American Academy of Actuaries
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November 22, 2019
Ms. Rhonda Ahrens
Chair, Longevity Risk (A/E) Subgroup
National Association of Insurance Commissioners
Via email: Dave Fleming (dfleming@naic.org)
Re: RBC Blank Implementation of Longevity C-2

Dear Rhonda,
On behalf of the Longevity Risk Task Force of the American Academy of Actuaries, ${ }^{1}$ I am providing sample changes to risk-based capital (RBC) blanks to implement longevity C-2 factors to assist the Longevity Risk Subgroup.

Changes from the existing blanks are highlighted in yellow in the attached excel file.

- The LRtbd tab was previously provided to calculate the pre-tax longevity C-2 amount based on the factors proposed by the LRTF.
- Changes to LR030 include longevity risk in the calculation of tax effect for C-2.
- Changes to LR031 include longevity risk in the calculation of Net C-2 Post-Tax.

It was necessary to add new lines to LR030 and LR031 for longevity risk. This was done in this sample by adding lines numbered with "b." It may be preferable in a final version to renumber the entire calculation so that longevity risk uses a uniquely numbered line.

Correlation between longevity and mortality is included in the formulas suggested for implementation. The formula includes a TBD Correlation Factor which can be inserted into the formula pending a decision by Life RBC on correlation.

At your request we have also included an alternative formula (provided to the right in the exhibit) that includes a Guardrail Factor that could be used to limit the reduction from correlation. We do not believe this Guardrail Factor is needed as part of the implementation of longevity C-2. If correlation is implemented with the Guardrail Factor, we recommend that it be

[^0]reviewed and phased out over time rather than become a permanent factor increasing the complexity of the RBC calculation.

Should you have any questions or comments regarding this letter, please contact Ian Trepanier, life policy analyst at the Academy (trepanier@actuary.org).

Sincerely,

Paul Navratil, MAAA, FSA
Chairperson, Longevity Risk Task Force
American Academy of Actuaries

## |CALCULATION OF TAX EFFECT FOR LIFE AND FRATERNAL RISK-BASED CAPITAL

## ASSET RISKS

Bonds
(001) Long-term Bonds - NAIC 1
(002) Long-term Bonds - NAIC 2
(003) Long-term Bonds - NAIC 3
(004) Long-term Bonds - NAIC 4
(005) Long-term Bonds - NAIC 5
(006) Long-term Bonds - NAIC 6
(007) Short-term Bonds - NAIC 1
(008) Short-term Bonds - NAIC 2
(009) Short-term Bonds - NAIC 3
(010) Short-term Bonds - NAIC 4
(011) Short-term Bonds - NAIC 5
012) Short-term Bonds - NAIC 6
(013) Credit for Hedging - NAIC 1 Through 5 Bonds
(014) Credit for Hedging - NAIC 6 Bonds
(015) Bond Reduction - Reinsurance
(016) Bond Increase - Reinsurance
(017) Non-Exempt NAIC 1 U.S. Government Agency
(018) Bonds Size Factor

## Mortgages

## In Good Standing

19) Residential Mortgages - Insure
(020) Residential Mortgages - Other
20) Commercial Mortgages - Insured
(022) Total Commercial Mortgages - All Other
(023) Total Farm Mortgages

90 Days Overdue
(024) Farm Mortgages
(025) Residential Mortgages - Insured
026) Residential Mortgages - Other
027) Commercial Mortgages - Insured
(028) Commercial Mortgages - Other

In Process of Foreclosure
(029) Farm Mortgages

Source

LR002 Bonds Column (2) Line (2) + LR018 Off-Balance Sheet Collateral Column (3) Line (2)
LR002 Bonds Column (2) Line (3) + LR018 Off-Balance Sheet Collateral Column (3) Line (3)
LR002 Bonds Column (2) Line (4) + LR018 Off-Balance Sheet Collateral Column (3) Line (4)
LR002 Bonds Column (2) Line (5) + LR018 Off-Balance Sheet Collateral Column (3) Line (5)
LR002 Bonds Column (2) Line (6) + LR018 Off-Balance Sheet Collateral Column (3) Line (6)
LR002 Bonds Column (2) Line (7) + LR018 Off-Balance Sheet Collateral Column (3) Line (7)
LR002 Bonds Column (2) Line (10)
LR002 Bonds Column (2) Line (11)
LR002 Bonds Column (2) Line (12)
LR002 Bonds Column (2) Line (13)
LR002 Bonds Column (2) Line (14)
LR002 Bonds Column (2) Line (15)
LR014 Hedged Asset Bond Schedule Column (13) Line (0199999)
LR014 Hedged Asset Bond Schedule Column (13) Line (0299999)
LR002 Bonds Column (2) Line (19)
LR002 Bonds Column (2) Line (20)
LR002 Bonds Column (2) Line (22)
LR002 Bonds Column (2) Line (26) - LR002 Bonds Column (2) Line (21)

