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RISKS OF LAPSE-SUPPORTED PRODUCTS

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- o Experiences of companies with level premium term to 100 or similar plans:
 - Pricing considerations and techniques
 - Lapse experience
 - Regulatory activity
 - Establishing an "adequate" reserve

MR. J. DONALD MCFARLANE: Lapse-supported products have always been with us in one way or another, but only during the last few years have we seen the dramatic increase in interest in these products. It is interesting to speculate why reinsurance companies should be discussing the lapse support of products, which is in fact a function of a direct writing company, but we all as reinsurers see these products and we must know about them, the risks inherent in them, the valuation problems that are associated with them, and anything else that's helpful in pricing accurately, so that we don't build in some long term losses for our companies.

MR. ROGER WESLEY MACDONALD: I'll like to reflect back a few years to our first involvement with lapse-supported products. In late 1982 through 1983, we received inquiries from policy owners, agents, reinsurance actuaries, and, a bit later, from members of Parliament, expressing concerns about these permanent premium life insurance contracts that provided no cash values, no paid-up value, and, in fact, no non-forfeiture values of any kind. I find it somewhat amusing to note that in the letter I prepared at that time for a superior I had referred to "lapse-supported products." He said that the adjective "lapse-supported"

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would not do -- it was somewhat derogatory and could be viewed as insulting. I changed it. So you can see that the regulators were not responsible for that label.

Why the product is called lapse-supported, why it's not mortality- or interest-supported, or expense-supported, I don't know. Anyway, at least once per month -- we're talking about 1983 -- we'd be asked, "What are you doing about these lapse-supported products?" This was a somewhat difficult question to respond to, since we were continually seeing new versions. There was low price 20 year term to provide a full refund of premium at death or the end of 20 years. Then, of course, there was perhaps our most famous, or infamous -- depending on your point of view -- the "Term to 100" product. The generic type required level premiums to age 100 and provided no value whatsoever upon failure to pay premiums. Under the category "Term to 100," we had a major separation between fixed premium and adjustable premium products. The adjustable premium plan allowed the company to review the premium basis periodically, typically every 5 years, and to change the premium if estimates of future conditions so dictated. The premium adjustment procedure and factors taken into account varied substantially from company to company. Some varieties of the Term to 100 Plan provide a cash value only after an extended period, like 20 years or after attainment of a specified age, like age 65. Other varieties have no cash values but do provide paid-up values or extended term benefits, for example, after 10 or 15 years. We even encountered one plan that required the policy owner to negotiate and pay commissions at the time of issue, and also to pay underwriting expenses at the time of issue.

We had differences of opinion among actuaries within the Department of Insurance itself. (The Department is now called the Office of the Superintendent of Financial Institutions.) One extreme position therein held that the lapse assumption should be 0%. Others disagreed, believing that the lapse rate should definitely exceed 0%, but felt that, for regulatory purposes, there should be some upper limit.

Nevertheless the Insurance Acts have requirements, as illustrated by Slide 1. This is a direct quotation from the legislation. Just to summarize, both the Canadian and British Insurance Companies Act and Foreign Insurance Company Act require the valuation actuary to calculate the reserve based on assumptions

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SLIDE 1

CANADIAN AND BRITISH INSURANCE COMPANIES ACT - SUBSECTION 82(2)
FOREIGN INSURANCE COMPANIES ACT - SUBSECTION 38(2)

CALCULATION OF
RESERVE

(2) THE RESERVE REFERRED TO IN SUBSECTION
(1) SHALL BE CALCULATED ON THE BASIS OF A
RATE OR RATES OF INTEREST AND A RATE OR RATES
OF MORTALITY, ACCIDENT, SICKNESS OR OTHER
CONTINGENCIES

(A) THAT, IN THE OPINION OF THE VALUATION
ACTUARY, ARE APPROPRIATE TO THE CIRCUM-
STANCES OF THE COMPANY AND THE POLICIES (IN
CANADA) IN FORCE; AND

(B) THAT ARE ACCEPTABLE TO THE
SUPERINTENDENT.

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appropriate to the Company and to the policies in force, and that are acceptable to the Superintendent.

As the first step in our analysis, we collected copies of policy contracts -- brochures, descriptions, whatever was available in the media. Here, for example, in Slide 2, is a sample of premium rates for Term to 100. Under the heading "non-adjustable," NS stands for nonsmoker. At age 30, you see the nonsmoker rates ranging from \$3.24 to \$4.93, the smoker rate from \$4.70 to \$6.79. Moving over to the adjustable columns, still at age 30, you find the premiums, as you would expect, to be somewhat lower, because the company has the right to change those premiums, and the nonsmoker rates range from \$2.25 to \$3.48, smoker rates from \$3.70 to \$5.18. The average size of these policies -- this isn't necessarily an all-inclusive list -- would probably be \$100,000 to \$200,000. The policy factor of \$15 to \$75 shows quite a range.

Slide 3 shows that the premiums of these Term to 100 contracts follow different curves. I don't suggest that this is peculiar to Term to 100, but for a product under which premium deficiencies arise, this consideration is important. You will note for example under the heading "Fixed Premium Rates," Company B's premiums for both nonsmokers and smokers start at less than those of Company A at age 25. At age 35 the relationship reverses for nonsmokers, and by age 55 the nonsmoker premium rate of Company B, \$20.15, is considerably in excess of that of Company A, \$13.84. The same comment can be made for the smoker rate, but there is not such a gap there. There is quite a range in the ratio of nonsmoker premium rates to smoker rates. At age 30, the range is from 55% to 78%; at age 60, from 54% to 84%.

In reviewing the 1983 reports of the Valuation Actuary, we identified the following. I think you will be interested in our findings (Slide 4). Under the mortality valuation assumption, the numbers represent the lowest factors that were applied to the Canadian Institute of Actuaries (CIA) 69-75 select and ultimate table. For example, the number 55 implies that the company took 55% of the qx's at some age in its valuation. Typically, the lowest factors were applied to the younger ages and graded up to higher percentages at the older ages. You'll notice the high interest rates that are used to value adjustable premium Term to 100 -- 9 to 12 1/2% level, as a valuation interest rate. I have not

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SLIDE 2

SAMPLE TERM TO 100 CONTRACTS
PREMIUM RATES

DATE JULY 1983

<u>AGE</u>	<u>NON-ADJUSTABLE</u>		<u>ADJUSTABLE</u>		<u>AGENTS FEES AND UNDERWRITING CHARGES PAID BY</u>
	N.S.	/ S	N.S.	/ S	<u>P/O</u> NS/S
30	3.24-4.93	/ 4.70-6.79	2.25-3.48	/ 3.70-5.18	1.89/3.16
40	6.56-9.40	/ 10.05-12.00	4.20-6.64	/ 7.70-11.27	3/71/6.21

POLICY FACTOR: \$15 TO \$75

N.S. - NON SMOKER

S - SMOKER

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SLIDE 3

POLICY PREMIUM CROSS OVER

FIXED <u>PREMIUM RATES</u>			ADJUSTABLE <u>PREMIUM RATES</u>		
<u>AGE</u>	<u>Co. A</u> NS/S	<u>Co. B</u> NS/S	<u>AGE</u>	<u>Co. C</u> NS/S	<u>Co. D</u> NS/S
25	2.78/3.73	2.67/3.33	20	2.16/2.94	1.90/3.03
35	4.05/6.24	4.08/5.64	30	2.45/3.69	2.25/3.70
45	6.57/12.88	6.76/11.62	40	4.56/8.28	4.20/7.70
55	13.84/24.89	20.15/25.39	50	9.69/16.87	9.17/18.00
			60	21.95/32.18	19.92/36.92

N.S. - NON SMOKER

S - SMOKER

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SLIDE 4

VALUATION ASSUMPTIONS - 1983

TERM TO 100

MORTALITY: RANGE FOR NON-SMOKERS: 55 TO 80% CIA 69-75 (S&U)
SMOKERS: 92.5% TO 160% CIA 69-75 (S&U)

INTEREST : FIXED PREMIUM: INITIAL RATE - 9% TO 11%
ULTIMATE RATE - 4% TO 5%
YEARS TO REACH ULT. - 10 TO 30 YEARS
ADJUSTABLE : 9% TO 12 1/2% LEVEL

WITHDRAWAL: INITIAL RATE: 5% TO 23.4%
ULTIMATE RATE: 0% TO 7.2%

ADMINISTRATION

EXPENSES: RANGE \$15 TO \$75 PER POLICY
- MOST INCLUDED A % OF PREMIUM AND A FEW INCLUDED A
CHARGE PER 1000
- A MINORITY INCLUDED AN INFLATION PROVISION.

