



AMERICAN ACADEMY *of* ACTUARIES

**Group Long-Term Disability Valuation Standard
Report of the American Academy of Actuaries’
Group Long-Term Disability Work Group**

**Presented to the National Association of Insurance
Commissioners’ Health Actuarial Task Force**

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The American Academy of Actuaries is a 17,000-member professional association whose mission is to serve the public and the U.S. actuarial profession. The Academy assists 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.

Group Long-Term Disability Work Group

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A) Background and Purpose

For group long term disability (GLTD) insurers, reserves for monthly benefits payable to known ongoing disabled lives represent their most significant liability. Those reserves, usually referred to as tabular or case reserves, are typically computed on a seriatim basis using assumptions that measure the expected number of remaining monthly payments and payment amounts. The former requires claim termination assumptions. The purpose of this report is to recommend a new valuation standard basis for those termination assumptions.

In August 2009, the Society of Actuaries Group Disability Experience Committee (SOA GDEC) published a study regarding the January 1, 1997 to December 31, 2006 GLTD Termination Experience of over 20 long term disability (LTD) carriers, representing about 72 percent of the Long-Term Disability (LTD) industry. The study included over 1.2 million claims and over 680,000 terminations segmented by many key variables known by the industry as significant drivers of experience. The SOA GDEC proceeded to use the study results to build a new table: the GLTD 2008 Experience Table, published in June 2011.

The last step for the SOA GDEC was to present the new table to the Health Actuarial Task Force (HATF) of the NAIC, with the objective of starting a project that would incorporate the new table into the GLTD valuation standards. In March 2012, HATF asked the American Academy of Actuaries (Academy) to form a work group, the joint Academy/Society of Actuaries Group Long-Term Disability Work Group (GLTDWG), which was charged with revising the valuation standard to replace the Commissioner's Group Disability Table 1987 (CGDT87 Table) with a new one based on the GLTD 2008 Table.

This report describes the work group's proposal to amend the current model regulation by introducing the 2012 GLTD Table and adding a reference to a new actuarial guideline applicable to GLTD tabular reserves. The work group believes that the use of an actuarial guideline is more appropriate to handle the multiple segments of the 2012 GLTD table, the computations of own experience and the application of credibility which are not normally found in model regulations.

This report documents the processes and deliberations the GLTDWG used to arrive at its proposal. A draft of a revised model regulation is shown in Appendix 1. The report does not include any draft of the new actuarial guideline but it does describe in detail all elements of the new guideline.

B) Influences and Scope

The GLTDWG identified the following as key elements to consider in our effort to update the LTD valuation standard.

- The proposal will focus on tabular reserves;
 - other liabilities, such as incurred-but-not-reported (IBNR) reserves will not be covered
- The proposal will focus only on termination assumptions;
 - Social Security and other benefit offset assumptions that affect projected payment amounts will not be addressed
- The proposal will attempt to balance prescribed reserves vs. the full, unrestricted use of company experience as the basis;
- The GLTDWG's deliberations will consider theories and techniques applied in the development of other valuation standards; in particular, for the 2006 Group Life Waiver of Premium Valuation Table and the CGDT87 Table; and
- Though not part of the proposal, the work group believes it is appropriate to also include in its report a section discussing other aspects of reserving that could be useful to both valuation actuaries and state regulators.

With the above high level guidance, sub-teams were formed to formulate a proposal regarding:

- Review of the 2008 GLTD Experience Table, and simplification as appropriate;
- Determination of margins to be applied to the 2008 GLTD Experience Table to form the industry experience-based Valuation Table;
- Computation and usage of a carrier's own experience;
- Determination of margins applicable to a carrier's own experience;
- Credibility formulas used to define the maximum allowed use of own experience; and
- Floor reserves or other limits on minimum reserves.

C) Summary of Recommendations

A company, to meet the standard, will generally be expected to use a credibility-weighted combination of its own termination experience and the 2012 GLTD Valuation Table, to create its own company-specific Blended Table. This blending process shall be computed separately for each of four duration groupings using the formula $T \times S$, where:

1) T shall be computed as $T = [Z \times (F \times (1-M)) + (1 - Z)]$;

2) Z shall be a credibility weighting factor, between 0 and 1, as defined in Section J. Small companies may be exempt from the own experience measurement, in which case they would set Z equal to 0.00;

3) F shall be the ratio, for the period defined in Section H, of the company's actual claim termination experience to the expected claim termination experience according to the 2012 GLTD Table (by disability duration grouping);

4) M shall be the margin percentage specified in Section K, applicable to the company’s own experience according to its expected number of terminations based on its exposure applied to the 2012 GLTD Table (by disability duration grouping); and

5) S shall be the termination rates in the 2012 GLTD Table.

Floors to the above recommended calculated company-specific Blended Table require that:

- a) The company shall not use termination rates that produce total reserves less than the reserves produced by computing T as $T = [F \times (1-M)]$; and
- b) The company shall not use termination rates that produce total reserves less than the reserves produced by using $T=1.30$.

Henceforth, the value T shall be referred to as the Valuation Table Modification Factor.

This report summarizes the work group’s recommendations regarding the above topics and provides comments as to how the decisions were supported. It also presents proposed amendments to the Health Insurance Reserves Model Regulation (Appendix 1).

The remaining sections of this report address each key aspect of the work group’s work, as outlined in the table below

Aspect	Report Sections
1. Valuation table development	
a. Base Table (industry experience)	D
b. Margin development	E
c. Mortality improvement	F
2. Company specific experience	
a. Duration bands	G
b. Measurement of company's own experience	H
c. Exemption to own experience measurement	I
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3. Reserves floor	L
4. Mental & Nervous limits	M
5. Valuation Standards	N
6. NAIC adoption	O

In all sections of this document, the expression “termination” refers to disability termination related to death or recovery.

D) Valuation Table Development - Base Table

The Base Table is defined as the simplified version of the 2008 GLTD Experience Table that the work group developed to serve as the underlying experience version of the 2012 Valuation Table (i.e., the 2012 GLTD Table before margins).

The 2008 GLTD Experience Table reflects the experience from over 70 percent of the industry for the 1997-2006 period, with over 1.2 million claims studied. The data includes 2.4 million life years of exposure and 680,000 total terminations. The 2008 Experience Table is represented by the composite of several sub-tables. The sub-tables provide a greater level of granularity, and therefore increased precision, versus the experience underlying the current industry table (CGDT87). The 2008 Table separates termination assumptions for deaths and recoveries, and recognizes the impact of diagnosis, gross monthly benefit (GMB), and the definition of disability.

The 2008 GLTD Experience Table can be found at the following at:

<http://www.soa.org/Research/Experience-Study/group-disability/2008-ltd-experience-report.aspx>

This section discusses the structure of the 2008 Experience Table, certain simplifications the work group has recommended, and the rationale for those simplifications.

Summary of 2008 GLTD Experience Sub-Tables

The chart below summarizes the sub-tables in the original 2008 GLTD Experience Table Report, as well as the simplifications recommended by the work group for the 2012 Base Table. As mentioned above, there are separate sub-tables for recoveries (sub-tables containing “r” in the name) and deaths (sub-tables containing “d” in the name).

Recovery Rate Sub-Tables

2008 Experience Table	2012 Base Table
Sub-Table 1r: Basic Recoveries	No Change
Sub-Table 2r: Elimination Period	Change Name to 2r-e
Sub-Table 2r-m: Maternity	No Change
Sub-Table 3r: Gross Monthly Benefit adjustment	Remove the “Own Occ” period and duration components
Sub-Table 4r: Any Occ adjustment	Add additional columns of factors for own occupation and for unknown definition of disability
Sub-Table 5r: Any Occ and Diagnosis	Table is being removed
Sub-Table 6r: Change in Definition transition	Remove dependence on months since transition and diagnosis, and rename as Table 5r - applies in addition to adjustments 3r and 4r, rather than as replacement

Death Rate Sub-Tables

2008 Experience Table	2012 Base Table
Sub-Table 1d: Basic Death	No change
Table Sub-Table 2d: Elimination Period adjustment	No change
Table Sub-Table 3d: Diagnosis	No change

Calculations for the 2012 Base Table start with base termination rates for recoveries and deaths (sub-tables 1r and 1d) that vary by duration and diagnosis. These are then modified by subsequent sub-tables based on particular claim characteristics.

The modifications are applied sequentially and are multiplicative. For maternity claims that are less than 37 months in duration, no further recovery modifiers should be applied after table 2r-m.

Recoveries

Sub-Table 1r: Basic Table for recoveries (varies by gender, age at disability, duration, and diagnosis).

- If diagnosis is known, use one of 13 diagnosis categories, otherwise use “Unknown” category (shown as “no diagnosis” current sub-table).

Current industry Valuation Table (CGDT87) does not vary by diagnosis and combines recoveries and deaths into one termination rate.

Justification: Experience study showed that diagnosis is a significant variable in claim recovery rates. Separate recovery and death terminations allow for more precise reserves.

Sub-Tables 2r (sub-tables of modification factors 2r-e and 2r-m): Claims that are 19 months and older as measured from the end of elimination period (EP) should use 19 month factor (which is 1.0).

- Sub-Table 2r-e recognizes effect of EP (by duration) on recoveries in first three years. Maternity claims that are less than 37 months old should use table 2r-m rather than this table regardless of EP. Sub-Table 1r recoveries for maternity claims older than 37 months are the same as those with a diagnosis of “Other.” Claims with EPs of greater than 14 months should be put into the 14 month elimination period category; and
- Sub-Table 2r-m recognizes unique recovery characteristics of maternity claims less than 37 months old beyond what is already reflected in Sub-Table 1r. For such claims, no further modifications to recoveries should be applied after this table.

Justification: Experience study showed EP leads to significant variations in terminations in the early part of a claim. Additionally, maternity claims have a unique termination pattern which should be separately addressed.

Sub-Table 3r: Modifies Basic Table for effect of GMB on recoveries.

