6D/8C Estimating a Reinsurer's Liabilities for Asbestos and Environmental Exposures

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<u>Estimating a Reinsurer's Liabilities</u>
<u>For Asbestos and Environmental Losses</u>
<u>By Jim Haidu</u>

Abstract

The process presented provides an approach to estimate a reinsurer's potential liabilities for asbestos and environmental losses. It can also be used for any other latent losses which cannot be accurately portrayed by history due to uncertainty surrounding coverage, size of loss and trigger issues.

It is designed for reinsurers, as opposed to direct writers, who by the nature of the loss reporting process are dependent on the claim information received from their ceding companies. The dependency is reduced through the establishment of claim level Exposure Reserves. It would also be effective for excess and surplus lines carriers who participate on the higher layers of coverage and are dependent on the insured to communicate the relevant facts of the claims.

The process uses report year loss development triangles along with scenarios of future reportings to estimate the ultimate losses for treaty excess of loss and facultative. A relationship between the development of losses for treaty prorata and treaty excess is used to determined the ultimate losses for treaty prorata.

The Reinsurance Claim Process

For treaty excess of loss and facultative reinsurance, a reinsurer relies on the ceding company to report the claim, provide an estimate of the cost (case reserve), and provide the details upon which the cost estimate is based. Under normal loss situations, this process creates a lag in the loss development patterns of the reinsurer which can generally be handled using standard actuarial techniques for projecting ultimate loss estimates. A normal loss is one for which historical experience exists concerning coverage, size of loss, and trigger.

In situations where there is uncertainty as to whether coverage exists, a ceding company may choose to not report the claim to its reinsurer. Even if the claim is reported, there may be further uncertainty surrounding the size of the claim which limits the ability of the ceding company to provide an estimate of the cost. There may also be issues surrounding trigger of coverage, i.e. which policy should respond. If the overall magnitude of the type of loss is large, such as with asbestos and environmental, there can be further reluctance

on the ceding company's part due to affordability issues or the potential impact on the pricing of treaty renewals.

The issues of coverage, size of loss and trigger of coverage make it difficult for a primary or direct excess carrier to estimate its ultimate liabilities. In addition to these difficulties, a reinsurer, as described above, is further inhibited by its reliance on the ceding company. The process described here is designed to help alleviate the barrier this reliance creates.

The process starts with treaty excess of loss and facultative since individual claim details are available. For treaty prorata, the same reliance on the ceding company exists. With treaty prorata, however, individual claim details are generally not available since losses are reported on a bordereau basis. This necessitates different projection techniques.

Components of Ultimate Losses

There are five components of the ultimate loss for a reinsurer. Three need to be developed to an ultimate value. One is taken as is. The fifth needs to be monitored and may require an additional estimate. They will be addressed one at a time. The components are as follows:

> ### For Treaty Excess of Loss and Facultative
>
> 1. The ultimate value of the reported claims
> 2. Pure IBNR
>
> ### For Treaty Prorata
>
> 3. Reported claims (taken as is)
> 4. Broad Definition of IBNR
>
> ### For Treaties and Facultative Certificates where expenses are in addition to limits
>
> 5. Additional expense considerations (monitor)

The Starting Point - A Database

The process begins with the creation of a database[1] which will be used to collect the required information for treaty excess of loss and facultative. It can be created using a

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[1] For more information on the structure and content of databases see Amy Bouska and Thomas McIntyre, "Measurement of US Pollution Liabilities" in the Summer 1994 CAS Forum.

personal computer or a mainframe computer. Given the evolving use and ability of personal computers and software, the personal computer is probably a better choice. The database needs to have transaction level details so the needed report year loss development triangles can be created.

The database should be designed to collect the characteristics of the type of loss which are needed to help the claim handler properly evaluate the cost of each claim. Many of the needed characteristics will not be available on existing data sources. Consideration should also be given to the categories needed to estimate the ultimate cost of the claims in aggregate.

The most important characteristic needed is the underlying layers of insurance. The attachment point is essential in order to properly evaluate the exposure when the total value of the claim is determined and spread to the years involved.

Another important data element of the database is the Exposure Reserve. The Exposure Reserve allows the claim handlers to establish claim level reserves above and beyond what the ceding company has reported. It should be based upon the circumstances of each claim including a realistic probability of coverage and size of loss. It also needs to reflect an assumption regarding trigger of coverage. If trigger of coverage is uncertain, multiple Exposure Reserves could be established to reflect each possibility. The Exposure Reserve should also reflect the reinsurer's position regarding the coverage and allocation of declaratory judgement (DJ) expenses.

The purpose of the Exposure Reserve is to reduce the reliance on the ceding company's reported case reserve. After a certain amount of time has passed and the accuracy (or consistent inaccuracy) of the Exposure Reserves has been established, the time lag in getting accurate case level reserves will be dramatically reduced. This will dramatically improve the projections of the total ultimate cost.

