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HOW ADEQUATE ARE LOSS AND LOSS EXPENSE LIABILITIES?

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This question is continuously asked and it is difficult to answer without making an in-depth study of the company's financial statistics. Yet the quest for a simple yardstick goes on. In this paper I will tackle this formidable and perhaps impossible task.

There have been four approaches thus far, namely:

1. Roger Kenney, Insurance Editor of "U. S. Investor," relates reported loss and loss expense liabilities as of the latest date to the latest calendar year premiums written and premiums earned by major line, but cautions the reader not to draw rash conclusions as to adequacy of reserves solely by reason of the absolute values of these ratios.

2. Schedule P—Part 4 sets forth data for each Schedule P line by accident year which allows the viewer to evaluate loss and loss expense liability levels, as of the latest date (the last diagonal of the date), by comparing the ratios of these liabilities to the respective calendar year premiums earned with updated ratios of prior years at the same stage of development.

3. The present Test 3 in the NAIC Property and Liability Solidity Tests approximates the adequacy of liabilities for each Schedule P line by the excess of reported loss liabilities, as of the latest date, over stipulated percentages of the latest calendar year losses paid plus the excess of reported loss expense liabilities, as of the latest date, over stipulated percentages of the reported loss liabilities for that line.

4. The present Test 4 in the NAIC Tests (a combination of 1 and 2 above) approximates the adequacy of reported loss and loss expense liabilities as of the latest date, by the excess of the ratio of these liabilities to the latest calendar year earned premiums, for all lines combined, over the arithmetic average of similar ratios for the two preceding years, after all of the prior liabilities involved have been adjusted for developments to date.

A BETTER YARDSTICK

The disadvantages and limitations of the above yardsticks are obvious. This paper introduces another yardstick which, though fallible, will, hopefully, be an improvement over those presently in use.

To begin, if one knew, or could predict, the ultimate loss and loss expense ratio, then the calculation of the proper loss and loss expense liability would be simple because one is generated from the other: Incurred equals paid plus ending liabilities less beginning liabilities.

However, if one does not know and cares not to predict a loss and loss expense ratio, then it is necessary to construct a yardstick for ending liabilities that is responsive to the components affecting it.

One can easily accept calendar year premiums earned as an appropriate exposure base for measuring loss and loss expenses incurred. But when ending liabilities are the summation of new and old loss and loss expenses not yet paid, two additional factors become relevant: beginning liabilities and payments during the accounting period. As a result, rather than using premiums earned alone, a better yardstick for measuring liability levels, as of any accounting date, would be the following modification of premiums earned:

$$\text{Liabilities}_{12/31/n-1} + \text{Premiums Earned}_{n} - \text{Losses Paid}_{n}$$

In Exhibit I, loss and loss expense liabilities have been ratioed to this new formula base for thirteen companies (groups). Such ratios include liabilities adjusted for subsequent developments so that prior history will be more meaningful. Because loss expense liabilities were included, and because all financial data was extracted from filed annual statements, the starting point for the analysis became 12/31/68; for it was in 1969 that Schedule P changed, and, among other things, the new Schedule P added a test of loss expense liabilities for the first time. As a result, the data in

Exhibit I includes loss and loss expense liabilities for Schedule P coverages adjusted for developments through 12/31/71, and loss liabilities for Schedule O coverages adjusted up to two years.

Ratios of adjusted liabilities to premiums earned are also calculated in the exhibit for comparison purposes. Note that the range of ratios computed on the new formula base is much narrower than the range of ratios computed on a premiums earned base.

Calendar Year	Range of Ratios of Adjusted Loss & Loss Expense Liabilities	
	To Premiums Earned	To Formula Base
1969	49.6%—128.8%	67.9%—91.2%
1970	45.0%—130.6%	61.1%—85.4%
1971	43.6%—127.9%	59.3%—83.1%

This shrinkage in the range of ratios, plus the fact that the new yardstick will produce ratios which will almost never exceed 100%, will, in and of itself, invite greater acceptance and believability. Likewise, unusual circumstances which involve significant changes in growth or payment of losses will be accommodated more satisfactorily. For these reasons, the new yardstick should be a "better-seller" in addition to being more theoretically sound.

