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Comments From the Chair

by Larry N. Stern

The primary focus this year of the Product Development Section Council has been to more aggressively communicate with our membership to achieve a higher level of participation in section activities. One of the larger specialty Sections, there are nearly 4,000 individuals who are members of the Section. In the past few years, we have witnessed a diminished "spirit" of involvement as shown in the following examples:

- The ballot to elect three new Council members a year ago netted only four people showing an interest to serve. And, one of the top three vote-getters decided not to accept the challenge.

- The Council attempted to conduct a survey of the 250 attendees at the annual meeting luncheon in San Francisco. The forms were placed on the seats around the tables. Numerous times we encouraged attendees to complete the surveys and turn them in after the luncheon. Only 34 responded.

- For SOA meetings, we typically sponsor 12 to 16 sessions. We have been having difficulty recruiting speakers. It seems some of the members who have volunteered in the past are not as willing to continue, and the reluctance of others has caused the Council to scramble to fill the voids.

The Council decided we needed to take the first steps to revive volunteerism among our membership. At our meeting last October, we discussed two mediums for achieving our goal — utilizing the Section's newsletter and Web site.

Jumping Through the Hoops of XXX to Minimize Reserves on UL Secondary Guarantees

by Jason A. Jump

Secondary Guarantees on Universal Life policies are subject to NAIC Regulation XXX. Generally, the most common secondary guarantees offer "no lapse" protection for a period of time from issue, provided the policy owner pays the premium required by the policy (the specified premium). The most prevalent secondary guarantee periods are 5, 10, and 20 years. Policies with longer level premium no lapse periods exist but XXX makes this a difficult product to profitably offer. The examples in this article refer to a 5-year secondary guarantee period, but the concepts apply to all secondary guarantees that offer an initial no lapse period based on the payment of a specified level premium. An example of competitive 5-year no lapse guarantee premium for Male non-smoker best risk class is provided in Table I.

TABLE I: 5-Year Premium Rates per 1000

Issue Age	Premium rate
25	1.70
35	2.20
45	3.30
55	5.80
65	9.90
75	23.50

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General Requirements of XXX
NAIC Regulation XXX does not apply to universal life policies that meet all of the following conditions:

a) Secondary guarantee period, if any, is five years or less;
b) Specified Premium for the secondary guarantee period is not less than the net level reserve premium for the secondary guarantee period based on the 1980 CSO table without selection factors; and
c) The initial surrender charge is not less than 100% of the first year annualized specified premium for the secondary guarantee period.

Failure to meet all three of the requirements above forces the product development actuary to focus on the minimum reserves required for the secondary guarantee period. The minimum reserves during the secondary guarantee period are the greater of:

1) The basic reserves for the secondary guarantee plus the deficiency reserve, if any, for the secondary guarantee; or
2) The minimum reserves required by other rules or regulations governing universal life plans.

Setting competitive secondary guarantees and minimizing reserves
In order to minimize reserves due to UL secondary guarantees, the product development actuary will need to jump through a series of hoops that get smaller and higher depending on the level of the secondary guarantee premiums and the length of the secondary guarantee period.
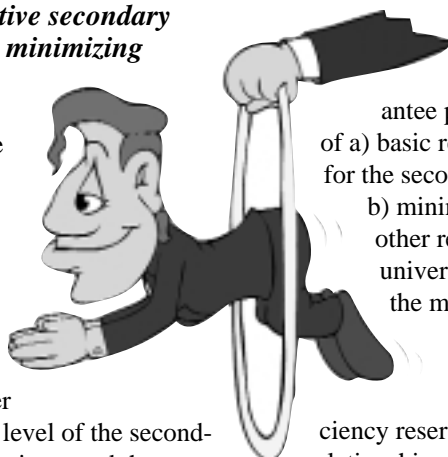
Hoop #1: The easiest way to avoid reserves in excessive XXX reserves is to avoid application of XXX completely. Using our example of 5-year guarantees and the requirements above, let's try to avoid XXX:

a) Secondary Guarantee Period of five years or less. This requirement is met given that our example is a five-year period.
b) Secondary Guarantee Premium is not less than the net level reserve premium. Table II provides this answer.

TABLE II: Net Level Premium Test

Issue Age	Premium rate	NLP
35	2.20	1.96
45	3.30	4.11
55	5.80	10.24
65	9.90	27.89
75	23.50	76.13

We fail to meet requirement b) for issue ages greater than 40. There is no need to check requirement c).

Given failure to avoid application of XXX, the fervent hope of not having to dig into the regulation is dashed. The focus turns to the minimum reserve requirement during the secondary guarantee period which is the greater of a) basic reserves + deficiency reserve for the secondary guarantee period; or b) minimum reserves required by other regulations governing universal life plans. Assuming that the minimum reserves required by other regulations is CRVM, the goal becomes minimizing basic and deficiency reserves such that the following relationship will hold at each duration. (UL CRVM Reserves) > (basic +

> *"Given failure to avoid application of XXX, the fervent hope of not having to dig into the regulation is dashed."*

deficiency reserves over the secondary guarantee period)

This relationship will be referred to as the minimum reserve requirement throughout this paper.