The Exposure Reserve is not called IBNR since it will be established on each individual claim. The use of the term additional case reserve (ACR) is also avoided since this term is commonly used in the reinsurance arena and implies that the amount will immediately hit the income statement. The Exposure Reserve does not hit the income statement until the reinsurer decides that it should. Early in the process, the confidence needed to establish the recognition criteria of FAS 5 ("Accounting for Contingencies") will not be met. Specifically, recognition is required when it has been determined that (1) a loss is probable, and (2) its amount is estimable.

Another question involves how expenses (both true ALAE and DJ) are handled. Are they included in the reinsurance limit or are they prorata in addition to limits? The answer to this question is important in the establishment of accurate claim level reserves since the impact of expenses can be significant.

The cost of this database can be high and for certain latent losses may not be justified. It may be too late in the game to establish the database for asbestos (Maybe not if the minor defendants continue to grow!) but it is certainly not too late for environmental. The projection techniques presented in the remainder of this paper can be utilized with losses as reported by the ceding companies. The only missing element will be the Exposure Reserve, while a big element, does not totally eliminate the usefulness of the method.

Ultimate Value of the Reported Claims for Treaty Excess of Loss and Facultative

The database described above is the source of the data to project the ultimate value of the claims already reported for treaty excess and facultative using a chain ladder methodology. These projections will also lay the foundation for the estimates of the pure IBNR and to a lesser extent the estimates of the broad definition of IBNR for treaty prorata.

The problem trigger of coverage presents in using actuarial techniques involving accident year or underwriting year loss development triangles is circumvented through the use of report year triangles. The problem arises due to the fact that asbestos and environmental loss emergence is unrelated to the maturity of the accident or underwriting year. These problems are well documented in actuarial literature and will not be repeated here.[2]

Report year loss development triangles are created for losses as reported by the ceding company and for losses including the Exposure Reserves set by the claim handlers. The Cedent Reported losses consist of paid losses and case reserves. The losses including the Exposure Reserves are denoted as Cedent Reported Including Exposure Reserves. The two definitions of loss create the following advantages:

1. The Cedent Reported Including Exposure Reserves definition will dramatically reduce the time needed to establish accurate reserves for the reported claims. This will produce a corresponding reduction in the length and magnitude of the report year loss development pattern which makes the pattern easier to predict.
2. The Cedent Reported Including Exposure Reserves definition can provide guidance on an appropriate tail factor for the Cedent Reported definition.
3. Increased confidence when the two definitions converge to similar answers.
4. A range of possibilities.

There will probably be an improving trend in the loss development patterns which could also be used to establish a range by selecting one loss development pattern which gives full credence to the trend and one which does not. This improving trend is the result of:

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[2] For a description of the appropriateness of report year triangles for asbestos and environmental losses see Sholom Feldblum, "Reserving for Toxic Tort Liabilities", Casualty Loss Reserve Seminar, September 19-20, 1994.

1. The more severe claims will be reported in the earlier report years and will initially tend to be under reserved due to uncertainties surrounding coverage, size of loss, and trigger.
2. Settlement of the coverage and trigger issues through judicial decisions or general agreement in the insurance community will improve the accuracy of initial cost estimates for the more recent report years.
3. Increased levels of manpower assigned to handle the claims and increased experience levels of the claim analysts.

For asbestos, the major defendants should be analyzed separately from the minor defendants. The development patterns are different. The major defendants are the large manufacturers and users of asbestos. The claim department can provide a list. The claim reporting patterns and the Ultimate Percent of Exposure will also be different which will impact the pure IBNR as described below. The Ultimate Percent of Exposure will be higher for the major defendants.

For environmental, the losses could be analyzed by layer or capped at $5 or $10 million. The losses in the upper layers should be limited in number. Capping the losses should smooth the loss development patterns. A separate provision will need to be made for the excluded losses.

Large asbestos settlements will produce similar distortions in the loss development triangles which can be smoothed or excluded and provided for separately.

For both asbestos and environmental, the ceding companies could be separated into those that establish case reserves and those that don't. The claim department can help establish the groupings.

As the process matures, report year triangles can be used to test the adequacy of the Exposure Reserves on closed claims. This will be very important in the development of confidence in the process. It will also be important in helping to determine the need for additional expense considerations on contracts where expenses are in addition to limits.

Pure IBNR for Treaty Excess of Loss and Facultative

The pure IBNR component for a reinsurer is generally a larger portion of the ultimate losses than for a primary carrier. For asbestos and environmental there will be the normal higher pure IBNR component which results from the reinsurer's reliance on the ceding company to report the claim and participation on the higher layers of coverage. There will also be an increased need for asbestos and environmental due to the impact of coverage, size of loss, trigger, and affordability issues (discussed above) on the reporting practices of the ceding companies.

