A Dynamic Approach to Modeling Free Tail Coverage

Submitted by

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Abstract

This paper presents two approaches to estimating free tail coverage unearned premium reserves. The first approach starts with an existing deterministic model and outlines several enhancements that can be added if there is sufficient data on the insured population. Specific modifications presented include reflecting waiting periods for eligibility, trends in mortality rates, gender distinctions in mortality rates, differences in policy limits and semi-retired status. The second approach uses a completely different method. Instead of computing expected values for a cohort of insureds, the second approach simulates possible individual insured results. This is accomplished using elements of stochastic simulation for the random generation of interest and mortality variables so as to create a truly Dynamic approach. Modifications in the approach focus on modeling interest rates, loss inflation rates and insured mortality behavior.

Introduction

The emergence of claims-made coverage in the professional liability insurance marketplace has created a potentially uninsured risk for professionals who have converted to claims-made coverage. Specifically, a professional who is insured using claims-made coverage and discontinues his/her practice, for whatever reason, may be uninsured for claims reported after the expiration of any extended reporting provisions of the coverage. The initial response to this problem by insurers was the Supplemental Extended Period Endorsement. This endorsement extended the basic tail coverage indefinitely and reinstated the policy aggregate limits for claims covered by the supplemental tail.[1] Unfortunately, this coverage carried a premium of up to 200% of the annual claims-made premium. Furthermore, electing to purchase the endorsement was complicated and sometimes overlooked in situations where the named insured had died or become permanently disabled.

The recognition of this coverage gap and competitive pressures combined to create the "free tail coverage" that has become widely used today. Free tail coverage, offers coverage similar to supplemental extended reporting period endorsements at no charge in specific situations in which coverage would be cancelled and not replaced with comparable coverage. Situations that trigger free tail coverage usually include the death of the insured, the insured becoming disabled in a way that precludes further professional practice, and the insured's retirement from practice. As a means to encourage insured retention, many insurers include a waiting period before the retirement trigger is extended. As a result of these common coverage triggers, free tail coverage is also called Death, Disability, and Retirement (DD&R) coverage.

The NAIC recognized that although no explicit premium was charged for free tail coverage, there was an implicit premium charge embedded in the claims-made premium to fund this "free" coverage. Furthermore, because the free tail coverage is basically a guarantee of future coverage, earning the implicit DD&R coverage premium at the same rate as the total policy premium prematurely recognizes that portion of the premium prior to coverage actually being provided. To address this issue, the NAIC's 1994 *Accounting Practices and Procedures Manual for Property and Casualty Insurance Companies* required companies to establish "a reserve … to assure that amounts collected by insurers to pay for these benefits are not earned prematurely."[2] The NAIC recommends that this reserve be part of the unearned premium reserve, but also

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[1] Malecki, et al., Commercial Liability Insurance and Risk Management, Volume 1, Third Edition, pp. 148-49.
[2] NAIC Proceedings – 1991, Volume IIB, p. 1168 (Also Attachment One of Walker & Skrodenis)

considers reflection of this reserve as an unpaid loss reserve acceptable, subject to the approval of the domiciliary state insurance commissioner.

The NAIC also recommends a level funding premium load. This approach is somewhat counterintuitive as it implies that the same proportion of premium should be allocated to the DD&R coverage regardless of age shifts in the insured population or the past or future size of the insurer's book of business.

In their 1996 Ratemaking Call Paper article, Christopher Walker and Donald Skrodenis presented three approaches to estimating the unearned premium reserves and loss reserves for Death, Disability, or Retirement coverage associated with claims-made professional liability policies[3]. The last approach presented provides a reasonable compromise between the NAIC's level funding concept and reflecting the risk characteristics of individual age groups.

The goal of this paper is to demonstrate how the concepts presented in the Walker & Skrodenis paper can be:

1) modified to accommodate more refined varieties of the coverage, and
2) converted from a deterministic model into a dynamic model by applying simulation techniques similar to those currently being used in dynamic financial analysis research.

Walker & Skrodenis Overview

The Walker and Skrodenis article presents three models to estimating DD&R reserves. The basic computational tool of all three Walker and Skrodenis models is the expected ratio of the present value of DD&R utilized to the present value of non-DD&R premium. This ratio is then used to aid in estimating the unearned premium reserve.

The first model, "Pay as You Go" Funding, looks at the funding needs for the current year of the current insured population. The authors identify a couple key drawbacks of this model; first, the "premium loadings are clearly dependent on the age of the population" and second '(u)sing this model, the theoretical unearned premium reserve at the end of the policy year would be zero."

The second model, "Level Premium Funding by Entry Age of Insured" takes a longer-term look. The approach used in the second model is to estimate the behavior of a cohort of insureds with a common age of entry to the program as they leave the insurance program over time. This approach looks at not only causes of leaving the plan that would create DD&R claims, but also ways of leaving the program that eliminate tail coverage, such as policy lapses. The by cohort approach used in the second model calculates the DD&R to premium ratio and the unearned premium reserves for DD&R through the following steps[4]:

1) At each age subsequent to entry, calculate the percentage of the cohort that utilizes the DD&R coverage through a multiple decrement approach.
2) In addition, at each age, calculate the percentage of the cohort whose coverage lapses.

[3] Walker, Christopher and Skrodenis, Donald (1996) "Death, Disability, and Retirement Coverage: Pricing the "Free" Claims-Made Tail," Casualty Actuarial Society *Forum*, Winter 1996, pp. 317-346.
[4] The reader is encouraged to refer to the Walker & Skrodenis paper for a complete discussion of the assumptions underlying the model.

3) The combined effect of the steps 1) and 2) provides the number of insureds "surviving" to begin the next policy term.
4) Given a current rate, interest rate and loss trend, estimate the premium collected for each year for the cohort adjusted to present value.
5) Given an expected relationship between the claims-made policy cost and the cost for tail coverage, estimate the cost of the DD&R coverage utilized at each age adjusted to present value.
6) The discounted value of future DD&R losses can be computed for each age by discounting all subsequent DD&R losses by the appropriate interest rate and number of years.
7) Given a selected DD&R percentage of total premium, compute the discounted value of future DD&R premiums for each age by discounting all subsequent DD&R premium by the appropriate interest rate and number of years.
8) The year-end unearned premium reserve is the difference between the present value of future losses and the present value of future premiums.

The basic structure and flow of Walker & Skrodenis' second model is retained in the model shown in Exhibit 3.

The third model, "Level Premium Charge the Same for All Insureds," goes one step further and computes the non-DD&R premium weighted average DD&R rate for a distribution of currently insured cohorts. This allows for a reasonable compromise between the actuarial intuitiveness of the second model (i.e. estimates by age of entry) and the NAIC recommendation of a level funding premium load. However, this approach has the drawback of creating a subsidy from insureds that enter the program at a relatively young age to those that enter at an older age.

The third model provides a tremendous foundation for modeling DD&R unearned premium reserves. There are some additional enhancements that a company may want to add to more accurately model their company's situation. Most notably, as presented in the paper, the model can be modified to accommodate:

1) Mortality rates at a given age that vary by sex and over time
2) Waiting periods for DD&R eligibility (these waiting periods may also vary by age or some other criteria),
3) Varying policy limits,
4) Incorporation of historical rate levels for insureds that have been insured for more than one year, and
5) Semi-retired status.

Let us consider modifying the approach of Walker & Skrodenis to accommodate a hypothetical insurance company.

D.O.C. Insurance Company

D.O.C. Insurance Company (D.O.C.) is an established writer of medical professionals practicing in a particular specialty (e.g. dentists, chiropractors, or podiatrists). They currently have 400 insureds and have data identifying each doctor according to:

1) Age/date of birth
2) Sex
3) Inception date of first policy
4) Limits of insurance (occurrence/aggregate), and
5) Waiting period (for free tail eligibility) that applies.

D.O.C. would like to estimate the indicated percentage of premium that should be designated to cover free-tail claims and the indicated current unearned premium reserve for this book. They would also like to take advantage of as much of the available risk detail as possible. D.O.C would also like a mortality assumption that realistically reflects the decreasing trend in mortality rates. The program's rate history for the entire life of the program is shown in Exhibit 1.

The first step in the process is to cluster the insureds into cohorts. This may seem an unnecessary step for D.O.C.'s 400 insureds, but is demonstrated as an approach that works equally well for 400 or 40,000 insureds. Aggregating into groups by current age (in increments of 5 years), years in program (5 year bands), limits ($200K/600K, 500K/1M, 1M/3M), and applicable waiting period (5 or 10 year waits) clusters the insureds into 60 cohorts. This clustering approach is based on judgment and appears to simplify the analysis without losing a significant amount of the detail from the data. These cohort groupings are summarized in Exhibit 2. Further assume that D.O.C. offers coverage to insureds age 60 and older at a rate of 75% of the otherwise chargeable rate to reflect "semiretired status". These are all the factors D.O.C. has identified as significant for the purpose of estimating the unearned premium reserve.

The plan for computing the unearned premium reserves for the program is to compute the unearned premium percentage for each cohort and summarize the results. The model used for D.O.C. needs to accommodate a number of adjustments from the base model of Walker & Skrodenis. The modified model used for D.O.C. is shown as Exhibit 3 and the summarized results for D.O.C. are shown in Exhibit 4. Each adjustment to the model in Exhibit 3 will be addressed separately.

Mortality Rates and Trends

A fairly recent development in the area of mortality is the development of the Group Annuity Reserve Valuation Standard (GAR)[5]. This new standard incorporates the concept of generational mortality for the first time. Generational mortality allows for the explicit recognition of improving mortality trends over time. In essence, the probability of someone age 30 dying this year and the probability of someone who achieves age 30 ten years from now dying at that age are not identical and appear to be decreasing over time. To recognize this trend, the GAR reflects a mortality rate for a person age x as of 1994, q_x^{1994}, and an annual improvement factor, AA_x. The future mortality rate for a person age x in the year (1994 + n) becomes:

$$q_x^{1994+n} = q_x^{1994} * (1 - AA_x)^n$$

The data from GAR 1994 and the computation for a single cohort is shown in Exhibit 5. The impact this approach to mortality rates has on the Skrodenis & Walker model is that the model must be adjusted to provide different mortality rates for different current ages. For example, for

[5] Society of Actuaries Group Annuity Valuation Table Task Force, Society of Actuaries *Transactions*, Volume XLVII, pp. 865-918.

a male cohort with a current age (as of 7/98) of 35, $q_{35}^{7/98} = q_{35}^{1994} * (1 – AA35)^{4.5} = 0.000851 * (1-0.005)^{4.5} = 0.000816$, whereas for a current age group of 30 (turning 35 in 2003), $q_{35}^{2003} = q_{35}^{1994} * (1 – AA35)^{9} = 0.000851 * (1-0.005)^{9} = 0.0008135$. Because mortality trends are generally increasing survival age, using the GAR approach to mortality tends to reduce DD&R rates and unearned premium reserves.