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included acquisition expenses here because the Insurance Act limits deferral to 150% of the valuation premium for guaranteed benefits.

I should point out that it is not true that any one company would tend to use all of the most aggressive assumptions. For example, a company that used 55% of the CIA 69/75 table would probably use a lower valuation interest rate. However, the variation, I think, is quite surprising.

We constructed a special computer program to test the sensitivity of reserves under these Term to 100 products to changes in valuation assumptions and, in particular, to changes in the withdrawal rates (Slide 5). The term "standard valuation basis" is not meant to imply anything; it was just used to facilitate this demonstration of reserve sensitivity to changes in valuation assumptions. You will note, however, that the assumptions do fall in the range of the actual assumptions used in 1983, with the exception possibly of the withdrawal rate assumption, which probably tends to be considerably lower than what companies were actually using at that time. Just reading through this standard valuation basis for issue age 30, you will note that the mortality for nonsmokers starts at 60% of the CIA 69/75 table at the lower age, 30 and grades up in a linear fashion to 80% at age 85. I'll leave the smoker assumptions aside for now. As to interest rates, we used 10%, grading down by .25% yearly to 4 1/2% as an ultimate rate. Withdrawal rates start at a 15% level in the first year, grading down to the 3% level by 65, then dropping to 2% to age 85 and 1% thereafter. Acquisition expenses are: first year only, 100% of the premium; \$100 per policy and \$.20 per thousand. Administration expenses each year are: 6% of premium, \$30 per policy (inflated at the valuation interest rate less 4 1/2%), and 10 cents per thousand. Further, there is a \$100 "cost to die" and a \$10 "cost to lapse." The policy premium charged to the policy owner was \$3.30. The average size was \$100,000. No surrender benefits are available and the policy factor is \$35.

Slide 6 displays reserves. Again I say that this was used to demonstrate sensitivity. These are mean reserves per thousand. Under the standard valuation basis that I described, the 1st year mean reserve is \$2.66/thousand, showing that there is no allowance in the policy premium to defer acquisition expenses. Coming down to the bottom of that standard column, we see that the valuation premium required to fund all those benefits and expenses would be

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SLIDE 5

STANDARD VALUATION BASIS - EXHIBIT

AGE: 30

MORTALITY : NON SMOKERS: 60% OF CIA 69-75 (S&U) GRADING TO 80%
@ AGE 85
SMOKERS: 130% OF CIA 69-75 (S&U) GRADING TO 100%
@ AGE 85

INTEREST : 10% GRADING BY 1/4% TO 4.5%

WITHDRAWAL: .15 .10 .08 .06 .04 (.03 TO 65) (.02 TO 85) .01 AFTER

EXPENSES :	ACQUISITION (1ST YR.)	ADMINISTRATION (EACH YR.)
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% PREMIUM:	100%	6%
PER POLICY:	\$100	\$30 (INFLATE @I -.045)
PER 1000 :	\$.20	\$.10

COST TO DIE: \$100.00: COST TO LAPSE: \$10.00

POLICY PREMIUM: \$3.30 - NON-SMOKER
\$5.20 - SMOKER

AVERAGE POLICY SIZE: \$100,000

SURRENDER BENEFITS: NO CASH VALUES, PAID-UP VALUES OR EXTENDED
TERM

POLICY FACTOR : \$35.00

(THE ABOVE WAS CONSTRUCTED FOR DEMONSTRATION PURPOSES ONLY)

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SLIDE 6

VALUATION RESULTS - NON-SMOKER POLICY
MEAN RESERVES PER 1000

DURATION	STANDARD	REDUCE		ULTIMATE WITH 5%	ULTIMATE WITH 0%
		INCREASE MORT. 10%	INTEREST 9.5/4%		
0	2.66	4.31	5.89	-0.98	28.76
1	6.75	8.87	10.86	0.73	39.80
2	10.70	13.16	15.56	2.83	50.40
3	15.13	17.95	20.74	5.24	61.85
4	19.91	23.07	26.25	7.97	73.75
5	24.85	28.33	31.85	11.00	85.59
10	55.28	60.49	65.66	30.24	145.18
15	97.79	105.20	111.92	58.68	209.92
20	150.84	160.64	168.64	96.21	278.21
VALUATION PREMIUM	4.25	4.48	4.64	3.00	6.74
POLICY PREMIUM	3.65	3.65	3.65	3.65	3.65

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\$4.25, whereas the policy premium is \$3.65, resulting in some 60 cents premium deficiency, and of course generating the positive reserve in the first year.

The changes to the standard are not cumulative. For the next column, I just take the standard valuation assumptions and increase the mortality by 10%. That drives the first year reserve up again; it drives the valuation premium up also. Moving over to the 3rd column (reduction in interest rate), we simply reduced interest rates by 1/2%. Again it pushes the first year mean reserve up even higher than the previous level, and also the valuation premium. Now the next column refers to the use of ultimate withdrawal rates at 5%. Everything else is on the standard except the withdrawal assumption. This is the first case in which the company can defer some acquisition expenses, and there is a negative reserve in the first year. And of course the valuation premium of \$3.00 is less than the policy premium of \$3.65. The final column is the most extreme. Setting ultimate withdrawal rates to 0% (actually the 0 kicks in from the 9th duration onward) we generate policy reserves of \$28.76 in the first year and a \$6.74 valuation premium required to fund that.

On Slide 7, we find it somewhat interesting to separate into its component parts the reserve of \$28.76 that you saw in the last column (of Slide 6), with the ultimate withdrawal rates of 0%. We can think of that \$28.76 first year as composed of: \$28.84 premium deficiency reserves, \$5.33 death benefit reserves, zero surrender benefit reserves (since there are no surrender benefits), \$0.20 administration expense reserve, and deferred acquisition reserve of (negative) \$5.62. The valuation premium of \$6.74 can be broken down (see bottom line) as follows: \$5.27 for death benefits, 0 for surrender, 81 cents for administration, and 66 cents for acquisition expenses, with a premium deficiency of 3.09.

As a result of our analysis we wrote to the President of the Canadian Institute of Actuaries at the end of 1984, expressing our concern about the assumptions and methods used to value term insurance and the level of the resulting reserves. We wondered at that time whether the low premiums were supported by the assumption, on the part of certain actuaries, that valuation reserves had no minimum. In that letter, we particularly called attention to the valuation of Term to 100 and similar products that have no or low non-forfeiture values. We expressed our preference for working with the CIA to establish standards for the valuation of term insurance.

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SLIDE 7

VALUATION RESERVE COMPONENTS

<u>DURATION</u>	ULTIMATE					
	WITH 0%	PREM.	DEATH	SURR. &	ADMIN.	ACQ.
	TOTAL RES.	DEF.	BEN.	END	RES.	RES.
0	28.76	28.84	5.33	0	0.20	- 5.62
1	39.80	34.00	11.96	0	0.42	- 6.57
2	50.40	37.48	19.59	0	0.65	- 7.32
3	61.85	40.72	28.24	0	0.90	- 8.01
4	73.75	43.54	37.68	0	1.14	- 8.61
5	85.59	45.75	47.56	0	1.38	- 9.09
10	145.18	51.22	101.93	0	2.29	-10.26
15	209.92	52.31	165.32	0	2.78	-10.50
20	278.21	50.81	234.65	0	2.93	-10.19
VALUATION	6.74	3.09	5.27	0	.81	.66
PREMIUM						
POLICY	3.65					
PREMIUM						

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The 1984 Memorandum to Valuation Actuaries, which we sent out toward the year-end, prescribed the holding of a reserve not less than that produced employing a method that does not anticipate gains on lapse. We were certainly appreciative of the speed with which the CIA reacted. As consequence the CIA introduced Technique Paper No. 1 (Slides 8 and 9). I have extracted certain pages -- not necessarily the most important -- from that Technique Paper. The first area is point No. 3, which says it is rarely appropriate to use an ultimate lapse rate for valuation in excess of 3%. Point No. 4 states that the presence of certain policy features or marketing considerations requires an ultimate lapse rate for valuation less than 3%. Point No. 5 states that the valuation lapse rate should grade to 0 over a period of years prior to the attainment of a "cliff" and normally should be 0 for a short period immediately preceding. I don't know if people are aware of what we mean by "cliff." By way of example: In that my opening comments I talked about a 20 year term product that provided a full premium refund at the end of 20 years. Presumably when you get to your 19th year, if you didn't pay your 20th premium you'd receive nothing. If you pay your 20th premium, you have this massive benefit of 20 years of premium come due at the end of the year. That's the "cliff," i.e., no cash values and then suddenly a big cash value.

It is interesting to note that at least 2 companies would not have had sufficient surplus to establish Term to 100 reserves at 0% ultimate lapses.

