year and by only $0.02 billion the liabilities as at 31 March 1996 because only a small proportion of members are actually affected.

The PSSA provision that allowed deputy heads ceasing employment under age 60 to elect, for the purposes of the PSSA only, to be deemed full-time employees absent from the Public Service on leave without pay up to age 60 was repealed.

These changes became effective on 15 December 1994 as a result of the legislative authority under Bill C-55. Also effective 15 December 1994, as a result of the legislative authority under the SRAA which was included in Bill C-55, a RCA was established for the above benefits that are now excluded from the PSSA. The first actuarial report on the RCA is contemplated as at 31 March 1999, i.e. the same date contemplated for the next report on the PSSA.

Members who were age 71 or older on 31 December 1995 had to cease contributions effective from 1 April 1996. Members who reach age 71 on or after 1 January 1996 must cease contributions on 1 January of the year following the year the member reaches age 71. This change became effective from 1 April 1996 as a result of the legislative authority under Bill C-55.

(d) *Pension Benefits Division Act* (PBDA)

The purpose of this change is to provide for a division, upon spousal union (including common-law) breakdown, of pension benefits accrued during the spousal cohabitation period. The member's spouse's portion of the accrued benefits is paid out as a lump sum determined using current market values.

This change, which has no material effect on the valuation results, became effective on 30 September 1994 as a result of the legislative authority under the PBDA which was included in Bill C-55.

(e) Optional Survivor Benefit

The underlying amending legislation allows plan members to provide survivor benefits, in respect of marriages established after termination, through an appropriate actuarial reduction being made to the member's pension.

This change, which has no material effect on the valuation results, became effective on 18 February 1994 as a result of the legislative authority under Bill C-55.

(f) Pension Coverage for Part-Time Employees

Employees hired on or after 4 July 1994 who work at least 12 hours per week are required to contribute to the PSSA. However, such coverage is optional for part-time employees hired prior to that date. Employees are allowed to buy back prior part-time service which occurred after 31 December 1980.

This change, which has no material effect on the valuation results, became effective on 4 July 1994 as a result of the legislative authority under Bill C-55.

(g) Leave Without Pay

Employees may now elect not to contribute in respect of leave without pay periods in excess of three months. They may also elect later on to purchase the pension benefits relating to such period in the form of elective prior service.

This change, which has no material effect on the valuation results, became effective on 9 September 1993 as a result of the legislative authority under Bill C-55.

(h) Loss of PSSA Contributory Status due to Receipt of a Canada or Québec Pension Plan (CPP/QPP) Pension

The provision that barred employees in receipt of a CPP/QPP retirement pension from contributing to the PSSA was repealed as of 9 September 1993 as a result of the legislative authority under Bill C-55. It has no material effect on the valuation results.

(i) Employees Under Age 18 Joining the Pension Plan

Employees under age 18 who meet all PSSA eligibility requirements must contribute to the pension plan. The applicable contribution rate is 7.5% integrated with the CPP/QPP as if they were contributing to the CPP/QPP.

This change, which has no material effect on the valuation results, became effective on 9 September 1993 as a result of the legislative authority under Bill C-55.

(j) Portability of Pension Benefits after Termination

Members who terminate under age 50 and are eligible for a deferred annuity may elect to transfer the present value of their benefits, determined subject to the regulations, to a locked-in RRSP of the prescribed kind, to another pension plan registered under the *Income Tax Act*, or to a financial institution for the purchase of an immediate or deferred annuity of the prescribed kind.

This change became effective on 20 June 1996 as a result of the legislative authority under Bill C-31.

(k) Reciprocal Transfer Agreements (RTA)

The terms of future RTAs with another employer’s pension plan will require that the transfer amount not exceed the actuarial value, determined in accordance with the RTA, of all accrued benefits in respect of the contributor’s pensionable service. The transfer amount may not be less than the transfer value calculated as per (j) above.

This change became effective on 20 June 1996 as a result of the legislative authority under Bill C-31.

(l) Interest on Return of Contributions

From 1 January 1997, interest on return of contributions shall be calculated on a quarterly compounded basis in such a manner as the regulations provide and on such balances as are determined in accordance with the regulations.

This change became effective from 1 January 1997 as a result of the legislative authority under Bill C-31.

(m) Definition of Disabled

Disabled was previously defined as being "incapable of pursuing regularly any substantially gainful employment". The new criterion for disability requires a physical or mental impairment that prevents a contributor from working in an employment for which the contributor is reasonably suited by virtue of education, training or experience, and which can reasonably be expected to last for the remainder of the contributor's lifetime.

This change became effective 1 January 1996 as a result of the legislative authority under section 71 of the PSSA. The previous PSSA definition will continue to apply to those cases where the contributor became disabled prior to 1 January 1996 and continues to meet this previous definition.

II- Data

A- Account

1. Reconciliation of Balances in the Public Service Superannuation Account

			(in millions of dollars)	
Account balance as at 31 December 1992				49,558.1
Net Cash Flow 1 January 1993 to 31 March 1993				1,026.7
Plan year	1994	1995	1996	1994-1996
Public Accounts opening balance	50,584.8	55,094.3	59,941.1	50,584.8
INCOME				
Employee contributions	776.9	766.8	739.3	2,283.0
Employer contributions	999.9	1,032.0	1,032.2	3,064.1
Transfers from other pension funds	5.3	6.0	13.5	24.7
Investment earnings	5,356.7	5,715.3	6,183.6	17,255.6
Subtotal	7,138.8	7,520.1	7,968.6	22,627.4
EXPENDITURES				
Annuities	2,405.7	2,510.8	2,706.0	7,622.4
Cash termination allowances	0.2	0.1	0.2	0.5
Minimum benefits	15.8	16.1	14.5	46.3
Pension division	0	0	33.7	33.7
Returns of contributions	78.0	88.7	134.9	301.6
Transfers to other pension funds	129.6	57.7	23.1	210.5
Subtotal	2,629.2	2,673.3	2,912.4	8,214.9
Public Accounts closing balance	55,094.3	59,941.1	64,997.3	64,997.3
Contributions receivable			36.3	36.3
Account balance as at 31 March 1996			65,033.6	65,033.6

The above table shows the reconciliation of assets in the Public Service Superannuation (PSS) Account from the last valuation date to the current valuation date. (Some totals in this page might err by a margin of $0.1 million due to rounding.) Since the last valuation, the Account balance has grown by $15,475,500,000 (i.e. a 31.2% increase) to reach $65,033,600,000 as at 31 March 1996. The net growth in the Account balance is to a large extent the result of interest credits made.

2. Rates of Return

The following rates of return on the Account by plan year were calculated using the foregoing entries. These results differ somewhat from those shown in the actuarial reports as at 31 March 1996 and 1997, respectively, on the Royal Canadian Mounted Police and Canadian Forces pension plans even though the quarterly yields used to compute actual investment earnings are identical for all three plans. The main reasons for this discrepancy are that:

(a) the uniform quarterly yields are applied only to the opening balance of the Accounts but not whatsoever to the cash flows during the quarter, and

(b) the results below were computed assuming a uniform distribution of cash flows during the plan year by imputing to them one half year of interest.

	%
1994	10.68
1995	10.46
1996	10.41

3. Sources of Asset Data

The Account entries shown in item 1 above were taken from the Public Accounts of Canada. In accordance with section 8 of the PPRA, the Office of the Comptroller General of Canada provided a certification of the assets of the plan as at 31 March 1996.

B- Membership

1. Highlights

The individual data in respect of contributors, pensioners and eligible survivors were provided as at 31 December 1995 but are shown as at 31 March 1996 in the summaries of data in Appendix 3. The methodology used to project those data over that 3-month period is described in section III-E below.

(a) Contributors

There were 284,840 active contributors as at 31 March 1996. They were subdivided as follows:

	Male	Female	Total
NAVCAN ATC[1] o/s[2]	1,790	140	1,930
NAVCAN other than ATC o/s	2,924	948	3,872
CSC[3] o/s	5,049	2,212	7,261
Other full-time	147,504	121,030	268,534
Part-time	488	2,755	3,243
Total active contributors	**157,755**	**127,085**	**284,840**
Average age	43.4	41.1	
Average length of pensionable service	14.5	11.2	
Average annual employment earnings	$44,819	$37,232	

In addition, there were 4,012 non-active contributors (see III-C-2 below).

Tables 3D and 3E of Appendix 3 show detailed information on the age, pensionable service and average employment earnings (vs pensionable as values shown in the Appendix are not adjusted in respect of the maximum level of earnings prescribed for tax purposes) of male and female members, respectively.

(b) Pensioners and Survivors

As at 31 March 1996, the plan was paying benefits to pensioners and surviving spouses at the following annual rates:

Type of Beneficiary	Number	(% Male)	Annual Benefit ($ millions)
Retirement pensioners	139,877	70.0	2,326.2
Disability pensioners	12,433	61.0	117.3
Surviving spouses	49,209	4.2	355.3
Total	201,519	53.4	2,798.8

In addition, there were 6,194 deferred annuitants, 2,480 surviving children beneficiaries and 9,447 outstanding terminations (including 5,964 terminations who have not yet elected their option).

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[1] Air Traffic Controllers.

[2] Operational service.

[3] Correctional Service Canada.

Tables 3F, 3G and 3H of Appendix 3 show detailed information on the benefits to pensioners and survivors. In determining the yearly amounts of pension shown in these tables, the 1 January 1996 indexation adjustment was taken into account. As well, the figures in these tables recognize the benefit reductions resulting from CPP/QPP offsets, annual allowance adjustments and PBDA reductions.

2. Source of Membership Data

The valuation input data required in respect of contributors (both active and non-active), pensioners and survivors are extracted from master computer files maintained by the Superannuation Directorate of the Department of Public Works and Government Services Canada. The Compensation Systems Branch of that department is responsible for the computer programs that extract these valuation data from the master files. The co-operation and able assistance received from the above-mentioned data providers deserve to be acknowledged.

3. Validation of Membership Data

The principal tests applied to the basic data can be separated into two categories:

(a) Status-Related Tests

The main valuation data file supplied by the Superannuation Directorate contains all the status information of a member during the period from 1 January 1993 to 31 December 1995. Another data file was supplied in respect of ERI/EDI terminations between 1 January 1996 and 31 March 1996. The following status tests were made on the main valuation data file:

i) 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, dead leaving an eligible survivor;

ii) 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 distinct pensioner record should exist;
- if a contributor or pensioner record indicated that the member died leaving an eligible survivor, then a distinct survivor record should exist;

iii) a reconciliation was made between the status of members as at 1 January 1993 from the current valuation data and the status of members as at 31 December 1992 from the previous valuation data; and

iv) a comparison of members' valuation data as at 31 December 1995 (and as at 31 March 1996 after accounting for ERI/EDI terminations) with the membership shown in the Report on the Administration of the Public Service Account for the fiscal year ending 31 March 1996.

(b) Benefits-Related Tests

Consistency tests were made to ensure that all proper information to value the members' benefits based on their status as at 31 March 1996 was included:

i) For Active Members

- verifying that the pensionable service was reasonable in relation to the attained age;
- verifying that the salary of the member was included and, if not, updating a salary rate from a previous year with an average earnings increase. If no such previous salary was available, then using the average salary rate for that sex;
- verifying that salaries included negotiated increases in effect. If any negotiated increase was not reflected then the salary rates were increased; and
- verifying that the pay equity increase was included for the clerical, secretarial and nurse job classifications.

ii) For Pensioners and Survivors in Receipt of an Annuity

- verifying that the amount of the annuity, including indexation, was included; and
- verifying that the benefits were indexed up to 1 January 1996.

iii) Outstanding Terminations

- verifying that the lump sum payment was included.

(c) Adjustments to Status and Benefit Data

Based on the omissions and discrepancies identified by the tests mentioned above and several additional tests, appropriate adjustments were made to the basic data after consulting with the data providers.

III- Methodology

A- Assets

The assets of the plan consist essentially of the recorded balance in the PSS Account, which forms part of the Public Accounts of Canada. These assets are shown at the book value of the underlying notional bond portfolio described in Appendix 1. For consistency, the normal costs and liabilities are determined using the projected Account yields, described in section D below, that fully reflect the earning power of the assets. If a market value approach had been taken, the resulting higher asset value would have been largely offset by the higher liabilities attributable to discounting at market new money interest rates, which were lower than the projected yields assumed for this valuation.

The only other plan asset consists of the value, discounted in accordance with the projected yields on the Account of all future member contributions and government credits (see section IV-G-7) in respect of prior service elections.

B- Normal Costs

The projected accrued benefit actuarial cost method (also known as the projected unit credit method) was used to compute normal costs. Under this method, the normal cost computed in respect of a given year corresponds to the value, discounted in accordance with the projected yields (described in section D below and shown in section IV-C), of all future benefits considered to accrue in respect of that year's service. 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 method used for projecting future employment earnings in excess of the prescribed yearly maximum pensionable earnings is described in section C-1 below.

The Transport Canada members whose positions are being privatized effective as at 1 November 1996 under an arrangement with NAVCAN are excluded from the normal costs calculations.

C- Liabilities

1. Active Contributors

Consistent with the projected accrued benefit actuarial cost method employed to estimate normal costs, the plan's liabilities in respect of active contributors as at the valuation date correspond to the value, discounted in accordance with the projected yields on the Account (described in section D below and shown in section IV-C), of all future benefits having accrued as at that date in respect of all previous years' service. If an active contributor is currently in operational service, all the member's previous service is deemed operational. Similarly, if a contributor is not currently in operational service, all the member's previous service is deemed regular.

With respect to Transport Canada members whose positions are being privatized to NAVCAN, because it is known that up to 90% of eligible members will choose to transfer their accrued benefits to the NAVCAN pension plan, it was assumed that all members will transfer and that the transfer date is the valuation date. The actuarial liability is compared against two times the employee contributions accumulated at the actual Account yields, and the greater is taken as the transfer value.

