AMERICAN ACADEMY *of* ACTUARIES

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ACTUARIAL GUIDELINE ZZZZ

**THE APPLICATION OF THE COMMISSIONERS RESERVE VALUATION METHOD
TO EQUITY INDEXED LIFE INSURANCE POLICIES**</div>

Background

The purpose of this Actuarial Guideline is to clarify statutory and regulatory requirements for the valuation of reserves for equity indexed universal life insurance policies. This Guideline codifies the interpretation of the Commissioners Reserve Valuation Method (CRVM) by clarifying the computational methodologies that are deemed to comply with the intent of the Standard Valuation Law (SVL) and the Universal Life Insurance Model Regulation. These methodologies will be deemed to be consistent with CRVM.

Equity indexed universal life insurance policies include interest credits that are a combination of a guaranteed interest rate and an interest rate based on a percentage of the increase in an equity index, such as the S&P 500. Currently, there are only a few products in the market and the product designs have been straightforward. As new product designs emerge, this Actuarial Guideline may have to be revised.

In order that all insurers issuing equity indexed universal life insurance policies establish reserves for statutory reporting purposes that are consistent with CRVM minimum statutory formula reserves, this Actuarial Guideline identifies a computational method deemed to be consistent when specific operational criteria called "Hedged as Required" criteria are met. In addition, two other computational methods are defined that are deemed to be consistent with CRVM in the event the "Hedged as Required" criteria are not met.

Scope

This Actuarial Guideline applies to all equity indexed universal life insurance policies, regardless of the date of issue, that are subject to CRVM and would otherwise be subject to the reserve requirements under the Universal Life Insurance Model Regulation.

Definitions

Appointed Actuary. The appointed actuary, for purposes of this guideline, is the actuary appointed by the company's board of directors to provide opinions in accordance with Standard Valuation Law and the model Actuarial Opinion and Memorandum regulation.

Credited. Index-based benefits will be considered to be credited when they are added to the fund and treated in the same manner as other interest credits to the fund.

Term. An index-based benefit crediting period.

Computational Methods

Computational methods deemed to be consistent with CRVM can be classified into three groups, Type 1 methods, Type 2a methods and Type 2 methods. The following computational method is considered a Type 1 method: the Implied Guarantee Rate Method (IGRM). Type 1 computational methods are deemed to be consistent with CRVM only if the "Hedged as Required" criteria are met. The following is considered a Type 2a method: the Commissioners Reserve Valuation Method with Updated Average Market Value (CRVM with UAMV). The following is considered a Type 2 method: the Commissioners Reserve Valuation Method with Updated Market Value (CRVM with UMV). For a complete description of these methods, consult Attachment 1.

The minimum reserve for equity indexed life insurance policies is the statutory reserve calculated under the Universal Life Insurance Model Regulation for an identical policy with no guaranteed index-based benefits. If the reserve produced by Type 1, Type 2a or Type 2, as appropriate, is greater than the minimum reserve, then that Type 1, Type 2a or Type 2 reserve is the minimum reserve.

Type 1 Methods

A Type 1 computational method is deemed to be consistent with CRVM if an insurer using the method complies with the "Hedged as Required" Criteria (Attachment 2) and provides a certification (Attachment 3) as to compliance with the criteria. The appointed actuary must sign the certification. The certification shall be provided with each annual and quarterly statutory financial statement filed with the appropriate insurance regulatory official in each state in which the insurer writes or reinsures equity indexed universal life insurance business.

For purposes of determining compliance with the "equivalence of characteristics" requirement in the "Hedged as Required" criteria, the current term of an equity indexed universal life insurance policy is one year or less. This should be interpreted consistently when a separate index-based benefit guarantee is made on each premium received.

The IGRM computational method is deemed to be consistent with CRVM under the following conditions:

1. The implied guaranteed rate for terms after the first, determined at issue using the method of Attachment 1, paragraph 3 of the IGRM method, is less than or equal to the appropriate maximum valuation interest rate.

2. Index-based benefit terms cannot be greater than one year. This should be interpreted consistently when a separate index- based benefit guarantee is made on each premium received.

3. The appointed actuary has demonstrated at time of filing or in conjunction with a change to a Type 1 Method, to the satisfaction of the regulatory officials in each state in which the insurer writes or reinsures equity indexed universal life insurance business, prior to the use of the IGRM that the requirements in (1) and (2) above have been met.

