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MEMBERS OF PARLIAMENT RETIRING ALLOWANCES ACT
AND RELEVANT PROVISIONS OF
SUPPLEMENTARY RETIREMENT BENEFITS ACT

ACTUARIAL REPORT AS AT MARCH 31, 1982

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ACTUARIAL REPORT AS AT MARCH 31, 1982

We have completed an actuarial examination of the operation of the Members of Parliament Retiring Allowances Act (MPRAA) and the related provisions of the Supplementary Retirement Benefits Act (SRBA) and have the honour to report thereon.

The principal purposes of the report are to determine the required rates of government contribution and to measure the financial impact of the amendments to the Members of Parliament Retiring Allowances Act that became effective August 1, 1981.

The remainder of this report is divided into seven sections. Section A presents a summary of the results of this actuarial valuation which was carried out as at March 31, 1982. Section B contains a summary of the plan, while Section C describes the data and shows membership statistics and recent transactions of the MPRA and SRB Accounts. The actuarial assumptions and methods are described in Sections D and E. Detailed results of the valuation, more specifically, the development of actuarial liabilities and the presentation of balance sheets, are given in Section F, and this is followed by the conclusion in Section G. Three appendices that are referred to in the report are attached.

The post-1981 costs and the measurement of the impact of the 1981 amendments on contribution rates and on the unfunded actuarial liabilities are affected by a concurrent amendment to the Senate and House of Commons Act which restricted annual increases in remuneration to be one percentage point below the lesser of the increase in the Consumer Price Index and the increase in the Industrial Composite (average wages and salaries); from 1974 to 1981, increases in remuneration were related to increases in the Industrial Composite subject to a maximum of 7%. Additional calculations are provided in Appendix 1, based on the assumption that over time increases in remuneration will be equal to increases in the Industrial Composite.

A. Summary of Results

It is difficult to present normal actuarial costs (future service contribution rates) for this plan in a way to allow meaningful comparisons to be made between the pre-1981 and the post-1981 plan and between this plan and other pension plans, because various types of contributions are payable over different periods.

For purposes of comparing long term costs, normal actuarial costs applicable to groups of new members were calculated for the MPRAA and the SRBA combined, assuming that all contributions are payable during the member's entire active lifetime. The results are shown in Table 1.

Table 1

Normal Actuarial Costs (Future Service Contribution Rates)
applicable to New Members for MPRAA and SRBA combined
expressed as percentages of all earnings

	<u>Before 1981 Amendments</u>				<u>After 1981 Amendments</u>			
	<u>Percent of Earnings*</u>			<u>Ratio</u>	<u>Percent of Earnings*</u>			<u>Ratio</u>
	<u>Members</u>	<u>Govern- ment</u>	<u>Total</u>	<u>(2)÷(1)</u>	<u>Members</u>	<u>Govern- ment</u>	<u>Total</u>	<u>(6)÷(5)</u>
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<u>Senate</u>								
Sessional Indemnity	6.43*	13.49	19.92	2.10	6.55*	11.23	17.78	1.71
Additional Salaries**	6.41*	4.90	11.31	0.76	11.00	23.19	34.19	2.11
<u>House of Commons</u>								
Sessional Indemnity	8.30*	27.76	36.06	3.34	10.27*	34.29	44.56	3.34
Additional Salaries**	7.84*	16.52	24.36	2.11	11.00	47.93	58.93	4.36

For determining the actuarial status of the plan and normal actuarial costs for funding purposes, the Aggregate Attained Age Actuarial Cost Method was used, as described on page 22.

* It was necessary to reduce the statutory contribution rates to the SRBA with respect to additional salaries before the 1981 amendments and to the MPRAA (except with respect to additional salaries after the 1981 amendments), which are payable by members only until maximum benefits are earned, to equivalent rates that would be applicable to all future earnings.

** Additional salaries are salaries or allowances paid to members of the Senate and the House of Commons in their capacities as Speaker, Minister, Leader of the Opposition, Parliamentary Secretary, etc.

Contributions in respect of additional salaries are optional.

Table 2 below presents the normal actuarial costs expressed as percentages of contributory earnings for active members as at March 31, 1982. Separate costs are shown for the MPRAA and the SRBA, and these costs cannot be combined directly, because stipulated contribution rates to the MPRAA (except with respect to additional salaries after the 1981 amendments) and to the SRBA with respect to additional salaries before the 1981 amendments are payable only until maximum benefits are earned.

Moreover, it should be noted that contributions to the MPRAA with respect to the basic indemnity by Members of the House of Commons are limited to 25 years before the 1981 amendments and to 15 years thereafter; before the 1981 amendments the contributory period would be less than 25 years for any member who contributed with respect to additional salaries.

It must also be recognized that the determination of separate costs for the MPRAA and the SRBA is very sensitive to the assumed level of inflation. If differentials between economic assumptions are kept constant, a relatively higher level of inflation would increase the cost of the SRBA but decrease the cost of the MPRAA.

Table 2

Normal Actuarial Costs (Future Service Contribution Rates)
expressed as percentages of contributory earnings

	<u>Before 1981 Amendments</u>				<u>After 1981 Amendments</u>			
	<u>% of Contrib. Earnings</u>		<u>Ratio</u>		<u>% of Contrib. Earnings</u>		<u>Ratio</u>	
	<u>Government</u>		<u>Total</u>	<u>(2)÷(1)</u>	<u>Government</u>		<u>Total</u>	<u>(6)÷(5)</u>
	<u>Members</u>	<u>ment</u>			<u>Members</u>	<u>ment</u>		
<u>(1)</u>	<u>(2)</u>	<u>(3)</u>	<u>(4)</u>	<u>(5)</u>	<u>(6)</u>	<u>(7)</u>	<u>(8)</u>	
<u>Senate</u>								
<u>Sessional Indemnity</u>								
MPRAA	6.00*	10.99*	16.99*	1.83	6.00*	9.21*	15.21*	1.54*
SRBA	1.00	2.66	3.66	2.66	1.00	2.51	3.51	2.51
<u>Additional Salaries</u>								
MPRAA	7.50*	3.21*	10.71*	0.43*	10.00	15.24	25.24	1.52
SRBA	1.00*	2.17*	3.17*	2.17*	1.00	6.08	7.08	6.08
<u>House of Commons</u>								
<u>Sessional Indemnity</u>								
MPRAA	7.50*	18.74*	26.24*	2.50*	10.00*	28.99*	38.99*	2.90*
SRBA	1.00	8.47	9.47	8.47	1.00	10.24	11.24	10.24
<u>Additional Salaries</u>								
MPRAA	7.50*	9.53*	17.03*	1.27*	10.00	29.49	39.49	2.95
SRBA	1.00*	6.12*	7.12*	6.12*	1.00	15.24	16.24	15.24

* contributions payable until maximum benefit earned

As at March 31, 1982 the balances in the MPRA and SRB Accounts were \$13.9 and \$2.0 million, respectively. The estimated unfunded actuarial liabilities as at March 31, 1982, in respect of benefits earned to that date are shown in Table 3 below.

Table 3
Unfunded Actuarial Liabilities as at March 31, 1982

	<u>Before 1981</u> <u>Amendments</u> (\$ millions)	<u>After 1981</u> <u>Amendments</u> (\$ millions)
Members of Parliament Retiring Allowances Account	42.4	47.8
Supplementary Retirement Benefits Account	38.8	42.4
Life Senators (MPRAA Part VI)	<u>3.5</u>	<u>3.4</u>
Total in respect of earned benefits	84.7	93.6

If interest at the assumed rate is not credited on the unfunded liabilities, they will grow accordingly; they will also increase to the extent that future contribution rates are deficient.* On the other hand, there will be some offset arising out of the fact that MPRAA payments in respect of Life Senators and a substantial portion of the SRBA payments are charged directly to the Consolidated Revenue fund, and that contribution rates shown as payable until maximum benefits are earned provide slightly more than currently accruing benefits.

Other actuarial losses as well as gains may be expected to emerge to the extent that future experience varies from the assumptions.