Waiting Periods

In general, the effect of a waiting period is to introduce years at the beginning of a relationship between the insurer and the insured where the insured becomes "vested" in the free tail benefit. This means the insured is contributing to the unearned premium reserve for the coverage but is not yet eligible for coverage. This is modeled in Exhibit 3 by adjusting Column 7, "Expected DD&R Utilized" to remove any ineligible DD&R claims occurring during the waiting period. This does not mean that an insured could remain in the population (despite their death, disability or retirement), but merely that there are no incurred claims during the period. In fact, some insureds may die or become disabled during the period. For example, in Exhibit 3 it can be seen that 178 insureds (0.178% of a cohort of 100,000) that entered the plan at age 29 were disabled during that year and exited the program without the plan incurring any DD&R claims because of the eligibility requirement. Their premium, while insured, contributes to the unearned premium reserve for DD&R and needs to be reflected in the premium computations in Columns 13 and 19. In general, waiting periods reduce DD&R losses without impacting implied DD&R premiums which has the effect of reducing unearned premium reserve levels.

Various Policy Limits

The original Walker & Skrodenis models do not reflect the impact of varying policy limits. Interestingly, if the cost of tail coverage is not presumed to differ by policy limit, different policy limits have identical effects on premiums and losses, which leave the DD&R ratio unchanged. However, if the limit profile varies substantially between the mature policy portfolio and the new business being written on younger insureds, failing to reflect differences in policy limits might give too much weight to older insureds with higher DD&R needs as a percentage of premium (but a lower premium base). Policies with higher limits would also create larger unearned premium reserves because the selected percentage of premium for DD&R coverage would be applied to a larger premium base.

The model for D.O.C. alters Column 13 (Premiums) and Column 15 (DD&R Losses) for the varying premiums associated with different policy limits. The summarized DD&R ratio shown in Column 10 of Exhibit 4 is also weighted on insured count and current premium.

Rate Changes

The unearned premium reserve for the free tail premium is a function of the rate charged for each insured. Therefore, column 13 in Exhibit 3 of the model for D.O.C. has been adjusted to reflect the rate levels from D.O.C.'s rate history. This adjustment makes the ratio of DD&R Loss to Total Premium in Column 17 more accurate and also adds accuracy to the discounted value of the premium cashflows in Column 19. It is worthwhile to note that the prospective premiums in Column 13 adjust for loss trend, the adjustment in the historical rate levels simply replaces the estimated rate levels for prior years using a trend procedure with actual rate levels. This adjustment does not impact future years.

Semi-Retired Status

Semi-retired status for D.O.C. reflects their product design, which assumes that insureds over the age of 60 tend to work fewer hours per week thus reducing their loss exposure. D.O.C. reflects this reduced exposure by applying a factor of 0.75 to the otherwise applicable rate. Because the premium and loss expectations for D.O.C. are reduced by equivalent amounts, the tail cost factor is not changed. The adjustment for the semi-retired status pricing has the effect of reducing both the premium estimates (Column 13) and the loss estimates (Column 15) and leaves the ratio of DD&R to Premium (Column 17) unchanged for individual years. However, because there is less premium in the later years that have the largest DD&R to premium ratios, the overall DD&R to premium ratio is reduced because of D.O.C.'s approach to semi-retired status.

The D.O.C. model can be modified and the insured population can be segmented into full-time and semi-retired groupings in order to accommodate different treatments of semi-retired status.

Advantages and Disadvantages

This modified Walker & Skrodenis has a number of advantages and some remaining areas for improvement:

Advantages

1) The approach of following a cohort of risks through its "life cycle" is actuarially intuitive and appealing.
2) The approach still meets the NAIC level-funding requirement, but additional subsidies are identified and quantified.
3) The GAR approach to mortality is more responsive to changing mortality rates.
4) The modifications for policy limit, waiting period, historical rate levels, and semiretired status add precision.

Disadvantages

1) The approach still fails to reflect possible variations in mortality, loss trends and interest rates.
2) The modifications may add computational time for large books of business with detailed segmentation into a large number of cohorts.
3) The modifications add substantial data needs in terms of detailed profiling of the inforce book of business.

Making it Dynamic

Now that the model has been modified enough to examine a variety of risk characteristics in a deterministic way (scenario testing). The transition to a truly dynamic (stochastic) model is relatively straightforward. The actuary must determine which elements of the model to randomly generate and how the distribution of these random variables should be parameterized.

Then a meaningful number of trials can be run and the results can be analyzed. For the D.O.C. dynamic model we will stochastically generate three variables: interest rates, loss trends and a multiple decrement mortality (the time an insured leaves the program and the cause). The generation of each of these variables will be described and then the actual generation and accumulation of results will be discussed

Interest Rate Generation

One of the more compelling choices for variables to simulate is the interest rate. A simple 5% assumption overlooks too much variability in a program with a potential tail of over 50 years. This paper will propose using the Cox-Ingersoll-Ross interest rate model[6] to provide a meaningful estimate of future interest rates.

Recognizing that an interest rate model requires definition as to precisely what type of rate will be modeled, short-term treasury rates have been chosen as the base rate resulting from model generations. In particular, 90-day treasury rates on an annual basis will be modeled. This produces rates that are reasonable for discounting in this application and that are similar to the original rate chosen by Walker and Skrodenis.

As discussed in D'Arcy et al. (1997), Cox-Ingersoll-Ross (CIR) provides a workable process for modeling interest rates. CIR offers a mean-reverting random walk, where interest rates are projected by modeling incremental movements in interest rates. These increments are the sum of mean-ward and purely random generated movements. We provide the formula in Exhibit 6 and an example of simulated values for 50 years in Exhibit 7. This process is advantageous in that it balances flexibility, simplicity, and intuitive appeal. CIR, by itself, is merely a parameter driven formula concept; it is not intended to be a completely comprehensive or universally accurate system of projection methodologies. Nonetheless, it appears to suit many stochastic modeling applications quite well.[7] For simplicity for D.O.C., the historical interest rates are presumed to be 5%. In practice, actual interest rates could be used to bring historical premiums to present value.

Loss Trend

Having added a level of complexity to the interest rate used for discounting, it is appropriate that we add a similar level of complexity to loss inflation. The dynamic D.O.C. model assumes that medical malpractice loss inflation varies by a constant amount (1%) from the interest rate, subject to a random error term distributed as normal with mean 0 and standard deviation 0.01. This approach is intuitive, draws on existing actuarial readings, and seems to reasonably model reality. More precise models, based on interest rate or not, could certainly be introduced. The approach presented is a straightforward one for illustrative purposes.

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[6] For additional background about Cox-Ingersoll-Ross and other possible actuarial applications, the reader is directed to D'Arcy, Stephen P., et al. (1997) "Building a Public Access PC-Based DFA Model," Casualty Actuarial Society *Forum*, Summer 1997, Volume 2, pp. 1-40, and D'Arcy, Stephen P., et al. (1998) "Using the Public Access DFA Model: A Case Study," Casualty Actuarial Society *Forum*, Summer 1998 Edition, pp. 53-118.

[7] A detailed discussion of the parameterization of the C-I-R model used in this paper can be found in Walling, Robert J., Hettinger, Thomas E., Emma, Charles C., Ackerman, Shawna S., (1999) "Customizing the Public Access Model," submitted for the 1999 Casualty Actuarial Society Dynamic Financial Analysis Call Paper Program.

Simulated Multiple Decrements

The most intriguing feature of the stochastic model for D.O.C. is that we are no longer looking at average mortalities, disabilities, retirements and lapse. Instead, possible individual results for each doctor's future are being stochastically simulated.

There are four ways an insured can exit this insurance plan: Death, Disability, Retirement, and Lapse (Policy Non-renewal and all other noninsured exits). Each decrement is assumed to be independent of the others and therefore the model follows multiple decrement theory. This means that the individual decrements can be compiled in to a combined mortality function that assigns a probability to each decrement in each year. These probabilities sum to 100% (i.e. everybody leaves at some time). These probabilities can then be arranged in order so that a randomly generated number between 0 and 1 can be assigned to a specific decrement and year.[8]

In Exhibit 8 you will see that two additional columns have been added to the first page. These columns create the probability distributions for each of the decrements. Actually, the decrements of Death, Disability and Retirement all have the same effect (a claim) so they can remain combined. The combined decrement for DD&R equals the sum of the individual decrements in a given year. A random number uniformly distributed over the interval [0,1] is then generated for each insured and mapped into the probability distribution that has been created. This assigns a year of exit and a cause of exit (DD&R claim or lapse). Once this has been determined, the rest of the model flows very much as before.

Once the model has been programmed for a single insured, it is a fairly simple matter to write a macro that runs through the entire portfolio and simulates their individual outcomes and accumulates the results. A partial presentation of the results for a single iteration are shown in Exhibit 9. Once this is done for one iteration of all insureds, running multiple iterations of the model and capturing summary data for each of them is also a fairly straightforward macro. One word of caution, the model should assign the same projected interest and inflation (loss trend) rates to all insureds for a single iteration. This provides a realistic representation of the fact that all insureds would be subject to the same discount rate and inflation rate in a given future year. This adjustment adds a more complexity to the spreadsheet macro.

A partial table of simulated results is shown as Exhibit 10 and the results are summarized graphically in Exhibit 11. Exhibit 11 shows both the indicated DD&R ratio and the indicated unearned premium for a sampling of 100 iterations in Exhibit 11. Because both the loss inflation and discount rates are being compounded over many years, the relationship between the two rates (inflation and discount) can have a substantial effect on the overall results. The parameters for both the interest rate and inflation generators can be modified and the dynamic model can be rerun to test the sensitivity of the results of the model to these parameters.

Advantages and Disadvantages

This dynamic model has a number of advantages beyond the modified stochastic model and some additional areas for improvement:

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[8] See SOA Study Note, "An Introduction to Stochastic Simulation" for additional information on mapping a uniform unit variable in another probability distribution.

Advantages

1) The model addresses the complexity of interest and loss inflation assumptions.
2) It adds variability to actual mortalities.
3) The stochastic simulation approach adds the ability to analyze the variability of results.

Disadvantages

1) The modifications may add substantial computational time for a large books of business
2) Significant parameter risk still exists and may actually be increased by using a stochastic model.

Future Development/Other Research

One compelling area for future research is adding additional stochastic variables and their parameterization. For example, disability rates could be modeled due to future improved safety techniques or the impact of widespread diseases like AIDS. This would be a difficult enhancement because of the lack of credible data available. Another example of a new variable would be modeling lapse rates and retirement rates as a function of economic conditions. Some medical associations keep detailed information about retirement behaviors of members and long standing medical malpractice writers may have enough lapse history to effectively regress lapse rates and economic conditions.

Another area of future development is using the approach demonstrated here for stochastically generating mortalities and their cost in other areas of applicability. One particularly interesting possibility is using a stochastic model similar to the one presented to assess the risk transfer of annuities covering workers compensation permanent total disability indemnity benefits. A company looking to transfer a portfolio of such claims to a life annuity provider can simulate the costs, benefits and variability transferred by the annuity. For example, a company could ask the question, “what is the probability of the present value of the indemnity payments exceeding the annuity costs?” The simulation results of a model that stochastically generated interest rates and mortalities of the claimants could provide a meaningful answer to that question and help inform the decision maker about the real risks involved in the claim portfolio. This model could also assess the sensitivity of the simulated values to different interest and/or mortality assumptions. Similar modeling can be done for unlimited PIP claim annuities. This approach has some advantages over the classical life insurance approach in that it accepts modeled interest rates and enhanced policy conditions (e.g. premium refunds for early mortalities a.k.a. Cash Refund options) more easily.