As is true of the other yardsticks, the absolute values of the new ratios cannot be used to rank companies by degree of adequacy. Even though this yardstick should prove to be more effective than the others, because it is more responsive to unusual situations, the new ratios will still vary by company for reasons other than adequacy alone. These reasons are twofold: the unequal influence of premiums earned in the formula base, and the unequal loss potential therein. So to establish a yardstick which answers the question in the title of this paper, further refinement is necessary. Although no simple refinement will disclose the unwavering underlying truth, the margin of error can be significantly reduced by reviewing the past history of the company itself.

Limited history of this kind is set forth in Exhibit I, and two observations can be made:

1. On the new formula base, the 1971 ratios were lower than either of the two prior updated ratios for the same company (group) in

eight out of the thirteen cases, four were within the two-year range, and one exceeded both prior ratios. This fact may, or may not, have significance. The results are based upon only two years of history and we must remember, too, that 1971 was an unusually good year.

2. On the premiums earned base, 1971 ratios were lower than the three prior updated ratios for the same company (group) in five out of thirteen cases, one was within the range, and seven were in excess of all three prior ratios. This situation also may, or may not, have significance, but it comes about with one more year of history. The number of ratios falling above and below the range of prior ratios is, however, noteworthy.

No definite conclusion can be drawn from the results in Exhibit I at this time, but when more history becomes available and further developments occur, a better assessment of the new yardstick can be made. In the meantime I recommend that the new yardstick be introduced into the 1972 NAIC Solidity Tests so that the necessary history can be accumulated. As of 12/31/72, three years of updated history will be available. Though this history is limited, it may prove to be sufficiently representative because the three years include both a good and a poor underwriting year in the industry. In the 12/31/72 test, reported liabilities could be deemed acceptable if the ratio of such liabilities to the new formula base fell within the range of updated ratios in the company's past three-year history. And more specifically, the NAIC Solidity Tests would "accept" 12/31/72 liabilities as reported if the 1972 ratio equalled or exceeded any of the three prior ratios. This accomplishment, backed up by some additional surplus protection, should suffice as a minimum cursory review of loss and loss expense liabilities, the major item of concern in the balance sheet.

On an ultimate basis, I recommend that five years of updated history be used. An illustration of such an analysis is set forth in Exhibit II with data from my own company. In this exhibit, loss and loss expense liabilities for Schedule P coverages have been adjusted for developments through 12/31/71 as if the 1971 Schedule P format and scope had been in existence in prior years, and loss liabilities for Schedule O coverages have been adjusted for developments up to two years. (The difference in data between Exhibits I and II is due entirely to the new testing basis vs. prior methods.) Thus, using the same type of preliminary screening, the 12/31/71 liabilities would be considered neither inadequate nor excessively redundant if the

1971 ratio fell within the prior five-year range of updated ratios, or for Sentry, a ratio between 71.9% and 78.3%, which it does. And for the NAIC Solidity Tests, the 12/31/71 liabilities would be deemed acceptable if the 1971 ratio equalled or exceeded 71.9%, which it does.

Purpose of the Yardstick

A simple yardstick for evaluating the level of loss and loss expense liabilities, as currently reported, is needed by the supervisory authorities to administer their responsibilities regarding the solvency of insurance companies and the early detection of potential insolvencies. Because the yardstick must necessarily be quantified from reported financial data and then reduced to a simple translation, such a yardstick can only produce rough justice in a very difficult and complicated area. This limitation must be recognized and accepted if the primary purpose of the yardstick is to be fulfilled. Hopefully then, any yardstick would err on the conservative side. The yardstick described in this paper has been constructed with this purpose in mind.

Criticism and a Future Possibility

The criticism in the use of any simple yardstick is in its fallibility and the resulting harm that may be done in its misuse. For that reason, we should take a long, hard look at any quantification and its limitations.

