NCRB-NCRF-NCIGA

north carolina
RATE BUREAU
REINSURANCE FACILITY
INSURANCE GUARANTY ASSOCIATION

Exhibit RB-1

North Carolina Rate Bureau

May 30, 2008

Honorable James E. Long
Commissioner of Insurance
North Carolina Department of Insurance
P. O. Box 26387
Raleigh, North Carolina 27611

Re: Revision of Mobile Homeowner's MH(F) Insurance Rates

Dear Sir:

Enclosed herewith for filing on behalf of all member companies of the North Carolina Rate Bureau are revised premium rates for Mobile Homeowner's MH(F) insurance subject to the jurisdiction of the Rate Bureau.

The enclosed memoranda and exhibits set forth and explain the calculations which, after capping full indications, show the need for (1) statewide average rate level changes of 11.2% for all MH(F) coverages; and (2) revised windstorm and hail exclusion credits.

The foregoing changes were calculated based on rates currently in force and reflect consideration duly given to data for the experience period set forth herein. Ratios in the filing relating to expense experience were developed from special calls issued by the Rate Bureau. In preparing this filing, due consideration has been given to the factors specified in G.S. 58-36-10(2).

Information and statistical data required pursuant to G.S. 58-36-15 and 11 NCAC 10.1105 are shown and referenced in Section E. Additionally, the pre-filed testimony of (a) Robert J. Curry, Assistant Vice President and Actuary - Insurance Services Office, Inc.; (b) Shantelle Thomas, Chairman, Property Rating Subcommittee; (c) David Lalonde, Senior Vice President - AIR Worldwide Corporation; (d) Dr. James Vander Weide, Fuqua School of Business of

Duke University; and (e) Dr. David Appel - Director - Milliman, Inc. are submitted herewith.

The revised rates are to become effective in accordance with the following Rule of Application:

> These changes are applicable to all policies effective on or after January 1, 2008.

Your approval of this filing is respectfully requested.

Very truly yours,

F. Timothy Lucas
Personal Lines Manager

FTL:dms

Attachments

NORTH CAROLINA

MOBILE HOMES INSURANCE - MH(F) PROGRAM

REVISION OF RATES

INDEX

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MOBILE HOMES INSURANCE - MH(F) PROGRAM

SECTION A - SUMMARY OF REVISION

NORTH CAROLINA

MOBILE HOMES INSURANCE - MH(F) PROGRAM

STATEWIDE RATE LEVEL CHANGES

FORM	PREMIUM WEIGHT (A)	INDICATED CHANGE	FILED CHANGE
OWNERS	$ 43,659,180	+ 25.7%	11.1%
TENANTS	$ 158,638	+ 39.9%	39.6%
Total	$ 43,817,818	+ 25.8%	11.2%

(A) Year ended 12/31/2004 aggregate premiums at current level.

NORTH CAROLINA

MOBILE HOMES INSURANCE - MH(F) PROGRAM

STATEWIDE AND TERRITORY RATE LEVEL CHANGES

Territory	Owners	Tenants
05, 06, 42, 43	100.0%	100.0%
32,34,36,38,39, 41,44,45,46,47, 53,57,60	2.9%	38.6%
Statewide	11.1%	39.6%

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MOBILE HOMES INSURANCE - MH(F) PROGRAM

SECTION B - MATERIAL TO BE IMPLEMENTED

NORTH CAROLINA

MOBILE HOMES INSURANCE- MH(F) PROGRAM

MATERIAL TO BE IMPLEMENTED

1. TERRITORIES 05,06,42,43; SEACOAST COUNTY SURCHARGE

CURRENT OWNERS	CURRENT TENANT	FILED OWNERS	FILED TENANT
0%	0%	94.4%	44.3%

2. OWNERS FORMS; NO DEDUCTIBLE--TERRITORIES 32,34,36,38,39,41,44,45,46,47,53,57,60

Amount of Insurance				MH(F)-2	MH(F)-2	MH(F)-3	MH(F)-3
A	B	C	D	CURRENT	FILED	CURRENT	FILED
$2,000	$200	$600	$200	$46	$47.33	$50	$51.45
3,000	300	900	300	58	59.68	63	64.83
4,000	400	1,200	400	70	72.03	77	79.23
5,000	500	1,500	500	82	84.38	91	93.64
6,000	600	1,800	600	94	96.73	104	107.02
7,000	700	2,100	700	106	109.07	118	121.42
8,000	800	2,400	800	118	121.42	133	136.86
9,000	900	2,700	900	130	133.77	146	150.23
10,000	1,000	3,000	1,000	142	146.12	160	164.64
11,000	1,100	3,300	1,100	154	158.47	174	179.05
12,000	1,200	3,600	1,200	166	170.81	187	192.42
13,000	1,300	3,900	1,300	179	184.19	201	206.83
14,000	1,400	4,200	1,400	190	195.51	215	221.24
15,000	1,500	4,500	1,500	202	207.86	228	234.61
each Add'l. $1,000 - Add				12	12.35	14	14.41

3. TENANT FORM;NO DEDUCTIBLE--TERRITORIES 32,34,36,38,39,41,44,45,46,47,53,57,60

Amount of Insurance		MH(F)-4	MH(F)-4
C	D	CURRENT	FILED
$2,000	$200	$43	$59.60
3,000	300	53	73.46
4,000	400	63	87.32
5,000	500	73	101.18
6,000	600	84	116.42
7,000	700	95	131.67
8,000	800	104	144.14
9,000	900	115	159.39
10,000	1,000	125	173.25
Each Add'l. $1,000 - Add		10	13.86

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MOBILE HOMES INSURANCE- MH(F) PROGRAM

MATERIAL TO BE IMPLEMENTED

4. DEDUCTIBLE CREDITS- MAXIMUM DOLLAR AMOUNTS

	Owners- Section 1 Deductible			
Deductible Amount	$100	$250	$500	$1,000
Percentage Credit	10%	20%	27%	34%
Current Maximum Credit	$25.00	$50.00	$100.00	$250.00
Filed Maximum Credit:				
--Territories 05,06,42,43	$50.02	$100.02	$200.04	$500.09
--Territories 32,34,36,38,39,41,44-47,53,57,60	$25.73	$51.45	$102.90	$257.25

	Tenant- Section 1 Deductible			
Deductible Amount	$100	$250	$500	$1,000
Current Maximum Credit	$25.00	$50.00	$100.00	$250.00
Filed Maximum Credit:				
--Territories 05,06,42,43	$50.00	$100.00	$200.00	$500.00
--Territories 32,34,36,38,39,41,44-47,53,57,60	$34.65	$69.30	$138.60	$346.50

	Owners Theft Deductible		Tenant Theft Deductible	
Deductible Amount	$100	$250	$100	$250
Percentage of Credit	3%	5%	3%	5%
Current Maximum Credit	$10.00	$15.00	$10.00	$15.00
Filed Maximum Credit:				
--Territories 05,06,42,43	$20.00	$30.02	$20.00	$30.00
--Territories 32,34,36,38,39,41,44-47,53,57,60	$10.29	$15.44	$13.86	$20.79

5. WINDSTORM OR HAIL EXCLUSION CREDIT -- Territories 05,06,42,43 only

Current Owners	Current Tenant	Filed Owners	Filed Tenant
30.0%	10.0%	58.9%	57.0%

NORTH CAROLINA

MOBILE HOMES INSURANCE - MH(F) PROGRAM

SECTION C - SUPPORTING MATERIAL

NORTH CAROLINA

MOBILE HOMES INSURANCE - MH(F) PROGRAM

OWNERS FORMS

Determination of Statewide Rate Level Change

	(1) Non-Modeled Adjusted Incurred Losses (a)	(2) Non-Modeled Excess Losses (b)	(3) Non-Modeled Losses-Excess x Non-Modeled Excess Factor (c)	(4) Modeled Hurricane Losses (d)	(5) Total Losses Including Loss Adjustment Expense [(3)+(4)] * LAE (e)
2000	16,567,551	417,875	16,731,064	4,143,615	22,732,525
2001	18,079,627	0	18,730,494	4,671,914	25,485,222
2002	19,163,073	0	19,852,944	4,766,668	26,810,757
2003	23,896,208	6,312,041	18,217,197	4,733,971	24,993,822
2004	17,677,162	0	18,313,540	4,716,875	25,080,122

	(6) Current Cost/ Amount Factor (f)	(7) Earned House Years	(8) Average Trended Loss Cost (5) *(6)*CPF/(7) (g)	(9) Average Rating Factor (h)	(10) Trended Base Class Loss Cost	(11) Weights
2000	0.885	98,295	213.47	1.300	164.21	0.10
2001	0.947	104,140	241.72	1.443	167.51	0.15
2002	0.961	104,135	258.06	1.527	169.00	0.20
2003	0.976	100,253	253.79	1.614	157.24	0.25
2004	0.966	95,120	265.66	1.687	157.47	0.30

(12) Weighted Trended Base Class Cost (i)	=	161.90
(13) Credibility (501,943 House Years)	=	1.00
(14) Expected Base Class Loss Cost	=	181.97
(15) Credibilty-Weighted Base Class Loss Cost	=	161.90
(16) Fixed Expense per Policy (j)	=	19.31
(17) Loss and Fixed Expense,(15) + (16)	=	181.21
(18) Expected Loss and Fixed Expense Ratio (k)	=	0.5577
(19) Net Base Rate per Policy, (17) / (18)	=	324.92
(20) Anticipated Deviation (l)	=	0.05
(21) Deviation Amount per Policy, (19) / (1.0 - (20)) - (19)	=	17.10
(22) Required Base Rate, (19)+(21)	=	342.02
(23) Current Base Rate	=	272.00
(24) Ind'd Rate-Level Change, (22) / (23)	=	1.257

NORTH CAROLINA

MOBILE HOMES INSURANCE - MH(F) PROGRAM

TENANTS FORM

Determination of Statewide Rate Level Change

	(1) Non-Modeled Adjusted Incurred Losses (a)	(2) Modeled Hurricane Losses (d)	(3) Total Losses Including Loss Adjustment Expense [(1)+(2)] * LAE (e)	(4) Current Cost/ Amount Factor (f)
2000	$ 484,505	$ 48,910	$ 599,558	1.344
2001	424,384	27,245	507,631	1.302
2002	196,479	12,357	234,732	1.254
2003	128,061	6,289	151,010	1.183
2004	50,320	5,091	62,282	1.102

	(5) Earned House Years	(6) Average Trended Loss Cost (3) *(4)*CPF/(5) (g)	(7) Average Rating Factor (h)	(8) Trended Base Class Loss Cost	(9) Weights
2000	11,800	72.86	1.329	54.82	0.10
2001	6,369	110.72	1.291	85.76	0.15
2002	2,552	123.09	1.238	99.43	0.20
2003	1,346	141.65	1.157	122.43	0.25
2004	1,038	70.58	1.092	64.63	0.30

(10) Weighted Trended Base Class Cost (i)	=	88.23
(11) Credibility (23,104 House Years)	=	0.20
(12) Expected Base Class Loss Cost	=	87.50
(13) Credibilty-Weighted Base Class Loss Cost	=	87.65
(14) Fixed Expense per Policy (j)	=	16.10
(15) Loss and Fixed Expense,(13) + (14)	=	103.75
(16) Expected Loss and Fixed Expense Ratio (k)	=	0.5577
(17) Net Base Rate per Policy, (15) / (16)	=	186.03
(18) Anticipated Deviation (l)	=	0.05
(19) Deviation Amount per Policy, (17) / (1.0 - (18)) - (17)	=	9.79
(20) Required Base Rate, (17)+(19)	=	195.82
(21) Current Base Rate	=	140.00
(22) Ind'd Rate-Level Change, (20) / (21)	=	1.399

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MOBILE HOMES INSURANCE - MH(F) PROGRAM

STATEWIDE RATE REVIEW ACCIDENT YEAR ENDED 12/31/2004

(a) Incurred losses excluding hurricane have been adjusted by the following loss development factors:

Year Ended	Loss Development Factor
12/31/2000	1.000
12/31/2001	1.000
12/31/2002	1.000
12/31/2003	1.000
12/31/2004	1.000

(b & c) Excess Losses and Excess Factor are calculated on page D-28.

(d) Modeled hurricane losses are calculated by multiplying the modeled hurricane loss cost per $1000 of coverage developed by AIR Worldwide by total limits insurance years (in thousands of dollars.)

(e) The trended loss adjustment expenses have been calculated to be 8.9% of the incurred losses for Owners Forms and 12.4% of the incurred losses for Tenants. These factors are developed on pages D-26-27.

(f & g) The development of Current Cost/Amount Factors and Composite Projection Factors is shown on page D-22. See pages D-8-21 for additional detail.

(h) The Average Rating Factor is the ratio of average rate at current manual level and average current base rate.

(i) The Weighted Trended Base Class Loss Cost is the sum of the products, by year, of the Trended Base Class Loss Costs and the accident year weights.

(j) The development of Fixed Expense per policy is shown on page D-27.

(k) The development of the Expected Loss and Fixed Expense Ratio is shown on page D-25.

(l) The anticipated deviation of 5% was selected by the North Carolina Rate Bureau.

NORTH CAROLINA

MOBILE HOMES INSURANCE - MH(F) PROGRAM

INDICATED BASE LOSS COSTS BY TERRITORY - OWNERS FORMS

Terr.	(1) Non-Hurricane Base Class Loss Cost	(2) Current Base Rate	(3) Five Year House Years	(4) Cred-ibility	(5) Cred-ibility Weighted Base Loss Cost	(6) Model Loss Cost	(7) Total Loss Cost	(8) Indicated Relativity Terr(7)/ SW(7)	(9) Indicated Statewide Base Loss Cost	(10) Indicated Base Loss Cost Terr(8)/ SW(8)*(9)
5,6,42,43	105.55	272	45,648	0.80	108.63	177.65	286.28	1.889	161.90	305.92
ROS	122.41	272	456,295	1.00	122.41	15.98	138.39	0.913	161.90	147.86
SW	120.94	272	501,943				151.54	0.9997		

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INDICATED BASE CLASS RATE AND RATE LEVEL CHANGE BY TERRITORY - OWNERS FORMS

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Terr.	Indicated Base Class Loss Cost	Trended Fixed Expenses	Variable Expenses	Current Base - Class Rate	Indicated Net Base-Class Rate ((1)+(2)*(4)) / (1.0-(3))	Deviation	Dollar Deviation Per Exposure ((5) / (1.0- (6))) - (5)	Indicated Required Base - Class Rate (5) + (7)	Filed Base - Class Rate	Indicated Rate Level Change (8) / (4)	Filed Rate Level Change (a) (9) / (4)	Five Year Earned Premium
5,6,42,43	305.92	0.0728	0.6497	272	929.84	0.05	48.94	979	544.00	3.599	2.000	18,323,737
ROS	147.86	0.0708	0.3710	272	265.69	0.05	13.98	280	279.89	1.029	1.029	188,252,445
SW			0.4423							1.257	1.111	206,576,182

(a) The filed rating differential for Terr. 05,06,42,43, 1.944 , is the ratio of column (11) for Terr. 05,06,42,43 and column (11) for ROS.

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INDICATED BASE LOSS COSTS BY TERRITORY - TENANTS FORM

Terr.	(1) Non-Hurricane Base Class Loss Cost	(2) Current Base Rate	(3) Five Year House Years	(4) Cred-ibility	(5) Cred-ibility Weighted Base Loss Cost	(6) Model Loss Cost	(7) Total Loss Cost	(8) Indicated Relativity Terr(7)/ SW(7)	(9) Indicated Statewide Base Loss Cost	(10) Indicated Base Loss Cost Terr(8)/ SW(8)*(9)
5,6,42,43	20.71	140	97	0.00	43.14	67.51	110.65	2.377	87.65	208.32
ROS	43.23	140	23,007	0.50	43.19	3.08	46.27	0.994	87.65	87.12
SW	43.14	140	23,104				46.56	1.0001		

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INDICATED BASE CLASS RATE AND RATE LEVEL CHANGE BY TERRITORY - TENANTS FORM

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Terr.	Indicated Base Class Loss Cost	Trended Fixed Expenses	Variable Expenses	Current Base - Class Rate	Indicated Net Base-Class Rate ((1)+(2)*(4)) / (1.0-(3))	Deviation	Dollar Deviation Per Exposure ((5) / (1.0- (6))) - (5)	Indicated Required Base - Class Rate (5) + (7)	Filed Base - Class Rate	Indicated Rate Level Change (8) / (4)	Filed Rate Level Change (9) / (4) (a)	Five Year Earned Premium
5,6,42,43	208.32	0.1112	0.6200	140	589.18	0.05	31.01	620	280.00	4.429	2.000	18,149
ROS	87.12	0.1150	0.4385	140	183.83	0.05	9.68	194	194.04	1.386	1.386	4,148,418
SW			0.4423							1.399	1.396	4,166,567

(a) The filed rating differential for Terr. 05,06,42,43, 1.443 , is the ratio of column (11) for Terr. 05,06,42,43 and column (11) for ROS.

NORTH CAROLINA
MOBILE HOMES INSURANCE - MH(F) PROGRAM
DERIVATION OF WIND EXCLUSION CREDITS

The filed wind exclusion credits are based on the pricing methodology contained in Robert Hurley's "Commercial Fire Insurance Ratemaking" contained in the 1973 CAS Proceedings. This method is summarized in the following formula:

$$C = 1.0 - \frac{Ld + F}{(1 - V)R} \quad \text{where,}$$

C = indicated percentage credit

F = provision in indicated rates for fixed expenses

V = variable expense provision

L = provision in filed rates for losses and loss adjustment expense = 1.0 – V – F

R = territory risk load factor = (1-statewide variable expense loading)/(1-V). The statewide variable expense loading is 44.23%.

d = percentage of losses remaining after wind losses are excluded

The d values used in this calculation are obtained by the following formula:

$$d = \frac{N}{N + W}, \text{ where}$$

N = 5 year non-wind losses

W = X + Y, where
X = 5 year modeled hurricane losses
Y = 5 year non-hurricane wind losses

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MOBILEHOMES INSURANCE - MH-F PROGRAM

Derivation of Wind Exclusion Credit- Territories 05,06,42,43

The following displays the variables described above and the indicated percentage credit, C:

	Owners	Tenant
C	0.773	0.806
L	0.330	0.355
d	0.323	0.235
F	0.020	0.025
V	0.6497	0.6200
R	1.592	1.468
N	$6,160,364	$2,685
X	$11,969,465	$8,752
Y	$951,109	$0

The following calculation derives the filed percentage credit.

		Owners	Tenant
1.	Indicated Percentage Credit	77.3%	80.6%
2.	Indicated Base Rate net of deviations	929.84	589.18
3.	Indicated Base Credit net of deviations (a)	718.77	474.88
4.	Indicated non-wind Base Rate net of deviations (b)	211.07	114.30
5.	Filed Base Rate	540.00	280.00
6.	Deviation	0.050	0.050
7.	Filed Base Rate net of deviations (c)	513.00	266.00
8.	Credit net of deviations (d)	301.93	151.70
9.	Filed Percentage Credit (e)	58.9%	57.0%

(a) (1) x (2)
(b) (2) - (3)
(c) (5) x [1.0 - (6)]
(d) (7) - (4)
(e) [(8) / (1.0- (6)] / (5)

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MOBILE HOMES INSURANCE - MH(F) PROGRAM

SECTION D - EXPLANATORY MATERIAL

NORTH CAROLINA

MOBILE HOMES INSURANCE - MH(F) PROGRAM

EXPLANATORY MEMORANDUM

This memorandum supplements the filing letter and supporting exhibits setting forth a revision of Mobile Homes MH(F) insurance rates in the State of North Carolina. It is the purpose of this memorandum to describe the source data used and to set forth in detail the insurance ratemaking procedures reflected in the filing. Certain pages in the filing and accompanying material contain a notation "all carriers" or other similar wording. This indicates that the data are combined for all statistical agents and companies except as noted in Section E.

Premium and Loss Experience

This revision is based upon the combined premium and loss experience of all licensed companies writing Mobile Homes MH(F) insurance in this State, except as noted in Section E. In order to have this experience available in all detail necessary for rate review and ratemaking in accordance with accepted standards, all such companies are required to file each year their total Mobile Homes insurance experience with the official statistical agents. Experience is recorded pursuant to the officially approved statistical plans and reported by the companies in accordance with instructions issued by the statistical agents under the Official Calls for Experience.

The Commissioner appointed the following statistical agents for the collection of Mobile Homes insurance experience in North Carolina: Insurance Services Office (ISO), Independent Statistical Services, Inc. (ISS), American Association of Insurance Services (AAIS), and National Independent Statistical Service (NISS).

Experience utilized in the filing was collected under the Personal Lines Statistical Plan (Other Than Automobile), and the 2005 Official Statistical Programs of ISO, the Statistical Plan for Mobilehome Policies, 2005 Statistical Programs of ISS, the Mobilehomes Statistical Plan developed by AAIS and the 2005 Statistical Programs of the AAIS, the Dwelling Statistical Plan developed by the NISS and the 2005 Statistical Programs of the NISS. In substance, the statistical plans of all statistical agents are similar in North Carolina, and provide for the recording and reporting of the experience in the detail required for ratemaking and in such form that the experience of all companies can be combined.

The filing of experience is accompanied by an affidavit executed by an officer of the statistical agent responsible for and acquainted with the statistical procedures employed for the production of this end product. Further, the licensing of an organization and its appointment as a statistical agent in the various states is predicated upon demonstration by the organization of its ability to perform this function. Moreover, the performance of the statistical agents is reviewed periodically through examination by personnel of state insurance departments under the convention examinations of the National Association of Insurance Commissioners. From time to time such organizations are called upon by Insurance Department examiners to verify, and do verify the data consolidated by them as statistical agents.

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MOBILE HOMES INSURANCE - MH(F) PROGRAM

EXPLANATORY MEMORANDUM

The insurance companies likewise are subject to a variety of checks and controls. Effective controls are maintained within the company over the activities of company employees connected with the company's statistics. Companies are required by statute to submit directly to the Insurance Department statistical and accounting information to be found in the Annual Statement and the Insurance Expense Exhibit. These documents are scrutinized by experienced Insurance Department personnel throughout the country. The insurance companies are also subject to examination by the Insurance Department, which examinations extend into the statistical records of the companies.

Tabulations of experience reported to North Carolina statistical agents are provided to the Insurance Services Office. The Insurance Services Office combines the experience of all statistical agents and develops the analysis included in this filing. This work is performed at the direction of the North Carolina Rate Bureau.

Statewide Rate Level Exhibits

1. Experience

   Mobile Homes insurance experience was compiled on a calendar accident year basis for the years ended December 31, 2004, 2003, 2002, 2001 and 2000. For any twelve-month period, the accident year experience brings together the losses resulting from accidents occurring during that period with the premiums and number of houses "earned" during the same period. Since this filing utilizes a computer model to measure losses attributable to hurricanes, actual hurricane losses have been removed from the ratemaking experience.

2. Average Rating Factors

   The earned premiums at present manual rates for the mobilehomes insurance coverages are calculated by multiplying the number of insured houses earned during the experience period by the rates in effect at the time of review. Earned premiums at present rates are used to determine average rating factors. The average rating factor is the ratio of the average rate (earned premium at manual level divided by corresponding house-years) and the "base class" rate. The average rating factor is used to convert the pure-premiums incurred during the experience period to the base-class level.

   The "base class" for MH(F) Owners Forms is defined to be: $25,000 Coverage A limit, Form 2, no tie-down, $250 all-perils deductible. The "base class" for the MH(F) Tenants Form is defined to be: $15,000 Coverage C limit, no tie-down, $250 all-perils deductible, and no theft deductible.

3. Losses

Losses compiled for any accident year include paid losses as well as loss reserves. Each year the experience is compiled for the latest five years, all valued as of three months after the close of the latest accident year period. The amounts that will ultimately be required as payments of claims on open cases are carefully determined by the claim departments of the companies, and experience has shown that these determinations are highly accurate in the aggregate. A selected loss development factor of 1.000 has been applied to the losses for each accident year.