LR004 Mortgages Column (6) Line (1)
LR004 Mortgages Column (6) Line (2)
LR004 Mortgages Column (6) Line (3) LR004 Mortgages Column (6) Line (9) LR004 Mortgages Column (6) Line (15)

LR004 Mortgages Column (6) Line (16) LR004 Mortgages Column (6) Line (17)
LR004 Mortgages Column (6) Line (18)
LR004 Mortgages Column (6) Line (19) LR004 Mortgages Column (6) Line (20)

LR004 Mortgages Column (6) Line (21)
(1)

RBC Amount
$\qquad$
Tax Factor
(2)

RBC Tax Effect

$\dagger$ Denotes lines that are deducted from the total rather than added.
Denotes items that must be manually entered on the filing software.

## |CALCULATION OF TAX EFFECT FOR LIFE AND FRATERNAL RISK-BASED CAPITAL (CONTINUED)

(030) Residential Mortgages - Insured
(031) Residential Mortgages - Other
(032) Commercial Mortgages - Insured
(033) Commercial Mortgages - Other
(034) Due \& Unpaid Taxes Mortgages
(035) Due \& Unpaid Taxes - Foreclosures
(036) Mortgage Reduction - Reinsurance
(037) Mortgage Increase - Reinsurance Preferred Stock and Hybrid Securities
(038) Unaffiliated Preferred Stock and Hybrids NAIC 1
(039) Unaffiliated Preferred Stock and Hybrids NAIC 2
(040) Unaffiliated Preferred Stock and Hybrids NAIC 3
(041) Unaffiliated Preferred Stock and Hybrids NAIC 4
(042) Unaffiliated Preferred Stock and Hybrids NAIC 5
(043) Unaffiliated Preferred Stock and Hybrids NAIC 6
(044) Preferred Stock Reduction-Reinsurance
(045) Preferred Stock Increase-Reinsurance Separate Accounts
(046) Guaranteed Index
(047) Nonindex-Book Reserve
(048) Separate Accounts Nonindex-Market Reserve
(049) Separate Accounts Reduction-Reinsuranc
(050) Separate Accounts Increase-Reinsurance
(051) Synthetic GICs
(052) Separate Account Surplus Real Estate
(053) Company Occupied Real Estate
(054) Foreclosed Real Estate
(055) Investment Real Estate
(056) Real Estate Reduction - Reinsurance
(057) Real Estate Increase - Reinsurance Schedule BA
(058) Sch BA Real Estate Excluding Low Income Housing Tax Credits
(059) Guaranteed Low Income Housing Tax Credits
(060) Non-Guaranteed and All Other Low Income Housing Tax Credits
(061) Sch BA Real Estate Reduction - Reinsurance
(062) Sch BA Real Estate Increase - Reinsurance

## Source

LR004 Mortgages Column (6) Line (22
LR004 Mortgages Column (6) Line (23)
LR004 Mortgages Column (6) Line (24)
LR004 Mortgages Column (6) Line (25)
LR004 Mortgages Column (6) Line (26) LR004 Mortgages Column (6) Line (27)
LR004 Mortgages Column (6) Line (29)
LR004 Mortgages Column (6) Line (30)
LR005 Unaffiliated Preferred and Common Stock Column (5) Line (1) + Line (8) + LR018 Off-Balance Sheet Collateral Column (3) Line (9)
LR005 Unaffiliated Preferred and Common Stock Column (5) Line (2) + Line (9) + LR018 Off-Balance Sheet Collateral Column (3) Line (10)
LR005 Unaffiliated Preferred and Common Stock Column (5) Line (3) + Line (10) + LR018 Off-Balance Sheet Collateral Column (3) Line (11)
LR005 Unaffiliated Preferred and Common Stock Column (5) Line (4) + Line (11)