- Have one set of factors that vary by GMB; remove variations by Own Occupation (Own Occ) Period and duration;

- Smooth out factors as they progress by GMB;
- Table should not be used for maternity claims less than 37 months old; and
- Benefit amount levels were set based on 2007 dollars. GMB values in table should be indexed to date of claim incurral based on actual or public salary inflation data (e.g., Social Security data).

Justification: Experience study showed that GMB is significant variable for recoveries. Removal of Own Occ Period and duration variance within table simplifies application, while having minor impact on overall terminations. Smoothing of factors as they progress by GMB allows for more intuitive understanding of factors.

Sub-Table 4r: Modifies Basic Table for effect of definition of disability by duration.

- The experience table included a set of modifications for claims in the “Any Occupation” period. This table has been modified to include three different columns capturing the range of possible definitions of disability. These include claims in the “Own Occupation” period, (all factors = 1.0), claims in the “Any Occupation” period, and claims where the definition of disability is unknown. Claims in the exact month of the change in definition, should get the appropriate factor for “Any Occupation”; and
- Table should not be used for maternity claims less than 37 months old.

Justification: Basic Table (1r) termination assumptions assume claims are in “Own Occ Period,” but we have included the 1.0 column so that all claims will get this adjustment. These factors recognize difference in recoveries for claims in “Any Occ Period” vs. “Own Occ Period.” In certain situations, definition of disability may be unknown which requires the third set of factors for this category of claims.

Sub-Table 5r: Modifies Basic Table for claims in “Any Occ Period” only; diagnosis variation.

- Table is being removed.

Justification: Table is being removed to simplify calculation. Table 4r captures most of the impact of “Any Occ Period” definition of disability by duration.

Sub-Table 6r: Modifies basic recoveries as claim changes from “Own Occ” definition of disability to “Any Occ” definition; also referred to as Change in Definition (CID). Recognizes spike in recoveries during this transition. This table is renamed as Sub-Table 5r.

- Remove dependence on diagnosis and duration since CID;
- Have one set of factors that vary by GMB and Own Occ Period rather than nine, with the one factor being applied at the duration of CID;
 - The valuation actuary should, if appropriate, spread the effect of this factor over more than one duration, based on the company’s specific experience.
- Set factors to 1.00 where definition of disability is Own Occ for life of contract or is unknown; and

- These adjustments are applied in addition to the adjustments from Tables 3r and 4r, rather than as a replacement.

Justification: Experience study showed that CID period significantly increases recoveries for a short period. Diagnosis differences were removed for simplicity. Company-specific patterns (from claim adjudication practices) should dictate how factor is applied rather than a prescription from a Valuation Table.

Deaths

Sub-Table 1d: Basic Table for deaths (varies by gender, age at disability, duration, and diagnosis).

- Use one of 13 diagnosis categories if diagnosis is known, otherwise use “Unknown” category; and
- Current industry table (CGDT87) does not vary by diagnosis and combines recoveries and deaths into one termination rate.

Justification: 2008 Experience Study showed material variation in death rates by diagnosis (although less extreme than for recoveries). Separate recovery and death terminations allows for more precise reserves.

Sub-Table 2d: Modifies basic death rates based on EP and duration since end of EP. Claims that are 19 months and older as measured from end of EP should use 19 month factor (which is 1.0).

- Incorporates separate sets of factors for one month EP vs. all others.

Justification: Experience study showed that elimination period was a significant variable for death rates.

Sub-Table 3d: Modifies basic death rates based on GMB and presence of cancer diagnosis.

- Six sets of factors that vary by GMB; “Cancer” vs. “Non-Cancer” vs. “Unknown”; and duration;
- Benefit amount levels were set based on 2007 dollars. GMB values in 2008 Table should be indexed to date of claim incurral based on actual public salary inflation data (e.g., Social Security data); and
- Unusual pattern of factors is driven by diagnosis differences in Base Table (Table 1d).

Justification: Experience study showed that GMB and Cancer diagnosis were significant additional variables for death rates.

E) Valuation Table Development - Base Table Margin

Derived from a long study period, the 2012 Base Table reflects experience variations across a range of economic cycles. Because of the very large exposure, the Base Table can be considered as the “true mean.” However, because of the different benefit practices in the market place, it is possible that a specific carrier’s true mean may differ from the industry (Base Table) mean. Since a minimum valuation standard applies to each company’s claims, a margin is needed.

The A/E (E relative to the 2008 GLTD Experience Table) experience per carrier was used to identify a proper margin. With a 15 percent margin, 18 of the 21 carriers had A/E’s above 100 percent (i.e., 85.6 percent of carriers). A 12 percent margin would have kept 15 carriers with A/E’s above 100 percent and an additional three carriers just below that threshold. We therefore selected a Base Table margin of 15 percent.

Carrier	15% Margin	12% Margin
A	135.0%	130.4%
B	145.3%	140.3%
C	134.0%	129.4%
D	125.9%	121.6%
E	107.1%	103.4%
F	105.8%	102.2%
G	103.3%	99.8%
H	128.7%	124.3%
I	112.8%	108.9%
J	109.4%	105.7%
K	101.1%	97.6%
L	61.1%	59.0%
M	106.0%	102.4%
N	102.9%	99.4%
O	90.8%	87.7%
P	126.9%	122.5%
Q	112.7%	108.9%
R	105.1%	101.5%
S	111.5%	107.7%
T	139.2%	134.4%
U	97.6%	94.3%
Count>100	18	15
Carrier count	21	21
% of Carriers	85.7%	71.4%

F) Valuation Table Development - Mortality Improvement

The 2008 GLTD Experience Study showed mortality improvement during the study period. That, combined with a generally consistent pattern of mortality improvement

across all insurance products, led the work group to believe a 1 percent improvement in mortality per year would be appropriate. In order to maintain the relative strength in the Valuation Table, the work group elected to introduce a mortality improvement.

Recognizing possible reserve computation limitations, the work group agreed that a simple margin approach would be preferable. Consequently, it was decided to multiply the 2012 Base Table death rates by 85 percent to account for mortality improvement from the central point of the 2008 Study (around 2001) to 2016.

The 2012 Valuation Table death rates were set as the product of the Base Table times 85 percent for margin, times 85 percent for mortality improvement.

G) Company Specific Experience - Duration Bands

Accurately reflecting the experience adjustment of termination rates by duration was considered critical for valuation purposes. For example, a carrier with more successful claim management in the early durations would be expected to have actual termination rates higher than the Valuation Tables in early durations, and termination rates lower than the Valuation Table in later durations. A single adjustment factor across all durations would therefore produce inadequate reserves for claims in the later durations.

Duration is measured from the disablement date. The elected duration bands make it possible to recognize different A/E termination patterns we observed among carriers in the 2008 Study, while keeping the overall approach fairly simple. For example, differences in definition of disability often alter the pattern of termination rates. These changes usually occur at certain points – typically 12, 24, 36 or 60 months *from the end of the EP*. A large majority of the definition changes occur 24 months after the completion of the elimination period. We designed the duration bands to capture the change in disability definition effect on termination rates for a specific carrier.

The measurement of own experience, the credibility formula and the development of own experience margins will be determined separately for each of the duration bands.

The duration bands are discussed as follows:

4 to 24 Months

These durations represent the initial stage of claims management. The termination rates are usually highest at three months' duration and generally move monotonically down through 24 months (except for any intervening CID). The first three months of disability were purposely excluded as they are not typically associated with LTD products: inclusion of such claims would dominate the four to 24 month experience and may not accurately reflect the experience after three months. The work group decided that the adjustment factor applied to this duration four would also be applied to less than four months.

25 to 60 Months

These durations represent the second stage of claim management. Nearly all the CIDs occur within this duration band. The average termination rates are significantly higher around the CID duration with a significant drop in termination rates in the months following such duration. The level of claim management success in the four to 24 month duration band may have a significant impact on this duration band.

61 to 120 and 121+ Months

These durations represent the final stage of claim management and are dominated by claimants with total and permanent disabilities. Claimants surviving to these stages usually meet the most restrictive definitions of disability. These durations also have the largest portion of claimants that terminate as a result of death, especially in the later durations. Overall termination rates generally fall after the CID and then rise toward the end of the benefit period (e.g., age 65 or Social Security Normal Retirement Age (SSNRA)).

These durations were split into two bands (61 to 120 and 121+) to recognize that the first band may not reflect the experience of the second band, which might have little to no experience for some carriers.

H) Company Specific Experience - Own Experience Measurement

State Insurance Commissioners should expect carriers and their appointed actuaries to develop and maintain the appropriate experience measurements on a timely basis. It is recommended that the Appointed Actuary also review at least once every year the company's claim termination experience applicable to the DLR calculation. This review can range from a detailed experience study to a high level analysis.

