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CIRCULAR LETTER NO. 1688

To All Members and Subscribers of the Bureau:

INSURANCE CHARGE REFLECTING LOSS LIMITATION (ICRLL)
ELIMINATION OF EXCESS LOSS ADJUSTMENT AMOUNTS (ELAA's)
ELIMINATION OF RETROSPECTIVE RATING PLAN OPTIONS I, II, III, AND IV

The Division of Insurance has approved the above Item, developed by the NCCI, and adopted by our Committees, to become effective 12:01 A.M., October 1, 1994, on new and renewal policies only.

As explained in the attached Filing Memorandum, this Item is intended to more equitably price retrospective rating when an insured selects a limitation on ratable losses. The charge for this selection partly overlaps the insurance charge in the Basic Premium. The prior procedure to compensate for the overlap employed the Excess Loss Adjustment Amounts (ELLA) tables. The new procedure eliminates the need for ELAA's and therefore, the ELAA tables are eliminated, concurrently.

This Item provides a means by which the overlap between the charge for individual loss limitation and the insurance charge is reflected in the insurance charge. The excess loss factor will be used without further adjustment.

Exhibit 1 compares the current and proposed formulas used to calculate the insurance charge and the basic premium factor. At the heart of the new procedure is a new set of equations to solve for the net insurance charge, so the expected retro premium is equal to standard premium less premium discount. A summary of the Insurance Charge Reflecting Loss Limitation (ICRLL) procedure is provided in Exhibit 2.

This Item also eliminates the Retrospective Rating Plan Options I, II, III, and IV (Tabular Plans) which would be nearly impossible to calculate using the new procedure.

Manual pages reflecting these changes will be distributed in due course.

NORMAN R. FONTAINE
Vice President of Industry Affairs

NRF/pw/741
Enclosures

INSURANCE CHARGE REFLECTING LOSS LIMITATION (ICRLL)

FILING MEMORANDUM

Purpose:

This item is intended to more equitably price retrospective rating when there are differences in expected loss severity of individual insureds selecting the plan due to optional selection of individual occurrence limitation on ratable losses.

Background:

The proposed adjustment pertains to differences in severity distributions that result when individual loss limitations are selected in the retrospective rating agreement. Differences in severity affect the insured's loss distribution. The charge for this selection partly overlaps the insurance charge in the Basic Premium.

The overlap between insurance charge and excess loss premium factor was observed by Glenn G. Meyers in his paper, "An Analysis of Retrospective Rating," PCAS 1980. This subject was discussed more recently in great detail by Ira Robbin in "Overlap Revisited: The 'Insurance Charge Reflecting Loss Limitation' Procedure," CAS Discussion Paper Program, 1990. This overlap could unnecessarily reduce the attractiveness of the option to limit individual losses in the plan.

In 1983, NCCI and several independent bureaus, including the Massachusetts Bureau, filed a revision to the Retrospective Rating Plan to approximate the overlap through the introduction of Excess Loss Adjustment Amounts (ELAA's).

ELAA's are displayed in the Retrospective Rating Plan Manual in tables indexed by loss limit, maximum entry ratio and expected loss amounts. While an improvement over the prior lack of a procedure, ELAA's do not vary by state, hazard group or minimum entry ratio, which limits their accuracy.

The ELAA procedure adjusts the excess loss factor for overlap, while continuing to compute the insurance charge as if there were no loss limit. This filing proposes that the correction for overlap should not change the loss limitation charge. Instead, the insurance charge should be reduced.

In addition to the proposed introduction of a reduced insurance charge to reflect loss limitations, this item impacts the rating options available under the Retrospective Rating Plan. The tabular options I, II, III and IV were introduced in 1943 as rating plans A, B, C and J. They provided a very simplistic and non-flexible pricing scheme, in that, the plan parameters (basis premium factor, minimum premium factor, maximum premium factor and loss conversion factor) were pre-set and applied based on standard premium size. Current usage of these outdated tabular options is minimal, and this filing proposes their elimination.

Plan D (later renamed Rating Option V) was introduced in 1951 and provided insureds more flexibility by allowing the plan parameters to be negotiated with the insurance company, based on an individual risk's characteristics and/or preferences. Over time, the popularity of the tabular options waned as Option V became the preferred pricing mechanism for larger, more sophisticated insureds.

Proposal:

This filing provides a means by which the overlap between the charge for individual loss limitation and the insurance charge is reflected in the insurance charge. The excess loss factor will be used without further adjustment. Exhibit 1 compares the current and proposed formulas used to calculate the insurance charge and the basic premium factor.

At the heart of the new procedure is a new set of equations to solve for the net insurance charge, so that the expected retro premium is equal to standard premium less premium discount. This requires the simultaneous solution of two equations. When there is a loss limit, the value difference and ratio difference equations are adjusted by a substitution of expected limited losses for expected total losses in the denominator. In other words, the equations are modified to reflect the fact that if individual actual losses are limited, then expected actual losses need to be reduced to be consistent.