In order to insure stability in rate levels while maintaining adequacy in the event of wide swings in hurricane and other wind losses, an excess wind procedure and a hurricane loss model have been utilized. Hence, extreme shifts in rate level (both upward and downward), which might result from reflecting large hurricane and other wind losses only in the year in which they occur will be avoided. For the MH(F) Owners Forms, the incurred non-modeled excess losses are those losses which result from unusually severe wind activity (other than hurricane). They are removed from the experience used in developing rates. In order to reflect the impact of excess wind losses (that are not related to hurricanes and not accounted for in the hurricane model) on a long-term basis, the non-modeled losses are multiplied by an excess factor of 1.036. The derivation of the excess factor is shown on Page D-28. Since the number of years available for mobilehomes experience is limited, the excess calculation uses Homeowners insurance experience for years prior to 2001. The modeled losses used in this filing are based on analysis performed by the Air Worldwide Corporation on behalf of the North Carolina Rate Bureau. See pages D-30-31 for details.

4. Loss Adjustment Expense

The MH(F) loss adjustment expenses are determined as an average percentage of the North Carolina incurred losses for the corresponding five calendar accident years, based on a North Carolina expense call. The high and low years are excluded in the average. See pages D-26-27.

5. Credibility Factor Determination

Credibility considerations enter into the Mobilehomes ratemaking formula in the calculation of statewide rate level indications which depend, in part, on the determination of the weighted statewide trended pure-premium.

The statewide credibility procedure is the same as the procedure currently used in North Carolina Homeowners filings. This procedure is based on the 'frequency with severity modification' model discussed in "Credibility of the Loss cost" by Mayerson, Bowers and Jones. The full credibility standard is based on a normal distribution with a 90% probability of meeting the test and a 5% maximum departure from the expected value, translated to house year standards. Partial credibility (Zp) is calculated as follows:

$$Z_p = \sqrt{\text{five year house years / full credibility standard}} \text{ (truncated to the nearest tenth)}$$

The full credibility standard is 240,000 house years for the Owners Forms, and 285,000 house years for the Tenants Form.

6. Loss Trend

Loss Trend is based on external trend information. For the owners' forms, loss trend relies on the Boeckh Residential Index and the Modified Consumer Price Index, which are averaged (weighted 55% and 45%, respectively) and comprise the Current Cost Index. For the tenant form, the Modified Consumer Price Index is used.

The loss trending procedure is accomplished in two steps. In the first step Current Cost Factors are applied to each year's losses. The Current Cost Factors are derived from the external indices and, when applied to a given year's losses, translate these losses to a cost level which represents November 15, 2006. In order to trend losses from November 15, 2006 to one year beyond the assumed effective date of October 1, 2007, a Loss Projection Factor is applied. This projection factor is based on the annual change inherent in the latest twelve quarterly points of the Current Cost Index.

Since the external indices necessarily ignore the effect of policy deductibles, a First Dollar procedure to trend from the first dollar of loss is incorporated into the calculation of the Loss Projection Factor. The calculation of the first-dollar effect is the average effect for the $100, $250 and $500 deductibles.

The procedures described above are displayed on Pages D-8-14 and D-22.

7. Expense Trend

The average annual change in expenses is based on the All Items Consumer Price Index and the Compensation Cost Index. The expected average annual change in expenses has been selected to be 3.0% based on analysis and review of these data, which are displayed on Pages D-23-24.

8. Premium Trend

Since the rate-of-change in MH(F) manual rates by policy limit varies somewhat with the choice of deductible, the average (implicit) policy amount relativities used in the premium trend calculations are based on the data for the $100, $250 and $500 deductibles which are the typically-selected options. The historical average relativities are used to calculate an average annual change. This rate of change, after being adjusted for distorting effects such as the introduction of policies covering newly constructed homes, is used to estimate the average relativity at the point in time corresponding to the mid-point of the latest quarter of the Current Cost Index (11/15/2006). The Current Amount Factor for a given year is calculated as the adjusted ratio of the 11/15/2006 average relativity and the given year's average relativity. In order to calculate the Premium Projection Factor, the adjusted annual rate of change is compounded over the time period between 11/15/2006 and 4/1/2008 (six months beyond the assumed effective date).This calculation is shown on pages D-15-22.

NORTH CAROLINA

MOBILE HOMES INSURANCE - MH(F) PROGRAM

EXPLANATORY MEMORANDUM

9. Trend Periods

The effective date assumed in this filing is October 1, 2007 for new and renewal policies. Given this effective date, the trend periods for premiums, losses and expenses are as follows:

- premiums, and the corresponding average rating factors, are trended from January 1 of the given year to April 1, 2008.
- losses are trended from July 1 of the given year to October 1, 2008
- general expense and other acquisition expense percentages, since they are based on 2002-2004 data, are trended from July 1, 2003 to April 1, 2008
- loss adjustment expense percentages, since they are based on 2000-2004 data, are trended from July 1, 2002 to October 1, 2008

10. Expense Loadings (other than L.A.E.)

These quantities represent the portion of the premium income expended on taxes, reinsurance costs, general expenses, commissions and other acquisition expenses. Expenses other than those related to reinsurance costs are determined from special calls for North Carolina expense experience and reflect the 2002, 2003, and 2004 results as reported by all companies licensed in North Carolina during those years. Reinsurance expense loadings are based on a separate analysis performed by Dr. David Appel on the behalf of the North Carolina Rate Bureau. The breakdown of all expenses is set forth on Page D-25. The provisions for general, other acquisition and loss adjustment expenses are trended in order to reflect the fact that the dollar costs of these expense components do not vary with the premium charged.

The provision for the net cost of reinsurance is 18.23%. See also pre-filed testimony of D. Appel.

NORTH CAROLINA

MOBILE HOMES INSURANCE - MH(F) PROGRAM

EXPLANATORY MEMORANDUM

Determination of Base-Class Loss Costs by Territory

1. Non-Modeled Base-Class Loss Cost

   A five-year non-modeled base-class loss cost by territory is derived by dividing five-year territory losses excluding hurricane by the product of the five-year average rating factor and five-year house-years. The territory losses excluding hurricane include a territory wind provision for Mobile Homes MH(F) Owners. The calculation of the territory non-hurricane wind provision is described on page D-29.

2. Credibility

   The five-year base-class loss cost excluding hurricane is assigned a credibility value based upon the number of house-years underlying this loss cost. The standard for full credibility is 60,000 house years for the Owners Forms, and 75,000 house years for Tenants, with partial credibility equal to:

$$\sqrt{\text{five year house years / full credibility standard}}$$

   truncated to the nearest tenth. The complement of credibility is assigned to the statewide five-year base-class loss cost excluding hurricane adjusted by the ratio of the territory's current base rate and the average current base rate for all territories.

3. Five-year Modeled Hurricane Base-Class Loss Cost

   The five-year modeled hurricane base-class loss cost is derived by dividing five-year modeled hurricane territory losses by the product of the five-year average rating factor and five-year house-years.

4. Five-year Total Base-Class Loss Cost

   The five-year base-class loss cost for total losses is the sum of the five-year credibility weighted base-class loss cost excluding hurricane and the five-year modelled hurricane base-class loss cost.

5. Indicated Relativity for Base-Class Loss Costs

   The total loss costs by territory are made to be relative to the state by taking the ratio of the by-territory loss costs and the statewide average loss cost.

6. Indicated Base-Class Loss Costs By Territory

   The territory relativities are applied to the statewide base-class loss cost (computed on the statewide indications pages) in order to obtain the indicated base-class loss costs by territory.

NORTH CAROLINA

MOBILE HOMES INSURANCE - MH(F) PROGRAM

EXPLANATORY MEMORANDUM

Determination of Base Rates by Territory

1. Fixed Expenses By Territory

   The statewide provisions for general and other acquisition expenses are adjusted in order to reflect the varying size of the current rates by territory. This is accomplished by multiplying the statewide provisions by the ratio of the current statewide average rate and the current average rate for the given territory.

2. Variable Expenses By Territory

   The variable expense loadings include provisions for commissions, taxes, and the cost of reinsurance. The provision for the reinsurance cost expense varies by territory.

3. Calculation of Indicated Base-Class Rates By Territory

   The calculation of the revised rates is based on the following formula:

   Revised Rate = [(Base-Class Loss Cost) + (Fixed Expense Provision * Current Rate)] / (1- Variable Expense Provision)

   The calculation includes the reflection of the necessary provisions for profit, deviations, and contingencies. In order to reflect the varying risk of hurricane losses, the profit and reinsurance provisions vary by territory.

Credibility Factor Determination

Credibility considerations enter into the Mobile Homes MH(F) ratemaking formula in the calculation of territory rate level indications which depend, in part, on the determination of the individual territory's formula non-hurricane loss cost.

The territory credibility procedure is based on the 'frequency with severity modification' model discussed in "Credibility of the Loss cost" by Mayerson, Bowers and Jones. The full credibility standard is based on a normal distribution with a 90% probability of meeting the test and a 10% maximum departure from the expected value, translated to house year standards. Partial credibility (Zp) is calculated as follows:

$Z_p = \sqrt{\text{five year house years / full credibility standard}}$ (truncated to the nearest tenth)

The full credibility standard is 60,000 house years for the Owners Forms, 75,000 house years for the Tenants Form.

NORTH CAROLINA

MOBILE HOMES INSURANCE - MH(F) PROGRAM - OWNERS

DEVELOPMENT OF CURRENT COST FACTORS (CCF) AND LOSS PROJECTION FACTOR

QUARTER ENDING DECEMBER 31, 2006

PART A: ESTABLISHMENT OF MONTHLY CURRENT COST INDEX (CCI) WITH:
45% WEIGHT TO MODIFIED COMSUMER PRICE INDEX (MCPI)
55% WEIGHT TO BOECKH RESIDENTIAL INDEX (BRI) FOR N.C.
(MCPI BASE: 1967 = 100 BRI BASE: 1967 = 100)

MO	BRI	MCPI 2004	CCI	QCCI	BRI	MCPI 2005	CCI	QCCI	BRI	MCPI 2006	CCI	QCCI
1	740.4	387.6	581.6		789.6	394.5	611.8		838.8	400.0	641.3	
2	744.9	390.4	585.4		797.6	396.8	617.2		848.9	402.0	647.8	
3	745.0	393.0	586.6	584.5	798.3	399.1	618.7	615.9	847.8	404.5	648.3	645.8
4	744.6	393.5	586.6		799.0	399.5	619.2		853.6	405.8	652.1	
5	755.5	393.2	592.5		809.8	399.8	625.3		859.8	405.9	655.5	
6	755.0	393.0	592.1	590.4	809.1	398.1	624.2	622.9	862.6	404.5	656.5	654.7
7	766.8	391.6	598.0		813.8	397.6	626.5		866.5	403.7	658.2	
8	772.5	391.2	600.9		817.6	397.5	628.6		874.4	404.6	663.0	
9	771.8	393.0	601.3	600.1	817.9	399.3	629.5	628.2	878.1	405.7	665.5	662.2
10	777.0	395.5	605.3		820.7	400.8	631.7		884.9	407.0	669.8	
11	784.1	395.1	609.1		833.7	401.3	639.1		888.8	406.4	671.7	
12	785.2	393.6	609.0	607.8	835.5	400.2	639.6	636.8	890.1	404.7	671.7	671.1

PART B: CALCULATION OF CURRENT COST FACTORS (CCF)

CALENDAR YEAR AVERAGE CCI				CURRENT COST FACTORS BASED ON AVERAGE CCI VALUE FOR QUARTER ENDING 12/31/2006 = 671.1
YEAR	BRI	MCPI	CCI	
2000	629.2	375.0	514.8	1.304
2001	644.6	379.8	525.4	1.277
2002	667.6	384.1	540.0	1.243
2003	703.4	386.6	560.8	1.197
2004	761.9	392.6	595.7	1.127

NORTH CAROLINA

MOBILE HOMES INSURANCE - MH(F) PROGRAM - OWNERS

DEVELOPMENT OF CURRENT COST FACTORS (CCF) AND LOSS PROJECTION FACTOR
QUARTER ENDING DECEMBER 31, 2006

PART C: COMPUTATION OF LOSS PROJECTION FACTOR

CAL. YEAR	QUARTER ENDING	TIME (2X)	$4X^2$	AVG. CCI (Y)	Z=LN(Y)	2XZ	FITTED CCI
2004	MAR. 31	-11	121	584.5	6.371	-70.081	584.8
2004	JUN. 30	-9	81	590.4	6.381	-57.429	592.1
2004	SEP. 30	-7	49	600.1	6.397	-44.779	599.6
2004	DEC. 31	-5	25	607.8	6.410	-32.050	607.1
2005	MAR. 31	-3	9	615.9	6.423	-19.269	614.8
2005	JUN. 30	-1	1	622.9	6.434	-6.434	622.5
2005	SEP. 30	1	1	628.2	6.443	6.443	630.3
2005	DEC. 31	3	9	636.8	6.456	19.368	638.3
2006	MAR. 31	5	25	645.8	6.470	32.350	646.3
2006	JUN. 30	7	49	654.7	6.484	45.388	654.4
2006	SEP. 30	9	81	662.2	6.496	58.464	662.7
2006	DEC. 31	11	121	671.1	6.509	71.599	671.0
			572		77.274	3.570	

EQUATIONS:

$$Y = E^{A+BX}$$
$$Z = A+BX$$
$$SZ= NA + BSX$$
$$SXZ= ASX + BSX^2$$

WHERE A = MEAN OF FITTED LINE
B = AVERAGE QUARTERLY INCREMENT
S = SUMMATION
N = NUMBER OF OBSERVATIONS

2SXZ = 3.570 OR SXZ = 1.785 S4X^2 = 572 OR SX^2 = 143

A (MEAN OF FITTED LINE) = 77.274 / 12 = 6.440
B (AVG. QUARTERLY INCREMENT) = 1.785 / 143 = 0.0125

QUARTERLY RATE OF CHANGE = $E^{0.0125} - 1 =$ 0.0126

ANNUAL RATE OF CHANGE $= (E^{0.0125})^4 =$ 1.051 OR 5.1%

LOSS PROJECTION FACTOR $= (E^{0.0125})^{22.5/3} =$ 1.098

* TO PROJECT LOSSES FROM 11/15/06 TO 10/1/08

NORTH CAROLINA

MOBILE HOMES INSURANCE - MH(F) PROGRAM - TENANTS

DEVELOPMENT OF CURRENT COST FACTORS (CCF) AND LOSS PROJECTION FACTOR

QUARTER ENDING DECEMBER 31, 2006

PART A: ESTABLISHMENT OF MONTHLY CURRENT COST INDEX (CCI) WITH:
MODIFIED CONSUMER PRICE INDEX ONLY (BASE: 1967 = 100)

MO.	MCPI 2004	QCCI	MCPI 2005	QCCI	MCPI 2006	QCCI
01	301.3		303.2		303.7	
02	303.4		304.7		304.9	
03	305.7	303.5	306.6	304.8	307.0	305.2
04	305.9		306.8		308.0	
05	305.2		306.8		307.6	
06	304.5	305.2	304.6	306.1	306.0	307.2
07	302.5		303.4		304.7	
08	301.8		303.4		305.3	
09	303.5	302.6	305.1	304.0	306.3	305.4
10	305.9		306.1		307.3	
11	305.1		305.8		306.3	
12	303.1	304.7	304.5	305.5	304.3	306.0

PART B: CALCULATION CURRENT COST FACTORS (CCF)

AVERAGE ANNUAL CCI YEAR	CCI	CURRENT COST FACTORS BASED ON AVERAGE CCI VALUE FOR QUARTER ENDING 12/31/2006 = 306.0
2000	306.1	1.000
2001	306.2	0.999
2002	305.3	1.002
2003	303.0	1.010
2004	304.0	1.007

NORTH CAROLINA

MOBILE HOMES INSURANCE - MH(F) PROGRAM - TENANTS

DEVELOPMENT OF CURRENT COST FACTORS (CCF) AND LOSS PROJECTION FACTOR
QUARTER ENDING DECEMBER 31, 2006

PART C: COMPUTATION OF LOSS PROJECTION FACTOR

CAL. YEAR	QUARTER ENDING	TIME (2X)	$4X^2$	AVG. CCI (Y)	Z=LN(Y)	2XZ	FITTED CCI
2004	MAR. 31	-11	121	303.5	5.715	-62.865	303.6
2004	JUN. 30	-9	81	305.2	5.721	-51.489	303.8
2004	SEP. 30	-7	49	302.6	5.712	-39.984	304.1
2004	DEC. 31	-5	25	304.7	5.719	-28.595	304.3
2005	MAR. 31	-3	9	304.8	5.720	-17.160	304.5
2005	JUN. 30	-1	1	306.1	5.724	-5.724	304.8
2005	SEP. 30	1	1	304.0	5.717	5.717	305.0
2005	DEC. 31	3	9	305.5	5.722	17.166	305.3
2006	MAR. 31	5	25	305.2	5.721	28.605	305.5
2006	JUN. 30	7	49	307.2	5.727	40.089	305.8
2006	SEP. 30	9	81	305.4	5.722	51.498	306.0
2006	DEC. 31	11	121	306.0	5.724	62.964	306.2
			572		68.644	0.222	

EQUATIONS:

$$Y = E^{A+BX}$$
$$Z = A+BX$$
$$SZ = NA + BSX$$
$$SXZ = ASX + BSX^2$$

WHERE A = MEAN OF FITTED LINE
B = AVERAGE QUARTERLY INCREMENT
S = SUMMATION
N = NUMBER OF OBSERVATIONS

2SXZ = 0.222	OR SXZ =	0.111	S4X^2 =	572	OR SX^2 =	143	
A (MEAN OF FITTED LINE) =		68.644	/ 12	=	5.720		
B (AVG. QUARTERLY INCREMENT) =		0.111	/	143	=	0.0008	

QUARTERLY RATE OF CHANGE = $E^{0.0008} - 1$ = 0.0008

ANNUAL RATE OF CHANGE = $(E^{0.0008})^{4}$ = 1.003 OR 0.3%

LOSS PROJECTION FACTOR = $(E^{0.0008})^{22.5/3}$ = 1.006

* TO PROJECT LOSSES FROM 11/15/06 TO 10/1/08

NORTH CAROLINA

MOBILE HOMES INSURANCE - MH(F) PROGRAM

NOTES TO DETERMINATION OF TREND

Modified Consumer Price Index – source: Bureau of Labor Statistics. Weights applied to individual Consumer Price Index components are as follows:

Owners Forms:	Tenants Form:
48% House Furnishings	54% House Furnishings
20% Medical Care	10% Medical Care
16% Apparel Commodities	18% Apparel Commodities
16% Entertainment Commodities	18% Entertainment Commodities

NORTH CAROLINA

MOBILE HOMES INSURANCE - MH(F) PROGRAM - OWNERS

DEVELOPMENT OF TREND FROM FIRST DOLLAR

Year Ended	(1) Current Cost Factors	(2) Weights
2000	1.304	0.10
2001	1.277	0.15
2002	1.243	0.20
2003	1.197	0.25
2004	1.127	0.30

(3) Weighted Current Cost Factor = Sum of (1) X (2)	= 1.208
(4) Loss Projection Factor	= 1.098
(5) Loss Trend = (3) X (4)	= 1.326

	$100 Deductible	$250 Deductible	$500 Deductible	Combined
(6) Five Year Incurred Losses	13,340,073	66,061,767	21,812,418	101,214,258
(7) Five Year Incurred Claims Subject to Deductible	6,941	29,508	6,278	42,727
(8) Losses Eliminated by Deductible	694,100	7,377,000	3,139,000	11,210,100
(9) Adjustment to Trend from First Dollar of Loss*	1.013	1.027	1.035	1.027

* Adjustment to Trend from First Dollar is calculated as follows:

1.0 + (((5) - 1.0) x (8)) / ((5) x (6))

NORTH CAROLINA

MOBILE HOMES INSURANCE - MH(F) PROGRAM - TENANTS

DEVELOPMENT OF TREND FROM FIRST DOLLAR

Year Ended	(1) Current Cost Factors	(2) Weights
2000	1.000	0.10
2001	0.999	0.15
2002	1.002	0.20
2003	1.010	0.25
2004	1.007	0.30

(3) Weighted Current Cost Factor = Sum of (1) X (2) = 1.005

(4) Loss Projection Factor = 1.006

(5) Loss Trend = (3) X (4) = 1.011

	$100 Deductible	$250 Deductible	$500 Deductible	Combined
(6) Five Year Incurred Losses	38,979	1,114,417	144,602	1,297,998
(7) Five Year Incurred Claims Subject to Deductible	23	519	56	598
(8) Losses Eliminated by Deductible	2,300	129,750	28,000	160,050
(9) Adjustment to Trend from First Dollar of Loss*	1.001	1.001	1.002	1.001

* Adjustment to Trend from First Dollar is calculated as follows:
1.0 + (((5) - 1.0) x (8)) / ((5) x (6))

NORTH CAROLINA

MOBILE HOMES INSURANCE - MH(F) PROGRAM

DEVELOPMENT OF CURRENT AMOUNT FACTORS (CAF) AND PREMIUM TREND PROJECTION FACTOR

MH(F) OWNERS
$100 Deductible Option

	X	Y*	Z=ln Y	X*Z
2000	-2.000	0.899	-0.106	0.212
2001	-1.000	0.925	-0.078	0.078
2002	0.000	0.930	-0.073	0.000
2003	1.000	0.936	-0.066	-0.066
2004	2.000	0.943	-0.059	-0.118
			-0.382	0.106

A (mean of fitted line) = (Sum Z)/5 = -0.382 /5 = -0.076

B (average annual increment) = (Sum X*Z)/10 = 0.106 /10 = 0.011

Average Annual Rate of Change = $e^{0.011} - 1$ = 0.011

Latest Year Relativity trended from 01/01/04 to 11/15/06

$0.943 * 1.011^{34.5/12} = 0.973$

	(1) Average Relativity	(2) = 0.973 / (1)	Current Amount Factor [(2)-1]*.95+1
2000	0.899	1.082	1.078
2001	0.925	1.052	1.049
2002	0.930	1.046	1.044
2003	0.936	1.040	1.038
2004	0.943	1.032	1.030

Premium Projection Factor $1.010^{(16.5/12)}$ = 1.014

Premium projection factor reflects trend from 11/15/06 to 04/01/08

* Average Policy Amount Relativity

NORTH CAROLINA

MOBILE HOMES INSURANCE - MH(F) PROGRAM

DEVELOPMENT OF CURRENT AMOUNT FACTORS (CAF) AND PREMIUM TREND PROJECTION FACTOR

MH(F) OWNERS
$250 Deductible Option

	X	Y*	Z=ln Y	X*Z
2000	-2.000	1.313	0.272	-0.544
2001	-1.000	1.461	0.379	-0.379
2002	0.000	1.551	0.439	0.000
2003	1.000	1.663	0.509	0.509
2004	2.000	1.777	0.575	1.150
			2.174	0.736

A (mean of fitted line) = (Sum Z)/5 = 2.174 /5 = 0.435

B (average annual increment) = (Sum X*Z)/10 = 0.736 /10 = 0.074

Average Annual Rate of Change = $e^{0.074} - 1$ = 0.077

Latest Year Relativity trended from 01/01/04 to 11/15/06

$1.777 * 1.077^{34.5/12}$ = 2.199

	(1) Average Relativity	(2) = 2.199 / (1)	Current Amount Factor [(2)-1]*.95+1
2000	1.313	1.675	1.641
2001	1.461	1.505	1.480
2002	1.551	1.418	1.397
2003	1.663	1.322	1.306
2004	1.777	1.237	1.225

Premium Projection Factor $1.073^{(16.5/12)}$ = 1.102

Premium projection factor reflects trend from 11/15/06 to 04/01/08

* Average Policy Amount Relativity

NORTH CAROLINA

MOBILE HOMES INSURANCE - MH(F) PROGRAM

DEVELOPMENT OF CURRENT AMOUNT FACTORS (CAF) AND PREMIUM TREND PROJECTION FACTOR

MH(F) OWNERS
$500 Deductible Option

	X	Y*	Z=ln Y	X*Z
2000	-2.000	1.721	0.543	-1.086
2001	-1.000	1.819	0.598	-0.598
2002	0.000	1.828	0.603	0.000
2003	1.000	1.849	0.615	0.615
2004	2.000	1.831	0.605	1.210
			2.964	0.141