A yearly maximum salary rate is now prescribed for PSSA purposes. Benefits earned on and after 15 December 1994 (except dependant pension benefits) will be limited by this salary rate. For 1996 the prescribed yearly maximum salary rate was $98,600. The formula for calculating the prescribed yearly maximum salary rate is

[{A minus (.013 times B)}divided by .02] plus B; rounded to next highest $100

where A	is the defined benefit maximum as per the *Income Tax Act* (currently fixed at $1,722.22 until 2005, and then increasing in line with the Industrial Aggregate), and
B	is the Year's Maximum Pensionable Earnings for the CPP.

This prescribed maximum salary rate is applied as follows for valuation purposes:

(a) the liabilities and normal cost are first calculated without taking into consideration the prescribed yearly maximum salary rate,

(b) offsets to the liabilities and normal cost are then applied taking into consideration the prescribed yearly maximum salary rate. In order to approximately account for those members' salaries currently under the maximum which will eventually exceed the maximum, the salaries of members below the threshold age of 55 with service less than 20, or age 45 with a minimum of service 20, were replaced by theoretical salaries. These theoretical salaries were derived assuming that:

   i) members, whose average salaries at termination will be in excess of the yearly maximum salary rate, will be promoted from within the rank and file of membership, and

   ii) the salary distributions at the threshold are applied to the less mature population using the Monte Carlo simulation. The theoretical salaries in each quinquennial age and service group are adjusted such that the average theoretical salary for the group is equal to the actual average salary. The salary distributions were derived using the data from the PSSA valuation at 31 December 1992 instead of the current valuation data because the ERI/EDI programs and the two-year salary freeze on seniority increases have distorted the salary distributions at 31 March 1996.

2. Non-Active Contributors

These members are still employed but are not actively contributing to the plan. Their benefits have been valued assuming that they terminated on the valuation date and elected an immediate annuity (deferred if not yet age 60).

3. Pensioners and Survivors

Consistent with accepted actuarial practice and standards, the plan's liabilities as at the valuation date in respect of pensioners (including deferred annuitants) and survivors correspond to the value, using the projected yields described in section D below and shown in section IV-C), of all outstanding future benefits.

D- Projected Yields

The projected yields (shown in section IV-C) assumed in computing the present value of benefits involved in estimating the normal costs and liabilities mentioned in sections B and C above are the projected annual yields on the combined book value of Superannuation Accounts of the pension plans established under the *Public Service, Canadian Forces, and Royal Canadian Mounted Police Superannuation Acts*. The yields were determined using the open-group approach, meaning that all expected future contributions to the plan were taken into account in projecting the annual yields on the Account.

The open-group approach was adopted in accordance with the plan provision, common to the three above-mentioned plans, stipulating that the average yield on the combined accounts is to be used in allocating aggregate investment earnings to each of the three accounts.

The projected yields were determined by an iterative process involving the actual investment earnings on the combined existing assets of the three accounts as at the valuation date, the assumed future new money interest rates (also shown in section IV-C), and all future contributions as well as all future expected benefits payable in respect of all pension entitlements either accrued before the valuation date or accruing thereafter.

In previous reports, the projected yields were determined on a closed-group basis. The effect of the new open-group approach is shown in section V-D-8 on the reconciliation of surplus and normal cost.

E- Membership Data

For valuation purposes, data for active contributors were grouped by individual age and number of years of service and by $5,000 annual salary ranges.

The valuation is as at 31 March 1996. However, almost all of the demographic data was gathered as at 31 December 1995. The methodology used for projecting the data three months to the valuation date assumes a modified stationary population as follows:

1. The contributor population as at 31 December 1995 was reduced in respect of ERI/EDI terminations between 1 January 1996 and 31 March 1996. These ERI/EDI positions have been declared surplus and will not be replaced. Therefore, the contributor population is decreased between 31 December 1995 and 31 March 1996.

   The active contributor population's accrued benefits were valued based on:
   (a) age and service as at 31 March 1996;
   (b) salary as at 31 December 1995 (general salary increases from 31 December 1995 to 31 March 1996 are assumed to be zero);
   (c) benefits reduced due to spousal union breakdown for PBDA settlements to 31 March 1996; and
   (d) for Transport Canada positions being privatized under an arrangement with NAVCAN, a minimum value of two times employee contributions accumulated with interest until 31 March 1996 at the Account yield.

2. The accrued benefits in respect of pensioners (including actual ERI/EDI cases to 31 March 1996), surviving spouses and children were valued based on:
   (a) regarding ERI/EDI terminations, the benefit option elected and on service, salary and contributions to only the earlier of the date of termination and 31 December 1995,
   (b) age as at 31 March 1996 as well as at CPP/QPP offset commencement,
   (c) annuity benefits indexed to 31 March 1996, and
   (d) benefits reduced due to spousal union breakdown for PBDA settlements to 31 March 1996.

3. Outstanding terminations as at 31 March 1996 have been assumed equal to:
   (a) actual outstanding terminations as at 31 December 1995, plus
   (b) outstanding terminations as at 31 March 1996 from ERI/EDI terminations between 1 January 1996 and 31 March 1996.

4. Members' future contributions in respect of elected prior service as at 31 March 1996 were deemed equal to those in respect of elected prior service as at 31 December 1995.

IV- Assumptions

A- Key Economic Assumptions

The following key economic assumptions are required for valuation purposes in respect of each year following the valuation date:

- average new money interest rate applicable to long-term (at least 20 years to maturity) Government of Canada bonds purchased during the year;
- increase in the CPI;
- increase in the Industrial Aggregate of Average Weekly Earnings; and
- increase in contributors’ average annual salary (exclusive of seniority and promotional increases).

These assumptions were made by analysing past experience (i.e. over the last 10, 25, and 50 years), current experience, and expectations for the future. Three main conclusions were reached as a result of these analyses:

1. High current real rates of return (i.e. the excess of new money interest rates over annual increases in the CPI) on long-term Government of Canada bonds are expected to return eventually to 3% per annum.

2. Low current increases in the CPI will rise gradually to eventually reach an ultimate level of 3% per annum.

3. Low current real increases in average earnings (i.e. the excess of increases in average annual employment earnings over CPI increases) will rise gradually to eventually reach an ultimate level of 1% per annum. The assumed increase in contributors’ average annual employment earnings would normally, for any year, be the same as the assumed increase in the Industrial Aggregate of Average Weekly Earnings. However, it was adjusted in the short term to reflect the continuation of the four-year Public Service salary freeze until 1997 or 1998 (dependent on contract expiry).

These conclusions are the same as those underlying the ultimate values assumed for the previous valuation. The rationale is as follows:

1. The assumed ultimate real rate of return on long-term Government of Canada bonds at 3% per annum appears reasonable considering the average experience of the last 25 years and the expected impact on the Canadian economy of free trade, international competition and the size of the public debt.

2. The assumed ultimate level of inflation at 3% per annum, with the prospects of stable moderate inflation from now on, seems appropriate. Considering the normal fluctuations in the financial and labour markets, inflation is not expected to remain at the historically low rates experienced over the last five years (average of 1.6% per annum was the lowest in three decades). However, a return to the high inflation rates of the 1970s and 1980s (average of 6.9% per annum over 20 years) is judged to be unlikely.

3. The assumed ultimate productivity rate (i.e. real increase in average employment earnings) was kept at 1% per annum, which lies about midway between the average Canadian experience of the past 25 years (0.59% per annum) and 50 years (1.50% per annum).

B- Derived Economic Assumptions

The following assumptions were derived from the key economic assumptions:

1. Projected Yields on the Account

These yields are required for the computation of present values of benefits to determine the plan's liabilities and normal costs. The methodology used to determine the projected yields on the Account is described in section III-D.

2. Year's Increase in the Canada Pension Plan (CPP) Year's Maximum Pensionable Earnings (YMPE)

The YMPE is involved in the valuation process because the plan is integrated with the CPP/QPP. The assumed increase in the YMPE for a given year was derived, in accordance with the *Canada Pension Plan Act*, to correspond to the increase in the assumed Industrial Aggregate of Average Weekly Earnings over successive 12-month periods ending on 30 June.

3. Year's Increase in the Pension Indexing Factor

The year's pension indexing factor is involved in the valuation process by virtue of its role in the pension inflation adjustments. It was derived by applying the indexation formula described in Appendix 1, which relates to the assumed CPI increases over successive 12-month periods ending on 30 September.

C- Summary of Key and Derived Economic Assumptions

	Interest		Inflation		Employment Earnings		
Plan Year	New Money Interest	Yield Projected on Account	CPI Increase	Pension Indexing[1]	Industrial Aggregate Increase	YMPE Increase[1]	Average Pensionable Earnings Increase[2]
1997	7.7%	10.11%	2.0%	1.6%[3]	3.0%	1.1%[3]	0.7%
1998	7.2	9.97	2.2	2.0	3.2	2.9	1.9
1999	6.8	9.73	2.4	2.2	3.4	3.1	3.3
2000	6.5	9.47	2.6	2.4	3.6	3.3	3.5
2001	6.2	9.16	2.8	2.6	3.8	3.5	3.7
2002	6.0	8.81	3.0	2.8	4.0	3.7	3.9
2003	6.0	8.41	3.0	3.0	4.0	3.9	4.0
2004	6.0	8.14	3.0	3.0	4.0	4.0	4.0
2005	6.0	7.89	3.0	3.0	4.0	4.0	4.0
2006	6.0	7.65	3.0	3.0	4.0	4.0	4.0
2007	6.0	7.46	3.0	3.0	4.0	4.0	4.0
2008	6.0	7.30	3.0	3.0	4.0	4.0	4.0
2009	6.0	7.13	3.0	3.0	4.0	4.0	4.0
2010	6.0	6.97	3.0	3.0	4.0	4.0	4.0
2011	6.0	6.81	3.0	3.0	4.0	4.0	4.0
2012	6.0	6.57	3.0	3.0	4.0	4.0	4.0
2013	6.0	6.45	3.0	3.0	4.0	4.0	4.0
2014	6.0	6.36	3.0	3.0	4.0	4.0	4.0
2015	6.0	6.28	3.0	3.0	4.0	4.0	4.0
2016	6.0	6.18	3.0	3.0	4.0	4.0	4.0
2017	6.0	6.11	3.0	3.0	4.0	4.0	4.0
2018	6.0	6.07	3.0	3.0	4.0	4.0	4.0
2019	6.0	6.04	3.0	3.0	4.0	4.0	4.0
2020	6.0	6.02	3.0	3.0	4.0	4.0	4.0
2021+	6.0	6.00	3.0	3.0	4.0	4.0	4.0

[1] Assumed to be effective as at 1 January.

[2] Exclusive of seniority and promotional increases.

[3] These figures reflect actual experience.

D- Margin Against Adverse Fluctuations

Actuarial valuations prepared for private employers' pension plans normally include safety margins. This is done mainly to ensure that on plan wind-up there would be, taking into account possible future fluctuations in economic and demographic factors, sufficient funds for the payment of all future benefits accrued as at the wind-up date. Such rationale does not appear to apply to this plan because it is sponsored by the Government of Canada.

However, a secondary objective of a margin consists of ensuring as much as possible that any eventual difference between assets and liabilities will be positive rather than negative, and therefore that any required financing adjustments will be in respect of a surplus rather than a deficit. This objective is deemed to be met implicitly in this valuation through the assumed ultimate real rate of return on investments which, at 3% per annum, is deemed to err on the safe side.

In the previous report, the explicit margin corresponded to an increase of one quarter of a percentage point in the pension indexing factor (see section B above) derived for 1996 and subsequent years. For this report, the explicit margin was removed. The removal of this explicit margin entails a reduction in the liabilities and in the normal cost, which is shown in section V-D-8.

E- Seniority and Promotional Salary Increases

Pursuant to the federal budget of February 1994, seniority increases in respect of government employees were suspended for two years starting in 1994. Moreover, there will be no retroactive catch-up when the suspension is lifted. Because this was a temporary suspension, i.e. seniority increases have actually resumed in 1996, it is expected that it will not materially affect the projected amount of retirement pensions, which depend on the highest consecutive six-year earnings average. In the previous valuation, the suspension was ignored for valuation purposes as it was deemed that there would be a prospective catch-up. Therefore, for this valuation, the salary scale must be adjusted to reflect the prospective catch-up which will be amortized on average over the members' careers.

For this valuation, rates of seniority and promotional increases are those assumed for the previous valuation but adjusted by adding a constant 0.2% at each service duration, such that the additional liability and normal cost created will provide for the liability released due to the temporary seniority freeze. The assumptions for seniority and promotional increases, broken down by years of service, are shown in table 2A of Appendix 2.

F- Demographic Assumptions

Except where otherwise noted, all demographic assumptions were determined from the plan's own experience as was done in the past. Assumptions of the previous valuation were updated to reflect the experience of January 1993 to December 1995.

1. Contributors

(a) New Members

To estimate the normal costs shown in the cost certificate (section V-B), assumptions are required for future years regarding the number, age, sex and initial salary rate of future new members.

With respect to number, it was assumed that for the first two years following the valuation date the total number of new entrants would be smaller than the number of total terminations by 17,000 to take into account the non-replacement of members terminating under the ERI/EDI programs. After two years, it was assumed that the number of new members would be equal to the year's assumed number of terminations.

It was also assumed that the distribution of new members by age, sex and initial salary rate would be the same as members with less than one year of service at the valuation date.

(b) Rates of Termination with No Right to a Pension

From 20 June 1996, subject to certain minor exceptions, a return of contributions is the only benefit applicable in respect of a contributor who ceases to be employed for any reason before two years of pensionable service have accrued. Prior to that date, a period of five years was applicable.

It was assumed for liability and normal cost calculation purposes that the new two-year vesting provision was in effect at the valuation date. Furthermore, since valuation data is grouped by years of service at the valuation date and terminations are deemed to occur mid-way in a year, it was assumed that only members with less than one year of service at the beginning of a year would terminate with nonvested benefits. The rates cover termination of employment for all reasons and vary only by sex.

