ARWG August 2013 Report to LATF's VM-22 Subgroup

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Annuity Reserves Work Group

Disclaimers

- Some of our proposals are tentative and need further review
  - e.g., lapse rates in the Floor Reserve not a final recommendation & requires additional study
- Modeled Reserve concepts are relatively new and details are still to be developed
  - Possibility there may be questions with no answers yet available
- Kansas Insurance Department field test
  - Several reserve calculations for actual business in force
  - Results to be shared with the ARWG
  - ARWG not involved in design or performance of test

Goals of VM-22 Methodology Development

- Appropriate formulaic floor reserve that extends the current CARVM methodology as minimum reserve
- Modeled reserve that:
  - Handles today's complex product designs
  - Properly reflects key risks
  - Is intended to make audit process more manageable
- Ensure that statutory reserves are sufficiently conservative

Annuity Reserve Change Comparison		
Aspect	**Current Requirement**	**Currently Envisioned for VM-22**
Defined Reserve	CARVM with AG 33 and other Actuarial Guidelines. Subject to aggregate asset adequacy analysis at the company level.	Greater of Floor Reserve and Modeled Reserve.[1] Subject to asset adequacy analysis at either the company level or perhaps at a block-of-business or line of business level.

[1] Note that we expect to propose that this be expressed in VM-22 as the Floor Reserve, plus the excess, if any, of the Modeled Reserve over the Floor Reserve.

Annuity Reserve Change Comparison (Continued)		
Aspect	**Current Requirement**	**Currently Envisioned for VM-22**
Magnitude of Current Reserve and Floor Reserve	CARVM Reserve under AG-33 is Greatest Present Value of all possible Integrated Benefit Streams, subject to the Cash Value Floor	α is similar to existing CARVM, but with prescribed lapse rates adjusted for ITM of rich non-listed benefits. For α, no future charges or benefits related to Listed Benefits are included in the calculations. α is a GPV calculation. For β, prescribed lapse rates, adjusted for ITM of the Listed Benefits and "rich" non-listed benefits, and prescribed Listed Benefit incidence rates are included in the calculations. β is a PV calculation of a single Integrated Benefit Stream for each Listed Benefit. The Floor Reserve for each contract is the larger of α and β, subject to the Cash Value Floor.

Annuity Reserve Change Comparison (Continued)

Aspect	Current Requirement	Currently Envisioned for VM-22
Reserve Assumptions	Those required under the current Standard Valuation Law	For the Floor Reserve, assumptions are those currently required for CARVM statutory valuation except for the prescribed lapse assumptions, adjusted for ITM (α and β) and the prescribed incidence rates for the Listed Benefit Integrated Benefit Stream (β). For the Modeled Reserve, assumptions are the actuary's anticipated experience assumptions plus prescribed variations in the critical assumptions for the calculation of the Current Estimate Reserve with margins provided by the Margin over Current Estimate (aggregate margin).

Reserve Features Comparison
VM-20 & VM-21 vs. Currently Envisioned for VM-22

Aspect	VM-20 & VM-21	Currently Envisioned for VM-22
Current Assumption Reserve	Deterministic Reserve (VM-20), Stochastic Reserve (VM-20 and VM-21)	Modeled Reserve
Number of Scenarios	Generally considered to be a large number (>= 1,000 ?) for Stochastic, 1 for Deterministic	Small number per risk with multiple risks
Risks Tested Using Scenarios	Generally limited to interest rate and market risk. Other risks are tested by adding margins to anticipated experience assumptions.	All critical risks

Reserve Features Comparison (Cont.)
VM-20 & VM-21 vs. Currently Envisioned for VM-22

Aspect	VM-20 & VM-21	Currently Envisioned for VM-22
General Conservatism Requirement	CTE 70 + individual assumption margins	Evaluation of Critical Risks with reflection of possible outcomes in Current Estimate Reserve plus explicit statutory conservatism built into the Margin over Current Estimate (aka Aggregate Margin)
Theoretical Goal of Principle-based Reserve	CTE measure applied to model results where each critical assumption incorporating randomness is stochastically modeled. However, current practice under VM-20 and VM-21 generally only stochastically model interest and market risks.	Modeled Reserve may take a large, practical step towards this theoretical goal.

Current Assumption Reserve Comparison (Cont.)
VM-20 & VM-21 vs. Currently Envisioned for VM-22

Aspect	VM-20 & VM-21	Currently Envisioned for VM-22
Assumption Margins	Current practice generally results in margins added to each assumption	Margin over Current Estimate added to Current Estimate Reserve
Guardrails	Many required margins or assumptions	Requirements around assumed probability distribution of current estimate reserve assumptions, including specified methods for determining assumed experience for risks outside the control of the company
Auditability of Current Assumption Reserve	Time consuming; difficult to manage	The methodology being considered is intended to make the audit process more manageable

Minimum Reserve Features Comparison
VM-20 & VM-21 vs. Currently Envisioned for VM-22

Aspect	VM-20 & VM-21	Currently Envisioned for VM-22
Minimum Reserve	**VM-20:** Largest of Net Premium Reserve (with Cash Value Floor), Deterministic Reserve, and Stochastic Reserve **VM-21**: Larger of Standard Scenario Reserve (with Cash Value Floor) and CTE Reserve	Larger of the Floor Reserve and the Modeled Reserve, where the Floor Reserve is based on the greatest of the Cash Value, α and β, as discussed above.
Guaranteed Minimum Death Benefits	Reflected in both reserve components with special requirements in the calculation of the Accumulated Net Revenue, especially to avoid assuming lapses when other more valuable benefits exist.	GMDBs are not Listed Benefits but are reflected in α and in β (to the extent the GMDB still exists if the Listed Benefit is terminated) components. An "in the money-ness" test for "rich" non-listed benefits will be included in the lapse rate assumptions to avoid the assumption of surrendering a policy when a significantly larger death benefit is available.

Minimum Reserve Features Comparison (Cont.)
VM-20 & VM-21 vs. Currently Envisioned for VM-22

Aspect	VM-20 & VM-21	Currently Envisioned for VM-22
Tax Reserve	**VM-20:** Net Premium Reserve (with Cash Value Floor) **VM-21**: Standard Scenario Reserve (with Cash Value Floor)	Expected to be Floor Reserve (with Cash Value Floor)
Reserve Assumptions	**VM-20**: Experience Based Assumptions with margins for Deterministic Reserve and Stochastic Reserve (with many margins that are prescribed) and prescribed assumptions for Net Premium Reserve. **VM-21**: Prescribed assumptions (including lapse and election rates for Accumulated Net Revenue portion) for the Standard Scenario Reserve. Prudent estimate for the CTE Reserve.	α is similar to existing CARVM, but with prescribed lapse rates along the GPV path. The lapse rates would be adjusted for ITM if there are rich non-listed benefits. For α, no future charges or benefits related to Listed Benefits are in the calculations. For β, prescribed lapse rates (adjusted for ITM of the listed benefits and rich non-listed benefits) and Listed Benefit incidence rates are included in the calculations. β is the largest of a PV calculation of a single Integrated Benefit Stream for each Listed Benefit. Reserve is larger of α and β, subject to the Cash Value Floor.