+ LR018 Off-Balance Sheet Collateral Column (3) Line (12)
LR005 Unaffiliated Preferred and Common Stock Column (5) Line (5) + Line (12)
+ LR018 Off-Balance Sheet Collateral Column (3) Line (13)
LR005 Unaffiliated Preferred and Common Stock Column (5) Line (6) + Line (13)
+ LR018 Off-Balance Sheet Collateral Column (3) Line (14)
LR005 Unaffiliated Preferred and Common Stock Column (5) Line (16)
LR005 Unaffiliated Preferred and Common Stock Column (5) Line (17)
LR006 Separate Accounts Column (3) Line (1)
LR006 Separate Accounts Column (3) Line (2)
LR006 Separate Accounts Column (3) Line (3)
LR006 Separate Accounts Column (3) Line (5)
LR006 Separate Accounts Column (3) Line (6)
LR006 Separate Accounts Column (3) Line (8)
LR006 Separate Accounts Column (3) Line (13)
LR007 Real Estate Column (3) Line (3)
LR007 Real Estate Column (3) Line (6)
LR007 Real Estate Column (3) Line (9)
LR007 Real Estate Column (3) Line (11)
LR007 Real Estate Column (3) Line (12

LR007 Real Estate Column (3) Line (16)
LR007 Real Estate Column (3) Line (17) + Line (19)
LR007 Real Estate Column (3) Line (18) + Line (20) + Line (21)
LR007 Real Estate Column (3) Line (23)
LR007 Real Estate Column (3) Line (24)
(1)

$\dagger$ Denotes lines that are deducted from the total rather than added.
Denotes items that must be manually entered on the filing software.

## |CALCULATION OF TAX EFFECT FOR LIFE AND FRATERNAL RISK-BASED CAPITAL (CONTINUED)

(063) Sch BA Bond NAIC 1
(064) Sch BA Bond NAIC 2
(065) Sch BA Bond NAIC 3
(066) Sch BA Bond NAIC 4
(067) Sch BA Bond NAIC 5
(068) Sch BA Bond NAIC 6
(069) BA Bond Reduction - Reinsurance
(070) BA Bond Increase - Reinsurance
(071) BA Preferred Stock NAIC 1
(072) BA Preferred Stock NAIC 2
(073) BA Preferred Stock NAIC 3
074) BA Preferred Stock NAIC 4
(075) BA Preferred Stock NAIC 5
(076) BA Preferred Stock NAIC 6
(077) BA Preferred Stock Reduction-Reinsurance
(078) BA Preferred Stock Increase - Reinsurance
(079) Rated Surplus Notes
(080) Rated Capital Notes
081) BA Common Stock Affiliated
082) BA Collateral Loan
(083) Other BA Assets
(084) Other BA Assets Reduction-Reinsuranc
(085) Other BA Assets Increase - Reinsurance
(086) BA Mortgages - In Good Standing
087) BA Mortgages - 90 Days Overdue
088) BA Mortgages - In Process of Foreclosure
(089) Reduction - Reinsurance
(090) Increase - Reinsurance Miscellaneous
(091) Asset Concentration Factor
(092) Miscellaneous Assets
093) Derivatives - Collateral and Exchange Traded
(094) Derivatives NAIC 1
(095) Derivatives NAIC 2
(096) Derivatives NAIC 3
(097) Derivatives NAIC 4
(098) Derivatives NAIC 5
099) Derivatives NAIC 6
(100) Miscellaneous Assets Reduction-Reinsurance
(101) Miscellaneous Assets Increase-Reinsurance

## Source

LR008 Other Long-Term Assets Column (5) Line (2) LR008 Other Long-Term Assets Column (5) Line (3) LR008 Other Long-Term Assets Column (5) Line (4) LR008 Other Long-Term Assets Column (5) Line (5) LR008 Other Long-Term Assets Column (5) Line (6) LR008 Other Long-Term Assets Column (5) Line (7) LR008 Other Long-Term Assets Column (5) Line (9) LR008 Other Long-Term Assets Column (5) Line (10) LR008 Other Long-Term Assets Column (5) Line (12.3) LR008 Other Long-Term Assets Column (5) Line (13) LR008 Other Long-Term Assets Column (5) Line (14) LR008 Other Long-Term Assets Column (5) Line (15) LR008 Other Long-Term Assets Column (5) Line (16) LR008 Other Long-Term Assets Column (5) Line (17) LR008 Other Long-Term Assets Column (5) Line (19) LR008 Other Long-Term Assets Column (5) Line (20) LR008 Other Long-Term Assets Column (5) Line (31) LR008 Other Long-Term Assets Column (5) Line (41) LR008 Other Long-Term Assets Column (5) Line (48.3) LR008 Other Long-Term Assets Column (5) Line (50)
LR008 Other Long-Term Assets Column (5) Line (52.3) + LR018 Off-Balance Sheet Collateral Column (3) Line (17) + Line (18)
LR008 Other Long-Term Assets Column (5) Line (54) LR008 Other Long-Term Assets Column (5) Line (55) LR009 Schedule BA Mortgages Column (6) Line (11) LR009 Schedule BA Mortgages Column (6) Line (15) LR009 Schedule BA Mortgages Column (6) Line (19) LR009 Schedule BA Mortgages Column (6) Line (21) LR009 Schedule BA Mortgages Column (6) Line (22)