The starting point for determining the pure IBNR is the ultimate loss estimates determined for the existing report years. These ultimate values are related to the aggregate reinsurance policy limits of the claims in each respective report year to derive the Ultimate Percent of Exposure (see Exhibit 1). Pure IBNR is then determined by projecting the policy limits and the Ultimate Percent of Exposure for future report years (see Exhibit 2).

The trends in both the policy limits and the Ultimate Percent of Exposure by report year need to be analyzed. Assumptions about future report years can then be formulated either through informed judgement or a regression analysis.

Keep in mind that the universe of claims is closed due to the absolute pollution exclusion and the fact that the use of asbestos has been greatly restricted. There may also be absolute asbestos exclusions. This implies that eventually the policy limits for new report years have to start decreasing at some point and eventually decay to zero. The hypothetical example in Exhibit 1 contains policy limits with an underlying decay rate of 5% except for the 1993 and 1995 years. The increase in the 1993 year may be attributable to stock companies as a result of SAB 92 reporting requirements. The increase in 1995 could be from non-stock companies and may be attributed to Annual Statement Note 24 reporting requirements.

Also keep in mind that the more severe claims will be in the earlier report years since they will come to the forefront first. This is counter-intuitive to normal claims where the smaller, more quickly settled claims are reported first. It implies that the Ultimate Percent of Exposure by report year will also eventually start to decline, although it will probably not reach zero. For asbestos, other products will erode the amount of coverage available which further suggests a decreasing trend. A decreasing trend can be seen in Exhibit 1 of the hypothetical example by comparing the Ultimate Percent of Exposure for the first 5, last 5, and last 3 years.

The procedures used by the claim department for opening claim files needs to be examined. It is not necessarily important that every policy year be opened up front. It is also not necessary that a separate claim file be opened up front for each dump site. Sometimes there is just not enough information. There does, however, have to be consistency in determining how many claim files are initially set up and when the additional files are opened at later dates. The original report year should be assigned to the claims for additional policy years (and sites if they are truly an expansion of the original claim) when they are opened. This will cause the report year policy limits to develop upward. The policy limits in Exhibit 1 are from an analysis of a policy limits report year development triangle.

As described above, external influences such as SAB 92 and Note 24 may impact the trends in claim reporting. Consideration should also be given to the fact that as the major asbestos defendants are running out of insurance, lawyers are focusing on the minor defendants. This suggests a slow down in newly reported claims for the major asbestos

defendants and perhaps an acceleration for the minor defendants. It may also suggest the number of future report years should be greater for the minor defendants. In addition, other external influences, as well as the amount of manpower assigned to the claim handling process, will change over time and have an impact on the rate of claims reporting.

The use of discounting for the time value of money will also influence how many future report years need to be included, if or when discounting becomes acceptable for these types of claims. When the number of new claims is growing smaller year by year and the severity of these claims is decreasing, the discounted value of the remote report years will have very little impact on the overall answer.

There will be a great deal of judgment involved in selecting the level of new claim reports, how long they will continue, and the Ultimate Percent of Exposure. Multiple scenarios need to be formulated so a reasonable range can be selected.

Turning back to the hypothetical example. Given the data in Exhibit 1, the low scenario for the policy limits of future report years might ignore the upward blips in 1993 and 1995 since they are attributable to one time events. The assumption would then be that the 5% downward trend would continue for say 15 years (see Exhibit 2a). The high scenario for policy limits might consider these upward blips to be less attributable to SAB 92 and Note 24 than would like to be believed. The assumption might then be to start the 1996 report year at the last 3 years average of $44,198 and then decrease by 5% for say 25 years. Remember, the goal is to establish a reasonable range of the possibilities.

In analyzing the Ultimate Percent of Exposures in Exhibit 1, there is a noticeable drop in the last two years. The low scenario might start with the two year average and decrease with future report years. Exhibit 2a contains two year blocks which decrease by 2 percentage points. The high scenario might start with the 3 year average and decrease by 1 percentage point every year as in Exhibit 2b. Again, remember to run multiple scenarios and select those which establish a reasonable range.

When selecting the final range, more weight might be given to the ultimate values from the Cedent Reported Including Exposure Reserve loss definition if the accuracy of this definition has been established. This definition contains a larger portion of the ultimate values which is based upon the characteristics of the individual claims as opposed to a statistical projection. As mentioned earlier, the length and magnitude of the report year loss development pattern for this definition will be dramatically reduced compared with the Cedent Reported definition.

The tail factor used for the Cedent Reported loss definition may also add uncertainty to the ultimate values from this definition of loss which further suggests more weight should be given to the ultimate values from the definition including Exposure Reserves. In

Exhibit 1, the tail factor for the Cedent Reported definition was selected based upon the ultimate values from the Cedent Reported Including Exposure Reserve definition for the 1985 and prior report years. This tail factor may be too heavy for the more recent report years as the Ultimate Percent of Exposure starting with the 1992 year is consistently higher for this definition. In addition to being consistently higher, the amount by which it is higher is growing. This may be the result of ceding companies reporting more accurate initial reserves as the coverage and trigger issues are established.