So, what are we doing now? We have reviewed the 150 Canadian, British, and Foreign insurance valuation reports for 1986. I do not know of any instance where they did not comply with Technique Paper No. 1. Just to clarify that point: the valuation actuary states in his report either that he complies with Technique Paper No. 1 or that the company does not do sufficient lapse-supported business to make it significant. Alternatively, we have written or will be writing to the actuary to obtain confirmation in those cases where nothing was sent. Our Memorandum to Valuation Actuaries still asks the actuary to specifically state in his report that the valuation of the lapse-supported products has been made in accordance with Technique Paper No. 1. It goes on to say that the valuation of such products requires the use of a very low probability of lapse over the duration of the policy.

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SLIDE 8

II. SUMMARY

1. IN VALUING LAPSE SUPPORTED PRODUCTS, THE TWO MOST SIGNIFICANT ASSUMPTIONS ARE NORMALLY LAPSES AND INTEREST. THE LEVEL OF RESERVES CAN BE VERY SENSITIVE TO CHANGES IN THESE ASSUMPTIONS, AND THE VALUATION ACTUARY SHOULD TEST THIS SENSITIVITY.

2. IT IS APPROPRIATE IN MOST CASES TO ASSUME THAT ULTIMATE LAPSE RATES WILL BE GREATER THAN ZERO [BUT SEE (5) AND (6) BELOW].

3. IT IS RARELY APPROPRIATE TO USE AN ULTIMATE LAPSE RATE FOR VALUATION IN EXCESS OF 3%.

4. THE PRESENCE OF CERTAIN POLICY FEATURES OR MARKETING CONSIDERATIONS REQUIRES AN ULTIMATE LAPSE RATE FOR VALUATION LESS THAN 3%, FOR EXAMPLE:
 - (A) SOPHISTICATION OF THE MARKET (GREATER SOPHISTICATION IS LIKELY TO RESULT IN LOWER LAPSE RATES).

 - (B) HIGH QUALITY SALE.

 - (C) LEVELIZED COMMISSION STRUCTURE.

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SLIDE 9

(D) LARGE AMOUNTS OF INSURANCE.

(E) THE DEGREE OF LOSS TO THE POLICYHOLDER ON LAPSE (LAPSE RATES ARE LIKELY TO DECREASE AS THE BENEFIT GIVEN UP ON LAPSE INCREASES).

(F) THE PRESENCE OF A "CLIFF" (SEE SECTION IV.C).

(G) THE EXISTENCE OF A RETURN OF PREMIUM RIDER.

5. THE VALUATION LAPSE RATE SHOULD GRADE TO ZERO OVER A PERIOD OF YEARS PRIOR TO ATTAINMENT OF A CLIFF, AND SHOULD NORMALLY BE ZERO FOR A SHORT PERIOD IMMEDIATELY PRECEDING.
6. IN THE ABSENCE OF ANY CASH VALUES, LAPSE RATES SHOULD BE ASSUMED TO BE ZERO AFTER A POLICY BECOMES PAID-UP.
7. RETURN OF PREMIUM RIDERS HAVE THE POTENTIAL FOR LOWER ULTIMATE LAPSE RATES THAN ANY OTHER LAPSE SUPPORTED PRODUCT CURRENTLY BEING SOLD. THE COMMENTS MADE ABOUT CLIFFS IN (5) ABOVE ALSO APPLY TO RETURN OF PREMIUM RIDERS, BUT THE PERIOD OF ZERO VALUATION LAPSE RATES SHOULD NORMALLY BE LONGER, AND THE GRADING OF THE VALUATION LAPSE RATE TO ZERO SHOULD NORMALLY START EARLIER.

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The Insurance Acts in Canada require us to verify company reserves at least every 5 years. At that time we look for lapse-supported products, we verify those numbers, and we test the sensitivity to variations in assumptions. Two of our examiners who visit the head office of the companies at least every 3 years are FCIA's, and they also look for these products and for compliance.

As I mentioned, the focus of my remarks was on what we did back in 1983. We are continuing to look at these lapse-supported products but probably not to the same degree as we did back in 1983 or 1984. Possibly with new developments and consideration of the applicability of this Technique Paper No. 1, we might have to change that focus.

MR. MCFARLANE: It's apparent that in Canada we do enjoy great cooperation between the Canadian Institute and the federal regulatory authorities. That's not true in all jurisdictions, but we certainly enjoy it up here.

MR. PHILIP GOLD: I would like to take you through some of the actuarial stages of pricing a Term to 100 product. As you heard, this product has been quite popular in Canada over the last few years. Until quite recently, most of the sales of this product have been through the smaller brokerage-oriented companies. In the last year or so, we have been seeing larger Canadian companies participating, and the Canadian subsidiaries or branches of U.S. companies have been offering Term to 100 products.

Let me first give a loose definition of the product. As I'm going to discuss it today, it's a non-par guaranteed premium endowment. The most common endowment ages are 95 and 100. Even those endowing at 95 are referred to in the industry as Term to 100. Some of these products include guaranteed cash values, paid up values, but generally the products are lapse-subsidized; that is, unlike the normal run of events, the company stands to make more money if the policy lapses than if it continues to full term.

Of particular interest in the development of this product are the valuation assumptions. Under the present Canadian statutory reserve method, the actuary may make reasonable conservative estimates of lapse. However, as this is a product of the 1980s and the term of this product may be up to 80 years, one may ask, "What is reasonable? And what is conservative?" Valuation Technique

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Paper 1, which has just been referred to, indicates that it is hard to justify an ultimate lapse rate above 3%. This paper reminds the valuation actuary that, when a policyholder has an option, we should normally assume that he'll exercise that option against the best interests of the insurer. In other words, for this product, he will keep his policy in-force. It's fair to say that this paper has had an impact which has gone well beyond valuation and quite correctly has had a major impact on product design, pricing, and reinsurance practice.

Originally, I was supposed to be talking about Canadian experience with lapse-sensitive products, specifically the Term to 100 product. However, as the product has only been around for a few years and as the key elements to profitability are the ultimate lapse, mortality, and interest experience in 20 or 30 years time, there is very little I can tell you. Instead I'll concentrate on the future. Those of us with thoughts on the subject should meet again in 30 years time or so to see whether we were right.

More than any other product I can think of, Term to 100 is sensitive to our actuarial assumptions today for periods well out into the future. For my presentation today, I've prepared a case study in the pricing of lapse-sensitive product, a Term to 100 plan for a male age 40 nonsmoker. I've chosen a premium of \$6.00 per thousand. This product will endow at age 100; there are no cash values, no paid up values, and no extended term benefits. For valuation I have assumed a margin of 10% on the mortality, interest, lapse, and expense assumptions for simplicity. We are using the 1978 Canadian modified method for reserving.

Now I will show you sensitivity analyses but I will keep the reserve assumptions the same throughout, otherwise the strain that I would be showing would be jumping all over the place. The mortality basis is the CIA 69/75 table and I have adjusted it for nonsmoker entrants. For expenses in the 1st year, to include commissions, I have chosen 175% of the first year premium, 30 cents per thousand, and \$100 per policy. In renewal years these are reduced to 5% of premium, 3 cents per thousand, and \$10.00 per policy. In addition there is a 2% premium tax. The product I have examined is a \$500,000 policy and the guy is getting a bargain -- there is no policy fee. On this basis we would expect the present value of profits per thousand issued to be \$3.84, which is a nice comfortable margin of just over 8% of premiums or a return on investment of 13

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1/3%, however you want to look at it. Whichever profit method you want to use, I have tried to represent it here. On this basis there will be a maximum strain (which occurs in year 1) of \$3.07 per thousand, or about 80% of premium.

The first sensitivity analysis (Slide 10) applies to mortality assumptions. I should point out here that, while there is a correlation between lapse and mortality, in this case I have varied mortality on its own; later I shall vary lapse on its own. Those expected profits and strains that we saw before are shown in the central column. Here, if mortality is actually 10% lower than expected, we nearly double our profit; if it's 10% higher we more than halve our profit, but we are still making money. Since with a 20% swing in mortality we still produce profits, I think you can see that this is not all that sensitive to the mortality assumption. The strain as expected will stay the same because I am not altering the valuation assumptions. In fact the reserves stay the same, but the strain is somewhat different from the reserves.

We have an unexpected result (Slide 11) when we change the lapse rate by 10%. We move the expected profit from \$3.84 to \$3.18 or \$4.37 -- not that big a swing. We'll find out why later. I'd like to come back to this after we have looked at some of the other assumptions. Now compare the sensitivity to interest assumption (Slide 12). A 10% swing on the interest has an enormous effect on profitability. If interest is just 90% of expected, i.e., about 7.2% instead of 8%, you have lost almost all the profit on this product. The margin on the premiums is wiped out and your return on investment is a very miserable 8.4%. Conversely, if you get lucky, and your interest is 10% higher than you'd expected, you'll be making massive profits.