The consensus of the Work Group was that Company experience analyses shall:

- (I) Be segmented into any major subgroups that the appointed actuary believes may produce significantly different results (e.g., market niches, claims operations, very unique benefit designs, etc.);
- (II) Be experience-specific to each company. It is often appropriate to combine affiliated entities or assumed reinsurance where claims management is under a common structure. On the other hand, it may be appropriate to calculate separate Actual-to-Expected (A/E) ratios where separate blocks of company business have distinct claims management or significantly different risk characteristics;
- (III) Include all relevant experience the company is capable of providing for as many of the last five years (not including the lag period described below) as is appropriate. Exclude experience that is not in the most recent five years unless the inclusion of additional years (no more than 5) results in reserves that are (a) deemed by the Appointed Actuary to be more appropriate, and (b) result in equal or higher total reserves;
- (IV) Include a suitable lag period. There is often a significant delay in correctly identifying whether a claim is truly terminated as of a specific date. Some claims may close retroactively and others initially thought to be closed may re-open

retroactively. Therefore, based on company experience, a suitable lag period is needed. The 2008 GLTD Study conservatively used a 12 month lag; however, the appointed actuary may use a lesser lag if company experience shows it is appropriate. The five-year period mentioned above does not include the lag period;

- (V) Measure A/E based on claim count. The GMB dimension of the 2012 GLTD Valuation Table is used in calculating E. Therefore it is not critical that this amount be used as a direct weight on results. Also, since we are assigning credibility based on expected counts, and not expected GMB terminations (which would be much more confusing), it makes sense for the A/E measure to also be on this basis. Hence, neither the resulting expected terminations rate, nor the actual terminations shall be weighted by gross benefit, reserve amount, etc.;
- (VI) Be updated at least once every five years. Termination assumptions must also be adjusted whenever the company's own annual experience study produces credibility weighted results that would decrease the Valuation Table Modification Factor for any of the standard duration groups, by more than 10 percent (in absolute value);
- (VII) Be used to derive A/E data to construct a valuation basis that is a credibility weighted modification of the 2012 GLTD Valuation Table. It is not to be used to construct any unique valuation table based on company experience. When appropriate, the valuation actuary may take advantage of any flexibility built into the 2012 GLTD valuation table such as (a) not utilizing diagnosis specific termination rates or (b) not utilizing the more aggressive termination rates built into assuming an "Own Occ" to "Any Occ" change in definition of disability. Such flexibility is designed in recognition that there will be some situations where the data is unknown, the actuary is not confident in the accuracy of the underlying data, and/or the actuary's own studies strongly suggest that use of the tabular extra terminations following the "Own Occ" termination date may be too aggressive for the company. There is no flexibility in using the 2012 valuation table structure of age, gender, duration, elimination period or gross benefit amount. Notwithstanding these restrictions, it should always be possible for the actuary to obtain written permission from the domiciliary commissioner to produce some unique company-specific modifications based on sound logic, credible experience and sufficient margins;
- (VIII) Those claims that close due to settlement (i.e., a lump sum replacing a series of potential future payments) or reach the end of the maximum benefit duration, or are closed due to a contractual limit, such as a Mental and Nervous limit should not be counted. Maximum benefit duration does not include those claims closed due to a change in definition of disability;
- (IX) Otherwise be relevant, in accordance with the professional judgment of the appointed actuary; and
- (X) Not be deemed inappropriate or likely to produce significantly inadequate reserves by the commissioner.

I) Company Specific Experience - Own Experience Measurement Exemption

For companies with a small claim portfolio, the measurement of own experience may be irrelevant because of lack of credibility. The work group elected to create a threshold defining when the computation of own experience measurement is optional.

The minimum claim threshold is based on open claims as of the time of the valuation, since this is easier to define and to evaluate. The recommendation is that a carrier count current open claims in two duration categories (durations less than two years and durations greater than two years). If either the first number is greater than 50, or the second number is greater than 200, then the carrier must compute an own experience measurement. We note that, based on rough industry averages, this threshold might equate to about \$8 million of claim reserves.

J) Company Specific Experience – Credibility

The work group elected to define credibility using what is called the “Limited Fluctuation Credibility” (LFC) model. For reference, see the Academy practice note on credibility: http://actuary.org/files/publications/Practice_note_on_applying_credibility_theory_july2008.pdf

This model uses two different parameters to determine the level of credibility. These are the confidence factor and the allowable error. The assumption is that the percentage variance of the observed outcomes diminishes as the number of expected observations increases. One hundred percent credibility is defined as when the number of expected observations is sufficiently large that there is an X percent probability (confidence interval) that the observed outcomes will be within plus or minus Y percent (allowable error) of the expected outcome.

The work group has selected a confidence factor of 85 percent and an allowable error of 5 percent. However, the work group also noted that one of the key assumptions underlying the LFC model is independent of the event being measured. The work group noted that LTD terminations are not completely independent events. Actuarial and statistical literature is essentially silent on how to address variables that are not independent. Therefore, the work group developed its own approach to address this. The work group’s approach included conservatism it felt was sufficient to address the potential additional variability caused by this. While the true distribution of outcomes is likely not strictly normal, and also not measured by the its study, the work group expects that the deviations from normal will more likely affect the shape of the distributions for less probable outcomes. Since the work group’s selected allowable error is fairly large, it has assumed that the normal distribution will be reasonably representative within out selected interval.

However, the work group did make a subjective adjustment to increase the expected variance of the work group’s outcomes. A purely random assumption would result in percent standard deviation equal to one divided by the square root of the expected outcomes. In reality, the work group expects greater variability than the purely random case due to the lack of independence. In any study period, the work group would expect to indirectly observe additional variance due to a number of causes such as:

1. Claims management or operational change;
2. Economic of other external factors;
3. Business portfolio changes; and
4. Other unexpected changes

The work group decided to represent this additional variance by adding Selected Variance Factors that vary for the work group's four durational groups. The Selected Variance Factor is a margin (multiplier) that is applied to the strictly random process variances to reflect that actual claims are not strictly independent variables. The Selected Variance Factors diminish as we move from low to high duration, representing that claim dynamics are more volatile in the early durations, and that in the later durations, the terminations are more dominated by deaths, which are less sensitive to external influences.

The following table shows the Selected Variance Factors, the proportion of terminations represented by deaths and the average termination rates for each duration group.

Duration Group (Months)	Selected Variance Factor	Deaths/Total Terminations	Average Termination Rate
4 to 24	4.0	14%	4.76%
25 to 60	3.0	28%	1.16%
61 to 120	2.5	56%	0.43%
> 120	2.0	73%	0.35%

The actual expected variance is equal to the strictly random process variance times the Selected Variance Factor.

The number of expected terminations needed to achieve 100 percent credibility can be found by determining the variance of the adjusted distribution, such that there is an 85 percent chance that the observed outcome would be within plus or minus 5 percent of the expected outcome. A review of the normal distribution shows that 85 percent of expected outcomes fall between plus or minus 1.44 times the standard deviation, and so 5 percent should equal 1.44 times the expected standard deviation. If N is the number of expected terminations, this value defined by the relationship:

$$5\% = 1.44 * \sqrt{K/N}$$

Full credibility is therefore achieved when the expected terminations (N) are greater than or equal to the 100 percent credibility values (M) given in the table below. (For example, for Duration Group 4 to 24 months, the Selected Variance Factor (K) equals 4, and full

credibility is reached when $5\% \geq 1.44 * \sqrt{K/N}$. This is achieved when $N \geq 3,316$.

*Approximate exposure required to general required level of expected terminations.

		100% Credibility Values		
Duration Group (Months)	Raw (M)	Selected (M)	Approx. Life Years Claims Exposure*	
4 to 24	<input type="checkbox"/> 3,316	<input type="checkbox"/> 3,300	6,000	
25 to 60	<input type="checkbox"/> 2,487	<input type="checkbox"/> 2,500	18,000	
61 to 120	<input type="checkbox"/> 2,022	<input type="checkbox"/> 2,100	40,000	
> 120	<input type="checkbox"/> 1,658	<input type="checkbox"/> 1,700	40,000	

If the number of expected terminations falls below the 100 percent credibility value, then the credibility is defined as the square root of the ratio of the expected terminations to the selected target. Hence the resulting credibility formula is defined as follows:

$$\text{Credibility} = \text{Minimum} \left(100\%, \sqrt{N/M} \right)$$

Where N is the number of *expected* terminations for the same period used in performing the own experience measurement and M is the 100 percent credibility value selected from the table above. Note that Limited Fluctuation Theory specifies that the credibility be determined from the expected terminations and not the actual terminations. For purposes of simplicity, the work group considered modifying the formula to use the actual terminations, but felt that since that approach would give increased credibility when experience was good and reduced credibility when experience was poor, that modification would produce a less conservative approach.

K) Company Specific - Own Experience Margin

The margin that should be added to each carrier's own experience before blending with the Valuation Table is based on similar assumptions we used for setting the credibility. (As in the case of the margin included in the Valuation Table, when we say we add margin according to a fixed percent, we mean that we reduce the termination expectation by that same percent.) To select the margin, we assumed that, for each carrier, the distribution of observed terminations will be normally distributed around the true expectation, with a percentage standard deviation equal to the square root of the Selected Variance Factor (*K*) and the number of expected terminations. We first set a base margin so that there would be a 95 percent probability that the true expected terminations would be greater than the adjusted observed results. To capture any additional unexpected deviations we added an additional margin (3 percent) that is independent of the number of terminations. The final margin is equal to the base margin plus the additional margin, the total of which is then capped using a lower limit of 5 percent and an upper limit of 15 percent.

The calculation works as follows: For a normal distribution, 95 percent of observations fall below 1.65 standard deviations above the mean. This means that the needed margin will be 1.65 times the square root of the Selected Variance Factor (*K*) divided by the number of expected terminations. The work group modified the formula to replace

expected with actual observed terminations (A) so that low actual terminations will produce additional margin. The resulting own experience margin formula is as follows:

$$\text{Own Experience Margin} = \text{Min} \left(15\%, \text{Max} \left(5\%, 3\% + 1.65 * \sqrt{K/A} \right) \right)$$

The following table shows sample indicated margins for the different duration groups and different numbers of actual terminations.

Own Experience Margin by Duration Group					
Duration Group	◻ <==== Actual Terminations (A) ====>				
	100	500	1,000	5,000	10,000
4 to 24 Mo	15%	12%	9%	6%	5%
25 to 60 Mo	15%	11%	8%	5%	5%
61 to 120 Mo	15%	10%	8%	5%	5%
> 120 Mo	15%	9%	7%	5%	5%

The margin is capped at 15 percent since the experience blending formula becomes problematic if the own experience margin is larger than the Valuation Table margin, as a company could have experience that is better than the 2012 GLTD Valuation Table, but be required to use an own-experience adjustment that produces higher reserves. The floor was set to 5 percent, based on the work group's judgment for prudence.

L) Floor Reserves

A company should be allowed to reflect its more favorable experience but in a manner that assures the regulator that a reasonable relationship to the Valuation Table is retained. The work group recommend a maximum termination reserve assumption of 130 percent of the Valuation Table; under this constraint a company will be allowed to reflect its favorable experience, but that use will be limited to termination rate assumptions no more than 20 percent higher than the industry.