Broad Definition IBNR for Treaty Prorata

Treaty prorata is reported on a bordereau basis. The database process will, therefore, not add value since the details of the individual claims are not available. This necessitates the estimation of a broad definition IBNR. The separate reporting of asbestos and environmental losses has been well established in the industry, so at least calendar year data is available. It is important that the claim department be involved with questioning what is included in the loss reports to ensure agreement with the ceding companies' positions on coverage and trigger.

One technique which is always mentioned when calendar year data is available is curve fitting.[3] A curve can be fit or assumptions concerning how many future years losses will be reported and at what rate they will be reported can be formulated. This method provides one estimate and can also be used to substantiate other estimates developed.

Another technique is to relate the treaty prorata IBNR requirements to the IBNR for treaty excess given the following considerations:

1. For asbestos, since treaty prorata is generally lower in the layers of coverage and product aggregates are involved, losses for the major defendants have already pushed through the prorata covers. The treaty prorata IBNR requirements are therefore probably less than the treaty excess requirements. This assumption may not hold if exposure to a large portion of minor defendants exists or if the coverage of asbestos is successfully moved into the non-products arena.
2. For environmental, again since treaty prorata is usually lower in the layers of coverage and since product aggregates are not involved (the cover can be hit multiple times), the IBNR requirements are probably higher than the treaty excess requirements. Also, treaty prorata generally covers expenses (versus excess of loss which generally requires loss indemnification before expenses are covered) which further contributes to the higher requirement. This second contributing factor may no longer be applicable if the coverage issues are ever fully clarified.

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[3] For more information on calendar year curve fitting see Raja Bhagavatula, Brian Brown, and Kevin Murphy, "Estimation of Liabilities Due to Inactive Hazardous Waste Sites" in the Summer 1994 CAS Forum.

The calendar year treaty prorata losses can be related to the calendar year losses for treaty excess (excluding the exposure reserves) to develop a relationship as in Exhibit 3. In this exhibit, the calendar year development as a percentage of the prior year-end inception to date losses is determined separately for treaty excess and treaty prorata. The ratio of these development percentages gives the needed relationship. The relationship of this hypothetical example is probably more like asbestos than environmental since the selected ratio is less than one.

Remember to apply the relationship to the broad definition IBNR for treaty excess as in Exhibit 4. In this hypothetical example, the ultimate for treaty excess is equal to half the ultimate for treaty excess and facultative.

Be careful when analyzing the calendar year data. If previously reported but unidentified asbestos and environmental losses are subsequently identified, how the coding is changed needs to be understood. Is the history corrected (probably not) or is there a reclassification in the calendar year in which the identification was made? See calendar year 1992 in Exhibit 3 for an example.

Additional Expense Considerations

It is well documented that the level of expenses, both ALAE and DJ costs, are unusually high for asbestos and environmental. Declaratory judgement costs are the expenses associated with litigation, between the insurer and the policyholder, generally surrounding issues of coverage. Given the claim handlers lack of experience in dealing with such unusually high expenses, the ability to set accurate claim level reserves should be separately monitored.

The real problem lies with those contracts where expenses are in addition to limits and therefore, the total loss to the reinsurer can be greater than the limits. In cases where expenses are included in the limits the difficulty is less, although not totally eliminated, since the maximum is known.

As mentioned earlier, report year loss development triangles can be used to test the adequacy of the reserves for the closed claims where expenses are in addition to limits. This will provide guidance on how much or if additional provisions are needed at all.

Keep in mind that as time passes the need for this additional provision will change. As coverage issues are settled, less will be spent on DJ cases. Also, as settlement mechanisms are put in place, less will be spent on ALAE.

Additional Uses of the Database

There are additional uses of the database which should not be overlooked when justifying the expense of creating and maintaining the database. They include:

1. The claim department will use the database to manage workload and consistency of the assumptions used to settle claims. The policing of settlements may more than pay for the cost of the database.
2. It is an effective tool to answer questions from upper management. For example, when a large settlement is made public, it is an easy task to summarize the exposures and determine whether the settlement was covered by the reserves.
3. Assuming the database has reinsurance recoveries by retrocession, the recoveries from the Exposure Reserves can help with the allocation of IBNR for Schedule F. The same recoveries can be used to determine an appropriate IBNR write-off provision for uncollectible reinsurance.
4. The Exposure Reserves can be useful in determining the IBNR for commutations.
5. For environmental, the data may be useful in the analysis of changes to Superfund regulations.

Conclusion

The process presented uses Exposure Reserves which are set by the claim department to capture the details of individual claims. Report year loss development triangles along with scenarios of future reportings are used to project the ultimate losses for treaty excess and facultative. A relationship between treaty prorata and treaty excess is then developed to project the ultimate losses for treaty prorata. Expenses which are in addtion to limits are monitored in case an additional provision is required.