Type 2a Methods

A Type 2a computational method is deemed to be consistent with CRVM if an insurer using the method complies with Type 2a Prerequisite Criteria below, and provides Reasonableness and Consistency of Assumptions Certification (Attachment 4). The appointed actuary must sign the certification. The certification shall be provided with each annual and quarterly statutory financial statement filed with the appropriate insurance regulatory official in each state in which the insurer writes or reinsures equity indexed universal life insurance business.

Type 2a Prerequisite Criteria are as follows:

1. At issue, the policy satisfies (a) or (b) as follows:

    (a) The implied guaranteed rate for terms after the first, determined at issue using the method of Attachment 1, paragraph 3 of the CRVM with UAMV method, is less than or equal to the appropriate maximum valuation interest rate; or

    (b) Policies with identical renewal guarantees issued in three of the past five years would have satisfied condition 1 for the Type 1 method.

2. Index-based benefit terms cannot be greater than one year. This should be interpreted consistently when a separate index- based benefit guarantee is made on each premium received.

3. The appointed actuary has demonstrated at time of filing or in conjunction with a change to a Type 2a Method, to the satisfaction of the regulatory officials in each state in which the insurer writes or reinsures equity indexed universal life insurance business, prior to the use of the CRVM with UAMV that the requirements in (1) and (2) above have been met.

Type 2 Methods

The use of a Type 2 method is not conditioned upon the requirement to meet the "Hedged as Required" criteria or the Type 2a Prerequisite Criteria. However, an insurer using a Type 2 method must provide a certification (Attachment 5) signed by the appointed actuary with each annual and quarterly statutory financial statement filed with the appropriate insurance regulatory official in each state in which the insurer writes or reinsures equity indexed universal life insurance business. This certification deals with the assumptions underlying the option market values included in the calculation of reserves using a Type 2 method and the consistency in assumptions between these option market values and the statement value of any options owned by the insurer to support the equity indexed universal life insurance business being valued.

Required Change in Method

In the event an insurer that is using a Type 1 computational method for a block of business fails to meet the applicable "Hedged as Required" criteria, the required actuarial certification must disclose this fact. If the reason for failing the "Hedged as Required" criteria is not corrected within one quarterly financial reporting

period of the initial disclosure of the failure in the actuarial certification, the insurer must choose to use a Type 2a or a Type 2 computational method for determining minimum statutory formula reserves for this block of business.

If, at a later date, the insurer can demonstrate to the satisfaction of its domiciliary commissioner that it is meeting the applicable "Hedged as Required" criteria, the insurer may, with the approval of the domiciliary commissioner, resume using a Type 1 computational method. In addition, the insurer must notify the appropriate regulatory official in each state in which the insurer does business subject to the change in computational method.

Optional Change in Method

An insurer using either a Type 1, Type 2a or Type 2 computational method for a block of business may, with the approval of its domiciliary commissioner and after notifying the appropriate regulatory official in all the other states in which the insurer writes this block of business, use a computational method of another type. If the change in computational methods involves a change from a Type 2 or Type 2a computational method to a Type 1 computational method the request to the domiciliary commissioner for approval of the change in method must be accompanied with a demonstration of compliance with the applicable "Hedged as Required" criteria. If the change in computational methods involves a change from a Type 2 computational method to a Type 2a or Type 1 computational method, the request to the domiciliary commissioner for approval of the change in method must be accompanied with a demonstration of compliance with the "Type 2a Prerequisite Criteria" or the requirements specified in the section captioned "Type 1 Methods."

Asset Adequacy Testing of Reserves

To the extent required by law, regulation, or regulatory requirements, reserves established for equity indexed life policies must be tested for adequacy using appropriate methods and assumptions.

Attachment 1

Description of Computational Methods

Implied Guaranteed Rate Method (IGRM)

To use this computational method, companies must satisfy the "Hedged as Required" criteria, which are set out in Attachment 2. On the asset side, options will be held in accordance with the rules of the NAIC Accounting and Procedures Manual.