As an example, if a company's experience is 141.3 percent of the Valuation Table and the company adds 8 percent own experience margin (per Section J above), it will use termination rates equal to 130 percent of the table. (Note that since a Base Table margin of 15 percent (Section E above) is used to define the Valuation Table and since the Base Table reflects industry experience, then 117.6 percent (1.00/0.85) of the Valuation Table reflects industry experience). The example company's experience is 20 percent (141.3 percent vs. 117.6 percent) more favorable than the industry. If its experience was even more favorable, the floor constraint would result in more margin over its own experience than what is required in Section J.

M) Mental and Nervous or Other Limitation - Related Terminations

The 2012 Valuation Table does not provide for explicit handling of terminations related to the application of contractual benefit duration limit for Mental and Nervous claims, or related to the application of similar contractual limitations for other claims categories such

as subjective disability or special conditions. Therefore, the formula prescribed in this document explicitly excludes such terminations in the computation of actual claim termination count.

In the 2008 Experience Study, on which the proposed 2012 Valuation Table is based, the submitting companies were asked to identify both the terminations due to these limits, and also the limit termination date, where applicable. When developing the recovery and death expectations, these limit terminations were explicitly excluded, along with all non-death terminations that occurred at the limit date. This study did examine the total probability that these claims would terminate at the limit date, and provided a separate table of limit termination rates that varies by age and gender.

Since there is significant variation in valuation practice within the industry on the handling of these limit terminations, it was decided not to specifically prescribe how this 2008 Experience Table should be used. Instead, the work group recommends that the resolution of claims identified as subject to a contractual limit be an item of consideration in setting non-recovery and non-death valuation assumptions, and also recommend that the 2008 Experience Study Table be contemplated as part of that consideration.

N) New Valuation Standard Application and Transition Rules

The new valuation standard will be required for claims incurred after the effective date of the new standard. Under prescribed rules, it may also be applied to prior incurrals.

Since the new standard creates company-specific valuation assumptions based on the combination of credible company experience and the 2012 Valuation Table, it was recognized that this could possibly be interpreted to mean an additional valuation basis gets created every time the company updates its termination rates. It is not the work group's intent to have each termination rate update acting as a "new valuation basis" strictly applicable to a specific cohort of claims. Instead, reserves for claims subject to the new standard will use the latest set of assumptions based on the combination of credible company experience and the 2012 Valuation Table regardless of their incurral year; i.e., the valuation basis will not be "frozen" by year of incurral. The work group's proposal provides details on how the assumption set is monitored and when it needs to be updated.

In order to avoid carrying an unnecessary number of reserving bases, the work group proposes that the valuation standard includes an option to move prior incurral years to the new standard. The table below illustrates the portion of a company's tabular reserve balance that would be subject to the new vs. current standards by projected year-ends if that were not done.

Assumptions:

- Steady-state business
- New standard takes effect on 1/1/2014
- Applies only to claims incurred on or after that date

Date	New Standard	Current Standard
12/31/2013	0%	100%
12/31/2014	11%	89%
12/31/2015	22%	78%
12/31/2016	31%	69%
12/31/2017	39%	61%
12/31/2018	45%	55%
12/31/2019	51%	49%
12/31/2020	58%	42%
12/31/2021	63%	37%
12/31/2022	69%	31%
12/31/2023	74%	26%
12/31/2024	78%	22%
12/31/2025	81%	19%

The table illustrates that the previous standard would remain in effect for many years without a specific fade-out option. Also, when the current standard (CGDT87) was introduced, companies had the option to move to the new standard for all incurral years any time after its introduction as long as:

1. All incurral years preceding the standard effective date were moved to the new standard at once; and
2. The transition to the new basis was final (no option to move back).

The work group is recommending a similar approach under which the new standard implementation and transition recommendations are:

- All reserves related to claims incurred on or after the effective date must be computed using the new standards; and
- Reserves related to claims incurred before the new standard effective date may be computed under the new standard if a carrier chooses to do so, subject to:
 - The election to move prior incurral years to the new standard can be made any time after the new standard effective date;
 - The election applies to all reserves related to claims incurred prior to the effective date; and
 - The transition to the new basis is final (no option to move back).

Appendix 1 shows the proposed revision to the current model regulation amended to introduce the new standard and the proposed transition rules.

O) NAIC Adoption

The preliminary decision of the National Association of Insurance Commissioners (NAIC) Health Actuarial (B) Task Force (HATF) is to revise the NAIC model regulation, which involves following certain NAIC processes. The Academy GLTD Work Group will help move the process forward by identifying issues and drafting documents to present to HATF when requested.

The new standard will be applied to all group LTD claims incurred on or after a date to be specified (perhaps January 1, 2014).

At a minimum, both the NAIC Health Insurance Reserve Model Regulation and the Accounting Practices & Procedures Manual Appendix A-010 will need to be updated. The basic requirements of the new valuation process would be in these documents, with the actual table maintained on a website. Sufficient detail must be provided for companies to know about the need to combine company experience with the approved table values. We recommend that calculation details including credibility rules be incorporated into a new actuarial guideline rather than the model regulation. The actuarial guideline would also point to the location of the 2012 Valuation Table. The actuarial guideline could be updated by the NAIC as appropriate, without requiring state-by-state adoption of revised regulations.

Appendix 1-Proposed Revision to Current Health Insurance Reserves Model Regulation

HEALTH INSURANCE RESERVES MODEL REGULATION

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Section 1. Introduction

A. Purpose and Scope

The purpose of this regulation is to implement [cite section of law which sets forth the NAIC Standard Valuation Law].

These standards apply to all individual and group health [accident and sickness] insurance coverages including single premium credit disability insurance. All other credit insurance is not subject to this regulation.

When an insurer determines that adequacy of its health insurance reserves requires reserves in excess of the minimum standards specified herein, such increased reserves shall be held and shall be considered the minimum reserves for that insurer.

With respect to any block of contracts, or with respect to an insurer's health business as a whole, a prospective gross premium valuation is the ultimate test of reserve adequacy as of a given valuation date. Such a gross premium valuation will take into account, for contracts in force, in a claims status, or in a continuation of benefits status on the valuation date, the present value as of the valuation date of: all expected benefits unpaid, all expected expenses unpaid, and all unearned or expected premiums, adjusted for future premium increases reasonably expected to be put into effect.

Such a gross premium valuation is to be performed whenever a significant doubt exists as to reserve adequacy with respect to any major block of contracts, or with respect to the insurer's health business as a whole. In the event inadequacy is found to exist, immediate loss recognition shall be made and the reserves restored to adequacy. Adequate reserves (inclusive of claim, premium and contract reserves, if any) shall be held with respect to all contracts, regardless of whether contract reserves are required for such contracts under these standards.

Whenever minimum reserves, as defined in these standards, exceed reserve requirements as determined by a prospective gross premium valuation, such minimum reserves remain the minimum requirement under these standards.

B. Categories of Reserves

The following sections set forth minimum standards for three categories of health insurance reserves:

- Section 2. Claim Reserves
- Section 3. Premium Reserves
- Section 4. Contract Reserves

Adequacy of an insurer's health insurance reserves is to be determined on the basis of all three categories combined. However, these standards emphasize the importance of determining appropriate reserves for each of the three categories separately.

C. Appendices

These standards contain two appendices which are an integral part of the standards, and one additional "supplementary" appendix which is not part of the standards as such, but is included for explanatory and illustrative purposes only.

Appendix A. Specific minimum standards with respect to morbidity, mortality and interest, which apply to claim reserves according to year of incurral and to contract reserves according to year of issue.

Appendix B. Glossary of Technical Terms used.

Appendix C. (Supplementary) Waiver of Premium Reserves.

Section 2. Claim Reserves

A. General

- (1) Claim reserves are required for all incurred but unpaid claims on all health insurance policies.
- (2) Appropriate claim expense reserves are required with respect to the estimated expense of settlement of all incurred but unpaid claims.
- (3) All such reserves for prior valuation years are to be tested for adequacy and reasonableness along the lines of claim runoff schedules in accordance with the statutory financial statement including consideration of any residual unpaid liability.

B. Minimum Standards for Claim Reserves

- (1) Disability Income
 - (a) Interest. The maximum interest rate for claim reserves is specified in Appendix A.
 - (b) Morbidity.

- (i) For individual disability income claims incurred on or after [January 1, 2005], the minimum standards with respect to morbidity are those specified in Appendix A except that, at the option of the insurer, assumptions regarding claim termination rates for the period less than two (2) years from the date of disablement may be based on the insurer's experience, if such experience is considered credible, or upon other assumptions designed to place a sound value on the liabilities.

- (ii) For individual disability income claims incurred prior to January 1, 2005 each insurer may elect which of the following to use as the minimum morbidity standard for claim reserves:
 - (I) The minimum morbidity standard in effect for claim reserves as of the date the claim was incurred, or

 - (II) The standards as defined in Item (i) applied to all open claims. Once an insurer elects to calculate reserves for all open claims on the standard defined in Item (i), all future valuations must be on that basis.

- (iii) For group long term disability income claims incurred on or after January 1, 2014, the minimum standards with respect to morbidity are based on the 2012 GLTD termination table or subsequent table with considerations of:
 - (I) The insurer's own experience computed in accordance with Actuarial Guidelines [XX], and
 - (II) An adjustment to include an own experience measurement margin derived in accordance with Actuarial Guidelines [XX] and,
 - (III) A credibility factor derived in accordance with Actuarial Guidelines [XX]

- (iv) For group long term disability income claim incurred on or after January 1, 2005, but before January 1, 2014, and group disability income claims incurred on or after January 1, 2005 that are not group long term disability income, the minimum standards with respect to morbidity are those specified in Appendix A except that, at the option of the insurer:

(I) Assumptions regarding claim termination rates for the period less than two (2) years from the date of disablement may be based on the insurer's experience, if the experience is considered credible, or upon other assumptions designed to place a sound value on the liabilities.