Currently, there is only one Table M reflecting no limitations of individual claims. When a per claim limitation applies, an optimal algorithm would involve solving the balance equations using a different Table M for each loss limitation. However, a more practical approach is to use a column for Table M that approximates the column for a "limited loss" table of insurance charges.

This is done by multiplying an adjustment factor times the expected losses and using the size group which corresponds to this product. It should be observed that the selection of a loss limit reduces the expected losses in the charge formula, but the adjustment for purposes of selecting an insurance charge curve is to use a larger Expected Loss Size Range.

This adjustment factor is: $(1 + 0.8 \times LER)/(1 - LER)$ where LER is the ratio of excess loss factor to the expected loss ratio. This formula, including the 0.8 coefficient, is calculated to provide the best shift of Table M columns to approximate a Limited Loss Table M. In addition, it provides a smooth transition from the current procedure.

An example of this calculation is shown in Exhibit 1 and a summary of the ICRLL procedure is provided in Exhibit 2.

Along with the above innovation, this filing proposes to eliminate Tabular Rating Options I-IV. The new retrospective procedure would be almost impossible to tabularize because of the extremely large number of possible combinations of selections. The tabular plans were designed for times when personal computers were not common nor available, and the use of Option V was less convenient compared to a table look-up. With today's proliferation of personal computers, the tabular plans have become outdated. This new procedure also eliminates the need for ELAA's, and therefore our proposal includes the elimination of the ELAA tables.

INSURANCE CHARGE REFLECTING LOSS LIMITATIONS (ICRLL)

Sample Calculation

Standard Premium	500,000
Loss Limit	100,000
Expected Loss Ratio (ELR)	0.755
Excess Loss Factor (ELF)	0.231
Loss Elimination Ratio (LER): (ELF/ELR)	0.306
Adjustment Factor: (1 + 0.8 x LER) / (1 - LER)	1.794

	Current Program[1]	**Program Effective 10/1/94**
Formula Expected Loss	377,500	377,500 x 1.794 = 677,235
Expected Loss Group	33	29
Insurance Charge at Entry Ratio = 1.00	.330	.290

[1]Currently the ELF would have an ELAA subtracted from it. This will not be the case under the new program.

SUMMARY OF ICRLL PROCEDURE FOR INCORPORATION OF LOSS LIMITATIONS INTO RETROSPECTIVE RATING PRICING

The insurance charge is calculated net of overlap, and unlike the prior procedure, no adjustment is made to the excess loss premium. (ELAA's will no longer be used.)

All entry ratios and insurance charge values are considered relative to expected limited losses, rather than expected unlimited losses.

"Losses" Used for Loss Group Selection

LUGS = E[L] x m(S/H) m(k)

Where:

LUGS	=	"Losses" Used for Loss Group Selection
E[L]	=	Expected (Unlimited) Losses
m(S/H)	=	State/Hazard Group Severity Multiplier[1]
m(k)	=	ICRLL Multiplier for Reflecting Loss Limit k
m(k)	=	$(1 + \alpha \times LER) / (1 - LER)$

Where:

α	=	Constant = 0.8
LER	=	Loss Elimination Ratio = ELF/ELR = Excess Loss Factor/Expected Loss Ratio

Charge Difference Equation:

$$\kappa_H - \kappa_G = \frac{e + ELR - \frac{H}{TM}}{(LCF)\ (ELLR)}$$

[1]The State/Hazard Group severity adjustment has yet to be approved in Massachusetts. Until it is, the multiplier will be unity, i.e., no adjustment will be made for State or Hazard Group in Massachusetts.

Entry Ratio Difference Equation:

$$r_G - r_H = \frac{G - H}{(TM)\ (LCF)\ (ELLR)}$$

I = Insurance Charge = $(\varkappa_G - S_H) \times ELLR$

Basic Premium Factor = e - (LCF - 1) x ELR + I x LCF

Where:

G	=	Maximum Premium Factor
H	=	Minimum Premium Factor
e	=	Expense Factor
ELR	=	Expected Unlimited Loss Ratio
ELF	=	Excess Loss Factor
ELLR	=	ELR - ELF = Expected Limited Loss Ratio
TM	=	Tax Multiplier
LCF	=	Loss Conversion Factor
r_G	=	Maximum Entry Ratio
r_H	=	Minimum Entry Ratio
$\varkappa_G$	=	Insurance Charge for Maximum Entry Ratio r_G
$\varkappa_H$	=	Insurance Charge for Minimum Entry Ratio r_H
S_H	=	$\varkappa_H + r_H - 1$ = Insurance Savings for Minimum Entry Ratio r_H