Finally, let's look at the expense assumptions (Slide 13). Here we'll notice that the product is not particularly sensitive to expense. We can predict the expenses to within better than 10%, I'm sure, because most of them are commission-related. The worst that happens with a 10% increase in expenses is that you lose about 1/4 of your profitability.

From the sensitivity analyses, it may appear that this product is much more sensitive to a small change in interest rates than to a small change in lapse rates. I wanted to make this point because I think not enough attention has been paid to the sensitivity to interest rates in the past.

SENSITIVITY TO MORTALITY ASSUMPTIONS

	<u>90%</u>	<u>Expected</u>	<u>110%</u>
Present value of profit/\$1,000 issued	\$ 6.15	\$ 3.84	\$ 1.60
Margin in premiums	12.88%	8.05%	3.36%
Return on investment	16.26%	13.33%	10.46%
Maximum strain/ \$1,000 issued	\$ 3.05	\$ 3.07	\$ 3.13

SENSITIVITY TO LAPSE ASSUMPTIONS

	<u>90%</u>	<u>Expected</u>	<u>110%</u>
Present value of profit/\$1,000 issued	\$ 3.18	\$ 3.84	\$ 4.37
Margin in premiums	6.39%	8.05%	9.57%
Return on investment	12.36%	13.33%	13.91%
Maximum strain/ \$1,000 issued	\$ 3.04	\$ 3.07	\$ 3.34

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SLIDE 11

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SENSITIVITY TO INTEREST ASSUMPTIONS

	<u>90%</u>	<u>Expected</u>	<u>110%</u>
Present value of profit/\$1,000 issued	\$ 0.51	\$ 3.84	\$ 9.31
Margin in premiums	1.07%	8.05%	19.54%
Return on investment	8.40%	13.33%	15.44%
Maximum strain/\$1,000 issued	\$ 3.03	\$ 3.07	\$ 3.98

SENSITIVITY TO EXPENSE ASSUMPTIONS

	<u>90%</u>	<u>Expected</u>	<u>110%</u>
Present value of profit/\$1,000 issued	\$ 5.20	\$ 3.84	\$ 2.47
Margin in premiums	10.92%	8.05%	5.19%
Return on investment	18.22%	13.33%	10.72%
Maximum strain/ \$1,000 issued	\$ 1.97	\$ 3.07	\$ 4.17

RISKS OF LAPSE-SUPPORTED PRODUCTS

However, the comparison is a little misleading, and deliberately so. A 10% change in the interest rate moves the rate from 8% to 7.2% or 8.8%, a swing of just 1.6%; but a 10% change in the ultimate lapse rate moves it from 2% to 1.8% or to 2.2%, a range of just .4%. Further, if you simply multiply your lapse table by 110% or 90% you are compounding two things, early lapses and later lapses. In fact, the early lapses are going to cost you because you have laid out 175% in the first year in expenses alone. You don't want them to lapse for 10 years, preferably more.

You would probably like to know what happens when I vary the ultimate lapse rate between 0% and 5%. At 0%, the product loses just over \$5 and with an ultimate lapse rate of 5% the product makes \$10.49. The extremely wide range, I think, accounts for, to a large degree, the variability in the pricing of this product from company to company. While the CIA can recommend what you can use for valuation, it can't lay down what you can use for pricing. Some actuaries have chosen to price at an ultimate lapse rate of 6%; others have chosen to use 2%, or 3%. I would say that something in the range of 3-5% is probably common today.

Let's look very closely at the ultimate lapse rates to see whether 2% is reasonable or if it is ultra-conservative. We have plenty of information on the lapse experience of non-par whole life, and an ultimate lapse rate there of 5-10% for such a product would not be unreasonable. What causes lapses on non-par whole life? For a start, the product developed a cash value that could be applied to buy things for retirement or could be applied to switch to some new lower cost product, whole life or term. Rates have declined steadily over a long time period as mortality has improved, interest rates have increased, and nonsmoker vs. smoker products have been introduced, encouraging nonsmokers, at least, to re-enter. What will be the position for today's buyer in 20 or 30 years' time? If the market becomes increasingly segregated into drinkers and non-drinkers, swimmers and non-swimmers, actuaries and non-actuaries, and so on, then for some of these classes there will be an incentive to re-enter. If we find that all actuaries live to age 100, we can offer an actuaries-only product and all the actuaries will switch into it. The lapses on their current T100 product will be high and we'll all make money.

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But on the product that we are talking about today, there is generally no cash value to facilitate the switch. If interest rates climb, then premium rates might decline and we may have more lapses as a result. But are interest rates not at historically high levels for the decade? If interest rates fall, there should be very little incentive to switch, because whole life premium rates should increase. As the client becomes significantly older (and remember, we are talking 20 - 30 years hence), even ART type products may be initially more expensive than his 20-year-old term to 100, even allowing for a secular mortality improvement, which, with AIDS today, may not arise. Overall, then, this is the ideal product to encourage good long term conservation.

If you introduce cash values and make them attractive enough to induce lapsation, you may also have to increase your premium rates and make your product vulnerable to early switching, or difficult to sell. That may be counter-productive. Is 2% then not a reasonable lapse rate for our plain vanilla policy? Even at this rate, remember, half of those still in force after 10 years will lapse in the next 25 years. You have to be fairly serious to have kept a policy going for 10 years in the first place. Why should anyone who has gone so far, and started reaping the rewards of the level premium product, then switch, when he is getting such a good deal? In an effort to increase lapse rates and to make the product more marketable, we can introduce cash values or paid up values of various types. There are some interesting twists to the product design which could help here (Slide 14). In the left hand column, the plain vanilla no cash value product is reproduced, with profits, margins, returns on investment and strain. In the next column, I show the impact, without changing the premium rate, of introducing a cash value equal to 90% of the policy premium reserve. This cash value kicks in at duration 21+. The lapses have been adjusted to reflect the fact that there are now cash values present. As you can see, this wipes out almost all the profit that was in the product in the first place. You can't introduce a cash value like that without increasing your premium rates.

The next column in Slide 14 shows a different cash value. This one, very common recently, is the return of premiums. It is very easy to sell a return of premiums on a Term to 100. Your agent can tell his clients, "Listen, if you don't need it, you can always get your money back." And that goes for every premium he pays even after the 20th year. "Pay me another premium, it doesn't matter. You'll still get it back at the end of the year if you want to lapse."

SENSITIVITY TO CASH VALUES OFFERED

	<u>Plain Vanilla (no cash value)</u>	<u>CV= 90% of Reserve Durations 21+</u>	<u>Return of Premiums Duration 21-40 Grading to 1000</u>	<u>Bullet Cash Value at age 70</u>
Present value of profit/\$1,000 issued	\$ 3.84	\$ 0.86	\$ 3.83	\$ 4.21
Margin in premiums	8.05%	1.86%	8.31%	8.96%
Return on investment	13.33%	9.05%	15.29%	15.16%
Maximum strain/ \$1,000 issued	\$ 3.07	\$ 5.18	\$ 3.12	\$ 3.12
Lapses used	10% Grading to 2% year 9 2% to age 100	As plain vanilla but 20% year 21 6% thereafter	As plain vanilla but 20% year 21 6% thereafter	As plain vanilla but 50% year 30

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Under that assumption and grading the cash value to 1000 at age 100, you see there is virtually no impact on the present value of profits. In other words we have been able to introduce a cash value and not change the premium rate or profit.

But the last column of Slide 14 introduces one of the more interesting concepts, the "cliff" or "bullet" cash value. Here, the actuary has said to himself, "Now what do I really want people to do? I want them to lapse. The best way to get them to lapse is to give them a special offer." You are 70 now, take the cash value and run; it will never be available to you again. It is available at just one age. You set the cash value somewhere between the return of premium and the reserve to make it attractive. Here, I think, it's about halfway between the two. On everybody who lapses, you make a profit because you are paying him less than the reserve. Here you have increased your profit and the reserve strain has stayed the same. You could, of course, have reduced your premium rate instead and kept the same profit. I have some further ideas on product design which concern this point but they are not for publication at this stage. I am not giving away any competitive advantage.