The assumed rates of termination with no right to a pension were set equal to the graduated average 1990-1995 experience (groups privatized were excluded). These rates are 10% and 20% lower for males and females respectively than those of the previous valuation. Termination rates for members in operational service (Air Traffic Controllers and Correctional Service), not used previously, were set at 75% of the main group. These assumptions are shown in table 2B of Appendix 2.

(c) Rates of Termination (for Reasons Other than Disability and Death) Prior to Age 50 with Right to a Pension and Assumed Benefit Elections

From 20 June 1996 contributors under age 50 (other than those with operational service) who terminate their employment with at least two years of pensionable service may opt for a return of contributions, a deferred annuity to commence at age 60, or a transfer of the present value of their deferred annuity to a locked-in RRSP or other prescribed financial arrangement. After 20 June 1998, the option of a return of contributions will no longer be available.

In the previous valuation, an assumption was used for members electing either a return of contributions or a deferred annuity (this assumption was also applied to contributors with a right to a pension at least 50 years of age with less than 25 years of pensionable service; such cases are now included under item (d) below).

All contributors terminating under age 50 with at least two years of service are now assumed to elect a transfer of the commuted value of the deferred annuity (except members in operational service with attained age 45 to 49 and with 20 or more years of operational service who are assumed to elect an operational service annual allowance). For this purpose, the present value of the deferred annuity is estimated using the same economic and demographic assumptions as would normally be the case for valuing a deferred annuity, except the projected yields are replaced by the new money interest rate assumed for the year of termination for a select period of 15 years and 6% thereafter.

Termination rates are assumed to vary by sex and by number of years of service. For the main population the rates of the previous valuation were used. In analysing the relevant experience to see whether the previous rates were still appropriate, the terminations under the EDI program were included. It was also decided not to use select assumptions for the approximately 2.25 years remaining in the EDI program. It was assumed that over the next two years 10,000 terminations will not be replaced by new entrants, thereby decreasing the active PSSA population by that number. The rates for members in operational service (Air Traffic Controllers and Correctional Service) were set at 75% of those of the main group, except for service of 19 years or more. These assumptions are shown in table 2C of Appendix 2.

(d) Rates of Retirement Benefits (for Reasons other than Disability and Death) at Age 50 and Over With Right to a Pension and Assumed Benefit Elections

Some changes were made to this assumption in comparison with the previous valuation. Previously, contributors were assumed to elect for an annual allowance or an immediate annuity at termination from age 50 with at least 25 years of pensionable service. Now, all contributors with a right to a pension are assumed to elect an immediate annuity or annual allowance depending on eligibility (they therefore include contributors with less than 25 years of pensionable service who used to be included under item (c) above).

For purposes of determining the assumed rates, the experience of groups subject to work force adjustments, e.g. ERI and privatizations (see following sections V-D-5 and V-D-6, respectively) was excluded. Assumed ultimate rates were determined as the graduated average experience rates for 1990 to 1995 which (based on a weighted average by population) are 12% higher than those used in the previous report. Furthermore, a select period of two years was introduced, adding approximately 10% to specific age and service rates where the ERI program is applicable. The difference between unity and the ratio of ultimate to select rates determines the likelihood of the member receiving an ERI benefit. This increases assumed retirements by approximately 7,000 over the next two years. It was also assumed that these 7,000 terminations will not be replaced by new entrants, thereby decreasing the active PSSA population by that number. Rates, assumed to vary by age, sex and service, are shown in tables 2D and 2E of Appendix 2.

For Correctional Service Canada and Air Traffic Controllers in operational service, special rates have been introduced to reflect their higher expected incidence of retirement and enhanced benefit entitlement. Select rates have not been applied to these groups. Members who terminate with 20 or more years of operational service are entitled to an immediate annuity reduced by 5% times the greater of 50 minus the age and 25 minus the number of years of operational service, subject to a maximum of 60 minus the contributor’s age. Rates are assumed to vary by age, sex and service, and are shown in table 2F of Appendix 2.

(e) Rates of Termination With Right to a Disability Pension

The definition of disability has changed as of 1 January 1996 under the PSSA. Based on a review of the recent disability experience, it was decided to retain the assumed rates for females used in the previous valuation. For males, since the recent experience indicates that the actual number of new disabilities is significantly lower than expected, rates were determined as the graduated average experience for 1990 to 1995. These rates vary by age and are shown in table 2G of Appendix 2. It was assumed that all members becoming disabled would opt for an immediate annuity. As in the previous valuation, it was further assumed that 80% of disability terminations would be receiving CPP/QPP disability benefits.

(f) Mortality Rates and Longevity Improvement Factors

The mortality rates deemed to apply in the plan year following the valuation date were assumed to vary by age and sex and were set equal to 97.5% of the graduated average 1990-1995 experience of active and non-disabled pensioners, reduced for 3.75 years of mortality improvements. These rates are also applicable to non-disabled pensioners. These rates are shown in table 2H of Appendix 2.

Mortality rates deemed to apply after 31 March 1997 are adjusted to take account of expected future improvements in longevity. The corresponding longevity improvement factors shown in table 2I of Appendix 2 were used for contributors, retirees and survivors. The projection scale used is a modification of Projection Scale AA of the Society of Actuaries used with the UP(uninsured pensioner)-94 mortality table. A factor of 0.25% was added to all non-zero factors to reflect a portion of the difference between scale AA and recent PSSA experience. The overall effect of changing longevity improvement factors is to decrease projected male deaths by approximately 0.3% per annum and to increase females deaths by approximately 0.4% per annum.

2. Pensioners

The following assumptions used for contributors were also used for pensioners:

- mortality rates (except for disabled pensioners);
- longevity improvement factors;
- proportions married at death;
- average age of spouse at death of contributor;
- number of children at death of contributor; and
- average age of children at death of contributor.

For disabled pensioners, the mortality rates deemed to apply in the year following the valuation date are the same as the previous valuation 1993 base rates (i.e. rates were not projected 3.25 years for deemed improvements in longevity).

A sample of rates deemed to apply in the year following the valuation are shown in table 2H of Appendix 2.

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

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

3. Survivors

(a) Mortality Rates

The mortality rates deemed to apply in the year following the valuation were set equal to the Life Table, Canada 1990-1992 (adjusted to an age last basis), but projected for 5.25 years of deemed longevity improvement.

A sample of the rates deemed to apply in the year following the valuation is shown in table 2H of Appendix 2. Mortality rates deemed to apply to surviving spouses after 31 March 1997 were determined by applying the longevity improvement factors assumed for contributors.

For the current as for preceding valuations, mortality was ignored in projecting the allowances payable to eligible children because its effect at the relevant ages (below 25) is negligible.

(b) Proportions of Contributors or Pensioners Married at Death

These proportions are assumed to vary by age and sex. For males, these assumptions were set equal to the graduated average 1990-95 experience. The main change in assumptions is in respect of male members under age 60 where the weighted average rates compared with the previous valuation are about 10% less. For females, the assumptions used are those of the previous report, i.e. under the age of 56, the proportions were set equal to 0.55, decreasing each year by 0.01 until age 60. Over age 60, the proportions are assumed to decrease, from 0.50 at age 60 and then in proportion to the survivorship factors for higher ages, in accordance with the previous valuation's 1993 base year mortality of widowers. A sample of these assumed values is shown in table 2J of Appendix 2.

(c) Average Age of Spouses at Death of Contributors or Pensioners

These assumptions apply to both contributors and pensioners. The previous valuation assumptions were modified for males but remain unchanged for females. For males, they were set equal to the graduated average 1990-1995 experience in respect of both contributors and pensioners. The assumed age differences (weighted average) between spouses were reduced compared with the previous valuation. A sample of the assumed average ages is shown in table 2J of Appendix 2.

(d) Average Number of Children at Death of Contributors or Pensioners

The assumptions, varying by age and sex of the contributor or pensioner were set equal to the graduated average 1990-1995 experience. The expected numbers of children are accordingly reduced (weighted average) compared with the previous valuation by approximately 20% for males and 10% for females. Sample values are shown in table 2K of Appendix 2.

(e) Average Age of Children at Death of Contributors or Pensioners

The assumptions of the previous valuation were retained. Sample values are shown in table 2K of Appendix 2. They are based on 95% of the graduated 1981-1986 experience of the plan, rounded to the next lower integer.

(f) Proportions of Children Remaining Eligible for Allowances Over Age 17

The payment of an allowance to a child between ages 18 and 25 is conditional on the child attending school full-time.

The proportions of students remaining eligible for an allowance were set equal to the graduated average 1990-1995 experience which represents an increase compared with the previous valuation. Sample values are shown in table 2K of Appendix 2.

G- Other Assumptions

1. **Pension Benefits Division / Optional Survivor Benefit / Leave Without Pay**
   Pension benefits divisions have almost no effect on the valuation results because their corresponding liability is reduced on average by roughly the amount paid to the credit of the former spouse. Consequently, no future pension benefits divisions were assumed in estimating normal costs and liabilities. However, past pension benefits divisions were fully reflected in liabilities.

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

2. **Minimum Death Benefit**
   This valuation does not take into account the minimum death benefit, described in Note 13, section F of Appendix 1, in respect of deaths occurring after retirement. The resulting understatement of accrued liability and normal cost is not material because a majority of the relatively few pensioners who die in the early years of retirement do leave an eligible survivor.

3. **CPP Contribution Rates**
   In accordance with the CPP amending Bill tabled in the House of Commons 25 September 1997, the CPP contribution rate for employees is assumed herein to rise from 2.8% in 1996 to its ultimate level of 4.95% by the calendar year 2003. The previous schedule of CPP employee contribution rates increased more slowly, taking 12 more years to reach the same level of 4.95%.

4. **CPP Offset for Retirement Pensioners**
   Although the CPP amending Bill of 25 September 1997 incorporates a change to base the CPP benefit on a contributor's last five years of service instead of the current three years, no corresponding change was assumed for the calculation of the CPP offset at age 65 to the PSSA retirement pension. Such a change would require an amendment to the Act.

5. **Maximum Pensionable Earnings**
   The tax-related limit of $98,600 prescribed for the 1996 calendar year was assumed to rise very slowly until 1 January 2005, and to rise thereafter in accordance with the assumed increase in the Industrial Aggregate of Average Weekly Earnings, as prescribed under the current legislation. A small proportion of members are affected by this new assumption; consequently the effect on the valuation is negligible.

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

7. **Funding of Elected Prior Service**
   The government credits to the Account in each future year in respect of prior service elections are assumed to be 183% of the corresponding future contributions by the contributors making the elections. This multiple was derived from the split of the normal cost for the 1997 plan year, per the cost certificate in the next section.

8. **Outstanding Terminations**
   There are two categories of outstanding terminations accounted for in this valuation. The first is in respect of members who have elected a return of contributions that had not yet been paid as of the valuation date. The valuation liability properly reflects this. The second is in respect of terminated employees who have not elected their benefit option. In this case, the valuation liability held is the value of the minimum death benefit (see Note 13, section F of Appendix 1).

V- Results

A- Balance Sheet as at 31 March 1996

The following balance sheet was prepared using the data described in section II, the methodology described in section III, and the assumptions described in section IV.

Assets		$ millions
Balance in PSS Account		65,033.6
Present value of future contributions in respect of elected prior service:		
• Members	387.2	
• Government	708.6	
		1,095.8
Total Assets		**66,129.4**
Liabilities		
For benefits accrued to, and in respect of:		
• Active status contributors	27,407.5	
• Non-active status contributors	104.0	
		27,511.5
For benefits payable to, and in respect of:		
• Retirement pensioners (including pensions deferred to age 60)	24,211.3	
• Disability pensioners	1,275.4	
• Surviving spouses	3,117.0	
• Surviving children	13.8	
		28,617.5
Outstanding terminations		128.6
Total Liabilities		**56,257.6**
Surplus		**9,871.8**

B- Cost Certificate

The normal costs, assets and liabilities were computed using the data described in section II, the methodology described in section III, and the assumptions described in section IV. Emerging experience, differing from the corresponding assumptions, will result in gains or losses to be revealed in subsequent reports.

1. Normal Costs

The following normal costs are expressed as a dollar amount as well as a percentage of the projected pensionable payroll (see F-1 in Appendix 1) in each given plan year.

Plan Year	% of Pensionable Payroll	Millions of Dollars
1997	15.43	1,743
1998	16.33	1,827
1999	17.08	1,944
2000	17.73	2,099
2001	18.33	2,259
2002	18.86	2,422
2003	19.30	2,585
2004	19.70	2,752
2005	20.04	2,922
2006	20.33	3,091
2011	21.16	3,936
2016	21.29	4,934
2021	21.59	6,145

The annual increase in the normal costs (expressed as a % of pensionable payroll) from 1997 to 2002 reflects mainly the partial transition of all economic assumptions from their current to their ultimate values. The annual increase in the normal cost (expressed as a % of pensionable payroll) from 2003 to 2021 reflects mainly the balance of the transition from the currently high investment yield on the Account (e.g. 10.11% for the 1997 plan year) to the lower ultimate yield (6% per annum) projected for the 2021 plan year and thereafter.

2. Allocation of Normal Costs

The foregoing normal costs are borne jointly by contributors and the government. Contributors make required contributions in accordance with a prescribed formula (see Appendix 1), with the government covering the balance of the normal cost. The following table shows the allocation of the normal cost expressed as a percentage of pensionable payroll, as well as the ratio of the cost borne by the government to that borne by the contributors.