(II) Assumptions regarding claim termination rates for the period two (2) or more years but less than five (5) years from the date of disablement may, with the approval of the commissioner, be based on the insurer's experience for which the insurer maintains underwriting and claim administration control. The request for such approval of a plan of modification to the reserve basis must include:

- An analysis of the credibility of the experience;
- A description of how all of the insurer's experience is proposed to be used in setting reserves;
- A description and quantification of the margins to be included;
- A summary of the financial impact that the proposed plan of modification would have had on the insurer's last filed annual statement;
- A copy of the approval of the proposed plan of modification by the commissioner of the state of domicile; and
- Any other information deemed necessary by the commissioner.

(III) Each insurer may elect which of the following to use as the minimum morbidity standard for group long term disability income claim reserves:

- The minimum morbidity standard in effect for claim reserves as of the date the claim was incurred, or
- The standards as defined in Item (iii), applied to all open claims.

Once an insurer elects to calculate reserves for all open claims on a more recent standard then all future valuations must be on that basis.

(v) For group disability income claims incurred prior to January 1, 2005 each insurer may elect which of the following to use as the minimum morbidity standard for claim reserves:

- (I) The minimum morbidity standard in effect for claim reserves as of the date the claim was incurred, or
- (II) After January 1, 2014, the standards as defined in Item (iii), applied to all open group long term disability income claims, or
- (III) The standards as defined in Item (iv), applied to all open group disability income claims.

Once an insurer elects to calculate reserves for all open claims on a more recent standard then all future valuations must be on that basis.

Drafting Note: It is recommended that these amended standards apply to claims incurred on or after January 1, 2005, however, the state should insert the date on which these standards will apply to newly incurred claims in its jurisdiction.

Drafting Note: For experience to be considered credible for purposes of Item (ii), the company should be able to provide claim termination patterns over no more than six (6) years reflecting at least 5,000 claims terminations during the third through fifth claims durations on reasonably similar applicable policy forms.

For claim reserves to reflect “sound values” and reasonable margins, reserve tables based on credible experience should be adjusted regularly to maintain reasonable margins. Demonstrations may be required by the commissioner of the state of domicile based on published literature (e.g., Goldman, TSA XLII).

Drafting note: The 2012 GLTD Valuation Table is based on experience for claims with maximum benefit periods in excess of two years. The 2012 Table (or any single morbidity table) may not be appropriate for claims with maximum benefit periods less than or equal to two years (i.e., STD or GSTD) for the following reasons:

1. Benefit designs, definitions of disability and markets vary much more widely between companies for GSTD than for GLTD.
2. As a result, termination experience varies significantly and a single morbidity standard would not be achievable.
3. Most companies’ book of GSTD business would be fully credible.
4. Calculating tabular claim reserves for GSTD claims would not result in an appreciably more adequate claim reserving method (e.g., claim triangles) with margins.
5. It has been common industry practice to use aggregate methods as the basis for GSTD claim reserves.

(c) Duration of Disablement. For contracts with an elimination period, the duration of disablement should be measured as dating from the time that benefits would have begun to accrue had there been no elimination period.

(2) All Other Benefits

(a) Interest. The maximum interest rate for claim reserves is specified in Appendix A.

- (b) Morbidity or Other Contingency. The reserve should be based on the insurer's experience, if the experience is considered credible, or upon other assumptions designed to place a sound value on the liabilities.

C. Claim Reserve Methods Generally

A generally accepted actuarial reserving method or other reasonable method, if, after a public hearing, the method is approved by the commissioner prior to the statement date, or a combination of methods may be used to estimate all claim liabilities. The methods used for estimating liabilities generally may be aggregate methods, or various reserve items may be separately valued. Approximations based on groupings and averages may also be employed. Adequacy of the claim reserves, however, shall be determined in the aggregate.

Section 3. Premium Reserves

A. General

- (1) Except as noted in Paragraph (2), unearned premium reserves are required for all contracts with respect to the period of coverage for which premiums, other than premiums paid in advance, have been paid beyond the date of valuation.
- (2) Single premium credit disability insurance, both individual and group, is excluded from unearned premium reserve requirements of this Section 3.
- (3) If premiums due and unpaid are carried as an asset, the premiums must be treated as premiums in force, subject to unearned premium reserve determination. The value of unpaid commissions, premium taxes and the cost of collection associated with due and unpaid premiums shall be carried as an offsetting liability.
- (4) The gross premiums paid in advance for a period of coverage commencing after the next premium due date which follows the date of valuation may be appropriately discounted to the valuation date and shall be held either as a separate liability or as an addition to the unearned premium reserve which would otherwise be required as a minimum.

B. Minimum Standards for Unearned Premium Reserves

- (1) The minimum unearned premium reserve with respect to a contract is the pro rata unearned modal premium that applies to the premium period beyond the valuation date, with the premium determined on the basis of:
 - (a) The valuation net modal premium on the contract reserve basis applying to the contract; or
 - (b) The gross modal premium for the contract if no contract reserve applies.
- (2) However, in no event may the sum of the unearned premium and contract reserves for all contracts of the insurer subject to contract reserve requirements be less than the gross modal unearned premium reserve on all such contracts, as of the date of valuation. The reserve shall never be less

than the expected claims for the period beyond the valuation date represented by the unearned premium reserve, to the extent not provided for elsewhere.

Drafting Note: States should be aware that while single premium credit disability insurance is excluded from unearned premium reserve requirements, there may be requirements elsewhere in statutory accounting to test reserves against the premium refund net liability.

C. Premium Reserve Methods Generally

The insurer may employ suitable approximations and estimates; including, but not limited to groupings, averages and aggregate estimation; in computing premium reserves. Approximations or estimates should be tested periodically to determine their continuing adequacy and reliability.

Section 4. Contract Reserves

A. General

- (1) Contract reserves are required, unless otherwise specified in Section 4A(2) for:
 - (a) All individual and group contracts with which level premiums are used; or

- (b) All individual and group contracts with respect to which, due to the gross premium pricing structure at issue, the value of the future benefits at any time exceeds the value of any appropriate future valuation net premiums at that time. This evaluation may be applied on a rating block basis if the total premiums for the block were developed to support the total risk assumed and expected expenses for the block each year, and a qualified actuary certifies the premium development. The actuary should state in the certification that premiums for the rating block were developed such that each year's premium was intended to cover that year's costs without any prefunding. If the premium is also intended to recover costs for any prior years, the actuary should also disclose the reasons for and magnitude of such recovery. The values specified in this subparagraph shall be determined on the basis specified in Subsection B of this section.

Drafting Note: Language permitting a rating block test was added because a concern arose that the existing minimum reserve standards could be interpreted as requiring contract reserves on a per contract basis for products that are community rated or that use other rating methodology based on cross-subsidies among contracts within the block. If rates are determined such that each year's premium is intended to cover that year's cost, the rating block approach results in no contract reserves unless required by Subsection D. If rates are designed to prefund future years' costs, contract reserves will be required.

- (2) Contracts not requiring a contract reserve are:
 - (a) Contracts that cannot be continued after one year from issue; or
 - (b) Contracts already in force on the effective date of these standards for which no contract reserve was required under the immediately preceding standards.
- (3) The contract reserve is in addition to claim reserves and premium reserves.
- (4) The methods and procedures for contract reserves shall be consistent with those for claim reserves for a contract, or else appropriate adjustment shall be made when necessary to assure provision for the aggregate liability. The definition of the date of incurral shall be the same in both determinations.
- (5) The total contract reserve established shall incorporate provisions for moderately adverse deviations.

B. Minimum Standards for Contract Reserves

- (1) Basis
 - (a) **Morbidity or Other Contingency.** Minimum standards with respect to morbidity are those set forth in Appendix A. Valuation net premiums used under each contract shall have a structure consistent with the gross premium structure at issue of the contract as this relates to the advancing age of insured, contract duration and period for which gross premiums have been calculated. Contracts for which tabular morbidity standards are not specified in Appendix A shall be valued using tables established for reserve purposes by a qualified actuary

and acceptable to the commissioner. The morbidity tables shall contain a pattern of incurred claims cost that reflects the underlying morbidity and shall not be constructed for the primary purpose of minimizing reserves.

Drafting Note: Section 4B(1)(a) only applies to the premium structure applicable to each contract. The relationship among gross premiums for different contracts (e.g., variations by age) has no bearing on the net premium structure. If for a policy form there is no gross premium variation by age, the valuation net premiums will nonetheless vary based on age at issue for each contract since at issue the present value of valuation net premiums for a contract must equal the present value of tabular claim costs.

(i) In determining the morbidity assumptions, the actuary shall use assumptions that represent the best estimate of anticipated future experience, but shall not incorporate any expectation of future morbidity improvement. Morbidity improvement is a change, in the combined effect of claim frequency and the present value of future expected claim payments given that a claim has occurred, from the current morbidity tables or experience that will result in a reduction to reserves. It is not the intent of this provision to restrict the ability of the actuary to reflect the morbidity impact for a specific known event that has occurred and that is able to be evaluated and quantified.

Drafting Note: The last sentence is intended to provide allowances for a known event, such as a new drug release, but at the time of this writing, there are no specific examples that could be pointed to in the recent past that would have met this standard. This is intended to be an extremely rare event.

(ii) Business in force as of the effective date of Section 4B(1)(c)(iii) may be permitted to retain the original reserve basis which may not meet the provisions of Item (i) above, subject to the acceptability to the commissioner.

Drafting Note: The consistency between the gross premium structure and the valuation net premium is required only at issue, because the impact on such consistency after issue of regulatory restrictions on premium rate increases is still under study.