Now let's examine the interest rate assumption. I think this is really the key assumption. This is a very long term guaranteed product with low lapses. We can see even without the use of computers that the interest rate is a key assumption, much more so than in most other products, except of course annuities. In the case of annuities we usually have a capital sum to invest today and the interest rate assumption in the future is required only for the reinvestment of interest. Here, we are unlikely to have any cash to invest in the first year and we have full annual premiums to invest for up to 80 years into the future. If we had the right to vary the premium rate or benefit according to experience or to adjust a dividend of some kind, then this would not be a matter of such concern. Here again, there is room for more ingenuity in the product design process. I would suggest here also that a direct writer be careful as to how much of this interest rate risk it wishes to keep in its portfolio. While on an expected basis, the product may be profitable, the reserve required to cover the interest rate risk alone may be extremely high. It may exceed the surplus in some cases.

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Now on the positive side! I have said a lot of things to worry you. Because this is a non-par product and we have to include, therefore, margins for adverse fluctuations, you'd think that, if things work out as expected, we can expect to reap the profits from those margins and that, because of the high sensitivity, those margins are going to lead to a lot of profit. Further, in the purest form with no cash values, the pay-out is only at death or upon reaching age 100. Mortality is therefore a critical element, more critical than on a traditional whole life plan. We were worried about the adverse effect of healthy lives lapsing from reentry term products and ART products. Here, we have the very opposite. First of all, mortality should start off well because someone anti-selecting at issue would probably go for a much lower premium product -- a renewable 5 year term or an ART product. As time goes on, we can also expect lapses to be lower than for any other product. We have just shown that 2% lapses might be reasonable. Therefore, of all products this one should experience less mortality deterioration due to lapse than any other product. All told, then, this product should generate the best mortality of any product, except maybe an annuity. The lower the lapse experience, the better the mortality experience, compensating to some extent for the losses directly due to low lapses.

Now, because of the high statutory strain associated with this product, many smaller companies will find it advantageous to arrange reinsurance on a quota share basis from the first dollar. Slide 15 shows the results of ceding 50% of each policy on quota share basis to your friendly reinsurer on a YRT basis or a coinsurance basis. The first column is without reinsurance. I have adjusted the reinsurance terms to give you exactly the same profit before and after reinsurance. (I'm not sure you'll achieve that. I would hope not!) The interesting thing to look at here is the strain. If you coinsure just 50% of the business out on these terms, which are allowances of 100% first year and 27.5% on renewals, you may not get rid of your cash flow problem. (If you remember, you had 175% expenses first year alone.) But you have gotten rid of your strain. There will be some negative reserves developed. This is according to the Canadian Valuation Technique Paper or recommendations on reserving for reinsurance. This paper has not currently been accepted, but it is a proposal on the floor. Here, in fact, the maximum strain would be -\$1.00. I have shown this as zero. I don't want to antagonize the authorities here.

SENSITIVITY TO REINSURANCE

	<u>No Reinsurance</u>	<u>50% Coinsured Terms First Year 100% Renewals 27.5%</u>	<u>50% YRT Using 57% cia 69/75</u>
Present value of profit/\$1,000 issued	\$ 3.84	\$ 3.82	\$ 3.81
Margin in premiums	8.05%	8.01%	8.00%
Return on investment	13.33%	NA	21.20%
Maximum strain/ \$1,000 issued	\$ 3.07	NONE	\$ 0.97

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RISKS OF LAPSE-SUPPORTED PRODUCTS

If, on the other hand, you use a YRT basis (and I have used, I think, 57% of CIA 69-75), your strain is reduced but by only half the reduction for co-insurance. Instead of moving from \$3.00 to -\$1.00, it has moved from \$3.00 to \$+1.00. It is still quite effective in reducing the strain. It would be reasonable to say that most of the successful products of this type in the Canadian market have been launched with very significant reinsurance and retrocessional support.

In summary, I believe this field can be a very fruitful one for product designers and marketers. Like the investment area of "junk bonds," the risks may be high but so also should be the pay-off. The product requires either the presence of a substantial surplus or the cooperation of a friendly reinsurer. I'm sure that there are good opportunities in the near future in Canada, because there are plenty of design alternatives that have not yet come to market but which are certainly in the planning process. And when you compete with a new product design, there must be more money to be made than on a price-competitive mature product such as 10 year R&C. While this may not be of much comfort to actuaries of the US market, because non-forfeiture rules do not permit our plain vanilla product to be marketed there successfully, my understanding is that Phil Polkinghorn may have some ideas as to how a lapse-sensitive product can be made to work in your environment.

MR. PHILIP K. POLKINGHORN: I have come with some good news and some bad news. The good news is that, unlike Phil Gold, I have 35 years' worth of lapse experience on products that have no non-forfeiture values. The bad news is it's the period 1870 to 1905.

That's a good introduction to my remarks because, as both panelists have commented, in the U.S. we do have a non-forfeiture law. That is not to say that we don't have lapse-supported products, and I'll be talking about the type that we do have soon. But I decided as part of this presentation to research a bit more why we don't have the Term to 100, how the problems associated with the products sold in the late 1800s and early 1900s in the U.S. led to our non-forfeiture laws, and try and draw some conclusions about whether or not the lapse-supported products we are seeing in the U.S. today and perhaps even the Canadian Term to 100 suffer from some of these problems.

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One of the largest risks associated with this type of product is really the "market image" risk. In the U.S. in the early 1900s, this risk was so severe that it led to a serious credibility problem and the Armstrong investigation. I'd like to talk about the products that were sold during that period of time. They were called tontine policies or semi-tontine policies. A tontine policy entailed the following: a group of individuals subject to benefit of survivorship; survivors or persisters benefited at the expense of those who withdrew; and there was no guarantee as to the amount of future benefit. Basically, the structure was a deferred dividend structure. You rarely got a guaranteed non-forfeiture value -- occasionally you did -- but if you did, it was determined by the company and not by a set of regulations. The division of surplus was deferred for 10, 15 or 20 years. The products were very popular in the U.S. They had a great deal of sales appeal. It was the first time (in the U.S., anyway) that policyholders were attracted to contracts for investment purposes rather than for protection purposes. They were quite excited about the potential dividend distribution at 10, 15 or 20 years. Second, tontine products were very important because in the early days they had the blessing of the regulators -- which is probably the opposite of the position U.S. regulators have on lapse-supported products today. Third, they were used to support the rapid growth of the life insurance industry during that period of time. The products, due to the fact that they deferred the dividends to 10, 15 or 20 years and charged the normal premium rate (combined with the commission rates that were common at that point in time), developed huge surpluses in the companies which needed that surplus to finance rapid growth. As a matter of fact, the contract was developed largely as a competitive response to one company's adoption of an annual dividend system. Another company, which is huge today but was not so huge then, tried to compete by saying, "We will give you more, we will just give it to you later." One of the early promoters of this type of policy had a bonus that was based upon the surplus developing from the plan. That couldn't hurt. I found it interesting to note that when policyholders were asked to choose, as they could, among deferred dividend periods of 10, 15 or 20 years, over half chose the period of 20 years.

Before we get too far, I'd like to say why this plan didn't work, why the Armstrong investigation led to a non-forfeiture law, and why we don't have Term to 100 in the U.S. today. First of all, the companies dipped their hands into the piggy-bank and spent the surplus that should have been used to create the

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deferred dividends for the policyholders. Second, there were exaggerated projections as to the amount of deferred dividends that would be available. Many of these projections were prepared in what was considered a high interest rate era at the time. With companies spending the surpluses to raise commissions and finance the growth of their companies, many policyholder expectations were not met. Last, they had poor disclosure and regulation at that period of time.

In researching this, I read two books. One was "An Historical Analysis of the Tontine Principle" by Robert W. Cooper and the second was "The Development of Life Insurance Surrender Values in the U.S." by J. David Cummins. I was amazed to find out that when New York first passed its non-forfeiture law, the life insurance industry lobbied heavily to create what was later to be called the "joker amendment." The "joker amendment" said that you could go ahead and still offer a product that didn't have guaranteed non-forfeiture values as long as you notified the policyholder in red ink in the policy form. One company promptly put its entire policy form into red ink. That's one of the problems that we had.

Now we have defined a product that I think emerged from being somewhat like the Canadian Term to 100 (pure protection) and developed into the semi-tontine where there were very low surrender values but huge projected values at 10, 15 or 20 years. This product I think is somewhat similar to the types of lapse-supported products we are seeing in the U.S. today. I'd like to discuss some of them, so that we can contrast some of the elements that they have with the elements of the products that led to the severe credibility crisis in the insurance industry in the U.S.