Conclusion

Actuarial research in the area of liabilities for long duration contracts is a relatively new area of study to the CAS. Hopefully the ideas presented in this paper, particularly using GAR mortality and stochastic simulation techniques as tools for modeling DD&R liabilities will foster additional research in this area.

Exhibit 1

D.O.C. Insurance Company
Rate History

Effective Date	Mature Claims-Made Rates		
	200/600	500/1000	1000/3000
04/01/98	6,353	7,412	9,000
04/01/97	7,325	10,285	11,550
04/01/96	6,659	9,350	11,000
04/01/95	6,054	8,500	10,000
04/01/94	6,054	8,500	10,000
04/01/93	8,344	11,715	13,782
04/01/92	9,816	13,782	16,214
04/01/91	9,816	13,782	16,214
04/01/90	13,306	13,782	18,133
04/01/89	7,280	13,782	18,133
04/01/88	7,280	13,782	18,133
04/01/87	7,280	13,782	18,133
04/01/86	7,280	13,782	18,133
04/01/85	7,280	13,782	18,133
04/01/84	7,280	13,782	18,133
04/01/83	7,280	13,782	18,133
04/01/82	7,280	13,782	18,133

Exhibit 2

D.O.C. Insurance Company

Cohort Distribution

Tail Currently Offered ? (1)	Year on Risk (2)	Insured Age (3)	Sex (4)	# of Insureds (5)	Avg. Year on Risk (6)	Avg. Insd. Age (7)	Waiting Period (8)	Limits (9)
No	1-5	26-30	F	5	0	28	10	1000/3000
No	1-5	26-30	M	19	1	29	10	1000/3000
No	1-5	31-35	M	2	2	31	5	200/600
No	1-5	31-35	M	4	2	32	5	500/1000
No	1-5	31-35	F	15	2	33	5	1000/3000
No	1-5	31-35	M	12	2	33	5	1000/3000
No	6-10	31-35	M	2	7	33	10	500/1000
No	6-10	31-35	F	13	7	32	10	1000/3000
No	6-10	31-35	M	17	7	34	10	1000/3000
No	1-5	36-40	M	4	2	38	10	500/1000
No	1-5	36-40	F	15	2	38	10	1000/3000
No	1-5	36-40	M	25	2	38	10	1000/3000
No	6-10	36-40	F	7	7	37	10	1000/3000
No	6-10	36-40	M	10	8	38	10	1000/3000
No	1-5	41-45	M	3	2	44	5	200/600
No	1-5	41-45	F	1	3	41	10	500/1000
No	1-5	41-45	M	20	3	42	10	1000/3000
No	1-5	41-45	F	22	3	43	10	1000/3000
No	6-10	41-45	F	1	9	43	10	1000/3000
No	1-5	46-50	M	3	3	49	5	200/600
No	1-5	46-50	F	2	1	49	10	500/1000
No	1-5	46-50	M	12	4	48	10	1000/3000
No	1-5	46-50	F	19	3	48	10	1000/3000
No	6-10	46-50	M	1	8	49	10	500/1000
No	6-10	46-50	M	3	7	48	10	1000/3000
No	6-10	46-50	F	2	8	47	10	1000/3000
No	1-5	51-55	M	2	3	54	5	200/600
No	1-5	51-55	F	5	2	52	10	500/1000
No	1-5	51-55	M	7	3	53	10	500/1000
No	1-5	51-55	F	13	2	52	10	1000/3000
No	1-5	51-55	M	13	2	52	10	1000/3000
No	6-10	51-55	F	8	7	52	10	1000/3000
No	6-10	51-55	M	7	7	52	10	1000/3000
No	1-5	56-60	F	1	4	58	10	1000/3000
No	1-5	61-65	M	1	2	62	10	1000/3000
No	6-10	66-70	M	1	5	70	10	1000/3000
Yes	6-10	36-40	M	3	7	39	5	500/1000
Yes	11-15	36-40	F	6	11	37	10	1000/3000
Yes	11-15	36-40	M	6	11	39	10	1000/3000
Yes	11-15	41-45	F	5	13	42	10	1000/3000
Yes	11-15	41-45	M	7	14	43	10	1000/3000
Yes	6-10	41-45	F	1	6	41	5	200/600
Yes	6-10	46-50	M	6	15	47	5	1000/3000
Yes	6-10	46-50	F	5	9	49	5	1000/3000
Yes	11-15	46-50	M	3	15	48	10	200/600
Yes	11-15	46-50	F	1	14	48	10	500/1000
Yes	11-15	46-50	M	10	15	47	10	1000/3000
Yes	11-15	46-50	F	5	9	49	10	1000/3000
Yes	11-15	51-55	M	1	15	51	5	200/600
Yes	11-15	51-55	F	7	14	53	10	1000/3000
Yes	11-15	51-55	M	15	15	52	10	1000/3000
Yes	11-15	56-60	M	3	15	59	10	500/1000
Yes	11-15	56-60	F	2	15	57	5	1000/3000
Yes	11-15	56-60	M	1	12	56	10	1000/3000
Yes	11-15	61-65	F	2	14	64	10	500/1000
Yes	11-15	61-65	M	3	14	63	10	500/1000
Yes	11-15	61-65	M	2	13	62	10	1000/3000
Yes	11-15	66-70	M	1	14	68	10	200/600
Yes	11-15	66-70	M	4	14	68	10	500/1000
Yes	11-15	66-70	M	2	14	68	10	1000/3000
Yes	11-15	71-75	M	2	15	73	10	1000/3000
				400	6	43		

D.O.C. Insurance Company

Free Tail Analysis

Current Age	31	Annual Interest Factor	1.04
Current Tenure	2	Annual Loss Trend	1.05
Sex	M	Current Mature Claims-Made	
Years for Eligibility	5	Premium Estimate	4.835
Selected DD&R %	3.5%	Number of Insureds	100,000
Limit of Liability	200/600		

Age (1)	Years Insured at Start of Year (2)	# of Insureds (3)	Disability Rate (4)	Mortality Rate (5)	Retire Rate (6)	Expected # of DD&R Utilized (7)	Lapse Rate (8)	Expected # of Lapses (9)	Loss Trend Factor (10)	Interest Rate Factor (11)	Tail Cost (12)
22	NA	0	0.194%	0.000%	0.000%	0	10.0%	0	0.000	0.000	1.93
23	NA	0	0.192%	0.000%	0.000%	0	10.0%	0	0.000	0.000	1.93
24	NA	0	0.189%	0.000%	0.000%	0	10.0%	0	0.000	0.000	1.93
25	NA	0	0.187%	0.000%	0.000%	0	10.0%	0	0.000	0.000	1.93
26	NA	0	0.185%	0.000%	0.000%	0	10.0%	0	0.000	0.000	1.93
27	NA	0	0.182%	0.000%	0.000%	0	10.0%	0	0.000	0.000	1.93
28	NA	0	0.180%	0.000%	0.000%	0	10.0%	0	0.000	0.000	1.93
29	0	100,000	0.178%	0.000%	0.000%	0	10.0%	10,000	0.907	0.925	1.93
30	1	89,822	0.176%	0.000%	0.000%	0	10.0%	8,982	0.952	0.962	1.93
31	2	80,682	0.173%	0.040%	0.000%	0	10.0%	8,068	1.000	1.000	1.93
32	3	72,442	0.171%	0.122%	0.000%	0	10.0%	7,244	1.050	1.040	1.93
33	4	64,986	0.169%	0.204%	0.000%	0	10.0%	6,499	1.103	1.082	1.93
34	5	58,245	0.166%	0.285%	0.000%	263	10.0%	5,798	1.158	1.125	1.93
35	6	52,157	0.164%	0.367%	0.000%	276	10.0%	5,188	1.216	1.170	1.93
36	7	46,665	0.178%	0.449%	0.000%	292	10.0%	4,637	1.276	1.217	1.93
37	8	41,706	0.191%	0.533%	0.000%	301	10.0%	4,141	1.340	1.265	1.93
38	9	37,234	0.205%	0.620%	0.000%	307	10.0%	3,693	1.407	1.316	1.93
39	10	33,204	0.218%	0.711%	0.000%	308	10.0%	3,290	1.477	1.369	1.93
40	11	29,575	0.232%	0.806%	0.000%	306	10.0%	2,927	1.551	1.423	1.93
41	12	26,310	0.245%	0.907%	0.000%	303	10.0%	2,601	1.629	1.480	1.93
42	13	23,376	0.259%	1.013%	0.000%	297	10.0%	2,308	1.710	1.539	1.93
43	14	20,741	0.281%	1.125%	0.000%	291	10.0%	2,045	1.796	1.601	1.93
44	15	18,375	0.307%	1.241%	0.000%	284	10.0%	1,809	1.886	1.665	1.93
45	16	16,253	0.335%	1.364%	0.010%	277	10.0%	1,598	1.980	1.732	1.93
46	17	14,350	0.367%	1.493%	0.020%	269	10.0%	1,408	2.079	1.801	1.93
47	18	12,645	0.402%	1.630%	0.040%	261	10.0%	1,238	2.183	1.873	1.93
48	19	11,119	0.441%	1.776%	0.060%	252	10.0%	1,087	2.292	1.948	1.93
49	20	9,754	0.485%	1.931%	0.080%	242	10.0%	951	2.407	2.026	1.93
50	21	8,535	0.533%	2.096%	1.000%	307	8.0%	658	2.527	2.107	1.93
51	22	7,542	0.586%	2.272%	1.000%	288	8.0%	580	2.653	2.191	1.93
52	23	6,648	0.645%	2.460%	1.000%	270	8.0%	510	2.786	2.279	1.93
53	24	5,843	0.710%	2.664%	1.000%	253	8.0%	447	2.925	2.370	1.93
54	25	5,120	0.780%	2.887%	1.000%	236	8.0%	391	3.072	2.465	1.93
55	26	4,471	0.858%	3.135%	2.500%	285	8.0%	335	3.225	2.563	1.93
56	27	3,823	0.943%	3.416%	2.500%	257	8.0%	285	3.386	2.666	1.93
57	28	3,255	1.036%	3.735%	5.000%	309	8.0%	236	3.556	2.772	1.93
58	29	2,677	1.137%	4.100%	5.000%	266	8.0%	193	3.733	2.883	1.93
59	30	2,189	1.247%	4.503%	5.000%	228	8.0%	157	3.920	2.999	1.93
60	31	1,779	1.367%	4.947%	10.000%	278	8.0%	120	4.116	3.119	1.93
61	32	1,346	1.497%	5.454%	10.000%	218	2.0%	23	4.322	3.243	1.93
62	33	1,091	1.638%	6.015%	10.000%	183	2.0%	18	4.538	3.373	1.93
63	34	877	1.779%	6.659%	10.000%	153	2.0%	14	4.765	3.508	1.93
64	35	698	1.920%	7.371%	10.000%	127	2.0%	11	5.003	3.648	1.93
65	36	549	2.061%	8.153%	20.000%	154	2.0%	8	5.253	3.794	1.93
66	37	372	2.202%	9.043%	20.000%	107	2.0%	5	5.516	3.946	1.93
67	38	248	2.343%	10.008%	20.000%	74	2.0%	3	5.792	4.104	1.93
68	39	163	2.484%	11.004%	20.000%	50	2.0%	2	6.081	4.268	1.93
69	40	105	2.624%	12.066%	20.000%	33	2.0%	1	6.385	4.439	1.93
70	41	66	2.765%	13.147%	20.000%	21	2.0%	1	6.705	4.616	1.93
71	42	41	2.906%	14.298%	20.000%	14	2.0%	1	7.040	4.801	1.93
72	43	25	3.047%	15.525%	20.000%	9	2.0%	0	7.392	4.993	1.93
73	44	15	3.188%	16.830%	20.000%	5	2.0%	0	7.762	5.193	1.93
74	45	9	3.329%	18.211%	20.000%	3	2.0%	0	8.150	5.400	1.93
75	46	5	3.470%	19.747%	100.000%	5	0.0%	0	8.557	5.617	1.93

