

Office of the Superintendent of Financial Institutions      Bureau du surintendant  
des institutions financières

**Canada Pension Plan**  
**Twelfth**  
**Statutory Actuarial Report**

**October 1991**

**Canada**<sup>ISI</sup>

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## CANADA PENSION PLAN

### TWELFTH ACTUARIAL REPORT OCTOBER 1991

#### I. Introduction

This is the twelfth actuarial report since the inception of the plan in 1966. It has been prepared in compliance with subsection 115(2) of the Canada Pension Plan (CPP) which provides that,

"... in accordance with a request of the Minister of Finance, the Chief Actuary shall, whenever any Bill is introduced in or presented to the House of Commons to amend this Act in a manner that would in the opinion of the Chief Actuary materially affect any of the estimates contained in the most recent report under this section made by the Chief Actuary, prepare, using the same actuarial assumptions and basis as were used in that report, a report setting forth the extent to which such Bill would, if enacted by Parliament, materially affect any of the estimates contained in that report."

The most recent report made pursuant to Section 115 was the Eleventh Statutory Actuarial Report, as at December 31, 1988, which was tabled in the House of Commons on January 22, 1990. The terms of the existing CPP are described in that report.

This report was prepared pursuant to the request addressed to the Chief Actuary on October 2, 1991, by the Minister of Finance. In his letter, the Minister indicates that the government expects "to table a Bill in October 1991 which will increase benefits for children of deceased and disabled contributors and raise contribution rates".

In accordance with section 114 of the Canada Pension Plan, the provisions of this amending Bill will come into force "on a day to be fixed by proclamation of the Governor in Council, which proclamation may not be issued and shall not in any case have any force or effect unless the lieutenant governor in council of each of at least two-thirds of the included provinces, having in the aggregate not less than two-thirds of the population of all the included provinces, has signified the consent of that province."

Preliminary agreement on the major amendments contained in this Bill was

reached at a federal-provincial meeting of Ministers of Finance on January 28, 1991.

## **II. Description and Effect of Amendments Proposed in the Bill**

In the text and tables that follow, references to "contribution rate" or "contribution rates" mean combined employer and employee contribution rates. These combined contribution rates are divided equally between the employer and the employee. Self-employed persons pay the combined rate.

### **1. General**

The Bill contains two levels of amendments: first, two major amendments which, in my opinion, materially affect the estimates contained in the CPP Eleventh Statutory Actuarial Report; second, a number of minor administrative or technical amendments which, in my opinion, do not materially affect those estimates. This report deals only with the effects of the two major amendments and assumes that they will come into force on January 1, 1992.

The first major amendment increases the level of children's flat-rate benefits, and the second modifies the schedule of required contribution rates to the plan. The following two subsections describe these two amendments in more detail.

#### **2. Children's Flat-Rate Benefits**

Children's benefits are payable when the contributor parent of an eligible child becomes disabled or dies.

Effective January 1, 1992, the October 1991 Bill increases by \$35.00 the amount of the children's monthly flat-rate benefits for existing cases and those emerging in the future. The resulting enhanced flat-rate benefit for 1992 will continue to be adjusted annually thereafter in accordance with the Pension Index which reflects increases in the Consumer Price Index.

The financial effect of this amendment is shown in terms of absolute dollar amounts in Table 1 and in terms of percentages of CPP contributory earnings (i.e., pay-as-you-go rates) in Table 2.

TABLE 1  
Children's Benefits  
Expenditures in Millions of Dollars

Year	Disability of Contributing Parent		Death of Contributing Parent	
	Prior to Bill	After Bill	Prior to Bill	After Bill
1989	96	96	129	129
1992	108	140	149	192
1996	100	130	163	211
2001	113	146	197	254
2006	124	160	238	307
2011	147	190	279	361
2016	175	226	330	427
2025	252	325	472	610
2050	649	839	1,207	1,560
2100	4,268	5,517	7,917	10,233

TABLE 2  
Children's Benefits  
Expenditures as a Percentage of Contributory Earnings

Year	Disability of Contributing Parent		Death of Contributing Parent		Total	
	Prior to Bill	After Bill	Prior to Bill	After Bill	Prior to Bill	After Bill
1989	0.06	0.06	0.08	0.08	0.14	0.14
1992	0.06	0.07	0.08	0.10	0.14	0.17
1996	0.04	0.06	0.07	0.09	0.11	0.15
2001	0.04	0.05	0.07	0.08	0.11	0.13
2006	0.03	0.04	0.06	0.08	0.09	0.12
2011	0.03	0.04	0.05	0.07	0.08	0.11
2016	0.03	0.03	0.05	0.06	0.08	0.09
2025	0.02	0.03	0.05	0.06	0.07	0.09
2050	0.02	0.02	0.03	0.04	0.05	0.06
2100	0.01	0.01	0.02	0.02	0.03	0.03

As a result of this amendment, pay-as-you-go rates in respect of children's benefits would increase by 0.03% of contributory earnings in 1992 and by 0.04% in 1996. Thereafter the extra cost would tend to decrease and become insignificant in 2100, the end of the current projection period.