LR010 Asset Concentration Factor Column (6) Line (68) Grand Total Page LR012 Miscellaneous Assets Column (2) Line (7)
LR012 Miscellaneous Assets Column (2) Lines (8) + (9) + (10)
LR012 Miscellaneous Assets Column (2) Line (11)
LR012 Miscellaneous Assets Column (2) Line (12)
LR012 Miscellaneous Assets Column (2) Line (13)
LR012 Miscellaneous Assets Column (2) Line (14)
LR012 Miscellaneous Assets Column (2) Line (15)
LR012 Miscellaneous Assets Column (2) Line (16)
LR012 Miscellaneous Assets Column (2) Line (19)
LR012 Miscellaneous Assets Column (2) Line (20)

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Denotes items that must be manually entered on the filing software.

## |CALCULATION OF TAX EFFECT FOR LIFE AND FRATERNAL RISK-BASED CAPITAL (CONTINUED)

(102) Replications
(103) Reinsurance
(104) Investment Affiliates
105) Investment in Parent
(106) Other Affiliate: Property and Casualty Insurers not Subject to Risk-Based Capital
(107) Other Affiliate: Life Insurers not Subject to Risk-Based Capital
(108) Publicly Traded Insurance Affiliates
(109) Subtotal for C-1o Assets

C-0 Affiliated Common Stock
(110) Off-Balance Sheet and Other Items
(111) Off-Balance Sheet Items Reduction - Reinsurance
(112) Off-Balance Sheet Items Increase - Reinsurance
(113) Affiliated US Property - Casualty Insurers Directly Owned
(114) Affiliated US Life Insurers Directly Owned
(115) Affiliated US Health Insurers Directly and Indirectly Owned
(116) Affiliated US Property - Casualty Insurers Indirectly Owned
(117) Affiliated US Life Insurers Indirectly Owned
(118) Affiliated Alien Life Insurers - Canadian
(119) Affiliated Alien Life Insurers - All Others
(120) Subtotal for C-0 Affiliated Common Stock

Common Stock
(121) Unaffiliated Common Stock
(122) Credit for Hedging - Common Stock
(123) Stock Reduction - Reinsurance
(124) Stock Increase - Reinsurance
(125) BA Common Stock Unaffiliated
(126) BA Common Stock Affiliated - C-1cs
(127) Common Stock Concentration Factor
(128) NAIC 01 Working Capital Finance Notes
(129) NAIC 02 Working Capital Finance Notes
(130) Affiliated Preferred Stock and Common Stock Holding Company in Excess of Indirect Subs
(131) Affiliated Preferred Stock and Common Stock All Other
(132) Total for C-1cs Assets

Insurance Risk
(133) Disability Income Premium

## Source

LR013 Replication (Synthetic Asset) Transactions and Mandatory Convertible Securities Column (7) Line (9999999)
LR016 Reinsurance Column (4) Line (17)
LR042 Summary for Affiliated Investments Column (4) Line (6) LR042 Summary for Affiliated Investments Column (4) Line (10) LR042 Summary for Affiliated Investments Column (4) Line (11)

LR042 Summary for Affiliated Investments Column (4) Line (12)
LR042 Summary for Affiliated Investments Column (4) Line (14) Sum of Lines (001) through (108), Recognizing the Deduction of Lines (013), (014), (015), (036), (044), (049), (056), (061), (069), (077), (084), (089) and (100)

LR017 Off-Balance Sheet and Other Items Column (5) Line (27) LR017 Off-Balance Sheet and Other Items Column (5) Line (28) LR017 Off-Balance Sheet and Other Items Column (5) Line (29) LR042 Summary for Affiliated Investments Column (4) Line (1)

LR042 Summary for Affiliated Investments Column (4) Line (2) LR042 Summary for Affiliated Investments Column (4) Line (3)