D.O.C. Insurance Company

Free Tail Analysis

Current Age	31		Annual Interest Factor	1.04
Current Tenure	2		Annual Loss Trend	1.05
Sex	M		Current Mature Claims-Made	
Years for Eligibility	5		Premium Estimate	4.835
Selected DD&R %	3.5%		Number of Insureds	100,000
Limit of Liability	200/600			

Age (1)	Years Insured at Start of Year (2)	# of Insureds (3)	Total Premium # Collected (13)	PV Total Premium # Collected (14)	DD&R # Utilized (15)	PV DD&R # Utilized (16)	Ratio DD&R to Prem. (17)	Discounted Value of Future DD&R Loss # (18)	Discounted Value of Future DD&R Prem # (19)	Year-End UPR # (20)	Year-End UPR # per Insd (21)
22	NA	0	$0	$0	$0	$0	0.00%	$0	$0	$0	$0.00
23	NA	0	$0	$0	$0	$0	0.00%	$0	$0	$0	$0.00
24	NA	0	$0	$0	$0	$0	0.00%	$0	$0	$0	$0.00
25	NA	0	$0	$0	$0	$0	0.00%	$0	$0	$0	$0.00
26	NA	0	$0	$0	$0	$0	0.00%	$0	$0	$0	$0.00
27	NA	0	$0	$0	$0	$0	0.00%	$0	$0	$0	$0.00
28	NA	0	$0	$0	$0	$0	0.00%	$0	$0	$0	$0.00
29	0	100,000	$302,700	$327,400	$0	$0	0.00%	$82,508	$123,573	($41,065)	($0.41)
30	1	89,822	$299,062	$311,024	$0	$0	0.00%	$85,809	$118,049	($32,240)	($0.36)
31	2	80,682	$295,498	$295,498	$0	$0	0.00%	$89,241	$112,429	($23,188)	($0.29)
32	3	72,442	$350,221	$336,751	$0	$0	0.00%	$92,811	$104,668	($11,857)	($0.16)
33	4	64,986	$329,884	$304,996	$0	$0	0.00%	$96,523	$97,309	($786)	($0.01)
34	5	58,245	$310,448	$275,987	$2,705	$2,405	0.87%	$97,625	$90,335	$7,290	$0.13
35	6	52,157	$291,899	$249,516	$2,981	$2,548	1.02%	$98,490	$83,732	$14,758	$0.28
36	7	46,665	$274,221	$225,390	$3,312	$2,722	1.21%	$99,052	$77,484	$21,569	$0.46
37	8	41,706	$257,334	$203,375	$3,584	$2,832	1.39%	$99,360	$71,577	$27,783	$0.67
38	9	37,234	$241,228	$183,313	$3,839	$2,917	1.59%	$99,419	$65,997	$33,422	$0.90
39	10	33,204	$225,874	$165,044	$4,044	$2,955	1.79%	$99,272	$60,731	$38,541	$1.16
40	11	29,575	$211,247	$148,419	$4,218	$2,964	2.00%	$98,941	$55,767	$43,174	$1.46
41	12	26,310	$197,322	$133,304	$4,386	$2,963	2.22%	$98,426	$51,091	$47,335	$1.80
42	13	23,376	$184,083	$119,577	$4,514	$2,932	2.45%	$97,759	$46,692	$51,068	$2.18
43	14	20,741	$171,500	$107,118	$4,644	$2,901	2.71%	$96,934	$42,557	$54,377	$2.62
44	15	18,375	$159,533	$95,811	$4,759	$2,858	2.98%	$95,958	$38,676	$57,282	$3.12
45	16	16,253	$148,165	$85,562	$4,874	$2,815	3.29%	$94,826	$35,037	$59,789	$3.68
46	17	14,350	$137,358	$76,270	$4,969	$2,759	3.62%	$93,551	$31,631	$61,921	$4.32
47	18	12,645	$127,090	$67,854	$5,063	$2,703	3.98%	$92,130	$28,448	$63,682	$5.04
48	19	11,119	$117,340	$60,239	$5,133	$2,635	4.37%	$90,581	$25,479	$65,102	$5.86
49	20	9,754	$108,082	$53,352	$5,175	$2,555	4.79%	$88,926	$22,715	$66,211	$6.79
50	21	8,535	$99,303	$47,133	$6,894	$3,272	6.94%	$85,453	$20,148	$65,305	$7.65
51	22	7,542	$92,137	$42,050	$6,790	$3,099	7.37%	$81,947	$17,729	$64,217	$8.51
52	23	6,648	$85,276	$37,422	$6,684	$2,933	7.84%	$78,408	$15,454	$62,954	$9.47
53	24	5,843	$78,698	$33,207	$6,577	$2,775	8.36%	$74,837	$13,317	$61,520	$10.53
54	25	5,120	$72,408	$29,378	$6,441	$2,613	8.89%	$71,262	$11,316	$59,946	$11.71
55	26	4,471	$66,391	$25,901	$8,168	$3,187	12.30%	$65,783	$9,445	$56,338	$12.60
56	27	3,823	$59,607	$22,360	$7,734	$2,901	12.97%	$60,527	$7,736	$52,791	$13.81
57	28	3,255	$53,289	$19,221	$9,763	$3,521	18.32%	$52,992	$6,181	$46,811	$14.38
58	29	2,677	$46,017	$15,959	$8,825	$3,061	19.18%	$46,112	$4,817	$41,294	$15.43
59	30	2,189	$39,510	$13,176	$7,942	$2,648	20.10%	$39,857	$3,627	$36,230	$16.55
60	31	1,779	$25,287	$8,108	$7,626	$2,445	30.16%	$33,674	$2,887	$30,787	$17.31
61	32	1,346	$20,089	$6,194	$6,280	$1,936	31.26%	$28,617	$2,300	$26,317	$19.55
62	33	1,091	$17,097	$5,069	$5,535	$1,641	32.37%	$24,117	$1,793	$22,323	$20.46
63	34	877	$14,430	$4,113	$4,859	$1,385	33.67%	$20,126	$1,360	$18,766	$21.40
64	35	698	$12,059	$3,305	$4,235	$1,161	35.13%	$16,612	$992	$15,620	$22.38
65	36	549	$9,959	$2,625	$5,392	$1,421	54.13%	$11,778	$683	$11,095	$20.21
66	37	372	$7,086	$1,796	$3,934	$997	55.51%	$8,237	$463	$7,775	$20.90
67	38	248	$4,960	$1,209	$2,856	$696	57.57%	$5,654	$307	$5,347	$21.56
68	39	163	$3,423	$802	$2,027	$475	59.23%	$3,813	$200	$3,613	$22.17
69	40	105	$2,315	$522	$1,404	$316	60.54%	$2,534	$127	$2,407	$22.92
70	41	66	$1,528	$331	$938	$203	61.33%	$1,679	$79	$1,600	$24.24
71	42	41	$997	$208	$657	$137	65.87%	$1,076	$47	$1,029	$25.10
72	43	25	$638	$128	$443	$89	69.53%	$667	$26	$641	$25.62
73	44	15	$402	$77	$259	$50	64.94%	$429	$13	$416	$27.75
74	45	9	$253	$47	$163	$30	63.83%	$280	$5	$275	$30.61
75	46	5	$148	$26	$286	$51	196.15%	$0	$0	$0	$0.00
				$4,146,167		$87,507	2.11%				

All premiums and losses are expressed in thousands of dollars.

D.O.C. Insurance Company

Free Tail Analysis - Column Documentation

Column	Source/Formula
(1)	Given
(2)	(1) - [Current Age - Current Tenure]
(3)	Original population less all DD&R and lapses.
(4)	Commissioners 1985 Individual Disability Tables A (DTS Valuation Table)
(5)	GAR 1994
(6)	Walker & Skrodenis, reviewed for reasonableness.
(7)	(3) * {1.0 - [1.0 - (4)] * [1.0 - (5)] * [1.0 - (6)]} Note: Set equal to 0.0 if eligibility not met.
(8)	Walker & Skrodenis, reviewed for reasonableness.
(9)	[(3) - (7)] * (8)
(10)	[Loss Trend Factor] ^ {(1) - [Modeled Age - Current Age]}
(11)	[Interest Rate Factor] ^ {(1) - [Modeled Age - Current Age]}
(12)	Given by D.O.C.
(13)	Historical mature C-M rates adjusted to remove expenses and credits times col (3) OR projected 1998 loss costs trended using col (10) times col (3) Ages >= 60 adjusted for semiretirement status in 50% of population.
(14)	(13) / (11)
(15)	[(7) * (12) * (13) / (3)]
(16)	(15) / (11)
(17)	(16) / (14)
(18)	For each year, sum of (15) for that year and all subsequent years discounted to that year.
(19)	For each year, sum of (13) for that year and all subsequent years discounted to that year.
(20)	(18) - (19)
(21)	(20) / (3)