### 3. Schedule of Contribution Rates

The October 1991 Bill modifies the contribution rates for the remaining 20 years of the existing 25-year schedule.

The existing schedule of contribution rates covers the period 1987 to 2011. Pursuant to the legislation, five more years must be added to the schedule by the beginning of 1992 to cover the period 2012 to 2016. There are two ways of extending the schedule. The extension can be made by regulation (or by legislation) provided that agreement is reached between the federal and provincial governments. Failing an agreement, the making of regulations, and their coming into force (or the enactment of legislation), prior to January 1, 1992, the schedule would be extended by adding thereto the contribution rates generated by the 15-year formula prescribed by the CPP Regulations.

The formula, which incorporates the financing principles set in the legislation, provides for the minimum constant annual rate of change (positive or negative, and a multiple of one hundredth of a percentage point) in the contribution rate that produces an account/expenditure ratio at least equal to 2.00 after 15 years. The account/expenditure ratio is the balance in the CPP Account on December 31 divided by the next year's expenditure. In this way, the legislation ensures that there will always be a schedule containing contribution rates for not less than 20 and not more than 25 years into the future. The intent of the formula is to produce rates that will be sufficient to finance the benefits of the plan.

Prior to the January 1991 agreement of the Ministers of Finance to revise the schedule of contribution rates, the schedule provided annual increases from 1992 to 2011 of 0.15% of contributory earnings. Because of this relatively low annual increase, the application of the formula described in the preceding paragraph generated an increase of 0.57% in the contribution rate each year from 2012 to 2016, as shown in Main Table 1A of the Eleventh Actuarial Report and Table 6 of this report.

If contribution rates for this period were not set through agreement of federal and provincial finance ministers prior to January 1, 1992, the legislation would require the federal Minister of Finance to set them at the

level produced by the formula; i.e., increasing them by 0.57% of contributory earnings each year from 2012 to 2016.

For the period **beyond 2016, the Eleventh Report** assumed, in the absence of any agreed upon contribution rates for this period, that contribution rates would continue to be generated by the formula. In this case, the constant annual rate of change is revised every five years. However, these rates are not part of the schedule and are shown for actuarial projection purposes only.

The October 1991 Bill provides that the present contribution rate of 4.6% applicable in 1991 will be increased annually by 0.20% of contributory earnings from 1992 to 1996, by 0.25% from 1997 to 2006, and by 0.20% from 2007 to 2011. As mentioned above, the current schedule provides for annual increases of 0.15% for these years.

The Bill also provides for an extension of the schedule by an additional five years, from 2012 to 2016. During that time the annual increase will be 0.20%. Without an amendment to the **Canada Pension Plan** or to the **CPP Regulations**, the annual increase during that period would be 0.57%, as shown in Main Table 1A of the Eleventh Report.

### III. Tables of Financial Projections

This section presents tables of financial projections that take into account the amendments contained in the October 1991 Bill as described in sub-sections II,2 and II,3 above.

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TABLE 3

Total Expenditures (In Millions of Dollars)  
The Existing Plan Is Modified by Increasing the Children's Monthly Flat-Rate Benefits by \$35.00