The following describes how the IGRM works:

1. Issue date calculations:
    Calculate an implied guaranteed rate, determined at issue, for the period of the initial term equal to: (a) the guaranteed interest rate for the period of the initial term; plus (b) the accumulated option cost expressed as a percent of the policy value to which the indexed benefit is to be applied. The accumulated option cost, determined at issue, is the option cost, which will provide the index-based benefit in excess of any other interest rate guarantee for the initial term, accumulated to the end of the term at the appropriate maximum valuation rate.

    Calculate an implied guaranteed rate, determined at issue, for the terms after the first. The implied guaranteed rates for terms after the first term will be based on historical moving average option costs according to (3) below.

    Using the Universal Life Insurance Model Regulation, with the guaranteed interest rates equal to the implied guaranteed rates, calculate the Guaranteed Maturity Premium, Guaranteed Maturity Fund, and net premium for the policy based on guarantees at issue.

2. Valuation date calculations:
    Calculate the implied guaranteed rate for the current term based on the current term's index-based benefit and the option cost at the start of the current term that will provide the indexed benefit, in excess of any other interest rate guarantee, for the current term. The method of calculating the current term implied guaranteed rate is the same as for calculating the rate for the initial term. The implied guaranteed rate for terms after the current is not recalculated as long as neither the interest rate guarantees nor the index-based benefit guarantee have changed. (If guarantees have improved, then the new implied guaranteed rates for future terms will be based on option costs determined at issue according to (3) below.)

    Continue the calculation of the reserve according to the Universal Life Insurance Model Regulation. Use the recalculated current term implied guaranteed rate and the implied guaranteed rate for future terms, as determined according to (3) below, when computing future guaranteed benefits at the valuation date. Do not recalculate the Guaranteed Maturity Premium, Guaranteed Maturity Fund, or net premium. This section should be interpreted consistently when a separate index-based benefit guarantee is made on each premium received.

    In determining reserves, the net premiums, as determined in Section 1 above, are payable over the period that benefits are projected to be available, but not beyond the end of the net premium payment period determined at issue.

3. Index-based benefit guarantees beyond the current term should be handled as follows:
    Calculate an implied guaranteed rate, determined at issue, for the terms after the current term equal to:
    (a) the guaranteed interest rate for the period of the term; plus (b) the accumulated option cost expressed as a percent of the policy value to which the indexed benefit is to be applied. The accumulated option cost is the historical moving average cost of the option whose term begins at the beginning of the term, which will provide the index-based benefit in excess of any other interest rate guarantee for the term, accumulated for the length of the term at the appropriate maximum valuation rate.

    The historical moving average cost of the option will be calculated based on the averages over the sixty months previous to the calendar year of issue of each of the following items: (a) 3% plus the annualized daily actual index volatility as the estimated implied volatility for a one year European At-The-Money option, e.g. if the average index volatility is 15%, the implied volatility for the base case option cost is 18%; (b) index dividend rate; and (c) risk free rate. The base case cost is for a one year European At-The–Money option and must be adjusted to the characteristics of the policy.

In those states that require, by regulation, that the policy valuation interest rates not exceed the "minimum guaranteed interest rate" in the policy, the "minimum guaranteed interest rate" for IGRM is the implied guaranteed rate.

Commissioners Reserve Valuation Method Updated Average Market Value (CRVM with UAMV)

To use this computational method, companies must satisfy the Type 2a Prerequisite Criteria. On the asset side, options will be held in accordance with the rules of the NAIC Accounting and Procedures Manual. Similarly, reinsurance reserve credit will be in accordance with the rules of the NAIC Accounting and Procedures Manual.

The following describes how the CRVM with UAMV works:

1. Issue date calculations:
    Calculate an implied guaranteed rate, determined at issue, for the period of the initial term equal to:
    (a) the guaranteed interest rate for the period of the initial term; plus (b) the accumulated option cost expressed as a percent of the policy value to which the indexed benefit is to be applied. The accumulated option cost, determined at issue, is the option cost that will provide the index-based benefit in excess of any other interest rate guarantee for the initial term, accumulated to the end of the term at the appropriate maximum valuation rate. The option cost should be as of the issue date.

    Calculate an implied guaranteed rate, determined at issue, for the terms after the first. The implied guaranteed rates for terms after the first term will be based on historical moving average option costs according to (3) below.