The figures in Tables 1, 2 and 3 for the post-1981 plan, are affected by the 1981 amendment to the Senate and House of Commons Act in the manner explained on page 1; in effect these figures assume that, on the average, remuneration will increase by 2.5 percentage points less than the increase in the Industrial Composite. Appendix 1 provides additional calculations based on the assumption that increases in remuneration over time will be equal to increases in the Industrial Composite.

* Since the statutory government contribution is equal to the contributions of members, current deficiencies may be deduced from Tables 1 and 2 as the difference between government and members' contributions. It may be noted that, if no changes are made in the statutory government contributions, the additional unfunded liability as at March 31, 1982, arising out of contribution deficiencies in respect of future benefit accruals for existing members is estimated at \$10.1 million before the 1981 amendments and \$13.0 million after the 1981 amendments.

B. Summary of the Members of Parliament Retiring Allowances Act (MPRAA) and relevant provisions of Supplementary Retirement Benefits Act (SRBA)

Part I: Original Plan

This Part does not apply to a member⁽¹⁾ who becomes a member after March 31, 1970. It also no longer applies to most members who were members on March 31, 1970, because they elected to come under Part III. This Part did apply to members of the Senate who were summoned after June 1, 1965 and before April 1, 1970, or who were summoned before June 2, 1965 and elected to come under this Part. It also applied to members of the House of Commons who first became members before April 1, 1970.

A member of the House of Commons was entitled, subject to certain restrictions, to elect to contribute for sessions prior to November 20, 1952 and thereby earn credit for those sessions.

- | | |
|---------------------------------------|--|
| Member Contributions to MPRA Account: | A member is required to contribute 6% of sessional indemnity. ⁽²⁾ |
| Government Contribution: | Matches member contributions. |
| Retiring Allowance: | At the option ⁽³⁾ of the member, the amount of the annual allowance is either |
| | (a) the sum of |
| | i) 75% of the member's contributions with respect to sessions prior to the 26th Parliament (prior to May 16, 1963) and |
| | ii) five-twelfths of the member's total contributions with respect to any sessions after the 25th Parliament, or |
| | (b) five-twelfths of the member's total contributions under this Part. |

The maximum retiring allowance under this Part is \$9,000.

-
- (1) Unless otherwise specified, in this report "member" signifies a member of the Senate or House of Commons.
 - (2) "Sessional indemnity" means the allowance payable to a member pursuant to sections 34 to 39 of the Senate and House of Commons Act and before October 8, 1970, included the expense allowance payable pursuant to subsections 43(3) to (5) of that Act; one-sixth of the allowance payable to Senators between October 7, 1970 and July 8, 1974 was excluded.
 - (3) Exercisable within one year for members of the House of Commons on August 2, 1963, and otherwise within one year from the first day of the session following the member's first election after August 2, 1963.

Eligibility for
Retiring Allowance:

A member becomes eligible to receive a retiring allowance upon termination after having contributed in respect of more than two Parliaments.

Surviving Spouse's
Allowance:

An annual allowance until death or remarriage is payable to the spouse of a deceased member if the member had satisfied the eligibility for a retiring allowance. The maximum allowance is \$5,400. The amount of the spouse's allowance is equal to three-fifths of any part of the allowance payable to a member or that would have been payable on retirement immediately prior to the member's death and that was, or would have been based on five-twelfths of the member's contributions.

Withdrawal Allowance:

If a member ceases to be a member prior to satisfying the eligibility requirements for a retiring allowance, or if the member is disqualified from the Senate or expelled from the House of Commons, the member becomes entitled to a withdrawal allowance consisting of the member's contributions plus interest at the rate of 4% per annum compounded annually.

Part II: Prime Minister's Plan

This Part applies to the member who holds the office of Prime Minister.

Member Contributions to
MPRA Account:

The member is required to contribute 6% of the salary payable to the Prime Minister under the Salaries Act.

Government Contribution:

Matches member contributions.

Eligibility for Retiring
Allowance:

A member becomes eligible to receive a retiring allowance after having

- i) held the office of Prime Minister for at least four years and
- ii) attained age 65.

Retiring Allowance:

An annual allowance will commence on the later of the day the member ceases to hold the office of Prime Minister and the member's 65th birthday. The allowance is suspended during any period that the member is a Senator or a member of the House of Commons. The amount of the allowance is two-thirds of the salary payable to the Prime Minister under the Salaries Act on the date the allowance commences.

Surviving Spouse's Allowance:

An annual allowance is payable to the spouse of a deceased member, if the member had held the office of Prime Minister for at least four years and the surviving spouse was the spouse at the time the member held the office of Prime Minister. The allowance ceases on the remarriage of the surviving spouse. The amount of the allowance is one-half the allowance that was payable to the former Prime Minister or would have been payable if immediately preceding death he had ceased to be a member and had attained age 65.

Part III. Current Plan

(a) Prior to 1981 Amendments

This part applies to a member who becomes a member after March 31, 1970 and to any member who was a member on that day and elected to contribute under this Part.

Members could elect, during the first year of being a member after March 31, 1970, to contribute for service prior to March 31, 1970 and thereby have that service credited under this Part.

Member Contributions to MPRA Account:

Members of the Senate are required to contribute 6% of sessional indemnity.

Members of the House of Commons are required to contribute 7½% of sessional indemnity.

Members in receipt of additional salaries* may contribute up to 7½% of such salaries, except for a member who has held the office of Prime Minister for four years.

Member contributions cease when the maximum benefit has been earned.

Government Contribution:

Matches member contributions.

* additional salaries are salaries or allowances paid to members of the Senate and House of Commons in their capacities as Speaker, Minister, Leader of the Opposition, Parliamentary Secretary, etc.

Eligibility for
Retiring Allowance:

A member is eligible to receive a retiring allowance upon termination of membership after having contributed for at least 6 years.

Retiring Allowance:

The amount of annual allowance payable to a former member who has satisfied the eligibility requirements is determined by multiplying the member's average sessional indemnity during the best six years of consecutive periods of pensionable service by a fraction, not to exceed .75, determined as the aggregate of (i), (ii) and (iii), where

(i) = the number of years of credit for contributions with respect to sessional indemnity as a member of the House of Commons multiplied by

.035 for the first 10 years,
.03 for the next 10 years, and
.02 for any additional years,

(ii) = .02 times the number of years of credit determined by summing the ratios of the member's contributions to the MPRAA with respect to additional salaries received by the member in a calendar year to $7\frac{1}{2}\%$ of the maximum sessional indemnity in that calendar year, and

(iii) = the number of years of credit for contributions with respect to sessional indemnity as a Senator multiplied by .03.

Survivor Allowances:

The following annual allowances are payable on the death of a member or former member who has satisfied the eligibility requirements for a retiring allowance:

- a) to a surviving spouse⁽¹⁾ until remarriage, three-fifths of the basic allowance⁽²⁾ and
- b) if there is a surviving spouse, to each unmarried child under age 18 (or 25 if a full-time student), one-tenth of the basic allowance subject to a maximum of three-tenths, or

(1) In the case of a former member, no allowance is payable unless the marriage existed while the deceased spouse was a member.

(2) The "basic allowance" is the annual allowance a member was receiving or would have been eligible to receive if he had ceased to be a member immediately before his death.

- c) If there is no surviving spouse, to each unmarried child under age 18 (or 25 if a full-time student), two-tenths of the basic allowance, subject to a maximum of eight-tenths.

Withdrawal Allowance:

If a member ceases to be a member before satisfying the eligibility requirements for a retiring allowance, or if the member is disqualified from the Senate or is expelled from the House of Commons, the member is entitled to a return of all contributions with interest at the rate of 4% per annum compounded annually.

(b) The 1981 Amendments

Member Contributions:

Members of the House of Commons are required to contribute 10% of sessional indemnity until they have earned the maximum benefit related to sessional indemnity.

Members in receipt of additional salaries, including the Prime Minister, may contribute up to 10% of their additional salaries.

Government Contribution:

Matches member contributions.