Year	Retirement	Flat-Rate Rate	Disability			Surviving Spouses			Orphans	Death	Expenses	Grand Total
			Earnings- Related	Children	Sub- Total	Earnings- Related	Sub- Total	Total				
1989	6117	695	747	96	1537	255	1038	1293	129	136	161	9374
1990	6917	728	797	104	1630	270	1164	1434	136	161	170	10448
1991	7712	759	843	106	1709	286	1301	1587	141	177	178	11504
1992	8563	798	896	140	1833	305	1464	1769	192	194	186	12738
1993	9243	819	926	137	1881	319	1608	1928	198	211	195	13656
1994	9899	831	945	133	1909	333	1750	2083	204	227	204	14527
1995	10556	843	965	128	1936	346	1898	2244	205	249	214	15404
1996	11280	863	992	130	1984	361	2061	2422	211	268	225	16390
1997	12085	893	1032	132	2057	378	2242	2621	219	286	240	17508
1998	12933	930	1082	136	2147	397	2434	2830	227	309	254	18700
1999	13822	976	1143	140	2260	417	2634	3050	236	332	270	19969
2000	14766	1030	1215	144	2389	437	2846	3283	245	366	286	21334
2001	15780	1089	1296	146	2531	459	3069	3528	254	393	303	22789
2002	16871	1157	1389	148	2695	481	3305	3786	264	421	320	24357
2003	18053	1232	1492	150	2875	505	3552	4057	275	452	340	26052
2004	19347	1313	1606	152	3072	530	3812	4342	285	484	359	27889
2005	20748	1402	1731	155	3288	556	4085	4641	297	517	380	29872
2006	22280	1495	1866	160	3521	584	4373	4957	307	554	401	32020
2007	24008	1595	2011	165	3771	613	4677	5290	317	593	424	34402
2008	25950	1695	2160	171	4026	643	4997	5640	327	636	447	37026
2009	28064	1801	2319	177	4297	674	5334	6009	337	681	471	39860
2010	30348	1915	2493	184	4592	708	5690	6398	350	731	497	42915
2011	32843	2029	2671	190	4891	743	6066	6809	361	781	524	46209
2012	35632	2123	2824	197	5144	779	6464	7243	373	837	551	49779
2013	38683	2226	2994	204	5424	816	6883	7699	385	895	581	53667
2014	41931	2339	3181	211	5731	855	7326	8181	398	958	610	57808
2015	45412	2458	3381	218	6057	894	7797	8692	412	1025	641	62239
2016	49152	2582	3591	226	6398	936	8297	9232	427	1095	674	66978
2017	53183	2705	3802	235	6742	978	8827	9805	443	1172	708	72053
2018	57538	2826	4016	244	7086	1021	9389	10410	460	1252	743	77488
2019	62212	2946	4232	254	7431	1065	9984	11049	478	1336	781	83285
2020	67214	3064	4450	264	7778	1109	10618	11726	497	1429	818	89462
2025	97523	3647	5615	325	9587	1339	14499	15838	610	1999	1035	126592
2030	135319	4077	6666	398	11142	1578	19901	21479	746	2779	1324	172788
2035	177653	4824	8408	481	13713	1833	27204	29037	899	3810	1709	226821
2040	227259	5857	10882	577	17316	2134	36666	38800	1075	5113	2316	291778
2045	289171	7275	14423	693	22393	2516	48405	50921	1290	6693	2863	373331
2050	372089	8944	18923	839	28706	2998	62577	65575	1560	8582	3678	480189
2055	484214	10714	24153	1019	35887	3573	79638	83211	1895	10859	4714	620780
2060	629653	12750	30594	1234	44579	4238	100650	104932	2295	13707	6055	801221
2065	814710	15364	39243	1487	56094	5015	127595	132565	2763	17407	7797	1031336
2070	1052923	18749	50999	1787	71535	5953	162447	168399	3319	22285	10042	1328500
2075	1366169	22861	66247	2152	91261	7091	207813	214904	3996	28676	12903	1717906
2100	5022852	58160	230394	5517	294071	16763	717103	733865	10233	99362	45093	6205472



TABLE 4  
Total Expenditures (as Percentages of Contributory Earnings)  
The Existing Plan Is Modified by Increasing the Children's Monthly Flat-Rate Benefits by \$35.00