    Using the Universal Life Insurance Model Regulation, with the guaranteed interest rates equal to the implied guaranteed rates, calculate the Guaranteed Maturity Premium, Guaranteed Maturity Fund, and net premium for the policy based on guarantees at issue.

2. Valuation date calculations:

When calculating the present value of future guaranteed policy benefits at the valuation date by projecting a fund equal to the greater of the Guaranteed Maturity Fund or the policy value, this fund should be projected to the end of the current term at the guaranteed interest rate and added to the accumulated option cost for the current term. The option cost should be determined as of the valuation date.

The option should provide for the index-based benefit in excess of any other interest rate guarantee for the current term based on a fund equal to the greater of the Guaranteed Maturity Fund or the policy value. The option cost should be accumulated to the end of the current term at the appropriate maximum valuation rate in accordance with the SVL.

This combined amount should then be projected forward using the implied guaranteed rates for future terms, as determined according to (3) below.

The implied guaranteed rates for terms after the current are recalculated on the valuation date. The implied guaranteed rates for future terms will be based on historical moving average option costs on the valuation date according to (3) below.

Do not recalculate the Guaranteed Maturity Premium, Guaranteed Maturity Fund, or net premium. This section should be interpreted consistently when a separate index-based benefit guarantee is made on each premium received.

In determining reserves, the net premiums, as determined in Section 1 above, are payable over the period that benefits are projected to be available, but not beyond the end of the net premium payment period determined at issue.

3. Index-based benefit guarantees beyond the current term should be handled as follows:
Calculate an implied guaranteed rate, determined either at issue or at a valuation date, for the terms after the current term equal to: (a) the guaranteed interest rate for the period of the term; plus (b) the accumulated option cost expressed as a percent of the policy value to which the indexed benefit is to be applied. The accumulated option cost is the historical moving average cost of the option whose term begins at the beginning of the term, which will provide the index-based benefit in excess of any other interest rate guarantee for the term, accumulated for the length of the term at the appropriate maximum valuation rate.

The historical moving average cost of the option will be set equal to the option cost calculated based on the averages of each of the following items over the sixty months previous to the calendar year of the determination date: (a) 3% plus the annualized daily actual index volatility as the estimated implied volatility for a one year European At-The-Money option, e.g. if the average index volatility is 15%, the implied volatility for the base case option cost is 18%; (b) index dividend rate; and (c) risk free rate. The base case cost is for a one year European At-The–Money option and must be adjusted to the characteristics of the policy.

In those states that require, by regulation, that the policy valuation interest rates not exceed the "minimum guaranteed interest rate" in the policy, the "minimum guaranteed interest rate" for CRVM with UAMV is the implied guaranteed rate.

CRVM with Updated Market Value (UMV) Method

CRVM with UMV applies the Universal Life Insurance Model Regulation to equity indexed life insurance policies using the following methods:

1. Issue date calculations:
   When calculating the present value of future guaranteed policy benefits at issue by projecting fund values, the fund should be projected to the end of the initial term at the guaranteed interest rate and added to the accumulated option cost for the initial term. This combined amount should then be projected forward, using the policy guarantees to determine future death and endowment benefits. The option should provide for the indexed benefit in excess of any other interest rate guarantee for the initial term. The option cost should be as of the issue date. The option cost should be accumulated to the end of the initial term at the appropriate maximum valuation rate in accordance with the SVL. Any index-based benefit guarantees beyond the initial term should be determined as described in (3) below.

   Using this method of determining the present value of future guaranteed benefits, calculate the Guaranteed Maturity Premium, Guaranteed Maturity Fund, and net premium for the policy based on guarantees at issue.

2. Valuation date calculations:
   When calculating the present value of future guaranteed policy benefits at the valuation date by projecting a fund equal to the greater of the Guaranteed Maturity Fund or the policy value, this fund should be projected to the end of the current term at the guaranteed interest rate and added to the accumulated option cost for the current term. The option cost should be determined as of the valuation date. This combined amount should then be projected forward, using the policy guarantees to determine future death and endowment benefits. The option should provide for the index-based benefit in excess of any other interest rate guarantee for the current term, based on a fund equal to the greater of the Guaranteed Maturity Fund or the policy value. The option cost should be accumulated to the end of the current term at the appropriate maximum valuation rate in accordance with the SVL. Any index-based benefit guarantees beyond the current term should be treated as described in (3) below. Do not recalculate the Guaranteed Maturity Premium, Guaranteed Maturity Fund, or net premium. This section should be interpreted consistently when a separate index-based benefit guarantee is made on each premium received.

