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PBA Corner

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On June 10, 2016, the NAIC issued a news release on its website announcing the adoption of a recommendation to activate principle-based reserving (PBR) starting on Jan. 1, 2017. At the time of this news release, the revised Standard Valuation Law permitting recognition of a PBR approach had been passed by 45 states, representing nearly 80 percent of the U.S. life insurance market. The quote from John M. Huff, NAIC president and Missouri insurance director appears below.

“This is an historic accomplishment for the state-based system of insurance regulation that marks the beginning of a new policy valuation system that can adapt to new and innovative life insurance products benefiting consumers and life insurers. For many years, life insurers and insurance regulators contended with an outdated formulaic based system that was challenged to keep pace with consumer demands for new life insurance products, while providing life insurers with reasonable valuation guidance for ensuring financial soundness.”

With this milestone achieved, and as the 2016 calendar year progresses, the NAIC’s Life Actuarial Task Force (LATF) is scrambling to smooth out any snags or rough edges they view as critical to a company’s implementation of VM-20’s minimum reserve requirements. This article will cover late-developing amendment proposal forms (APF) submitted to the LATF for its consideration. At the time of drafting of this article, several of these APFs were either adopted or under consideration by the LATF group. The reader should be advised to follow up with relevant developments regarding final action.

NET PREMIUM RESERVE DEFINITION

Several clarifications and adjustments have been made to the net premium reserve (NPR) language in VM-20. The discussion below assumes the reader is familiar with the NPR formula for term and universal life with secondary guarantee (ULSG) products.

During the LATF call on June 22, the group discussed the APF submitted by the American Council of Life Insurers (ACLI) re-



garding the definition of secondary guarantee. The language in VM-20 did not include a formal definition of “secondary guarantee” in terms of a ULSG product. The language that has been added is consistent with the definition found in Model Regulation 830. Specifically, a secondary guarantee is:

A conditional guarantee that a policy will remain in force for either:

- More than five years (the secondary guarantee period); or
- Five years or less (the secondary guarantee period) if the specified premium for the secondary guarantee period is less than the net level reserve premium for the secondary guarantee period based on the CSO valuation tables defined in VM-20 Section 3.C and the valuation interest rates defined in this Section, or if the initial surrender charge is less than 100 percent of the first year annualized specified premium for the secondary guarantee period; even if its fund value is exhausted.

This language is equivalent to the carve-out in Model Regulation 830 Section 3A(2), except that Model Regulation 830 defines what is **not** a secondary guarantee and VM-20 defines what **is** a secondary guarantee.

The VM-20 Section 3 definition of NPR for ULSG includes the comparison of two reserve components. One of these components is determined by ignoring the fact that the policy has a secondary guarantee (See Section 3B(5) in VM-20). The method used for this component is much like the reserve determined under the Universal Life Insurance Model Regulation. The clarification necessary in the 3B(5) reserve component was to define “future benefits” as being based on the greater of e_{x+t} which is the actual policy fund value on the valuation date and f_{x+t} which is a proxy fund value at the valuation date developed

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by assuming payment of the level gross premiums necessary to keep the policy in force for the entire coverage period, based on the policy's (primary) guarantees of mortality, interest and expenses.

The second of the two reserve components is defined in Section 3B(6). In this component the secondary guarantee is recognized. As such, the reserve calculation can make use of lapse rates through a specified formula for lapse. The APF clarifies that the R_{x+t} variable of the lapse formula below cannot be greater than one or less than zero.

$$L_{x+t} = R_{x+t} \cdot 0.01 + (1 - R_{x+t}) \cdot 0.005 \cdot r_{x+t}$$

Where

$$R_{x+t} = \frac{[FFSG_{x+t} - ASG_{x+t}]}{[FFSG_{x+t} - LSG_{x+t}]}, \text{ but } \geq 1 \text{ and } \leq 0$$

For term policies subject to Actuarial Guideline 45 (Return of Premium Term, or ROP Term), the lapse rates to be used in the NPR have been clarified as “6 percent for the first half of the initial level premium period, and 0 percent for the remainder of the initial level premium period.” Prior to this clarification, the reader would have found 0 percent at all durations to be the requirement for lapse rates for this product type.