Year	Retirement	Flat-Rate	Disability					Surviving Spouses					Orphans	Death	Expenses	Total Pay-As-You-Go Rates
			Rate	Earnings-Related	Children	Sub-Total	Flat-Rate	Earnings-Related	Sub-Total							
1989	3.79	0.43	0.46	0.06	0.95	0.16	0.64	0.80	0.08	0.08	0.08	0.08	0.10	5.82		
1990	4.06	0.43	0.47	0.06	0.96	0.16	0.68	0.84	0.08	0.08	0.10	0.10	6.14			
1991	4.33	0.43	0.47	0.06	0.96	0.16	0.73	0.89	0.08	0.08	0.10	0.10	6.46			
1992	4.60	0.43	0.48	0.07	0.98	0.16	0.79	0.95	0.10	0.10	0.10	0.10	6.84			
1993	4.74	0.42	0.47	0.07	0.97	0.16	0.83	0.99	0.10	0.10	0.10	0.10	7.01			
1994	4.84	0.41	0.46	0.07	0.93	0.16	0.86	1.02	0.10	0.10	0.10	0.10	7.11			
1995	4.92	0.39	0.45	0.06	0.90	0.16	0.89	1.05	0.10	0.10	0.10	0.10	7.18			
1996	5.00	0.38	0.44	0.06	0.88	0.16	0.91	1.07	0.09	0.09	0.10	0.10	7.27			
1997	5.04	0.37	0.43	0.06	0.86	0.16	0.94	1.09	0.09	0.09	0.10	0.10	7.30			
1998	5.09	0.37	0.43	0.05	0.85	0.16	0.96	1.11	0.09	0.09	0.10	0.10	7.36			
1999	5.13	0.36	0.42	0.05	0.84	0.15	0.98	1.13	0.08	0.08	0.10	0.10	7.41			
2000	5.17	0.36	0.43	0.05	0.84	0.15	1.00	1.15	0.09	0.09	0.10	0.10	7.47			
2001	5.22	0.36	0.43	0.05	0.84	0.15	1.01	1.17	0.08	0.08	0.10	0.10	7.53			
2002	5.27	0.36	0.43	0.05	0.84	0.15	1.03	1.18	0.08	0.08	0.10	0.10	7.60			
2003	5.32	0.36	0.44	0.04	0.85	0.15	1.05	1.20	0.08	0.08	0.10	0.10	7.67			
2004	5.38	0.37	0.45	0.04	0.85	0.15	1.06	1.21	0.08	0.08	0.10	0.10	7.76			
2005	5.47	0.37	0.46	0.04	0.87	0.15	1.08	1.22	0.08	0.08	0.10	0.10	7.87			
2006	5.55	0.37	0.46	0.04	0.88	0.15	1.09	1.23	0.08	0.08	0.10	0.10	7.98			
2007	5.67	0.38	0.47	0.04	0.89	0.14	1.10	1.25	0.07	0.07	0.10	0.10	8.12			
2008	5.81	0.38	0.48	0.04	0.90	0.14	1.12	1.26	0.07	0.07	0.10	0.10	8.29			
2009	5.96	0.38	0.49	0.04	0.91	0.14	1.13	1.28	0.07	0.07	0.10	0.10	8.46			
2010	6.11	0.39	0.50	0.04	0.92	0.14	1.15	1.29	0.07	0.07	0.10	0.10	8.64			
2011	6.27	0.39	0.51	0.04	0.93	0.14	1.16	1.30	0.07	0.07	0.10	0.10	8.82			
2012	6.47	0.39	0.51	0.04	0.93	0.14	1.17	1.32	0.07	0.07	0.10	0.10	9.04			
2013	6.66	0.38	0.52	0.04	0.93	0.14	1.19	1.33	0.07	0.07	0.10	0.10	9.24			
2014	6.87	0.38	0.52	0.03	0.94	0.14	1.20	1.34	0.07	0.07	0.10	0.10	9.47			
2015	7.08	0.38	0.53	0.03	0.94	0.14	1.22	1.36	0.06	0.06	0.10	0.10	9.70			
2016	7.29	0.38	0.53	0.03	0.95	0.14	1.23	1.37	0.06	0.06	0.10	0.10	9.94			
2017	7.51	0.38	0.54	0.03	0.95	0.14	1.25	1.38	0.06	0.06	0.10	0.10	10.17			
2018	7.74	0.38	0.54	0.03	0.95	0.14	1.26	1.40	0.06	0.06	0.10	0.10	10.43			
2019	7.97	0.38	0.54	0.03	0.95	0.14	1.28	1.42	0.06	0.06	0.10	0.10	10.67			
2020	8.21	0.37	0.54	0.03	0.95	0.14	1.30	1.43	0.06	0.06	0.10	0.10	10.93			
2025	9.42	0.35	0.54	0.03	0.93	0.13	1.40	1.53	0.06	0.06	0.10	0.10	12.23			
2030	10.22	0.31	0.50	0.03	0.84	0.12	1.50	1.62	0.06	0.06	0.10	0.10	13.06			
2035	10.39	0.28	0.49	0.03	0.80	0.11	1.55	1.70	0.05	0.05	0.10	0.10	13.27			
2040	10.26	0.26	0.49	0.03	0.78	0.10	1.69	1.75	0.05	0.05	0.10	0.10	13.17			
2045	10.10	0.25	0.50	0.02	0.78	0.09	1.69	1.78	0.05	0.05	0.10	0.10	13.04			
2050	10.12	0.24	0.51	0.02	0.78	0.08	1.70	1.78	0.04	0.04	0.10	0.10	13.06			
2055	10.27	0.23	0.51	0.02	0.76	0.08	1.69	1.77	0.04	0.04	0.10	0.10	13.17			
2060	10.40	0.21	0.51	0.02	0.74	0.07	1.66	1.73	0.04	0.04	0.10	0.10	13.23			
2065	10.45	0.20	0.50	0.02	0.72	0.06	1.64	1.70	0.04	0.04	0.10	0.10	13.23			
2070	10.48	0.19	0.51	0.02	0.71	0.06	1.61	1.68	0.03	0.03	0.10	0.10	13.23			
2075	10.59	0.18	0.51	0.02	0.71	0.05	1.61	1.67	0.03	0.03	0.10	0.10	13.31			
2100	11.14	0.13	0.51	0.01	0.65	0.04	1.59	1.63	0.02	0.02	0.10	0.10	13.76			

TABLE 5  
Account Projection In Millions of Dollars

The existing plan is modified as follows:  
a) The children's monthly flat-rate benefits are increased by \$35.00;  
b) The schedule of contribution rates is revised in accordance with the Oct/91 Bill; that is, the contribution rate for 1991 remains at 4.60% but future contribution rates are determined as follows:  
1. From 1992 to 1996: 0.20% Constant annual increase;  
2. From 1997 to 2006: 0.25% Constant annual increase;  
3. From 2007 to 2016: 0.20% Constant annual increase;  
4. After 2016 contribution rates are generated by the 15-year formula.