Exhibit 4

D.O.C. Insurance Company

Modeling Results

Tail Currently Offered ? (1)	Year on Risk (2)	Insured Age (3)	Sex (4)	# of Insureds (5)	Avg. Year on Risk (6)	Avg. Insd. Age (7)	Waiting Period (8)	Limits (9)	DD&R Premium as % of Total (10)	Unearned Premium Reserve (11)
No	1-5	26-30	F	5	0	28	10	1000/3000	1.38%	($1.29)
No	1-5	26-30	M	19	1	29	10	1000/3000	1.67%	($0.93)
No	1-5	31-35	M	2	2	31	5	200/600	2.11%	($0.29)
No	1-5	31-35	M	4	2	32	5	500/1000	2.22%	($0.32)
No	1-5	31-35	F	15	2	33	5	1000/3000	1.98%	($0.56)
No	1-5	31-35	M	12	2	33	5	1000/3000	2.33%	($0.25)
No	6-10	31-35	M	2	7	33	10	500/1000	1.21%	($0.22)
No	6-10	31-35	F	13	7	32	10	1000/3000	0.93%	($0.68)
No	6-10	31-35	M	17	7	34	10	1000/3000	1.22%	($0.13)
No	1-5	36-40	M	4	2	38	10	500/1000	2.77%	$0.10
No	1-5	36-40	F	15	2	38	10	1000/3000	2.53%	($0.07)
No	1-5	36-40	M	25	2	38	10	1000/3000	2.75%	$0.11
No	6-10	36-40	F	7	7	37	10	1000/3000	1.32%	$0.03
No	6-10	36-40	M	10	8	38	10	1000/3000	1.35%	$0.54
No	1-5	41-45	M	3	2	44	5	200/600	5.11%	$1.19
No	1-5	41-45	F	1	3	41	10	500/1000	3.03%	$0.49
No	1-5	41-45	M	20	3	42	10	1000/3000	3.45%	$0.95
No	1-5	41-45	F	22	3	43	10	1000/3000	3.51%	$1.00
No	6-10	41-45	F	1	9	43	10	1000/3000	1.53%	$1.45
No	1-5	46-50	M	3	3	49	5	200/600	7.13%	$2.33
No	1-5	46-50	F	2	1	49	10	500/1000	5.01%	$1.25
No	1-5	46-50	M	12	4	48	10	1000/3000	4.53%	$2.37
No	1-5	46-50	F	19	3	48	10	1000/3000	4.84%	$2.05
No	6-10	46-50	M	1	8	49	10	500/1000	3.12%	$3.27
No	6-10	46-50	M	3	7	48	10	1000/3000	3.16%	$3.13
No	6-10	46-50	F	2	8	47	10	1000/3000	2.43%	$2.72
No	1-5	51-55	M	2	3	54	5	200/600	10.27%	$3.29
No	1-5	51-55	F	5	2	52	10	500/1000	5.22%	$1.56
No	1-5	51-55	M	7	3	53	10	500/1000	5.23%	$1.84
No	1-5	51-55	F	13	2	52	10	1000/3000	5.17%	$1.75
No	1-5	51-55	M	13	2	52	10	1000/3000	4.97%	$1.60
No	6-10	51-55	F	8	7	52	10	1000/3000	3.91%	$4.22
No	6-10	51-55	M	7	7	52	10	1000/3000	4.00%	$4.34
No	1-5	56-60	F	1	4	58	10	1000/3000	5.15%	$2.62
No	1-5	61-65	M	1	2	62	10	1000/3000	2.63%	$0.25
No	6-10	66-70	M	1	5	70	10	1000/3000	1.95%	$1.33
Yes	6-10	36-40	M	3	7	39	5	500/1000	1.87%	$0.70
Yes	11-15	36-40	F	6	11	37	10	1000/3000	0.73%	$0.10
Yes	11-15	36-40	M	6	11	39	10	1000/3000	0.92%	$0.78
Yes	11-15	41-45	F	5	13	42	10	1000/3000	0.78%	$1.18
Yes	11-15	41-45	M	7	14	43	10	1000/3000	0.78%	$1.75
Yes	6-10	41-45	F	1	6	41	5	200/600	2.28%	$0.59
Yes	6-10	46-50	M	6	15	47	5	1000/3000	1.00%	$3.08
Yes	6-10	46-50	F	5	9	49	5	1000/3000	2.61%	$3.66
Yes	11-15	46-50	M	3	15	48	10	200/600	1.31%	$2.21
Yes	11-15	46-50	F	1	14	48	10	500/1000	1.20%	$2.86
Yes	11-15	46-50	M	10	15	47	10	1000/3000	0.90%	$3.08
Yes	11-15	46-50	F	5	9	49	10	1000/3000	2.46%	$3.66
Yes	11-15	51-55	M	1	15	51	5	200/600	1.79%	$2.91
Yes	11-15	51-55	F	7	14	53	10	1000/3000	1.57%	$5.14
Yes	11-15	51-55	M	15	15	52	10	1000/3000	1.29%	$4.93
Yes	11-15	56-60	M	3	15	59	10	500/1000	2.30%	$6.18
Yes	11-15	56-60	F	2	15	57	5	1000/3000	2.24%	$6.31
Yes	11-15	56-60	M	1	12	56	10	1000/3000	2.50%	$6.29
Yes	11-15	61-65	F	2	14	64	10	500/1000	2.84%	$6.97
Yes	11-15	61-65	M	3	14	63	10	500/1000	2.77%	$6.83
Yes	11-15	61-65	M	2	13	62	10	1000/3000	2.56%	$7.60
Yes	11-15	66-70	M	1	14	68	10	200/600	3.30%	$4.33
Yes	11-15	66-70	M	4	14	68	10	500/1000	2.63%	$6.08
Yes	11-15	66-70	M	2	14	68	10	1000/3000	2.34%	$6.83
Yes	11-15	71-75	M	2	15	73	10	1000/3000	2.06%	$7.46
				400	6	43			2.69%	$618.02

All premiums are expressed in thousands of dollars.

D.O.C. Insurance Company

Mortality for Male Age 31 as of 7/98

	GAR 1994 Table				7/98 GAR		Conditional	Conditional
					Mortality	Survival	Survival	Mortality
Age	Male qx	Male AAx	Female qx	Female AAx	Rate	Rate	Rate	Rate
25	0.000661	0.010	0.000291	0.014	0.0671%	0.990641	0.000000	0.000000
26	0.000696	0.006	0.000294	0.012	0.0698%	0.989949	0.000000	0.000000
27	0.000727	0.005	0.000302	0.012	0.0725%	0.989231	0.000000	0.000000
28	0.000754	0.005	0.000314	0.012	0.0748%	0.988491	0.000000	0.000000
29	0.000779	0.005	0.000331	0.012	0.0769%	0.987730	0.000000	0.000000
30	0.000801	0.005	0.000351	0.010	0.0787%	0.986557	1.000000	0.000000
31	0.000821	0.005	0.000373	0.008	0.0803%	0.986161	0.999599	0.000401
32	0.000839	0.005	0.000397	0.008	0.0816%	0.985356	0.998783	0.001217
33	0.000848	0.005	0.000422	0.009	0.0821%	0.984547	0.997963	0.002037
34	0.000849	0.005	0.000449	0.010	0.0818%	0.983742	0.997147	0.002853
35	0.000851	0.005	0.000478	0.011	0.0816%	0.982940	0.996334	0.003666
36	0.000862	0.005	0.000512	0.012	0.0822%	0.982132	0.995515	0.004485
37	0.000891	0.005	0.000551	0.013	0.0845%	0.981302	0.994673	0.005327
38	0.000939	0.006	0.000598	0.014	0.0876%	0.980442	0.993802	0.006198
39	0.000999	0.007	0.000652	0.015	0.0915%	0.979545	0.992892	0.007108
40	0.001072	0.008	0.000709	0.015	0.0962%	0.978602	0.991937	0.008063
41	0.001156	0.009	0.000768	0.015	0.1014%	0.977610	0.990932	0.009068
42	0.001252	0.010	0.000825	0.015	0.1071%	0.976563	0.989870	0.010130
43	0.001352	0.011	0.000877	0.015	0.1126%	0.975463	0.988755	0.011245
44	0.001458	0.012	0.000923	0.015	0.1180%	0.974311	0.987588	0.012412
45	0.001578	0.013	0.000973	0.016	0.1239%	0.973104	0.986364	0.013636
46	0.001722	0.014	0.001033	0.017	0.1308%	0.971832	0.985074	0.014926
47	0.001899	0.015	0.001112	0.018	0.1393%	0.970478	0.983702	0.016298
48	0.002102	0.016	0.001206	0.018	0.1486%	0.969036	0.982240	0.017760
49	0.002326	0.017	0.001310	0.018	0.1581%	0.967503	0.980687	0.019313
50	0.002579	0.018	0.001428	0.017	0.1683%	0.965875	0.979036	0.020964
51	0.002872	0.019	0.001568	0.016	0.1795%	0.964141	0.977279	0.022721
52	0.003213	0.020	0.001734	0.014	0.1919%	0.962290	0.975403	0.024597
53	0.003584	0.020	0.001907	0.012	0.2098%	0.960271	0.973356	0.026644
54	0.003979	0.020	0.002084	0.010	0.2283%	0.958079	0.971134	0.028866
55	0.004425	0.019	0.002294	0.008	0.2561%	0.955625	0.968647	0.031353
56	0.004949	0.018	0.002563	0.006	0.2896%	0.952858	0.965842	0.034158
57	0.005581	0.017	0.002919	0.005	0.3308%	0.949705	0.962646	0.037354
58	0.006300	0.016	0.003359	0.005	0.3790%	0.946105	0.958998	0.041002
59	0.007090	0.016	0.003863	0.005	0.4197%	0.942134	0.954972	0.045028
60	0.007976	0.016	0.004439	0.005	0.4646%	0.937757	0.950535	0.049465
61	0.008986	0.015	0.005093	0.005	0.5335%	0.932754	0.945464	0.054536
62	0.010147	0.015	0.005832	0.005	0.5934%	0.927219	0.939854	0.060146
63	0.011471	0.014	0.006677	0.005	0.6857%	0.920862	0.933410	0.066590
64	0.012940	0.014	0.007621	0.005	0.7626%	0.913839	0.926291	0.073709
65	0.014535	0.014	0.008636	0.005	0.8446%	0.906120	0.918467	0.081533
66	0.016239	0.013	0.009694	0.005	0.9685%	0.897345	0.909572	0.090428
67	0.018034	0.013	0.010764	0.005	1.0615%	0.887819	0.899917	0.100083
68	0.019859	0.014	0.011763	0.005	1.1062%	0.877998	0.889962	0.110038
69	0.021729	0.014	0.012709	0.005	1.1935%	0.867519	0.879340	0.120660
70	0.023730	0.015	0.013730	0.005	1.2296%	0.856852	0.868528	0.131472
71	0.025951	0.015	0.014953	0.006	1.3245%	0.845502	0.857024	0.142976
72	0.028481	0.015	0.016506	0.006	1.4319%	0.833396	0.844752	0.155248
73	0.031201	0.015	0.018344	0.007	1.5451%	0.820519	0.831700	0.168300
74	0.034051	0.015	0.020381	0.007	1.6609%	0.806891	0.817886	0.182114
75	0.037211	0.014	0.022686	0.008	1.8780%	0.791737	0.802526	0.197474

7/98 GAR Mortality = 1994 GAR * $(1 - AA_x)^{(X - \text{Current Age} + 4.5)}$

Survival Rate = Cumulative Product of Mortality

Conditional Survival Rate =

Conditional Mortality Rate = 1.00 – Conditional Survival Rate

Exhibit 6

Cox Ingersoll Ross

Interest Rate Generator Formula

General Formula: $r_i = a \text{ x } (b - r_{i-1}) + s_1 \text{ x } z_1$

Selected Formula: $r_i = 0.25 \text{ x } (0.06 - r_{i-1}) + 1.40 \text{ x } z_1$

where	r_i	=	90 day rate for year i
	a	=	reversion frequency parameter
	b	=	long-term mean for 90 day rates
	s_1	=	volatility parameter
	z_1	=	standard normal variate

Note: The volatility parameter is characterized in the actual model used for this analysis as the standard deviation of the interest rates times the square root of the interest rate, thus the s x (r^0.5) term in Exhibit 7.