A strength of the process presented is the use of the familiar actuarial technique utilizing report year loss development triangles. If Exposures Reserves are available, this is also a strength since the ultimate loss estimates will have a larger portion which is based upon the details of individual claims. The process does rely on the use of actuarial judgement surrounding the scenarios of future report years. Creation of multiple scenarios regarding the future report years should help narrow the range of possibilities. Also, the process may not be as effective in situations where the treaty prorata book of business is large in relation to the treaty excess book.

As an alternative or as further justification to the estimates produced by the transaction level database process presented, a file with one record per reported claim could be constructed. This file could then be used in the PRP/NPL database process of certain nationally recognized consultants. Most of the key pieces of information will be the same, i.e. layer of coverage, years of exposure, and expense handling are critical. In addition, any

reinsurance the ceding companies have which inures to the benefit of your coverage would have to be considered. This reinsurance has already been contemplated by the case and Exposure Reserves in the process presented.

The use of the consultant's PRP/NPL database process could be expanded beyond the claims reported by requesting lists of the policies ceded to the treaties. A full list of the insureds for facultative should be obtainable from the reinsurer's records. This may help reduce the amount of subjective IBNR.

Estimating the ultimate losses for asbestos and environmental is a difficult task to say the least. It is even more difficult for reinsurers and high layer excess and surplus lines carriers due to the reliance on others for the relevant information about the claims. The process presented requires a real commitment to the resources needed to build and maintain the database. The cost and effort needs to be weighed against the benefits. Obviously, the more significant the exposure to a latent loss a reinsurer has, the greater the benefit. Even without the Exposure Reserves from the database, the process of using report year loss development triangles along with scenarios of future reportings can be an effective technique for any book of business.

Treaty Excess of Loss and Facultative
Ultimate Value of the Reported Claims

Exhibit 1

Report Year	Policy Limits		Cedent Reported		Cedent Reported Including Exposure Reserve	
			Ultimate Incurred	Ultimate Percent of Exposure	Ultimate Incurred	Ultimate Percent of Exposure
Prior	$ 131,201		$ 45,920	0.350	$ 45,920	0.350
1986	50,431		16,642	0.330	18,206	0.361
1987	50,103		17,235	0.344	16,534	0.330
1988	50,604		18,217	0.360	20,697	0.409
1989	48,074		16,393	0.341	16,297	0.339
1990	45,670		14,706	0.322	14,158	0.310
1991	43,387		13,190	0.304	13,624	0.314
1992	41,217		11,582	0.281	10,304	0.250
1993	45,725	SAB 92?	13,032	0.285	11,523	0.252
1994	37,199		8,928	0.240	7,477	0.201
1995	49,669	Note 24?	13,361	0.269	10,530	0.212
Total	$ 593,280		$ 189,206	0.320	$ 185,270	0.312
First 5 Years	244,882		83,193	0.340	85,892	0.351
Average	48,976					
Last 5 Years	217,197		60,093	0.277	53,458	0.246
Average	43,439					
Last 3 Years	132,593		35,321	·0.266	29,530	0.223
Average	44,198					

Treaty Excess of Loss and Facultative
Low-End Pure IBNR

Report Year	Policy Limits	Cedent Reported		Cedent Reported Including Exposure Reserve	
		Ultimate Incurred	Ultimate Percent of Exposure	Ultimate Incurred	Ultimate Percent of Exposure
1996	$ 33,572	$ 8,393	0.25	$ 6,714	0.20
1997	31,893	7,973	0.25	6,379	0.20
1998	30,299	6,969	0.23	5,454	0.18
1999	28,784	6,620	0.23	5,181	0.18
2000	27,345	5,742	0.21	4,375	0.16
2001	25,977	5,455	0.21	4,156	0.16
2002	24,679	4,936	0.20	3,702	0.15
2003	23,445	4,455	0.19	3,282	0.14
2004	22,272	4,009	0.18	2,895	0.13
2005	21,159	3,597	0.17	2,539	0.12
2006	20,101	3,216	0.16	2,211	0.11
2007	19,096	2,864	0.15	1,910	0.10
2008	18,141	2,540	0.14	1,633	0.09
2009	17,234	2,240	0.13	1,379	0.08
2010	16,372	1,965	0.12	1,146	0.07
Total	$ 360,369	$ 70,974		$ 52,956	