Year	Pay-As-You-Go Rate %	Contribution Rate %	Contributions \$	Expenses \$	Cash Flow \$	Investment Earnings \$	Change in Account \$	Year-End Account \$	Account/Expense Ratio
1989	5.82	4.20	6770	9374	-2604	4054	1450	38837	3.72
1990	6.14	4.40	7491	10448	-2957	4208	1251	40088	3.48
1991	6.46	4.60	8188	11504	-3316	4319	1003	41091	3.23
1992	6.84	4.80	8943	12738	-3795	4390	595	41686	3.05
1993	7.01	5.00	9746	13656	-3910	4427	517	42204	2.91
1994	7.11	5.20	10625	14527	-3902	4448	546	42749	2.78
1995	7.18	5.40	11577	15404	-3827	4454	627	43376	2.65
1996	7.27	5.60	12624	16390	-3766	4450	684	44060	2.52
1997	7.30	5.85	14022	17508	-3486	4441	955	45015	2.41
1998	7.36	6.10	15488	18700	-3212	4449	1237	46253	2.32
1999	7.41	6.35	17116	19969	-2853	4470	1616	47869	2.24
2000	7.47	6.60	18860	21334	-2474	4489	2015	49884	2.19
2001	7.53	6.85	20724	22789	-2065	4486	2420	52304	2.15
2002	7.60	7.10	22741	24357	-1616	4433	2817	55121	2.12
2003	7.67	7.35	24954	26052	-1098	4359	3261	58382	2.09
2004	7.76	7.60	27306	27889	-583	4433	3850	62232	2.08
2005	7.87	7.85	29803	29872	-69	4488	4419	66651	2.08
2006	7.98	8.10	32521	32020	501	4641	5143	71794	2.09
2007	8.12	8.30	35156	34402	754	4840	5594	77387	2.09
2008	8.29	8.50	37960	37026	934	5089	6024	83411	2.09
2009	8.46	8.70	40995	39860	1135	5362	6497	89908	2.09
2010	8.64	8.90	44224	42915	1309	5668	6977	96885	2.10
2011	8.82	9.10	47657	46209	1448	6009	7457	104342	2.10
2012	9.04	9.30	51222	49779	1443	6399	7842	112184	2.09
2013	9.24	9.50	55150	53667	1483	6835	8318	120501	2.08
2014	9.47	9.70	59184	57808	1376	7304	8680	129182	2.08
2015	9.70	9.90	63490	62239	1251	7800	9051	138233	2.06
2016	9.94	10.10	68082	66978	1104	8324	9428	147661	2.05
2017	10.17	10.34	73246	72053	1193	8881	10073	157734	2.04
2018	10.43	10.58	78612	77488	1124	9479	10602	168336	2.02
2019	10.67	10.82	84452	83285	1167	10112	11279	179616	2.01
2020	10.93	11.06	90515	89462	1053	10783	11837	191452	1.99
2025	12.23	12.06	124880	126592	-1712	14415	12703	254133	1.88
2030	13.06	12.73	168486	172788	-4302	18223	13921	320384	1.75
2035	13.27	13.05	223076	226621	-3745	22860	19115	403589	1.69
2040	13.17	13.18	292060	291778	282	29766	30048	529104	1.73
2045	13.04	13.20	377964	373331	4633	40621	45254	724145	1.85
2050	13.06	13.16	484015	480189	3826	56018	59843	995494	1.97
2055	13.17	13.11	617972	620780	-2808	75370	72562	1332870	2.04
2060	13.23	13.06	790719	801221	-10502	98677	88175	1739854	2.06
2065	13.23	13.05	1017531	1031336	-13805	127806	114001	2253149	2.08
2070	13.23	13.09	1314536	1328500	-13964	166257	152293	2933381	2.10
2075	13.31	13.14	1695483	1717906	-22423	216758	194335	3820943	2.11
2100	13.76	13.49	6083005	6205472	-122467	745196	622729	13117374	2.01

TABLE 6

Comparison of the Pay-as-you-go rates, contribution rates and Account/Expenditure ratio between the existing plan (Report #11) and the plan amended by the Oct/91 Bill (Report #12)