All of the yardsticks introduced to date have encountered no difficulty in identifying the numerator; the problem has been in the composition of the denominator. This is, of course, because, as dictated by its purpose, each yardstick has been balance sheet oriented. Although this emphasis, in and of itself, is not to be criticized, it is very likely that this orientation has misled the user into the belief that an evaluation of the liability can stand completely on its own. You will recall, at the beginning of this paper, the statement was made: "If one knew, or could predict, the ultimate loss and loss expense ratio, then the calculation of the proper loss and loss expense liability would be simple because one is generated by the other." In other words, one cannot evaluate the level of loss and loss expense liabilities without also dictating a resulting loss and loss expense ratio.

It is interesting to note that all of the yardsticks skirted this relationship, but borrowed considerably from it. The components in the true loss and loss expense ratio

$$\frac{\text{Losses Paid}_n - \text{Adjusted Liabilities}_{12/31/n-1} + \text{Adjusted Liabilities}_{12/31/n}}{\text{Premiums Earned}_n}$$

have been used, as follows, in the various yardsticks:

1. $\text{Adjusted Liabilities}_{12/31/n} \div \text{Premiums Earned}_n$
2. $\text{Liabilities}_{12/31/n} \div \text{Losses Paid}_n$
3. And in the yardstick proposed in this paper:

$$\frac{\text{Adjusted Liabilities}_{12/31/n}}{\text{Adjusted Liabilities}_{12/31/n-1} + \text{Premiums Earned}_n - \text{Losses Paid}_n}$$

It is because liabilities continue to be evaluated independently of the loss and loss expense ratio in the new yardstick that it, too, is fallible. The following explains the two areas involved:

1. If the quantity ($\text{Losses Paid}_n - \text{Adjusted Liabilities}_{12/31/n-1}$) is added to the numerator and denominator, the resulting ratio is the adjusted loss and loss expense ratio for the year(n). Because the addition of an equal amount to both the numerator and denominator of a fraction does not produce a ratio which is arithmetically equivalent, the new yardstick suffers; for when the rate of loss settlement increases, the ratio goes down, or vice versa. (Though a failing, the degree of error is less in this yardstick than the others.)
2. The second area of fallibility is in the inability of the yardstick to compensate for the substantive influence that a lower, or higher, loss and loss expense ratio produces. All else being equal, the lower this ratio, the lower the ratio of liabilities to either the formula reserve base or to premiums earned will be.

From the foregoing, it is relatively clear that a more suitable yardstick would be one that judged the credibility of the adjusted loss and loss expense ratio for the latest year. The recognition that this ratio is the real intangible in any evaluation is most important; for only this understanding will generate the tolerance necessary in the use of simple yardsticks.

When the 1972 statements are filed, adjusted loss and loss expense ratios will be available for three prior years. Three years may not be sufficient, but, in 1974, five years of updated prior history will be available.

At that time, 12/31/74 loss and loss expense liabilities could be evaluated by reviewing the "credentials" of the 1974 adjusted loss and loss expense ratio. Though this approach may have to be subsequently abandoned when experience dictates otherwise, the adjusted loss and loss expense ratio for the latest year should be deemed sufficiently reliable if it falls within the arithmetic average (for the past five years) $\pm$ 2 σ. Likewise, liabilities reported as of the latest date, which satisfy these loss and loss expense ratio parameters, would also be acceptable in any preliminary screening process.

In the case of Sentry, from Exhibit II, the range of liabilities thus generated for 12/31/71 would be $173,617,000 (derived from a loss and loss expense ratio average of 72.98%-5.90%), and $192,814,000 (72.98% + 5.90%). If reported liabilities exceeded the $173,617,000 floor, such liabilities should be deemed adequate in the preliminary review. The surplus requirement for protection against possible optimism in the derivation of reported liabilities or, potential adverse deviations on business in force, would simply be the amount that the liabilities at the high end of the range (in this illustration, $192,814,000) exceeded the sum of reported liabilities and excess statutory Schedule P reserves, if any. This difference for Sentry as of 12/31/71, amounts to $13,485,000 ($192,814,000 less $177,660,000 less $1,669,000), or 22.9% of the 12/31/71 reported surplus. So long as this percentage is less than 100%, sufficient surplus protection for the underwriting operation could be assumed to exist.

This approach, though requiring more extensive calculations, is not too complicated. It eliminates many arithmetic pitfalls and provides a wide range of acceptability. But offsetting this greater latitude and tolerance in reported data is the rather stiff provision for surplus protection, which is what solvency is all about.