Treaty Excess of Loss and Facultative
High-End Pure IBNR

Report Year	Policy Limits		Cedent Reported			Cedent Reported Including Exposure Reserve	
			Ultimate Incurred	Ultimate Percent of Exposure		Ultimate Incurred	Ultimate Percent of Exposure
1996	$	44,198	$	11,933	.27	$ 9,724	.22
1997		41,988		10,917	.26	8,817	.21
1998		39,889		9,972	.25	7,978	.20
1999		37,894		9,095	.24	7,200	.19
2000		36,000		8,280	.23	6,480	.18
2001		34,200		7,524	.22	5,814	.17
2002		32,490		6,823	.21	5,198	.16
2003		30,865		6,173	.20	4,630	.15
2004		29,322		5,571	.19	4,105	.14
2005		27,856		5,014	.18	3,621	.13
2006		26,463		4,499	.17	3,176	.12
2007		25,140		4,022	.16	2,765	.11
2008		23,883		3,582	.15	2,388	.10
2009		22,689		3,176	.14	2,042	.09
2010		21,554		2,802	.13	1,724	.08
2011		20,477		2,457	.12	1,433	.07
2012		19,453		2,140	.11	1,167	.06
2013		18,480		1,848	.10	924	.05
2014		17,556		1,580	.09	702	.04
2015		16,678		1,334	.08	500	.03
2016		15,844		1,109	.07	475	.03
2017		15,052		903	.06	301	.02
2018		14,299		715	.05	286	.02
2019		13,584		543	.04	136	.01
2020		12,905		387	.03	129	.01
Total	$	638,759	$	112,399		$ 81,715	

Treaty Prorata/Excess Development Relationship

Exhibit 3

Calendar Year	Treaty Excess Cedent Reported	Calendar Year as a Percent of Prior ITD	Treaty Prorata Cedent Reported	Calendar Year as a Percent of Prior ITD	Prorata Excess Relationship
Prior - 1990	$ 47,653		$ 14,339		
1991	9,927	0.208	2,171	0.151	0.727
Prior - 1991	57,580		16,510		
1992	8,176	0.142	2,947	0.178	1.257 *
Prior - 1992	65,756		19,457		
1993	9,366	0.142	2,346	0.121	0.847
Prior - 1993	75,122		21,803		
1994	9,019	0.120	1,766	0.081	0.675
Prior - 1994	84,141		22,262		
1995	8,818	0.105	1,759	0.079	0.752

Selection 0.750

*Reclassification?

Exhibit 4

TREATY PRORATA
BROAD DEFINITION IBNR

	Cedent Reported		Cedent Reported Including Exposure Reserve	
	High	Low	High	Low
Ultimate for Treaty Excess	150,803	130,090	133,493	119,113
Reported for Treaty Excess	92,959	92,959	92,959	92,959
Excess To-Ultimate Factor	1.622	1.399	1.436	1.281
Prorata/Excess Relationship	0.75	0.75	0.75	0.75
Reported for Prorata	24,021	24,021	24,021	24,021
Ultimate for Prorata *	35,227	31,209	31,876	29,083
IBNR for Prorata	11,206	7,188	7,855	5,062

* [1+ (Excess To-Ultimate Factor - 1)(Prorata/Excess Relationship)](Reported for Prorata)

1996 Casualty Loss Reserve Seminar

6D/8C: Estimating a Reinsurer's Liabilities

for Asbestos and Environmental

Moderator

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Panel

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The Reinsurance Claim Process

❏ For Treaty Excess of Loss and Facultative, a reinsurer relies on the ceding company to:

- Report the claim
- Provide an estimate of the cost (case reserve)
- Provide the details upon which the cost estimate or settlement is based

❏ For Prorata Treaty you have:

- Bordereau reporting, i.e. do not have individual claim details
- Identification of major categories of loss, such as Asbestos and Environmental

Ceding companies are slow in reporting case reserves due to:

❑ Coverage issues

❑ Uncertainty surrounding the size of loss

❑ Trigger issues, i.e. which policies will pay

❑ Affordability issues

The Starting Point - A Database
Why a separate database?

❑   Data elements not available in regular systems
  – Limits
  – Expense indicator
  – Exposure reserve

❑   Management tool
  – Consistent reserves for same insured across all ceding companies
  – Quick retrieval and update of information

❑   Gather data needed to project ultimate loss scenarios

Declaratory Judgment Expense Philosophy

❑ Business decision to pay as an expense

❑ All policies, even high layer excess, have to pay a portion

❑ Allocated over all years/occurrences

Asbestos Exposure Reserve Considerations

❏ Name of insured
  – Major versus minor defendant

❏ Expense handling
  – Included or in addition to limits

❏ Occurrence definition
  – Every claimant is a separate occurrence

❏ Aggregate clause

❏ Inuring reinsurance

❏ Coordination with other product losses

Environmental Exposure Reserve Considerations

❑ Pollution exclusion
- None, S&A, Absolute

❑ Layer of coverage
- Do not have aggregates, therefore lower layers have the most exposure

❑ Expense handling
- Included or in addition to limits
- Prorata versus Excess of Loss

❑ Occurrence definition
- Every site is a separate occurrence

❑ Inuring reinsurance

❑ Trigger depends on state's law

❑ Allocation of settlements
- All of the above including DJ expense philosophy

Components of Ultimate Loss

❏ Treaty Excess of Loss and Facultative

- The ultimate value of the reported claims

- Pure IBNR

❏ Treaty Prorata

- Reported claims (taken as is)