Plan	Allocation of Normal Costs		
Year	Government %	Contributors %	Ratio
1997	9.97	5.46	1.83
1998	11.02	5.31	2.08
1999	11.94	5.14	2.32
2000	12.82	4.91	2.61
2001	13.71	4.62	2.97
2002	14.52	4.33	3.35
2003	15.23	4.07	3.74
2004	15.76	3.94	4.00
2005	16.11	3.93	4.10
2006	16.40	3.93	4.17
2011	17.23	3.93	4.38
2016	17.36	3.93	4.42
2021	17.66	3.93	4.49

The initial ratio of 1.83 more than doubles in the first seven years, partly because the rate at which contributors make required contributions to the plan decreases as the CPP contribution rate rises rapidly until 2003 to its ultimate level of 4.95% (see item IV-G-3). The ratio increases more slowly thereafter, reaching a value of 4.49 in the 2021 plan year.

3. Normal Cost by Type of Contributor

The normal cost for the plan is the weighted average of the separate normal costs for Correctional Service Canada members in operational service (CSC o/s members) and other members. For example, in the 1997 plan year the overall normal cost of 15.43% of pensionable payroll is the composite of 16.70% for CSC o/s members and 15.40% for other members. The difference in normal costs is chiefly attributable to the more advantageous early retirement provisions available only to CSC o/s members.

4. Summary Balance Sheet

The assets of the plan were $66.13 billion as at 31 March 1996. The total liabilities as at the same date are estimated at $56.26 billion, leaving a surplus of $9.87 billion. Amortizing this surplus over 15 years would correspond to a level annual amount of $1.18 billion (payable monthly and corresponding to 10.4% of pensionable payroll for the 1997 plan year), which was estimated using the yields described in section III-D and shown in section IV-C.

C- Sensitivity of Normal Costs to Variations in Key Assumptions

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

1. Productivity (real rate of annual increase in average employment earnings)

If the annual productivity gains were reduced by one percentage point from 1998 onward (e.g. from 1% to 0% ultimately) then the 1997 normal cost would decrease by 1.33% of pensionable payroll (from 15.43% to 14.10%).

2. Investment Yields

The valuation reflects a deemed investment policy of buying and holding long-term Government of Canada bonds. If the investment portfolio also included a significant equity component, it would be appropriate to project higher rates of return. As a measure of sensitivity, an increment of one percentage point in the projected yields would decrease the 1997 normal cost by 3.22% of pensionable payroll (from 15.43% to 12.21%).

3. Pension Indexing

If the pension indexation assumption were reduced by one percentage point in all years (e.g. from 3% to 2% ultimately), then the 1997 normal cost would decrease by 1.91% of pensionable payroll (from 15.43% to 13.52%).

4. Mortality

If the mortality rates assumed in each future year were reduced by one-tenth, then the 1997 normal cost would increase by 0.28% of pensionable payroll (from 15.43% to 15.71%).

If the assumed improvements in longevity after the 1997 plan year were disregarded, then the 1997 normal cost would decrease by 0.87% of pensionable payroll (from 15.43% to 14.56%).

D- Reconciliation of Results with Previous Report

This section describes the various factors reconciling the surplus and normal cost of this valuation with the corresponding items of the previous valuation. Figures in brackets indicate negative amounts. The main items in the table below are explained in the following pages.

	Surplus ($ millions)	Normal Cost (% of pensionable payroll)
As at 31 December 1992	7,172.5	12.53 **(for calendar year 1993)**
Data corrections and methodology refinements	(206.5)	-
Interest on revised starting surplus	2,683.4	-
Expected normal cost change	-	2.23
Cost/contributions difference	55.9	-
Downsizing of the Public Service	(484.7)	0.07
NAVCAN privatization	(148.4)	(0.08)
Changes to the plan provisions	(502.1)	0.61
Other experience gains and losses	676.4	-
Changes in assumptions and methodology	625.3	0.07
As at 31 March 1996	9,871.8	15.43 **(for plan year 1997)**

Explanations of the Above Reconciliation

1. **Data Corrections and Methodology Refinements**
   The correction of errors (such as coding of status) in the 1992 data as well as valuation methodology refinements resulted in a decrease in the surplus of $206.5 million.

2. **Interest on the Revised Starting Surplus**
   The surplus was increased by $2,683.4 million as a result of accruing interest on the initial surplus revised for the amount of $206.5 million mentioned in the previous paragraph. The amount of expected interest from 1 January 1993 to 31 March 1996 was computed using the yields projected in the previous report.

3. **Expected Normal Cost Change**
   The gradual increase of 2.23% of pensionable payroll in the normal cost from 1993 to 1996 projected in the previous report mainly reflects a partial transition from current to ultimate economic assumptions.

4. **Cost/Contributions Difference**
   An increase in the surplus of $55.9 million resulted from the actual government contributions in the intervaluation period exceeding the government portion of the normal cost shown in the previous report cost certificate. This amount includes interest accumulation on that difference.

5. **Downsizing of the Public Service**
   The ERI and Work Force Adjustment programs affect the PSSA costs in two respects. Firstly, some members are terminating earlier than anticipated. Secondly, the annual allowance reduction in respect of members who met the following criteria is waived:

   - at least 55 years of age;
   - involuntary termination; and
   - a minimum of 10 years of employment in the Public Service.

   The cost of these programs was estimated in respect of members who have already availed themselves of these programs and of members who will do so until the ERI program expires. Assumed retirement rates were adjusted for a two-year select period in connection with the ERI program by assuming an additional 7,000 ERI retirements, causing the normal cost for plan years 1997 and 1998 to rise by 0.07% of pensionable payroll. The additional related liability as at 31 March 1996 is estimated at $484.7 million.

6. NAVCAN Privatization

We have estimated the additional liability of the NAVCAN privatization as $148.4 million based on the assumption that all eligible members will choose to transfer and that the transfer date is the same as the valuation date. The total PSSA normal cost accordingly decreases by 0.08% of pensionable payroll.

7. Changes to the Plan Provisions

Among the several recent changes to the plan provisions, the following three changes have a material effect on the valuation results.

The first is the change from five-year to two-year vesting as of 20 June 1996, and the removal of the option from 20 June 1998 to choose a return of contributions except for such persons with no right to a pension. The corresponding additional liability at 31 March 1996 is $463.4 million and the total PSSA normal cost increases by 0.68% of pensionable payroll.

The second change is in respect of the early retirement program for Correctional Service Canada. The additional liability at 31 March 1996 is $55.6 million and the total PSSA normal cost increases by 0.03% of pensionable payroll. Affected members contribute an additional 1.25% of their pensionable earnings in this respect.

The third change is with respect to the compliance with the *Income Tax Act* whereby benefits (except those for dependants) in excess of the prescribed maximum are paid through a RCA established separately from the PSSA. The liability is accordingly reduced at 31 March 1996 by $16.9 million and the normal cost by 0.10% of pensionable payroll.

8. Other Experience Gains and Losses and Effect of Changes in Assumptions and Methodology

The table below summarizes the analysis of the effect on the surplus and the normal cost of other experience gains and losses (actual experience during the three-year intervaluation period being different from that expected in the valuation report as at 31 December 1992) and of other changes in assumptions and methodology. Figures in brackets indicate decreases in the surplus or normal cost. Each item in the table below is explained in the following pages.

Components of Item 8

Other Experience Gains and Losses
and
Effect of Changes in Assumptions and Methodology

	Surplus ($ millions)	Normal Cost (% of pensionable payroll)
‣ **Economic Experience**		
Interest earnings	221.8	-
Pension indexing	147.7	-
Average earnings and YMPE increases	(127.6)	-
Seniority and promotional salary increases	599.1	-
‣ **Demographic Experience**		
Terminations (other than deaths and disabilities)	(267.5)	-
Terminations due to disability (vested benefits)	11.2	-
Mortality	(39.0)	-
Surviving spouses	36.3	-
Miscellaneous	94.4	-
Total Experience Gains and Losses	**676.4**	
Effect of Changes in Assumptions and Methodology		
‣ **Economic Assumptions and Methodology Changes**		
Margin removal	1,568.2	(0.54)
Select period and adoption of open group method	(466.0)	0.25
Seniority and promotional salary increases	(381.9)	0.30
Government future contributions in respect of elected prior service	321.4	-
‣ **Demographic Assumptions**		
Terminations (other than death and disability)	(347.9)	0.12
Terminations with a right to a disability pension	1.9	-
Mortality (for base year 1996)	(305.9)	0.05
Mortality improvement factors	46.3	(0.05)
Proportion married at death and average age of spouse	184.4	(0.06)
Children	4.8	-
Total Effect Due to Changes to Assumptions and Methodology	**625.3**	**0.07**

Components of Item 8

The total effect of the changes in economic assumptions and methodology was a surplus gain of $1,041.7 million and a normal cost increase of 0.01% of pensionable payroll.

- **Economic Experience**
  During the intervaluation period, investment earnings credited to the PSS Account were greater than those assumed. This accounted for an increase in the surplus of $221.8 million. An increase in the surplus of $147.7 million resulted from pension indexing increases less than assumed. A decrease in the surplus of $127.6 million resulted mainly from YMPE increases that were less than expected.

- **Economic Assumptions and Methodology**
  The experience with respect to seniority and promotional salary increases during the intervaluation period resulted in an experience gain of $599.1 million, due to the freeze in seniority salary increases.

  The removal of the margin (against adverse fluctuations) produced by a quarter of a percentage point increase in the pension indexing factors resulted in an increase of the surplus of $1,568.2 million and in a reduction of the normal cost of 0.54% of pensionable payroll.

  The change of economic assumptions in the select period and in valuation methodology (from closed to open-group approach) resulted in a decrease of the surplus of $466.0 million and an increase in the normal cost of 0.25% of pensionable payroll.

  The rates of seniority and promotional salary increases assumed for the previous valuation were increased by a constant 0.2% at each service duration, such that the additional liability and normal cost created will provide for the liability lost due to the seniority freeze. The change in assumptions resulted in a decrease in surplus of $381.9 million and an increase in normal cost of 0.30% of pensionable payroll.

  In the previous valuation, it had been assumed that the government contributions in respect of prior service would match members’ future contributions in respect of such service. For this valuation, it was assumed for accuracy purposes that the government would contribute at the 1997 ratio (1.83 as shown in V-B-2) of government to contributor normal costs. This methodology change resulted in an increase of surplus of $321.4 million.

- **Demographic Experience and Assumptions**

  - **Terminations for Reasons Other Than Death and Disability**
    The experience during the intervaluation period resulted in a surplus decrease of $267.5 million.

    Changes in the termination assumptions included amalgamating all contributors with pension rights age 50 and over into the retirement assumption and generally increasing the retirement rate assumptions and also assuming all retirements with pension rights would elect an annual allowance. The changes in the termination assumptions resulted in a decrease in surplus of $347.9 million and an increase in normal cost of 0.12% of pensionable payroll.

  - **Terminations with Right to a Disability Pension**
    The disability experience during the intervaluation period was more favourable than expected and resulted in a gain of $11.2 million. The resulting change in assumptions caused an increase in surplus of $1.9 million and a non-material effect on the normal cost.

  - **Mortality (for base plan year 1997)**
    The following table breaks down the variation in surplus due to the difference between the actual and expected mortality rates during the intervaluation period.

Group	Surplus ($ millions)
Contributors and retirement pensioners	(57.3)
Disabled pensioners	7.2
Surviving spouses	11.1
Total	(39.0)

The following table breaks down the variation in surplus and the normal cost due to changes in assumed mortality rates deemed to apply in plan year 1997.

Group	Surplus ($ millions)	Normal Cost (%)
Contributors and retirement pensioners	(272.7)	0.04
Disabled pensioners	17.2	(0.01)
Surviving spouses	(50.4)	0.02
Total	(305.9)	0.05

- **Mortality Improvement Factors**
  The changes in the assumed mortality improvement factors resulted in a surplus increase of $46.3 million and a decrease in normal cost of 0.05% of pensionable payroll.

- **Proportion Married at Death and Average Age of Spouse**
  The difference between the related actual and expected results during the intervaluation period produced a net gain of $36.3 million.

  The following table breaks down the effect on the excess of assets over liabilities and the normal cost stemming from changes in the assumed proportions married at death and in the assumed average age of surviving spouses at death of the member.

Assumption	Surplus ($ millions)	Normal Cost (%)
Proportion married at death	106.4	(0.05)
Average age of spouse	78.0	(0.01)
Total	184.4	(0.06)

- **Children**
  The assumptions were changed with respect to the number of children at the death of the member and the proportions of children remaining eligible for allowances over age 17. These assumptions changes cause an increase in surplus of $4.8 million and a non material effect on the normal cost.

- **Miscellaneous**
  This item includes all other factors of lesser importance (e.g. PBDA, RCAs at this time) and the use of approximations to estimate the cost of changes to the plan and effect of experience versus assumptions. The effect on the surplus was an increase of $94.4 million.

VI- Conclusions

A- Surplus

Considering that the surplus as at 31 March 1996 is very large, whether expressed absolutely ($9.87 billion) or relatively (17.5% of liabilities or alternatively 5.7 times the estimated normal cost for the 1997 plan year), and that

- the liabilities computed in respect of all benefits accrued by 31 March 1996 were estimated on an adequate and realistic basis, and

- the normal costs computed for the 1997, 1998 and 1999 plan years make adequate provision for the full funding of benefits projected to accrue during those years,

it would be appropriate to address the plan's surplus as soon as possible. However, the statutes governing the operation of the plan are silent on this matter.

B- Actuarial Standards

In my opinion, considering that this report was prepared pursuant to the PPRA,

- the valuation input data on which it is based are sufficient and reliable;
- the assumptions that have been used are, in aggregate, appropriate;
- the methodology employed is appropriate; and
- the value of the assets exceeds the wind-up liabilities at the valuation date.

This report has been prepared, and my opinion given, in accordance with accepted actuarial practice, and particularly with the Canadian Institute of Actuaries' Standard of Practice for the Valuation of Pension Plans.

Bernard Dussault, B.Sc., F.S.A., F.C.I.A.
Chief Actuary
Public Insurance and Pension Programs

Ottawa, Canada
3 April 1998

APPENDIX 1

Summary of Plan Provisions

The federal government has been providing its employees with a pension plan since 1870. The current pension arrangements for employees of the Public Service of Canada are provided through the *Public Service Superannuation Act* (PSSA) as enacted on 1 January 1954 and modified thereafter. The current provisions of the pension plan established under the PSSA are summarized in this Appendix. However, the Act shall prevail if there is a discrepancy between it and the summary.