CIR Interest Rate Model

a	0.2339
b	6.00%
s	6.00%
r0	6.00%

t	a*(b-r)	s(r^.5)dZ	dr	r
0				6.00%
1	0.00%	-2.48%	-2.48%	3.52%
2	0.58%	-0.19%	0.39%	3.90%
3	0.49%	0.88%	1.37%	5.27%
4	0.17%	-0.71%	-0.53%	4.74%
5	0.30%	-0.52%	-0.23%	4.51%
6	0.35%	-1.34%	-0.99%	3.52%
7	0.58%	-0.12%	0.46%	3.98%
8	0.47%	-0.10%	0.37%	4.35%
9	0.39%	1.39%	1.78%	6.13%
10	-0.03%	1.07%	1.04%	7.17%
11	-0.27%	2.55%	2.28%	9.45%
12	-0.81%	-3.62%	-4.42%	5.02%
13	0.23%	-0.41%	-0.18%	4.84%
14	0.27%	0.30%	0.57%	5.42%
15	0.14%	0.86%	0.99%	6.41%
16	-0.10%	0.18%	0.08%	6.49%
17	-0.11%	-1.58%	-1.69%	4.80%
18	0.28%	0.09%	0.37%	5.17%
19	0.19%	-0.43%	-0.24%	4.93%
20	0.25%	-0.52%	-0.27%	4.66%
21	0.31%	0.51%	0.83%	5.48%
22	0.12%	-0.02%	0.10%	5.58%
23	0.10%	2.18%	2.28%	7.86%
24	-0.44%	-1.45%	-1.88%	5.98%
25	0.01%	1.51%	1.51%	7.49%
26	-0.35%	1.61%	1.26%	8.75%
27	-0.64%	-2.32%	-2.96%	5.79%
28	0.05%	1.18%	1.23%	7.02%
29	-0.24%	0.88%	0.64%	7.67%
30	-0.39%	1.57%	1.18%	8.84%
31	-0.66%	0.99%	0.33%	9.17%
32	-0.74%	0.15%	-0.59%	8.58%
33	-0.60%	-4.46%	-5.06%	3.52%
34	0.58%	1.64%	2.22%	5.74%
35	0.06%	-1.57%	-1.51%	4.23%
36	0.42%	0.78%	1.19%	5.42%
37	0.14%	0.10%	0.23%	5.65%
38	0.08%	1.50%	1.59%	7.24%
39	-0.29%	0.64%	0.35%	7.59%
40	-0.37%	-0.23%	-0.60%	6.99%
41	-0.23%	0.96%	0.73%	7.72%
42	-0.40%	0.43%	0.03%	7.75%
43	-0.41%	-2.60%	-3.01%	4.75%
44	0.29%	-0.44%	-0.15%	4.60%
45	0.33%	0.77%	1.10%	5.69%
46	0.07%	1.36%	1.43%	7.12%
47	-0.26%	1.77%	1.51%	8.63%
48	-0.62%	0.83%	0.21%	8.84%
49	-0.67%	-3.70%	-4.36%	4.48%
50	0.36%	1.65%	2.00%	6.48%

D.O.C. Insurance Company

Free Tail Analysis

Current Age	33
Current Tenure	2
Sex	F
Years for Eligibility	5
Selected DD&R %	3.5%
Limit of Liability	1000/3000

Name	Carver, Bonnie
Current Mature Claims-Made	
Premium Estimate	7,623
Random Mortality #	0.98171

Age (1)	Years Insured at Start of Year (2)	# of Insureds (3)	Disability Rate (4)	Mortality Rate (5)	Retire Rate (6)	Cumulative Mortality (6A)	# of DD&R Utilized (7)	Lapse Rate (8)	Cumulative Mortality (8 A)	# of Lapses (9)	Loss Trend Factor (10)	Interest Rate Factor (11)	Tail Cost (12)
22	NA	0	0.000%	0.000%	0.000%	0.000%	0	0.0%	0.000%	0	0.000	0.000	1.93
23	NA	0	0.000%	0.000%	0.000%	0.000%	0	0.0%	0.000%	0	0.000	0.000	1.93
24	NA	0	0.000%	0.000%	0.000%	0.000%	0	0.0%	0.000%	0	0.000	0.000	1.93
25	NA	0	0.000%	0.000%	0.000%	0.000%	0	0.0%	0.000%	0	0.000	0.000	1.93
26	NA	0	0.000%	0.000%	0.000%	0.000%	0	0.0%	0.000%	0	0.000	0.000	1.93
27	NA	0	0.000%	0.000%	0.000%	0.000%	0	0.0%	0.000%	0	0.000	0.000	1.93
28	NA	0	0.000%	0.000%	0.000%	0.000%	0	0.0%	0.000%	0	0.000	0.000	1.93
29	NA	0	0.000%	0.000%	0.000%	0.000%	0	0.0%	0.000%	0	0.000	0.000	1.93
30	NA	0	0.000%	0.000%	0.000%	0.000%	0	0.0%	0.000%	0	0.000	0.000	1.93
31	0	1	0.000%	0.000%	0.000%	0.000%	0	0.0%	0.000%	0	0.907	0.925	1.93
32	1	1	0.000%	0.000%	0.000%	0.000%	0	0.0%	0.000%	0	0.952	0.962	1.93
33	2	1	0.169%	0.020%	0.000%	0.189%	0	10.0%	10.189%	0	1.000	1.000	1.93
34	3	1	0.166%	0.063%	0.000%	10.395%	0	10.0%	19.376%	0	1.084	1.076	1.93
35	4	1	0.164%	0.107%	0.000%	19.594%	0	10.0%	27.657%	0	1.177	1.163	1.93
36	5	1	0.178%	0.154%	0.000%	27.897%	0	10.0%	35.131%	0	1.259	1.243	1.93
37	6	1	0.191%	0.203%	0.000%	35.387%	0	10.0%	41.874%	0	1.363	1.324	1.93
38	7	1	0.205%	0.255%	0.000%	42.141%	0	10.0%	47.954%	0	1.455	1.410	1.93
39	8	1	0.218%	0.311%	0.000%	48.229%	0	10.0%	53.434%	0	1.571	1.496	1.93
40	9	1	0.232%	0.370%	0.000%	53.714%	0	10.0%	58.371%	0	1.673	1.582	1.93
41	10	1	0.245%	0.434%	0.000%	58.653%	0	10.0%	62.816%	0	1.723	1.623	1.93
42	11	1	0.259%	0.501%	0.000%	63.099%	0	10.0%	66.817%	0	1.806	1.685	1.93
43	12	1	0.281%	0.571%	0.000%	67.100%	0	10.0%	70.418%	0	1.918	1.725	1.93
44	13	1	0.307%	0.643%	0.000%	70.699%	0	10.0%	73.657%	0	1.971	1.741	1.93
45	14	1	0.335%	0.717%	0.010%	73.937%	0	10.0%	76.571%	0	2.053	1.784	1.93
46	15	1	0.367%	0.793%	0.020%	76.848%	0	10.0%	79.191%	0	2.104	1.815	1.93
47	16	1	0.402%	0.872%	0.040%	79.464%	0	10.0%	81.545%	0	2.199	1.872	1.93
48	17	1	0.441%	0.956%	0.060%	81.814%	0	10.0%	83.660%	0	2.241	1.910	1.93
49	18	1	0.485%	1.045%	0.080%	83.923%	0	10.0%	85.557%	0	2.344	1.976	1.93
50	19	1	0.533%	1.143%	1.000%	85.943%	0	8.0%	87.099%	0	2.434	2.039	1.93
51	20	1	0.586%	1.251%	1.000%	87.465%	0	8.0%	88.497%	0	2.531	2.099	1.93
52	21	1	0.645%	1.374%	1.000%	88.844%	0	8.0%	89.764%	0	2.584	2.139	1.93
53	22	1	0.710%	1.514%	1.000%	90.094%	0	8.0%	90.913%	0	2.727	2.204	1.93
54	23	1	0.780%	1.673%	1.000%	91.227%	0	8.0%	91.954%	0	2.804	2.250	1.93
55	24	1	0.858%	1.855%	2.500%	92.373%	0	8.0%	93.017%	0	2.897	2.326	1.93
56	25	1	0.943%	2.068%	2.500%	93.402%	0	8.0%	93.961%	0	2.934	2.368	1.93
57	26	1	1.036%	2.316%	5.000%	94.465%	0	8.0%	94.948%	0	3.033	2.408	1.93
58	27	1	1.137%	2.599%	5.000%	95.389%	0	8.0%	95.794%	0	3.169	2.474	1.93
59	28	1	1.247%	2.922%	5.000%	96.179%	0	8.0%	96.516%	0	3.297	2.550	1.93
60	29	1	1.367%	3.290%	10.000%	97.026%	0	8.0%	97.305%	0	3.498	2.674	1.93
61	30	1	1.497%	3.708%	10.000%	97.715%	0	2.0%	97.769%	0	3.735	2.843	1.93
62	31	1	1.638%	4.183%	10.000%	98.122%	0	2.0%	98.166%	0	4.020	3.032	1.93
63	32	1	1.779%	4.721%	10.000%	98.469%	1	2.0%	98.506%	0	4.369	3.268	1.93
64	33	0	1.920%	5.329%	10.000%	98.763%	0	2.0%	98.793%	0	4.681	3.498	1.93
65	34	0	2.061%	6.010%	20.000%	99.132%	0	2.0%	99.156%	0	5.081	3.782	1.93
66	35	0	2.202%	6.765%	20.000%	99.401%	0	2.0%	99.417%	0	5.422	3.975	1.93
67	36	0	2.343%	7.592%	20.000%	99.592%	0	2.0%	99.604%	0	5.723	4.173	1.93
68	37	0	2.484%	8.484%	20.000%	99.726%	0	2.0%	99.734%	0	5.996	4.366	1.93
69	38	0	2.624%	9.434%	20.000%	99.819%	0	2.0%	99.825%	0	6.509	4.637	1.93
70	39	0	2.765%	10.444%	20.000%	99.883%	0	2.0%	99.886%	0	7.074	4.992	1.93
71	40	0	2.906%	11.480%	20.000%	99.925%	0	2.0%	99.928%	0	7.502	5.188	1.93
72	41	0	3.047%	12.605%	20.000%	99.954%	0	2.0%	99.955%	0	7.811	5.348	1.93
73	42	0	3.188%	13.778%	20.000%	99.972%	0	2.0%	99.973%	0	8.237	5.579	1.93
74	43	0	3.329%	15.054%	20.000%	99.983%	0	2.0%	99.984%	0	8.783	5.804	1.93
75	44	0	3.470%	16.381%	100.000%	100.000%	0	0.0%	100.000%	0	9.245	6.101	1.93

D.O.C. Insurance Company

Free Tail Analysis

Current Age	33	Name	Carver, Bonnie
Current Tenure	2	Current Mature Claims-Made	
Sex	F	Premium Estimate	7623.000
Years for Eligibility	5		
Selected DD&R %	3.5%	Number of Insureds	1
Limit of Liability	1000/3000		