- (b) Interest. The maximum interest rate is specified in Appendix A.
- (c) Termination Rates. Termination rates used in the computation of reserves shall be on the basis of a mortality table as specified in Appendix A except as noted in the following items:
 - (i) Under contracts for which premium rates are not guaranteed, and where the effects of insurer underwriting are specifically used by policy duration in the valuation morbidity standard or for return of premium or other deferred cash benefits, total termination rates may be used at ages and durations where these exceed specified mortality table rates, but not in excess of the lesser of:
 - (I) Eighty percent of the total termination rate used in the calculation of the gross premiums, or
 - (II) Eight percent;

- (ii) For long-term care individual policies or group certificates issued after January 1, [1997], the contract reserve may be established on a basis of separate:
- (I) Mortality (as specified in Appendix A); and
 - (II) Terminations other than mortality, where the terminations are not to exceed:
 - For policy years one through four (4), the lesser of eighty percent (80%) of the voluntary lapse rate used in the calculation of gross premiums and eight percent (8%);
 - For policy years five (5) and later, the lesser of one hundred percent (100%) of the voluntary lapse rate used in the calculation of gross premiums and four percent (4%).
- (iii) For long-term care individual policies or group certificates issued on or after January 1, [2005], the contract reserve shall be established on the basis of:
- (I) Mortality (as specified in Appendix A); and
 - (II) Terminations other than mortality, where the terminations are not to exceed:
 - For policy year one, the lesser of eighty percent (80%) of the voluntary lapse rate used in the calculation of gross premiums and six percent (6%);
 - For policy years two (2) through four (4), the lesser of eighty percent (80%) of the voluntary lapse rate used in the calculation of gross premiums and four percent (4%); and
 - For policy years five (5) and later, the lesser of one hundred percent (100%) of the voluntary lapse rate used in the calculation of gross premiums and two percent (2%), except for group insurance as defined in [insert reference to Section 4E(1) of the NAIC Long-Term Care Insurance Model Act, i.e., employer groups] where the 2% shall be three percent (3%).

- (iv) Where a morbidity standard specified in Appendix A is on an aggregate basis, the morbidity standard may be adjusted to reflect the effect of insurer underwriting by policy duration. The adjustments must be appropriate to the underwriting and be acceptable to the commissioner.
- (2) Reserve Method.
- (a) For insurance except long-term care and return of premium or other deferred cash benefits, the minimum reserve is the reserve calculated on the two-year full preliminary term method; that is, under which the terminal reserve is zero at the first and also the second contract anniversary.
 - (b) For long-term care insurance, the minimum reserve is the reserve calculated as follows:
 - (i) For individual policies and group certificates issued on or before December 31, [1991], reserves calculated on the two-year full preliminary term method;
 - (ii) For individual policies and group certificates issued on or after January 1, [1992], reserves calculated on the one-year full preliminary term method.
 - (c) (i) For return of premium or other deferred cash benefits, the minimum reserve is the reserve calculated as follows:
 - (I) On the one year preliminary term method if the benefits are provided at any time before the twentieth anniversary;
 - (II) On the two year preliminary term method if the benefits are only provided on or after the twentieth anniversary.
 - (ii) The preliminary term method may be applied only in relation to the date of issue of a contract. Reserve adjustments introduced later, as a result of rate increases, revisions in assumptions (e.g., projected inflation rates) or for other reasons, are to be applied immediately as of the effective date of adoption of the adjusted basis.
- (3) Negative Reserves. Negative reserves on any benefit may be offset against positive reserves for other benefits in the same contract, but the total contract reserve with respect to all benefits combined may not be less than zero.

- (4) Nonforfeiture Benefits for Long-Term Care Insurance. The contract reserve on a policy basis shall not be less than the net single premium for the nonforfeiture benefits at the appropriate policy duration, where the net single premium is computed according to the above specifications.

Drafting Note: While the above consideration for nonforfeiture benefits is specific to long-term care insurance, it should not be interpreted to mean that similar consideration may not be applicable for other lines of business.

C. Alternative Valuation Methods and Assumptions Generally

Provided the contract reserve on all contracts to which an alternative method or basis is applied is not less in the aggregate than the amount determined according to the applicable standards specified above; an insurer may use any reasonable assumptions as to interest rates, termination and mortality rates, and rates of morbidity or other contingency. Also, subject to the preceding condition, the insurer may employ methods other than the methods stated above in determining a sound value of its liabilities under such contracts, including, but not limited to the following: the net level premium method; the one-year full preliminary term method; prospective valuation on the basis of actual gross premiums with reasonable allowance for future expenses; the use of approximations such as those involving age groupings, groupings of several years of issue, average amounts of indemnity, grouping of similar contract forms; the computation of the reserve for one contract benefit as a percentage of, or by other relation to, the aggregate contract reserves exclusive of the benefit or benefits so valued; and the use of a composite annual claim cost for all or any combination of the benefits included in the contracts valued.

D. Tests For Adequacy and Reasonableness of Contract Reserves

Annually, an appropriate review shall be made of the insurer's prospective contract liabilities on contracts valued by tabular reserves to determine the continuing adequacy and reasonableness of the tabular reserves giving consideration to future gross premiums. The insurer shall make appropriate increments to such tabular reserves if such tests indicate that the basis of such reserves is no longer adequate; subject, however, to the minimum standards of Section 4B.

In the event a company has a contract or a group of related similar contracts, for which future gross premiums will be restricted by contract, insurance department regulations, or for other reasons, such that the future gross premiums reduced by expenses for administration, commissions, and taxes will be insufficient to cover future claims, the company shall establish contract reserves for such shortfall in the aggregate.

Section 5. Reinsurance

Increases to, or credits against reserves carried, arising because of reinsurance assumed or reinsurance ceded, must be determined in a manner consistent with these minimum reserve standards and with all applicable provisions of the reinsurance contracts which affect the insurer's liabilities.

Section 6. Effective Date

The regulation shall be effective on [insert date].

APPENDIX A. SPECIFIC STANDARDS FOR MORBIDITY, INTEREST AND MORTALITY

I. MORBIDITY

A. Minimum morbidity standards for valuation of specified individual contract health insurance benefits are as follows:

(1) Disability Income Benefits Due to Accident or Sickness.

(a) Contract Reserves:

Contracts issued on or after January 1, 1965 and prior to January 1, [YEAR]:

The 1964 Commissioners Disability Table (64 CDT).

Contracts issued on or after January 1, [YEAR]:

The 1985 Commissioners Individual Disability Tables A (85CIDA); or

The 1985 Commissioners Individual Disability Tables B (85CIDB).

Contracts issued during [YEAR or YEARS]:

Optional use of either the 1964 Table or the 1985 Tables.

Each insurer shall elect, with respect to all individual contracts issued in any one statement year, whether it will use Tables A or Tables B as the minimum standard. The insurer may, however, elect to use the other tables with respect to any subsequent statement year.

(b) Claim Reserves:

(i) For claims incurred on or after [effective date of this amendment]:

The 1985 Commissioners Individual Disability Table A (85CIDA) with claim termination rates multiplied by the following adjustment factors:

Duration	Adjustment Factor	Adjusted Termination Rates*
Week 1	0.366	0.04831
2	0.366	0.04172
3	0.366	0.04063
4	0.366	0.04355
5	0.365	0.04088
6	0.365	0.04271
7	0.365	0.04380
8	0.365	0.04344
9	0.370	0.04292
10	0.370	0.04107
11	0.370	0.03848
12	0.370	0.03478
13	0.370	0.03034
Month 4	0.391	0.08758
5	0.371	0.07346
6	0.435	0.07531
7	0.500	0.07245
8	0.564	0.06655
9	0.613	0.05520
10	0.663	0.04705
11	0.712	0.04486
12	0.756	0.04309
13	0.800	0.04080
14	0.844	0.03882
15	0.888	0.03730
16	0.932	0.03448
17	0.976	0.03026
18	1.020	0.02856
19	1.049	0.02518
20	1.078	0.02264
21	1.107	0.02104
22	1.136	0.01932
23	1.165	0.01865
24	1.195	0.01792
Year 3	1.369	0.16839
4	1.204	0.10114
5	1.199	0.07434
6 and later	1.000	**

- * The adjusted termination rates derived from the application of the adjustment factors to the DTS Valuation Table termination rates shown in exhibits 3a, 3b, 3c, 4, and 5 (*Transactions of the Society of Actuaries* (TSA) XXXVII, pp. 457-463) is displayed. The adjustment factors for age, elimination period, class, sex, and cause displayed in exhibits 3a, 3b, 3c, and 4 should be applied to the adjusted termination rates shown in this table.

** Applicable DTS Valuation Table duration rate from exhibits 3c and 4 (TSA XXXVII, pp. 462-463).

The 85CIDA table so adjusted for the computation of claim reserves shall be known as 85CIDC (The 1985 Commissioners Individual Disability Table C).

- (ii) For claims incurred prior to [effective date of this amendment]:

Each insurer may elect which of the following to use as the minimum standard for claims incurred prior to [effective date of this amendment]:

- (I) The minimum morbidity standard in effect for contract reserves on currently issued contracts, as of the date the claim is incurred, or

- (II) The standard as defined in Item (i), applied to all open claims. Once an insurer elects to calculate reserves for all open claims on the standard defined in Item (i), all future valuations must be on that basis.

- (2) Hospital Benefits, Surgical Benefits and Maternity Benefits (Scheduled benefits or fixed time period benefits only).

- (a) Contract Reserves:

Contracts issued on or after January 1, 1955, and before January 1, 1982:

The 1956 Intercompany Hospital-Surgical Tables.

Contracts issued on or after January 1, 1982:

The 1974 Medical Expense Tables, Table A, *Transactions of the Society of Actuaries*, Volume XXX, pg. 63. Refer to the paper (in the same volume, pg. 9) to which this table is appended, including its discussions, for methods of

adjustment for benefits not directly valued in Table A:
“Development of the 1974 Medical Expense Benefits,”
Houghton and Wolf.