A- Membership

Subject to the exceptions mentioned in the next paragraph, membership in the plan is compulsory for all full-time and part-time employees working 12 or more hours per week (except those that were grandfathered as at 4 July 1994 as not required to join but were eligible to join on a voluntary basis for two years) in the Public Service. This includes all positions in any department or portion of the executive government of Canada, and of the Senate and House of Commons, the Library of Parliament and any board, commission or corporation listed in a *Schedule to the Act*. Persons engaged as sessional employees, postmasters or assistant postmasters in revenue post offices and some others may be designated as contributors by the President of the Treasury Board either individually or as members of a class.

The main groups of persons employed in the Public Service to which the Act does not apply are part-time employees working less than 12 hours per week, persons locally engaged outside Canada and employees of some Crown corporations, boards or commissions covered by their own pension plans.

B- Assets

The plan is financed through the Public Service Superannuation Account, which forms part of the Public Accounts of Canada. The Account is credited with all contributions made by members and the government, and charged with the benefit payments when they become due. The Account is also credited with investment earnings as though net cash flows were invested quarterly in 20-year Government of Canada bonds issued at prescribed interest rates and held to maturity. No formal debt instrument is issued to the Account by the government in recognition of the amounts therein.

C- Contributions

1. Members

Annual contributions in respect of current service are required at the following rates applying to pensionable earnings:

Group	Contribution Rate
Air Traffic Controllers (ATC)	9.5%, less contributions to CPP/QPP[1], for a maximum of 35 years[2], thereafter 1%
CSC operational[3]	8.75%, less contributions to CPP/QPP[1], for a maximum of 35 years[2], thereafter 1%
Others	7.5%, less contributions to CPP/QPP[1], for a maximum of 35 years[2], thereafter 1%

If eligible, a contributor may elect to contribute for prior service.

2. Government

(a) Current Service

The government contributes monthly such amount which when combined with the required contributions by contributors in respect of current service, is sufficient to cover the cost, as estimated by the President of the Treasury Board, of all future benefits that have accrued in respect of pensionable service during that month. The government and the Crown corporations must contribute an amount at least equal to the contributions (except if the member is contributing at double rate for certain types of prior service) made by members.

(b) Elected Prior Service

The government credits to the Account in respect of elected prior service are analogous to those already described in respect of current service.

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[1] CPP/QPP refers to the Canada Pension Plan and/or the Québec Pension Plan, as the case may be.

[2] The 35-year period includes years for which contributions were made pursuant to the *Canadian Forces Superannuation Act* and/or the *Royal Canadian Mounted Policy Superannuation Act.*

[3] *Operational employees* means CSC employees other than those engaged in Staff Colleges or national or regional headquarters.

(c) Unfunded Liability

If an unfunded actuarial liability is identified through a triennial statutory actuarial report, the PSS Account is to be credited with such annual amounts that in the opinion of the President of the Treasury Board will fully amortize this deficit over a period not exceeding 15 years.

D- Investment Earnings

1. Interest Rate on New Money

The interest rate on the newly issued notional bonds is the same as that applying to the CPP, i.e. the average rate on outstanding Government of Canada bonds with 20 or more years to maturity.

2. Allocation of Investment Earnings

Investment earnings are credited every three months to the Account on the basis of the actual average yield for the same period on the combined Superannuation Accounts of the Public Service, Canadian Forces and Royal Canadian Mounted Police pension plans.

E- Summary Description of Benefits

The pension established under the PSSA mainly aims at providing an earnings-related lifetime retirement pension to the eligible members of the Public Service. The plan also provides pensions to members in case of disability and to their spouses and children in case of death.

Subject to its integration with the pensions paid by the CPP/QPP, the initial rate of retirement pension is equal to 2% of the highest average of annual pensionable earnings over any period of six consecutive years, multiplied by the number of years of pensionable service not exceeding 35. Once in pay, the pension is indexed annually with the CPI, but in case of members with operational service benefits the payment of the indexing does not start until age 55 and then only if certain conditions are satisfied. Such indexation also applies to deferred pensions during the deferment period.

Details on the following overview are provided in the following section.

Contributors' Type of Termination		Types of Benefit
With less than two[1] years of service[2]		Return of contributions (ROC)
With two[1] or more years of service[2]; and		
• Disability, and	▸ no other conditions	Immediate annuity
	▸ termination prior to 20 June 1998; and age less than 45 or service less than 10	Greater of ROC and cash termination allowance
• Death leaving no surviving spouse or eligible children		Minimum benefit
• Death leaving surviving spouse and/or eligible children		Survivors annual allowances
• Attainment of specific age or age and service duration[2]	▸ age 60 or more; or age 55 or more and service 30 or more	Immediate annuity
• Leaving with (o/s)[3], and	▸ no other conditions	Use o/s as regular service
	▸ age 50 or more and o/s 25 or more; or ATC involuntary and o/s 20 or more	o/s immediate annuity
	▸ age 45 or more and o/s 20 or more; or ATC involuntary and o/s 10 or more	o/s annual allowance
• Leaving prior to age 50, except death, disability, o/s, and	▸ no other conditions	Deferred annuity (DA)
	▸ termination from 20 June 1996	DA or transfer value (TV)
	▸ termination prior to 20 June 1998; and age less than 45 or service less than 10	DA or TV or ROC
• Leaving from age 50, except death, disability, o/s, age or age and service, and	▸ no other conditions	DA or annual allowance
	▸ termination prior to 20 June 1998; and age less than 45 or service less than 10	ROC

Deferred and Immediate Pensioners' Type of Termination	Types of Benefit
Disability before age 60 while entitled to a deferred annuity or an annual allowance	Immediate annuity
Death leaving no surviving spouse or eligible children	Minimum benefit
Death leaving surviving spouse and/or eligible children	Survivors annual allowances

[1] Two years was five years before 20 June 1996. After attaining this threshold, a member's accrued pension benefits are vested.

[2] Thresholds are determined using total pensionable service including operational service.

[3] Thresholds and benefits are determined using operational service only.

F- Explanatory Notes

1. Pensionable Earnings

Pensionable earnings means the annual employment earnings (excluding overtime but including pensionable allowances, such as bilingual bonuses) of a contributor, subject for tax purposes to a prescribed yearly maximum after 14 December 1994. The maximum was $98,400 for the 1995 calendar year, rising marginally to $98,600 for the 1996 calendar year.

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

2. Indexation

(a) Level of Indexation Adjustments

All immediate and deferred annuities (pensions and allowances) are adjusted every January to the extent warranted by the increase, as at 30 September of the previous year, in the 12-month average CPI. If the indicated adjustment is negative, annuities are not decreased for that year; however, the next following adjustment is diminished accordingly.

(b) First Indexation Adjustment

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

(c) Commencement of Indexation Payments

The indexed portion of a retirement, disability or survivor pension starts being paid only once the pension is put into pay. However, regarding a retirement pension, the pensioner must, in the case of an individual with operational service-related benefits, be at least 55 years old provided also the sum of age and pensionable service is at least 85; otherwise the pensioner must be at least 60 years old; this restriction does not apply in the case of an ATC having involuntarily resigned.

3. Pensionable Service and Operational Service

Pensionable service of a contributor includes any period of service in the Public Service for which the contributor has been required to contribute or has elected to contribute, if eligible to do so, and such other types of service for which the contributor has elected to make the required special contributions to the PSS Account. Pensionable service is limited to 35 years.

The amount of any annuity or allowance to which a contributor or the surviving spouse or children may become entitled and, in some cases, the early retirement reduction factor used for determining the amount of an annual allowance payable to a contributor, depend on the pensionable service to the credit of the contributor at the date employment in the Public Service ceased.

Operational service means, in the case of Correctional Service Canada employees, the number of years of pensionable service by employees other than those engaged in Staff Colleges or national or regional headquarters. In the case of Transport Canada employees, it means pensionable service which requires a valid Air Traffic Controller License or a letter of authority issued by the Department of Transport. Note that these services are subject to minor restrictions (as per the regulations) which are not described here. Operational service is, like pensionable service, limited to 35 years.

4. Return of Contributions

Return of contributions means the payment of an amount equal to the total contributions, accumulated with interest, made by a given member. Interest is credited at a rate of 4% per annum, beginning in 1974, up to 31 December of the year immediately preceding the year the given contributor ceased to be employed in the Public Service.

From 1 January 1997, interest on return of contributions shall be calculated in accordance with the actual average annual yield on the PSS Account instead of the fixed rate of 4% and will be credited quarterly rather than annually. Moreover, the interest calculation will be based on the payment date rather than the member's termination date.

5. Cash Termination Allowance

Cash termination allowance means an amount equal to the pensionable service times one month's salary (normally at the rate of salary payable to the contributor at the time the contributor ceases to be employed in the Public Service), less an amount corresponding to the reduction, in the employee's PSSA contributions, applying in connection with the integration of the PSSA with the CPP/QPP.

6. Immediate Annuity

Immediate annuity means an unreduced pension (see items 9 and 10) that becomes payable to a contributor immediately upon a pensionable retirement or a pensionable disability. The annual amount of the *basic annuity* (before the indexation adjustments described in Note 2 above) is 2% multiplied by the years of pensionable service (which is limited to 35) and by the highest average of annual pensionable earnings (calculated without reference to yearly maximum referred to in Note 1 above) of the contributor over any six consecutive years. If the pensionable service is less than six years, earnings are averaged over the total pensionable service. For contributors with periods of part-time pensionable service, earnings used in the six-year average are based on (full-time) scheduled work week but the resulting average is multiplied by the number (divided by 37.5) of hours worked per week averaged over the entire pensionable service. If the highest six-year earnings average exceeds the maximum prescribed for the calendar year in which service is terminated, then the annual amount is reduced by 2% of such excess, multiplied by the number of years of pensionable service after 15 December 1994.

Any basic annuity or annual allowance is normally payable in equal monthly instalments at the end of each month until the month in which the pensioner dies or ceases to be entitled thereto.

When a contributor entitled to an annuity or annual allowance reaches age 65 or has become entitled to a disability pension under the terms of the CPP/QPP, the annuity or annual allowance is reduced annually by an amount equal to 0.7% multiplied by the years of pensionable service after 1965 involved in the calculation of the basic annuity and by the indexed highest six-year pensionable earnings average mentioned in the second preceding paragraph but limited to the YMPE, as indexed, averaged over the three-year period ending with the year when the member ceases to be employed.

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

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

7. Deferred Annuity

Deferred annuity means an annuity that becomes payable to a former contributor upon reaching age 60. The annual amount of the annuity is described in Note 6 above but is also increased (as referred to in Note 2 above) to reflect indexation to the commencement of benefit payments.

8. Transfer Value

Effective 20 June 1996, members who, at their date of termination of pensionable service, are under age 50 and 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 RRSP of the prescribed kind, another pension plan registered under the *Income Tax Act*, or a financial institution for the purchase of an immediate or deferred annuity of the prescribed kind.

9. Annual Allowance To Member

The amount of the immediate annual allowance is equal to the amount of the deferred annuity to which the former contributor is entitled, reduced by 5% times a number depending on age and length of pensionable service at retirement. This number is determined by expressing age and length of service to the nearest one-tenth of a year.

For a contributor aged at least 50 and with at least 25 years of pensionable service, this number is equal to the greater of 55 minus the contributor's age, and 30 minus the years of pensionable service, subject to a maximum of 60 minus the contributor's age.

For a contributor aged at least 55 who has been employed in the Public Service for a period or periods of pensionable service totalling at least 10 years and who does not retire voluntarily, the number is equal to 30 minus the number of years of pensionable service, subject to a maximum of 60 minus the contributor's age. In any such case the whole or part of the reduction calculated using this number may be waived by the Treasury Board.

In all other cases, the number is 60 minus the contributor's age.

10. Operational Service Immediate Annuity and Annual Allowance

These operational service-related benefits are calculated in relation to operational service only.

The operational service-related annual allowance reduction number is calculated for Air Traffic Controllers, in case of *involuntary retirement,* as 20 minus the years of operational service (subject to a minimum of ten years). In case of voluntary retirement for Air Traffic Controllers and voluntary or involuntary retirement for Correctional Service Canada operational employees, this number is equal to the greater of 50 minus the contributor's age, and 25 minus the years of operational service.

An Air Traffic Controller who involuntarily ceases to be employed in operational service may, after becoming employed elsewhere in the Public Service in non-operational service, choose to receive a benefit based on up to fifty per cent of past operational service. This benefit is known as an “Income - Smoothing Benefit” and is payable immediately at the time of choosing it. It represents a portion of whatever operational service benefit the employee would have been entitled to receive, had the employee ceased to be employed in the Public Service. In this case, the benefits would be either an immediate annuity or an annual allowance.

11. Annual Allowance to Surviving Spouse

The *basic allowance* is an annuity payable to the surviving spouse of a contributor or pensioner upon the death of that individual. The amount of basic allowance is one-half of the annual amount of basic annuity computed as described in Note 6 but without regard to the tax-related yearly maximum.

If a member marries after having become entitled to an annuity or annual allowance, the surviving spouse is not entitled to the annual allowance unless, after the marriage, the member was either re-employed as a contributor (in such cases, a common-law union is accepted) or made an optional survivor benefit election. The latter provision is meant to be cost neutral, the full cost being borne by the member electing the option through an actuarial reduction being made to the member’s own 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.

No allowance is payable to the widower of a female contributor, unless the member contributed to the PSS Account on or after 20 December 1975, or was employed in the Public Service and had completed 35 years of pensionable service, or as described in the previous paragraph.