Hoop #2: The first attempt to satisfy the minimum reserve requirement involves calculating the segmented basic and deficiency reserves without dealing with selection factors or X-factor requirements.

The substantial increase in reserves over the secondary guarantee period forces us to dive deeper into the regulation in order to minimize reserves. An important discovery for products using CRVM over the first segment: If the specified premium for the secondary guarantee is less than the valuation net premium associated with Quantity A, this will result in a first year deficiency reserve. What is Quantity A?

Quantity A is used to determine deficiency reserves such that:

$$\text{Deficiency Reserves} = \text{Max}[\text{Quantity A} - \text{Basic Reserve}, 0]$$

TABLE III: Reserves Without Application of Selection Factors

Age	Reserve	Duration			
		1	2	3	4
35	Basic	0.00	0.19	0.26	0.20
	Deficiency	0.00	0.00	0.00	0.00
	UL CRVM	0.00	3.46	7.13	11.01
45	Basic	0.00	0.44	0.61	0.47
	Deficiency	3.04	2.33	1.59	0.81
	UL CRVM	0.00	6.20	12.71	19.54
55	Basic	0.00	1.42	1.99	1.58
	Deficiency	16.52	12.68	8.66	4.44
	UL CRVM	0.00	10.14	20.67	31.57
65	Basic	0.00	3.99	5.61	4.45
	Deficiency	65.36	50.51	34.77	17.99
	UL CRVM	0.00	17.59	36.02	55.05
75	Basic	0.00	10.28	14.53	11.66
	Deficiency	178.74	140.76	99.08	52.63
	UL CRVM	0.00	29.70	60.27	91.29

Quantity A is calculated using the same method as the associated basic reserve with two key differences:

a) if the gross premium < the net premium, the gross premium must be substituted for the net premium in the valuation, and;

b) X − factors can be used to adjust the selection factors.

Hoop #3: Reviewing the deficiency reserve section of the regulation reveals that if X-factors are set equal to 1, the appointed actuary will not have to prepare an actuarial opinion. The next attempt to satisfy the minimum reserve requirement involves calculating the Quantity A with the new 20 year selection factors and the X-factors set equal to 1.

The goal of eliminating reserves in excess of CRVM is met for most issue ages. Of course, longer secondary guarantee periods and/or lower specified premiums will present bigger challenges. At this point, you could simply increase the specified premium to the point where basic + deficiency reserves are less than CRVM at all ages or limit the maximum issue age, and avoid the need for X-factors below 100%. Why do we want to avoid X-factors < 100%? Here are some of the reasons:

a) appointed actuary must prepare an actuarial opinion
b) appointed actuary must opine annually, i.e; this is not just a one-time process
c) implies the need for a mortality study
d) need to be in sync with reinsurers
e) if experience is not as good as expected, may have a surprise increase in reserves

Again, it is necessary to adjust the mortality through selection factors and X-factors in order to produce a valuation net premium for Quantity A that is below the desired specified premium for the secondary guarantee.

Hoop #4: X-factors are simply percentages that you can apply to select mortality factors used in the determination of Quantity A and the corresponding net premiums. The regulation spells out the requirements and limitations in setting X-factors. X-factors less than 100% require annual preparation of an actuarial opinion and memorandum by the appointed actuary. Maintenance of X-factors is more treacherous as X-factor adjusted select mortality approaches anticipated mortality experience and other limitations presented in the regulation. If experience is not as good as the X-factor adjusted mortality, the appointed actuary is required to increase X causing a sudden increase in reserves.

The last attempt to satisfy the minimum reserve requirement involves calculating the XXX reserves with the new 20 year selection factors and the X-factors set below 100%.

Success! Unfortunately, this is just one risk class and one band of male specified premiums for a five-year secondary guarantee, but the same concepts will apply to other cells and secondary guarantees. Longer guarantees and lower

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TABLE IV: Applying Selection Factors with X = 100% to minimize XXX Reserves

Age	Reserve	Duration			
		1	2	3	4
35	Basic	0.00	0.19	0.26	0.20
	Deficiency	0.00	0.00	0.00	0.00
	UL CRVM	0.00	3.46	7.13	11.01
45	Basic	0.00	0.44	0.61	0.47
	Deficiency	0.00	0.00	0.00	0.00
	UL CRVM	0.00	6.20	12.71	19.54
55	Basic	0.00	1.42	1.99	1.58
	Deficiency	0.00	0.00	0.00	0.00
	UL CRVM	0.00	10.14	20.67	31.57
65	Basic	0.00	3.99	5.61	4.45
	Deficiency	0.00	0.00	0.00	0.00
	UL CRVM	0.00	17.59	36.02	55.05
75	Basic	0.00	10.28	14.53	11.66
	Deficiency	70.92	54.01	36.86	17.51
	UL CRVM	0.00	29.70	60.27	91.29

specified premiums will require more aggressive X-factors.