Also for term policies, the language and the table specifying lapse rates to use in the NPR calculation have been clarified. The rates remain unchanged from earlier versions, but the language regarding when to apply these rates has been made clear.

POST LEVEL TERM PROFITS

An amendment proposed by the Minnesota Department of Commerce was adopted by LATF on May 19. This APF prohibits the recognition in the Deterministic Reserve of any positive net cash flows following the level premium period for a term product (losses may be recognized). This stipulation appears in Section 9 on assumptions, under paragraph D.6 for policyholder behavior. The new language is provided below.

“For the calculation of the deterministic reserve, for a term life policy issued 1/1/2017 and later that guarantees level or near level premiums for more than five years until a specified dura-

tion followed by a material premium increase, or for a policy for which level or near level premiums are expected for more than five years, followed by a material premium increase, for the period following that premium increase the cash inflows or outflows shall be adjusted such that the present value of cash inflows does not exceed the present value of cash outflows.”

Notice that the new requirement is specific to a term plan with more than five years of level premiums and specific to the deterministic reserve calculation. Prior to adding this additional paragraph, for the type of term products defined, the company would have based the inclusion or exclusion of any post level term cash flows on whether the company's experience was relevant and credible. If the company has no relevant or credible experience, then a 100 percent shock lapse at the end of the level-term period would be the reasonable assumption for this situation. The reason regulators felt this provision was necessary has to do with the availability of the 2017 CSO and the fact that the term NPR was developed in a 2001 CSO valuation environment. As such, calibration of the NPR was based on 2001 CSO, and the NPR parameters (in particular the 135 percent allowance on post-level term profits) was a counter-weight to the conservatism in the 2001 CSO mortality rates. However, with 2017 issues, companies will have the ability to value NPR using 2017 CSO. It was felt that not enough relevant testing was available to determine if 135 percent continues to be the appropriate parameter for term NPR. Until the NPR formula can be re-calibrated to the new 2017 valuation table, the regulators felt this provision was necessary.

MINIMUM RESERVE CHANGES

An amendment titled, “Keep Term and ULSG Separate,” affected Sections 2, 3, 4, 5 and 7 of VM-20. The change put in place by this amendment was an effort to appropriately assign the PBR excess to the policies which contributed the excess. In other words, the new language clearly defines how the deterministic reserve and stochastic reserve are apportioned among product groups. The revised Section 2 language makes three product groups clear. The product groups are: all term policies, all ULSG policies and all life insurance policies subject to 3.A.2. As originally submitted, the amendment included two options for apportioning the stochastic reserve.

On July 7, 2016, LATF adopted Option 2 of this amendment which is described further below. LATF also voiced a commitment to further study Option 1. Both options are explained and demonstrated below in order to profile the differences. Option 2 will be the only option appearing in VM-20 Section 5.G in the version of the Valuation Manual appropriate for Jan. 1, 2017.

Let's first start with the calculation of the modeled stochastic reserve (SR) and see how, under each of options 1 and 2, the SR would be apportioned among the product groups included in the

SR model segment. For this illustration, product 1 is traditional whole life (WL) and product 2 is a lifetime ULSG product. The company manages its risks across these products similarly because they are both permanent products, and therefore product 1 and 2 are combined in the same model segment. The company does not qualify for the company-wide exemption; chooses not to perform the stochastic exclusion test for either product; and will implement PBR for both products for 2017 year end.

For purposes of this illustration, the following definitions are made and linked to the amounts in Table 1 below.