12. Annual Allowance to Surviving Children

The *annual allowance* to each eligible child of a deceased contributor is one-fifth of the basic allowance described above (still without regard to the tax-related yearly maximum), or if there is no living spouse, two-fifths of the basic allowance. The allowance is payable to any children under age 18 until they reach their eighteenth birthday, and to any children 18 years or older until they reach their twenty-fifth birthday provided they have been in full-time attendance at school or university substantially without interruption since their eighteenth birthday or the death of the contributor, whichever occurred later. The total amount of allowance payable to the eligible children of a deceased contributor may not exceed that which would be payable if there were four eligible children.

13. Minimum Death Benefit

If an active contributor or a pensioner dies without leaving an eligible survivor, there is paid a lump sum equal to the greater of:

a) the return of contributions, and

b) five times the basic annuity to which the contributor would have been, or the pensioner was entitled, at the time of death,

less all amounts (excluding indexation adjustments) already paid to the pensioner.

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

14. Division of Pension with Former Spouse

The PBDA provides for a payment to be transferred in a lump sum out of the plan to the former spouse of a contributor or of a pensioner in case of spousal union breakdown. This amount is referred to as the maximum transferable amount (MTA).

The method for calculating the MTA depends upon whether the member's accrued benefits are vested at the time payment is to be made.

The MTA for nonvested benefits is 50% of pension contributions made by the member during the period subject to division (PSTD), plus interest. Interest is calculated in the same manner and at the same rate as interest on a refund of contributions that would be payable to the member.

The MTA for vested benefits is 50% of the actuarial present value of the benefits that accrued during the PSTD. The actuarial present value is the lump sum equivalent to retirement benefits, discounted with interest, expected to be paid to the contributor or pensioner after the date of payment of the lump sum.

Whether benefits are vested or not, the benefits of the contributor or pensioner are reduced accordingly.

APPENDIX 2

Sample Demographic Assumptions

Table 2A

Assumed Seniority and Promotional Salary Increases

Service[1] (years)	Male (%)	Female (%)
0	4.95	5.80
1	4.25	5.00
2	3.60	4.25
3	3.05	3.55
4	2.55	2.95
5	2.15	2.50
6	1.90	2.15
7	1.70	1.90
8	1.55	1.75
9	1.45	1.65
10	1.35	1.55
11	1.25	1.45
12	1.20	1.40
13	1.15	1.35
14	1.10	1.30
15	1.05	1.25
16	1.00	1.20
17	1.00	1.15
18	0.95	1.10
19	0.90	1.05
20	0.90	1.00
21	0.90	1.00
22	0.85	0.95
23	0.80	0.90
24	0.80	0.90
25	0.80	0.90
26	0.80	0.90
27	0.80	0.85
28	0.80	0.80
29	0.80	0.80
30	0.80	0.80
31	0.85	0.80
32	0.90	0.80
33	0.90	0.80
34	0.95	0.85
35	1.00	0.90
36	1.00	0.90
37	1.05	0.90
38+	1.10	0.90

[1] Expressed in completed years calculated as at the beginning of the plan year.

Table 2B

Assumed Rates of Termination without Right to a Pension

Service[2]	Main Group Male	Main Group Female	ATC[1] and CSC[1] (o/s) Male	ATC[1] and CSC[1] (o/s) Female
0	0.180	0.200	0.135	0.150

Table 2C

Assumed Rates of Termination (for Reasons Other than Disability and Death) Prior to Age 50 with Right to a Pension

Service[2]	Main Group Male	Main Group Female	ATC[1] and CSC[1] (o/s) Male	ATC[1] and CSC[1] (o/s) Female
1[3]	0.105	0.125	0.079	0.094
2	0.080	0.090	0.060	0.068
3	0.065	0.072	0.049	0.054
4	0.055	0.062	0.041	0.047
5	0.046	0.055	0.035	0.041
6	0.040	0.049	0.030	0.037
7	0.035	0.044	0.026	0.033
8	0.031	0.040	0.023	0.030
9	0.027	0.036	0.020	0.027
10	0.023	0.033	0.017	0.025
11	0.020	0.030	0.015	0.023
12 -18	0.014	0.025	0.011	0.019
19+	0.014	0.025	0.014	0.025

1 Air Traffic Controllers and Correctional Service Canada in operational service.

2 Expressed in completed years calculated at the beginning of the plan year.

3 Refer to second paragraph of section IV-F-1(b) in the report.

Table 2D

Assumed Rates of Retirement (for Reasons Other than Disability and Death) at Age 50 and Over with Right to a Pension Male Members - Main Group

Select from 1 April 1996 to 31 March 1998

	Years of Service[1]												
Age[1]	1-3	4-8	9-13	14-18	19-23	24-28	29	30	31	32	33	34	35+
49	0.080	0.030	0.110	0.115	0.115	0.125	0.140	0.150	0.150	0.150	0.160	0.220	0.200
50	0.080	0.030	0.110	0.120	0.120	0.130	0.145	0.155	0.155	0.160	0.165	0.240	0.200
51	0.080	0.030	0.110	0.120	0.125	0.135	0.165	0.165	0.165	0.175	0.185	0.240	0.240
52	0.080	0.030	0.110	0.120	0.125	0.140	0.170	0.170	0.180	0.190	0.220	0.270	0.270
53	0.080	0.030	0.110	0.120	0.125	0.145	0.180	0.200	0.220	0.220	0.250	0.300	0.300
54	0.100	0.040	0.110	0.120	0.125	0.145	0.270	0.270	0.270	0.350	0.350	0.600	0.550
55	0.120	0.060	0.110	0.120	0.125	0.140	0.250	0.250	0.250	0.270	0.320	0.550	0.500
56	0.120	0.060	0.110	0.120	0.130	0.140	0.250	0.250	0.250	0.270	0.320	0.500	0.450
57	0.140	0.080	0.110	0.120	0.130	0.140	0.250	0.250	0.250	0.270	0.320	0.500	0.450
58	0.140	0.080	0.120	0.130	0.140	0.150	0.250	0.250	0.250	0.270	0.320	0.500	0.450
59	0.190	0.190	0.210	0.210	0.210	0.310	0.410	0.410	0.410	0.370	0.350	0.600	0.500
60	0.190	0.190	0.210	0.210	0.210	0.310	0.350	0.350	0.370	0.340	0.320	0.550	0.450
61	0.180	0.180	0.180	0.180	0.220	0.280	0.310	0.310	0.310	0.310	0.310	0.500	0.410
62	0.200	0.200	0.200	0.200	0.240	0.280	0.340	0.360	0.380	0.380	0.380	0.500	0.410
63	0.250	0.250	0.250	0.250	0.270	0.310	0.350	0.350	0.370	0.370	0.370	0.600	0.480
64	0.500	0.500	0.500	0.500	0.600	0.600	0.600	0.600	0.650	0.650	0.650	0.700	0.600
65	0.400	0.400	0.400	0.400	0.450	0.450	0.500	0.500	0.500	0.500	0.500	0.650	0.480
66	0.400	0.400	0.400	0.400	0.400	0.400	0.500	0.500	0.500	0.500	0.500	0.650	0.480
67	0.400	0.400	0.400	0.400	0.400	0.400	0.500	0.500	0.500	0.500	0.500	0.650	0.480
68	0.400	0.400	0.400	0.400	0.400	0.400	0.500	0.500	0.500	0.500	0.500	0.650	0.480
69	0.400	0.400	0.400	0.400	0.400	0.400	0.500	0.500	0.500	0.500	0.500	0.650	0.480

Ultimate

	Years of Service[1]												
Age[1]	1-3	4-8	9-13	14-18	19-23	24-28	29	30	31	32	33	34	35+
49	0.080	0.030	0.020	0.015	0.015	0.025	0.040	0.050	0.050	0.050	0.060	0.120	0.100
50	0.080	0.030	0.020	0.015	0.015	0.030	0.045	0.055	0.055	0.060	0.065	0.140	0.100
51	0.080	0.030	0.020	0.015	0.015	0.035	0.065	0.065	0.065	0.075	0.085	0.140	0.140
52	0.080	0.030	0.020	0.015	0.015	0.040	0.070	0.070	0.080	0.090	0.120	0.170	0.170
53	0.080	0.030	0.020	0.020	0.015	0.045	0.080	0.100	0.120	0.120	0.150	0.200	0.200
54	0.100	0.040	0.020	0.020	0.020	0.045	0.270	0.270	0.270	0.350	0.350	0.600	0.550
55	0.120	0.060	0.020	0.025	0.020	0.040	0.250	0.250	0.250	0.270	0.320	0.550	0.500
56	0.120	0.060	0.030	0.025	0.020	0.040	0.250	0.250	0.250	0.270	0.320	0.500	0.450
57	0.140	0.080	0.040	0.025	0.025	0.045	0.250	0.250	0.250	0.270	0.320	0.500	0.450
58	0.140	0.080	0.040	0.035	0.035	0.050	0.250	0.250	0.250	0.270	0.320	0.500	0.450
59	0.190	0.190	0.210	0.210	0.210	0.310	0.410	0.410	0.410	0.370	0.350	0.600	0.500
60	0.190	0.190	0.210	0.210	0.210	0.310	0.350	0.350	0.370	0.340	0.320	0.550	0.450
61	0.180	0.180	0.180	0.180	0.220	0.280	0.310	0.310	0.310	0.310	0.310	0.500	0.410
62	0.200	0.200	0.200	0.200	0.240	0.280	0.340	0.360	0.380	0.380	0.380	0.500	0.410
63	0.250	0.250	0.250	0.250	0.270	0.310	0.350	0.350	0.370	0.370	0.370	0.600	0.480
64	0.500	0.500	0.500	0.500	0.600	0.600	0.600	0.600	0.650	0.650	0.650	0.700	0.600
65	0.400	0.400	0.400	0.400	0.450	0.450	0.500	0.500	0.500	0.500	0.500	0.650	0.480
66	0.400	0.400	0.400	0.400	0.400	0.400	0.500	0.500	0.500	0.500	0.500	0.650	0.480
67	0.400	0.400	0.400	0.400	0.400	0.400	0.500	0.500	0.500	0.500	0.500	0.650	0.480

[1] Expressed in completed years calculated at the beginning of the plan year.

68	0.400	0.400	0.400	0.400	0.400	0.400	0.500	0.500	0.500	0.500	0.500	0.650	0.480
69	0.400	0.400	0.400	0.400	0.400	0.400	0.500	0.500	0.500	0.500	0.500	0.650	0.480

Table 2E

Assumed Rates of Retirement (for Reasons Other than Disability and Death) at Age 50 and Over with Right to a Pension Female Members - Main Group

Select from 1 April 1996 to 31 March 1998

	Years of Service[1]												
Age[1]	1-3	4-8	9-13	14-18	19-23	24-28	29	30	31	32	33	34	35+
49	0.100	0.040	0.120	0.130	0.135	0.140	0.160	0.160	0.160	0.165	0.170	0.240	0.210
50	0.120	0.045	0.120	0.130	0.135	0.140	0.170	0.170	0.170	0.175	0.180	0.250	0.220
51	0.120	0.045	0.120	0.130	0.135	0.140	0.170	0.180	0.180	0.185	0.190	0.260	0.230
52	0.120	0.045	0.120	0.130	0.140	0.150	0.170	0.180	0.180	0.185	0.190	0.260	0.230
53	0.120	0.045	0.120	0.130	0.140	0.155	0.190	0.190	0.190	0.195	0.200	0.300	0.260
54	0.130	0.050	0.120	0.130	0.140	0.170	0.300	0.300	0.300	0.300	0.300	0.600	0.450
55	0.140	0.055	0.130	0.140	0.150	0.180	0.270	0.270	0.270	0.270	0.230	0.500	0.400
56	0.140	0.055	0.130	0.140	0.150	0.180	0.270	0.270	0.270	0.270	0.230	0.500	0.400
57	0.140	0.055	0.130	0.140	0.150	0.180	0.270	0.270	0.270	0.270	0.230	0.500	0.400
58	0.140	0.060	0.140	0.150	0.160	0.190	0.300	0.300	0.300	0.300	0.260	0.500	0.400
59	0.150	0.150	0.200	0.230	0.290	0.360	0.380	0.380	0.380	0.380	0.300	0.640	0.440
60	0.150	0.150	0.200	0.230	0.290	0.330	0.330	0.330	0.330	0.330	0.330	0.580	0.350
61	0.150	0.150	0.200	0.230	0.290	0.330	0.330	0.330	0.330	0.330	0.330	0.580	0.350
62	0.150	0.150	0.200	0.230	0.290	0.330	0.330	0.330	0.330	0.330	0.330	0.580	0.350
63	0.150	0.150	0.200	0.230	0.290	0.330	0.330	0.330	0.330	0.330	0.330	0.580	0.350
64	0.500	0.500	0.600	0.600	0.600	0.600	0.600	0.600	0.600	0.600	0.600	0.700	0.500
65	0.400	0.400	0.400	0.400	0.420	0.420	0.480	0.480	0.480	0.480	0.480	0.600	0.480
66	0.300	0.300	0.350	0.350	0.350	0.350	0.350	0.350	0.400	0.400	0.400	0.600	0.400
67	0.300	0.300	0.350	0.350	0.350	0.350	0.350	0.350	0.400	0.400	0.400	0.600	0.400
68	0.300	0.300	0.350	0.350	0.350	0.350	0.350	0.350	0.400	0.400	0.400	0.600	0.400
69	0.300	0.300	0.350	0.350	0.350	0.350	0.350	0.350	0.400	0.400	0.400	0.600	0.400