YEAR	Pay-as-you-go Rates		Contribution Rates		Account/Expenditure Ratio	
	Report #11	Report #12	Report #11	Report #12	Report #11	Report #12
1989	5.82	5.82	4.20	4.20	3.72	3.72
1990	6.14	6.14	4.40	4.40	3.48	3.48
1991	6.46	6.46	4.60	4.60	3.24	3.23
1992	6.80	6.84	4.75	4.80	3.07	3.05
1993	6.97	7.01	4.90	5.00	2.91	2.91
1994	7.07	7.11	5.05	5.20	2.76	2.78
1995	7.15	7.18	5.20	5.40	2.61	2.65
1996	7.24	7.27	5.35	5.60	2.45	2.52
1997	7.27	7.30	5.50	5.85	2.30	2.41
1998	7.33	7.36	5.65	6.10	2.15	2.32
1999	7.38	7.41	5.80	6.35	2.01	2.24
2000	7.43	7.47	5.95	6.60	1.88	2.19
2001	7.50	7.53	6.10	6.85	1.75	2.15
2002	7.58	7.60	6.25	7.10	1.62	2.12
2003	7.64	7.67	6.40	7.35	1.48	2.09
2004	7.73	7.76	6.55	7.60	1.35	2.08
2005	7.84	7.87	6.70	7.85	1.22	2.08
2006	7.95	7.98	6.85	8.10	1.09	2.09
2007	8.10	8.12	7.00	8.30	0.96	2.09
2008	8.27	8.29	7.15	8.50	0.83	2.09
2009	8.43	8.46	7.30	8.70	0.69	2.10
2010	8.61	8.64	7.45	8.90	0.56	2.10
2011	8.80	8.82	7.60	9.10	0.42	2.10
2012	9.01	9.04	8.17	9.30	0.32	2.09
2013	9.22	9.24	8.74	9.50	0.27	2.08
2014	9.45	9.47	9.31	9.70	0.25	2.08
2015	9.68	9.70	9.88	9.90	0.26	2.06
2016	9.91	9.94	10.45	10.10	0.30	2.05
2017	10.15	10.17	10.82	10.34	0.36	2.04
2018	10.41	10.43	11.19	10.58	0.43	2.02
2019	10.65	10.67	11.56	10.82	0.50	2.01
2020	10.91	10.93	11.93	11.06	0.58	1.99
2025	12.20	12.23	13.10	12.06	0.94	1.88
2030	13.04	13.06	13.62	12.73	1.19	1.75
2035	13.25	13.27	13.70	13.05	1.40	1.69
2040	13.15	13.17	13.58	13.18	1.62	1.73
2045	13.02	13.04	13.39	13.20	1.84	1.85
2050	13.04	13.06	13.23	13.16	2.01	1.97
2055	13.16	13.17	13.08	13.11	2.09	2.04
2060	13.22	13.23	13.01	13.06	2.10	2.06
2065	13.21	13.23	13.00	13.05	2.10	2.08
2070	13.22	13.23	13.04	13.09	2.11	2.10
2075	13.30	13.31	13.09	13.14	2.11	2.11
2100	13.75	13.76	13.58	13.49	2.01	2.01

#### IV. Observations and Conclusions

The main conclusions that can be drawn from Table 6, which compares key financial factors in this report with the corresponding factors in the previous (eleventh) report, are that:

1. (a) The increases in the contribution rates resulting from the two amendments described in this report progress more smoothly, reaching 10.10% of contributory earnings in 2016, than the corresponding increases shown in Main Table 1A of the Eleventh Report which reach 10.45% of contributory earnings in 2016.
- (b) As a result of the October 1991 Bill, the annual increases in the contribution rates between 1992 and 2016 vary only from 0.20% to 0.25% of contributory earnings. Without an amendment there would be a substantial variation in the rate of increase. For example, from 1992 to 2011 the annual increase would be 0.15% of contributory earnings, but this annual increase would jump to 0.57% in 2012 and would continue at this level to 2016.
- (c) It is noteworthy that, for the period 2017 to 2021, which is beyond the proposed schedule, this report shows that the 15-year formula produces an annual increase in the contribution rates of 0.24% of contributory earnings. For the same years, the Eleventh Report showed an annual increase of 0.37%.
2. (a) The account/expenditure ratio, which starts at 3.72 on December 31, 1989, reaches 2.1 at the end of 2011 as a result of the amendments described in this report. The corresponding ratio at the end of 2011 in the Eleventh Report was 0.42.
- (b) The Eleventh Report indicated that, if the contribution rates were set by the 15-year formula from 2012 onward, the account/expenditure ratio would reach its lowest value of 0.25 in 2014 after which it would gradually tend towards 2 as intended by the legislation. This report shows that, applying the 15-year formula from 2017 onward, the lowest ratio, 1.69, is reached in 2035. The ratio subsequently tends towards the value of 2.

V. Actuarial Opinion

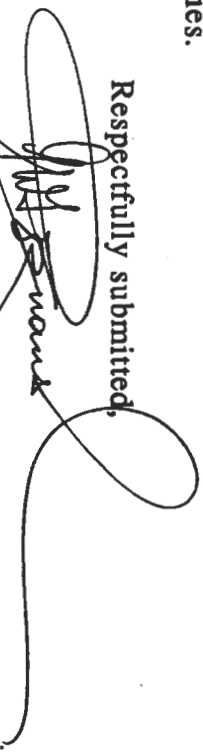
In my opinion, for the purposes of this actuarial report,

1. the assumptions which have been used are adequate and appropriate, and
2. the methods employed are consistent with sound actuarial principles.