- Broad definition of IBNR

❏ Treaties and Facultative Certificates where expenses are in addition to limits

- Additional expense considerations

Treaty Excess of Loss & Facultative
Ultimate Value of the Reported Claims

❏ Report year loss development triangles

❏ Two definitions of loss
  – As reported by the ceding companies
  – Including the exposure reserves

❏ Investigate data disturbances, i.e. large settlements
  – Smooth the loss development factors
  – Exclude and provide separate provision

❏ For asbestos, analyze major versus minor defendants

❏ For environmental, analyze losses by layer

❏ For both asbestos and environmental, you could separate your ceding companies into those that establish case reserves and those that don't

Treaty Excess of Loss & Facultative
Ultimate Value of the Reported Claims
Advantages of Two Loss Definitions

❑ Exposure reserves dramatically reduce the length and magnitude of the loss development pattern

❑ Exposure reserves provide guidance on an appropriate tail factor for the losses as reported by the ceding companies

❑ Increased confidence when the two definitions converge

❑ A range of the possibilities

Treaty Excess of Loss & Facultative
Ultimate Value of the Reported Claims
Improving Trend in the Loss Development

□   More severe claims are reported first and are probably under reserved

□   Settlement of the coverage and trigger issues will improve the accuracy of initial cost estimates

□   Increased levels of manpower and experience levels

Treaty Excess of Loss & Facultative
Large Pure IBNR for Reinsurers

❑   Reliance on ceding companies to report the claims

❑   Higher layers of coverage

❑   For asbestos and environmental, impact of issues surrounding:
- Coverage
- Trigger
- Size of loss
- Affordability

Treaty Excess of Loss & Facultative
Pure IBNR Determination

❑ Relate report year ultimate loss estimates to policy limits
(ultimate percent of exposure)

❑ Analyze and project future ultimate percent of exposures and policy limits

❑ Key Questions
 – How many future report years?
 – What rate of decay?

❑ High/Low Scenarios

Treaty Excess of Loss & Facultative
Pure IBNR Considerations

❑ More severe claims will be reported first - implies the ultimate percent of exposure will decrease

❑ Universe of claims is closed due to restricted use of asbestos and the absolute pollution exclusion - implies policy limits will decrease

❑ External influences
  - SEC reporting requirements
  - Annual Statement Note 24
  - Lawyers focus on minor asbestos defendants as the major defendants run out of insurance

Treaty Excess of Loss and Facultative

Ultimate Value of the Reported Claims

Report Year	Policy Limits		Cedent Reported		Cedent Reported Including Exposure Reserve	
			Ultimate Incurred	Ultimate Percent of Exposure	Ultimate Incurred	Ultimate Percent of Exposure
Prior	$ 131,201		$ 45,920	0.350	$ 45,920	0.350
1986	50,431		16,642	0.330	18,206	0.361
1987	50,103		17,235	0.344	16,534	0.330
1988	50,604		18,217	0.360	20,697	0.409
1989	48,074		16,393	0.341	16,297	0.339
1990	45,670		14,706	0.322	14,158	0.310
1991	43,387		13,190	0.304	13,624	0.314
1992	41,217		11,582	0.281	10,304	0.250
1993	45,725	SEC?	13,032	0.285	11,523	0.252
1994	37,199		8,928	0.240	7,477	0.201
1995	49,669	Note 24?	13,361	0.269	10,530	0.212
Total	$ 593,280		$ 189,206	0.320	$ 185,270	0.312
First 5 Years Average	244,882 48,976		83,193	0.340	85,892	0.351
Last 5 Years Average	217,197 43,439		60,093	0.277	53,458	0.246
Last 3 Years Average	132,593 44,198		35,321	0.266	29,530	0.223

Treaty Excess of Loss and Facultative   *Low-End Pure IBNR*

Report Year	Policy Limits		Cedent Reported			Cedent Reported Including Exposure Reserve	
			Ultimate Incurred	Ultimate Percent of Exposure		Ultimate Incurred	Ultimate Percent of Exposure
1996	$	33,572	$	8,393	0.25	$ 6,714	0.20
1997		31,893		7,973	0.25	6,379	0.20
1998		30,299		6,969	0.23	5,454	0.18
1999		28,784		6,620	0.23	5,181	0.18
2000		27,345		5,742	0.21	4,375	0.16
2001		25,977		5,455	0.21	4,156	0.16
2002		24,679		4,936	0.20	3,702	0.15
2003		23,445		4,455	0.19	3,282	0.14
2004		22,272		4,009	0.18	2,895	0.13
2005		21,159		3,597	0.17	2,539	0.12
2006		20,101		3,216	0.16	2,211	0.11
2007		19,096		2,864	0.15	1,910	0.10
2008		18,141		2,540	0.14	1,633	0.09
2009		17,234		2,240	0.13	1,379	0.08
2010		16,372		1,965	0.12	1,146	0.07
Total	$	360,369	$	70,974		$ 52,956	