First, we have long duration term, which is like the zero-cash value whole life. It has been around forever. In the later years the company gets a gain on surrender but this product is not likely to have lapse rates that are much different from historical lapse rates, and it is fairly easy to price. The second is what I call "Fake Term to 100." The key difference is that the premium rate is not guaranteed. There are 3 or 4 companies in the U.S. which have developed products that, on a current basis, are projected as Term to 100. The simplest way to accomplish that is to have a decreasing term that is participating and, magically, the dividends produce one year term additions to bring you up

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to the initial face amount. So it is level premium, projected level coverage to 100 with no non-forfeiture values. Many universal life or excess interest whole life products with very high surrender charges can be lapse-supported. However, it's more common for them to be relatively lapse-insensitive. The figures that Phil Gold gave you showing the steep change in profitability according to ultimate lapse rate would not likely occur. These would generate much flatter curves.

Probably more common and more lapse-supported are the Universal Life products that have substantial return benefits. These are returns of cost of insurance rates, returns of expense loading, returns of target premiums, or some function of target premiums at specified points, say 10, 15 or 20 years down the road. Obviously, as with the zero-cash value whole life product, the more people who persist, the more you have to pay these types of benefits. Other Universal Life contracts have been developed that offer enhanced cash values depending on how long you persist. Assume that the company credited 9%. That was their declared rate every year for 20 years. Some contracts would say that if you persisted for 20 years, your cash value would be as if from day one they had credited 10%, instead of 9%. This causes a huge discontinuity in the cash value. With both this type of contract and the substantial return benefits, the actual benefits vary. Occasionally all you have to do is have your policy in force to qualify for the benefit. At other times there are qualifiers placed on the benefit, such as having paid at least cumulative target or minimum premiums. Or you have to never have taken a loan, or never have taken a partial withdrawal to qualify for the benefit. Some contracts in the U.S. may be lapse-supported without the companies even realizing it. There are more and more contracts, such as Universal Life or flexible premium, which have what I call cost of insurance rate insufficiencies in the later durations. It was a good idea to begin with. You take your ultimate cost of insurance rates right down to expected mortality. Your whole life target premium gets lower. It gets easier to "vanish." All that sort of thing happens. It was a good idea. The problem is, if you were to suffer from poor premium persistency but excellent contract persistency, you would have very little investment margins to offset these losses and you could be in a position of having a lapse-supported product. You'd rather see these people terminate and go away than keep them on the books.

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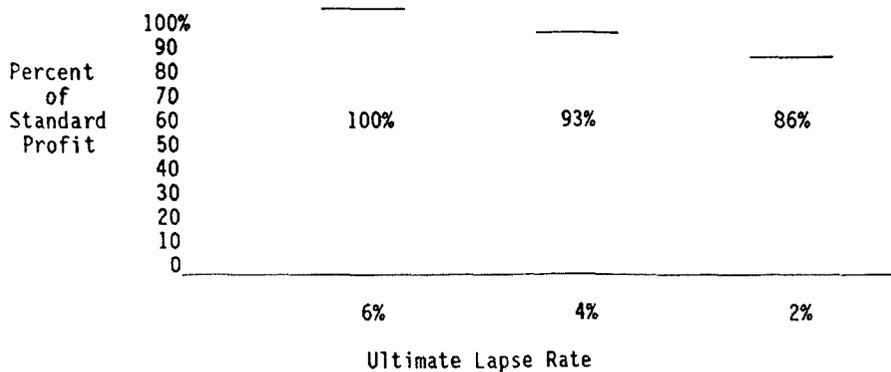
I came prepared with a couple of examples. Let's consider a Universal Life policy with return of target premiums paid in year 20, and a standard lapse assumption grading down from 15% in year 1 to 6% in year 4 and beyond. As you can see, profit margins in the U.S. are much lower than in Canada. We only got a 6% profit margin; Phil Gold got 8%. Slide 16 shows that if we return half of the cumulative targets at year 20 with no qualifier other than being in force, it is not terribly lapse-supported. It is a little bit lapse-supported. The first bar is the 100% baseline with the 6% ultimate lapse rate. The second bar shows what happens if you drop that lapse rate to 4%. You get only 93% of your baseline profits. If you drop it all the way to 2% you get 86% of your baseline profits. So, yes, it is lapse-supported but it does not seem to be terribly risky. What if we change the return benefit and modify other product parameters, cost of insurance rates, loading, etc., so that we get to about the same standard profit but our benefit is the return of all of these cumulative target premiums? You see that this is much more lapse-supported (Slide 17). Dropping the ultimate lapse rate from 6% to 4% causes a decrease of over 40% in profitability, and if the ultimate lapse rate were to drop to 2%, nearly all of your profits would be gone. This leads me into what I was really supposed to talk about today, which were pricing considerations, regulatory activity and reserving.

Phil Gold hit upon pricing considerations in performing lapse sensitivities. First, if you have a contract that you believe is lapse-sensitive or maybe lapse-supported, you should perform a lapse-sensitivity analysis, concentrating on the ultimate lapse rate, since, if you take a straight 50% of a standard lapse scenario, the benefit of lower early lapse rates will offset some of the loss of lapse-support in the later years. The second pricing consideration, or rather repricing consideration, is: Should lapse experience influence your future cost factors? In many states in the U.S., the companies are required to file a statement as to how they determine and redetermine policy cost factors in the future and what factors will influence that decision. It would be interesting to see what would happen, if someone said, "If lapse rates go down, we will have to raise the price." Thus, that is sort of a conceptual consideration that should be addressed up front in product design. What factors are we going to use to change the price later on? Third, you should see if there are easy ways for the policyholder to beat the company. For example, a return benefit that has no qualifier does not seem to make as much sense as one which does. This is

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SLIDE 16

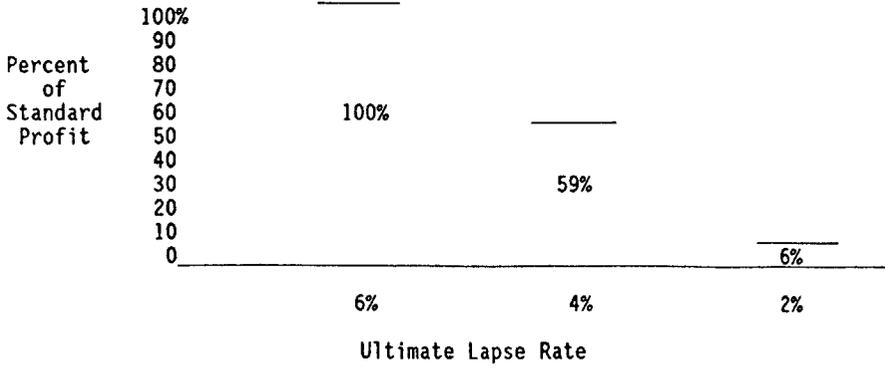
RETURN HALF OF CUMULATIVE TARGETS AT YEAR 20



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RETURN OF CUMULATIVE TARGETS AT YEAR 20



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particularly so for our flexible premium contracts in the U.S., where what you really want is not for them just to be in-force, but for them to be in-force and have invested some money with you.

In terms of regulatory activity, there is not really much going on with respect to lapse-supported products in the U.S. A partial reason for this could be that we are currently re-evaluating our overall non-forfeiture law and our overall valuation law, and the evaluators are expected to take a broad look at things. One proposal that I heard recently was that the cash value at any policy duration be limited to last year's cash value plus any premiums paid with interest less a charge for mortality. Since this proposal is in its infancy, it's unclear what the basis would be for the mortality charge or the interest rate. You can see it would certainly would smooth out discontinuities in cash values. It would probably meet with some resistance from companies today, which have taken on this product type and embraced it and had tremendous sales success with it as well. We do have a smoothness test in our standard non-forfeiture law, but it applies only to guaranteed values. Since most of the benefits that create lapse-supported products in the U.S. are non-guaranteed, it doesn't affect the products being sold that much. It is a complicated test that is based upon adjusted non-forfeiture net level premiums which are prospective in nature, and many of the products being sold in the U.S. today develop values on a retrospective basis. Thus it is very cumbersome to apply to Universal Life. I'm aware of only one state which has asked a Universal Life company to show that it complies with the smoothness requirement in the standard non-forfeiture law.

In terms in reserving practices, as I mentioned, most of these benefits are non-guaranteed, and this creates a very wide range of practices. Some actuaries will be reserving for these, others won't. Those that do may choose to do it on what they feel is a basis consistent with statutory reserving principles in the U.S. Others may choose to do it on a more "best estimate" basis, with some smaller margins for adverse deviation. I found that those who have these products are also much influenced by the definition of tax reserves. Since these benefits are often not guaranteed, the extra reserve established for them will not be tax deductible. I think that this tends to drive people toward the position of either not establishing an extra reserve, or establishing one on the basis of "best estimate" assumptions. In the case of those companies which

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do not establish such reserves, the policyholders could be dependent upon the available surplus at the time that the benefit comes due.