Summary
If avoiding any impact of XXX is the goal, a simplified route is suggested:

- If you can't avoid application of XXX by meeting the three conditions applicable to policies with UL secondary guarantees, (UL CRVM) > (basic + deficiency reserves) will need to be met.

- In order for this relationship to hold, the first year basic + deficiency terminal reserves must be 0.

- In order for the first year basic + deficiency terminal reserve to be 0, the first year terminal deficiency reserve must be 0.

- In order for the first year terminal deficiency reserve to be 0, Quantity A must be 0 in the first year.

- In order for Quantity A to be 0 in the first year, the Specified Premium must be > the net level premium associated with Quantity A. This relationship can be accomplished by increasing the Specified Premium and/or decreasing the net level premium through the use of select factors and X-factors.

- Check to see if (UL CRVM reserves) > (basic + deficiency reserves) at all durations over the secondary guarantee period.

Conclusion
The work involved in minimizing the impact of XXX on UL secondary guarantees runs much deeper than what I have touched on. It's similar to studying for exams; you end up studying a lot more than you actually use. In the end, most UL secondary guarantees with adequate premiums and short guarantee periods will be able to avoid reserves in excess of the minimum CRVM requirement; unfortunately, XXX forces you to jump through several hoops in order to prove it.

Jason A. Jump, ASA, MAAA, is an assistant actuary at Nationwide Financial in Columbus, OH.

TABLE V: Applying Selection Factors with X-factors below 100% to minimize XXX reserves.

Age	Reserve	Duration			
		1	2	3	4
35	Basic	0.00	0.19	0.26	0.20
	Deficiency	0.00	0.00	0.00	0.00
	UL CRVM	0.00	3.46	7.13	11.01
45	Basic	0.00	0.44	0.61	0.47
	Deficiency	0.00	0.00	0.00	0.00
	UL CRVM	0.00	6.20	12.71	19.54
55	Basic	0.00	1.42	1.99	1.58
	Deficiency	0.00	0.00	0.00	0.00
	UL CRVM	0.00	10.14	20.67	31.57
65	Basic	0.00	3.99	5.61	4.45
	Deficiency	0.00	0.00	0.00	0.00
	UL CRVM	0.00	17.59	36.02	55.05
75	Basic	0.00	10.28	14.53	11.66
	Deficiency	0.00	0.00	0.00	0.00
	UL CRVM	0.00	29.70	60.27	91.29

1999 Product Development Sessions Now in The Record *on the Web (www.soa.org)*

Atlanta, May 1999

6PD   Changing Patterns in Insured Mortality: Do We Understand Them?
Changing patterns in insured mortality are discussed related to mortality improvement, tobacco usage, age and gender and effective use of underwriting tools.

10OF   **Bancassurance in US and Canada: Before Today…Beyond Tomorrow**
Experts participate in a discussion of the convergence of financial service companies, Bancassurance models, regulatory barriers, and the competitive environment.

11OF   **Instant issue for Life Insurance Products**
With issue speed becoming a critical success factor, these panelists represent the disciplines involved: product development, new business processing, underwriting, and data processing.

22PD   **XXX Update**
Panelists cover a brief history of the 1995 and 1999 versions of XXX and assess the impacts on product design and valuation.

27PD   **The Next Generation Universal Life**
Panelists explore interesting developments in "traditional" life products. Some current issues are maturity date extensions of the death benefit beyond age 100, no-lapse, secondary guarantees of coverage, and the effect of potential new regulations on pricing.

63PD   **Impact of Regulatory Uncertainty on Product Innovation**
Experts discuss current regulatory developments including adoption status and proposals for various regulations critical to product development.

64IF   **Underwriting Issues: Processes in Foreign Jurisdictions**
Panelists discuss developing products for a foreign market, including differences in areas that impact risk assessment and underwriting.

78OF   **What's Hot in Term Products?**
Panelists include representatives of a direct carrier, a reinsurer and a consulting firm speaking on topics important to successful product development.

88PD   **Bells and Whistles or Time Bombs: The Cost of Longer-Term Guarantees**
With interest rates reaching all-time lows and continuing mortality improvements, features previously considered minor have moved up to the major league. The panel discusses the risks and costs.

90PD   **Guarantees on Variable Products: How Are Companies Assessing the Risks?**
There has been a proliferation of guarantees on variable annuities and competing investment products. The panel identifies the various risks, pricing methodologies, and forecasts the next wave of guarantee designs.

San Francisco, October 1999

82PD   **Industry Convergence – Bank Participation**
Panelists discuss the issues companies face as banks and insurers become partners as a result of the passage of HR10: legal issues, recent applications by insurers for thrift charters, and successful Bancassurance models in other parts of the world.

131PD   **Underwriting Strategies in the 21st Century**
Speakers discuss how the issue process can be expedited without surrendering required mortality margins, what information is needed and where it will come from.