Retiring Allowance:

The amount of annual allowance payable to a member is determined by multiplying the member's best six-year average sessional indemnity by a fraction which is the sum of (a) plus (b) below.

(a) = the lesser of .75 and the sum of (i) and (ii), where

(i) = .05 times the number of years of credit for contributions with respect to basic indemnity as a member of the House of Commons.

(ii) = .03 times the number of years of credit for contributions with respect to basic indemnity as a Senator.

(b) = .05 times the number of years of credit determined by summing the ratios of the member's contributions with respect to the MPRAA in respect of additional salaries received by the member in a calendar year to 10% of the maximum sessional indemnity in that calendar year.

Election with Respect to Prior Service:

- (i) Members of the House of Commons may contribute an additional $2\frac{1}{2}\%$ of indemnities they received for service prior to August 1, 1981 and have the 5% accrual rate apply to such service. However, such election can only be made to the extent needed to acquire the maximum pension of 75%.
- (ii) Members in receipt of additional salary prior to August 1, 1981, whether or not they elected before 1981 to contribute $7\frac{1}{2}\%$ in respect of such salaries, were able to elect to pay an additional $2\frac{1}{2}\%$ of such additional salaries. This $2\frac{1}{2}\%$ contribution will earn a pro-rata share of the new 5% accrual rate, i.e., 1.25%, since $2\frac{1}{2}\%$ is one-quarter of the 10% contribution required for the normal 5% accrual.

Any members who did not make full contributions on any or all of their additional salary could elect to supplement those contributions up to $7\frac{1}{2}\%$. Any of the contributions up to $7\frac{1}{2}\%$ for additional salaries in respect of service prior to August 1, 1981, except where such contributions could not have been made before August 1, 1981, because of the 75% maximum benefit, will have earned the old 2% accrual rate in respect of such salaries. In addition, all contributions up to $7\frac{1}{2}\%$ of additional salaries in respect of service before August 1, 1981 are included for purposes of the 5% accrual rate on a pro-rata basis.

- (iii) The Government contributes an amount equal to the amount due from members at election.

Part IV: Supplementary Retirement Benefits

Member Contributions to
SRB Account:

All members are required to contribute 1% of sessional indemnity to the Supplementary Retirement Benefits Account. The contribution with respect to additional salaries is 1% of the portion of the additional salaries with respect to which the member is contributing to the Members of Parliament Retiring Allowances Account.

If a member elects to make prior service contributions to the MPRA Account on sessional indemnities or additional salaries, the member is also required to make up any corresponding deficiency in the SRBA contributions.

Government Contribution: Matches member current service contributions.

Supplementary Benefits: The Supplementary Retirement Benefits Act provides indexing to reflect increases in the Pension Index*. Survivor benefits are indexed immediately while retiring allowances are un-indexed until age 60, but at age 60 they are increased to reflect the increase in the Pension Index since commencement of the allowance, and they are normally fully indexed thereafter.

Withdrawal Allowance: Member contributions to the SRB Account are refunded whenever contributions to the MPRA Account are refunded.

Part V: General

Minimum Benefit: If a member or former member dies, leaving no eligible survivor, the amount by which the member's contributions exceed any amounts paid to the member is paid to the member's estate.

Suspension of Allowance: An allowance payable to a former member is suspended for the whole of any month during any part of which such person is a member of the Senate or the House of Commons.

Repayment of Withdrawal Allowances: If a member ceases to be a member, receives a withdrawal allowance and subsequently becomes a member again, the member may repay the withdrawal allowance and regain credit for the previous service.

Rate of Interest for Lump Sum Calculations: The rate of interest used in calculating withdrawal allowances and lump sum repayments of withdrawal allowances and prior service contributions is 4%. (Interest on withdrawn contributions is paid only for periods after December 31, 1973).

* The Pension Index normally provides for increases on January 1 of each year reflecting the increase in the average Consumer Price Index for the year ending on the preceding September 30 over the average for a similar period ending one year earlier. The first increase is pro-rated depending on the date of commencement of the allowance. Increases for 1983 and 1984 were limited to 6.5% and 5.5% respectively.

Amortization of Lump Sums:	Any payments that a member may elect to make with respect to prior service, including repayment of withdrawal allowances, may be amortized using a rate of interest of 8%
Interest Credited to MPRAA Account:	The rate of interest, to be credited to the MPRA Account is set by regulation and is intended to be in line with the rates used for the Public Service Superannuation Account, the Canadian Forces Superannuation Account and the Royal Canadian Mounted Police Superannuation Account.
Charges to Consolidated Revenue Fund:	Benefits payable in excess of contributions (including interest) by and in respect of members are charged directly to the Consolidated Revenue Fund.

Part VI: Life Senators*

Members Affected:	Members of the Senate who were summoned to the Senate prior to June 2, 1965 and who did not elect to be included under Part I are included under this Part.
Member Contributions:	Members are required to contribute 6% of sessional indemnity to the Consolidated Revenue Fund for a maximum of 26 2/3 years. In addition, members are required to contribute 1% to the SRB Account without limit.
Notice of Intention to Resign:	Members of the Senate who were less than age 75 could, until April 1, 1971, give notice of their intention to resign at age 75.
Annuity on Resignation:	The Governor in Council may grant an annuity equal to two-thirds of the Senator's sessional indemnity to a Senator who: a) has given the above notice of intention to resign and resigns within one year of attaining age 75, or b) is disabled.

* Senators other than those affected by this Part hold their place in the Senate until attainment of age 75 and are referred to herein as Term Senators.

Surviving Spouse's Annuity:

An annuity may be granted to the surviving spouse of a Senator who is in receipt of an annuity or who, having given the notice of intention to resign, dies before attaining age 75.

The amount of the surviving spouse's annuity will be the greater of (a) and (b), where

(a) = two-ninths of the sessional indemnity at death or resignation as applicable,

(b) = the lesser of

(i) thirty percent of the Senator's contributions, and

(ii) one-third of the applicable sessional indemnity.

This annuity will cease on the remarriage of the surviving spouse.

Minimum Benefit:

If a member dies without an eligible surviving spouse, the amount by which the member's contributions exceeds any amounts paid to the member is paid to the member's estate.

Consolidated Revenue Fund:

Benefits and contributions under this Part (other than contributions to the SRB Account) are charged and credited directly to the Consolidated Revenue Fund as opposed to the Members of Parliament Retiring Allowances Account.

C. Data, Membership Statistics and Accounts

The sources of the basic data were the files maintained by the House of Commons Division of the Department of Supply and Services for members of the House of Commons and by the Accounting Division of the Administration and Personnel Branch of the Senate for Senators.

The data were supplied by the above Divisions on forms developed by the Department of Insurance. In addition to data on active members (age, sex, contribution and salary histories) and persons in receipt of allowances (age, sex, amount of benefit), information on service and election results was requested for anyone who had been a member of the House of Commons at any time between January 1, 1963 and March 31, 1982.

The data were checked to ensure as much accuracy and completeness as possible.

Table 4

Active Members as at March 31, 1982

(a) In Receipt of Sessional Indemnity

	<u>Senate</u>			<u>House of Commons</u>
	<u>Life</u>	<u>Term</u>	<u>Total</u>	
<u>Number</u>				
Male	18	64	82	265
Female	<u>1</u>	<u>9</u>	<u>10</u>	<u>14</u>
Total:	19	73	92	279
Average Age	76.9	61.1	64.4	48.0
Average Service	23.9	11.6	14.1	7.8
Sessional Indemnity			\$48,600	\$48,600

(b) In Receipt of Additional Salary

<u>Number</u>				
Male	-	5	5	87
Female	<u>-</u>	<u>-</u>	<u>-</u>	<u>6</u>
Total:	-	5	5	93
Average Age	-	59.4	59.4	46.7
Average Service	-	16.2	16.2	7.4
Average Additional Salary	-		\$31,840	\$18,089

More detailed displays by age and service groups are given in Appendix 2.