LR042 Summary for Affiliated Investments Column (4) Line (4)
LR042 Summary for Affiliated Investments Column (4) Line (5) LR042 Summary for Affiliated Investments Column (4) Line (8) LR042 Summary for Affiliated Investments Column (4) Line (9) Lines (110)-(111) $+(112)+(113)+(114)+(115)+(116)+(117)+(118)+(119)$

LR005 Unaffiliated Preferred and Common Stock Column (5) Line (25) + LR018 Off-Balance Sheet Collateral Column (3) Line (16)
LR015 Hedged Asset Common Stock Schedule Column (10) Line (0299999) LR005 Unaffiliated Preferred and Common Stock Column (5) Line (27) LR005 Unaffiliated Preferred and Common Stock Column (5) Line (28) LR008 Other Long-Term Assets Column (5) Line (47)
LR008 Other Long-Term Assets Column (5) Line (49.2)
LR011 Common Stock Concentration Factor Column (6) Line (6)
LR008 Other Long-Term Assets Column (5) Line (51.1) LR008 Other Long-Term Assets Column (5) Line (51.2) LR042 Summary for Affiliated Investments Column (4) Line (7)

LR042 Summary for Affiliated Investments Column (4) Line (13)
Lines (121)-(122)-(123)+(124)+(125)+(126)+(127)+(128)+(129)+(130)+(131)
LR019 Health Premiums Column (2) Lines (21) through (27)
(1)

$\qquad$

Tax Factor
$\qquad$ X 0.2100
$=$


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Denotes items that must be manually entered on the filing software.

## |CALCULATION OF TAX EFFECT FOR LIFE AND FRATERNAL RISK-BASED CAPITAL (CONTINUED)

|  |  | Source | (1) <br> RBC Amount |  | Tax Factor |  | (2) <br> RBC Tax Effect |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| (134) | Long-Term Care | LR019 Health Premiums Column (2) Line (28) + LR023 Long-Term Care Column (4) Line (7) |  | X | 0.2100 | = |  |
| (135) | Life Insurance C-2 Risk | LR025 Life Insurance Column (2) Line (8) |  | X | 0.2100 | = |  |
| (136) | Group Insurance C-2 Risk | LR025 Life Insurance Column (2) Lines (20) and (21) |  | X | 0.2100 | = |  |
| (136b) | Longevity C-2 Risk | LRtbd Longevity Risk Column (2) Line (5) |  | X | 0.2100 | = |  |
| (137) | Disability and Long-Term Care Health Claim Reserves | LR024 Health Claim Reserves Column (4) Line (9) + Line (15) |  | X | 0.2100 | = |  |
| (138) | Premium Stabilization Credit | LR026 Premium Stabilization Reserves Column (2) Line (10) |  | X | 0.0000 | = |  |
| (139) | Total C-2 Risk | $\begin{aligned} & \mathrm{L}(133)+\mathrm{L}(134)+\mathrm{L}(137)+\mathrm{L}(138)+\text { Square Root of }\left[(\mathrm{L}(135)+\mathrm{L}(136))^{2}+\mathrm{L}(136 \mathrm{~b})^{2}+2\right. \\ & *(\mathrm{TBD} \text { Correlation Factor }) *(\mathrm{~L}(135)+\mathrm{L}(136)) * \mathrm{~L}(136 \mathrm{~b})] \end{aligned}$ |  |  |  |  |  |
| (140) | Interest Rate Risk | LR027 Interest Rate Risk Column (3) Line (36) |  | X | 0.2100 | = |  |
| (141) | Health Credit Risk | LR028 Health Credit Risk Column (2) Line (7) |  | X | 0.0000 | = |  |
| (142) | Market Risk | LR027 Interest Rate Risk Column (3) Line (37) |  | X | 0.2100 | = |  |
| (143) | Business Risk | LR029 Business Risk Column (2) Line (40) |  | X | 0.2100 | = |  |
| (144) | Health Administrative Expenses | LR029 Business Risk Column (2) Line (57) |  | X | 0.0000 | = |  |
| (145) | Total Tax Effect | Lines (109) + (120) + (132) + (139) + (140) + (141) + (142) + (143) + (144) |  |  |  |  |  |

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[^0]:    ${ }^{1}$ The American Academy of Actuaries is a 19,500-member professional association whose mission is to serve the public and the U.S. actuarial profession. For more than 50 years, the Academy has assisted public policymakers on all levels by providing leadership, objective expertise, and actuarial advice on risk and financial security issues. The Academy also sets qualification, practice, and professionalism standards for actuaries in the United States.