The problem of quantifying the total surplus needed in the parent company from unconsolidated financial reports is intentionally omitted from this discussion. This problem, though related, should be discussed separately because it is germane to all methods of evaluation. This paper limits itself to the concepts which need to be defined and explored first.

In summary, this paper proposes a new yardstick for implementation in 12/31/72 evaluations. Also, the paper proposes another approach for use beginning with 12/31/74 evaluations, both methods to be used for "fast-track" evaluations only.

From the conclusions in this paper, a much greater appreciation emerges for the use of statutory loss and loss expense reserves in Schedule

P, Parts 1 and 2. This discussion certainly endorses that concept with three major modifications: (1) liabilities for all lines combined are used in the evaluation, (2) the acceptability level for liabilities is individually calculated for each company, and (3) the minimum reserve concept is combined with a quantified amount of surplus back-up. With the third modification, the new approach could serve not only as a basis for computing minimum reserve levels by company, but also as a yardstick for the surplus safety margin needed to support the underwriting operation. This latter quantification would be a great improvement over the arbitrary percentage of a year's premium volume, which is the standard currently in use.

Exhibit I
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Analysis of Loss and Loss Expense Liability Levels by Company/Group
Liabilities Adjusted for Developments Reported Through 12/31/71

Item	Calendar Year 1968	1969	1970	1971
		Allstate (Group)		
1. Premiums Earned	$1,145,122,103	$1,338,512,756	$1,550,934,266	$1,856,659,863
2. Loss and Loss Expense Paid	—	919,519,399	1,067,384,671	1,222,690,031
3. Adjusted Loss and Loss Expense O/S	760,285,211	894,504,598	977,239,875	1,072,055,715
4. Formula Reserve Base	—	1,179,278,568	1,378,054,193	1,611,209,707
5. % Adjusted O/S to PE: (3) ÷ (1)	66.4%	66.8%	63.0%	57.7%
6. % Adjusted O/S to FRB: (3) ÷ (4)	—	75.9	70.9	66.5
7. Adjusted L. & L. E. Incurred	—	$1,053,738,786	$1,150,119,948	$1,317,505,871
8. Adjusted L. & L. E. Ratio: (7) ÷ (1)	—	78.7%	74.2%	71.0%
		American Mutual (Group)		
1. Premiums Earned	$189,726,768	$201,376,766	$218,315,430	$233,275,926
2. Loss and Loss Expense Paid	—	146,890,494	159,238,756	163,517,887
3. Adjusted Loss and Loss Expense O/S	200,474,013	206,076,850	203,049,973	193,731,205
4. Formula Reserve Base	—	254,960,285	265,153,524	272,808,012
5. % Adjusted O/S to PE: (3) ÷ (1)	105.7%	102.3%	93.0%	83.0%
6. % Adjusted O/S to FRB: (3) ÷ (4)	—	80.8	76.6	71.0
7. Adjusted L. & L. E. Incurred	—	$152,493,331	$156,211,879	$154,199,119
8. Adjusted L. & L. E. Ratio: (7) ÷ (1)	—	75.7%	71.6%	66.1%
		Dairyland Ins. (Co.)		
1. Premiums Earned	$46,119,964	$59,781,811	$72,647,301	$90,760,950
2. Loss and Loss Expense Paid	—	45,256,913	47,911,802	49,116,749
3. Adjusted Loss and Loss Expense O/S	28,636,596	33,091,930	35,334,837	46,328,307
4. Formula Reserve Base	—	43,161,494	57,827,429	76,979,038
5. % Adjusted O/S to PE: (3) ÷ (1)	62.1%	55.4%	48.6%	51.0%
6. % Adjusted O/S to FRB: (3) ÷ (4)	—	76.7	61.1	60.2
7. Adjusted L. & L. E. Incurred	—	$49,712,247	$50,154,709	$60,110,219
8. Adjusted L. & L. E. Ratio: (7) ÷ (1)	—	83.2%	69.0%	66.2%

Exhibit I
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Analysis of Loss and Loss Expense Liability Levels by Company/Group
Liabilities Adjusted for Developments Reported Through 12/31/71