A (mean of fitted line) = (Sum Z)/5 = 2.964 /5 = 0.593

B (average annual increment) = (Sum X*Z)/10 = 0.141 /10 = 0.014

Average Annual Rate of Change = $e^{0.014} - 1$ = 0.014

Latest Year Relativity trended from 01/01/04 to 11/15/06

$1.831 * 1.014^{34.5/12}$ = 1.906

	(1) Average Relativity	(2) = 1.906 / (1)	Current Amount Factor [(2)-1]*.95+1
2000	1.721	1.107	1.102
2001	1.819	1.048	1.046
2002	1.828	1.043	1.041
2003	1.849	1.031	1.029
2004	1.831	1.041	1.039

Premium Projection Factor $1.013^{(16.5/12)}$ = 1.018

Premium projection factor reflects trend from 11/15/06 to 04/01/08

* Average Policy Amount Relativity

NORTH CAROLINA

MOBILE HOMES INSURANCE - MH(F) PROGRAM

DEVELOPMENT OF CURRENT AMOUNT FACTORS (CAF) AND PREMIUM TREND PROJECTION FACTOR

MH(F) TENANTS
$100 Deductible Option

	X	Y*	Z=ln Y	X*Z
2000	-2.000	1.046	0.045	-0.090
2001	-1.000	1.048	0.047	-0.047
2002	0.000	1.055	0.054	0.000
2003	1.000	1.024	0.024	0.024
2004	2.000	1.039	0.038	0.076
			0.208	-0.037

A (mean of fitted line) = (Sum Z)/5 = 0.208 /5 = 0.042
B (average annual increment) = (Sum X*Z)/10 = -0.037 /10 = -0.004

Average Annual Rate of Change = $e^{-0.004} - 1$ = -0.004

Latest Year Relativity trended from 01/01/04 to 11/15/06

$1.039 * 0.996^{34.5/12}$ = 1.027

	(1) Average Relativity	(2) = 1.027 / (1)	Current Amount Factor [(2)-1]*.95+1
2000	1.046	0.982	0.982
2001	1.048	0.980	0.980
2002	1.055	0.973	0.973
2003	1.024	1.003	1.003
2004	1.039	0.988	0.988

Premium Projection Factor $0.996^{(16.5/12)}$ = 0.995

Premium projection factor reflects trend from 11/15/06 to 04/01/08

* Average Policy Amount Relativity

NORTH CAROLINA

MOBILE HOMES INSURANCE - MH(F) PROGRAM

DEVELOPMENT OF CURRENT AMOUNT FACTORS (CAF) AND PREMIUM TREND PROJECTION FACTOR

MH(F) TENANTS
$250 Deductible Option

	X	Y*	Z=ln Y	X*Z
2000	-2.000	1.525	0.422	-0.844
2001	-1.000	1.488	0.397	-0.397
2002	0.000	1.439	0.364	0.000
2003	1.000	1.337	0.290	0.290
2004	2.000	1.285	0.251	0.502
			1.724	-0.449

A (mean of fitted line) = (Sum Z)/5 = 1.724 /5 = 0.345

B (average annual increment) = (Sum X*Z)/10 = -0.449 /10 = -0.045

Average Annual Rate of Change = $e^{-0.045} - 1$ = -0.044

Latest Year Relativity trended from 01/01/04 to 11/15/06

$1.285 * 0.956^{34.5/12}$ = 1.129

	(1) Average Relativity	(2) = 1.129 / (1)	Current Amount Factor [(2)-1]*.95+1
2000	1.525	0.740	0.740
2001	1.488	0.759	0.759
2002	1.439	0.785	0.785
2003	1.337	0.844	0.844
2004	1.285	0.879	0.879

Premium Projection Factor $0.956^{(16.5/12)}$ = 0.940

Premium projection factor reflects trend from 11/15/06 to 04/01/08

* Average Policy Amount Relativity

NORTH CAROLINA

MOBILE HOMES INSURANCE - MH(F) PROGRAM

DEVELOPMENT OF CURRENT AMOUNT FACTORS (CAF) AND PREMIUM TREND PROJECTION FACTOR

MH(F) TENANTS
$500 Deductible Option

	X	Y*	Z=ln Y	X*Z
2000	-2.000	1.435	0.361	-0.722
2001	-1.000	1.493	0.401	-0.401
2002	0.000	1.525	0.422	0.000
2003	1.000	1.507	0.410	0.410
2004	2.000	1.323	0.280	0.560
			1.874	-0.153

A (mean of fitted line) = (Sum Z)/5 = 1.874 /5 = 0.375
B (average annual increment) = (Sum X*Z)/10 = -0.153 /10 = -0.015

Average Annual Rate of Change = $e^{-0.015}$ -1 = -0.015

Latest Year Relativity trended from 01/01/04 to 11/15/06

1.323 * $0.985^{34.5\ /12}$ = 1.267

	(1) Average Relativity	(2) = 1.267 / (1)	Current Amount Factor [(2)-1]*.95+1
2000	1.435	0.883	0.883
2001	1.493	0.849	0.849
2002	1.525	0.831	0.831
2003	1.507	0.841	0.841
2004	1.323	0.958	0.958

Premium Projection Factor $0.985^{(16.5\ /12)}$ = 0.979

Premium projection factor reflects trend from 11/15/06 to 04/01/08

* Average Policy Amount Relativity

NORTH CAROLINA

MOBILE HOMES INSURANCE - MH(F) PROGRAM

DEVELOPMENT OF CURRENT AMOUNT FACTORS (CAF) AND PREMIUM TREND PROJECTION FACTORS

Owners

	$100 Deductible		$250 Deductible		$500 Deductible		Combined*
	Current Amount Factor	Earned Premium at Manual Level	Current Amount Factor	Earned Premium at Manual Level	Current Amount Factor	Earned Premium at Manual Level	Current Amount Factor
2000	1.078	4,988,373	1.641	22,060,495	1.102	4,652,282	1.473
2001	1.049	4,530,772	1.480	25,937,897	1.046	6,783,885	1.349
2002	1.044	4,084,083	1.397	27,975,167	1.041	7,439,855	1.293
2003	1.038	3,699,399	1.306	28,445,349	1.029	7,818,504	1.227
2004	1.030	3,206,470	1.225	27,131,205	1.039	8,709,992	1.167
Premium Trend Projection Factors:	1.014		1.102		1.018		1.081

Tenants

	$100 Deductible		$250 Deductible		$500 Deductible		Combined*
	Current Amount Factor	Earned Premium at Manual Level	Current Amount Factor	Earned Premium at Manual Level	Current Amount Factor	Earned Premium at Manual Level	Current Amount Factor
2000	0.982	21,299	0.740	2,140,139	0.883	23,965	0.744
2001	0.980	22,054	0.759	1,076,190	0.849	42,080	0.767
2002	0.973	19,116	0.785	360,016	0.831	51,809	0.799
2003	1.003	14,628	0.844	134,520	0.841	56,911	0.854
2004	0.988	10,120	0.879	85,556	0.958	52,028	0.914
Premium Trend Projection Factors:	0.995		0.940		0.979		0.944

* Current Amount Factors for all individual deductibles combined are weighted averages of the by-deductible Current Amount factors; Earned Premiums at Manual Level are used as weights. Premium Trend Projection Factors are weighted averages of the by-deductible Premium Trend Projection Factors; the products of Earned Premiums at Manual Level and the Current Amount Factors (summed for the five years) are used as weights.

NORTH CAROLINA

MOBILE HOMES INSURANCE - MH(F) PROGRAM

SUMMARY OF TREND FACTORS FOR STATEWIDE RATE-LEVEL INDICATIONS

		Owners	Tenants
(1) Current Cost Factors	2000	1.304	1.000
	2001	1.277	0.999
	2002	1.243	1.002
	2003	1.197	1.010
	2004	1.127	1.007
(2) Current Amount Factors*	2000	1.473	0.744
	2001	1.349	0.767
	2002	1.293	0.799
	2003	1.227	0.854
	2004	1.167	0.914
(3) Current Cost / Amount Factors = (1) / (2)	2000	0.885	1.344
	2001	0.947	1.302
	2002	0.961	1.254
	2003	0.976	1.183
	2004	0.966	1.102
(4) Premium Projection Factor*		1.081	0.944
(5) Loss Projection Factor		1.098	1.006
(6) Adjustment to Trend from First Dollar of Loss*		1.027	1.001
(7) Composite Projection Factor = (5) * (6) / (4)		1.043	1.067

* All deductibles combined

NORTH CAROLINA

MOBILE HOMES INSURANCE - MH(F) PROGRAM

DETERMINATION OF TREND FOR EXPENSES

	ALL ITEMS CPI INDEX	COMPENSATION COST INDEX
Jan-03	181.7	
Feb-03	183.1	172.1
Mar-03	184.2	
Apr-03	183.8	
May-03	183.5	173.9
Jun-03	183.7	
Jul-03	183.9	
Aug-03	184.6	175.1
Sep-03	185.2	
Oct-03	185.0	
Nov-03	184.5	176.2
Dec-03	184.3	
Jan-04	185.2	
Feb-04	186.2	177.8
Mar-04	187.4	
Apr-04	188.0	
May-04	189.1	180.5
Jun-04	189.7	
Jul-04	189.4	
Aug-04	189.5	182.1
Sep-04	189.9	
Oct-04	190.9	
Nov-04	191.0	183.6
Dec-04	190.3	
Jan-05	190.7	
Feb-05	191.8	186.3
Mar-05	193.3	
Apr-05	194.6	
May-05	194.4	188.8
Jun-05	194.5	
Jul-05	195.4	
Aug-05	196.4	189.0
Sep-05	198.8	
Oct-05	199.2	
Nov-05	197.6	190.0
Dec-05	196.8	
Jan-06	198.3	
Feb-06	198.7	191.7
Mar-06	199.8	
Apr-06	201.5	
May-06	202.5	193.0
Jun-06	202.9	
Jul-06	203.5	
Aug-06	203.9	193.8
Sep-06	202.9	
Oct-06	201.8	
Nov-06	201.5	194.9
Dec-06	201.8	

NORTH CAROLINA

MOBILE HOMES INSURANCE - MH(F) PROGRAM

DETERMINATION OF TREND FOR EXPENSES

	All Items (A)	CCI (B)	Combined (C)
(1) Annual Change in indices based on exponential curve of best fit for the latest 48 points (or 16 quarters)	3.09%	3.54%	3.32%
(2) Annual Change in indices based on exponential curve of best fit for the latest 36 points (or 12 quarters)	3.28%	3.32%	3.30%
(3) Annual Change in indices based on exponential curve of best fit for the latest 24 points (or 8 quarters)	3.18%	2.50%	2.84%
(4) Annual Change in indices based on exponential curve of best fit for the latest 12 points (or 4 quarters)	1.89%	2.18%	2.03%
(5) Average Annual Index (D)			
Year Ended 6/30/2004	186.09	177.40	
Year Ended 12/31/2004	188.88	181.00	
Year Ended 6/30/2005	191.69	185.20	
Year Ended 12/31/2005	195.29	188.53	
Year Ended 6/30/2006	198.99	190.93	
Year Ended 12/31/2006	201.59	193.35	
(6) Current Cost Factor (Index Value Divided by Average Annual Index)			
Year Ended 6/30/2004	1.08	1.10	1.09
Year Ended 12/31/2004	1.07	1.08	1.08
Year Ended 6/30/2005	1.05	1.05	1.05
Year Ended 12/31/2005	1.03	1.03	1.03
Year Ended 6/30/2006	1.01	1.02	1.02
Year Ended 12/31/2006	1.00	1.01	1.01

Notes: (A) All items CPI index. Source: Bureau of Labor Statistics.

(B) Total Compensation Cost Index - Insurance Carriers, Agent Brokers, and Service. Source: Bureau of Labor Statistics.

(C) Weighted Average determined as .50 (All items) + .50 (CCI).

(D) Average year ended index for period shown.

NORTH CAROLINA
MOBILE HOMES INSURANCE - MH(F) PROGRAM

EXPENSE DATA

All carriers:	2002	2003	2004	Average
Commission & Brokerage	6,278,817	6,107,860	6,172,639	
Written Premium	43,656,755	43,482,944	42,893,592	
Ratio:	0.1438	0.1405	0.1439	0.1427
Total Other Acquisitions	2,619,166	2,762,273	2,582,139	
Earned Premium excluding deviations	54,882,885	57,706,909	57,988,639	
Earned Premium at current manual level	54,882,885	57,706,909	57,988,639	
Ratio:	0.0477	0.0479	0.0445	0.0467
General Expense	2,101,693	1,901,285	1,916,885	
Earned Premium excluding deviations	54,882,885	57,706,909	57,988,639	
Earned Premium at current manual level	54,882,885	57,706,909	57,988,639	
Ratio:	0.0383	0.0329	0.0331	0.0348
Taxes, Licenses & Fees	1,184,979	1,147,489	1,219,557	
Written Premium	43,656,755	43,482,944	42,893,592	
Ratio:	0.0271	0.0264	0.0284	0.0273

Commission & Brokerage	0.1427
Taxes, Licenses & Fees	0.0273
Underwriting Profit	0.0800
Contingencies	0.0100
Reinsurance Costs	0.1823
Total Variable Expenses, Profit, and Contingencies	0.4423

Expected Loss & Fixed Expense Ratio = 1.0000 - 0.4423 = 0.5577

NORTH CAROLINA

MOBILE HOMES INSURANCE - MH(F) PROGRAM

EXPENSE EXHIBIT

All carriers:

	2000	2001	2002	2003	2004	Average
Allocated LAE	222,652	234,268	220,929	345,465	279,110	
Unallocated LAE	1,586,637	1,826,083	1,808,630	3,681,511	2,587,620	
Total LAE	1,809,289	2,060,351	2,029,559	4,026,976	2,866,730	
Incurred Losses	19,099,183	20,331,930	20,604,704	35,428,470	20,579,428	
Ratio: LAE/I.L.	0.095	0.101	0.098	0.114	0.139	0.109 (A)

(A) A selection of 0.104 was made by excluding the high and low years (2000 and 2004).

NORTH CAROLINA
MOBILE HOMES INSURANCE - MH(F) PROGRAM

CALCULATION OF TRENDED EXPENSE RATIOS

(1) Factor for trending losses:

Owners:	1.243	*	1.098	*	1.027	=	1.402
Tenants:	1.002	*	1.006	*	1.001	=	1.009

(2) Factor for trending LAE based on Current Expense Index:

All Forms: $1.030^{(75.0\ /12)}$ = 1.203

(3) Factor for trending premiums:

Owners:	1.227	*	1.081	=	1.326
Tenants:	0.854	*	0.952	=	0.813

(4) Factor for trending GE, OA expenses based on Current Expense Index:

All Forms: $1.030^{(57.0\ /12)}$ = 1.151

Owners:

Trended LAE Factor =	1 + (	0.1040	*	1.203	/	1.402	)		=	1.089
Trended GE Ratio =		0.0348	*	1.151	/	1.326			=	0.03
Trended OA Ratio =		0.0467	*	1.151	/	1.326			=	0.041
Average Current Base Rate									=	272.00
Fixed Expense Per Policy		272.00	*	(0.030	+	0.041	)		=	19.31

Tenants:

Trended LAE Factor =	1 + (	0.1040	*	1.203	/	1.009	)		=	1.124
Trended GE Ratio =		0.0348	*	1.151	/	0.813			=	0.049
Trended OA Ratio =		0.0467	*	1.151	/	0.813			=	0.066
Average Current Base Rate									=	140.00
Fixed Expense Per Policy		140.00	*	(0.049	+	0.066	)		=	16.10

NORTH CAROLINA

MOBILE HOMES INSURANCE - MH(F) PROGRAM - OWNERS FORMS
DERIVATION OF EXCESS FACTOR (EXCLUDES HURRICANE LOSSES)

	(1)*#	(2)**#	(3)***	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Year	Reported Wind Losses	Reported Total Losses	Total minus Wind (2) - (1)	Wind / Total minus Wind	Capped Wind Ratio ≤ (5 X med.)	Capped Excess Wind Ratio (5)-Ave(5)	Capped Excess Wind Losses (3) x (6)	Non-Modeled Excess Wind Ratio Above The Cap	Excess Wind Losses Above The Cap (8) X (3)	Total Non-Modeled Excess Wind Losses (7) + (9)
1950	1,388,467	312,200	312,200	0.072	0.072	0.000	0	0.000	0	0
1951	1,422,207	290,780	290,780	0.066	0.066	0.000	0	0.000	0	0
1952	1,440,159	792,365	792,365	0.176	0.176	0.017	13,470	0.000	0	13,470
1956	2,297,877	1,928,925	1,928,925	0.269	0.269	0.110	212,182	0.000	0	212,182
1957	2,117,102	839,255	839,255	0.127	0.127	0.000	0	0.000	0	0
1961	301,538	2,663,173	2,361,635	0.128	0.128	0.000	0	0.000	0	0
1962	272,921	3,126,852	2,853,931	0.096	0.096	0.000	0	0.000	0	0
1963	694,065	5,638,155	4,944,090	0.140	0.140	0.000	0	0.000	0	0
1964	607,512	6,064,576	5,457,064	0.111	0.111	0.000	0	0.000	0	0
1965	671,048	6,901,947	6,230,899	0.108	0.108	0.000	0	0.000	0	0
1966	719,568	8,005,594	7,286,026	0.099	0.099	0.000	0	0.000	0	0
1967	915,862	8,050,817	7,134,955	0.128	0.128	0.000	0	0.000	0	0
1968	498,227	10,627,905	10,129,678	0.049	0.049	0.000	0	0.000	0	0
1969	563,307	13,143,012	12,579,705	0.045	0.045	0.000	0	0.000	0	0
1970	2,479,513	17,038,702	14,559,189	0.170	0.170	0.011	160,151	0.000	0	160,151
1971	2,627,662	21,885,664	19,258,002	0.136	0.136	0.000	0	0.000	0	0
1972	1,260,381	21,914,689	20,654,308	0.061	0.061	0.000	0	0.000	0	0
1973	2,266,976	30,436,168	28,169,192	0.080	0.080	0.000	0	0.000	0	0
1974	9,401,408	43,362,415	33,961,007	0.277	0.277	0.118	4,007,399	0.000	0	4,007,399
1975	5,485,456	53,538,527	48,053,071	0.114	0.114	0.000	0	0.000	0	0
1976	2,972,442	52,540,898	49,568,456	0.060	0.060	0.000	0	0.000	0	0
1977	3,476,744	60,315,936	56,839,192	0.061	0.061	0.000	0	0.000	0	0
1978	10,628,669	70,467,546	59,838,877	0.178	0.178	0.019	1,136,939	0.000	0	1,136,939
1979	3,105,986	71,072,268	67,966,282	0.046	0.046	0.000	0	0.000	0	0
1980	6,474,397	106,691,350	100,216,953	0.065	0.065	0.000	0	0.000	0	0
1981	4,950,144	109,000,823	104,050,679	0.048	0.048	0.000	0	0.000	0	0
1982	9,654,141	118,487,782	108,833,641	0.089	0.089	0.000	0	0.000	0	0
1983	9,722,115	123,552,849	113,830,734	0.085	0.085	0.000	0	0.000	0	0
1984	21,436,988	140,713,231	119,276,243	0.180	0.180	0.021	2,504,801	0.000	0	2,504,801
1985	30,960,043	179,473,338	148,513,295	0.208	0.208	0.049	7,277,151	0.000	0	7,277,151
1986	16,262,975	157,609,675	141,346,700	0.115	0.115	0.000	0	0.000	0	0
1987	23,190,753	185,616,181	162,425,428	0.143	0.143	0.000	0	0.000	0	0
1988	66,411,702	243,501,978	177,090,276	0.375	0.375	0.216	38,251,500	0.000	0	38,251,500
1989	83,498,398	278,467,229	194,968,831	0.428	0.428	0.269	52,446,616	0.000	0	52,446,616
1990	37,671,988	220,252,894	182,580,906	0.206	0.206	0.047	8,581,303	0.000	0	8,581,303
1991	18,151,400	219,353,728	201,202,328	0.090	0.090	0.000	0	0.000	0	0
1992	26,654,935	222,532,035	195,877,100	0.136	0.136	0.000	0	0.000	0	0
1993	97,830,965	321,921,890	224,090,925	0.437	0.437	0.278	62,297,277	0.000	0	62,297,277
1994	28,862,821	278,066,775	249,203,954	0.116	0.116	0.000	0	0.000	0	0
1995	52,370,482	291,974,195	239,603,713	0.219	0.219	0.060	14,376,223	0.000	0	14,376,223
1996	40,901,941	332,747,529	291,845,588	0.140	0.140	0.000	0	0.000	0	0
1997	37,382,138	303,669,980	266,287,842	0.140	0.140	0.000	0	0.000	0	0
1998	120,075,356	394,840,091	274,764,735	0.437	0.437	0.278	76,384,596	0.000	0	76,384,596
1999	58,232,430	350,186,938	291,954,508	0.199	0.199	0.040	11,678,180	0.000	0	11,678,180
2000	2,638,389	16,567,551	13,929,162	0.189	0.189	0.030	417,875	0.000	0	417,875
2001	1,212,549	18,079,627	16,867,078	0.072	0.072	0.000	0	0.000	0	0
2002	2,186,891	19,163,073	16,976,182	0.129	0.129	0.000	0	0.000	0	0
2003	8,723,033	23,896,208	15,173,175	0.575	0.575	0.416	6,312,041	0.000	0	6,312,041
2004	2,423,276	17,677,162	15,253,886	0.159	0.159	0.000	0	0.000	0	0
Total	865,495,347	5,185,002,481	4,328,172,946	7.777	7.777	1.979	286,057,703	0.000		286,057,703
Average				0.159	0.159	0.040		0.000		

Average of Column (5) =	0.159
Median Rank (25) = M =	0.128
Median * 5 =	0.640

Excess Factor = 1.0 + [(Ave(6) + Ave(8)) / (1.0 + Avg (5) - Ave(6))] = 1.036

* Dwelling E.C. Premiums for 1950-59.
** Dwelling E.C. Losses for 1950-59.
*** All Dwelling E.C. Losses for 1950-59 are assumed to be Wind Losses.
\# Homeowners Losses for 1961-1999.

NORTH CAROLINA

MOBILE HOMES INSURANCE - MH(F) PROGRAM

METHODOLOGY FOR CALCULATING WIND PROVISIONS BY TERRITORY - OWNER FORMS

In order to develop Wind Provisions by territory*, the statewide provision is distributed using each territory's "expected" wind losses. This procedure is illustrated in the following example. (All hurricane losses accounted for by the model have been removed. Modeled hurricane losses are not included in this procedure):

Territory	(1) Long-Term** Ratio of Wind to Non-Wind Losses	(2) Non-Wind Losses for Latest Five Years	(3) "Expected" Wind Losses for Latest Five Years (1) x (2)	(4) "Expected" Wind Distribution (3) ÷ Total (3)
A	.250	$16,000,000	$4,000,000	.400
B	.200	6,000,000	1,200,000	.120
C	.600	8,000,000	4,800,000	.480
			Total 10,000,000	1.000

Year	(5) Statewide Wind Provision***	(6) "Expected" Wind Distribution Territory A	(7) Territory B	(8) Territory C	(9) Territory Wind Provision Territory A (5) x (6)	(10) Territory B (5) x (7)	(11) Territory C (5) x (8)
x	$4,000,000	.400	.120	.480	$1,600,000	$480,000	$1,920,000
x+1	1,000,000	.400	.120	.480	400,000	120,000	480,000
x+2	2,000,000	.400	.120	.480	800,000	240,000	960,000
x+3	3,000,000	.400	.120	.480	1,200,000	360,000	1,440,000
x+4	2,000,000	.400	.120	.480	800,000	240,000	960,000

* In calculating the five-year non-hurricane loss costs by territory shown in Column (1) of page C-4, actual non-modeled wind losses by territory are replaced with the losses arrived at using this procedure.

** Average of yearly ratios of non-modeled wind to non-wind losses based on territory experience for all available years.

*** Statewide Wind Provision = (Non Hurricane Incurred Losses - Excess Losses) x Excess Factor
- (Non Hurricane Losses - Non Hurricane Wind Losses)

NORTH CAROLINA

MOBILE HOMES INSURANCE - MH(F) PROGRAM

MODELED HURRICANE LOSSES

Owners Forms

Territory	AIR Loss Cost Per $1,000	Estimated 2004 Total Limit Insurance Years(000)(a)	Modeled Hurricane Losses
5, 6, 42, 43	5.0030	$476,890	$2,385,897
Rest of State	0.4573	5,097,488	2,330,978
Statewide			$4,716,875

(a) Includes factor of 1.5 to reflect total limits coverage.