Table 5

Effect of 1981 Amendment on

(a) Number of Members with Maximum Benefit

(b) Average Accrued Benefit

	<u>Before</u> <u>1981 Amendment</u>	<u>After</u> <u>1981 Amendment</u>
<u>Number of Members with Maximum Benefits</u>		
House of Commons		
Sessional Indemnity*	16	30
Additional Salaries	11	0
Senate (Term)		
Sessional Indemnity*	16	16
Additional Salaries	8	0
 <u>Average Accrued Benefit</u>		
(As a Fraction of Sessional Indemnity):		
House of Commons		
Sessional Indemnity	.269	.351
Additional Salaries**	.030 (171)	.086 (171)
Senate (Term)		
Sessional Indemnity	.344	.344
Additional Salaries**	.046 (15)	.148 (15)

* These figures represent all members who can no longer accrue benefits on sessional indemnity, whether or not they are entitled to additional salary.

** Includes members who are not presently in receipt of additional salaries but were in the past. The total number of members involved is shown in parentheses.

Table 6

Allowances in Payment*

(Annual amounts as at March 31, 1982)

	<u>Number</u>	<u>MPRAA</u>		<u>SRBA</u>		<u>MPRAA & SRBA Combined</u>	
		<u>Total</u> \$	<u>Average</u> \$	<u>Total</u> \$	<u>Average</u> \$	<u>Total</u> \$	<u>Average</u> \$
<u>House of Commons</u>							
Retired							
SRBA in Payment	174	902,016	5,184	821,856	4,723	1,723,872	9,907
SRBA Deferred	82	601,053	7,330	(332,941)	(4,060)	601,053	7,330
Spouses	37	113,676	3,072	132,664	3,586	246,340	6,658
Children	4	<u>3,190</u>	798	<u>1,185</u>	296	<u>4,375</u>	1,094
Total:		1,619,935		955,705		2,575,640	
<u>Term Senators</u>							
Retired							
SRBA in Payment	10	97,200	9,720	54,549	5,455	151,749	15,175
SRBA Deferred	2	15,618	7,809	(9,396)	(4,698)	15,618	7,809
Spouses	16	80,605	5,038	50,954	3,185	131,559	8,222
Children	1	<u>558</u>	558	<u>190</u>	190	<u>748</u>	748
Total:		193,981		105,693		299,674	
<u>Life Senators</u>							
Retired	11	181,200	16,473	111,802	10,164	293,002	26,637
Spouses	11	<u>49,068</u>	4,461	<u>34,602</u>	3,146	<u>83,670</u>	7,606
Total:		230,268		146,404		376,672	
Grand Total:	<u>348</u>	<u>2,044,184</u>		<u>1,207,802</u>		<u>3,251,986</u>	
Deferred				(342,337)			

* SRBA payments not payable until attainment of age 60 are shown in parentheses and not included in totals.

Table 7

STATEMENT OF ACCOUNTS
for Fiscal Year 1981-1982
(\$ thousands)

	<u>Member of Parliament Retiring Allowances</u>		<u>Supplementary Retirement Benefits</u>	
BALANCE, March 31, 1981		11,339		1,414
RECEIPTS				
Member Contributions				
Current	1,640		214	
Arrears	137			
Government Contributions	1,640		213	
Interest	<u>965</u>	<u>4,382</u>	<u>241</u>	<u>668</u>
		15,721		2,082
PAYMENTS				
Annual Allowances	1,849		69*	
Withdrawal Allowances	6		1	
Interest on Withdrawals	<u>4</u>	<u>1,859</u>	<u>—</u>	<u>70</u>
BALANCE, March 31, 1982		13,862		2,012

* Note: Supplementary Retirement Benefits which are in excess of the member's share of contributions to the SRB Account are charged directly to the Consolidated Revenue Fund. The amount of such payments for fiscal year 1981-82 was \$707 thousand.

D. Valuation Assumptions

It is generally recognized that actuarial estimates of the cost of funding a pension plan are heavily dependent on the assumptions underlying the calculations, and that the choice of the economic assumptions tends to be among the most difficult.

When considering the economic assumptions, it is important to recognize that, if the benefits are related to final or final average earnings and are substantially indexed, the relationship between the economic factors is considerably more significant than their level in determining the total cost of the plan. The crucial assumptions are by how much the rate of investment earnings exceeds the rate of inflation and the rate of salary increases. The more the rate of investment earnings exceeds the rate of salary increases and cost-of-living increases, the lower the cost of the plan will be in the long run. However, the level of the economic factors will affect the proportion of the total cost that is attributed to the MPRAA as opposed to the SRBA. That is, relatively higher inflation with correspondingly higher interest rates and salary increases tend to shift the cost from the MPRAA to the SRBA, with relatively little effect on the combined cost.

It was decided to use level long-term economic assumptions consistent with those adopted for the actuarial reports on the Canada Pension Plan and various superannuation accounts, currently in progress, which are: a rate of interest of $6\frac{1}{2}\%$, a rate of general salary increases of 5% and a rate of increase in the Consumer Price Increase of $3\frac{1}{2}\%$. These assumptions are in line with assumptions in current use in the private sector and they appear consistent with the April 19, 1983, Budget projections for the period to 1987.

However, it was felt that cognizance should be taken of the fact that annual increases in sessional indemnities and additional salaries are subject to statutory limits. Prior to the 1981 amendments to the Senate and House of Commons Act, increases were related to increases in the Industrial Composite, i.e., average industrial wages and salaries, subject to a maximum of 7%. On the other hand, the 1981 amendments limited increases to one percentage point below the lesser of the increase in the Industrial Composite and the increase in the Consumer Price Index.

As a result, cost estimates in the body of this report are based on the following economic assumptions:

	<u>Before 1981</u> <u>Amendments</u>	<u>After 1981</u> <u>Amendments</u>
Rate of Interest	6.5%	6.5%
Increase in Remuneration	5.0%	2.5%
Increase in CPI	3.5%	3.5%

Many observers may consider the above set of assumptions relating to the post-1981 plan unrealistic for establishing long range costs, on the premise that ad hoc adjustments may be expected from time to time to maintain a reasonably consistent relationship of the remuneration of members of the Senate and the House of Commons to the Industrial Composite. Cost estimates based on this premise are presented in Appendix 1.

In addition to economic assumptions, it is necessary to make certain demographic assumptions, i.e., relating to such matters as mortality, disability, termination, re-entry, non-reelection, and the frequency of elections. The contingencies that were considered and the assumptions that were decided upon are shown below. Notes relating to selected assumptions are contained in Appendix 3.

- (1) Mortality: 1971 GAM (Group Annuity Mortality) Table was used for members and beneficiaries except children, for whom mortality was ignored.
- (2) Disability: Included in terminations.
- (3) Probability of an Election: 30% in any year.
- (4) Probability of non-Reelection (in an election year):

<u>Age</u>	<u>Probability of non-Reelection</u>
20	.121
30	.183
40	.259
50	.341
60	.421
70	.496
75	1.000

- (5) Probability of Termination from the House of Commons (in a non-election year):

<u>Years of Service</u>	<u>Probability of Termination</u>
less than 6	0
6-9	1%
10-14	2%
15 or more	3%
any service at age 75	100%

- (6) Probability of Termination from the Senate:

<u>Years of Service</u>	<u>Probability of Termination</u>
less than 6	0
6 or more	3%
any service at age 75	100%

- (7) Probability that an ex-Member of the House of Commons will Become a Senator:

4% in the first year after leaving the House of Commons for members age 40-65 with at least 10 years service,

0% for all other cases

- (8) Probability that a Terminated Senator will be Reappointed: 0

- (9) Probability that a Terminated Member of the House of Commons will be Re-elected: 0
- (10) Probability that a Terminated Senator will be elected to the House of Commons: 0
- (11) Remarriage Rates: 1940-1957 Pension Act of Canada
Remarriage Rates
- (12) Proportion Leaving Eligible Spouses (1977 Public Service Superannuation basis):

Age at Death	Males		Females	
	Active	Retired	Active	Retired
25	.720	.315	.700	.525
30	.720	.455	.815	.595
35	.860	.575	.840	.625
40	.890	.673	.825	.630
45	.890	.749	.800	.620
50	.910	.802	.750	.580
55	.920	.828	.665	.480
60	.905	.826	.580	.370
65	.860	.797	.480	.315
70	.810	.737	.380	.265

- (13) Age of Spouse: Female three years younger than the male.
- (14) Children: All married participants are assumed to have children that are 28, 30 and 32 years younger than the father. Further, it was assumed that all child beneficiaries will remain eligible until age 23.
- (15) Life Senators:
For purposes of developing the unfunded actuarial liability with respect to benefits payable to Life Senators pursuant to the MPRAA (Part VI) the following special assumptions were made:
 - (a) Rate of disability = rate of mortality
 - (b) Mortality of disabled: 1971 GAM Table rated up three years
 - (c) In determining the value of the net unfunded actuarial liability the present value of future contributions to the Consolidated Revenue Fund at the rate of 6% of Sessional Indemnities was deducted.
- (16) Additional Salaries:

It has been assumed that members who are contributing on Additional Salaries as at March 31, 1982 will continue to do so as long as they are members. The ratio of such contributions to their contributions on Sessional Indemnities is assumed to remain constant. Members not contributing on Additional Salaries at March 31, 1982 are assumed to continue not contributing on any Additional Salaries in the future.