Item	Calendar Year 1968	1969	1970	1971
		Employers Mutual (Group)		
1. Premiums Earned	$328,964,551	$379,438,388	$431,496,327	$460,561,072
2. Loss and Loss Expense Paid	—	235,048,244	272,364,690	285,952,768
3. Adjusted Loss and Loss Expense O/S	389,753,731	455,691,726	505,000,297	557,702,338
4. Formula Reserve Base	—	534,143,875	614,823,363	679,608,601
5. % Adjusted O/S to PE: (3) ÷ (1)	118.5%	120.1%	117.0%	121.1%
6. % Adjusted O/S to FRB: (3) ÷ (4)	—	85.3	82.1	82.1
7. Adjusted L. & L. E. Incurred	—	$300,986,239	$321,673,261	$338,654,809
8. Adjusted L. & L. E. Ratio: (7) ÷ (1)	—	79.3%	74.6%	73.5%
		Federated Mutual (Co.)		
1. Premiums Earned	$44,808,365	$49,001,259	$52,896,588	$56,534,269
2. Loss and Loss Expense Paid	—	32,802,532	34,193,581	35,219,515
3. Adjusted Loss and Loss Expense O/S	23,840,666	27,189,030	31,213,862	37,069,179
4. Formula Reserve Base	—	40,039,393	45,892,037	52,528,616
5. % Adjusted O/S to PE: (3) ÷ (1)	53.2%	55.5%	59.0%	65.6%
6. % Adjusted O/S to FRB: (3) ÷ (4)	—	67.9	68.0	70.6
7. Adjusted L. & L. E. Incurred	—	$36,150,896	$38,218,413	$41,074,832
8. Adjusted L. & L. E. Ratio: (7) ÷ (1)	—	73.8%	72.3%	72.7%
		INA (Co.)		
1. Premiums Earned	$697,861,857	$764,288,926	$851,666,880	$ 897,730,106
2. Loss and Loss Expense Paid	—	464,060,767	587,449,496	587,878,513
3. Adjusted Loss and Loss Expense O/S	635,553,345	709,633,786	695,348,494	684,499,218
4. Formula Reserve Base	—	935,781,504	973,851,170	1,005,200,087
5. % Adjusted O/S to PE: (3) ÷ (1)	91.1%	92.8%	81.6%	76.2%
6. % Adjusted O/S to FRB: (3) ÷ (4)	—	75.8	71.4	68.1
7. Adjusted L. & L. E. Incurred	—	$538,141,208	$573,164,204	$ 577,029,237
8. Adjusted L. & L. E. Ratio: (7) ÷ (1)	—	70.4%	67.3%	64.3%

Analysis of Loss and Loss Expense Liability Levels by Company/Group
Liabilities Adjusted for Developments Reported Through 12/31/71