The methods and assumptions are described in detail in the Canada Pension Plan Eleventh Statutory Actuarial Report as at December 31, 1988.

This report has been prepared and this opinion has been given in accordance with generally accepted actuarial principles and the Recommendations of the Canadian Institute of Actuaries.

Respectfully submitted,



~~G. W. Poznanski~~, F.S.A., F.C.I.A.  
Chief Actuary

Ottawa, Canada  
October 29, 1991

## APPENDIX

### **Effect of the Regulatory Limit (0.20%) Applying to the Annual Increase in Contribution Rates**

Subsections 113.1 (6) and 113.1 (7) of the Canada Pension Plan (Act) stipulate that the Governor in Council may amend the schedule of contribution rates by regulation, provided that no contribution rate is thereby increased by more than two-tenths of a percentage point (0.20%) above the contribution rate for the previous year.

As indicated in section II, the **federal-provincial agreement of January 28, 1991** provides for an annual increase in the contribution rate of 0.25% for the period 1997-2006. This increase exceeds the regulatory limit of 0.20%. Therefore the coming into force of this part of the agreement requires an amendment to the Act.

To ensure that the **initial rate changes** would come into effect on January 1, 1992, the **Governor General in Council**, on the recommendation of the Minister of Finance, made **regulations on July 10, 1991** to amend the schedule of contribution rates so that the annual increase in the rates would be 0.20% each year from 1992 to 2016.

This change in regulation will come into force on January 1, 1992 by order to be made by the Governor in Council but only after the lieutenant governor in council of each of at least two-thirds of the included provinces, having in the aggregate not less than two-thirds of the population of all of the included provinces, has, prior to January 1, 1992, signified the consent of that province to the coming into force of that regulatory change.

Table 7 shows the account projections taking into account a constant annual increase of 0.20% in the contribution rates from 1992 to 2016, but not the proposed increase in children's flat-rate benefits.

Table 8 compares the contribution rates and the account/expenditure ratio of Table 7 with those shown in Main Table 1A of the Eleventh Actuarial Report.

The main conclusion that can be drawn from this comparison is that if the only change is in the contribution rates, subject to the regulatory limit (i.e., constant annual increase in the contribution rate of 0.20% from 1992 to 2016 instead of 0.15% from 1992 to 2011 and 0.57% from 2012 to 2016), then the account/expenditure ratio is expected to reach 1.35 in 2016 as compared to 0.30 shown in the Eleventh Report. On the other hand, if all the provisions of the October 1991 Bill are adopted, the ratio in 2016 would be 2.05 (see Table 6).