E. Actuarial Cost Methods

In the case of the MPRAA (except with respect to "additional salaries" after the 1981 amendments), contributions are payable only until maximum benefits are earned. In the case of the SRBA, contributions with respect to additional salaries were similarly limited before the 1981 amendments. These features make comparisons difficult. For purposes of comparing long term costs with those for other pension plans, the required contributions were determined as a percentage of all future remuneration in respect of cohorts of new members* for the MPRAA and SRBA combined.

For determining the normal actuarial costs and the actuarial status of the plan for funding purposes, the Aggregate Attained Age Actuarial Cost Method was used. Normal actuarial costs (future service contribution rates) for the government in respect of members active at the valuation date are determined by subtracting the present value of future member contributions from the present value of benefits to be earned in the future; the difference, when expressed as a multiple of the present value of member contributions, produces the required government contribution rate in respect of future contributory earnings (see page 3). The unfunded actuarial liability is determined by deducting the value of assets from the value of benefits earned to the date of valuation (see pages 23 to 26).

F. Detailed Valuation Results

The contributions payable by members as well as the remainder of the Normal Actuarial Costs which are assumed to be the required government contributions are presented in detail in Section A of this Report.

The funded status of the pre-1981 plan as well as the post-1981 plan is developed below in the form of separate balance sheets for the MPRA Account and the SRB Account and a statement of net liabilities for basic allowances payable for or in respect of Life Senators; the latter are charged directly to the Consolidated Revenue Fund.

* The data used for this purpose relate to persons summoned to the Senate or first elected to the House of Commons during the period from January 1, 1970 to March 31, 1982; their average entry age is 56 and 42 years, respectively.

1. MPRAA Valuation Balance Sheet (pre-1981 plan)

<u>Assets</u>	\$	\$	\$
Balance of Account*			13,761,410
Present value of prior service contributions by members			"
Senate	2,422		
House of Commons	<u>72,092</u>		74,514
Present value of future contributions pursuant to Part II			<u>15,808</u>
Total Assets			13,851,732
Unfunded Actuarial Liability			<u>42,443,544</u>
			<u>56,295,276</u>
 <u>Liabilities</u>			
Present value of benefits accrued to active members under Parts II and III			
Senators			
Sessional Indemnity	6,553,397		
Additional Salary	<u>142,234</u>	6,695,631	
Members of the House of Commons			
Sessional Indemnity	28,253,450		
Additional Salary	<u>2,330,861</u>	<u>30,584,311</u>	37,279,942
Present value of benefits to persons entitled to annual allowances			
Senate			
Retiring allowances	883,657		
Spouses' allowances	702,644		
Children's allowances	<u>1,114</u>	1,587,415	
House of Commons			
Retiring allowances	16,333,279		
Spouses' allowances	1,076,939		
Children's allowances	<u>17,701</u>	<u>17,427,919</u>	<u>19,015,334</u>
Total Actuarial Liability			<u>56,295,276</u>

* The account balance of \$13,861,821 has been reduced by \$100,411, i.e., the total amount of member prior service contributions with respect to the 1981 amendments that were made prior to March 31, 1982.

2. MPRAA Valuation Balance Sheet (post-1981 plan)

<u>Assets</u>	\$	\$	\$
Balance of Account			13,861,821
Present value of member prior service contributions			
Senate	90,666		
House of Commons	<u>1,435,111</u>		1,525,777
Outstanding matching government prior service contributions			1,451,263
Present value of future contributions pursuant to Part II			<u>15,420</u>
Total Assets			16,854,281
Unfunded Actuarial Liability			<u>47,789,456</u>
			<u>64,643,737</u>
 <u>Liabilities</u>			
Present value of benefits accrued to active members under Parts II and III			
Senators			
Sessional Indemnity	5,723,704		
Additional Salary	499,608	6,223,312	
Members of the House of Commons			
Sessional Indemnity	33,844,005		
Additional Salary	<u>5,561,086</u>	<u>39,405,091</u>	45,628,403
Present value of benefits to persons entitled to annual allowances			
Senate			
Retiring allowances	883,657		
Spouses' allowances	702,644		
Children's allowances	<u>1,114</u>	1,587,415	
House of Commons			
Retiring allowances	16,333,279		
Spouses' allowances	1,076,939		
Children's allowances	<u>17,701</u>	<u>17,427,919</u>	19,015,334
Total Actuarial Liability			<u>64,643,737</u>

3. SRBA Valuation Balance Sheet (pre-1981 plan)

<u>Assets</u>	\$	\$	\$
Balance of Account			2,012,000
Present value of prior service contributions by members			
Senate	0		
House of Commons	1,238		1,238
Present value of future contributions pursuant to Parts II and VI			<u>85,721</u>
Total Assets			2,098,959
Unfunded Actuarial Liability			<u>38,812,157</u>
			<u>40,911,116</u>
 <u>Liabilities</u>			
Present value of benefits accrued to active members under Parts II, III and VI			
Senators (Term)			
Sessional Indemnity	1,949,942		
Additional Salary	<u>41,785</u>	1,991,727	
Senators (Life)		444,712	
Members of the House of Commons			
Sessional Indemnity	11,457,722		
Additional Salary	<u>991,608</u>	<u>12,449,330</u>	14,885,769
Present value of benefits to persons entitled to annual allowances			
Senators (Term)			
Retiring allowances	856,192		
Spouses' allowances	701,880		
Children's allowances	<u>380</u>	1,558,452	
Senators (Life)			
Retiring allowances	827,946		
Spouses' allowances	<u>474,274</u>	1,302,220	
House of Commons			
Retiring allowances	21,158,235		
Spouses' allowances	1,994,346		
Children's allowances	<u>12,094</u>	<u>23,164,675</u>	26,025,347
Total Actuarial Liability			<u>40,911,116</u>

4. SRBA Valuation Balance Sheet (post-1981 plan)

<u>Assets</u>	\$	\$	\$
Balance of Account			2,012,000
Present value of member prior service contributions			
Senate	0		
House of Commons	<u>5,054</u>		5,054
Outstanding matching government prior service contributions			3,949
Present value of future contri- butions pursuant to Parts II and VI			<u>78,712</u>
Total Assets			2,099,715
Unfunded Actuarial Liability			<u>42,395,519</u>
			<u>44,495,234</u>
 <u>Liabilities</u>			
Present value of benefits accrued to active members under Parts II, III and VI			
Senators (Term)			
Sessional Indemnity	1,724,450		
Additional Salary	<u>150,559</u>	1,875,009	
Senators (Life)		410,574	
Members of the House of Commons			
Sessional Indemnity	13,842,456		
Additional Salary	<u>2,341,848</u>	<u>16,184,304</u>	18,469,887
Present value of benefits to persons entitled to an annual allowance			
Senators (Term)			
Retiring allowances	856,192		
Spouses' allowances	701,880		
Children's allowances	<u>380</u>	1,558,452	
Senators (Life)			
Retiring allowances	827,946		
Spouses' allowances	<u>474,274</u>	1,302,220	
House of Commons			
Retiring allowances	21,158,235		
Spouses' allowances	1,994,346		
Children's allowances	<u>12,094</u>	<u>23,164,675</u>	<u>26,025,347</u>
Total Actuarial Liability			<u>44,495,234</u>