Item	Calendar Year 1968	1969	1970	1971
		Liberty (Group)		
1. Premiums Earned	$753,355,852	$ 860,333,794	$ 973,231,567	$ 970,014,612
2. Loss and Loss Expense Paid	—	592,256,622	659,975,558	640,452,612
3. Adjusted Loss and Loss Expense O/S	882,415,976	1,048,837,129	1,163,783,535	1,240,858,314
4. Formula Reserve Basc	—	1,150,493,148	1,362,093,138	1,493,345,535
5. % Adjusted O/S to PE: (3) ÷ (1)	117.1%	121.9%	119.6%	127.9%
6. % Adjusted O/S to FRB: (3) ÷ (4)	—	91.2	85.4	83.1
7. Adjusted L. & L. E. Incurred	—	$ 758,677,775	$ 774,921,964	$ 717,527,391
8. Adjusted L. & L. E. Ratio: (7) ÷ (1)	—	88.2%	79.6%	74.0%
		Michigan Mutual Liability (Co.)		
1. Premiums Earned	$68,258,663	$ 73,060,067	$ 73,414,175	$ 77,168,524
2. Loss and Loss Expense Paid	—	48,968,333	49,424,232	52,531,447
3. Adjusted Loss and Loss Expense O/S	90,552,550	94,100,843	95,914,279	97,327,599
4. Formula Reserve Base	—	114,644,284	118,090,786	120,551,356
5. % Adjusted O/S to PE: (3) ÷ (1)	132.7%	128.8%	130.6%	126.1%
6. % Adjusted O/S to FRB: (3) ÷ (4)	—	82.1	81.2	80.7
7. Adjusted L. & L. E. Incurred	—	$ 52,516,626	$ 51,237,668	$53,944,767
8. Adjusted L. & L. E. Ratio: (7) ÷ (1)	—	71.9%	69.8%	69.9%
		Nationwide (Group)		
1. Premiums Earned	$410,502,354	$476,626,663	$543,979,511	$588,438,046
2. Loss and Loss Expense Paid	—	325,387,866	348,763,416	343,840,505
3. Adjusted Loss and Loss Expense O/S	245,054,142	277,785,398	305,455,332	366,477,133
4. Formula Reserve Base	—	396,292,939	473,001,493	550,052,873
5. % Adjusted O/S to PE: (3) ÷ (1)	59.7%	58.3%	56.2%	62.3%
6. % Adjusted O/S to FRB: (3) ÷ (4)	—	70.1	64.6	66.6
7. Adjusted L. & L. E. Incurred	—	$358,119,122	$376,433,350	$404,862,306
8. Adjusted L. & L. E. Ratio: (7) ÷ (1)	—	75.1%	69.2%	68.8%

Exhibit I
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Analysis of Loss and Loss Expense Liability Levels by Company/Group
Liabilities Adjusted for Developments Reported Through 12/31/71

Item	Calendar Year 1968	1969	1970	1971
		St. Paul F & M (Co.)		
1. Premiums Earned	$293,705,900	$339,788,753	$395,287,279	$450,788,769
2. Loss and Loss Expense Paid	—	195,719,878	213,261,249	220,260,615
3. Adjusted Loss and Loss Expense O/S	200,969,023	237,255,963	271,612,945	318,173,721
4. Formula Reserve Base	—	345,037,898	419,281,993	502,141,099
5. % Adjusted O/S to PE: (3) ÷ (1)	68.4%	69.8%	68.7%	70.6%
6. % Adjusted O/S to FRB: (3) ÷ (4)	—	68.8	64.8	63.4
7. Adjusted L. & L. E. Incurred	—	$232,006,818	$247,618,231	$266,821,391
8. Adjusted L. & L. E. Ratio: (7) ÷ (1)	—	68.3%	62.6%	59.2%
		Sentry (Co.)		
1. Premiums Earned	$164,507,568	$182,824,772	$165,343,466	$162,692,755
2. Loss and Loss Expense Paid	—	117,269,007	108,404,089	101,564,479
3. Adjusted Loss and Loss Expense O/S	136,837,334	158,219,282	166,046,689	177,660,196
4. Formula Reserve Base	—	202,393,099	215,158,659	227,174,965
5. % Adjusted O/S to PE: (3) ÷ (1)	83.2%	86.5%	100.4%	109.2%
6. % Adjusted O/S to FRB: (3) ÷ (4)	—	78.2	77.2	78.2
7. Adjusted L. & L. E. Incurred	—	$138,650,955	$116,231,496	$113,177,986
8. Adjusted L. & L. E. Ratio: (7) ÷ (1)	—	75.8%	70.3%	69.6%
		State Farm (Group)		
1. Premiums Earned	$1,384,431,163	$1,634,769,821	$1,876,660,629	$2,143,487,278
2. Loss and Loss Expense Paid	—	1,237,087,125	1,364,645,201	1,412,010,682
3. Adjusted Loss and Loss Expense O/S	687,903,811	810,704,908	843,887,583	934,663,419
4. Formula Reserve Base	—	1,085,586,507	1,322,720,336	1,575,364,179
5. % Adjusted O/S to PE: (3) ÷ (1)	49.7%	49.6%	45.0%	43.6%
6. % Adjusted O/S to FRB: (3) ÷ (4)	—	74.7	63.8	59.3
7. Adjusted L. & L. E. Incurred	—	$1,359,888,222	$1,397,827,876	$1,502,786,518
8. Adjusted L. & L. E. Ratio: (7) ÷ (1)	—	83.2%	74.5%	70.1%