Ultimate

	Years of Service[1]												
Age[1]	1-3	4-8	9-13	14-18	19-23	24-28	29	30	31	32	33	34	35+
49	0.100	0.040	0.030	0.030	0.025	0.040	0.060	0.060	0.060	0.065	0.070	0.140	0.110
50	0.120	0.045	0.035	0.035	0.025	0.040	0.070	0.070	0.070	0.075	0.080	0.150	0.120
51	0.120	0.045	0.035	0.035	0.025	0.040	0.070	0.080	0.080	0.085	0.090	0.160	0.130
52	0.120	0.045	0.035	0.035	0.030	0.050	0.070	0.080	0.080	0.085	0.090	0.160	0.130
53	0.120	0.045	0.035	0.035	0.035	0.055	0.090	0.090	0.090	0.095	0.100	0.200	0.160
54	0.130	0.050	0.040	0.040	0.040	0.070	0.300	0.300	0.300	0.300	0.300	0.600	0.450
55	0.140	0.055	0.050	0.050	0.050	0.080	0.270	0.270	0.270	0.270	0.230	0.500	0.400
56	0.140	0.055	0.050	0.050	0.050	0.080	0.270	0.270	0.270	0.270	0.230	0.500	0.400
57	0.140	0.055	0.050	0.050	0.050	0.080	0.270	0.270	0.270	0.270	0.230	0.500	0.400
58	0.140	0.060	0.060	0.060	0.060	0.090	0.300	0.300	0.300	0.300	0.260	0.500	0.400
59	0.150	0.150	0.200	0.230	0.290	0.360	0.380	0.380	0.380	0.380	0.300	0.640	0.440
60	0.150	0.150	0.200	0.230	0.290	0.330	0.330	0.330	0.330	0.330	0.330	0.580	0.350
61	0.150	0.150	0.200	0.230	0.290	0.330	0.330	0.330	0.330	0.330	0.330	0.580	0.350
62	0.150	0.150	0.200	0.230	0.290	0.330	0.330	0.330	0.330	0.330	0.330	0.580	0.350
63	0.150	0.150	0.200	0.230	0.290	0.330	0.330	0.330	0.330	0.330	0.330	0.580	0.350
64	0.500	0.500	0.600	0.600	0.600	0.600	0.600	0.600	0.600	0.600	0.600	0.700	0.500
65	0.400	0.400	0.400	0.400	0.420	0.420	0.480	0.480	0.480	0.480	0.480	0.600	0.480
66	0.300	0.300	0.350	0.350	0.350	0.350	0.350	0.350	0.400	0.400	0.400	0.600	0.400
67	0.300	0.300	0.350	0.350	0.350	0.350	0.350	0.350	0.400	0.400	0.400	0.600	0.400
68	0.300	0.300	0.350	0.350	0.350	0.350	0.350	0.350	0.400	0.400	0.400	0.600	0.400

[1] Expressed in completed years calculated at the beginning of the plan year.

69	0.300	0.300	0.350	0.350	0.350	0.350	0.350	0.350	0.400	0.400	0.400	0.600	0.400

Table 2F

Assumed Rates of Retirement (for Reasons Other than Disability and Death) at Age 50 and Over with Right to a Pension CSC and ATC Members in Operational Service

Male Members

	Years of Service[1]												
Age[1]	1-3	4-8	9-13	14-18	19-23	24-28	29	30	31	32	33	34	35+
49	0.060	0.025	0.015	0.011	0.015	0.050	0.080	0.080	0.080	0.080	0.080	0.190	0.170
50	0.060	0.025	0.015	0.011	0.015	0.060	0.080	0.080	0.080	0.080	0.080	0.190	0.170
51	0.060	0.025	0.015	0.011	0.020	0.070	0.090	0.090	0.090	0.090	0.090	0.190	0.170
52	0.060	0.025	0.015	0.011	0.020	0.080	0.120	0.120	0.120	0.120	0.120	0.190	0.170
53	0.060	0.025	0.015	0.011	0.030	0.100	0.150	0.150	0.150	0.150	0.150	0.255	0.185
54	0.080	0.040	0.020	0.020	0.050	0.125	0.240	0.240	0.240	0.240	0.240	0.650	0.550
55	0.090	0.060	0.020	0.025	0.060	0.145	0.320	0.320	0.320	0.320	0.320	0.650	0.550
56	0.090	0.060	0.030	0.025	0.060	0.160	0.320	0.320	0.320	0.320	0.320	0.650	0.550
57	0.110	0.080	0.040	0.025	0.070	0.170	0.320	0.320	0.320	0.320	0.320	0.650	0.550
58	0.110	0.080	0.040	0.035	0.070	0.185	0.320	0.320	0.320	0.320	0.320	0.650	0.550
59	0.190	0.190	0.210	0.210	0.210	0.310	0.410	0.410	0.410	0.370	0.350	0.600	0.500
60	0.190	0.190	0.210	0.210	0.210	0.310	0.350	0.350	0.370	0.340	0.320	0.550	0.450
61	0.180	0.180	0.180	0.180	0.220	0.280	0.310	0.310	0.310	0.310	0.310	0.500	0.410
62	0.200	0.200	0.200	0.200	0.240	0.280	0.340	0.360	0.380	0.380	0.380	0.500	0.410
63	0.250	0.250	0.250	0.250	0.270	0.310	0.350	0.350	0.370	0.370	0.370	0.600	0.480
64	0.500	0.500	0.500	0.500	0.600	0.600	0.600	0.600	0.650	0.650	0.650	0.700	0.600
65	0.400	0.400	0.400	0.400	0.450	0.450	0.500	0.500	0.500	0.500	0.500	0.650	0.480
66	0.400	0.400	0.400	0.400	0.400	0.400	0.500	0.500	0.500	0.500	0.500	0.650	0.480
67	0.400	0.400	0.400	0.400	0.400	0.400	0.500	0.500	0.500	0.500	0.500	0.650	0.480
68	0.400	0.400	0.400	0.400	0.400	0.400	0.500	0.500	0.500	0.500	0.500	0.650	0.480
69	0.400	0.400	0.400	0.400	0.400	0.400	0.500	0.500	0.500	0.500	0.500	0.650	0.480

Female Members

	Years of Service[1]												
Age[1]	1-3	4-8	9-13	14-18	19-23	24-28	29	30	31	32	33	34	35+
49	0.090	0.035	0.025	0.019	0.025	0.050	0.080	0.080	0.080	0.080	0.080	0.190	0.170
50	0.090	0.035	0.025	0.019	0.025	0.060	0.080	0.080	0.080	0.080	0.080	0.190	0.170
51	0.090	0.035	0.025	0.019	0.025	0.070	0.090	0.090	0.090	0.090	0.090	0.190	0.170
52	0.090	0.035	0.025	0.019	0.030	0.080	0.120	0.120	0.120	0.120	0.120	0.190	0.170
53	0.090	0.035	0.025	0.019	0.035	0.100	0.150	0.150	0.150	0.150	0.150	0.255	0.185
54	0.100	0.045	0.030	0.025	0.050	0.125	0.240	0.240	0.240	0.240	0.240	0.650	0.550
55	0.110	0.050	0.040	0.040	0.060	0.145	0.320	0.320	0.320	0.320	0.320	0.650	0.550
56	0.110	0.050	0.040	0.040	0.060	0.160	0.320	0.320	0.320	0.320	0.320	0.650	0.550
57	0.110	0.050	0.040	0.040	0.070	0.170	0.320	0.320	0.320	0.320	0.320	0.650	0.550
58	0.110	0.055	0.050	0.040	0.070	0.185	0.320	0.320	0.320	0.320	0.320	0.650	0.550
59	0.150	0.150	0.200	0.230	0.290	0.360	0.380	0.380	0.380	0.380	0.300	0.640	0.440
60	0.150	0.150	0.200	0.230	0.290	0.330	0.330	0.330	0.330	0.330	0.330	0.580	0.350
61	0.150	0.150	0.200	0.230	0.290	0.330	0.330	0.330	0.330	0.330	0.330	0.580	0.350
62	0.150	0.150	0.200	0.230	0.290	0.330	0.330	0.330	0.330	0.330	0.330	0.580	0.350
63	0.150	0.150	0.200	0.230	0.290	0.330	0.330	0.330	0.330	0.330	0.330	0.580	0.350
64	0.500	0.500	0.600	0.600	0.600	0.600	0.600	0.600	0.600	0.600	0.600	0.700	0.500
65	0.400	0.400	0.400	0.400	0.420	0.420	0.480	0.480	0.480	0.480	0.480	0.600	0.480
66	0.300	0.300	0.350	0.350	0.350	0.350	0.350	0.350	0.400	0.400	0.400	0.600	0.400
67	0.300	0.300	0.350	0.350	0.350	0.350	0.350	0.350	0.400	0.400	0.400	0.600	0.400
68	0.300	0.300	0.350	0.350	0.350	0.350	0.350	0.350	0.400	0.400	0.400	0.600	0.400
69	0.300	0.300	0.350	0.350	0.350	0.350	0.350	0.350	0.400	0.400	0.400	0.600	0.400

[1] Expressed in completed years calculated at the beginning of the plan year.

Table 2G

Assumed Rates of Termination with Right to a Disability Pension

Age[1]	Male	Female
21	0.0003	0.0000
22	0.0003	0.0000
23	0.0003	0.0001
24	0.0003	0.0002
25	0.0003	0.0002
26	0.0003	0.0003
27	0.0003	0.0003
28	0.0003	0.0004
29	0.0003	0.0004
30	0.0003	0.0004
31	0.0003	0.0005
32	0.0003	0.0005
33	0.0004	0.0005
34	0.0005	0.0006
35	0.0005	0.0006
36	0.0006	0.0007
37	0.0008	0.0008
38	0.0009	0.0009
39	0.0010	0.0010
40	0.0011	0.0012
41	0.0013	0.0014
42	0.0014	0.0016
43	0.0016	0.0019
44	0.0018	0.0023
45	0.0021	0.0028
46	0.0025	0.0033
47	0.0030	0.0039
48	0.0036	0.0047
49	0.0043	0.0055
50	0.0051	0.0064
51	0.0060	0.0074
52	0.0069	0.0084
53	0.0078	0.0094
54	0.0088	0.0104
55	0.0097	0.0114
56	0.0107	0.0123
57	0.0118	0.0132
58	0.0128	0.0140

[1] Expressed in completed years calculated at the beginning of the plan year.

Table 2H

Sample of Assumed Mortality Rates[1] for 1997 Plan Year

	Current and Former Contributors (other than disabled)		Former Contributors (disabled)		Surviving Spouses	
Age[2]	Male	Female	Male	Female	Male	Female
25	0.0005	0.0003	0.0064	0.0075	0.0011	0.0004
30	0.0007	0.0004	0.0095	0.0080	0.0012	0.0005
35	0.0009	0.0004	0.0126	0.0084	0.0015	0.0007
40	0.0012	0.0006	0.0155	0.0091	0.0018	0.0010
45	0.0017	0.0012	0.0185	0.0101	0.0027	0.0016
50	0.0025	0.0018	0.0214	0.0117	0.0042	0.0026
55	0.0042	0.0027	0.0241	0.0138	0.0071	0.0043
60	0.0087	0.0051	0.0291	0.0169	0.0122	0.0068
65	0.0163	0.0091	0.0395	0.0220	0.0196	0.0107
70	0.0275	0.0150	0.0570	0.0301	0.0305	0.0169
75	0.0456	0.0248	0.0756	0.0440	0.0486	0.0278
80	0.0750	0.0453	0.1009	0.0687	0.0783	0.0476
85	0.1156	0.0816	0.1413	0.1179	0.1218	0.0809
90	0.1754	0.1324	0.2124	0.1841	0.1820	0.1348
95	0.2584	0.1973	0.3193	0.2873	0.2606	0.2129
100	0.3585	0.3217	0.4801	0.4486	0.3591	0.3219
105	0.5335	0.5067	0.7217	0.7002	0.7369	0.7286
109	0.8834	0.8767	1.0000	1.0000	1.0000	1.0000
110	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

[1] See also table 2I for a sample of assumed annual longevity improvement factors.

[2] Expressed in completed years calculated at the beginning of the plan year.

Table 2I

Sample of Assumed Longevity Improvement Factors

	Annual % of Mortality Reduction	
Age[1]	Male	Female
25	1.25	1.65
30	0.75	1.25
35	0.75	1.35
40	1.05	1.75
45	1.55	1.85
50	2.05	1.95
55	2.15	1.05
60	1.85	0.75
65	1.65	0.75
70	1.75	0.75
75	1.65	1.05
80	1.25	0.95
85	0.95	0.85
90	0.65	0.55
95	0.45	0.45
100	0.35	0.35
105	0.00	0.00
109	0.00	0.00

[1] Expressed in completed years calculated at the beginning of the plan year.

Table 2J

Assumed Proportions of Members Married at Death
and
Assumed Average Age of the Surviving Spouses

Age[1] of Deceased Contributor	Proportions Married Male	Proportions Married Female	Average Age[1] of Surviving Spouse Male	Average Age[1] of Surviving Spouse Female
25	0.325	0.550	26	24
30	0.414	0.550	32	29
35	0.468	0.550	37	34
40	0.554	0.550	42	39
45	0.650	0.550	47	43
50	0.727	0.550	53	47
55	0.770	0.550	58	52
60	0.784	0.500	62	57
65	0.779	0.452	66	63
70	0.754	0.387	70	67
75	0.705	0.305	74	71
80	0.634	0.211	79	75
85	0.529	0.120	82	79
90	0.394	0.051	86	83
95	0.247	0.013	88	88
100	0.097	0.001	92	92
105	0.006	0.000	96	96
109	0.006	0.000	-	100
110	0.000	0.000	-	-

[1] Expressed in completed years calculated at the beginning of the plan year.

Table 2K

Assumed Number and Average Age of Children at Death of Member

Age[1] of Deceased Contributor	Average Number of Children		Average Age[1] of Children	
	Male Members	Female Members	Male Members	Female Members
25	0.271	0.438	2	1
30	0.670	0.702	5	5
35	0.925	0.794	8	10
40	1.020	0.726	11	13
45	0.927	0.538	14	16
50	0.665	0.311	16	17
55	0.358	0.129	17	18
60	0.136	0.028	18	19
65	0.036	0.000	19	21
70	0.011	0.000	21	23
75	0.006	0.000	23	n/a
80	0.000	0.000	n/a	n/a

Assumed Proportions of Children Remaining Eligible (on account of school attendance) for Allowances Throughout the Following Year

Age[1]	Proportion
17 - 23	0.800
24	0.000

[1] Expressed in completed years calculated at the beginning of the plan year.