5. Actuarial Liability for Life Senators (pre-1981 basis)

	\$	\$
Present value of all benefits for current Senators		2,266,542
Present value of future contributions from Senators		<u>230,105</u>
		2,036,437
Present value of benefits to persons entitled to an annual allowance		
Retiring allowances	1,052,617	
Spouses' allowances	<u>424,198</u>	<u>1,476,815</u>
Total Actuarial Liability for Life Senators:		<u><u>3,513,252</u></u>

6. Actuarial Liability for Life Senators (post-1981 basis)

	\$	\$
Present value of benefits for current Senators		2,090,843
Present value of future contributions from Senators		<u>213,875</u>
		1,876,968
Present value of benefits to persons entitled to an annual allowance		
Retiring allowances	1,052,617	
Spouses' allowances	<u>424,198</u>	<u>1,476,815</u>
Total Actuarial Liability for Life Senators		<u><u>3,353,783</u></u>

The results of the above valuation balance sheets combined with the development of actuarial liabilities for Life Senators are summarized in Section A.

As noted elsewhere in this report, in order to reflect the applicable provisions of the Senate and House of Commons Act, the assumed increases in remuneration in respect of the pre-1981 plan estimates reflect increases in average industrial wages and salaries, while those for the post-1981 plan estimates are two and one-half percentage points lower. Supplementary estimates based on a uniform assumption of increases in remuneration proportional to increases in average industrial wages and salaries are given in Appendix 1.

G. Conclusion

1. The purpose of this report is to provide estimates of the cost of benefits pursuant to the Members of Parliament Retiring Allowances Act and the associated cost of benefits pursuant to the Supplementary Retirement Benefits Act as well as of the impact of the 1981 amendments.
2. The normal actuarial costs (contribution rates) and the unfunded actuarial liabilities as at March 31, 1982, are summarized in Section A.
3. We believe that the assumptions used are reasonable in the long run and produce appropriate estimates of the normal actuarial costs and the actuarial liabilities for the two plans combined. However, it is important to recognize that the split of contributions and actuarial liabilities according to whether they are attributable to the MPRAA or the SRBA is very sensitive to the level of the economic assumptions.
4. The estimates given in this report for the plan after the 1981 amendments appear somewhat lower than might be expected, because the assumption regarding increases in the remuneration of members is not the same as that used for the estimates for the pre-1981 plan. In order to reflect the applicable provisions of the Senate and House of Commons Act, it was assumed that remuneration would increase in proportion to average industrial wages and salaries with respect to the pre-1981 plan, but at a rate one percentage point below increases in the Consumer Price Index with respect to the post-1981 plan. The effect of the 1981 amendment, calculated on the assumption that remuneration of members increases in proportion to average wages and salaries, is presented in Appendix 1.

5. In my opinion,

- a) the data on which the report is based are sufficient and reliable for the purposes of this valuation,
- b) subject to the foregoing comments, the assumptions used are adequate and appropriate for the purposes of this valuation,
- c) the methods employed are consistent with sound actuarial principles, and
- d) this report conforms with the recommendations adopted by the Canadian Institute of Actuaries for the Valuation of Pension Plans.

6. Finally, we wish to acknowledge the assistance provided by the Accounting Division of the Administration and Personnel Branch of the Senate, by the House of Commons Division of the Department of Supply and Services and by the Pensions Group of the General Personnel Management Division of the Treasury Board.

Respectfully submitted,



Walter Riese, F.C.I.A.,
Chief Actuary.

Department of Insurance
Ottawa

March 5, 1985

Appendix 1

Estimates based on assumption that remuneration increases
in proportion to average industrial wages and salaries

Estimates based on this assumption are, in fact, presented in this report in respect of the pre-1981 plan. However, as noted in the report, concurrent with the 1981 amendment to MPRAA, an amendment to the Senate and House of Commons Act changed the statutory rate of increase in remuneration from the rate of increase in the Industrial Composite (average industrial wages) subject to a maximum of 7%, to a rate one percentage point below the lesser of the increase in the Consumer Price Index and the increase in the Industrial Composite.

In preparing the main report estimates in respect of the post-1981 plan, it appeared appropriate to take account of the amendment to the MPRAA as well as of the change in the statutory increase in the rate of remuneration. As a result, a comparison of the estimates for the pre-1981 and post-1981 plans, clearly, is not a measure of the pure effect of the MPRAA amendments.

Tables A, B and C below present estimates for the pre-1981 plan as they appear in the report and show estimates for the post-1981 plan on the same assumptions. In other words, these tables reflect the effect of the 1981 amendments to the MPRAA on the assumption that remuneration over time will increase at the rate of increases in the Industrial Composite or, put another way, if the 1981 amendment to the Senate and House of Commons Act had not been made.

Table A corresponds to Table 1 in this report and, similarly, was prepared for purposes of comparing long term costs. The rates shown are normal actuarial costs applicable to groups of new members for the MPRAA and SRBA combined, assuming that all contributions are payable during the member's entire active lifetime.

Table A

Normal Actuarial Costs (Current Service Contribution Rates)
 applicable to New Members for MPRAA and SRBA combined
 expressed as percentages of all earnings*
(remuneration assumed to increase at same rate as Industrial Composite)

	<u>Before 1981 Amendments</u>				<u>After 1981 Amendments</u>			
	<u>Percent of Earnings*</u>			<u>Ratio</u>	<u>Percent of Earnings*</u>			<u>Ratio</u>
	Govern-			<u>(2)÷(1)</u>	Govern-			<u>(6)÷(5)</u>
	<u>Members</u>	<u>ment</u>	<u>Total</u>		<u>Members</u>	<u>ment</u>	<u>Total</u>	
<u>(1)</u>	<u>(2)</u>	<u>(3)</u>	<u>(4)</u>	<u>(5)</u>	<u>(6)</u>	<u>(7)</u>	<u>(8)</u>	
<u>Senate</u>								
Sessional Indemnity	6.43*	13.49	19.92	2.10	6.47*	13.62	20.09	2.11
Additional Salaries	6.41*	4.90	11.31	0.76	11.00	25.89	36.89	2.35
<u>House of Commons</u>								
Sessional Indemnity	8.30*	27.76	36.06	3.34	9.99*	39.01	49.00	3.90
Additional Salaries	7.84	16.52	24.36	2.11	11.00	52.66	63.66	4.79

Tables B and C correspond to Tables 2 and 3, respectively, and were derived similarly, using the Aggregate Attained Age Actuarial Cost Method, as described on page 22.

It will be noted with regard to Table B below that, as in the case of Table 2 of the report, the separate costs shown for the MPRAA and SRBA cannot be combined directly, because stipulated contribution rates to the MPRA Account (except with respect to additional salaries after the 1981 amendments) and to the SRBA with respect to additional salaries before the 1981 amendments are payable only until maximum benefits are earned.

It is also worth pointing out once again that the determination of separate costs for the MPRAA and the SRBA is very sensitive to the assumed level of inflation. If differentials between economic assumptions are kept constant, a relatively higher level of inflation would increase the cost of the SRBA but decrease the cost of the MPRAA.

* It was necessary to reduce the statutory contribution rates to the SRBA with respect to "additional salaries" before the 1981 amendments and to the MPRAA (except with respect to "additional salaries" after the 1981 amendments), which are payable by members only until maximum benefits are earned, to equivalent rates that would be applicable to all earnings.