Analysis of Loss and Loss Expense Liability Levels by Company/Group
Liabilities Adjusted for Developments Reported Through 12/31/71

Item	Calendar Year 1968	1969	1970	1971
		Travelers (Group)		
1. Premiums Earned	$1,182,593,918	$1,176,824,971	$1,227,408,010	$1,408,016,727
2. Loss and Loss Expense Paid	—	812,302,325	813,253,826	744,510,298
3. Adjusted Loss and Loss Expense O/S	984,591,500	1,030,922,045	1,010,157,646	1,243,445,750
4. Formula Reserve Base	—	1,349,114,146	1,445,076,229	1,673,664,075
5. % Adjusted O/S to PE: (3) ÷ (1)	83.3%	87.6%	82.3%	88.3%
6. % Adjusted O/S to FRB: (3) ÷ (4)	—	76.4	69.9	74.3
7. Adjusted L. & L. E. Incurred	—	$ 858,632,870	$ 792,489,427	$ 977,798,402
8. Adjusted L. & L. E. Ratio: (7) ÷ (1)	—	73.0%	64.6%	69.5%

Source: Filed Annual Statements

Definitions

1. Adjusted Loss and Loss Expense O/S includes Schedule P loss and loss expense liabilities adjusted for developments through 12/31/71, and Schedule O loss liabilities adjusted for developments (net as to salvage) through two years, or 12/31/71, whichever date is earlier. For the current year, adjusted O/S is the same as the loss and loss expense O/S reported.
2. Formula Reserve Base is the quantity: adjusted loss and loss expense O/S at the beginning of the period, plus premiums earned for the calendar year, less loss and loss expense paid in the calendar year.
3. Adjusted L. & L. E. Incurred is the calendar year incurred volume of loss and loss expense using adjusted loss and loss expense O/S at the beginning and end of each calendar year in the calculation thereof.

Exhibit II

Analysis of Loss and Loss Expense Liability Levels by Company/Group
Liabilities Adjusted for Developments Through 12/31/71
(had the 1971 Annual Statement been used during this entire period)

Item	Calendar Year 1965	1966	1967	1968	1969	1970	1971
1. Premiums Earned	—	$140,956,960	$151,505,888	$164,507,568	$182,824,772	$165,343,466	$162,692,755
2. Loss and Loss Expense Paid	—	88,111,660	97,753,331	109,722,099	117,269,007	108,404,089	101,564,479
3. Adjusted Loss and Loss Expense O/S	$98,762,903	109,081,179	120,370,620	135,906,422	157,836,921	166,664,844	177,660,196
4. Formula Reserve Base	—	151,608,203	162,833,736	175,156,089	201,462,187	214,776,298	227,793,120
5. % Adjusted O/S to PE (3) ÷ (1)	—	77.4%	79.4%	82.6%	86.3%	100.8%	109.2%
6. % Adjusted O/S to FRB: (3) ÷ (4)	—	71.9	73.9	77.6	78.3	77.6	78.0
7. Adjusted L. & L. E. Incurred	—	$ 98,429,936	$109,042,772	$125,257,901	$139,199,506	$117,232,012	$112,559,831
8. Adjusted L. & L. E. Ratio: (7) ÷ (1)	—	69.8%	72.0%	76.1%	76.1%	70.9%	69.2%

Arithmetic average = 72.98%
σ = 2.95%

Source: Filed Annual Statements and company records

Definitions:

1. Adjusted Loss and Loss Expense O/S includes Schedule P (including PD) loss and loss expense liabilities adjusted for developments through 12/31/71 and Schedule O loss liabilities adjusted for developments (net as to salvage through two years, or 12/31/71, whichever date is earlier. For the current year, adjusted O/S is the same as the loss and loss expense O/S reported.
2. Formula Reserve Base is the quantity: adjusted loss and loss expense O/S at the beginning of the period, plus premiums earned for the calendar year, less loss and loss expense paid in the calendar year.
3. Adjusted L. & L. E. Incurred is the calendar year incurred volume of loss and loss expense using adjusted loss and loss expense O/S at the beginning and end of each calendar year in the calculation thereof.