   In determining reserves, the net premiums, as determined in Section 1 above, are payable over the period that benefits are projected to be available, but not beyond the end of the net premium payment period determined at issue.

3. Index-based benefit guarantees beyond the current term should be handled as follows:

   At the time of calculation, fund values projected to the end of the current term should be further projected to the end of the next term at the guaranteed interest rate. This should be added to the accumulated option cost for that term. This should be done successively for each subsequent term, using the appropriate option cost for each term. The option for each term should provide for the index-based benefit in excess of any other interest rate guarantee for the term. The cost for each option should recognize the current relevant economic condition on the calculation date and be priced as if the term

began on that date. The option cost for each future term should be accumulated to the end of the term at the appropriate maximum valuation rate in accordance with the SVL.

Attachment 2

Hedged as Required Criteria - Life Products

In order to use a Type 1 computational method, the appointed actuary needs to certify quarterly that it meets either the "Basic" or "Option Replication" criteria.

Basic

1. Required equivalence of characteristics between the option policies held and the options embedded in the policies for the current term with respect to specific policy features such as: index; averaging features; option type; strike price; term; etc.

2. The amount of hedge owned must substantially cover the greater of the account value or reserve. "Substantially" is measured by the guarantees in the specific policy (some policies may have longer term guarantees than others), and allows the company to assume no more than 6% per year of elective benefit decrements, unless the Commissioner agrees to a higher limit. Benefit decrements due to charges in the policy should be taken into account in the same way as they are in the indexed interest formula in the policy (i.e., if indexed interest is credited on an average fund value, then it is the projected average fund value on each policy which should be hedged.)

3. The company must have a specific plan for hedging risks associated with death benefits, early surrenders, unexpected premium payment patterns, and other potentialities. This plan must be available at issue and updated at every valuation date, or as often as the valuation actuary requirements may warrant.

4. The company must have a system in place that is used to monitor the effectiveness of its hedging strategy.

5. The company must have a stated maximum tolerance for differences between expected performance of the hedge and the actual results of the hedge.

Option Replication

1. Required equivalence of characteristics between the target of an option replication strategy employed and the options imbedded in the liabilities for the current term with respect to specific policy features such as: index; averaging features; option type; strike price; term; etc.

2. At the end of each quarter, the notional amount of the target of the option replication strategy must substantially cover the greater of the account value or reserve. "Substantially" is measured by the guarantees in the specific policy (some policies may have longer term guarantees than others), and allows the company to assume no more than 6% per year of elective benefit decrements, unless the Commissioner agrees to a higher limit. Benefit decrements due to charges in the policy should be taken into account in the same way as they are in the indexed interest formula in the policy, (i.e., if indexed interest is credited on an average fund value, then it is the projected average fund value on each policy which should be hedged.)

3. The company must have a specific plan for hedging risks associated with death benefits, early surrenders, unexpected premium payment patterns and other potentialities. This plan must be available at issue and updated at every valuation date, or as often as the valuation actuary requirements may warrant.

4. The company must have a system in place that is used to monitor the effectiveness of the company's hedging strategy.

5. The company must have a stated maximum tolerance for differences between the expected performance of the hedge and the actual results of the hedge. The maximum tolerance test and compliance evaluation test must meet the following minimum requirements. The compliance evaluation criterion will be a retrospective correlation test performed at least on a weekly basis. The company will compare the change in the market value, from the beginning of the calendar quarter, of the hedge portfolio with the change in the market value of the target of the option replication strategy. The maximum dollar amount of difference permitted between these two changes is10% of the beginning of period market value of the target of the option replication strategy. If the difference exceeds this limit, the following steps must be taken:

   ♦ If for a second time during a quarter the dollar amount of difference exceeds 10% of the beginning of period market value of the target of the option replication strategy, but is less than 25% of the beginning of period market value of the target of the option replication strategy, the company must notify the Commissioner in each state in which the insurer is licensed. The notification must indicate the dollar amount of reserves being hedged by the option replication strategy.