APPENDIX 3

Summaries of Membership Data

Table 3A

Reconciliation of Contributors

	Numbers		
	Male	Female	Total
As at 31 December 1992[1]	177,483	137,133	314,616
Data corrections	847	1,166	2,013
From 1 January 1993 to 31 December 1995			
New Members	24,208	31,287	55,495
Reinstatement to contributor status	795	1,049	1,844
Cash benefit (mainly return of contributions)	(18,593)	(24,587)	(43,180)
Deferred annuity or deferred annual allowance	(1,126)	(999)	(2,125)
Disability annuity	(1,139)	(1,010)	(2,149)
Annuity or annual allowance (except disabled)	(17,323)	(8,282)	(25,605)
Benefit option not yet chosen	(2,538)	(3,188)	(5,726)
Contributor terminations that subsequently returned to contributor status	(779)	(1,038)	(1,817)
Death with survivor annual allowance	(656)	(206)	(862)
As at 31 December 1995	**161,179**	**131,325**	**292,504**
From 1 January 1996 to 31 March 1996 due to ERI or EDI			
Return of contributions	(460)	(608)	(1,068)
Deferred annuity or deferred annual allowance	(147)	(153)	(300)
Annuity or annual allowance (except disabled)	(1,416)	(679)	(2,095)
Benefit option not yet chosen	(99)	(90)	(189)
Assumed as at 31 March 1996	**159,057**	**129,795**	**288,852**
- Non-active status only	1,302	2,710	4,012
- Active status only	157,755	127,085	284,840

Table 3B

[1] Includes those in both active and non-active statuses.

Reconciliation of Pensioners

	Deferred Annuity or Deferred AA[1]			Disability Annuity			Immediate Annuity or AA[1]		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
As at 31 December 1992	3,359	1,990	5,349	7,540	4,214	11,754	88,377	35,399	123,776
Data corrections	(35)	(33)	(68)	58	42	100	(21)	0	(21)
From 1 January 1993 to 31 December 1995									
Transfer from contributor status	1,126	999	2,125	1,139	1,010	2,149	17,323	8,282	25,605
Transfer from deferred status	n/a	n/a	n/a	5	3	8	927	552	1,479
Transfer from disabled status	11	7	18	n/a	n/a	n/a	0	0	0
Transfer to current contributor status	0	0	0	0	0	0	(16)	(11)	(27)
Transfer to deferred status	n/a	n/a	n/a	(11)	(7)	(18)	0	0	0
Transfer to disabled status	(5)	(3)	(8)	n/a	n/a	n/a	0	0	0
Transfer to annuity or AA[1] status	(927)	(552)	(1,479)	0	0	0	n/a	n/a	n/a
Death with no survivors	(12)	(8)	(20)	(377)	(324)	(701)	(3,452)	(2,488)	(5,940)
Death with survivors	(19)	(4)	(23)	(768)	(91)	(859)	(6,689)	(401)	(7,090)
As at 31 December 1995	3,498	2,396	5,894	7,586	4,847	12,433	96,449	41,333	137,782
From 1 January 1996 to 31 March 1996 due to ERI or EDI									
Transfer from contributor status	147	153	300	0	0	0	1,416	679	2,095
Assumed as at 31 March 1996	3,645	2,549	6,194	7,586	4,847	12,433	97,865	42,012	139,877

Table 3C

Reconciliation of Survivors

1 AA stands for Annual Allowance.

	Surviving Spouses			Children and Students		
	Widows	Widowers	Total	Children	Students	Total
As at 31 December 1992	44,871	1,593	46,464	1,475	1,239	2,714
Data corrections	52	23	75	67	41	108
From 1 January 1993 to 31 December 1995						
New survivors from current contributors	612	186	798	494	229	723
New survivors from former contributors	7,462	491	7,953	110	150	260
Surviving spouses' deaths	(5,848)	(233)	(6,081)	n/a	n/a	n/a
Children attaining age 18 and terminating	n/a	n/a	n/a	(107)	n/a	(107)
Children attaining age 18 and becoming students	n/a	n/a	n/a	(603)	603	0
Students terminating	n/a	n/a	n/a	n/a	(1,218)	(1,218)
As at 31 December 1995 and assumed as at 31 March 1996	47,149	2,060	49,209	1,436	1,044	2,480

Table 3D

Number and Average Annual Earnings[1] of Male Contributors on 31 March 1996

Age[2]	Years of Service[2]: 0-4	5-9	10-14	15-19	20-24	25-29	30-34	35 and over	All Years of Service
to 24	1,152 $34,005	19 37,041							1,171 $34,054
25-29	5,695 $36,503	2,169 38,398	35 43,181						7,899 $37,053
30-34	6,198 $38,106	7,820 40,733	2,822 41,575	256 40,424					17,096 $39,915
35-39	4,301 $39,054	6,868 41,778	7,924 44,640	5,777 41,429	635 40,244				25,505 $42,091
40-44	3,118 $39,752	4,785 42,193	6,241 46,369	9,815 45,336	9,491 43,787	372 46,330			33,822 $44,144
45-49	2,241 $40,775	3,332 43,843	4,019 46,530	6,127 47,056	12,598 49,755	6,311 48,421	532 47,133		35,160 $47,504
50-54	1,293 $41,610	2,083 44,318	2,114 46,945	2,612 46,890	5,013 52,114	5,431 52,848	2,679 47,623	183 50,766	21,408 $49,186
55-59	683 $42,722	1,149 43,549	1,459 44,924	1,454 44,509	2,148 49,546	2,115 54,082	1,471 54,084	403 51,223	10,882 $48,749
60-64	290 $43,810	548 44,865	590 45,305	659 43,916	803 48,229	581 53,860	367 58,786	175 55,813	4,013 $48,424
65-69	64 $46,182	99 44,519	131 47,341	112 48,947	111 53,625	93 55,705	64 59,647	58 59,935	732 $51,193
70+	13 $48,699	12 58,866	6 45,651	10 46,025	10 57,485	7 60,259	2 37,097	7 44,434	67 $51,575
All ages combined	25,048 $38,558	28,884 41,874	25,341 45,260	26,822 44,928	30,809 48,066	14,910 51,047	5,115 50,378	826 52,648	157,755 $44,819

Average age last birthday = 43.4 Average pensionable service = 14.5 completed years

Total PBDA indexed reduction to basic annuity = $1,769,015
Total PBDA indexed reduction adjustment = 370,538
(i.e. adjustment to CPP/QPP offset to basic annuity)

[1] Earnings shown here are the pensionable earnings of contributors except that they are not adjusted in respect of the maximum level of earnings prescribed for tax purposes.

[2] Expressed in completed years.

Table 3E

Number and Average Annual Earnings[1] of Female Contributors on 31 March 1996

	Years of Service[2]								
Age[2]	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35 and over	All Years of Service
to 24	1,566 $30,544	64 30,976							1,630 $30,561
25-29	6,215 $33,456	3,422 33,986	81 34,773						9,718 $33,654
30-34	5,953 $34,614	8,146 36,988	4,169 36,498	546 35,221					18,814 $36,077
35-39	5,250 $33,938	6,424 37,338	6,941 39,966	6,334 37,030	996 37,561				25,945 $37,286
40-44	4,360 $33,865	5,285 36,284	4,987 40,040	6,097 40,487	6,200 40,203	426 39,708			27,355 $38,461
45-49	3,229 $33,744	4,154 35,691	4,006 38,012	3,981 39,378	4,577 43,895	2,475 41,515	396 40,572		22,818 $38,828
50-54	1,620 $33,260	2,188 34,956	2,383 37,189	2,330 37,495	1,819 41,571	1,037 44,485	486 40,723	72 39,472	11,935 $37,766
55-59	779 $33,417	939 34,152	1,161 35,312	1,381 35,779	1,086 38,260	469 40,964	171 42,495	109 38,101	6,095 $36,209
60-64	309 $31,855	330 34,740	465 35,161	538 35,820	420 37,303	174 39,028	63 37,511	39 38,589	2,338 $35,610
65-69	61 $30,363	51 34,204	75 36,554	68 37,149	69 38,520	35 41,965	18 36,384	17 44,047	394 $36,534
70+	4 $25,033	10 29,044	9 41,579	7 28,757	6 38,059	0 0	4 44,916	3 28,744	43 $33,961
All ages combined	29,346 $33,678	31,013 36,163	24,277 38,449	21,282 38,350	15,173 41,079	4,616 41,869	1,138 40,705	240 38,896	127,085 $37,232

Average age last birthday = 41.1 Average pensionable service = 11.2 completed years

Total PBDA indexed reduction to basic annuity = $44,461
Total PBDA indexed reduction adjustment = 12,656
(i.e. adjustment to CPP/QPP offset to basic annuity)

[1] Earnings shown here are the pensionable earnings of contributors except that they are not adjusted in respect of the maximum level of earnings prescribed for tax purposes.

[2] Expressed in completed years.

Table 3F

Retired Male Members as at 31 March 1996

	Pensioners (other than disabled)			Disability Pensioners		
		Average Amounts[2]			Average Amounts[2]	
Age[1]	Number	Gross	Offsets	Number	Gross	Offsets
25-29	0	0	0	2	$3,415	$1,195
30-34	22	$5,184	$1,705	8	4,620	1,635
35-39	121	8,529	2,443	65	6,394	2,181
40-44	432	12,159	2,984	193	9,337	3,005
45-49	1,226	15,052	3,705	446	11,981	3,638
50-54	5,477	23,701	10,183	654	14,344	4,076
55-59	10,691	26,298	6,814	1,165	15,458	3,995
60-64	16,437	24,276	5,145	1,381	14,399	3,488
65-69	18,274	21,940	4,184	1,276	13,004	2,883
70-74	21,173	21,096	3,238	1,269	12,859	1,815
75-79	15,886	19,292	2,318	804	12,012	1,298
80-84	7,989	17,873	1,607	252	10,811	676
85-89	2,845	16,261	958	51	11,244	0
90-94	770	13,028	0	17	7,503	0
95-99	135	11,896	0	2	9,384	0
100-104	32	11,035	0	1	5,171	0
All ages	101,510	$21,577	$4,109	7,586	$13,303	$2,862

Average age last birthday: 68.5

Average age last birthday: 63.7

The total immediate annual pension payable as at 31 March 1996 for male immediate pensioners is $1,881.7 million and for disability pensioners is $82.3 million.

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[1] Expressed in completed years.

[2] The average amounts of pension:

- are annualized,
- include accrued indexation (even if not due) to 1 January 1996,
- gross includes deferred annuities to age 60, and
- show offsets that include annual allowance adjustments, PBDA reductions, and CPP/QPP offsets whether or not they are in effect at valuation date.

Table 3G

Retired Female Members as at 31 March 1996

Age[1]	Pensioners (other than disabled) Number	Average Amounts[2] Gross	Offsets	Disability Pensioners Number	Average Amounts[2] Gross	Offsets
25-29	1	$4,617	$1,430	2	$3,257	$1,143
30-34	43	5,601	1,753	14	5,713	1,870
35-39	184	7,607	2,280	113	6,406	2,187
40-44	420	9,991	2,960	274	7,991	2,667
45-49	867	11,258	3,286	387	9,365	2,979
50-54	3,068	15,453	8,238	477	10,006	3,094
55-59	4,681	15,378	5,595	760	10,432	3,088
60-64	6,542	14,113	4,362	817	9,801	2,790
65-69	7,489	12,999	3,614	642	9,205	2,258
70-74	8,364	12,425	2,936	568	8,931	1,549
75-79	6,117	11,527	2,137	425	8,214	1,059
80-84	3,945	10,945	1,428	254	7,910	609
85-89	1,978	9,609	812	87	8,386	0
90-94	655	7,795	0	23	7,154	0
95-99	166	7,132	0	4	10,132	0
100-104	40	7,612	0	-	-	-
105-109	1	586	0	-	-	-
All ages	44,561	$12,744	$3,513	4,847	$9,232	$2,310

Average age last birthday: 68.4

Average age last birthday: 62.0

The total immediate annual pension payable as at 31 March 1996 for female immediate pensioners is $444.5 million and for disability pensioners is $35.1 million.

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1 Expressed in completed years.

2 The average amounts of pension:
- are annualized,
- include accrued indexation (even if not due) to 1 January 1996,
- gross includes deferred annuities to age 60, and
- show offsets that include annual allowance adjustments, PBDA reductions, and CPP/QPP offsets whether or not they are in effect at valuation date.

Table 3H

Surviving Spouses as at 31 March 1996

	Widows		Widowers	
Age[1]	Number	Average Allowance[2]	Number	Average Allowance[2]
25-29	4	$3,778	-	-
30-34	35	3,508	7	$2,958
35-39	176	4,630	40	3,074
40-44	397	5,647	64	3,867
45-49	727	7,192	129	4,624
50-54	1,058	7,685	119	4,518
55-59	1,754	8,052	176	4,824
60-64	3,146	7,885	250	5,604
65-69	6,107	7,792	320	5,477
70-74	10,052	7,730	396	5,221
75-79	9,790	7,448	336	4,836
80-84	7,234	7,137	159	4,573
85-89	4,130	6,346	54	4,076
90-94	1,852	5,378	9	3,753
95-99	524	5,318	1	4,079
100-104	153	4,961	-	-
105-109	8	7,456	-	-
110-114	2	6,731	-	-
All ages	47,149	$7,320	2,060	$4,954

Average age last birthday: 73.9 (widows)   Average age last birthday: 66.3 (widowers)

The total annual allowance payable as at 31 March 1996 for widows was $345.1 million and for widowers was $10.2 million.

[1] Expressed in completed years.

[2] The average annual allowance includes accrued indexation to 1 January 1996.