NORTH CAROLINA

MOBILE HOMES INSURANCE - MH(F) PROGRAM

MODELED HURRICANE LOSSES

Tenants Form

Territory	AIR Loss Cost Per $1,000	Estimated 2004 Total Limit Insurance Years(000)(a)	Modeled Hurricane Losses
5, 6, 42, 43	3.7848	$360	$1,363
Rest of State	0.1739	21,435	3,728
Statewide			$5,091

(a) Includes factor of 1.1 to reflect total limits coverage.

SECTION E
SUPPLEMENTAL MATERIAL

NORTH CAROLINA
MOBILEHOMES INSURANCE- MH-F

SUPPLEMENTAL MATERIAL

North Carolina G.S. 58-36-15(h) specifies that the following information must be included in all policy form, rule and rate filings filed under Article 12B. 11 NCAC 10.1105 specifies that additional detail be provided under each of these items. These materials are contained on the pages indicated.

STATISTICAL DATA TO COMPLY WITH NORTH CAROLINA
REQUIREMENTS FOR A MOBILEHOMES INSURANCE- MH-F-RATE FILING
AS PER 11 NCAC 10.1105

1. NORTH CAROLINA EARNED PREMIUMS AT THE ACTUAL AND CURRENT RATE LEVEL, LOSSES AND LOSS ADJUSTMENT EXPENSES, EACH ON PAID AND INCURRED BASES WITHOUT TRENDING OR OTHER MODIFICATION FOR THE EXPERIENCE PERIOD, INCLUDING THE LOSS RATIO ANTICIPATED AT THE TIME THE RATES WERE PROMULGATED FOR THE EXPERIENCE PERIOD

Exhibit (1)

NORTH CAROLINA
MOBILEHOMES INSURANCE- MH-F INSURANCE

EARNED PREMIUMS AT ACTUAL AND CURRENT RATE LEVEL

I. EARNED PREMIUM AT COLLECTED LEVEL

Year	Owners	Tenant
2000	$ 33,828,618	$ 1,024,672
2001	39,100,136	896,081
2002	41,357,170	413,172
2003	40,955,178	236,695
2004	40,889,141	178,398

II. EARNED PREMIUM AT CURRENT LEVEL

Year	Owners	Tenant
2000	$ 34,765,363	$ 2,196,230
2001	40,884,854	1,151,562
2002	43,262,206	442,147
2003	44,004,579	217,990
2004	43,659,180	158,638

NORTH CAROLINA
MOBILEHOMES INSURANCE- MH-F- INSURANCE

PAID/INCURRED LOSSES AND ALLOCATED LOSS ADJUSTMENT EXPENSE

I. PAID LOSSES

The Rate Bureau is advised by ISO that paid loss and loss adjustment expenses are not available for the experience period of this filing.

II. INCURRED LOSSES (a)

Year	Owners	Tenant
2000	$ 16,567,551	$ 484,505
2001	18,079,627	424,384
2002	19,163,073	196,479
2003	33,840,058	159,305
2004	19,493,701	50,852

(a) Incurred losses include actual hurricane losses and do not include loss adjustment expense. These expenses are reflected via a factor. For Owners this factor is 8.9%. For Tenants this factor is 12.4%.

NORTH CAROLINA
MOBILEHOMES INSURANCE- MH-F- INSURANCE

ANTICIPATED LOSS AND LOSS ADJUSTMENT EXPENSE RATIOS

Prior filings are not available.

Exhibit (1)(a)

NORTH CAROLINA
MOBILEHOMES INSURANCE- MH-F- INSURANCE

EXCLUDED COMPANIES

Data for the following companies are not available or not available in sufficient detail:

Horace Mann Insurance Company
Piedmont Insurance Company
Pharmacists Insurance Company
Windsor Mount Joy Insurance Company

Based on 2004 written premium, these companies make up 4.8% of the total market.

-- Premium trend calculations are based on policies for which $100, $250 or $500 deductibles applied. Based on 2000-2004 exposures, these deductible options accounted for 94% of all exposures.

House-years by year are as follows:

	Owners	Tenant
2000	98,295	11,800
2001	104,140	6,369
2002	104,135	2,552
2003	100,253	1,346
2004	95,120	1,038

Not applicable to Mobilehomes insurance.

Exhibit (1)(c)

NORTH CAROLINA
MOBILEHOMES INSURANCE- MH-F- INSURANCE

ADJUSTMENTS TO PREMIUMS, LOSSES, LOSS ADJUSTMENT EXPENSES, EXPENSES AND EXPOSURES

Due to the volatile nature and the catastrophic potential of hurricane losses, they have been removed from the actual data and replaced with expected hurricane losses produced by a model designed by Air Worldwide Corporation (AIR). Also see prefiled testimony of R. Curry, S.Thomas and D. LaLonde.

NORTH CAROLINA
MOBILEHOMES INSURANCE- MH-F- INSURANCE

EARNED PREMIUM AT PRESENT RATES CALCULATION

Earned premium at present rates is calculated by the following formula for each individual insured:

(R -T - D) x C where,

R = base deductible manual rate for given policy limit and coverage option
T = applicable tie-down credit
D= applicable deductible credit
C = Optional Coverage Factor

The results are then summed over all territories to generate aggregate earned premium at present rates.

A sample calculation for the owners form for a single insured is shown below. This sample policy is for a coverage limit of $25,000, no tie-down, $250 higher optional deductible.

(1)	Base Deductible rate for $25,000	$ 322
(2)	Tie-down credit	$ 0
(3)	Credit for $250 Deductible*	$ 50
(4)	Optional Coverage Factor	1.0515
(5)	Premium at Manual Level = [(1) - (2) - (3)] x (4)	$ 286.00
	* 20% of (1) subject to $50 maximum	

EXHIBIT (1) (e)

MH(F) INSURANCE WRITERS

COMPANY NAME	2006 (a) WRITTEN PREMIUM	2006 WRITTEN PREMIUM MARKET SHARE	2006 (a) EARNED PREMIUM	2006 EARNED PREMIUM MARKET SHARE
STATE FARM FIRE & CAS CO	8,464,148	24.86%	8,369,034	24.67%
N C FARM BUREAU MUTUAL INS CO	8,442,081	24.80%	8,602,375	25.36%
ALLSTATE INSURANCE COMPANY	8,149,890	23.94%	8,035,101	23.68%
AMERICAN FAMILY HOME INS CO	5,772,926	16.96%	5,579,798	16.45%
WINDSOR MOUNT JOY MUTUAL INS CO	1,789,350	5.26%	1,856,041	5.47%
ERIE INSURANCE EXCHANGE	903,323	2.65%	895,483	2.64%
AEGIS SECURITY INSURANCE COMPANY	492,379	1.45%	511,669	1.51%
HORACE MANN INSURANCE COMPANY	16,682	0.05%	65,617	0.19%
ARMED FORCES INS EXCHANGE	10,925	0.03%	11,837	0.03%
	$ 34,041,704	100.00%	$ 33,926,955	100.00%
Grand Total	34,041,704		33,926,955	

(a) Per the 2006 MH(F) Expense Experience.

Not applicable to Mobilehomes insurance.

NORTH CAROLINA
MOBILEHOMES -MH-F- INSURANCE
LOSSES AND LOSS ADJUSTMENT EXPENSE

The data requested by 11 NCAC 10.1105(1)(i)(i,ii) were not being collected or reported in the experience period. The response to 11 NCAC 10.1105(1), page E-4, provides incurred loss and loss adjustment expense information. The response to 11 NCAC 10.1105(1)(1) provides incurred data by cause of loss. Additional information concerning loss development is provided in the response to 11 NCAC 10.1105(3). Additional information concerning loss adjustment expenses is provided in the response to 11 NCAC 10.1105(7). Additional information concerning loss trend is provided in Section D and in the prefiled testimony of R. Curry and S. Thomas.

	Owners	Tenant
(iii)		
Year	Applied Loss Development Factor	Applied Loss Development Factor
2000	1.000	1.000
2001	1.000	1.000
2002	1.000	1.000
2003	1.000	1.000
2004	1.000	1.000
(iv)		
Year	Loss Adjustment Expense Percentage	Loss Adjustment Expense Percentage
2000	9.5%	9.5%
2001	10.1%	10.1%
2002	9.8%	9.8%
2003	11.4%	11.4%
2004	13.9%	13.9%
(v)		
Year	Applied Loss Trend Factor	Applied Loss Trend Factor
2000	1.470	1.007
2001	1.440	1.006
2002	1.402	1.009
2003	1.350	1.017
2004	1.271	1.014
(vi)		
	Trended Incurred Losses and LAE	Trended Incurred Losses and LAE
2000	33,416,813	603,755
2001	36,698,719	510,676
2002	37,588,681	236,845
2003	33,741,660	153,577
2004	31,876,835	63,154

(vii) This information is given in the response to 11 NCAC 10.1105(1), page E-5.

Not applicable to Mobilehomes insurance.

See prefiled testimony of R. Curry, S. Thomas and D. LaLonde.

NORTH CAROLINA
MOBILEHOMES-MH-F- INSURANCE

CAUSE OF LOSS DATA

Loss experience by cause of loss is provided on the attached Exhibit (1)(1).

North Carolina Mobilehomes
Statewide Cause of Loss
MH-F Program

Coverage	COL	Year	Incurred Losses	Incurred Claims	Pure Premium	Frequency	Severity
OWNERS							
	1-FIRE						
		2000	6,730,325	1,939	68.47	1.97%	3471.03
		2001	9,470,498	1,700	90.94	1.63%	5570.88
		2002	6,916,566	1,695	66.42	1.63%	4080.57
		2003	6,917,429	1,534	69.00	1.53%	4509.41
		2004	7,061,125	1,144	74.23	1.20%	6172.31
	2-WIND						
		2000	2,638,389	2,069	26.84	2.10%	1275.20
		2001	1,212,549	1,040	11.64	1.00%	1165.91
		2002	2,186,891	1,667	21.00	1.60%	1311.87
		2003	18,250,315	7,570	182.04	7.55%	2410.87
		2004	4,079,459	2,555	42.89	2.69%	1596.66
	3-THEFT						
		2000	1,860,608	1,493	18.93	1.52%	1246.22
		2001	2,144,183	1,527	20.59	1.47%	1404.18
		2002	1,912,400	1,326	18.36	1.27%	1442.23
		2003	1,688,323	1,119	16.84	1.12%	1508.78
		2004	1,536,200	1,003	16.15	1.05%	1531.61
	4-WATER						
		2000	3,415,596	2,339	34.75	2.38%	1460.28
		2001	3,408,774	2,226	32.73	2.14%	1531.35
		2002	4,243,928	2,550	40.75	2.45%	1664.29
		2003	5,408,895	2,280	53.95	2.27%	2372.32
		2004	4,642,417	1,774	48.81	1.87%	2616.92
	5-OPD						
		2000	1,135,845	878	11.56	0.89%	1293.67
		2001	998,477	635	9.59	0.61%	1572.40
		2002	2,789,022	1,721	26.78	1.65%	1620.58
		2003	1,260,538	802	12.57	0.80%	1571.74
		2004	855,813	543	9.00	0.57%	1576.08
	6-LIABILITY						
		2000	786,041	302	8.00	0.31%	2602.78
		2001	890,651	281	8.55	0.27%	3169.58
		2002	1,109,834	239	10.66	0.23%	4643.66
		2003	304,901	185	3.04	0.18%	1648.11
		2004	1,318,287	208	13.86	0.22%	6337.92
	7-CREDIT CARD						
		2000	747	1	0.01	0.00%	747.00
		2001	-45,505	1	-0.48	0.00%	-45505.00
		2002	4,432	7	0.04	0.01%	633.14
		2003	9,657	8	0.10	0.01%	1207.13
		2004	400	1	0.00	0.00%	400.00
TENANTS							
	1-FIRE						
		2000	239,232	57	20.30	0.48%	4197.05
		2001	200,951	56	31.66	0.88%	3588.41
		2002	50,991	18	20.19	0.71%	2832.83
		2003	87,639	14	65.88	1.05%	6259.93
		2004	8,951	6	8.63	0.58%	1491.83
	2-WIND						
		2000	44,512	38	3.78	0.32%	1171.37
		2001	50,058	44	7.89	0.69%	1137.68
		2002	6,109	8	2.42	0.32%	763.63
		2003	41,506	6	31.20	0.45%	6917.67
		2004	881	2	0.86	0.20%	440.50
	3-THEFT						
		2000	71,561	47	6.07	0.40%	1522.57
		2001	72,066	46	11.35	0.72%	1566.65
		2002	78,635	37	31.14	1.47%	2125.27
		2003	21,624	18	16.25	1.35%	1201.33
		2004	34,979	23	34.32	2.26%	1520.83

North Carolina Mobilehomes
Statewide Cause of Loss
MH-F Program

Coverage	COL	Year	Incurred Losses	Incurred Claims	Pure Premium	Frequency	Severity
	4-WATER						
		2000	80,365	56	6.82	0.48%	1435.09
		2001	83,793	59	13.20	0.93%	1420.22
		2002	40,427	18	16.01	0.71%	2245.94
		2003	7,064	4	5.31	0.30%	1766.00
		2004	2,884	3	2.78	0.29%	961.33
	5-OPD						
		2000	42,217	25	3.58	0.21%	1688.68
		2001	15,498	7	2.44	0.11%	2214.00
		2002	15,805	15	6.26	0.59%	1053.67
		2003	765	4	0.58	0.30%	191.25
		2004	1,841	2	1.81	0.20%	920.50
	6-LIABILITY						
		2000	6,618	5	0.56	0.04%	1323.60
		2001	2,018	1	0.32	0.02%	2018.00
		2002	4,512	7	1.79	0.28%	644.57
		2003	707	1	0.53	0.08%	707.00
		2004	1,316	2	1.29	0.20%	658.00

North Carolina Mobilehomes
Cause of Loss by Territory

MH-F Program

Coverage	Territory	COL	Year	Incurred Losses	Incurred Claims	Pure Premium	Frequency	Severity
OWNERS								
	1-BEACH/SEACOAST							
		1-FIRE						
			2000	441,709	143	46.24	1.50%	3088.87
			2001	934,784	132	95.72	1.35%	7081.70
			2002	490,766	109	52.85	1.17%	4502.44
			2003	496,165	92	57.29	1.06%	5393.10
			2004	555,221	113	66.24	1.35%	4913.46
		2-WIND						
			2000	182,697	156	19.12	1.63%	1171.13
			2001	86,780	84	8.89	0.86%	1033.10
			2002	113,775	103	12.25	1.11%	1104.61
			2003	3,957,447	1,336	456.93	15.43%	2962.16
			2004	719,045	384	85.79	4.58%	1872.51
		3-THEFT						
			2000	79,918	83	8.37	0.87%	962.87
			2001	98,492	78	10.09	0.80%	1262.72
			2002	106,132	71	11.43	0.76%	1494.82
			2003	60,168	51	6.95	0.59%	1179.76
			2004	81,323	57	9.70	0.68%	1426.72
		4-WATER						
			2000	313,307	221	32.79	2.31%	1417.68
			2001	259,685	176	26.59	1.80%	1475.48
			2002	351,737	203	37.88	2.19%	1732.69
			2003	1,181,252	246	136.39	2.84%	4801.84
			2004	357,472	157	42.65	1.87%	2276.89
		5-OPD						
			2000	92,252	67	9.66	0.70%	1376.90
			2001	91,705	62	9.39	0.63%	1479.11
			2002	156,182	38	16.82	0.41%	4110.05
			2003	121,142	55	13.99	0.64%	2202.58
			2004	37,856	34	4.52	0.41%	1113.41
		6-LIABILITY						
			2000	12,536	22	1.31	0.23%	569.82
			2001	44,425	26	4.55	0.27%	1708.65
			2002	50,491	8	5.44	0.09%	6311.38
			2003	52,961	18	6.11	0.21%	2942.28
			2004	38,404	13	4.58	0.16%	2954.15
		7-CREDIT CARD						
			2002	200	1	0.02	0.01%	200.00
			2003	1,646	2	0.19	0.02%	823.00
	99-REMAINDER OF STATE							
		1-FIRE						
			2000	6,288,616	1,796	70.86	2.02%	3501.46
			2001	8,535,714	1,568	90.44	1.66%	5443.70
			2002	6,425,800	1,586	67.75	1.67%	4051.58
			2003	6,421,264	1,442	70.11	1.57%	4453.03
			2004	6,505,904	1,031	75.01	1.19%	6310.29
		2-WIND						
			2000	2,455,692	1,913	27.67	2.16%	1283.69
			2001	1,125,769	956	11.93	1.01%	1177.58
			2002	2,073,116	1,564	21.86	1.65%	1325.52
			2003	14,292,868	6,234	156.05	6.81%	2292.73
			2004	3,360,414	2,171	38.74	2.50%	1547.86
		3-THEFT						
			2000	1,780,690	1,410	20.07	1.59%	1262.90
			2001	2,045,691	1,449	21.68	1.54%	1411.80
			2002	1,806,268	1,255	19.04	1.32%	1439.26
			2003	1,628,155	1,068	17.78	1.17%	1524.49
			2004	1,454,877	946	16.77	1.09%	1537.92

North Carolina Mobilehomes
Cause of Loss by Territory

MH-F Program

Coverage	Territory	COL	Year	Incurred Losses	Incurred Claims	Pure Premium	Frequency	Severity
		4-WATER						
			2000	3,102,289	2,118	34.96	2.39%	1464.73
			2001	3,149,089	2,050	33.37	2.17%	1536.14
			2002	3,892,191	2,347	41.04	2.47%	1658.37
			2003	4,227,643	2,034	46.16	2.22%	2078.49
			2004	4,284,945	1,617	49.40	1.86%	2649.94
		5-OPD						
			2000	1,043,593	811	11.76	0.91%	1286.80
			2001	906,772	573	9.61	0.61%	1582.50
			2002	2,632,840	1,683	27.76	1.77%	1564.37
			2003	1,139,396	747	12.44	0.82%	1525.30
			2004	817,957	509	9.43	0.59%	1606.99
		6-LIABILITY						
			2000	773,505	280	8.72	0.32%	2762.52
			2001	846,226	255	8.97	0.27%	3318.53
			2002	1,059,343	231	11.17	0.24%	4585.90
			2003	251,940	167	2.75	0.18%	1508.62
			2004	1,279,883	195	14.76	0.22%	6563.50
		7-CREDIT CARD						
			2000	747	1	0.01	0.00%	747.00
			2001	-45,505	1	-0.48	0.00%	-45505.00
			2002	4,232	6	0.04	0.01%	705.33
			2003	8,011	6	0.09	0.01%	1335.17
			2004	400	1	0.00	0.00%	400.00
TENANTS								
	1-BEACH/SEACOAST							
		1-FIRE						
			2004	1,301	1	70.33	5.41%	1301.00
		4-WATER						
			2004	1,384	2	74.82	10.81%	692.00
	99-REMAINDER OF STATE							
		1-FIRE						
			2000	239,232	57	20.30	0.48%	4197.05
			2001	200,951	56	31.66	0.88%	3588.41
			2002	50,991	18	20.19	0.71%	2832.83
			2003	87,639	14	65.88	1.05%	6259.93
			2004	7,650	5	7.51	0.49%	1530.00
		2-WIND						
			2000	44,512	38	3.78	0.32%	1171.37
			2001	50,058	44	7.89	0.69%	1137.68
			2002	6,109	8	2.42	0.32%	763.63
			2003	41,506	6	31.20	0.45%	6917.67
			2004	881	2	0.86	0.20%	440.50
		3-THEFT						
			2000	71,561	47	6.07	0.40%	1522.57
			2001	72,066	46	11.35	0.72%	1566.65
			2002	78,635	37	31.14	1.47%	2125.27
			2003	21,624	18	16.25	1.35%	1201.33
			2004	34,979	23	34.32	2.26%	1520.83
		4-WATER						
			2000	80,365	56	6.82	0.48%	1435.09
			2001	83,793	59	13.20	0.93%	1420.22
			2002	40,427	18	16.01	0.71%	2245.94
			2003	7,064	4	5.31	0.30%	1766.00
			2004	1,500	1	1.47	0.10%	1500.00
		5-OPD						
			2000	42,217	25	3.58	0.21%	1688.68
			2001	15,498	7	2.44	0.11%	2214.00
			2002	15,805	15	6.26	0.59%	1053.67
			2003	765	4	0.58	0.30%	191.25
			2004	1,841	2	1.81	0.20%	920.50
		6-LIABILITY						
			2000	6,618	5	0.56	0.04%	1323.60
			2001	2,018	1	0.32	0.02%	2018.00
			2002	4,512	7	1.79	0.28%	644.57
			2003	707	1	0.53	0.08%	707.00
			2004	1,316	2	1.29	0.20%	658.00

STATISTICAL DATA TO COMPLY WITH NORTH CAROLINA
REQUIREMENTS FOR A MOBILEHOMES-MH-F- RATE FILING
AS PER 11 NCAC 10.1105

2. CREDIBILITY FACTOR DEVELOPMENT AND APPLICATION

The credibility procedures used in MH-F ratemaking are the same as have been used in recent Homeowners insurance rate filings. These procedures are described below.

The statewide credibility procedure is based on the 'frequency with severity modification' model discussed in "Credibility of the Pure Premium" by Mayerson, Bowers and Jones. The full credibility standard is based on a normal distribution with a 90% probability of meeting the test and a 5% maximum departure from the expected value, translated to house year standards. Partial credibility (Zp) is calculated as follows:

$Z_p = \sqrt{\text{five year house years / full credibility standard}}$ (truncated to the nearest tenth)

The full credibility standard is 240,000 house years for the Homeowners Owners Forms and 285,000 house-years for the Tenant form. These standards have been used for the development the statewide and by-territory indications for MH-F.

To distribute the statewide change by territory, a credibility procedure was used on the non-hurricane loss costs. The credibility standard used was based on the same model as statewide credibility. The full credibility standard is based on a normal distribution with a 90% probability of meeting the test and a 10% maximum departure from the expected value, translated to house years. The full credibility standards are 60,000 for Homeowners Owners' Forms and 75,000 for the Tenant Form. These standards have been used for the development the indications by territory for MH-F. Partial credibility (Zp) is calculated using the square root rule:

$Z_p = \sqrt{\text{five year house years / full credibility standard}}$ (truncated to the nearest tenth)

The Rate Bureau has not considered alternative credibility procedures in the last three years.

See Section D and prefiled testimony of R. Curry and S.Thomas.

STATISTICAL DATA TO COMPLY WITH NORTH CAROLINA
REQUIREMENTS FOR A MOBILEHOMES-MH-F- RATE FILING
AS PER 11 NCAC 10.1105

3. LOSS DEVELOPMENT FACTOR DERIVATION AND APPLICATION ON BOTH PAID AND INCURRED BASES AND IN BOTH NUMBERS AND DOLLARS OF CLAIMS

(a)-(g) Not applicable to Mobilehomes insurance.

STATISTICAL DATA TO COMPLY WITH NORTH CAROLINA
REQUIREMENTS FOR A MOBILEHOMES-MH-F- RATE FILING
AS PER 11 NCAC 10.1105

4. TRENDING FACTOR DEVELOPMENT AND APPLICATION

(a) See Section D and prefiled testimony of R. Curry and S.Thomas. The Rate Bureau has not considered alternative loss trend methodologies in the last three years.

(b) See prefiled testimony of R. Curry and S.Thomas.

(c) Not applicable for Mobilehomes insurance.

STATISTICAL DATA TO COMPLY WITH NORTH CAROLINA
REQUIREMENTS FOR A MOBILEHOMES-MH-F- RATE FILING
AS PER 11 NCAC 10.1105

5. CHANGES IN PREMIUM BASE RESULTING FROM RATING EXPOSURE TRENDS

(a) See Section D and prefiled testimony of R. Curry and S.Thomas. The Rate Bureau has not considered alternative exposure trend methodologies in the last three years.

(b) Not applicable to Mobilehomes insurance.

6. LIMITING FACTOR DEVELOPMENT AND APPLICATION

Limitations were applied to territorial rate changes. The filed rate level changes for territories 05, 06, 42, and 43 were capped at +100%.