Age (1)	Years Insured at Start of Year (2)	# of Insureds (3)	Total Premium # Collected (13)	PV Total Premium # Collected (14)	DD&R # Utilized (15)	PV DD&R # Utilized (16)	Ratio DD&R to Prem. (17)	Discounted Value of Future DD&R Loss # (18)	Discounted Value of Future DD&R Prem # (19)	Year-End UPR # (20)	Year-End UPR # per Insd (21)
22	NA	0	$0	$0	$0	$0	0.00%	$0	$0	$0	$0
23	NA	0	$0	$0	$0	$0	0.00%	$0	$0	$0	$0
24	NA	0	$0	$0	$0	$0	0.00%	$0	$0	$0	$0
25	NA	0	$0	$0	$0	$0	0.00%	$0	$0	$0	$0
26	NA	0	$0	$0	$0	$0	0.00%	$0	$0	$0	$0
27	NA	0	$0	$0	$0	$0	0.00%	$0	$0	$0	$0
28	NA	0	$0	$0	$0	$0	0.00%	$0	$0	$0	$0
29	NA	0	$0	$0	$0	$0	0.00%	$0	$0	$0	$0
30	NA	0	$0	$0	$0	$0	0.00%	$0	$0	$0	$0
31	0	1	$5,000	$5,408	$0	$0	0.00%	$75,324	$12,297	$63,027	$63,027
32	1	1	$5,500	$5,720	$0	$0	0.00%	$78,337	$12,596	$65,741	$65,741
33	2	1	$5,775	$5,775	$0	$0	0.00%	$81,470	$12,898	$68,572	$68,572
34	3	1	$7,623	$7,085	$0	$0	0.00%	$84,729	$13,147	$71,582	$71,582
35	4	1	$8,282	$7,124	$0	$0	0.00%	$91,163	$13,855	$77,308	$77,308
36	5	1	$8,852	$7,122	$0	$0	0.00%	$98,508	$14,662	$83,846	$83,846
37	6	1	$9,588	$7,240	$0	$0	0.00%	$105,310	$15,339	$89,972	$89,972
38	7	1	$10,237	$7,262	$0	$0	0.00%	$112,204	$15,984	$96,219	$96,219
39	8	1	$11,052	$7,389	$0	$0	0.00%	$119,437	$16,628	$102,809	$102,809
40	9	1	$11,765	$7,437	$0	$0	0.00%	$126,737	$17,232	$109,504	$109,504
41	10	1	$12,122	$7,471	$0	$0	0.00%	$134,037	$17,801	$116,236	$116,236
42	11	1	$12,705	$7,542	$0	$0	0.00%	$137,477	$17,813	$119,664	$119,664
43	12	1	$13,493	$7,823	$0	$0	0.00%	$142,740	$18,023	$124,717	$124,717
44	13	1	$13,867	$7,964	$0	$0	0.00%	$146,133	$17,966	$128,167	$128,167
45	14	1	$14,442	$8,096	$0	$0	0.00%	$147,539	$17,633	$129,906	$129,906
46	15	1	$14,798	$8,155	$0	$0	0.00%	$151,143	$17,546	$133,597	$133,597
47	16	1	$15,465	$8,261	$0	$0	0.00%	$153,748	$17,307	$136,441	$136,441
48	17	1	$15,763	$8,253	$0	$0	0.00%	$158,609	$17,302	$141,306	$141,306
49	18	1	$16,484	$8,344	$0	$0	0.00%	$161,821	$17,076	$144,745	$144,745
50	19	1	$17,122	$8,395	$0	$0	0.00%	$167,393	$17,065	$150,328	$150,328
51	20	1	$17,802	$8,480	$0	$0	0.00%	$172,803	$16,993	$155,810	$155,810
52	21	1	$18,178	$8,497	$0	$0	0.00%	$177,869	$16,855	$161,014	$161,014
53	22	1	$19,182	$8,704	$0	$0	0.00%	$181,260	$16,505	$164,755	$164,755
54	23	1	$19,724	$8,767	$0	$0	0.00%	$186,730	$16,313	$170,417	$170,417
55	24	1	$20,379	$8,760	$0	$0	0.00%	$190,624	$15,940	$174,684	$174,684
56	25	1	$20,634	$8,712	$0	$0	0.00%	$197,116	$15,760	$181,356	$181,356
57	26	1	$21,333	$8,857	$0	$0	0.00%	$200,676	$15,298	$185,378	$185,378
58	27	1	$22,293	$9,011	$0	$0	0.00%	$204,069	$14,777	$189,292	$189,292
59	28	1	$23,189	$9,093	$0	$0	0.00%	$209,621	$14,367	$195,254	$195,254
60	29	1	$103,231	$38,603	$0	$0	0.00%	$216,087	$11,197	$204,890	$204,890
61	30	1	$110,210	$38,763	$0	$0	0.00%	$226,580	$7,884	$218,697	$218,697
62	31	1	$118,621	$39,117	$0	$0	0.00%	$240,899	$4,230	$236,669	$236,669
63	32	1	$128,906	$39,448	$248,789	$76,135	193.00%	$0	$0	$0	$0
64	33	0	$0	$0	$0	$0	0.00%	$0	$0	$0	$0
65	34	0	$0	$0	$0	$0	0.00%	$0	$0	$0	$0
66	35	0	$0	$0	$0	$0	0.00%	$0	$0	$0	$0
67	36	0	$0	$0	$0	$0	0.00%	$0	$0	$0	$0
68	37	0	$0	$0	$0	$0	0.00%	$0	$0	$0	$0
69	38	0	$0	$0	$0	$0	0.00%	$0	$0	$0	$0
70	39	0	$0	$0	$0	$0	0.00%	$0	$0	$0	$0
71	40	0	$0	$0	$0	$0	0.00%	$0	$0	$0	$0
72	41	0	$0	$0	$0	$0	0.00%	$0	$0	$0	$0
73	42	0	$0	$0	$0	$0	0.00%	$0	$0	$0	$0
74	43	0	$0	$0	$0	$0	0.00%	$0	$0	$0	$0
75	44	0	$0	$0	$0	$0	0.00%	$0	$0	$0	$0
				$382,678		$76,135	19.90%				

Exhibit 9

D.O.C. Insurance Company

Modeling Results

Tail Currently Offered ? (1)	Name (2)	Insured Age (3)	Sex (4)	# of Insureds (5)	Avg. Year on Risk (6)	Tenure Eligibility (7)	Limits (8)	DD&R Premium as % of Total (9)	Unearned Premium Reserve (10)	Current Premium
No	Carver, Mary	27	F	1	0	10	1000/3000	0.00%	($3,473)	7.623
No	Dunham, Anne	27	F	1	0	10	1000/3000	0.00%	($2,255)	7.623
No	Vaughn, Bonnie	28	F	1	0	10	1000/3000	0.00%	($2,255)	7.623
No	Vaughn, Isabelle	29	F	1	0	10	1000/3000	0.00%	($737)	7.623
No	Houck, Stephanie	29	F	1	0	10	1000/3000	0.00%	($737)	7.623
No	Crum, Bob	26	M	1	1	10	1000/3000	0.00%	($7,316)	7.623
No	Decker, Brett	26	M	1	1	10	1000/3000	0.00%	$0	7.623
No	Miller, Rance	27	M	1	1	10	1000/3000	0.00%	($1,107)	7.623
No	Williams, Ken	28	M	1	1	10	1000/3000	0.00%	($5,595)	7.623
No	Williams, Ken	28	M	1	1	10	1000/3000	0.00%	($3,896)	7.623
No	Hart, Allen	28	M	1	1	10	1000/3000	0.00%	($3,896)	7.623
No	Smith, Bob	28	M	1	1	10	1000/3000	0.00%	($2,656)	7.623
No	Butler, John	28	M	1	1	10	1000/3000	0.00%	($3,896)	7.623
No	Smith, Louis	28	M	1	1	10	1000/3000	0.00%	$0	7.623
No	Holmes, Matt	29	M	1	1	10	1000/3000	0.00%	($1,868)	7.623
No	Polk, Tom	29	M	1	1	10	1000/3000	0.00%	$0	7.623
No	Wallen, Louis	29	M	1	1	10	1000/3000	13.59%	$55,969	7.623
No	Smith, Mike	29	M	1	1	10	1000/3000	0.00%	($7,763)	7.623
No	Polk, Ben	29	M	1	1	10	1000/3000	15.52%	$59,012	7.623
No	Polk, Stanley	29	M	1	1	10	1000/3000	0.00%	($1,868)	7.623
No	Flynn, Richard	30	M	1	1	10	1000/3000	0.00%	($2,255)	7.623
No	Wallen, Stanley	30	M	1	1	10	1000/3000	0.00%	$0	7.623
No	Holmes, Erich	30	M	1	1	10	1000/3000	0.00%	($3,896)	7.623
No	Cox, Bob	30	M	1	1	10	1000/3000	0.00%	($1,868)	7.623
No	Price, Louis	31	M	1	2	5	200/600	0.00%	($3,278)	4.835
No	Decker, Chuck	31	M	1	2	5	200/600	0.00%	($4,087)	4.835
No	Butler, Joe	31	M	1	2	5	500/1000	0.00%	$0	6.788
No	Samson, Matt	32	M	1	2	5	500/1000	0.00%	($3,845)	6.788
No	Hart, Tom	32	M	1	2	5	500/1000	0.00%	($4,230)	6.788
No	Miller, Jeff	33	M	1	2	5	500/1000	0.00%	($1,664)	6.788
No	Carver, Bonnie	31	F	1	2	5	1000/3000	31.36%	$13,338	7.623
No	Peifer, Alanis	31	F	1	2	5	1000/3000	0.00%	($1,868)	7.623
No	Adams, Isabelle	31	F	1	2	5	1000/3000	0.00%	($4,750)	7.623
No	Taylor, Elizabeth	32	F	1	2	5	1000/3000	0.00%	$0	7.623
No	Bock, Nicole	32	F	1	2	5	1000/3000	0.00%	($1,486)	7.623
No	Carver, Rosemary	33	F	1	2	5	1000/3000	17.95%	$59,000	7.623
No	Roth, Karen	33	F	1	2	5	1000/3000	0.00%	($2,255)	7.623
No	Peifer, Nancy	33	F	1	2	5	1000/3000	0.00%	($7,763)	7.623
No	Dunham, Anne	34	F	1	2	5	1000/3000	0.00%	($1,868)	7.623
No	Blevins, Mary	34	F	1	2	5	1000/3000	0.00%	($1,107)	7.623
No	Edwards, Kay	35	F	1	2	5	1000/3000	0.00%	($1,868)	7.623
No	Weiland, Nicole	35	F	1	2	5	1000/3000	0.00%	($2,255)	7.623
No	Feizek, Kay	35	F	1	2	5	1000/3000	0.00%	($737)	7.623
No	Blevins, Kay	33	F	1	2	5	1000/3000	0.00%	$0	7.623
No	Davis, Jennifer	33	F	1	2	5	1000/3000	0.00%	($3,473)	7.623