   ♦ If at any of the weekly intervals the difference between the two changes exceeds 25% of the beginning of period market value of the target of the option replication strategy, the company must notify the Commissioner in each state in which the insurer is licensed. The notification must indicate the dollar amount of reserves being hedged by the option replication strategy and the impact on surplus of reporting the reserves based on CRVM with UMV, or CRVM with UAMV if the conditions for that method are satisfied.

   ♦ If at any point in time during the quarter the difference between the two changes exceeds 35% of the beginning of period market value of target of the option replication strategy, the insurer is deemed to be out of compliance with the "Hedged as Required" criteria, and the company must notify the Commissioner in each state in which the insurer is licensed. The notification must indicate the dollar amount of reserves being hedged by the option replication strategy and the impact on surplus of reporting the reserves based on the CRVM with UMV, or CRVM with UAVM if the conditions for that method are satisfied.

The requirements discussed above deal with the situation in which the actual hedge underperforms relative to the expected hedge performance. The ability of an insurer to over-hedge may be constrained by other components of a state's regulatory framework including the state's investment article and regulations concerning the use of derivative instruments. For purposes of this Guideline, over-hedged mean that at a particular point in time, the hedge portfolio exceeds the portfolio of liabilities being hedged. If over-hedged, the excess hedging instruments are excluded from the measurements required in Item 5 of the Hedged as Required Criteria.

Attachment 3

Reasonableness of Assumptions Certification
for Implied Guaranteed Rate Method

The following certification must be filed in conjunction with each quarterly and annual statutory financial statement filed with the appropriate regulatory official in each state in which the insurer does business. The appointed actuary must sign the certification.

I, (state name and professional designation) am the appointed actuary for (company name). The company meets the Hedged as Required criteria for policies reserved under the Implied Guarantee Rate Method. I have reviewed the assumptions underlying the values assigned to all equity index options used in the determination of the implied guaranteed rate used in the calculation of reserves under the Implied Guaranteed Rate Method for all equity indexed universal life insurance policies issued or reinsured by (company name) and reported in the statutory financial statement as of (the date of valuation).

The assumptions at the start of the current term used to determine such option values for the current term are:

1. Reasonable in light of current relevant economic conditions at the start of the current term; and
2. Consistent with the comparable assumptions used to determine the statement of value of any derivative instruments as of the valuation date used to hedge the equity index-based obligations embedded in the equity indexed life policies subject to this certification.

The assumptions at issue used to determine equity index option values for terms subsequent to the current term are:

1. Determined in accordance with the Implied Guaranteed Rate Method
2. Based on quantitative data for the base case option (1-year European At-The-Money) of 3% plus ___._% average annualized daily actual volatility over the 60 months previous to the calendar year of issue.
3. Reasonably adjusted to reflect the following variances from the base case due to benefit design and capital market reasons (all material adjustments should be listed)
    a. skew adjustments
    b. _____(to be described by appointed actuary)
4. Reliant on the following source(s) for assumptions not prescribed by this Actuarial Guideline:
    a. _____ ____(to be described by appointed actuary)

_____
(Name of actuary)

_____
(Signature of actuary)

_____
(Date of certification)

Attachment 4

Reasonableness and Consistency of Assumptions Certification
for Commissioners Reserve Valuation Method with Updated Average Market Value

The following certification must be filed in conjunction with each quarterly and annual statutory financial statement filed with the appropriate regulatory official in each state in which the insurer does business. The appointed actuary must sign the certification.

I, (state name and professional designation) am the appointed actuary for (company name). I have reviewed the assumptions underlying the values assigned to all equity index options used in the determination of statutory reserves using a Type 2a computational method for all equity indexed universal life insurance policies issued or reinsured by (company name) insurance company and reported in the statutory financial statement as of (the date of valuation).

The assumptions used to determine such option values for the current term are:
1. Reasonable in light of current relevant economic conditions as of the date of valuation; and
2. Consistent with the comparable assumptions used to determine the statement of value of any derivative instruments as of the valuation date used to hedge the equity index-based obligations embedded in the equity indexed life policies subject to this certification.