STATISTICAL DATA TO COMPLY WITH NORTH CAROLINA
REQUIREMENTS FOR A MOBILEHOMES-MH-F- RATE FILING
AS PER 11 NCAC 10.1105

7. OVERHEAD EXPENSE DEVELOPMENT AND APPLICATION OF COMMISSION AND BROKERAGE, OTHER ACQUISITION EXPENSES, GENERAL EXPENSES, TAXES, LICENSES, AND FEES

(a) Exhibit (7)(a) provides all information relating to expense provisions contained in the filing. The Rate Bureau has not considered alternative expense trend methodologies in the last three years.

(b) Not applicable to Mobilehomes insurance.

(c) Not applicable to Mobilehomes insurance.

The following provides a description of the derivation of Mobilehomes MH-F expense provisions. The underlying expense data are provided by the North Carolina Rate Bureau and are displayed on pages D-25-26.

The filed expense provision methodology makes a distinction between those provisions which require trending and those that do not. For example, since commission and brokerage, and taxes, licenses and fees, vary directly with premium, no additional trend is required. In contrast, general expense, other acquisition expense, and loss adjustment expense, do not vary directly with premium and are subject to trend.

The filed provision for commission and brokerage expenses and the filed provision for taxes, licenses, and fees are based on the data shown on page D-25 for the latest three years.

Since the general expense and other acquisition expense percentages are relative to earned premiums and the loss adjustment expense percentage is relative to losses, separate trend factors are required for premiums, losses, and expenses. The following describes the calculation of the trended expense provisions used for the MH-F owners coverage.

General Expense and Other Acquisition Expense - Since general and other acquisition expenses are incurred throughout the twelve-month effective period, both the numerator and denominator of these ratios are trended to 4/1/2008 (six months beyond the 10/1/2007 effective date).

The average date of payment of the 2002-2004 expenses is 7/1/2003. Similarly, the average date of earning of the 2002-2004 premiums is 7/1/2003. Assuming policies are written with an effective period of one year, the average date of writing is therefore six months earlier, or 1/1/2003. The average date of writing of policies under the proposed rates, and the average date of payment of the expenses on these policies, is six months after the assumed effective date of 10/1/07, or 4/1/2008. Therefore, the expenses in the numerator are projected 57.0 months (from 7/1/2003 to 4/1/2008) and the premiums in the denominator are projected 63.0 months (from 1/1/2003 to 4/1/2008).

The trend factor for the expenses represented in the numerator is based on the index displayed on pages D-23-24. This index is constructed by weighting the Compensation Cost Index – Insurance Carriers, Agent Brokers, and Service with the Consumer Price Index. These two sources receive equal weights. Based on these data, an average annual change of 3.0% is selected. This average annual change is projected 57.0 months (from 7/1/2003 to 4/1/2008).

To trend the premiums in the denominator, two multiplicative factors are applied. The first is the 2003 Current Amount Factor shown on page D-22. The second is the Premium Projection Factor shown on page D-22.

Loss Adjustment Expense - Based on the 2000-2004 experience shown on page D-26, loss adjustment expenses (both allocated and unallocated) average 10.4% of incurred losses, after excluding the high- and low-valued years. The average date of loss in these data is 7/1/2002. Both the numerator and denominator are trended 75.0 months, from 7/1/2002 to 10/1/2008 (12 months beyond the anticipated effective date of 10/1/2007).

The trend factor used for expenses in the numerator is determined in a similar way as for general and other acquisition expenses. The 3.0% selected average annual change is projected 75.0 months (from 7/1/2002 to 10/1/2008).

To trend the losses in the denominator, quantities that are calculated in the loss trend procedure are used. Several factors are applied. To adjust losses from the 7/1/2002 (average) level to 11/15/2006, the Current Cost Factor for 2002 shown on page D-22 is applied. To project losses from 11/15/2006 to 10/1/2008 (twelve months beyond the assumed effective date) the Loss Projection Factor shown on page D-22 and the First Dollar factor shown on page D-22 are applied.

For the MH-F tenant coverage, the procedure for deriving the trended expense provisions is completely analogous to the procedure described above.

No alternate expense trend methodology has been considered within the last three years.

STATISTICAL DATA TO COMPLY WITH NORTH CAROLINA
REQUIREMENTS FOR A MOBILEHOMES-MH-F- RATE FILING
AS PER 11 NCAC 10.1105

8. PERCENT RATE CHANGE

The overall statewide rate change by coverage is shown on page A-1. The statewide rate changes are applied uniformly by coverage amount and deductible.

The proposed rate changes are dependent on the actual implementation date of the new rates, because any such change will affect all of the trending periods used in the filing. Any change in the trending periods will affect all of the losses, fixed expenses, and premiums used in the calculation of the rate level indication.

Because of the unusual circumstances and complexity of this revision involving a territory change as well as rate level changes, and because there has not been a change in many years, it could take as long as 180 days to implement changes, depending on the individual member company programming needs.

STATISTICAL DATA TO COMPLY WITH NORTH CAROLINA
REQUIREMENTS FOR A MOBILEHOMES-MH-F- RATE FILING
AS PER 11 NCAC 10.1105

9. FINAL PROPOSED RATES

The proposed rates are shown in Section B.

STATISTICAL DATA TO COMPLY WITH NORTH CAROLINA
REQUIREMENTS FOR A MOBILEHOMES-MH-F- RATE FILING
AS PER 11 NCAC 10.1105

10. INVESTMENT EARNINGS, CONSISTING OF INVESTMENT INCOME AND REALIZED PLUS UNREALIZED CAPITAL GAINS, FROM LOSS, LOSS EXPENSE AND UNEARNED PREMIUM RESERVES

(a) See attached Exhibit (10)(a) and the prefiled testimony of R. Curry and D. Appel. This information is available for two calendar years.

(b) Not applicable to Mobilehomes insurance.

(c) Not applicable to Mobilehomes insurance.

NORTH CAROLINA
MOBILE HOMES INSURANCE - MH-F PROGRAM

ESTIMATED INVESTMENT EARNINGS ON UNEARNED PREMIUM RESERVES AND ON LOSS RESERVES

A. Unearned Premium Reserve

1.	Direct Earned Premium for Accident Year Ended 12/31/04		779,301,710
2.	Mean Unearned Premium Reserve (1) x	0.5179	403,600,356
3.	Deduction for Prepaid Expenses		
	Commission and Brokerage		0.1439
	Taxes, Licenses and Fees		0.0237
	1/2 General Expenses		0.0222
	1/2 Other Acquisition		0.0299
	Total		0.2197
4.	(2) x (3)		88,670,998
5.	Net Subject to Investment (2) - (4)		314,929,358

B. Delayed Remission of Premium (Agents' Balances)

1.	Direct Earned Premium (A-1)		779,301,710
2.	Average Agents' Balances		0.066
3.	Delayed Remission (1) x (2)		51,433,913

C. Loss Reserve

1.	Direct Earned Premium (A-1)		779,301,710
2.	Expected Incurred Losses and Loss Adjustment Expense (1) x	0.6383	497,428,281
3.	Expected Mean Loss Reserves (2) x	0.206	102,470,226

D. Net Subject to Investment (A-5)-(B-3)+(C-3)		365,965,671
E. Average Rate of Return		0.0491
F. Investment Earnings on Net Subject to Investment (D) x (E)		17,968,914
G. Average Rate of Return as a Percent of Direct Earned Premium (F) / (A-1)		2.31%
H. Average Rate of Return as a Percent of Direct Earned Premium after Federal Income Taxes (G) x	0.772	1.78%

NORTH CAROLINA
MOBILE HOMES INSURANCE - MH-F PROGRAM

ESTIMATED INVESTMENT EARNINGS ON UNEARNED
PREMIUM RESERVES AND ON LOSS RESERVES

EXPLANATORY NOTES

Line A-1
Direct earned premiums are the Homeowners earned premiums for companies writing Mobilehomes insurance in North Carolina; from page 15 of the Annual Statement.

Line A-2
The mean unearned premium reserve is determined by multiplying the direct earned premiums in line (1) by the ratio of the mean unearned premium reserve to the collected earned premium for calendar year ended 12/31/03. These data are from Page 15 of the Annual Statement and represent North Carolina Homeowners data for companies writing mobilehomes insurance.

1. Collected Earned Premium for Calendar Year ended 12/31/04	779,301,710
2. Unearned Premium Reserve as of 12/31/03	391,102,517
3. Unearned Premium Reserve as of 12/31/04	416,085,838
4. Mean Unearned Premium Reserve 1/2 [(2) + (3)]	403,594,178
5. Ratio (4) ÷ (1)	0.5179

Line A-3
Deduction for prepaid expenses:
Production costs and a large part of the other company expenses in connection with the writing and handling of Mobile Homes policies, exclusive of claim adjustment expenses, are incurred when the policy is written and before the premium is paid. The deduction for these expenses is determined from Mobilehomes data provided by the NCRB for the year ended 12/31/03.

Line B-2
Delayed remission of premium:
This deduction is necessary because of delay in remission and collection of premium to the companies, which amounts to approximately 50-75 days after the effective dates of the policies. Therefore, funds for the unearned premium reserve required during the initial days of all policies must be taken from the company's surplus.

1. Agents' balances for premiums due less than 90 days as a ratio to net written premium (based on data for all companies writing Mobile Homes insurance in North Carolina)	0.064
2. Factor to include effect of agents' balances or uncollected premiums overdue for more than 90 days (based on data provided by A. M. Best)	1.03
3. Factor for agents' balances (1) x (2)	0.066

Line C-2

The expected loss and loss adjustment expense ratio reflects the Mobilehomes expense provisions for the year ended 12/31/03.

Line C-3

The mean loss reserve is determined by multiplying the incurred losses in line (2) by the North Carolina ratio of the mean loss reserves to the incurred losses in 2003. This ratio is based on North Carolina companies' Homeowners Page 15 annual statement data (for companies writing Mobilehomes) and has been adjusted to include loss adjustment expense reserves.

1. Incurred Losses for Calendar Year 2004	321,091,132
2. Loss Reserves as of 12/31/03	3,971,007
3. Loss Reserves as of 12/31/04	119,570,808
4. Mean Loss Reserve 2004: 1/2 [(2) + (3)]	61,770,908
5. Ratio (4) ÷ (1)	0.192
6. Ratio of LAE Reserves to Loss Reserves (a)	0.232
7. Ratio of Incurred LAE to Incurred Losses (a)	0.149
8. Loss and LAE Reserve [(5)x(1.0+(6))/(1.0+(7))]	0.206

(a) Based on 2004 All-Industry Insurance Expense Exhibit (source: A.M. Best)

Line E

The rate of return is the ratio of net investment income earned to mean cash and invested assets. Net investment income is computed for all companies writing Mobile Homes insurance in North Carolina as follows:

Year	Net Investment Income Earned	Mean Cash and Invested Assets	Rate of Return
2004	3,227,426,256	65,707,550,794	0.0491

Line H

The average rate of Federal income tax was determined by applying the average tax rate for net investment income and the current tax rate applicable to realized capital gains (or losses) to the rates of return as calculated above.

	Rate of Return	Federal Income Tax Rate
Net Investment Income Earned	0.0491	0.216

The average rate of Federal income tax was determined by applying current tax rates to the distribution of investment income earned for all companies. These data are for 2004 from Best's Aggregates and Averages, Underwriting and Investment Exhibit, Part 1, Column 8.

Bonds	Taxable	21,696,435	0.35
	Non-Taxable	11,340,140	0
	Sub-Total	33,036,575	0.23
Stocks	Taxable (a)	3,285,602	0.105
	Non-Taxable	2,131,399	0
	Sub-Total	5,417,001	0.064
Mortgage Loans		169,603	
Real Estate		1,646,000	
Collateral Loans		981	
Cash/short term investments		1,189,806	
		0	
All Other		3,751,696	
Sub-Total		6,758,086	0.35
Total		45,211,662	0.228
Investment Deductions		4,064,665	0.35
Net Investment Income Earned		41,146,997	0.216

(a) Only 30% of dividend income on stock is subject to the full corporate income tax rate of 35%. The applicable tax rate is thus 10.5% (.35 x .3 = 10.5%)

NORTH CAROLINA
MOBILE HOMES INSURANCE - MH-F PROGRAM

ESTIMATED INVESTMENT EARNINGS ON UNEARNED
PREMIUM RESERVES AND ON LOSS RESERVES

A. Unearned Premium Reserve

1.	Direct Earned Premium for Accident Year Ended 12/31/03			720,701,927
2.	Mean Unearned Premium Reserve (1) x		0.5173	372,819,107
3.	Deduction for Prepaid Expenses			
		Commission and Brokerage		0.1405
		Taxes, Licenses and Fees		0.022
		1/2 General Expenses		0.0219
		1/2 Other Acquisition		0.0318
		Total		0.2162
4.	(2) x (3)			80,603,491
5.	Net Subject to Investment (2) - (4)			292,215,616

B. Delayed Remission of Premium (Agents' Balances)

1.	Direct Earned Premium (A-1)		720,701,927
2.	Average Agents' Balances		0.052
3.	Delayed Remission (1) x (2)		37,476,500

C. Loss Reserve

1.	Direct Earned Premium (A-1)		720,701,927
2.	Expected Incurred Losses and Loss Adjustment Expense (1) x	0.6403	461,465,444
3.	Expected Mean Loss Reserves (2) x	0.156	71988609

D. Net Subject to Investment (A-5)-(B-3)+(C-3)		326,727,725
E. Average Rate of Return		0.0467
F. Investment Earnings on Net Subject to Investment (D) x (E)		15,258,185
G. Average Rate of Return as a Percent of Direct Earned Premium (F) / (A-1)		2.12%
H. Average Rate of Return as a Percent of Direct Earned Premium after Federal Income Taxes (G) x	0.774	1.64%

NORTH CAROLINA
MOBILE HOMES INSURANCE - MH-F PROGRAM

ESTIMATED INVESTMENT EARNINGS ON UNEARNED PREMIUM RESERVES AND ON LOSS RESERVES

EXPLANATORY NOTES

Line A-1
Direct earned premiums are the Homeowners earned premiums for companies writing Mobilehomes insurance in North Carolina; from page 15 of the Annual Statement.

Line A-2
The mean unearned premium reserve is determined by multiplying the direct earned premiums in line (1) by the ratio of the mean unearned premium reserve to the collected earned premium for calendar year ended 12/31/03. These data are from Page 15 of the Annual Statement and represent North Carolina Homeowners data for companies writing mobilehomes insurance.

1. Collected Earned Premium for Calendar Year ended 12/31/03	720,701,927
2. Unearned Premium Reserve as of 12/31/02	354,566,893
3. Unearned Premium Reserve as of 12/31/03	391,102,517
4. Mean Unearned Premium Reserve 1/2 [(2) + (3)]	372,834,705
5. Ratio (4) ÷ (1)	0.5173

Line A-3
Deduction for prepaid expenses:
Production costs and a large part of the other company expenses in connection with the writing and handling of Mobile Homes policies, exclusive of claim adjustment expenses, are incurred when the policy is written and before the premium is paid. The deduction for these expenses is determined from Mobilehomes data provided by the NCRB for the year ended 12/31/03.

Line B-2
Delayed remission of premium:
This deduction is necessary because of delay in remission and collection of premium to the companies, which amounts to approximately 50-75 days after the effective dates of the policies. Therefore, funds for the unearned premium reserve required during the initial days of all policies must be taken from the company's surplus.

1. Agents' balances for premiums due less than 90 days as a ratio to net written premium (based on data for all companies writing Mobile Homes insurance in North Carolina)	0.05
2. Factor to include effect of agents' balances or uncollected premiums overdue for more than 90 days (based on data provided by A. M. Best)	1.033
3. Factor for agents' balances (1) x (2)	0.052

Line C-2

The expected loss and loss adjustment expense ratio reflects the Mobilehomes expense provisions for the year ended 12/31/03.

Line C-3

The mean loss reserve is determined by multiplying the incurred losses in line (2) by the North Carolina ratio of the mean loss reserves to the incurred losses in 2003. This ratio is based on North Carolina companies' Homeowners Page 15 annual statement data (for companies writing Mobilehomes) and has been adjusted to include loss adjustment expense reserves.

1. Incurred Losses for Calendar Year 2003	503,700,389
2. Loss Reserves as of 12/31/02	143,115,185
3. Loss Reserves as of 12/31/03	3,971,007
4. Mean Loss Reserve 2003: 1/2 [(2) + (3)]	73,543,096
5. Ratio (4) ÷ (1)	0.146
6. Ratio of LAE Reserves to Loss Reserves (a)	0.242
7. Ratio of Incurred LAE to Incurred Losses (a)	0.166
8. Loss and LAE Reserve [(5)x(1.0+(6))/(1.0+(7))]	0.156

(a) Based on 2003 All-Industry Insurance Expense Exhibit (source: A.M. Best)

Line E

The rate of return is the ratio of net investment income earned to mean cash and invested assets. Net investment income is computed for all companies writing Mobile Homes insurance in North Carolina as follows:

Year	Net Investment Income Earned	Mean Cash and Invested Assets	Rate of Return
2003	2,822,684,066	60,399,691,076	0.0467

Line H

The average rate of Federal income tax was determined by applying the average tax rate for net investment income and the current tax rate applicable to realized capital gains (or losses) to the rates of return as calculated above.

	Rate of Return	Federal Income Tax Rate
Net Investment Income Earned	0.0467	0.213

The average rate of Federal income tax was determined by applying current tax rates to the distribution of investment income earned for all companies. These data are for 2003 from Best's Aggregates and Averages, Underwriting and Investment Exhibit, Part 1, Column 8.

Bonds	Taxable	21,190,681	0.35
	Non-Taxable	9,918,255	0
	Sub-Total	31,108,936	0.238
Stocks	Taxable (a)	2,864,754	0.105
	Non-Taxable	3,838,458	0
	Sub-Total	6,703,212	0.045
Mortgage Loans		158,612	
Real Estate		1,690,507	
Collateral Loans		438	
Cash/short term investments		1,158,122	
		0	
All Other		3,691,942	
Sub-Total		6,699,621	0.35
Total		44,511,769	0.226
Investment Deductions		4,174,811	0.35
Net Investment Income Earned		40,336,958	0.213

(a) Only 30% of dividend income on stock is subject to the full corporate income tax rate of 35%. The applicable tax rate is thus 10.5% (.35 x .3 = 10.5%)

STATISTICAL DATA TO COMPLY WITH NORTH CAROLINA
REQUIREMENTS FOR A MOBILEHOMES-MH-F-FILING
AS PER 11 NCAC 10.1105

11. IDENTIFICATION OF APPLICABLE STATISTICAL PLANS AND PROGRAMS AND A CERTIFICATION OF COMPLIANCE WITH THEM

(a) ISO Personal Lines Statistical Plan (Other Than Automobile)
ISO Minimum Personal Lines Statistical Plan
ISO Personal Lines Statistical Agent Plan (Other Than Automobile)
ISO 2004 Call for Mobilehomes Statistics
ISO 2004 Call for Mobilehomes Statistical Agent Plan Statistics
ISS Personal Lines Statistical Plans - All Coverages
ISS 2004 Mobilehomes Call
AAIS Personal Lines Statistical Plan
AAIS 2004 Call for Mobilehomes Statistics
NISS Statistical Plan - All Coverages - Part IV, North Carolina
NISS 2004 Quarterly Call
NISS 2004 Calendar Year Annual Statement
NISS 2004 Financial Reconciliation Call
Annual Statement for Calendar Year 2004
Insurance Expense Exhibit for Calendar Year 2004
RB Calls for 2000-2004 North Carolina Expense Experience

(b) The North Carolina Rate Bureau certifies that there is no evidence known to it or, insofar as it is aware following reasonable inquiry, to the statistical agencies involved that the data which were collected under the statistical plans identified in response (11)(a) above and used in the filing are not materially true and accurate representations of the experience of the companies whose data underlie such experience. While the Rate Bureau is aware that the collected data sometimes require corrections or adjustments, the Rate Bureau's review of the data, the data collection process, and the ratemaking process indicates that the aggregate data are reasonable and reliable for ratemaking purposes. See also the prefiled testimony of R. Curry and S.Thomas.

(c) The attached Exhibit (11)(c) contains general descriptions of the editing procedures used for property lines to ensure data were collected in accordance with the applicable statistical plans.

North Carolina Mobilehomes Insurance Statistical Data

ISO Editing Procedures

1. Upon receipt of the data from each reporting company, checks are made to ensure that each record (i.e., the data reported for each exposure) has valid and readable information. This includes a check that the appropriate alpha-numeric codes have been utilized.

2. The records are then checked to ensure that each of the fields has a valid code in it (e.g., company numbers must be entered as four-digit numerals).

3. Relationship edits which evaluate the interrelationship between codes are then performed. For example, if a record indicates North Carolina, Mobilehomes, Form 3, checks are made to ascertain that applicable interrelationships are maintained.

4. Distributional edits are performed to make sure that the reporting company has not erred in miscoding its data into a single class, territory, or other rating criteria due a systems problem or other error.

5. The resulting combined data from all the company records are reconciled with Page 15 Annual Statement data for that company.

6. After all of the ISO data are aggregated, a consolidated review of the data is conducted to determine overall reasonableness and accuracy. In this procedure the data are compared with previous statewide and territory figures. Areas of concern are identified and results are verified by checking back to the source data.

North Carolina Mobilehomes Insurance Statistical Data

Independent Statistical Service, Inc. (ISS)
Editing Procedures

The following narrative sets forth a general description of the editing procedures utilized by ISS to review North Carolina statistical data. All North Carolina experience submitted to ISS by affiliated companies undergoes standard procedures to ensure that the data is reported in accordance with the ISS state approved statistical plans.

The ISS review of the data takes place on two levels: analysis of individual company data and analysis of the aggregate data of all ISS reporting companies combined. These two separate functions will be treated in that order.

Analysis of Company Data

Analysis of company data includes: completeness checks, editing for valid statistical coding and checking the distribution of data within the various data elements.

1. Completeness Checks (Balancing and Reconciliation):

   Balancing and reconciliation procedures are used to determine completeness of reporting. Completeness means that ISS has received and processed all of the data due to be filed with ISS. First, totals of each company's processed data are compared to separate statewide transmittal totals supplied by the company. This step ensures that ISS has processed completely the experience included in the company's submission of data and that no errors occur during this processing. As a second check for completeness, the reported statistical data is reconciled to the Exhibit of Premiums and Losses, "Statutory Page 14", from the company's Annual Statement . It is a useful procedure in determining completeness because the annual statement represents an independent source of information.

2. Editing of Codes:

   Format and Readability

   Statistical data reported by affiliated companies must be filed in accordance with ISS approved statistical plans. This includes the requirement that the data must conform to the specific formats and technical specifications in order for ISS to properly read and process these submissions. The initial edit is a test of each company's submission to ensure it has been reported using the proper record format and that it meets certain technical requirements for the line of insurance being reported. Key fields are tested to ensure that only numeric information has been reported in fields defined as numeric, and that the fields have been reported in the proper position in the record.

   Edits

   The data items of information filed with the insurance company's experience are reported by using codes defined under the ISS statistical plans. For example, the various types of Policy Forms written on Mobilehomes policies in North Carolina are defined in the Personal Lines Statistical Plan. Each definition for each data element has a unique code assigned to it which distinguishes it from other definitions. All data items applicable to North Carolina are defined in a similar manner in each of the ISS statistical plans and have codes assigned to properly identify each definition.

   All records reported to ISS are subjected to validation of the reported codes. This validation, called editing, is performed to assure that companies are reporting properly defined ISS Statistical Plan codes for North Carolina experience.

The purpose of the edit is to validate the statistical codes reported in each record. This validation is called a Relation Edit. A relational edit verifies that a reported code is valid in combination with one or more related data items. Relational edit tests are accomplished primarily through the use of specific edit tables applicable to each line of insurance.

In most cases, the experience data in the record is used in conjunction with the related codes and compared to an establishment or discontinued date for the code being validated. This ensures that specific codes are not being utilized beyond the range of time during which they are valid.

An example of a relational edit involves territory coding. Many territory code numbers are available under each statistical plan for various states, with various effective dates. However, only codes defined for North Carolina for the specific line being processed are valid in combination with North Carolina reported experience. Further, if a new code is erected, that code will be considered valid only if the date reported in the statistical record is equal or subsequent to the establishment date of the code.