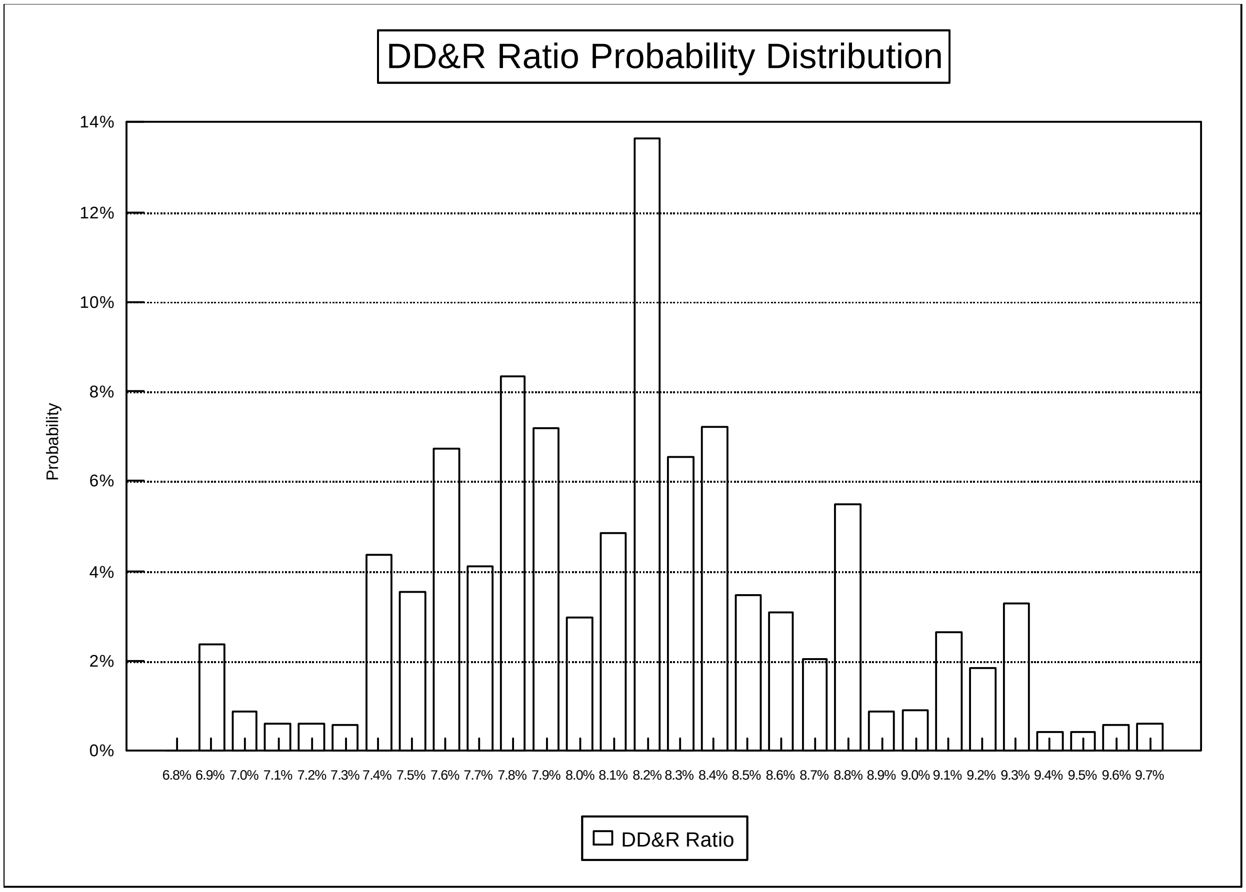
Exhibit 10

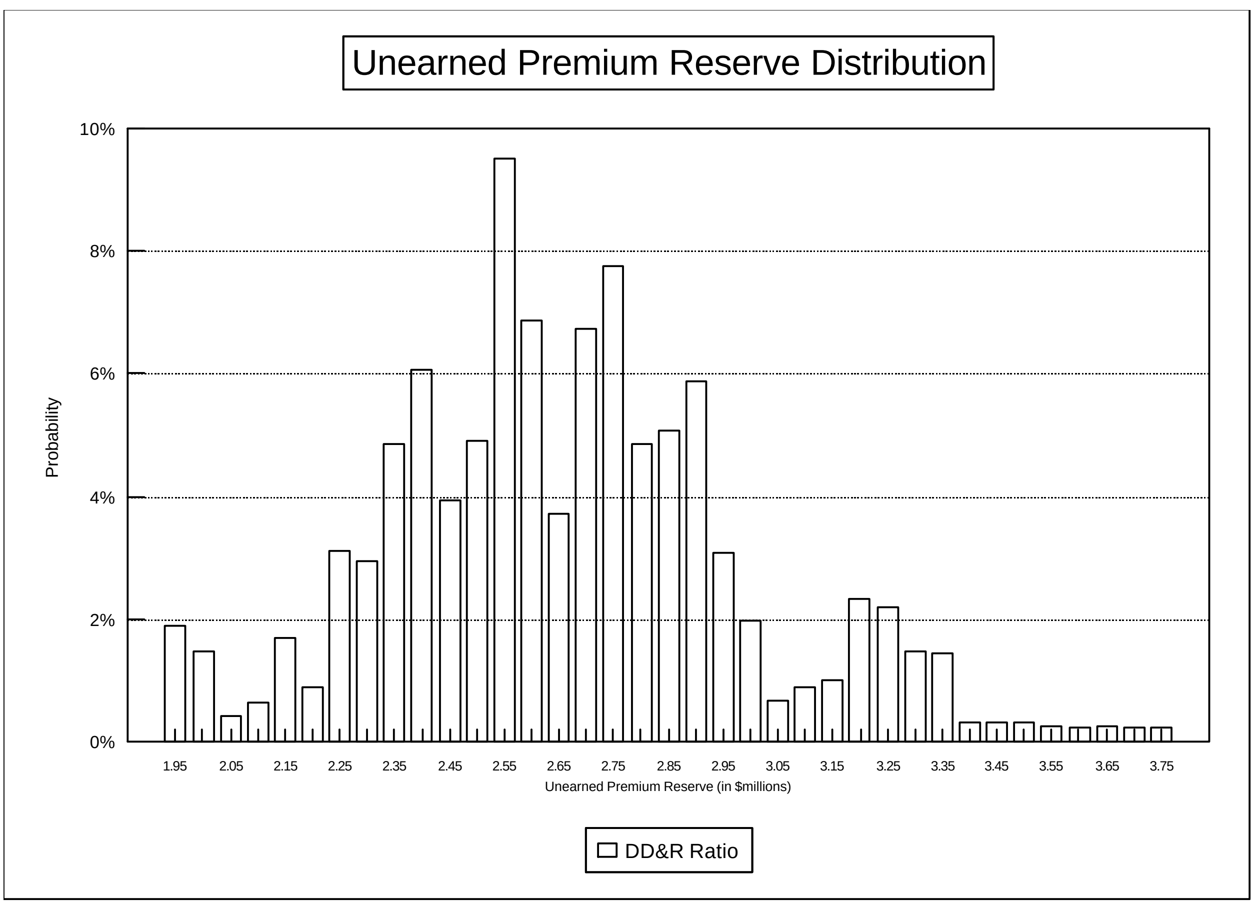
D.O.C. Insurance Company

Simulation Results

Iteration Number	DD&R Premium as % of Total	Unearned Premium Reserve	Iteration Number	DD&R Premium as % of Total	Unearned Premium Reserve
1	9.54%	$3,520,472	51	8.15%	$2,781,675
2	7.51%	$2,386,471	52	7.53%	$2,367,000
3	7.79%	$2,519,970	53	7.86%	$2,538,988
4	9.10%	$3,233,864	54	7.58%	$2,458,526
5	8.33%	$2,803,773	55	7.32%	$2,149,889
6	8.49%	$2,762,468	56	7.61%	$2,459,577
7	8.79%	$2,897,797	57	7.78%	$2,397,167
8	8.11%	$2,522,729	58	8.72%	$2,797,745
9	8.08%	$2,570,597	59	8.11%	$2,487,014
10	7.39%	$2,207,870	60	7.95%	$2,534,242
11	7.75%	$2,440,523	61	7.37%	$2,272,077
12	8.38%	$2,929,374	62	9.00%	$3,064,111
13	7.59%	$2,279,692	63	9.29%	$3,348,392
14	8.71%	$2,987,015	64	8.12%	$2,700,398
15	8.18%	$2,559,520	65	7.45%	$2,317,480
16	8.05%	$2,511,554	66	8.55%	$2,939,972
17	8.67%	$2,822,583	67	9.69%	$3,747,371
18	8.26%	$2,687,580	68	8.28%	$2,692,965
19	8.25%	$2,717,141	69	8.73%	$2,908,225
20	8.15%	$2,773,611	70	8.09%	$2,732,291
21	7.65%	$2,253,365	71	7.13%	$2,084,807
22	8.14%	$2,600,308	72	7.71%	$2,401,558
23	7.81%	$2,599,596	73	8.13%	$2,886,116
24	8.41%	$2,707,177	74	7.79%	$2,516,778
25	8.01%	$2,599,534	75	7.41%	$2,131,060
26	6.96%	$1,962,130	76	8.34%	$2,678,459
27	7.55%	$2,364,665	77	6.83%	$1,925,269
28	8.28%	$2,725,117	78	8.19%	$2,696,213
29	7.91%	$2,462,255	79	8.13%	$2,645,476
30	7.54%	$2,325,990	80	7.71%	$2,383,764
31	8.25%	$2,643,270	81	6.82%	$1,907,352
32	7.90%	$2,591,351	82	9.09%	$3,310,509
33	8.31%	$2,884,304	83	9.21%	$3,243,686
34	7.30%	$2,207,659	84	8.32%	$2,711,898
35	7.80%	$2,429,654	85	7.63%	$2,304,261
36	9.29%	$3,184,507	86	8.81%	$3,116,250
37	8.02%	$2,545,360	87	8.54%	$2,818,180
38	8.19%	$2,830,807	88	8.32%	$2,701,581
39	8.16%	$2,666,112	89	8.58%	$2,876,898
40	7.73%	$2,371,993	90	7.52%	$2,313,651
41	7.88%	$2,567,483	91	9.18%	$3,165,965
42	8.11%	$2,640,340	92	7.76%	$2,433,968
43	9.24%	$3,284,854	93	7.88%	$2,539,417
44	8.34%	$2,706,593	94	8.70%	$2,981,236
45	8.41%	$2,764,708	95	7.33%	$2,207,972
46	8.25%	$2,864,897	96	6.87%	$1,953,539
47	8.71%	$2,870,613	97	9.00%	$3,200,321
48	7.69%	$2,539,073	98	7.81%	$2,493,091
49	8.15%	$2,664,006	99	7.82%	$2,551,361
50	7.42%	$2,326,190	100	8.47%	$2,839,725
			Average	8.11%	$2,640,340

Exhibit 11


DD&R Ratio Probability Distribution
14%
12%
10%
8%
6%
4%
2%
0%
Probability
6.8% 6.9% 7.0% 7.1% 7.2% 7.3% 7.4% 7.5% 7.6% 7.7% 7.8% 7.9% 8.0% 8.1% 8.2% 8.3% 8.4% 8.5% 8.6% 8.7% 8.8% 8.9% 9.0% 9.1% 9.2% 9.3% 9.4% 9.5% 9.6% 9.7%
DD&R Ratio


Unearned Premium Reserve Distribution
10%
8%
6%
4%
2%
0%
Probability
1.95 2.05 2.15 2.25 2.35 2.45 2.55 2.65 2.75 2.85 2.95 3.05 3.15 3.25 3.35 3.45 3.55 3.65 3.75
Unearned Premium Reserve (in $millions)
DD&R Ratio