One common problem that does seem to be getting attention is that created by contracts that have very large surrender charges, greater than the target premium, and grading off very quickly. For many of these products the reserve was defaulted to the cash value. This created renewal losses during the grade-off period that proved troublesome to many actuaries. A fairly simple approach has been developed by some companies to eliminate these renewal losses. The method is to develop a surrender charge that is different from the non-forfeiture surrender charge and is used only in the reserve calculation. Often it would be limited to the fully commissionable premium on the Universal Life plan, less, say, the first year's cost of insurance rate and would grade straight line to zero over the surrender charge period. That sort of approach will usually eliminate the renewal losses that often occur in pricing these products. It is a troublesome matter because companies tend to discount these losses at relatively high rates of interest. When we develop appraisal values and that sort of thing, we usually take care to remove these losses and handle them separately. In pricing, however, it is often what comes out of the computer that gets used. You have to be careful about this.

I think there are some advantages to today's lapse-supported products in the U.S. compared with those that created the problems in the early days. First of all, the degree of lapse support is not as great, so that the company is not in as dangerous a situation. It takes a substantial return benefit to make the product very sensitive to lapsation. Second, these companies are, to a certain degree, emphasizing the strength of the product in a industry that is characterized by first year compensation equal to anywhere from 75% to 130% of the target or rate book premium. The product is not going to look very good in a period shorter than 10 years. The companies are just saying, "Let's make the product look good at the points where our agents decide what products to sell, and where the policyholders decide what products to buy." Very few people are buying life insurance for the rates of return produced at the 5th or 6th year. I think that the disclosure and regulation are stronger, today, in the U.S. It seems unlikely to me that a company could get away with putting all its policy form in red ink if a special statement were required. I don't think that a company in Canada could get away with sending English premium notices to

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French-speaking policy holders and French premium notices to English-speaking policy holders to encourage lapsation. Maybe they could, but I think regulators today would catch on to that.

Finally, some actuaries establish reserves for these types of benefits. You recall the "hands in the piggy-bank" problem. The key thing is that a promise or a representation was made. Does the policyholder have a reasonable expectation of getting it? If actuaries do not reserve for these anticipated benefits, the promise is in danger, and I think that's a key point. This is not uniform. Some actuaries are reserving for these benefits in the U.S.; others are not. But I think that would be the way to address it rather than to outlaw certain types of products. In an overall sense, the ability of a company to spend the surplus is diminished. I think this is true as well of the Canadian Term to 100 contract, since the emphasis there is on getting the price down, as opposed to the U.S. emphasis on getting the return on surrender up, but at a very deferred point. We have heard from Roger that the Valuation Technique Paper places an overall cap, or recommended cap, on the valuation lapse rate. If companies did have a unlimited valuation lapse rate, unrealistic surpluses could be generated, which might then be misspent or misappropriated within the company.

I think there are some problems with these types of contracts. One of them is that there are unrealistic projections of the future benefits, but I don't think that this problem is restricted to the lapse-supported product in the U.S. It seems to be universal and plagues our industry. Second, as I mentioned earlier, there are no reserves in some instances. This leads to an interesting question: Which came first? Did lapse-supported products emerge because of the emphasis that we place on 20th year values in this industry? Or was it the other way around? I'm of the view that it should be possible to sell a Term to 100 product in the U.S. We heard yesterday that Walt Miller said that the committee studying the non-forfeiture law is considering this question.

Missouri and Kentucky will allow the sale of a contract that has no cash values but has paid-up values. Texas, if the policy size is over \$10,000, will allow you to sell a contract that has no cash values and no non-forfeiture values. So, I think that it's coming and that now is the time for the industry to help form the regulations that will permit these types of products in the U.S. I think it would

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be unrealistic to expect to have the degree of flexibility that you have in Canada, given the track record we had in the early 1900s.

I think U.S. regulators would be very displeased if we were to develop a product that had no cash values for 20 years and then, boom -- had one. I don't think that type of thing is in the near future for us. But it does not seem out of the question that a contract clearly stating that it has no non-forfeiture values would be relatively simple from the disclosure point of view. "You pay this premium, you get this death benefit if you die." Now, we have heard from our Canadian colleagues that there are risks associated with this product. I think that U.S. lapse-supported products may be of more interest to the reinsurance section next time you get together, because, as I mentioned, currently U.S. lapse-supported products tend to emphasize investment rather than protection. They don't create the substantial strain that produces opportunities from reinsurance. But I think that the day is not far off when the products in the two countries may be more similar.

MR. CLAUDE Y. PAQUIN: Two thoughts occurred to me during the presentation. A comment was made that lapse rates are expected to be low for high amount policies. I might revert back to some of my own experience. Even though I have always known that, by law in the U.S., non-forfeiture values were required, I have in my career in the South encountered policies issued by funeral associations which were for low amounts and which had a level premium and were in effect term-to-infinity policies. They were whole life policies without any cash values, or any values whatsoever. I ran into this while making a valuation for a life insurance company which was in the debit market and was servicing some funeral association business. These policies were of low amount. I believe that the average size of the policies was between \$300 and \$600. They were designed to cover the cost of funerals, of course. The policies which I encountered, about 5 years ago, had an average duration of about 13 years, and the termination rate, which I analyzed over a period of 3 consecutive years, was about 4% overall, including mortality and lapses. The average attained age, I think, was around 58 or so. This seems to confirm that there is wisdom in assuming that, even when policies are small and the policyholders are thought to be unsophisticated, the lapse rate may still be fairly low at fairly high durations.

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The second point I'd like to make is one that I made in my author's review of discussions concerning the extension of the 75/80 table to all ages. I thought I detected a flaw here in some of the assumptions that were presented with respect to bullet cash values. It is my feeling that, if bullet cash values are offered, the people most likely to accept them are people in relatively good health, and therefore the mortality of the people who stay after that will be worse than it would have been if there had been no bullet cash values offered. So, the mortality rates we find in tables are not graven in granite. We have to take into account these little features that we might throw in which may affect the mortality later on. I was referring to select and ultimate term in the paper, but I think this would apply to bullet cash value as well.

MR. MCFARLANE: I agree with those comments. Valuation Technique Paper No. 2 in Canada does address the issue of mortality getting worse after periods of relatively high lapse.

MR. GOLD: I agree. In fact, that is built into my pricing model. All the same, even with the bullet cash values, you are talking about much lower lapses here and higher numbers of people (per initial hundred thousand) surviving to very long durations than with any other product I could think of.

MR. ROBERT J. TIESSEN: Mr. MacDonald said earlier that all the companies that submitted Valuation Actuaries' Reports in Canada had complied with Valuation Technique Paper No. 2. I was wondering if he could tell us whether any of those companies used an ultimate lapse assumption higher than 3%, and if so, how many.

MR. MACDONALD: If the actuary stated he complied with Technique Paper No. 1, the immediate presumption is that he did use the lapse rates of 3% or less. I could qualify this: I do know of one company that uses lapse rates greater than 3%, but the volume is not significant to the company.

MR. DIETER S. GAUBATZ: I want to tell you a story about an illustration I did for my father earlier this year. He is a 70-year-old gentleman who is in very good health. I tried to look at life-zero annuities which were out on the market and these Term to 100 products, looking for the vanilla type. I was able to devise for him a rate of return that he would have to get on a bond out in the

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market right now -- over 13% at a time when interest rates were, in Canada, between 8% and 9%! It seems like a pretty good deal for him to do that. There is no problem as far as underwriting is concerned because he would be accepted for insurance. I realize that it is a special issue case, but some of these older age Term to 100s, I think, really cause a lot of problems when you combine them with a life-zero annuity. I imagine in today's market he could probably get 15% or 16%. Just as an example: One company actually sold both of these products, and if we bought both products from that company, the return would be the equivalent of a 12% yield on a bond.

MR. MCFARLANE: So you are talking of a packaged life annuities?

MR. GAUBATZ: No, not packaged, it doesn't have to be packaged.

MR. MCFARLANE: That is, sold simultaneously, but not packaged.

MR. GAUBATZ: That's just one of the problems we have to address. Some of the features that Mr. Gold discussed would probably eliminate this type of packaging but, with the pure vanilla type and the life-zero annuities, there is basically nothing anybody can do to keep them from being packaged.

MR. GOLD: If you did see rates that gave you a yield of 15%, then I would suggest respectfully that the pricing actuary has not done his job. I know there are products like that on the market and it sometimes is not the pricing actuary's fault. It is the reinsurer's fault.