TABLE 7  
Account Projection in Millions of Dollars  
Using the Regulatory Limit

Year	Pay-As-You-Go Rate %	Contrib-ution Rate %	Contrib-utions \$	Expens-itures \$	Cash Flow \$	Invest-ment Earnings \$	Change in Account \$	Year-End Account \$	Account/Expense-ture Ratio
1989	5.82	4.20	6770	9374	-2604	4054	1450	38837	3.72
1990	6.14	4.40	7491	10448	-2957	4208	1251	40088	3.48
1991	6.46	4.60	8188	11504	-3316	4319	1003	41091	3.24
1992	6.80	4.80	8943	12663	-3720	4392	672	41764	3.08
1993	6.97	5.00	9746	13580	-3834	4436	602	42366	2.93
1994	7.07	5.20	10625	14450	-3825	4464	638	43004	2.81
1995	7.15	5.40	11577	15328	-3751	4477	726	43730	2.68
1996	7.24	5.60	12624	16313	-3689	4480	791	44521	2.55
1997	7.27	5.80	13902	17428	-3526	4476	949	45470	2.44
1998	7.33	6.00	15234	18618	-3384	4481	1097	46567	2.34
1999	7.38	6.20	16711	19884	-3173	4490	12290	47885	2.25
2000	7.43	6.40	18289	21246	-2957	4488	1531	49415	2.18
2001	7.50	6.60	19967	22699	-2732	4452	1720	51135	2.11
2002	7.58	6.80	21780	24264	-2484	4353	1869	53005	2.04
2003	7.65	7.00	23786	25956	-2190	4217	2027	55031	1.98
2004	7.73	7.20	25869	27790	-1921	4211	2290	57322	1.93
2005	7.84	7.40	28094	29770	-1676	4166	2490	59812	1.87
2006	7.95	7.60	30514	31914	-1400	4197	2796	62608	1.83
2007	8.10	7.80	33038	34293	-1255	4249	2995	65603	1.78
2008	8.27	8.00	35728	36913	-1185	4338	3153	68756	1.73
2009	8.43	8.20	38639	39743	-1104	4434	3330	72086	1.68
2010	8.61	8.40	41740	42794	-1054	4543	3489	75575	1.64
2011	8.80	8.60	45039	46084	-1045	4669	3624	79199	1.60
2012	9.01	8.80	48468	49650	-1182	4823	3641	82839	1.55
2013	9.22	9.00	52247	53533	-1286	4997	3711	86550	1.50
2014	9.45	9.20	56133	57671	-1538	5181	3643	90194	1.45
2015	9.68	9.40	60283	62097	-1814	5365	3552	93745	1.40
2016	9.91	9.60	64711	66831	-2120	5550	3430	97175	1.35
2017	10.15	9.97	70625	71900	-1275	5753	4478	101653	1.31
2018	10.41	10.34	76829	77329	-500	6024	5524	107177	1.29
2019	10.65	10.71	83593	83120	473	6365	6838	114015	1.28
2020	10.91	11.08	90679	89289	1390	6783	8173	122188	1.27
2025	12.20	12.41	128504	126380	2124	9735	11859	175526	1.30
2030	13.04	13.17	174309	172529	1780	13630	15410	244875	1.34
2035	13.25	13.46	230084	225509	3575	19001	22577	341704	1.43
2040	13.15	13.46	298265	291404	6861	27067	33927	486834	1.59
2045	13.02	13.37	382831	372882	9949	39065	49015	700849	1.79
2050	13.04	13.23	486589	479646	6943	55467	62410	988107	1.96
2055	13.16	13.12	618444	620120	-1677	75381	73704	1333828	2.04
2060	13.22	13.06	790719	800422	-9703	98966	89263	1745401	2.07
2065	13.21	13.01	1014412	1030374	-15962	128161	112199	2257740	2.08
2070	13.22	13.04	1309515	1327345	-17830	165630	147800	2919721	2.09
2075	13.30	13.13	1694192	1716514	-22322	214965	192643	3789600	2.10
2100	13.75	13.49	6083005	6201907	-118902	744052	625150	13099871	2.01

The benefit provisions of the existing plan are not changed but the schedule of contribution rates is revised in accordance with the July 10, 1991 regulatory changes; that is, the contribution rate for 1991 remains at 4.60% and future contribution rates are determined as follows:

1. From 1992 to 2016: 0.20% Constant annual increase;
2. After 2016, contribution rates are generated by the 15-year formula.

TABLE 8

Effect of the Change in Contribution Rates  
 Resulting from the July 10, 1991 Regulatory Amendment  
 (Comparison of Table 7 of this Report with Main Table 1A of the Eleventh Report)

YEAR	Contribution Rates		Account/Expenditure Ratio	
	Report #11	Report #12	Report #11	Report #12
1989	4.20	4.20	3.72	3.72
1990	4.40	4.40	3.48	3.48
1991	4.60	4.60	3.24	3.24
1992	4.75	4.80	3.07	3.08
1993	4.90	5.00	2.91	2.93
1994	5.05	5.20	2.76	2.81
1995	5.20	5.40	2.61	2.68
1996	5.35	5.60	2.45	2.55
1997	5.50	5.80	2.30	2.44
1998	5.65	6.00	2.15	2.34
1999	5.80	6.20	2.01	2.25
2000	5.95	6.40	1.88	2.18
2001	6.10	6.60	1.75	2.11
2002	6.25	6.80	1.62	2.04
2003	6.40	7.00	1.48	1.98
2004	6.55	7.20	1.35	1.93
2005	6.70	7.40	1.22	1.87
2006	6.85	7.60	1.09	1.83
2007	7.00	7.80	0.96	1.78
2008	7.15	8.00	0.83	1.73
2009	7.30	8.20	0.69	1.68
2010	7.45	8.40	0.56	1.64
2011	7.60	8.60	0.42	1.60
2012	8.17	8.80	0.32	1.55
2013	8.74	9.00	0.27	1.50
2014	9.31	9.20	0.25	1.45
2015	9.88	9.40	0.26	1.40
2016	10.45	9.60	0.30	1.35
2017	10.82	9.97	0.36	1.31
2018	11.19	10.34	0.43	1.29
2019	11.56	10.71	0.50	1.28
2020	11.93	11.08	0.58	1.27
2025	13.10	12.41	0.94	1.30
2030	13.62	13.17	1.19	1.34
2035	13.70	13.46	1.40	1.43
2040	13.58	13.46	1.62	1.59
2045	13.39	13.37	1.84	1.79
2050	13.23	13.23	2.01	1.96
2055	13.08	13.12	2.09	2.04
2060	13.01	13.06	2.10	2.07
2065	13.00	13.01	2.10	2.08
2070	13.04	13.04	2.11	2.09
2075	13.09	13.13	2.11	2.10
2100	13.58	13.49	2.01	2.01