3. Distributional Analysis:

The validation of the statistical coding is not by itself sufficient to assure the credibility of company data. Having assured the reporting of valid codes, the statistical agent must verify that valid entries are indeed reliable. Therefore, the data is also reviewed for reasonable distributions. The primary focus of this review is to establish that the statistical data reported by the company is a credible reflection of the company's experience.

The distribution of company experience by specific data elements such as state, territory, policy form, and construction, for example, for the current reporting period is compared to company profiles of prior periods. In addition, ratios relevant to the line of insurance such as average premium, average loss, percent of volume, loss ratio and loss frequency are compared to industry averages. This historical comparison can highlight changes in the pattern of reporting.

The distributional analysis serves as an additional verification that systematic errors are not introduced during the production of data files submitted to ISS by our affiliated companies. Disproportionate amounts of premiums and/or losses in a particular class or territory, for example, can be detected using this technique.

Validation of Aggregate Data

After the individual company data has been reviewed, the data for all reporting companies is compiled to produce aggregate reports. The aggregate data represents the combined experience of the reporting companies. This data is also subjected to similar review procedures. To ensure completeness, run to run control techniques are applied. This involved balancing the totals of the aggregate runs to previously verified control totals. In this manner the aggregate data is monitored to ensure the inclusion of the appropriate company data.

The aggregate data is also reviewed for credibility through distributional analysis similar to that performed on the individual company data. Earned exposures (where applicable) and premiums and incurred losses and claims are used to calculate pure premiums, claim frequencies and claim costs for comparison to past averages. The analysis of the aggregate data centers on determining consistency over time by comparing several years of experience, by policy form and territory, for example. Through the application of these techniques, ISS is able to provide reliable insurance statistical data in North Carolina.

North Carolina Mobilehomes Insurance Statistical Data

NISS Editing Procedures

a. Every report received is checked for completeness. Every submission must include (1) an affidavit; (2) a letter of transmittal setting forth company control totals for the data being sent; (3) the data being reported on tape, cartridge, diskette or form to be keyed.

b. Individual company submissions are balanced to the company letter of transmittal to ensure that all data have been received and processed. After all four quarters of data have been received, the company reports are reconciled to the Annual Statement Page 15 amounts. The NISS Financial Reconciliation identifies any amounts needed to reconcile any differences between the company reported data and Annual Statement amounts.

c. Every company record submitted to NISS is verified through NISS edit software for its coding accuracy and conformance with NISS record layouts and instructions. NISS edits verify the accuracy of each code for each data element. Where possible, each data element is subjected to a relational edit whereby it will be checked for accuracy in conjunction with another field.

d. Individual company submissions are also subjected to a series of reasonability tests to determine that the current submission is consistent with previous company submissions, known changes in this line of business and statewide trends. NISS compares current quarter data to the previous quarter. This comparison is performed and analyzed by grouping data.

e. After all of the NISS data are combined, a review of this consolidated data is also performed. The aggregate data is compared on a year to year basis to again verify its reasonableness, similar to those checks employed on an individual company submission.

North Carolina Mobilehomes Insurance Statistical Data

AAIS Editing Procedures

The American Association of Insurance Services functions as an official statistical agent in the State of North Carolina for a number of lines of insurance, including Mobilehomes. In this capacity, it provides for the administration of statistical programs in accordance with approved statistical plans on behalf of the Commissioner of Insurance. These plans, which were filed according to the requirements of the State of North Carolina, serve to insure a high quality of data reliability.

1. All statistical plans constitute permanent calls for data, which is due at AAIS within 60 days following the close of the period covered by the report.

2. Each data submission is accompanied by a transmittal that summarizes the detail data by state. The transmittal provides control totals to balance to the input and output of each step in our collection procedure. Signature of the company official responsible for data collection is required on the transmittal to certify the accuracy and completeness of the data submission.

3. The AAIS data collection procedure consists of several consecutive steps in order to further verify receipt of accurate and complete data from each company and ultimately aggregate the data into the final experience format.

4. The data collection procedure begins with entering the company number, date, type of media, and transmittal control totals for each line of insurance received into a log file. Company number, record counts, lines of insurance, year, quarter, type and number of media are recorded on a processing log and submitted to the computer room.

5. Operations will load the data into the computer and process all lines through a program which verifies certain key fields. The key fields are company number, line of insurance, transaction code and report period (quarter and year). All invalid key fields must be corrected before proceeding to the next step. Once a valid key field report is generated, Operations will copy all valid key field records to the edit file.

6. Upon receipt of the Moved to Edit report, the statistical department will verify that all records were copied from the stored data file to the edit file. All companies are then released by line and report period for editing.

7. The edit program has several functions and reports. They are:

   a. Data is balanced to transmittal totals.
   b. Each statistical field is edited to the valid codes in the statistical plan for the line being processed. Many fields are also cross edited. An example is deductible type and amount. All invalid codes are identified with an asterisk to the right of the code.
   c. Edit reports consist of a listing of invalid records, error summary report, month report, state report and field error detail report. Mobilehomes has an additional report entitled "Data Consistency Report". This report shows the companies' average premium, pure premium, loss ratio, frequency and severity.

d. In addition to the edit report, we provide the company a distribution report. As you might expect, this report provides a distribution of the reported data for almost every single field of information captured by the statistical plan. This report is not only provided as a courtesy to the company, but it is always reviewed by AAIS staff to identify any reporting irregularities that wouldn't be caught by the edit program.

e. Along with the edit and distribution reports, there are additional review procedures in place to identify procedural reporting errors that may exist (e.g., cancellations and coverage changes). A great deal of time is spent on this item because of it's importance to the validity of the reported data.

f. Our analysis of a company's data are returned to the company with a customized letter indicating the type of action required. Depending on the severity of errors, companies are requested to make corrections or resubmit data.

8. AAIS provides assistance to all of its affiliated companies to ensure a continued high level of data quality. Statistical coding seminars designed to instruct company coders and respond to questions are scheduled annually. In addition to the seminars, AAIS has developed Statistical Training Manuals for some lines and pre-edit programs for company in-house use. Technical Services staff is available to train company personnel in all aspects of data collection, coding, statistical reporting and data processing.

STATISTICAL DATA TO COMPLY WITH NORTH CAROLINA
REQUIREMENTS FOR A MOBILEHOMES-MH-F-RATE FILING
AS PER 11 NCAC 10.1105

12. INVESTMENT EARNINGS ON CAPITAL AND SURPLUS

Not applicable to mobilehomes insurance.

STATISTICAL DATA TO COMPLY WITH NORTH CAROLINA
REQUIREMENTS FOR A MOBILEHOMES-MH-F-RATE FILING
AS PER 11 NCAC 10.1105

13. LEVEL OF CAPITAL AND SURPLUS NEEDED TO SUPPORT PREMIUM WRITINGS WITHOUT ENDANGERING THE SOLVENCY OF MEMBER COMPANIES

LEVEL OF CAPITAL AND SURPLUS NEEDED TO SUPPORT PREMIUM WRITINGS WITHOUT ENDANGERING THE SOLVENCY OF MEMBER COMPANIES

(a) The aggregate premium to surplus ratios for the calendar years 1996-2005 for the company groups which have written North Carolina homeowners insurance are as follows:

Year	P/S Ratio
1996	1.399
1997	1.076
1998	0.982
1999	0.976
2000	1.033
2001	1.198
2002	1.418
2003	1.372
2004	1.259
2005	1.197
Ten-Year Average	1.191

(b) The experience provides the best estimate of the future. See the prefiled testimony of D. Appel.

(c) The actual premium to surplus ratio for the property and casualty industry on a countrywide basis (based upon the latest A. M. Best data available at this time) is as follows:

	(000's omitted)
STATUTORY CAPITAL AND SURPLUS, 2005	$438,730,167
STATUTORY CAPITAL AND SURPLUS, 2004	$401,388,974
AVERAGE STATUTORY CAPITAL AND SURPLUS (2005)	$420,059,571
NET PREMIUMS EARNED (2005)	$429,810,273
PREMIUM/SURPLUS RATIO	1.023

The actual level of capital and surplus needed to support premium writings without endangering the solvency of a company is dependent upon (among others) the financial structure and investments unique to each company, the relationship of the company with affiliated companies as a group (and the experience of the affiliated companies), the mix of business of each company, and the conditions of the economy as they affect each company's individual circumstances. The Rate Bureau is advised that the National Association of Insurance Commissioners, as one of several criteria, generally considers that a premium to surplus ratio for an individual company of 3 to 1 warrants close regulatory attention and monitoring with respect to the company's solvency position.

(d) The Rate Bureau has not allocated surplus by state and by line in preparing this filing. The Rate Bureau has treated surplus in this manner because each dollar of surplus is available to cover losses in excess of premium for each and every line.

STATISTICAL DATA TO COMPLY WITH NORTH CAROLINA
REQUIREMENTS FOR A MOBILEHOMES-MH-F-RATE FILING
AS PER 11 NCAC 10.1105

14. OTHER INFORMATION REQUIRED BY THE COMMISSIONER

See attached Exhibits (14)(a), (b), (c) and (d).

See the pre-filed testimony of D. Appel, J. Vander Weide and R. Curry.

Exhibit (14)(b), (14)(c)

Not applicable to Mobilehomes insurance.

Exhibit (14)(d)

Prior filings are not available.

MOBILE-HOMEOWNERS MH(F) POLICY PROGRAM
(FIRE FORM)
GENERAL RULES

1. GENERAL INSTRUCTIONS

The Mobile-Homeowners Policy Program provides property and liability coverage using the forms and endorsements herein. This manual also contains the rules governing the writing of the Mobile-Homeowners Policy. The rules, rates, forms and endorsements filed by or on behalf of the Company for each Coverage shall govern in all cases not specifically provided for herein.

2. POLICY FORMS AND DESCRIPTION OF COVERAGE

The following is a general description of the coverages provided by the individual Mobile-Homeowners Forms. The Policy and Forms should be consulted for exact contract conditions.

a. Section 1 Coverages - Property Damage
Coverage A - Dwelling
Coverage B - Other Structures
Coverage C - Personal Property
Coverage D - Loss of Use

(1) FORM MH(F)-2 - BROAD FORM. Covers dwelling, other structures, personal property and loss of use, against loss by:

Fire or Lightning
Windstorm or Hail
Explosion Riot or Civil Commotion
Aircraft
Vehicles
Smoke
Vandalism or Malicious Mischief
Breakage of Glass
Theft
Flood
Falling Objects
Weight of ice, snow or sleet
Collapse of buildings
Sudden and Accidental tearing assunder of heating systems and appliances
Accidental discharge of water or steam
Freezing of plumbing, heating systems and appliances
Sudden and accidental injury from electrical currents

(2) FORM MH(F)-3 - COMPREHENSIVE FORM. Covers dwelling, other structures, and loss of use against all risks of physical loss, with certain exceptions. Personal property is covered for the same perils as provided in FORM MH(F)-2 - BROAD FORM.

(3) FORM MH(F)-4 - CONTENTS BROAD FORM. Covers personal property, including the Insured's interest in building additions and alterations, and loss of use, against loss by the same perils as provided in Form MH(F)-2 - BROAD FORM.

b. Section 2 Coverages - Liability - All Forms

Coverage E - Personal Liability
Coverage F - Medical Payments to Others

(1) Personal Liability - Covers payment on behalf of the Insured of all sums which he shall become legally obligated to pay as damages because of bodily injury or property damage caused by an occurrence arising out of his premises or personal activities.

(2) Medical Payments to Others - Covers medical expenses incurred by persons, other than the Insured, who sustain bodily injury caused by an accident arising out of the Insured's premises or personal activities.

3. ELIGIBILITY

a. FORM MH(F)-1 not filed or approved under this Program.

b. FORM MH(F)-2, MH(F)-3 - A Mobile-Homeowners Policy may be issued:

(1) To an owner-occupant of a mobile home which is used exclusively for private residential purposes (except as provided in General Rule 3.f.) and contains not more than two families and with not more than two boarders or roomers.

c. FORM MH(F)-4 - A Mobile-Homeowners Policy may be issued only to:

(1) The Tenant (non-owner) of a mobile home; provided the residence premises occupied by the insured is used exclusively for residential purposes (except as provided in General Rule 3.f.) and is not occupied by more than one additional family or more than two boarders or roomers.

d. When a mobile home is occupied by co-owners, a Mobile-Homeowners Policy providing coverage A & B may be issued to only one of the co-owners and endorsed to cover the interest of the other co-owner in the mobile home and appurtenant private structures and for premises liability.

Attach Endorsement MH(F)-23 - Additional Insured - Residence Premises

A separate Mobile-Homeowners Policy with FORM MH(F)-4 may be issued to the second co-owner.

e. It is permissible to extend the Mobile-Homeowners Policy, without additional premium charge, to cover the interest of a non-occupied joint owner(s) in the mobile home(s) and for premises liability.

Attach Endorsement MH(F)-23 - Additional Insured

f. Subject to all other sections of this rule, a Mobile-Homeowners Policy may be issued to cover a seasonal mobile home and such mobile home shall be described as 'Seasonal Mobile Home' in the policy.

g. Incidental office, professional, private school and studio occupancies are permitted provided:

(1) the premises is occupied principally for mobile home purposes;
(2) there is no other business conducted on the premises; and
(3) there is no increase in the applicable fire rate for such occupancy.

h. A Mobile-Homeowners Policy shall not be issued covering any property to which farm forms or rates apply under the rules filed by or on behalf of the Company. In no event shall a policy be issued to cover any property situated on premises used for farming purposes, unless farming conducted thereon is only incidental to the occupancy of the premises by the Insured as a mobile home and farming is not the occupation of the Insured.

i. A Travel Trailer which is defined as 'a recreational vehicle equipped with temporary living quarters, including cooking and eating facilities' is not eligible for this program.

4. MANDATORY COVERAGES

a. It is mandatory that insurance be written for all coverages provided under both Sections I and II of the Mobile-Homeowners Policy, except for those optional coverages provided for under General Rule 8 of this manual.

b. Section II of the policy requires coverage for the following exposures and the additional premium developed must be charged when such exposures exist.

(1) All additional residence premises where the Named Insured or spouse maintain a residence other than business or farm properties;
(2) All residence employees of the Named Insured or spouse not covered or not required to be covered by Workers' Compensation Insurance (charge required for residence employees in excess of two); and
(3) Incidental office, professional private school or studio occupancies by the insured on residential premises of the Insured.

5. OFFICE, PROFESSIONAL, PRIVATE SCHOOL OR STUDIO OCCUPANCY

a. When the Insured maintains an incidental office, professional, private school or studio occupancy in the mobile home or in a separate structure on the premises, which otherwise meets the eligibility requirements, an additional premium for the increased Coverage C limit and for the liability exposure must be charged.

Under a Mobile-Homeowners Policy with Form MH(F)-4, the minimum limit of liability for Coverage C shall be $2,000.

Attach Endorsement MH(F)-24 - Office, Professional, Private School or Studio Use - Residence Premises

b. When the insured gives professional instruction, such as music, dancing or similar instruction in the mobile home, employs no assistants and there has been no physical alteration of the mobile home to accommodate the occupancy, the additional premium for the liability exposure must be charged.

Attach Endorsement MH(F)-24 - Office, Professional, Private School or Studio Use - Residence Premises

c. When the Insured has permissible office, professional, private school or studio occupancy in an additional residential premises occupied by the insured, other than the described mobile home, the additional premium for the liability exposures must be charged.

Attach Endorsement MH(F)-25 - Office, Professional, Private School or Studio Use - Other Residence

6. LIMITS OF LIABILITY

a. The limits of liability required under the Mobile Homeowners Policy are as follows:

Section I Coverages	**MH (F) -2**	**MH (F) -3**	**MH (F) -4**
A. Dwelling Minimum Limit	$2,000	$2,000	
B. Other Structures	10% of Mobile Home	10% of Mobile Home	
C. Personal Property	30% of Mobile Home	30% of Mobile Home	
D. Loss of Use	10% of Mobile Home	10% of Mobile Home	10% of Unscheduled Personal Property

Section II Coverages	**All Forms**
E. Personal Liability	$25,000 Each Occurrence
F. Medical payments to Others	$ 500 Each Person $25,000 Each Accident

b. ALL FORMS - The limit of liability for Coverages C of Section I and E or F of Section 11 may be increased. See General Rule 8.

c. FORM MH(F)-2, MH(F)-3 - Under Coverage B of Section I an additional amount of insurance may be written on a specific private structure. See General Rule 8.

7. DEDUCTIBLES

a. All Mobile Homeowners Forms contain a $50 Loss Deductible Clause applicable to loss under Section I of the policy except loss under Coverage D, Fire Department Service Charge and Emergency Removal Expense.

b. FORM MH(F)-2, MH(F)-3 & MH(F)-4 - The Mobile-Homeowners Policy may be endorsed to provide a flat (non-disappearing) deductible in the amount of $100 or $250 at a premium credit.

c. Optional $100 or $250 Flat Theft Deductible

FORM MH(F)-2, MH(F)-3, MH(F)-4 - The Mobile-Homeowners Policy may be endorsed to provide a flat (non-disappearing) deductible in the amount of $100 or $250 applicable to any loss caused by theft of property only covered under Coverage C of the policy. This deductible shall be applied to the amount of each adjusted loss. A premium credit is applicable.

8. OPTIONAL COVERAGES

a. Section I - Property Damage

The Coverage may be amended as follows:

(1) Other Structures - Increased Limit

An additional amount of insurance may be written on a specific private structure under Coverage B at an additional premium.

Attach Endorsement MH(F)-28 - Other Structures

(2) Credit Card , Forgery and Counterfeit Money Coverage

The Mobile Homeowners Policy may be extended to include coverage against loss by forgery or alteration in connection with credit cards, checks or drafts, or loss due to acceptance of counterfeit paper currency at an additional premium.

Attach Endorsement MH(F)-29 - Credit Card , Forgery and Counterfeit Money Coverage

(3) Money and Securities

Increased limits on money, bullion, numismatic property, bank notes, and on securities, accounts, bills, deeds, evidences of debt, letters of credit, notes other than bank notes, passports, railroad and other tickets and stamps, including philatelic property, may be provided at an additional premium.

The $100 limit on money may be increased by an amount not exceeding $400 and the $500 limit on securities may be increased by an amount not exceeding $500.

Attach Endorsement MH(F)-32 - Coverage C - Increased Special Limits of Liability

(4) Theft Coverage Extension

FORM MH(F)-2, MH(F)-3, MH(F)-4 - Coverages may be extended to include loss by theft of property while unattended in or on any vehicle or watercraft at an additional premium.

Attach Endorsement MH(F)-27 - Theft Coverage Extension

(5) Personal Property

(a) Increased Limit - All Forms - The limit of liability for Coverage C may be increased at an additional premium.

(b) Away from Premises - FORM MH(F)-2, MH(F)-3, MH(F)-4 - The limit of liability on unscheduled personal property away from premises under Coverage C may be increased at an additional premium.

Attach Endorsement MH(F)-33 - Coverage C - Away from Premises

(6) Earthquake Damage

The Additional Exclusion section may be amended to include direct loss caused by earthquake and volcanic eruption at an additional premium. A deductible in the amount of 2% is mandatory.

Attach Endorsement MH(F)-43 - Earthquake

(7) Fire Department Service Charge - The limit of $100 in the policy may be increased to $250 or $500 at an additional premium.

Attach Endorsement MH(F)-45 - Fire Department Service Charge

b. Scheduled Personal Property

Coverage may be provided against all risks of physical loss with certain exceptions on scheduled personal property subject to the rules and rates filed by or on behalf of the Company. This coverage is subject to an annual minimum premium of $15 irrespective of the term of the Mobile-Homeowners Policy.

Attach Endorsement MH(F)-31 - Scheduled Personal Property Endorsement

c. Lienholder's Single Interest

Coverage may be provided to cover the interest of the lienholder from the loss caused by collision, upset, conversion, embezzlement or secretion at an additional premium. Repossession and return protection is included. This coverage should be provided only when requested by the lienholder.

Attach Endorsement MH(F)-21 - Mobile Home Lienholder's Single Interest

d. Trip Collision

This coverage may be provided to protect the Insured from loss caused by collision or upset at an additional premium. A $100 deductible is mandatory.

Attach Endorsement MH(F)-22 - Collision

e. Consent to Move Mobile Home

This extension of coverage may be provided to avoid termination of coverage when the Mobile Home is moved and without reduction of coverage while the Mobile Home is away from the described premises (but not for collision or upset) at an additional premium.

Attach Endorsement MH(F)-20 - Consent to Move Mobile Home

f. Scheduled Glass

Coverage may be added for specified glass at the premiums filed by the Company.

Attach Endorsement MH(F)-44 - Scheduled Glass

g. Section II - Liability

The Limit of Liability for Coverages E or F may be increased at an additional premium and the following coverages may also be added to the Mobile-Homeowners Policy:

Note: Workers' Compensation coverage or liability on a non-comprehensive basis shall not be added to the Mobile-Homeowners Policy.

(1) Additional Residence Premises - Rented to Others

Coverage may be provided for additional one or two family residence premises, rented to others, owned by the Named Insured or spouse, at an additional premium.

Attach Endorsement MH(F)-34 - Additional Residence - Rented to Others, 1 or 2 Families

(2) Business Pursuits

Coverage may be provided for the liability of an insured arising out of business activities, other than a business of which he is sole owner or a partner, at an additional premium.

Attach Endorsement MH(F)-35 - Business Pursuits

(3) Outboard Motors and Watercraft

Coverage is provided for watercraft powered by an outboard motor or combination of outboard motors not exceeding 25 total horsepower. Watercraft not covered under the policy may be insured at an additional premium.

Attach Endorsement MH(F)-36 - Watercraft

(4) Owned Snowmobile

Each snowmobile owned by the Named Insured or any other insured who is a resident of the Named Insured's household must be declared. The premium charge shall apply separately to each snowmobile.

Attach Endorsement MH(F)-37 -Snowmobile

(5) Farmers Comprehensive Personal Liability

Section II can be amended to provide for this coverage at an additional premium.

Attach Endorsement MH(F)-41 - Farmers Comprehensive Personal Liability

9. TIE-DOWN CREDIT

When the mobile home is properly secured in accordance with the regulations of the North Carolina Building Code Council as set forth in the State of North Carolina Regulations for Mobile Homes, a credit of 10% shall be deducted from the applicable basic premium.

Attach Endorsement MH(F)-46 - Mobile Home Tie-Down.

10. CHANGE ENDORSEMENT

Endorsement MH(F)-26 - Change Endorsement, provides the minimum information requirements for any endorsement or change that takes place during the term of the policy. This endorsement must be used or the equivalent information provided.

11. POLICY TERM

The Mobile Homeowners Policy may be written for a term of one year. It is permissible to extend the policy for successive policy terms by extension certificate based upon the premiums in effect on renewal date. The then current editions of the applicable forms and endorsements must be made a part of the policy.

It is permissible to write for one or three year terms on the following bases:

An annual policy which may be extended for successive terms by Certificate, subject to the rules, premiums, forms and endorsements then in effect.

A three year policy with the premium payable in installments at the premium in effect on the anniversary dates.

A three year policy with the premium prepaid at three times the annual premiums in effect at inception.

Endorsement MH(F)-39 - Deferred Premium Payment applies.

12. OTHER INSURANCE

Credit for existing insurance is not permitted, except under Section II as provided for in the rate pages.

13. WHOLE DOLLAR PREMIUM RULE

All premiums shown on the policy and endorsements shall be rounded to the nearest whole dollar. A premium of fifty cents ($.50) or more shall be rounded to the next higher whole dollar.
In the event of cancellation by the Company, the return premium may be carried to the next higher whole dollar.

14. INTERPOLATION OF PREMIUMS FOR POLICY AMOUNTS NOT SHOWN ON PREMIUM CHARTS

Premiums for limits of liability in excess of the minimums required, not shown in the premium charts, may be obtained by interpolation.

15. INCREASES IN LIMITS OF LIABILITY OR ADDITION OF COVERAGES

The limits of liability may be increased or coverages may be added during the term of the policy. Any additional premium shall be computed on a prorata basis subject to all the rules of this manual.

16. MINIMUM ADDITIONAL PREMIUM

When an endorsement requiring an additional premium is issued subsequent to the inception date of the policy, such total additional premium shall not be less than $6.00 regardless of the unexpired policy period.