MR. GAUBATZ: Oh, definitely. I agree with you to a certain extent because then we tried to figure out who was paying for all of this. My father was getting 12% at that time but the company was also paying out all these commissions that we had ignored because it was not our concern. We tried to figure it out. Most of these policies are coming from small companies which I doubt are retaining very much of their business at all. Likely the reinsurance companies were getting both ends of the stick without realizing it. They were going to get some products with a zero lapse rate.

MR. MCFARLANE: I have a question for Mr. Phil Gold. What are the ethics of designing a product to encourage lapses?

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MR. GOLD: This is a problem that seems to worry people in the U.S. I see no problem with this product at all, as long as everything is clearly explained on day one. This is what you get, you get no cash value or paid-up value. I see nothing unethical about it at all. In fact, the consumers associations of Canada and various consumerists are promoting this product. They think it is the best way to buy life insurance.

MR. PETER B. PATTERSON: My personal point of view is diametrically opposed to the one that Phil Gold just gave us. I feel that we have to tread very, very cautiously in the design of these sorts of products. It seems to me that what gave rise to lapse-supported products was the poor persistency that we experienced on the other term business that we were selling, i.e., the cleverly crafted ultimate renewal term business. I think that there are some ethical considerations. Perhaps the best word is the "industry" image that Phil Polkinghorn mentioned. I think we run the danger of doing ourselves a great deal of harm over a long period of time. I don't think we are likely to do ourselves much harm in the immediate future. In the first ten years of these products, they are likely to be welcomed by consumer groups. Anything that has a lower price must benefit the consumer. But this changes as we move further out. I was impressed with some of the numbers that all three of the panelists produced as to the effect of changes occurring some 20 years out and what that did to the results. It does seem to me that there could be pressures on valuation actuaries in term of actions that they sanction. Roger mentioned that two companies could not afford a zero lapse rate; they had to have something more than that or those companies would be insolvent. If they couldn't set up the required reserves now, it means that they cannot afford, in the long term, to have a nil lapse rate. This means that some action on the part of that company may be needed to precipitate lapses if they don't occur naturally. If they don't experience lapses in sufficient numbers, then actuaries in that company may be confronted with the need to choose between seeing the company go out of business, which could affect a great number of people, and experiencing a few more lapses on one particular plan, which could keep the company going in business and would affect only a small number of people. Look at the industry's track record -- witness the history of the early 1900s. I don't think that mankind has changed all that much since then. If you look at what we have done in the U.S. with this tax bill, you will see we haven't always acted in our best interests. As soon as we happen to have a product which is tax-efficient, we sometimes go so

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far as advertise it as the last of the great tax loop-holes and end up right back in the muddle one year later. Human nature is such that we are prone to repeat the same mistakes, and I think if we do away with non-forfeiture benefits we could repeat the history of the early 1900s. There would be an outcry and some protective action. Frankly, I cannot see a tremendous difference between the tontine and a bullet cash value. What is logic of having one cash value one time in a product? To me the logic is to make it lapse. You are going to pay the guy with his own money. You are going to pay him just enough to make it attractive but make a profit on his lapse in any case. But you are going to use his money to try to induce him to lapse the policy. I have trouble reconciling that with the kind of industry that we are.

MR. POLKINGHORN: In general that is the reason my presentation was slanted the way it was. Those are very real risks, and I would hate to see the industry get into that sort of credibility problem. However, I don't think that it's this product type alone. Underpricing is underpricing, underreserving is underreserving. It can happen on any product. It is just that it's so very easy to see how to do it on this type of product. We have the same thing in the U.S. with Universal Life -- and to be fair, also with participating whole life, where the credited rates used to sell the products are unrealistic in terms of what can be anticipated, given today's experience. I agree with your point a little bit on the bullet cash value. I would feel more comfortable with that if it were an "arm's length" transaction and if the company didn't have the upper hand. In general I see nothing wrong with trying to buy someone out of his contract if you can do it on an equitable basis.

MR. PATTERSON: Just a comment on what you just said, Phil. There is a possibility that we will experience this on an "arms length" basis. If we sell enough of this business, then there may be an attractive secondary market established: some enterprising young actuary might start a company which buys these policies for something less than the full cash value and holds them to maturity so that effectively our companies will have the pleasure of a zero long term lapse rate.

MR. GOLD: In fact, several companies come to us with a Term to 100 proposal with non-forfeiture benefits included. When they have their reinsurance terms, they say: "Ok, now we are going to cut out some of the benefits. How much

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of a discount can you give us from the premiums, or how much extra allowance can you give us? I say, "I am sorry, I'll have to cut your allowances." We have been encouraging companies to include reasonable paid up values, cash values, but I really don't see that it is an ethical problem as long as things are very clearly presented.

MR. MCFARLANE: I see both sides of that argument. Right now, I have more trouble with the fact that we are illustrating dividends on interest rates that are not supportable into the future. This, I think, is more misleading than some of the things we might be doing on no-cash-value products.

MR. PATTERSON: What you absolutely do not want is to move toward the type of non-forfeiture regulation that we have in the U.S. I think that would be overkill. There is a lot of talk every time we develop a new non-forfeiture law in the U.S. We talk about theory and whether we should use something based upon an asset share or something based upon the indifference value, which I guess must be what Phil used, *if it didn't change profits. The company is indifferent to whether the policyholder lapses or not.* The problem is that all this theory gets applied to broad averages and so you have per thousand cash values promulgated for a product that has \$13.00 per thousand premiums, and if you want to offer a low price level coverage product, you have to offer that level of cash value. I think it's a matter of professional ethics, and regulation is the way for unethical people to beat the system. The Valuation Technique Papers and the guidelines are steps in the right direction.

MR. JOHN HOWARD GREENHALGH: With regard to the possibility of Term to 100 spreading to the U.S., is it not the case that, whether the regulators allow no-cash-values or paid-up value or not, the product will likely remain unique to Canada, because it has arisen in Canada out of Canadian valuation law, which allows a lapse assumption? If no lapse assumption is allowed, the statutory reserves that you have to set up are going to make the product unworkable, taking into account the market pricing that would limit the premium rate to be charged.

MR. POLKINGHORN: That's true to a large extent, and I'm working with a group of companies that are proposing the new valuation basis for this type of product, if it becomes available. Two comments, though, that I think are

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important: The adjustment premium format has become very popular in the U.S. because of deficiency reserves. We are undergoing a complete study of our valuation law because we realize that we ignore a lot of things, not just lapses. We ignore changes in interest rates, the interrelationship between assumptions, expenses. Our valuation is on mortality and interest only. Intermediate cash values are not factored into it, only the present value of death benefits and maturity benefits. So you are right. There would be a tendency for the product to create huge amounts of strain if it were offered on a guaranteed premium basis because we'd have a 5 1/2% interest rate. We'd have very conservative CSO mortality and we'd have 0% withdrawal rates. I have done some studies showing that even if we just take the valuation interest rate for this type of product up to the non-forfeiture interest rate we use in the U.S. (on the strength of the argument that the disintermediation risk is a little bit lower with this type of product), use the same statutory mortality that we normally use, and introduce a 3% withdrawal rate, the strain is still very large. The reserve increases would exceed premium income for the first 7 or 8 years on that basis. So, I think there is an opportunity for change in the U.S. Some of what you mentioned may go away, but the problem will still be with us, because I don't feel we will ever move towards the Canadian system where the actuary has so much flexibility in choosing his assumptions.

MR. KENT M. SIMMONS: We have been talking about direct writing most of the morning, but I have a reinsurance question. In the situation where we have coinsurance type of quotes or offers in-force and a level renewal allowance, it seems to me that we, as reinsurers, have the risk of a negative tail on many of our products, and we would be in the same situation of preferring to see the policies lapse than stay in force.

MR. GOLD: Well, somebody has got to hold the reserves. The Canadian method suggests that you take the present value of all your reinsurance costs, and that could be negative as well as positive. You get really good terms from your reinsurer or your retrocessionnaire. That present value is divided by an annuity of the premium and is spread in proportion to the premium over the life of the product. As a result, the retrocessionnaire, or whoever ends up with the product, should establish probably all of the reserves on the product. And don't forget: If the ceding company is holding negative reserves, that may

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mean more than 100% of the original reserves, if there had never been any reinsurance.

MR. CHARLES G. BENTZIN: I heard Peter Flamson, Chairman of Security Pacific Bank, give a talk in Phoenix several months ago. As you know, Security Pacific at one point made a run at the Bank of America and was rebuffed. He was asked if he didn't think that it would have been desirable to have some calamity befall the Bank of America so they could now acquire them. He said, quite aptly, that our problem in the banking business is not a lack of money. Our problems, if any, in the banking business will arise because of a lack of confidence. And he said anything which causes lack of confidence in the banking business is bad for Security Pacific.