Table B

Normal Actuarial Costs (Future Service Contribution Rates)
expressed as percentages of contributory earnings
(remuneration assumed to increase at same rate as Industrial Composite)

	Before 1981 Amendments				After 1981 Amendments			
	% of Contrib. Earnings		Ratio		% of Contrib. Earnings		Ratio	
	Members	Govern- ment	Total	(2)÷(1)	Members	Govern- ment	Total	(6)÷(5)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<u>Senate</u>								
<u>Sessional Indemnity</u>								
MPRAA	6.00*	10.99*	16.99*	1.83*	6.00*	10.93*	16.93*	1.82*
SRBA	1.00	2.66	3.66	2.66	1.00	2.77	3.77	2.77
<u>Additional Salaries</u>								
MPRAA	7.50*	3.21*	10.71*	0.43*	10.00	17.83	27.83	1.78
SRBA	1.00*	2.17*	3.17*	2.17*	1.00	6.66	7.66	6.66
<u>House of Commons</u>								
<u>Sessional Indemnity</u>								
MPRAA	7.50*	18.74*	26.24*	2.50*	10.00*	32.54*	42.54*	3.25*
SRBA	1.00	8.47	9.47	8.47	1.00	10.71	11.71	10.71
<u>Additional Salaries</u>								
MPRAA	7.50*	9.53*	17.03*	1.27*	10.00	32.21	42.21	3.22
SRBA	1.00*	6.12*	7.12*	6.12*	1.00	16.19	17.19	16.19

The rates shown in Table B above are convenient to use for purposes of funding, because the required government contributions are expressed as multiples of statutory contributions by members.

* contributions payable until maximum benefit earned

Using the same assumptions as for Tables A and B above the unfunded actuarial liabilities as at March 31, 1982, are estimated to be as in Table C below:

Table C

Unfunded Actuarial Liabilities as at March 31, 1982

	<u>Before 1981 Amendments</u> (\$ millions)	<u>After 1981 Amendments</u> (\$ millions)
Members of Parliament Retiring Allowances Account	42.4	52.5
Supplementary Retirement Benefits Account	38.8	44.2
Life Senators (MPRAA Part VI)	<u>3.5</u>	<u>3.5</u>
Total in respect of earned benefits	84.7	100.2

As might be expected, the normal actuarial costs and unfunded actuarial liabilities shown in this Appendix in respect of the post-1981 plan are somewhat higher than those shown in the report. The financial effects of the 1981 amendment as determined in accordance with the two alternative assumptions regarding increases in remuneration are compared in Table D below.

Table D

Effect of assumptions regarding future increases in remuneration
with respect to the post-1981 plan
on the cost of the 1981 amendments to MPRAA

	Remuneration assumed to increase in accordance with Senate and House of Commons Act* (Report basis)	Remuneration assumed to continue increasing in accordance with Industrial Composite**
1. Increase in effective government contribu- tion rate for combined MPRAA and SRBA, expressed as percentage of all earnings for new entrants	(% of earnings)	(% of earnings)
<u>Senate</u>		
Sessional Indemnity	-2.26	0.13
Additional Salaries	18.29	20.99
<u>House of Commons</u>		
Sessional Indemnity	6.53	11.25
Additional Salaries	31.41	36.14
2. Increase in unfunded actuarial liabilities	(\$ millions)	(\$ millions)
MPRA Account	5.4	10.1
SRB Account	3.6	5.4
Life Senators (Part VI)	<u>-0.1</u>	<u>-</u>
	8.9	15.5

* Statutory rate of increase is one percentage point below the lesser of the increase in the Industrial Composite and that of the Consumer Price Index. (Assumed rate: 2.5% p.a.)

** Assumed rate of increase: 5% p.a.

Note: For both above sets of estimates, the assumed rate of increase in remuneration for purposes of the pre-1981 plan is 5% p.a.

Appendix 2

Statistical Display of Senators
and Members of the House of Commons

Table E

Life Senators as at March 31, 1982

Service:	<u>15-19</u>	<u>20-24</u>	<u>25-29</u>	<u>30-34</u>	<u>35-39</u>	<u>40-44</u>	<u>Total</u>
<u>Age</u>							
60-64	2	-	-	-	-	-	2
65-69	2	-	-	-	-	-	2
70-74	2	-	1	-	-	-	3
75-79	2	2	1	-	-	-	5
80-84	-	1	2	-	-	-	3
85-89	-	-	1	-	-	1	2
90-94	-	-	1	-	-	-	1
95-99	-	-	-	-	-	1	1
Total	<u>8</u>	<u>3</u>	<u>6</u>	<u>0</u>	<u>0</u>	<u>2</u>	<u>19</u>

Table F

Term Senators as at March 31, 1982

Service:	<u>0-4</u>	<u>5-9</u>	<u>10-14</u>	<u>15-19</u>	<u>20-24</u>	<u>25-29</u>	<u>Total</u>
<u>Age</u>							
45-49	2	3	-	-	-	-	5
50-54	1	4	3	1	-	-	9
55-59	3	3	7	3	2	1	19
60-64	3	3	5	-	3	-	14
65-69	5	5	3	1	1	-	15
70-74	<u>3</u>	<u>1</u>	<u>4</u>	<u>1</u>	<u>2</u>	<u>-</u>	<u>11</u>
Total	<u>17</u>	<u>19</u>	<u>22</u>	<u>6</u>	<u>8</u>	<u>1</u>	<u>73</u>

Table G

Members of the House of Commons as at March 31, 1982

Service:	<u>0-4</u>	<u>5-9</u>	<u>10-14</u>	<u>15-19</u>	<u>20-24</u>	<u>25-29</u>	<u>30-34</u>	<u>35-39</u>	<u>Total</u>
<u>Age</u>									
25-29	4	1	-	-	-	-	-	-	5
30-34	16	3	-	-	-	-	-	-	19
35-39	14	9	3	-	-	-	-	-	26
40-44	35	20	2	-	-	-	-	-	57
45-49	24	9	12	5	-	-	-	-	50
50-54	21	15	9	7	2	-	-	-	54
55-59	14	12	4	4	1	-	-	-	35
60-64	4	6	-	7	2	1	-	-	20
65-69	1	3	1	-	-	-	1	-	6
70-74	<u>1</u>	<u>1</u>	<u>-</u>	<u>1</u>	<u>2</u>	<u>1</u>	<u>-</u>	<u>1</u>	<u>7</u>
Total	<u>134</u>	<u>79</u>	<u>31</u>	<u>24</u>	<u>7</u>	<u>2</u>	<u>1</u>	<u>1</u>	<u>279</u>

Table H

Members of House of Commons in Receipt of Additional Salaries as at March 31, 1982

Service:	<u>0-4</u>	<u>5-9</u>	<u>10-14</u>	<u>15-19</u>	<u>20-24</u>	<u>25-29</u>	<u>30-34</u>	<u>35-39</u>	<u>Total</u>
<u>Age</u>									
25-29	3	1	-	-	-	-	-	-	4
30-34	5	-	-	-	-	-	-	-	5
35-39	5	3	-	-	-	-	-	-	8
40-44	13	7	2	-	-	-	-	-	22
45-49	10	4	3	1	-	-	-	-	18
50-54	11	3	2	2	-	-	-	-	18
55-59	3	2	1	3	1	-	-	-	10
60-64	2	1	-	2	-	1	-	-	6
65-69	-	-	1	-	-	-	-	-	1
70-74	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>1</u>	<u>1</u>
Total	<u>52</u>	<u>21</u>	<u>9</u>	<u>8</u>	<u>1</u>	<u>1</u>	<u>-</u>	<u>1</u>	<u>93</u>

Appendix 3

Notes on Selected Assumptions

As mentioned in Section C of the report, data were gathered not only for the active members and beneficiaries, but historical data were collected on all persons who had been Members of Parliament on or after January 1, 1963. The data were then analyzed to determine experience with respect to certain contingencies in order to derive appropriate demographic assumptions. The various contingencies are discussed below.

(a) Probability of non-Reelection (in an election year)

This is the probability that a member of the House of Commons on January 1 of an election year terminates at some point during the election year. Thus, it includes all causes of ceasing to be a member other than death.