Treaty Excess of Loss and Facultative   *High-End Pure IBNR*

Report Year	Policy Limits		Cedent Reported			Cedent Reported Including Exposure Reserve	
			Ultimate Incurred	Ultimate Percent of Exposure		Ultimate Incurred	Ultimate Percent of Exposure
1996	$	44,198	$	11,933	.27	$ 9,724	.22
1997		41,988		10,917	.26	8,817	.21
1998		39,889		9,972	.25	7,978	.20
1999		37,894		9,095	.24	7,200	.19
2000		36,000		8,280	.23	6,480	.18
2001		34,200		7,524	.22	5,814	.17
2002		32,490		6,823	.21	5,198	.16
2003		30,865		6,173	.20	4,630	.15
2004		29,322		5,571	.19	4,105	.14
2005		27,856		5,014	.18	3,621	.13
2006		26,463		4,499	.17	3,176	.12
2007		25,140		4,022	.16	2,765	.11
2008		23,883		3,582	.15	2,388	.10
2009		22,689		3,176	.14	2,042	.09
2010		21,554		2,802	.13	1,724	.08
2011		20,477		2,457	.12	1,433	.07
2012		19,453		2,140	.11	1,167	.06
2013		18,480		1,848	.10	924	.05
2014		17,556		1,580	.09	702	.04
2015		16,678		1,334	.08	500	.03
2016		15,844		1,109	.07	475	.03
2017		15,052		903	.06	301	.02
2018		14,299		715	.05	286	.02
2019		13,584		543	.04	136	.01
2020		12,905		387	.03	129	.01
Total	$	638,759	$	112,399		$ 81,715	

Treaty Prorata
Reported Claims

❑   Bordereau reporting, i.e. do not have individual claim statistics

❑   Develop broad definition IBNR to cover development of reported claims and
    pure IBNR

Treaty Prorata
Broad Definition IBNR Methods

- ❏ Calendar year curve fitting

- ❏ Develop a relationship between treaty prorata and treaty excess IBNR

Treaty Prorata/Excess Relationship

❑ Asbestos Prorata IBNR requirements should be less than excess
  – Prorata covers are generally lower in the layers of coverage
  – Single hits since have product aggregates
  – Major defendants have already hit the covers

❑ Environmental IBNR requirements should be greater than excess
  – Prorata covers are generally lower in the layers of coverage
  – Multiple hits since do not have product aggregates on your side
  – Prorata generally covers expenses

Treaty Prorata/Excess Development Relationship

Calendar Year	Total Treaty Excess	Calendar Year as a Percent of Prior ITD	Treaty Prorata	Calendar Year as a Percent of Prior ITD	Prorata Excess Relationship
Prior - 1990	$ 47,653		$ 14,339		
1991	9,927	0.208	2,171	0.151	0.727
Prior - 1991	57,580		16,510		
1992	8,176	0.142	2,947	0.178	1.257 *
Prior - 1992	65,756		19,457		
1993	9,366	0.142	2,346	0.121	0.847
Prior - 1993	75,122		21,803		
1994	9,019	0.120	1,766	0.081	0.675
Prior - 1994	84,141		22,262		
1995	8,818	0.105	1,759	0.079	0.752

Selection	0.750

*Reclassification?

Treaty Prorata   *Broad Definition IBNR*

	Cedent Reported			Cedent Reported Including Exposure Reserve	
	High	Low		High	Low
Ultimate for Treaty Excess	150,803	130,090		133,493	119,113
Reported for Treaty Excess	92,959	92,959		92,959	92,959
Excess To-Ultimate Factor	1,622	1,399		1,436	1,281
Prorata/Excess Relationship	0.75	0.75		0.75	0.75
Reported for Prorata	24,021	24,021		24,021	24,021
Ultimate for Prorata *	35,227	31,209		31,876	29,083
IBNR for Prorata	11,206	7,188		7,855	5,062

* [1+ (Excess To-Ultimate Factor - 1) Prorata/Excess Relationship] Reported for Prorata

Additional Expense Considerations

❑ Expense consists of ALAE and DJ costs

❑ Expenses can be
  – Included in the limits
  – In addition to limits

❑ Report year triangles to test the adequacy of the exposure reserves for closed claims

❑ As time passes, the need for additional expense provisions will change
  – As coverage issues are settled, less will be spent on DJ cases
  – As settlement mechanisms are put in place, less will be spent on ALAE

Additional Uses of the Database

- ❑ Claim department management of workload and consistency of reserve assumptions

- ❑ Answer questions from upper management

- ❑ If your database has reinsurance recoveries
  - – Schedule F IBNR allocation
  - – Uncollectible reinsurance provision

- ❑ IBNR for commutations

- ❑ For environmental, analysis of Superfund changes