The assumptions used to determine equity index option values for terms subsequent to the current term are:1.Determined in accordance with the Commissioners Reserve Valuation Method with Updated Average Market Value
2. Based on quantitative data for the base case option (1-year European At-The-Money) of 3% plus ___._% 60 -month moving average annualized daily actual volatility
3. Reasonably adjusted to reflect the following variances from the base case due to benefit design and capital market reasons (all material adjustments should be listed)
   a. skew adjustments
   b. _____(to be described by appointed actuary)
4. Reliant on the following source(s) for assumptions not prescribed by this Actuarial Guideline:
   a. _____ ____(to be described by appointed actuary)

_____
(Name of actuary)

_____
(Signature of actuary)

_____
(Date of Certification)

Attachment 5

Reasonableness and Consistency of Assumptions Certification
for Commissioners Reserve Valuation Method with Updated Market Value

The following certification must be filed in conjunction with each quarterly and annual statutory financial statement filed with the appropriate regulatory official in each state in which the insurer does business. The appointed actuary must sign the certification.

> I, (state name and professional designation) am the appointed actuary for (company name). I have reviewed the assumptions underlying the values assigned to all equity index options used in the determination of statutory reserves using a Type 2 computational method for all equity indexed universal life insurance policies issued or reinsured by (company name) insurance company and reported in the statutory financial statement as of (the date of valuation). The assumptions used to determine such option values are:
>
> 1. Reasonable in light of current relevant economic conditions as of the date of valuation; and
>
> 2. Consistent with the comparable assumptions used to determine the statement of value of any derivative instruments as of the valuation date used to hedge the equity index-based obligations embedded in the equity indexed life policies subject to this certification.

_____
(Name of actuary)

_____
(Signature of actuary)

_____
(Date of Certification)

Numerical Illustration of Reserve Calculation
(In accordance with proposed Actuarial Guideline ZZZZ)

Assume we have a $250,000 face amount indexed policy issued 1/1/1997 to a 45, male, non-tobacco. The product credits interest using a European, annual ratchet. For example, at the beginning of the year, the index value is 740. At the end of the year, the index value is 970. If the participation rate were 60%, then the credited rate would be 60% * (970 / 740 – 1) = 18.65%.

The participation rate is 60% in 1997, 55% in 1998, and 45% in 1999. The guaranteed rates are 3% minimum credited rate with a 10% minimum participation rate guarantee.

This illustration will demonstrate the reserves calculated on 12/31/98, corresponding to the end of year 2 or beginning of year 3. Since the policy was issued in 1997, the valuation rate is 4.50%.

Type 1 – Implied Guaranteed Rate Method (IGRM):

   1. Issue date calculations:

     Calculate an implied guaranteed rate, determined at issue, for the period of the initial term equal to: (a) the guaranteed interest rate for the period of the initial term; plus (b) the accumulated option cost expressed as a percent of the policy value to which the indexed benefit is to be applied. The accumulated option cost, determined at issue, is the option cost, which will provide the index-based benefit in excess of any other interest rate guarantee for the initial term, accumulated to the end of the term at the appropriate maximum valuation rate.

     The option cost, expressed as a percent of the policy value to which the indexed benefit is to be applied, is 3.536%. Therefore, the implied guaranteed rate, at issue, for the period of the initial term of one year is 3.00% + 3.536% * (1 + 4.5%) = 6.695%.

     Calculate an implied guaranteed rate, determined at issue, for the terms after the first. The implied guaranteed rates for terms after the first term will be based on historical moving average option costs according to (3) below.

     This rate is 3.015%. See (3), below.

     Using the Universal Life Insurance Model Regulation, with the guaranteed interest rates equal to the implied guaranteed rates, calculate the Guaranteed Maturity Premium, Guaranteed Maturity Fund, and net premium for the policy based on guarantees at issue.

   2. Valuation date calculations:

     Calculate the implied guaranteed rate for the current term based on the current term's index-based benefit and the option cost at the start of the current term that will provide the indexed benefit, in excess of any other interest rate guarantee, for the current term. The method of calculating the current term implied guaranteed rate is the same as for calculating the rate for the initial term. The implied guaranteed rate for terms after the current is not recalculated.

     The option cost, expressed as a percent of the policy value to which the indexed benefit is to be applied, is 3.461%. Therefore, the implied guaranteed rate for the current term is 3.00% + 3.461% * (1 + 4.5%) = 6.617%.
     Since the guarantees have not changed, the implied guaranteed rate for terms after the current

remains at 3.015%.