- (b) Claim Reserves:
No specific standard. See (6).
- (3) Cancer Expense Benefits (Scheduled benefits or fixed time period benefits only).
 - (a) Contract Reserves:
Contracts issued on or after January 1, 1986:
The 1985 NAIC Cancer Claim Cost Tables.
 - (b) Claim Reserves:
No specific standard. See (6).
- (4) Accidental Death Benefits.
 - (a) Contract Reserves:
Contracts issued on or after January 1, 1965:
The 1959 Accidental Death Benefits Table.
 - (b) Claim Reserves:
Actual amount incurred.
- (5) Single Premium Credit Disability.
 - (a) Contract Reserves:
 - (i) For contracts issued on or after [effective date of this amendment]:
 - (I) For plans having less than a thirty-day elimination period, the 1985 Commissioners Individual Disability Table A (85CIDA) with claim incidence rates increased by twelve percent (12%).
 - (II) For plans having a thirty-day and greater elimination period, the 85CIDA for a fourteen-day elimination period with the adjustment in Item (I).
 - (ii) For contracts issued prior to [effective date of this amendment], each insurer may elect either Item (I) or (II) to use as the minimum standard. Once an insurer elects to calculate reserves for all contracts on the standard defined in Item (i), all future valuations must be on that basis.

(I) The minimum morbidity standard in effect for contract reserves on currently issued contracts, as of the date the contract was issued, or

Drafting Note: If the state does not have a minimum morbidity standard in effect for contract reserves on currently issued contracts, the state shall accept the methodology approved by the commissioner in the state of domicile.

(II) The standard as defined in Item (i), applied to all contracts.

(b) Claim Reserves:

Claim reserves are to be determined as provided in Subsection 2C.

(6) Other Individual Contract Benefits.

(a) Contract Reserves:

For all other individual contract benefits, morbidity assumptions are to be determined as provided in the reserve standards.

(b) Claim Reserves:

For all benefits other than disability, claim reserves are to be determined as provided in the standards.

B. Minimum morbidity standards for valuation of specified group contract health insurance benefits are as follows:

(1) Disability Income Benefits Due to Accident or Sickness, where the Model references this Appendix; otherwise the Actuarial Guidelines [XX].

(a) Contract Reserves:

Contracts issued prior to January 1, [YEAR]:

The same basis, if any, as that employed by the insurer as of January 1, [SAME YEAR];

Contracts issued on or after January 1, [YEAR]:

The 1987 Commissioners Group Disability Income Table (87CGDT).

(b) Claim Reserves:

For claims incurred on or after January 1, [YEAR]:

The 1987 Commissioners Group Disability Income Table (87CGDT);

For claims incurred prior to January 1, [YEAR]:

Use of the 87CGDT is optional.

For claims incurred prior to January 1, [YEAR]:
Use of the 87CGDT is optional.

(2) Single Premium Credit Disability

(a) Contract Reserves:

(i) For contracts issued on or after [effective date of this amendment]:

(I) For plans having less than a thirty-day elimination period, the 1985 Commissioners Individual Disability Table A (85CIDA) with claim incidence rates increased by twelve percent (12%).

(II) For plans having a thirty-day and greater elimination period, the 85CIDA for a fourteen-day elimination period with the adjustment in item (I).

(ii) For contracts issued prior to [effective date of this amendment], each insurer may elect either Item (I) or (II) to use as the minimum standard. Once an insurer elects to calculate reserves for all contracts on the standard defined in Item (i), all future valuations must be on that basis.

(I) The minimum morbidity standard in effect for contract reserves on currently issued contracts, as of the date the contract was issued, or

(II) The standard as defined in Item (i), applied to all contracts.

(b) Claim Reserves:

Claim reserves are to be determined as provided in Subsection 2C.

(3) Other Group Contract Benefits.

(a) Contract Reserves:

For all other group contract benefits, morbidity assumptions are to be determined as provided in the reserve standards.

(b) Claim Reserves:

For all benefits other than disability, claim reserves are to be determined as provided in the standards.

II. INTEREST

- A. For contract reserves the maximum interest rate is the maximum rate permitted by law in the valuation of whole life insurance issued on the same date as the health insurance contract.
- B. For claim reserves on policies that require contract reserves, the maximum interest rate is the maximum rate permitted by law in the valuation of whole life insurance issued on the same date as the claim incurral date.
- C. For claim reserves on policies not requiring contract reserves, the maximum interest rate is the maximum rate permitted by law in the valuation of single premium immediate annuities issued on the same date as the claim incurral date, reduced by one hundred basis points.

III. MORTALITY

- A. Unless Subsection B or C applies, the mortality basis used for all policies except long-term care individual policies and group certificates and for long-term care individual policies or group certificates issued before [January 1, 1997 or the effective date set in state regulations, whichever is later] shall be according to a table (but without use of selection factors) permitted by law for the valuation of whole life insurance issued on the same date as the health insurance contract. For long-term care insurance individual policies or group certificates issued on or after [January 1, 1997 or the effective date set in state regulations, whichever is later], the mortality basis used shall be the 1983 Group Annuity Mortality Table without projection. For long-term care insurance individual policies or group certificates issued on or after the effective date of Section 4B(1)(c)(iii), the mortality basis used shall be the 1994 Group Annuity Mortality Static Table.
- B. Other mortality tables adopted by the NAIC and promulgated by the commissioner may be used in the calculation of the minimum reserves if appropriate for the type of benefits and if approved by the commissioner. The request for approval shall include the proposed mortality table and the reason that the standard specified in Subsection A is inappropriate.
- C. For single premium credit insurance using the 85CIDA table, no separate mortality shall be assumed.

APPENDIX B. GLOSSARY OF TECHNICAL TERMS USED

As used in this valuation standard, the following terms have the following meaning:

ANNUAL-CLAIM COST. The net annual cost per unit of benefit before the addition of expenses, including claim settlement expenses, and a margin for profit or contingencies. For example, the annual claim cost for a \$100 monthly disability benefit, for a maximum disability benefit period of one year, with an elimination period of one week, with respect to a male at age 35, in a certain occupation might be \$12, while the gross premium for this benefit might be \$18. The additional \$6 would cover expenses and profit or contingencies.

CLAIMS ACCRUED. That portion of claims incurred on or prior to the valuation date which result in liability of the insurer for the payment of benefits for medical services which have been rendered on or prior to the valuation date, and for the payment of benefits for days of hospitalization and days of disability which have occurred on or prior to the valuation date, which the insurer has not paid as of the valuation date, but for which it is liable, and will have to pay after the valuation date. This liability is sometimes referred to as a liability for “accrued” benefits. A claim reserve, which represents an estimate of this accrued claim liability, must be established.

CLAIMS REPORTED. When an insurer has been informed that a claim has been incurred, if the date reported is on or prior to the valuation date, the claim is considered as a reported claim for annual statement purposes.

CLAIMS UNACCRUED. That portion of claims incurred on or prior to the valuation date which result in liability of the insurer for the payment of benefits for medical services expected to be rendered after the valuation date, and for benefits expected to be payable for days of hospitalization and days of disability occurring after the valuation date. This liability is sometimes referred to as a liability for unaccrued benefits. A claim reserve, which represents an estimate of the unaccrued claim payments expected to be made (which may or may not be discounted with interest), must be established.

CLAIMS UNREPORTED. When an insurer has not been informed, on or before the valuation date, concerning a claim that has been incurred on or prior to the valuation date, the claim is considered as an unreported claim for annual statement purposes.

DATE OF DISABLEMENT. The earliest date the insured is considered as being disabled under the definition of disability in the contract, based on a doctor’s evaluation or other evidence. Normally this date will coincide with the start of any elimination period.

ELIMINATION PERIOD. A specified number of days, weeks, or months starting at the beginning of each period of loss, during which no benefits are payable.

GROSS PREMIUM. The amount of premium charged by the insurer. It includes the net premium (based on claim-cost) for the risk, together with any loading for expenses, profit or contingencies.

GROUP INSURANCE. The term group insurance includes blanket insurance and franchise insurance and any other forms of group insurance.

GROUP LONG TERM DISABILITY INCOME. The term group long-term disability income includes group contracts providing group disability income coverage with a maximum benefit duration longer than two years. Group long term disability income contracts are based on a group pricing structure. The term group long term disability does not include group short-term disability (coverage with benefit periods of two years or less in maximum duration). It also does not include voluntary group disability income coverage that is priced on an individual risk structure and generally sold in the workplace.

LEVEL PREMIUM. A premium calculated to remain unchanged throughout either the lifetime of the policy, or for some shorter projected period of years. The premium need not be guaranteed; in which case, although it is calculated to remain level, it may be changed if any of the assumptions on which it was based are revised at a later time.

Generally, the annual claim costs are expected to increase each year and the insurer, instead of charging premiums that correspondingly increase each year, charges a premium calculated to remain level for a period of years or for the lifetime of the contract. In this case the benefit portion of the premium is more than needed to provide for the cost of benefits during the earlier years of the policy and less than the actual cost in the later years. The building of a prospective contract reserve is a natural result of level premiums.

LONG-TERM CARE INSURANCE. Any insurance policy or rider advertised, marketed, offered or designed to provide coverage for not less than twelve (12) consecutive months for each covered person on an expense incurred, indemnity, prepaid or other basis; for one or more necessary or medically necessary diagnostic, preventive, therapeutic, rehabilitative, maintenance or personal care services, provided in a setting other than an acute care unit of a hospital. Such term also includes a policy or rider which provides for payment of benefits based upon cognitive impairment or the loss of functional capacity. Long-term care insurance may be issued by insurers; fraternal benefit societies; nonprofit health, hospital, and medical service corporations; prepaid health plans; health maintenance organizations or any similar organization to the extent they are otherwise authorized to issue life or health insurance. Long-term care insurance shall not include any insurance policy which is offered primarily to provide basic Medicare supplement coverage, basic hospital expense coverage, basic medical-surgical expense coverage, hospital confinement indemnity coverage, major medical expense coverage, disability income or related asset-protection coverage, accident only coverage, specified disease or specified accident coverage, or limited benefit health coverage.