17. CANCELLATION OR REDUCTIONS IN LIMITS OF LIABILITY OR COVERAGES

It shall not be permissible to cancel any of the mandatory coverages in the policy unless the entire policy is cancelled.

If insurance is cancelled or reduced at the request of the Company, or in the event of foreclosure of the mortgage or other lien on the insured mobile home, the earned premium shall be computed on a prorata basis.

If insurance is cancelled or reduced at the request of the Insured, the earned premium shall be computed on a short rate basis, using the standard short rate tables subject to a minimum retained premium of $25.00 unless rewritten by another Mobile Homeowners Policy in this Company.

18. TRANSFER OR ASSIGNMENT

Subject to all the rules of this manual, any necessary adjustment of premium, and with permission of the Company, a Mobile-Homeowners Policy may be endorsed to effect:

a. transfer to another location within the same state; or

b. assignment from one insured to another in the event of transfer of title of the mobile home.

19. RESTRICTION OF INDIVIDUAL POLICIES

If a Mobile Homeowners Policy would not be issued because of unusual circumstances or exposures, the Named Insured may request a restriction of the policy provided no reduction in the premium is allowed. Such requests shall be referred to the Company and must be handled in accordance with consent to rate statutes.

20. REPLACEMENT COST - COVERAGES A AND B

Coverage may be provided on a replacement cost basis for Coverages A and B, at an additional premium.

Attach Endorsement MH(F)-48 - Replacement Cost Loss Settlement

21. INFLATION GUARD ENDORSEMENT

Form MH(F)-2 and MH(F)-3 - Limits of Liability on Coverages A, B, C & D are automatically increased by the amount of quarterly increase shown on the endorsement for an additional charge.

Attach Endorsement MH(F)-50

22. Personal Property Replacement Cost

Form MH(F)-2 and MH(F)-3 - Coverage C may be extended to include full cost of repair or replacement at an additional premium.

Attach Endorsement MH(F)-51

23. Coverage B - Off Premises - Forms MH(F)-2 and MH(F)-3

Coverage B - Other structures may be extended to cover other structures which are located off the residence premises at an additional charge.

Attach Endorsement MH(F)-52

24. WINDSTORM OR HAIL EXCLUSION - TERRITORY 05, 06, 42 and 43 ONLY

A. The peril of Windstorm or hail may be excluded if:
   1. The property is located in an area eligible for such coverage from the North Carolina Underwriting Association; and
   2. A Windstorm or Hail Rejection form is secured and maintained by the company.

Attach Endorsement MH(F)-54 Windstorm or Hail Exclusion.

B. When Endorsement MH(F)-54 is attached to the policy, enter the following on the Declaration Page:

> "This policy does not provide coverage for the peril of Windstorm or Hail."

25. Mobile Home Stated Value Loss Settlement

For an additional premium, your policy may be changed to reflect a stated value for the covered mobile home. For rate information, see Rate Section.
Attach MH(F)-310 (Ed. 9-97)

26. Optional Rating Characteristics

Companies may use the following optional rating characteristics or any combination of such optional rating characteristics and Bureau filed characteristics to determine rates, as long as applicable legal requirements are satisfied. The resulting premium shall not exceed the premium that would have been determined using the rates, rating plans, classifications, schedules, rules and standards promulgated by the Bureau, except as provided by statute. The rating factor for any combination of the following optional risk characteristics cannot exceed 1.00, unless the resulting premium does not exceed the Bureau premium.

A) Policy characteristics not otherwise recognized in this manual. Examples include: account or multi-policy credit; tiers; continuity of coverage; coverages purchased; intra-agency transfers; payment history; payment options; prior insurance; and new and renewal status.

B) Policyholder/Insured personal characteristics not otherwise recognized in this manual. Examples include: Smoker/non-smoker status; credit information; loss history; loss prevention training/education; age; work status; marital status; number of years owned; owned real estate; household composition; and good student/education.

C) Dwelling characteristics not otherwise recognized in this manual. Examples include: Gated community; retirement community; limited access community; mobilehome community; revitalized/renovated home; security, safety or loss deterrent systems or devices; age of home; occupancy; fire protection/distance to_fire department; and construction type and quality.

D) Affinity group or other group not otherwise recognized in this manual.

E) Any other rating characteristics or combination of characteristics if filed by a company and approved by the Commissioner.

Installment Payment Plan

When a policy is issued on an installment basis, the following rules apply:

a. The first installment shall be due on the effective date of the policy and the due date of the last installment shall be no later than one month prior to the policy anniversary date.

b. An additional charge of $3.00 shall be made for each installment.

c. The premium calculated for the first installment payment, exclusive of installment charges, shall not be less than the pro rata charge for the period from the inception date of policy to the due date of the next installment.

NORTH CAROLINA

MOBILE-HOMEOWNERS POLICY MH(F) PROGRAM

PROPOSED MANUAL PREMIUMS

Amount of Insurance				Premiums	
A	B	C	D	MH(F)-2	MH(F)-3
$2,000	$ 200	$ 600	$ 200	$46	$50
3,000	300	900	300	58	63
4,000	400	1,200	400	70	77
5,000	500	1,500	500	82	91
6,000	600	1,800	600	94	104
7,000	700	2,100	700	106	118
8,000	800	2,400	800	118	133
9,000	900	2,700	900	130	146
10,000	1,000	3,000	1,000	142	160
11,000	1,100	3,300	1,100	154	174
12,000	1,200	3,600	1,200	166	187
13,000	1,300	3,900	1,300	179	201
14,000	1,400	4,200	1,400	190	215
15,000	1,500	4,500	1,500	202	228
Each Add'l. $1,000 - Add				12	14

Amount of Insurance		Premiums
C	D	MH(F)-4
$ 2,000	$ 200	$ 43
3,000	300	53
4,000	400	63
5,000	500	73
6,000	600	84
7,000	700	95
8,000	800	104
9,000	900	115
10,000	1,000	125
Each Add'l. $1,000 - Add		10

SECTION I COVERAGES - FIRE FORM - ANNUAL PREMIUMS

1. **DEDUCTIBLES**:

a. For the purposes of this rule, premium subject to deductible credits shall be the sum of the following:
(1) the premium developed from the Basic Premium Chart for Section 1 Deductible:
(2) the premiums for amended limits of liability for Coverage C; and
(3) the premiums developed for all other Structures, Theft Coverage Extension and Coverage C - Increased Limits - Away from Premises, if applicable.

b. Optional Higher Flat Deductible
ALL FORMS - The Mobile-Homeowners Policy may be endorsed to provide a flat (non-disappearing) deductible applicable to any loss under Section 1 of the policy in an amount and at a premium credit developed as follows. The Percentage of premium credit shall be applied to the premium developed in 1.a. above subject to the maximum premium credit indicated.

	Section 1 Deductible			
Amount	$100	$250	$500	$1,000
Percentage of Credit	10%	20%	27%	34%
Maximum Premium Credit	$ 25	$ 50	$100	$250

c. Optional Flat Theft Deductible:
ALL FORMS - The mobile-Homeowners Policy may be endorsed to provide a $100 or $250 Flat Theft Deductible applying to loss by Theft of property covered under Coverage C of the policy at a premium credit developed from the table below.
The premium subject to this deductible shall be the sum of:
(1) the premium developed from the Basic Premium Chart;
(2) the premiums for amended limits of liability for Coverage C; and
(3) the premiums developed for Theft Coverage Extension and Coverage C - Increased Limits Away from Premises, if applicable.

	Theft Deductible	
Amount	$100	$250
Percentage of Credit	3%	5%
Maximum Premium Credit	$ 10	$ 15

2. **OPTIONAL COVERAGES:**

a. **Other Structures**:
(1) Increased Limit
When an additional amount of insurance is written on a specific Other Structure, the premiums listed on the following page per $1,000 of insurance shall apply separately to each such structure. Attach Endorsement **MH(F)28** - Other Structures

FORM	INCREASED LIMIT RATE PER $1,000
MH(F) 2	$ 9
MH(F) 3	$11

b. **Credit Card, Forgery and Counterfeit Money Coverage**:

When Credit Card, Forgery and Counterfeit Money Coverage is provided the additional premium shall be developed as follows:

Limit of Liability	Premium
$ 2,500	$3
5,000	$5
10,000	$6

For limits in excess of $10,000 refer to Company.
Attach Endorsement **MH(F) 29** - Credit Card, Forgery and Counterfeit Money

c. **Money and Securities - Increased Limit:**
When the limit of liability is increased on money or securities, the additional premium shall be developed as follows:

	Money	Securities
All Forms - Per $100 of Insurance	$6	$4

The special limit of liability for theft of jewelry, watches and furs may be increased to $1,000 but not exceeding $500 for any one article. The additional premium shall be $9.

Attach Endorsement **MH(F) 32** - Coverage C - Increased Special Limits of Liability

d. **Theft Coverage Extension:**
ALL FORMS - When the peril of Theft is extended to cover loss of property from unattended vehicles or watercraft, the additional premium shall be $3.
Attach Endorsement **MH(F) 27** - Theft Coverage Extension

e. **Personal Property**
(1) Increased Limit
When the limit of liability for Coverage C is increased, the additional premium shall be developed as follows:
Form MH(F) 2 or MH(F) 3 - $10 per $1,000 of insurance.

(2) Increased Limits - Away from Premises
When the limit of liability on personal property away from the premises under Coverage C is increased, the additional premium shall be developed as follows:

All forms	Each Additional $1,000
Without Theft coverage Extension	$ 9
With Theft Extension	$13

Minimum Premium - $9 Minimum Retained Premium for this endorsement when cancelled separately.
Attach endorsement **MH(F) 33** - Coverage C Away From Premises

f. **Mobile Home Lienholders Single Interest** - $10 per year, not subject to Short Rate adjustment. Covers lienholders interest from loss by collision, upset, conversion, embezzlement or secretion and repossession return expense. Attach endorsement **MH(F) 21.**

g. **Trip Collision Coverage** - In consideration of a fully earned premium of $15, the policy is extended to cover loss from collision or upset for a period of 30 days - Subject to a mandatory $100 deductible. Attach endorsement **MH(F) 22** Collision

h. **Consent to Move Mobile Home** - In consideration of a fully earned premiu of $10, the on premises limits are extended to wherever the Mobile Home may be, for a period of 30 days. Attach endorsement MH(F) 20 - Consent to Move Mobile Home.

i. **Earthquake Coverage** When Earthquake Coverage is provided it shall apply to all Section 1 Coverages for the same limits as provided under the policy. The premium for each $1,000 of insurance shall be developed as follows:

	Frame	Applied to
Form MH(F) 2, MH(F) 3	$ .40	Coverage A limit of Liability
Form MH(F) 4	.30	Coverage C Limit of Liability
Form MH(F) 2, MH(F) 3 Coverage C Increase Limits	.30	Amount of Increase only
All Forms Private Structure or Coverage D Increased or added limits	.40	Amount increased or added

Attach endorsement **MH(F) 43** - Earthquake.

j. **Fire Department Service Charge** - The limit may be increased as follows:

Increase to $250	$2
Increase to $500	$5

Attach endorsement **MH(F) 5** - Fire Department Service Charge.

k. **Tie-Down Credit** - See general rule 9. Attach endorsement MH(F) 46-Mobile Home Tie-Down.

l. **Replacement Cost Coverages A and B**
When coverage is provided on a replacement cost basis, charge 5% of the premium from the Basic Premium Chart. Attach **MH(F) 48** - Replacement Cost Loss Settlement

m. **Inflation Guard Coverage** - Form MH(F) 2 & Form MH(F) 3
When the Limits of Liability on Coverages A, B, C & D are automatically increased in accordance with the provisions of the Inflation Guard Endorsement the annual additional premium shall be developed by applying the following charges to the annual premium for Coverage A.

Amount Quarterly Increase	Charge
1%	1.5%
1 1/2%	2.25%
2%	3.0%

Each add'l. 1/2% Added Charge 3/4%

Minimum Annual Premium. $1.00
Additional premium for three year policies shall be three times the annual premium. Attach Endorsement **MH(F) 50**

n. **Personal Property Replacement Cost**
When Coverage C is extended to include full cost of repair or replacement without deduction for depreciation the additional premium shall be developed as follows:

Form MH(F)-2 and MH(F)-3 -

Add: Manual charge to increase the Coverage C limit to 40% of Coverage A.

Add: A 5% surcharge to the adjusted total base premium (including the additional premium for the increased Coverage C limit).

The surcharge shall be applied to the Total Adjusted Basic Premium before credit for optional higher deductible is applied:
The minimum additional premium is $20. Attach Endorsement **MH(F) 51**

o. **Coverage B - Off Premises Form MH(F)-2 and MH(F)-3**

When Coverage B - Off Premises is provided to cover other structures which are located off the residence premises, the additional charge shall be $33. Use Endorsement MH(F)-52 N.C. Coverage B - Off Premises

P. **WINDSTORM OR HAIL EXCLUSION** - TERRITORY 05, 06, 42 and 43 ONLY

When the perils of windstorm or hail are excluded from coverage under Section I of the policy the following credits shall be deducted from the applicable basic premium.

(1) Forms 2 & 3: 30%
(2) Form 4: 10%

q. **Mobile Home Stated Value Loss Settlement**
When coverage is provided on a stated value basis, charge 3% of the premium from the premium rate table. Use endorsement MH(F) 310.

SECTION II COVERAGES - LIABILITY - ANNUAL PREMIUMS

3. GENERAL INSTRUCTIONS

When the limit of liability for Coverage E or F is increased or coverage for additional exposures is provided, the additional premium shall be developed from the following tables. The respective limits of liability for Coverage E and for Coverage F must be uniform for all exposures covered under the policy. Coverage F limits indicated below are "each person" limits and contemplate the basic limit of $25,000 each accident. Refer to Company for Limits in Excess of those shown.

4. PREMIUMS

Exposure	Coverage E (Limits of Liability)	$25,000			$50,000			$100,000			$200,000			$300,000		
	Coverage F	None	$500	$1,000	None	$500	$1,000	None	$500	$1,000	None	$500	$1,000	None	$500	$1,000
a. Described Res. Premises		-	-	3	-	1	4	-	2	5	-	4	7	-	6	9
b. Additional Res. Premises Occupied by Insured, (1 or 2 Family Dwelling)		-	3	4	-	4	5	-	5	6	-	6	7	-	7	8
Rented to Others, 1 Family (a)		3	6	7	4	7	8	5	8	9	6	9	10	7	10	11
Rented to Others, 2 Family (a)		5	8	9	6	9	10	7	10	11	8	11	12	9	12	13
c. Res. Employees (b)		-	2	3	-	3	4	-	4	5	-	5	6	-	6	7

NOTES:

(a) Attach Endorsement MH(F)-34 - Additional Residence Premises - Rented to Others.

(b) Charge for each employee in excess of two other than employees whose time of employment is not more than half of the customary full time or to whom the Workers' Compensation exclusion applies as set forth in Section II of the policy.

(c) When coverage is provided by a Mobile-Homeowners for a Secondary Residence premises of an insured whose Primary Residence is covered by a Homeowners, Farmowners or Mobile-Homeowners Policy in the same company, the secondary premises shall be endorsed on Section II of the Primary policy at the appropriate charge, and a $7 credit allowed on the Secondary policy if the Primary policy number is shown on the Declarations page of the Secondary policy.

d. Office, Professional, Private School or Studio Occupancy

When the insured maintains an incidental office, professional, private school or studio occupancy on the premises, the additional premium shall be calculated by adding the appropriate charge from the following table to the premium developed for any required increased in the Coverage C Limit of Liability.
Submit to Company for Medical Payments charges on incidental day nurseries or nursery schools.

Exposure	Coverage E (Limits of Liability)	$25,000			$50,000			$100,000			$200,000			$300,000		
	Coverage F	None	$500	$1,000	None	$500	$1,000	None	$500	$1,000	None	$500	$1,000	None	$500	$1,000
Descr. Prem (a)	Gen. Rule 5.a.	9	11	13	10	12	14	11	13	15	12	14	16	13	15	17
Descr. Prem.	Gen. Rule 5.b.	-	3	4	-	4	5	-	5	6	-	6	7	-	7	8
Add'l. Residence Prem. Occupied by Insured (b)		4	6	8	5	7	9	6	8	10	7	9	11	8	10	12

NOTES: (a) Attach Endorsement MH(F)-24 - Office, Professional, Private School or Studio Use - Residence Premises.
(b) Attach Endorsement MH(F)-25 - Office, Professional, Private School or Studio Use - Other Residence.

e. Watercraft

Coverage must be written to expiration of the policy, but it is permissible to stipulate for inboard motor boats or inboard-outboard motor boats or sailboats (not outboard motors) the navigational period of each year. Premium shall be adjusted on a short rate basis. For boats not described below, coverage is not permitted under the Mobile-Homeowners policy. The premium applicable in the state in which the insured's initial residence premises is located shall apply except that if the insured owns another premises where he maintains a residence and operates his boat principally from such other premises, the premiums applicable in the state where the latter premises are located shall apply.

LIMITS OF LIABILITY

Coverage E	$25,000		$50,000		$100,000	$200,000	$300,000			
Exposure — Coverage F	$500	$1,000	$500	$1,000	$500	$1,000	$500	$1,000	$500	$1,000
Each Outboard Motor (a)										
Over 25 HP-less than 50 HP	5	6	6	7	7	8	8	9	9	10
50 HP and over	8	10	10	12	11	13	13	15	14	16
Inboard or Inboard-Outboard Motor Boats and Sailboats(b)										
Under 16 MPH										
Less than 26 feet	11	12	13	14	15	16	17	18	19	20
26 to 40 feet	30	33	34	37	39	42	44	47	50	53
Over 40 feet	58	65	67	74	76	83	87	94	99	106
16 - 30 MPH										
less than 26 feet	23	26	27	30	30	33	35	38	40	43
26 to 40 feet	47	53	54	60	61	67	70	76	80	86
Over 40 feet	87	98	100	111	114	125	131	142	149	160
Over 30 MPH										
Less than 26 feet	58	65	67	74	76	83	87	94	99	106
26 to 40 feet	87	98	100	111	114	125	131	142	149	160
Sailboats										
No Aux. Power 26 to 40 ft. incl.	23	26	27	30	30	33	35	38	40	43

NOTES: (a) Where two or more outboard motors are regularly used together in connection with any single watercraft owned by the Insured, the horsepower of all such outboards shall be accumulated for rating purposes.

(b) Sailboats 26 to 40 feet inclusive equipped with Auxiliary Power are classed as Inboard Motor Boats.

Attach Endorsement MH(F)-36 - Watercraft

f. Business Pursuits

Classify and apply charge separately for each person insured.

Classifications

A - Clerical Office Employees - Defines as those employees whose duties are confined to keeping the books or records, conducting correspondence, or who are engaged wholly in office work where such books or records are kept or where such correspondence is conducted, having no other duty or any nature in or about the employer's premises. This classification applies only to persons who are employed exclusively in separate buildings or on separate floors of buildings or in departments on such floors which are separated from all other work places of the employer by structural partitions and within which no work is performed other than clerical office duties.

B - Salesmen, Collectors or Messengers - Including installation, demonstration or servicing operations.

C - Teachers - Athletic, laboratory, manual training, physical training and swimming instruction, excluding liability for corporal punishment of pupils.

D - Teachers - Not otherwise classified, excluding liability for corporal punishment of pupils.

E - Teachers - Liability for corporal punishment of pupils. Additional premium for this coverage must be added to premium for classification C or D.

Occupations not otherwise classified - Refer to Company.

LIMITS OF LIABILITY

	Coverage E		$25,000			$50,000		$100,000		$200,000		$300,000			
Classification	Coverage F	None	$500	$1,000	None	$500	$1,000	None	$500	$1,000	None	$500	$1,000	None	$500	$1,000

A	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
B	2	3	4	2	3	4	3	4	5	3	4	5	3	4	5
C	3	5	6	3	6	7	4	7	8	5	8	9	6	9	10
D	1	2	3	1	2	3	1	2	3	2	3	4	2	3	4
E		2			3			4		5			6		

Attach Endorsement MH(F)-35 - Business Pursuits

g. Farmers Comprehensive Personal Liability

LIMITS OF LIABILITY

Exposure	Coverage E	$25,000		$50,000		$100,000		$200,000		$300,000	
	Coverage F	$500	$1,000	$500	$1,000	$500	$1,000	$500	$1,000	$500	$1,000
Initial Farm Premises		21	23	23	26	26	29	29	32	32	35
Each Add'l Farm Prem. - Occupied or Rented		12	13	14	15	15	16	17	18	19	20
Total Acreage for All Locations Occupied or Rented, Over 500		5		6		7		8		9	
Farm Employees(a) Per 100 Days-or fraction thereof		6	7	7	8	8	9	9	10	10	11
Each Farm Empl. Part Time(b)		8	9	9	10	10	11	11	13	12	14
Each Farm Empl. Full Time		18	20	20	22	22	25	25	28	28	31
Min. Prem. Per Policy		11	13	13	15	14	17	16	19	18	21

(Farm Employees Only)

Animal Collision Coverage G $300 Limit - $3

Attach Endorsement MH(F)-41 - Farmer's Comprehensive Personal Liability

h. Owned Snowmobile

Each snowmobile owned by the Named Insured or any other Insured who is a resident of the Named Insured's household must be declared. The premium charge shall apply separately to each snowmobile.
The minimum charge for each snowmobile for any period of coverage within a policy year shall be as indicated below for the respective Limits of Liability.

LIMITS OF LIABILITY

Coverage E	$25,000		$50,000		$100,000		$200,000		$300,000	
Coverage F	$500	$1,000	$500	$1,000	$500	$1,000	$500	$1,000	$500	$1,000
Each Snowmobile	-	-	-	-	-	-	-	-	-	-
Annual Minimum Premium	34	35	39	40	42	44	48	50	54	55

Attach Endorsement MH(F)-37 - Snowmobile

PREFILED TESTIMONY
OF
ROBERT J. CURRY

2008 MOBILEHOME MH-F INSURANCE
RATE FILING BY THE
NORTH CAROLINA RATE BUREAU

Q. Please state your name and business address.

A. My name is Robert J. Curry. My business address is Insurance Services Office, 545 Washington Boulevard, Jersey City, New Jersey.

Q. By whom are you employed?

A. I am employed by Insurance Services Office ("ISO") and have been employed by ISO since October 8, 1984.

Q. What are your responsibilities at ISO?

A. I am generally responsible for managing and overseeing the operations of the Personal Property Actuarial Division at ISO. The Personal Property Actuarial Division is responsible for ISO's total ratemaking operation as it pertains to personal property insurance, including homeowners, dwelling and inland marine coverages. We are generally responsible for doing analyses that pertain to ratemaking for the personal property coverages including reviewing experience, making filings, analysis of classification plans, etc. ISO is involved in ratemaking for the personal property coverages in general in all of the 50 states plus the District of Columbia and Puerto Rico.

Q. What is your employment background?

A. I have been employed by ISO for over twenty-three years in various actuarial positions. I was hired as an Actuarial Assistant in 1984 in the Data Management and Control area. In 1990, I joined Actuarial Development as an Actuarial Consultant coordinating work on the quarterly Industry Operating Results and several Insurance Issues Series studies. In 1994, I joined Actuarial Government Services as a Regional Actuary. In 1998, I joined the Personal Lines Actuarial Division (PLAD) as a Manager and Associate Actuary. In PLAD, I was responsible for personal auto filings in 25 states and the use of catastrophe models in personal property ratemaking. In 2003 I was appointed

Assistant Vice President and Actuary of the Personal Property Actuarial Division.

Q. What is your background in actuarial science and your educational background?

A. I have a Bachelor of Science degree in mathematics from Cook College at Rutgers University. I am a Fellow of the Casualty Actuarial Society ("CAS") and a member of the American Academy of Actuaries. I am a Chartered Property Casualty Underwriter (CPCU). I have also earned the Associate in Insurance Accounting and Finance (AIAF) and Associate in Regulatory Compliance (ARC) designations. I am currently the chairman of the CAS Predictive Modeling Seminar Committee. I have served on the CAS Examination Committee, CAS Syllabus Committee, CAS Committee on Special Interest Seminars and the CAS Continuing Education Committee. I have also served as a member of the American Academy of Actuaries Committee on Automobile Insurance Issues

Q. Are you familiar with ratemaking for residential property in North Carolina and in other states?

A. Yes. As part of my duties at ISO, I am familiar with the data collection and ratemaking procedures in use in states in addition to North Carolina. I am responsible at the present time for either preparing or supervising the preparation of residential property filings for all of the states and the District of Columbia and Puerto Rico.