Continue the calculation of the reserve according to the Universal Life Insurance Model Regulation. Use the recalculated current term implied guaranteed rate and the implied guaranteed rate for future terms, as determined according to (3) below, when computing future guaranteed benefits at the valuation date. Do not recalculate the Guaranteed Maturity Premium, Guaranteed Maturity Fund, or net premium.

In determining reserves, the net premiums, as determined in Section 1 above, are payable over the period that benefits are projected to be available, but not beyond the end of the net premium payment period determined at issue.

This produces a reserve of $2,285.56.

3. Index-based benefit guarantees beyond the current term should be handled as follows:

    Calculate an implied guaranteed rate, determined at issue, for the terms after the current term equal to: (a) the guaranteed interest rate for the period of the term; plus (b) the accumulated option cost expressed as a percent of the policy value to which the indexed benefit is to be applied. The accumulated option cost is the historical moving average cost of the option whose term begins at the beginning of the term, which will provide the index-based benefit in excess of any other interest rate guarantee for the term, accumulated for the length of the term at the appropriate maximum valuation rate.

    The historical moving average cost of the option will be calculated based on the averages over the sixty months previous to the calendar year of issue of each of the following items: (a) 3% plus the annualized daily actual index volatility as the estimated implied volatility for a one year European At-The-Money option, e.g. if the average index volatility is 15%, the implied volatility for the base case option cost is 18%; (b) index dividend rate; and (c) risk free rate. The base case cost is for a one year European At-The–Money option and must be adjusted to the characteristics of the policy.

    The option cost will be calculated as of 12/31/1996 (which is 12/31 of the year prior to issue, 1997). On 12/31/1996, the 60-month average of the volatility is 9.28%; volatility is 30-day annualized volatility on the index. In the option cost calculation, this needs to be increased by 3% to 12.28%. The 60-month average of the index dividend rate is 2.49%. The 60-month average of the risk-free rate is 5.14%; the risk-free rate is one-year LIBOR rates.

    There are two necessary adjustments. First, the cost needs to reflect that the liability is not at-the-money as it is struck higher than the current index value. Second, the cost needs to be expressed as a percent of the policy value to which the indexed benefit is to be applied. With these adjustments, the option cost is 0.0141%.
    Similar to the calculation of the implied guaranteed rate for the current term, this option cost translates into an ultimate guaranteed rate as follows: 3.00% + 0.0141% * (1 + 4.5%) = 3.015%.

Type 2 – Commissioners Reserve Valuation Method with Updated Market Values Method (CRVM with UMV):

1. Issue date calculations: The implied guaranteed rate, determined at issue, for the period of the initial term will be the same 6.695% as calculated for IGRM. The implied guaranteed rate, determined at issue, for the terms after the first will differ in that it uses current, non-averaged investment data rather than IGRM's utilization of 60-month averaging of volatilities, dividend yields, and risk-free interest rates. This produces a guaranteed rate of 3.069% (compared to 3.015% for IGRM).

2. Valuation date calculations: Value the indexed benefit which is guaranteed for the remainder of the current period by using the option cost for that benefit as of the valuation date, accumulated to the end of the current term at the valuation rate. Value the indexed benefit which is guaranteed for periods after the valuation date using the one year option cost as of the valuation date. Since option costs increased since the issue date, the implied guaranteed rate for periods after the current is 3.214% (compared to 3.069% at the issue date).

   This produces a reserve of $2,649.15, which is 16% higher than the IGRM reserve.

Type 2a – Commissioners Reserve Valuation Method with Updated Average Market Values Method (CRVM with UAMV):
1. Issue date calculations: Same as IGRM.

2. Valuation date calculations: Value the indexed benefit which is guaranteed for the remainder of the current period by using the option cost for that benefit as of the valuation date, accumulated to the end of the current term at the valuation rate. This is the same as UMV. Value the indexed benefit guaranteed for periods after the current date using the 60-month average of investment data (volatilities, dividend yields, and risk-free interest rates) as of the valuation date. Since volatilities have increased, the implied guaranteed rate for this valuation period is 3.066% (compared to 3.015% for IGRM).

   This produces a reserve of $2,399.21, which is 5% higher than the IGRM reserve and 9% lower than the UMV reserve.