MODAL PREMIUM. This refers to the premium paid on a contract based on a premium term which could be annual, semi-annual, quarterly, monthly, or weekly. Thus if the annual premium is \$100 and if, instead, monthly premiums of \$9 are paid then the modal premium is \$9.

NEGATIVE RESERVE. Normally the terminal reserve is a positive value. However, if the values of the benefits are decreasing with advancing age or duration it could be a negative value, called a negative reserve.

PRELIMINARY TERM RESERVE METHOD. Under this method of valuation the valuation net premium for each year falling within the preliminary term period is exactly sufficient to cover the expected incurred claims of that year, so that the terminal reserves will be zero at the end of the year. As of the end of the preliminary term period, a new constant valuation net premium (or stream of changing valuation premiums) becomes applicable such that the present value of all such premiums is equal to the present value of all claims expected to be incurred following the end of the preliminary term period.

PRESENT VALUE OF AMOUNTS NOT YET DUE ON CLAIMS. The reserve for “claims unaccrued” (see definition), which may be discounted at interest.

RATING BLOCK. “Rating block” means a grouping of contracts determined by the valuation actuary based on common characteristics filed with the commissioner, such as a policy form or forms having similar benefit designs.

RESERVE. The term “reserve” is used to include all items of benefit liability, whether in the nature of incurred claim liability or in the nature of contract liability relating to future periods of coverage, and whether the liability is accrued or unaccrued.

An insurer under its contracts promises benefits which result in:

- (a) Claims which have been incurred, that is, for which the insurer has become obligated to make payment, on or prior to the valuation date. On these claims, payments expected to be made after the valuation date for accrued and unaccrued benefits are liabilities of the insurer which should be provided for by establishing claim reserves; or
- (b) Claims which are expected to be incurred after the valuation date. Any present liability of the insurer for these future claims should be provided for by the establishment of contract reserves and unearned premium reserves.

TERMINAL RESERVE. This is the reserve at the end of a contract year, and is defined as the present value of benefits expected to be incurred after that contract year minus the present value of future valuation net premiums.

UNEARNED PREMIUM RESERVE. This reserve values that portion of the premium paid or due to the insurer which is applicable to the period of coverage extending beyond the valuation date. Thus if an annual premium of \$120 was paid on November 1, \$20 would be earned as of December 31 and the remaining \$100 would be unearned. The unearned premium reserve could be on a gross basis as in this example, or on a valuation net premium basis.

VALUATION NET MODAL PREMIUM. This is the modal fraction of the valuation net annual premium that corresponds to the gross modal premium in effect on any contract to which contract reserves apply. Thus if the mode of payment in effect is quarterly, the valuation net modal premium is the quarterly equivalent of the valuation net annual premium.

APPENDIX C. RESERVES FOR WAIVER OF PREMIUM

(Supplementary explanatory material)

Waiver of premium reserves involve several special considerations. First, the disability valuation tables promulgated by the NAIC are based on exposures that include contracts on premium waiver as in-force contracts. Hence, contract reserves based on these tables are NOT reserves on “active lives” but rather reserves on contracts “in force.” This is true for the 1964 CDT and for both the “1985 CIDA and CIDB tables.

Accordingly, tabular reserves using any of these tables should value reserves on the following basis:

Claim reserves should include reserves for premiums expected to be waived, valuing as a minimum the valuation net premium being waived.

Premium reserves should include contracts on premium waiver as in-force contracts, valuing as a minimum the unearned modal valuation net premium being waived.

Contract reserves should include recognition of the waiver of premium benefit in addition to other contract benefits provided for, valuing as a minimum the valuation net premium to be waived.

If an insurer is, instead, valuing reserves on what is truly an active life table, or if a specific valuation table is not being used but the insurer’s gross premiums are calculated on a basis that includes in the projected exposure only those contracts for which premiums are being paid, then it may not be necessary to provide specifically for waiver of premium reserves. Any insurer using such

a true “active life” basis should carefully consider, however, whether or not additional liability should be recognized on account of premiums waived during periods of disability or during claim continuation.

Chronological Summary of Action (all references are to the Proceedings of the NAIC).

1989 Proc. I 9, 23-25, 651-658, 705 (adopted new model).
1989 Proc. II 13, 23-24, 467, 875 (adopted technical amendment).
1991 Proc. II 25, 58, 719, 1257-1264 (amended and reprinted).
1993 Proc. I 8, 136, 820, 1460-1462 (amended).
1993 Proc. 1st Quarter 3, 34, 266, 438-446 (amended and reprinted).
1996 Proc. 2nd Quarter 10, 30, 732, 960, 961-964 (amended).
1997 Proc. 4th Quarter 1175-1188 (model adopted later is printed here).
1998 Proc. 1st Quarter 15, 17, 770, 1000, 1056-1057 (amended).
2000 Proc. 2nd Quarter 21, 22, 163-164, 166-168, 1098, 1112 (amended).
2001 Proc. 2nd Quarter 12, 14, 112-113, 991, 1130, 1132-1137 (amended).
2003 Proc. 3rd Quarter 217, 1006, 1013, (amended, adopted by parent committee).
2003 Proc. 4th Quarter 16 (Adopted by Plenary).
2003 Proc. 4th Quarter 390, 2059, 2065, 2116-2121 (amended, further amendments adopted by parent committee).
2004 Proc. 1st Quarter Vol. I 53 (adopted by Plenary).

The following has been superseded by the model above:

Reserve Standards for Individual Health Insurance Policies

1941 Proc. 160-162 (adopted).
1957 Proc. I 75, 77, 78-85, 107 (amended).
1959 Proc. I 90 (reaffirmed).
1965 Proc. I 71, 73-86, 88 (adopted 1964 Commissioners Disability Table).
1981 Proc. II 27, 35, 558, 561, 778, 781, 823-826 (amended).
1985 Proc. II 11, 23, 564, 567-569, 609-612 (cancer tables added).
1986 Proc. I 601-605 (Contains amendments adopted in June 1985 but omitted from that Proceedings).
1986 Proc. I 9, 23, 547, 557-558, 666 (Appendix A amended).

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Appendix 2-Additional Background Information

Purpose:

The work group believes it might be useful to valuation actuaries and regulators if it provided its observations on a couple of issues related to LTD reserving that were not within the scope of the work group's assignment. The first issue is LTD benefit offsets and why they were excluded from the scope. The second issue is an explanation of the importance of retrospective claim reserve adequacy testing.

Benefit Offsets:

Group LTD serves covers potential lost income if a person is physically or mentally incapacitated so that he or she is unable to work. One key to keeping LTD affordable is benefit offsets. The contract is designed as an umbrella coverage that coordinates with other sources of disability income to ensure that you will be paid a certain total amount of income. These other sources may pay using different definitions of disability and eligibility. To calculate the LTD benefits at any one time, the amounts received from these other resources, are subtracted from the total insured, i.e., "offset." Offsets are greater than the benefit in total benefit; there is often a stated minimum Group DI benefit. Offsets lower the price of the product by lowering the net amount paid.

Any single claim may have no offsets, partial offset, or even a 100 percent offset (subject to any minimum benefit being available). The value of offsets for LTD averages between 30 percent and 40 percent of the amounts insured. Since there are often significant delays in the awarding of offsets, it is often necessary for the valuation actuary to estimate the available offsets and the frequencies with which they are awarded to the claimants.

Potential offsets include, but are not limited to, Social Security, Workers' Compensation, State Teachers Retirement System, Public Employees Retirement System, Railroad Retirement, other Group disability coverages, state STD plans, salary continuance or fully paid sick leave plans, disability income from automobile accidents, and income received from rehabilitative work or part-time employment. Several of these are not common and therefore may only be introduced in the DLR calculation when they are received or specifically anticipated on a given claim. However, the first four are frequent and may be anticipated in the reserve calculation before actual receipt.

For example, Social Security award probabilities will vary materially based on company-specific claim administration practice. Offset frequencies and amounts will vary significantly for each underlying State Treasurers or Public Employee group insured. Workers' Compensation award rates will vary significantly between employer groups, especially across states. Our work group and similar prior industry groups have reached the conclusion that it is not practical to develop standardized valuation assumptions regarding offsets.

Retrospective Claim Reserve Adequacy Studies:

Although standardized assumptions for offsets are not available, there is a standard test for measuring the adequacy of aggregate reserves held as of prior points in time. A retrospective claim reserve adequacy study tests the overall adequacy of the combination of all the morbidity assumptions used in reserving, including those for offsets. (Any interest margins or inadequacies would be addressed through cash flow testing.)

The general method is to recalculate the DLR for claims open as of a prior date (the valuation date), using all of the current assumptions for termination rates and offsets. Then, the past claim payments subsequent to the valuation date up to present are identified. Each payment is discounted back to the past valuation date at the valuation rate of interest. Next, the DLR as of study end date for claims that remain active is calculated with the same assumptions; this is also discounted back to the valuation date. If the sum of discounted claim payments and discounted current DLR is less than the recalculated DLR as of the valuation date, then the past DLR was adequate (hopefully, there will be an excess reflecting margins in the reserve morbidity assumptions).

The reserve adequacy study is often designed to test how margins emerge over different claim durations. This may be done by breaking up a multiple year study into yearly stages. In a test of December 31, 2008 DLR as of December 31, 2012, the test could first be run as of December 31, 2009, then as of December 31, 2010 and then as of December 31, 2011. Similarly, the analysis is often broken down by incurral year within the observation year; this allows evaluation of adequacy at the later claim durations.

Hopefully, the margins in the December 31, 2008 reserves will continue to emerge each year. However there are acceptable situations where that may not always happen. For instance, when analysis is broken into sub-groups, credibility decreases and one or two large claims can have a disproportionate impact. Generally, overall patterns of inadequacy should tip off the actuary to the need for potential assumptions changes. However, any inadequacies should be examined and explained to the actuary's satisfaction.