$SR^{Aggregate}$ = Stochastic Reserve when both product groups are considered in one model segment (11,000 in Table 1)

$SROpt1^{Product1}$ = Stochastic Reserve when Product Group 1 is considered separately, using the 30 percent worst scenarios resulting from the calculation of $SR^{Aggregate}$ (2,000 in Table 1)

$SROpt1^{Product2}$ = Stochastic Reserve when Product Group 2 is considered separately, using the 30 percent worst scenarios resulting from the calculation of $SR^{Aggregate}$ (11,500 in Table 1)

$SROpt2^{Product1}$ = Stochastic Reserve when Product Group 1 is considered separately, using a set of 30 percent worst scenarios unique to Product Group 1 (2,250 in Table 1)

$SROpt2^{Product2}$ = Stochastic Reserve when Product Group 2 is considered separately, using a set of 30 percent worst scenarios unique to Product Group 2 (11,700 in Table 1)

For purposes of discussion, assume $SR^{Aggregate}$ is determined for the aggregate model segment (i.e., both product groups combined). The revised language of Section 5 describes the calculation of $SR^{Aggregate}$ and indicates that “if a company is managing the risks of two or more different product types as part of an integrated risk management process, then the products may be combined into the same aggregation subgroup. If policies from more than one product group are included in an aggregation subgroup, the reserve for each product group shall also be determined, as described in Section 5.G.” Once $SR^{Aggregate}$ is calculated and known, the revised language of 5.G. comes into play. This is a step that needs to be performed in order to facilitate the determination of the Minimum Reserve of Section 2. The company has calculated $SR^{Aggregate}$. Both options that LATF had considered are detailed below. As noted, option 2 was ultimately adopted and will appear in the version of VM-20 applicable for Jan. 1, 2017.

Option 1: Under Option 1, the allocated portions sum to the total $SR^{Aggregate}$. A key characteristic of Option 1 is that $SROpt1^{Product1}$ and $SROpt1^{Product2}$ are separately determined but using the same 30 percent worst scenarios that comprise the CTE70 for the entire group of policies. If the sum of the stochastic reserve for each product group does not equal the total

for the entire group of policies, the total is allocated to each product group proportionately, as demonstrated by the formula.

$$SR1\% = \frac{SROpt1^{Product1}}{(SROpt1^{Product1} + SROpt1^{Product2})}$$

$$SR2\% = \frac{SROpt1^{Product2}}{(SROpt1^{Product1} + SROpt1^{Product2})}$$

The portion of $SR^{Aggregate}$ allocated to Product 1 is ($SR^{Aggregate} \cdot SR1\%$); the portion of the SR allocated to Product 2 is ($SR^{Aggregate} \cdot SR2\%$). In the Table 1 example, $SR1\% = 14.8\%$ and $SR2\% = 85.2\%$

Option 2: Under Option 2, $SROpt2^{Product1}$ and $SROpt2^{Product2}$ are each determined independently using the set of 30 percent worst scenarios specific to the risks of each separate product group. In this option, the sum of $SROpt2^{Product1}$ and $SROpt2^{Product2}$ is most surely something different than $SR^{Aggregate}$, since it is highly likely that the scenarios contributing to the CTE70 will differ.

Once the allocation of the SR to the two contributing product groups is known, then the Section 2 minimum reserve for each product group can be determined. In order to apply the language of Section 2, the company needs the product-level NPR for product 1 (WL) and separately for product 2 (ULSG). This product-level NPR is the sum of the seriatim NPR amounts for the policies in the product group, is adjusted for due and deferred premium amounts and is net of reinsurance ceded. Under both allocation options, the minimum reserve for each product subgroup is the product-level NPR plus the excess PBR reserve allocated to that subgroup. For simplicity, the illustration assumes that the deterministic reserve falls below the stochastic reserve, and so the deterministic reserve amount is ignored in the illustration. Specifics for allocating the deterministic reserve among subgroups are discussed later.

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Table 1 below provides an example of the two stochastic reserve allocation options. All figures in Table 1 are only for illustrating the allocation options and do not represent actual calculations of PBR reserves. In this example, the cash flow offset benefit for the model segment (i.e., both product groups combined) is 2,500 (13,500 – 11,000). We can know this offset amount only by first finding the 30 percent worst scenarios for the aggregate segment and then running product-specific stochastic reserves using that same set of scenarios. There are two key elements of the allocation structure:

- i. The PBR Excess is only defined by product subgroup. The provision for this construct is found in the revised Section 2 language whereby each of the three product groups (term, USLG, all other policies subject to Section 3.A.2) have minimum reserves defined separate to the others. For example, in Table 1 the PBR excess is 2,000 when viewed as a model segment (11,000 – 9,000). However, when viewed as product groups under Option 1, the PBR excess is zero for WL and 5,370 for ULSG. When viewed as product groups under Option 2, the PBR excess is zero for WL and 7,700 for ULSG.
- ii. Under Option 2, there are no cash flow offset benefits across product groups due to the nature of calculating each product-level stochastic reserve independently. This is because each product-level stochastic reserve is

determined using a separate calculation and potentially unique 30 percent worst scenarios. Under Option 1, the cash flow offset available at the aggregate level (the 2,500 in row (d) of Table 1) is recognized, but limited when allocated to the product-level subgroups by the Option 1 proportions, or $SR1\%$ and $SR2\%$. In Table 1, after calculating the stochastic reserve for each product group using the same 30 percent worst scenarios, Product 1 has no PBR excess ($NPR > SR$) and Product 2 has a PBR excess of 7,500 (11,500 – 4,000). In the Option 1 allocation approach, the product level excess is essentially scaled back by 85.2 percent of the 2,500 offset ($5,370 = 7,500 - 85.2\%(2,500)$). The 85.2 percent is the Option 1 allocation percentage ($85.2\% = 11,500/13,500$).

The discussion above focuses on the revised requirements addressing allocation of the stochastic reserve. For the allocation of the deterministic reserve, the revised language simply includes this new paragraph in VM-20 Section 4.D:

“If the group of policies for which a deterministic reserve is calculated includes policies from more than one product group, where product group is defined as in Section 2 to be term insurance policies, ULSG policies, and all other types of policies, a deterministic reserve shall be determined for each product group by following the process of A – C above by treating each product group as a subgroup. The Net Asset Earned rate used for discounting each product group can be the NAER

Table 1

		Product 1 (WL)	Product 2 (ULSG)	Model Segment
a	NPR net of Reins	5,000	4,000	9,000
b	Model Segment Stochastic Reserve			11,000
c(1)	SROpt1	2,000	11,500	13,500
c(2)	SROpt2	2,250	11,700	
d	“Offsets” benefits (c(1)-b)			2,500
e				
f		<u>Product 1 (WL)</u>	<u>Product 2 (ULSG)</u>	<u>Total</u>
g	Allocate SR: Option 1	1,630	9,370	11,000
h	PBR Excess: Option 1	0	5,370	
i	Minimum Reserve Option 1	5,000	9,370	14,370
j				
k	Allocate SR: Option 2	2,250	11,700	
l	PBR Excess: Option 2	0	7,700	
m	Minimum Reserve Option 2	5,000	11,700	16,700

for the group of policies. If the sum of the deterministic reserve for each product group does not equal the total deterministic reserve, the total shall be allocated to each product group proportionally.”

Based on the language provided, the company can choose to use the NAER from the model segment in determining the product-level deterministic reserves. The other choice would be to calculate NAERs unique to each product-level deterministic reserve for use in discounting cash flows. Whichever method is chosen, it will only influence how the aggregate deterministic reserve is allocated back to the product group for purposes of Section 2 minimum reserve determination.

OTHER APFs

The following amendments are important to know and understand as well, and are largely in the spirit of clarification, removing redundancies and improving geography of the document.

VM-G: The key change in VM-G for actuaries is an effort to convey the concept that the company will assign to one or more qualified actuaries the responsibilities outlined in Section 4 of

VM-G. The qualified actuary’s responsibilities are made distinct from those of the appointed actuary which are covered in VM-30.

Companywide Exemption: The provisions for this exemption are moved from VM-20 Section 6 (Exclusion Tests) to Valuation Manual Section II Reserve Requirements.

VM-20: The terms “reinsurance discrete cash flows” and “reinsurance aggregate cash flows” are no longer necessary and are removed. At one time, the deterministic reserve was a seriatim construct, and it was necessary to allocate reinsurance aggregate cash flows to individual policies. Following the introduction of the seriatim NPR amount, the deterministic reserve became an aggregate reserve, and therefore the reinsurance aggregate cash flows can be considered part of the deterministic reserve. ■



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