Intuitively, it would appear that this probability should vary by age and service. However, due to the large possible number of combinations of years and service (ages 20 to 75 with up to 39 years of service) and relatively few (1601) life years of exposure, contained in the experience studied (elections of 1965, 1968, 1972, 1974, 1979 and 1980), it was difficult to develop a very fine breakdown.

The data were examined by age and service, age only and service only in one-year, five-year and ten-year groupings. The variation by service did not appear meaningful. However, the probabilities showed a very definite increase by age. We were successful in fitting a curve of the form

$$y = 1 - \frac{1}{a+bx^c}$$

with a = 1.076
b = .0001021
c = 2.14

Probabilities derived from this formula were used for ages below 75. The probability at age 75 was assumed to be one.

(b) Probability of Termination from the House of Commons
(in a non-election year)

The same type of analysis was made for the probability of termination in a non-election year as indicated above for the probability of non-reelection. While there did not appear to be any variation by age, there appeared to be a slow increase from zero at the earlier durations up to 3% after 15 years of service. Thus, it appeared appropriate to use the following:

<u>Years of Service</u>	<u>Probability of Termination</u>
0-5	0
6-9	1%
10-14	2%
15 and over	3%
any service, at age 75	100%

(c) Probability of an Election (in a given year)

For purposes of developing these probabilities it was first assumed that there would be no election in either 1982 or 1983 but that there would be an election in 1984.

Including an assumed election in 1984, and going back to 1949 and 1930 there have been 13 and 17 elections respectively. The periods between elections were distributed as follows:

<u>Number of Years Between Elections</u>	<u>1984 and twelve preceding elections (1949 - 1984)</u>		<u>1984 and sixteen preceding elections (1930 - 1984)</u>	
	<u>Number of Cases</u>	<u>Average Period (Years)</u>	<u>Number of Cases</u>	<u>Average Period (Years)</u>
1 or less	3	.92	3	.92
1-2	1	1.87	1	1.87
2-3	2	2.63	2	2.63
3-4	1	3.83	1	3.83
<u>4-5</u>	<u>5</u>	<u>4.30</u>	<u>9</u>	<u>4.60</u>
Total	12	2.92	16	3.43

Using the 1949-1984 data leads to the assumption that, if there is an election in any given year, then the probability of an election in the 1st, 2nd, 3rd, 4th and 5th following year is 3/12, 1/12, 2/12, 1/12 and 5/12, respectively. If it is further assumed that all elections occur at the mid-point of the fiscal year (the same assumption was made with respect to the timing of all decrements and re-entries) and applying the above probabilities there will be an election in the xth year following an election, the probability of an election in any calendar year may be derived.

The results are as follows:

<u>Year</u>	<u>Probability of an Election</u>	<u>Year</u> <u>Year</u>	<u>Probability of an Election</u>	<u>Year</u>	<u>Probability of an election</u>
1982	0	1991	.231	2000	.305
1983	0	1992	.280	2001	.289
1984	1	1993	.264	2002	.298
1985	0.25	1994	.373	2003	.297
1986	0.146	1995	.307	2004	.307
1987	0.224	1996	.272	2005	.302
1988	0.193	1997	.295	2006	.296
1989	0.529	1998	.289	2007	.299
1990	0.302	1999	.323	2008	.299

As time goes on, the probability of an election will approach .3.

Using a probability of an election that varies by calendar year would complicate the valuation process unduly, since it would result in decrements varying by age, years of service and calendar year. A test was made to determine the effect of ignoring the variation by calendar year. Using a 10% contribution rate, a 5% accrual rate, an unindexed benefit, assuming no prior service, assuming that all terminations and deaths with surviving spouses are entitled to an immediate annuity and using quinquennial ages 25 to 70, the total cost as a multiple of members' contributions was determined using (i) the above probabilities and (ii) a flat 30%. It was found that the flat 30% assumptions gave slightly higher costs ranging from 0.2% higher at age 25, to 1.0% higher at age 45 to 5.0% higher at age 70. The difference was considered to be negligible and thus a factor of 0.3 was used for the probability of an election occurring in a year.

The probability of terminating in a non-election year is then multiplied by .7 and the probability of terminating in an election year is multiplied by .3 giving, for any individual, the total probability of termination varying by age and service.

It will be noted that the probability of an election of 0.3 as derived above implies an average period between elections of 3.33 years which lies between the 1949-84 experience (2.92 years) and the 1930-84 experience (3.43 years). It is interesting to note that the total experience since confederation reveals an average period between elections of 3.66 years.

In any event, the sensitivity of the results to the level of the election probability (or other termination assumption) was tested by calculating supplementary estimates using a 35% probability of an election in a year. The results are shown in Table J below.

Table J

Sensitivity Test on Probability of Election in a Year
(Post-1981 Plan)

	<u>Assumed Probability = .35</u>	<u>Assumed Probability = .30</u> (report basis)
Normal Actuarial Cost for MPRAA and SRBA combined, expressed as percentage of all future earnings (House of Commons)	(% of earnings)	(% of earnings)
Sessional Indemnity	40.60	38.35
Additional Salaries	57.64	55.73
Unfunded Actuarial Liabilities	(\$ millions)	(\$ millions)
MPRA Account	48.0	47.5
SRB Account	41.6	41.3
Life Senators	<u>3.4</u>	<u>3.4</u>
Total	93.0	92.2

(d) Probability of Termination from the Senate

On examining the experience it was found that there was no discernible pattern by age but there was some variation by service. The probability was very low at the earlier durations and varied around 3% after about five years. Thus, a probability of 0 for the first 6 years and 3% thereafter was used, subject to the constraint that all members terminate at age 75.

(e) Probability that an ex-Member of the House of Commons will Become a Senator

The experience was examined in turn by age, service at termination, duration since termination, age and service at termination, and age and service since termination. Once again, the limited amount of data made it difficult to discern significant patterns. However, it was apparent that appointments to the Senate are concentrated in the period immediately following termination of membership in the House of Commons as well as between the ages of 40 and 65, provided the member had served for a reasonable period in the House of Commons. It was assumed that 4% of all terminated members who have at least 10 years of service in the House of Commons and are aged 40-65 will be appointed to the Senate within one year of termination.

According to this assumption, the expected number of ex-members of the House of Commons that would have been appointed to the Senate in the period studied is 33 while the actual number of such appointments was 39. The assumption thus understates somewhat the amount of the members' allowances that will be suspended during any period served in the Senate. Effectively, a terminated member who is appointed to the Senate is entitled to a deferred allowance which will be based on the best 6-year average sessional indemnity at termination from the Senate.

(f) Probability that a Terminated Member of the House of Commons will be Re-elected

The experience was analyzed in the following ways: age and service at termination, age and duration since termination, service at termination and duration since termination, age only, service at termination only and duration since termination only. The experience indicated that age was the best criterion.

Sample rates are:

<u>Age Group</u>	<u>30-39</u>	<u>40-49</u>	<u>50-59</u>	<u>60-69</u>	<u>70-79</u>
Probability of re-election (in an election year):	.11	.04	.04	.01	0

Note that these probabilities assume that it must be an election year. Thus, the probabilities must be multiplied by the probability of an election in order to determine the probability of re-election in any year.

Taking this contingency into account increases the cost for members who terminate with less than 6 years of service but lowers the cost for those who terminate after 6 years. This is so for those who terminate during the first 6 years, because the earlier pensionable service may be re-credited if the individual repays the withdrawal allowance on re-election; on the other hand, a member, with more than six years who is entitled to an immediate annuity upon termination, has his annuity suspended upon re-election although it is subject to reinstatement, recalculated on the member's best 6-year sessional indemnity at subsequent termination. The combined effect of the two classes would be to reduce the cost of the plan somewhat. However, attempting to include this contingency in the calculations vastly complicates the procedure, since any member may terminate for the first time in any year, be re-elected in any year following termination and terminate again in any year following re-election, etc. The benefit at any termination is determined by the number of credited years as a member (excluding breaks) and the best 6-year average sessional indemnity which will be affected by any breaks in service occurring in the six years before termination.

It was felt that the additional complexity and expense of the calculations was not justified by any additional precision that might be obtained by taking this contingency into account.