Q. What work have you performed with respect to the Rate Bureau's 2008 mobilehomes rate filing in North Carolina?

A. Through ISO I have been involved in the preparation of the 2008 mobilehomes rate filing for the Rate Bureau in two respects. Preparation of this filing generally began in early 2007 and therefore the factors and data used in the filing represent the latest available information at the time of preparation. First, ISO collects rate-related statistical data from a significant number of the companies which write mobilehomes insurance in North Carolina. The Property Casualty Insurers Association of America ("PCI"), the American Association of Insurance Services ("AAIS") and the National Independent Statistical Service ("NISS") are the statistical organizations which collect data from the other companies. The data which they collect are sent to ISO and compiled in the proper format so that they can be reviewed to determine whether rates are adequate or inadequate. Second, ISO provides consulting actuarial services directly to the Rate Bureau.

Under my direction, my staff put together the vast majority of the data and information contained in Exhibit RB-1.

Finally, I have also reviewed the filed rates to determine if they are calculated in accordance with the Casualty Actuarial Society's (CAS) Statement of Principles Regarding Property and Casualty Insurance Ratemaking. In accordance with Actuarial Standard of Practice No. 17 Expert Testimony by Actuaries, I conducted my review in terms of reasonableness rather than solely in terms of whether there is precise agreement on each issue. In addition, I applied the rate standards set forth in North Carolina General Statute 58-36-10, i.e., that rates must be adequate, not excessive and not unfairly discriminatory and that explicit factors must be given due consideration.

The ratemaking experience reflected in Exhibit RB-1 is, in general, supplied by the individual insurance companies. The data are submitted to one of the four statistical organizations (either ISO, AAIS, NISS or PCI). The four statistical organizations subject the data that are reported to them to a series of verification edits and then consolidate the data. The PCI the NISS and the AAIS then transmit their consolidated data to ISO for a further consolidation with the ISO data, and after that is done ISO produces the hard-copy exhibits of the combined data in a format and detail necessary for ratemaking.

Q. What data are utilized in Exhibit RB-1?

A. With respect to Exhibit RB-1 the supporting data for the rate level changes for the mobilehome F program are contained in Section C. Five years of experience are displayed in Section C. The five years are the years ended December 31, 2000 through December 31, 2004.

The loss experience used in the filing is what we call "accident year" experience. I can explain that best by giving you an example. The losses for the accident year ended December 31, 2004 consist of all losses caused by accidents which occurred during the one year period ended December 31, 2004. If an accident occurred December 29, 2003 and resulted in either a loss being paid or a reserve being established after January 1, 2004, that loss would be a part of the accident year losses for the period ended December 31, 2003.

The test for breaking losses down into accident years is the date the accident occurred.

Q: What is the reason for using five years of premium and loss data to determine the indicated rate level change?

A: Five years of data are used to balance the stability of the rates with responsiveness to current conditions. The North Carolina statutes allow the Rate Bureau to review five years of experience in its rate level filings. Furthermore, traditional homeowners ratemaking has relied on five years of experience with the weights of .10, .15, .20, .25 and .30 being given to each year respectively as the way to achieve this balance. We used these same weights for mobilehomes. The accident year weights used by the Bureau are identical to those used by Insurance Services Office in other states in developing their advisory loss costs for homeowners insurance. These weights are generally accepted in all jurisdictions in which these loss costs are submitted.

Q: Mr. Curry, please turn to page C-1 of Exhibit RB-1. Would you explain what that page is.

A: Page C-1 is what we call a statewide rate level calculation for mobilehomes MH-F owners for North Carolina. Page C-1 is a determination of what the actual indicated rate level changes are for the MH-F owners policy form.

Q: Referring to column 1 on page C-1, what are "Non-Modeled Adjusted Incurred Losses"?

A. The incurred losses in column 1 are the losses from all causes, except those losses identified as being caused by hurricanes, from insured events which occurred during each of the respective accident years. The figure includes losses which have already been paid, losses which are not yet paid and are represented by outstanding claim reserves, and losses which have been incurred but for which no individual reserve exists because they have not yet been reported.

Q. Have the losses excluding hurricanes as shown in column (1) been adjusted in any way?

A. Yes, there has been consideration of loss development. Historical loss development data was not available for mobilehomes so selected loss development factors of 1.00 were used. We believe that based on loss development for other residential property lines that the losses are probably understated.

Q: You indicated that losses due to hurricanes have been excluded on Page C-1. Have you excluded them anywhere else in the filing?

A: Yes, they have been excluded in the development of the territory indications and in the calculation of the non-hurricane excess factor.

Q: How have these losses been identified in order to be excluded from the Derivation of Excess Factor (Excludes Hurricane Losses) exhibit on page D-28?

A: The necessary detail to remove hurricane losses from the mobilehome data is not currently available. So the relationship between excluded hurricane losses and total losses from the last homeowners filing was used.

The method to remove the hurricane losses from the last homeowners filing depends on the detail of the available data. For 1950-1965 only statewide data is available; and it is from dwelling policies for the early years. Consequently for a year in which a hurricane occurred, losses from that year are removed from the calculation of the statewide non-hurricane excess factor.

Since territory data are available (in varying detail) for 1966-2004, the calculation of the non-hurricane losses is done at the territory level for this period. After it has been determined that a particular hurricane is accounted for by the AIR hurricane model, the territories affected (territories exposed to windspeeds of 50 MPH or higher) are determined by the use of recorded windspeeds and central pressures at 6 hour intervals, storm tracks, and wind to non-wind ratios.

For 1966 - 1985, the non-hurricane wind losses for a territory are calculated by replacing the hurricane year wind to non-wind ratio by the average wind to non-wind ratio of the non-hurricane years. Given the revised wind to non-wind ratio for the hurricane year, the reported non-hurricane total losses and the reported non-hurricane wind losses are then "backed into." For the years (1966 - 1982) in which the old territory codes (01-04) were in effect, the average wind to non-wind ratios are based on the non-hurricane years from 1966-1982. For the years (1983-2004) in which the revised territory codes (04, 30-41) were in effect, the average wind to non-wind ratios are based on the non-hurricane years from 1983 to 2004. For the territory codes introduced as part of the 1993 filing, the average wind to non-wind ratios from the predecessor territories have been used.

For 1986-1995, territory losses by month are available for ISO data only. The territory non-hurricane losses for this period are calculated as follows: first the average losses for the month in which the hurricane occurred are calculated based on the non-hurricane years. The average monthly losses are then added to the eleven remaining months of the hurricane year and divided by the hurricane year annual losses resulting in a non-hurricane adjustment factor. This factor is then applied appropriately to either reported losses or adjusted losses by territory for all statistical agents to obtain non-hurricane losses. For severe hurricanes, wind type losses are frequently reported as water losses or all other property damage losses. To accurately estimate the non-hurricane losses, the above non-hurricane factors are calculated for water and all other property damage and then applied to the water losses and the all other property damage losses.

For 1996-2004, based on information from NOAA and other sources, the specific dates on which a given hurricane was active in North Carolina are determined. The loss experience for ISO is then examined by date and cause-of-loss. Wind losses and losses for other weather-related perils, which occurred on these dates, are assumed to be hurricane losses. For ISO data, the percentage of hurricane losses to total losses is calculated. To estimate the hurricane losses for statistical agents other than ISO, the percentage of hurricane losses in the ISO data (relative to the ISO yearly total) is applied to the total loss amounts for the other statistical agents.

Q: Do you have an opinion as to whether the incurred losses excluding hurricanes shown in column 1 on page C-1 of RB-1 accurately represent the anticipated value of MH-F owners forms incurred losses excluding actual hurricane losses which resulted from accidents which took place during each of the years ended December 31 in North Carolina?

A: Yes, I do.

Q: What is that opinion?

A: I believe that the losses shown in column 1 do accurately represent the expected ultimate value of those losses excluding actual hurricane losses.

Q: Could you please describe the figures contained in column 4 labeled "Modeled Hurricane Losses" on page C-1?

A: These are the hurricane losses resulting from the model used by AIR Worldwide Inc. (AIR). ISO furnished to AIR North Carolina mobilehomes insurance data on the 2004 total number of earned house years and earned insurance years by territory. These data are ISO, PCI and NISS data, were compiled by ISO and are correct to the best of my knowledge, information and belief. The pre-filed testimony of David LaLonde discusses the AIR methodology in detail.

Q: How are these losses for each year derived?

A: The AIR model simulates 100,000 years of hurricane losses and develops a mean hurricane loss cost per $1,000 of coverage by territory. The model's aggregate demand surge accounts for the expected additional cost for supplies and labor if a large hurricane event occurs. The modeled hurricane losses also include a loading for storm surge losses since the MHF policy covers flood losses. However it should be noted that the AIR model only generates surge losses for the coastal areas and not for the inland areas. To produce the modeled hurricane losses, the Rate Bureau has multiplied the hurricane loss cost per $1000 of coverage times the amounts of insurance in effect. The calculations of the 2004 modeled hurricane losses are shown on pages D-30-31.

Q. How is the amount of insurance in effect determined?

A. For the purpose of developing the hurricane loss cost for the owners forms, the amount of insurance in effect is determined as the sum of the various internal limits found in a mobilehomes policy -- the Coverage A amount (building coverage), the Coverage B amount (other structures), the Coverage C amount (contents) and the Coverage D amount (loss of use). In terms of the buildings coverage amount, the amount of insurance in effect is:

Coverage A	100%
Coverage B	10%
Coverage C	50%
Coverage D	20%
	180%

Therefore, for the purpose of determining the hurricane loss cost, the amount of insurance in effect is 180% of the Coverage A amount. This is also often referred to as the total sum insured.

Q: Why was a simulation used to develop the hurricane wind losses?

A: A simulation was used to develop the hurricane losses because it is a more accurate way of including the exposure than using traditional insurance statistics. Hurricanes are highly variable in frequency, intensity and place of occurrence. The simulation allows for the smoothing out of the hurricane losses as well as better reflecting the potential for losses in a given location. For example, since we are using the losses from five years of data, if a very large hurricane like Fran or Floyd hit a certain part of the state during those years, it would be reflected only in those areas of the state, with little or no loading for other areas of the state. The simulation model produces a more accurate estimate of the loss potential both in terms of territory and dollar value than is possible using any analysis of the insurance data.

Q: What other adjustments must be made to the losses?

A: The losses need to be adjusted by trend to reflect the cost levels anticipated to prevail during the period that the proposed rates are expected to be in effect.

Q: Could you please describe how the loss trend is developed and applied?

A: The loss trend is developed in a two step process. The first step is the development of a current cost factor which brings the losses up to the current cost level. The second step is the development of a loss projection factor based upon an exponential fit of the last twelve quarters of the Current Cost Index and the actual mobilehomes pure premium trend. The loss projection factor projects the losses from November 15, 2006 (the midpoint of the latest quarter of the external index) to October 1, 2008 the average date of loss for policies which will be written at the proposed rates (i.e. one year beyond the assumed effective date of October 1, 2007).

Q: You mentioned that the loss trend is based on a Current Cost Index. What are the components of the Current Cost Index used for the MHF owners forms?

A: The Current Cost Index is a weighted average of the Modified Consumer Price Index (MCPI) and the Boeckh Residential Index (BRI), with the MCPI receiving 45% weight and the BRI receiving 55% weight. The intent of the weights is to reflect the split between contents type losses and buildings type losses.

Q. How are the weights of 55% to the Boeckh Residential Index and 45% to the Modified Consumer Price Index determined?

A. The weights were based on an examination of losses by cause of loss and apportioning the losses between buildings and contents. For example, if we were to examine the North Carolina homeowners losses (normalized for catastrophe losses) by cause and split them into percentages that correspond to buildings and contents, we would get:

Cause	% of Total	Building %	Contents %
Fire	37.3	75-80	20-25
Wind & Hail	22.0	80-90	10-20
Water Damage & Freezing	20.1	40-45	55-60
Theft	6.6	5-10	90-95
All Other PD	10.9	50	50
Liability	3.1	0	100
		59-65	35-41

Q. What is the Boeckh Residential Index?

A. The Boeckh Residential Index is an index of construction costs compiled by Marshall & Swift/Boeckh. The particular index used in this filing is based on information compiled specifically for construction costs in North Carolina.

Q: What is the Modified Consumer Price Index composed of?

A: The Modified Consumer Price Index is based on selected components of the Consumer Price Index which correspond to the items that mobilehomes insurance provides coverage for. The components used and the weight given to them are House Furnishings (48%), Medical Care (20%), Apparel Commodities (16%) and Entertainment Commodities (16%).

Q: Please illustrate what factors would be applied to trend the losses for the year ended December 31, 2004.

A: The losses from the accident year ended December 31, 2004 are first adjusted by the Current Cost Factor for 2004 found on page D-8. The observed annual rate of change in pure premium during the 2000-2004 experience period are in line with the observed annual change in the Current Cost Index. Therefore, to project losses to a 2004 level, a 0% additional annual trend was selected for the owners forms. The Current Cost Factor for all years is the ratio of the Current Cost Index from the quarter ending December 31,, 2006 to the Current Cost Index value for the full year 2004. The Current Cost factor brings the losses from the cost levels corresponding to an average date of loss of June 30, 2004 to the cost levels corresponding to the midpoint of the latest quarter (November 15, 2006). Since the average date of loss for policies which will be written at the proposed rates is assumed to be October 1, 2008 (one year past the effective date) it is necessary to project the losses from the November 15, 2006 cost level to that average date of loss for the assumed effective date. This is accomplished by projecting the losses at the annual rate of change of 5.1% (as determined by an exponential fit of the Current Cost Index) for 22.5 months. This factor is calculated on page D-9.

Q: You mentioned that the actual pure premium trend was considered in the selection of trend factors. How was this data used?

A: The pure premium experience was examined. A pure premium is the ratio of the losses to the number of insured house years. These data were fit to an exponential curve and an annual rate of change was calculated. This rate of change was compared to the annual rate of change of the Current Cost Index. In reviewing the loss trends, the annual rates of change in pure-premium during the 2000-2004 experience period are similar to the observed annual changes in the external indices. Therefore, to project losses to a 2004 level, a 0% additional annual trend was selected for the owners forms.

Q: Where on page C-1 are these two factors applied?

A: The Current Cost factor for each year is applied as part of the current cost/current amount factor in column 6. For example, for the year ended December 31, 2004 the current cost/current amount factor of 0.966 is the ratio of the current cost factor of 1.127 (shown on page D-8) and the current amount factor of 1.167 (shown on page D-21). The loss projection factor is combined with the premium projection factor and the trend from first dollar to produce the composite projection factor. This composite projection factor is applied in column 8 in the development of the Trended Base Class Loss Cost in column 10.

Q: You mentioned the trend from first dollar. Could you describe what that is and how it is developed and applied?

A: The index is a first dollar index. The losses are at different deductible levels. As such, increases in cost as measured by the current cost index would affect losses below the deductible and cause an additional increase as losses below the deductible increase above it. For example, a loss of $1,000 subject to a $250 deductible results in a payment of $750 to the insured. If there is 10% inflation the $1,000 loss grows to $1,100. This results in a payment to the insured of $850, which is a resulting effective inflation of 13.3%, an incremental trend of 3%. The procedure used in the filing accounts for this effect. The procedure in essence converts all the losses to a first dollar basis before the trend factor is applied. To obtain the resulting trended losses, the deductible portion of the trended losses are subtracted out. The trend from first dollar factor as shown on page D-16 is the incremental difference in the trend factor resulting from the application of our procedure. Using our example from before, and the formula for trend from first dollar on page D-16 results in a trend from first dollar factor of 1 + (((.1) (250))/((1.1)(750))) = 1.03, which matches what was calculated earlier.

Q: Please refer to column 5 of page C-1. With reference to the column headed "Total Losses Including Loss Adjustment Expenses," please tell us what the figure $25,080,122 represents.

A: These are the losses and loss adjustment expenses associated with claims or accidents that occurred in the accident year ended December 31, 2004. The losses are the sum of the adjusted incurred losses excluding hurricane losses found in Column 1, minus the non-modeled adjusted excess losses in Column 2, all multiplied by the non-modeled excess factor of 1.036 to arrive at the number shown in Column 3 plus the modeled hurricane losses found in Column 4, adjusted by a trended loss adjustment expense factor of 1.089.

Q: What data was used to develop the non-modeled excess factor of 1.036?

A: The development of the non-modeled excess factor is shown on page D-28. Because a long enough history of mobilehomes losses was not available the data from the excess exhibit from the last homeowners filing was used for 1950-1999. Mobilehome MH(F) data was used for 2000-2004.

Q: How is the trended loss adjustment expense factor of 1.089 developed?

A: Each year the Rate Bureau sends a call to its member companies for expense-related data. These calls showed that total loss adjustment expenses for the calendar years December 31, 2000, December 31, 2001, December 31, 2002, December 31, 2003 and December 31, 2004, after dropping the high and low values averaged 10.4% for the period.

This factor of 10.4% must be adjusted for the change in cost levels of the items that go into loss adjustment expense. Loss adjustment expenses include items like adjuster's salaries, rents and overhead items related to claims settlement. In essence, these items will vary as general economic trends vary. We adjust the loss adjustment expense factor by taking a ratio of the expense trend to the loss trend.

Q: Could you please explain how the expense trend used to adjust the loss adjustment expense factor is developed?

A: The expense trend used to adjust the loss adjustment expense factor is based on an analysis of the Current Expense Index, which is an index based on a 50/50 weighting of the all items CPI and the compensation cost index for marine, fire and casualty insurance. The data for this index are shown on pages D-23-24. Based on an analysis of these data, an annual rate of change of 3.0% was selected.

Q: Please explain the development and application of the expense projection factor in adjusting the loss adjustment expense factor?

A: The five year (excluding the high and low values) average total loss adjustment expense factor of 10.4% reflects an averaging of the five years 2000, 2001, 2002, 2003 and 2004. As such the factor is representative of the time period corresponding to 2002.

The expense projection factor uses the 3.0% annual rate of change based on an exponential curve of the Current Expense Index. Since we have brought our loss adjustment expense ratio up to the cost level corresponding to July 1, 2002 it is necessary to project this cost to the average date of accident for the period which our rates are assumed to be effective, October 1, 2008 (one year beyond our assumed effective date). This calculation is displayed on line (2) on page D-27.

Q: What other adjustments must be made to the loss adjustment expense factor in order to use it?

A: The loss adjustment expense factor is determined as the ratio of total loss adjustment expenses to losses. Having adjusted the expense portion of the factor, we need to adjust the denominator of the factor, the portion corresponding to losses, by the loss trend, reflecting both the current cost factor and the loss projection factor.

Q. Could you please describe what is being done in Column 6 on page C-1?

A. In Column 6 the current cost factors and current amount of insurance factors are combined into the current cost/current amount factors for the three deductibles used in the review. This is done by taking the ratio of the current cost factor to the current amount factor. For example, the current cost/current amount factor of 1.094 for 2004 is the ratio of the 2004 current cost factor of 1.127 to the 2004 current amount factor of 1.03 for $100 deductible data. The current cost/current amount factor for $250 deductible data is 0.92 and 1.085 for the $500 deductible data. The weighted average of these three current cost/current amount factors is the 0.966 that appears in column 6. In combining these steps the losses and average rating factor have been brought to the cost level of November 15, 2006.

Q: Please describe the development of the current amount factor.

A: The current amount factor is calculated by taking the ratio of the average policy size relativity for each year to the projected policy size relativity as of November 15, 2006. The average policy size relativity is a value which is calculated by taking a weighted average of the policy size relativity curve for each amount of insurance using the exposures for each amount of insurance as weights. In effect then, by taking the ratio of these relativities for each year to the

November 15, 2006 value, we are measuring the percentage growth in the premiums at present rates from year to year caused by changes in amount of insurance. These changes in average amount of insurance are not based on a consistent set of insureds, since some of the growth is due to the addition of new homes. For this reason, the percentage change part of the ratio is adjusted by a conservative factor of .95. This adjusted ratio is the current amount of insurance factor and is shown on Column (3) on Page D-16.

Q: How is the current amount factor used in the calculation of the indicated rate level change?

A: The current amount factor for each year is the denominator in the current cost/current amount factor for that year shown in column (6) of page C-1. The premium projection factor is the denominator in the composite projection factor used in column (8) of page C-1. The combined effect of these two factors is to adjust our average rating factor to the level for the amount of insurance expected to prevail during the period for which these rates are expected to be in use.

Q. Could you please describe what is being done in Column 8 of page C-1?

A. Column 8 combines all of the elements in Columns 1 to 7. In Column 8, the losses and loss adjustment expenses are trended to the cost level expected to prevail during the period in which the policies written at the proposed rates will be providing coverage (average date of accident of October 1, 2008). The house years are also projected to reflect the anticipated amounts of insurance for business written between October 1, 2007 and September 30, 2008. Column 8 is the equivalent of multiplying the losses by the current cost factor and loss projection factor and the house years by the current amount factor and premium projection factor. Using 2004 as an example:

(1)	Losses and Loss Adjustment Expenses	$25,080,122
(2)	Current Cost Factor (D-22, Line 1)	1.127
(3)	Loss Projection Factor (D-22, Line 5)	1.098
(4)	Trend from first dollar (D-22, Line 6)	1.027
(5)	Trended Losses and Loss Adjustment	

	Expenses	$31,873,250
	(1) x (2) x (3) x (4)	
(6)	Earned House Years	95,120
(7)	Current Amount Factor (D-22, Line 2)	1.167
(8)	Premium Projection Factor (D-22, Line 4)	1.081
(9)	Trended adjusted house years	119,996
	(6) x (7) x (8)	
(10)	Average Trended Loss Cost (5) ÷ (9)	$265.62

Note that because of rounding the trended loss cost calculated in this example differs slightly from the trended loss cost in column 8 -- 265.66 -- that is used in the statewide rate calculation.

Q: Please describe the development of the premium projection factor.

A: For each year we have an average policy size relativity which is calculated as a weighted average of each amount of insurance relativity. The premium projection factor is calculated by fitting an exponential curve to the average policy size relativities. This curve is used to develop an annual rate of change for the policy size relativities. In the case of mobilehomes owners forms the average annual rate of change is 7.7% for the $250 deductible data. In calculating the premium projection factor, we adjust the rate of change by a factor of .95 as discussed earlier. This then provides us with a rate of change of 7.3% for use in developing the premium projection factor. Since the current amount factor has been calculated as the value up to November 15, 2006, the premium projection factor will be calculated as the expected growth from November 15, 2006 to April 1, 2008 (which is six months beyond the assumed effective date of October 1, 2007). This date of April 1, 2008 represents the midpoint of the year in which policies are assumed to be written using the proposed rates. This results in a premium projection factor of 1.102 which is shown on Page D-16.

Q. Could you please explain column 9 on page C-1?

A. Column 9 is the average rating factor for the policies purchased in each year. The average rating factor is the ratio of the average rate at manual level to the average current base rate. For example, let's assume that the current territory base rate for frame construction with $25,000 coverage A is $100, that the rating factor for masonry is 0.9 and that the rating factor to purchase an additional $5,000 of coverage A is 1.2. Then the average rating factor for a $30,000 masonry policy is calculated as:

$$(100 * 1.2 * 0.9) / 100 = 1.08$$

This factor is needed to adjust the average trended loss costs in column (8) to a base class level. Since most policyholders do not purchase exactly the base amount of coverage the average trended loss cost is divided by the average rating factor to convert this average trended loss cost into a trended base class loss cost which is shown in column 10.

Q. Could you please explain line 12 on page C-1?

A. Line 12 is the resulting trended loss cost obtained by applying the accident year weights shown in Column 11 to the trended base class loss cost for each year shown in Column 10. This weighted trended base class loss cost is our forecasted base class loss cost for policies written during the one-year period after the proposed assumed effective date of October 1, 2007, if there were no change in rate level.

Q. Could you please explain line 13 on page C-1?

A. Line 13 is the reflection of the credibility of the experience based on the number of house years during the 5 year period. The MH-F review used the homeowners credibility standards. The homeowners full credibility standard is based on a procedure considering the frequency of claims and the variability of the size of those claims. The procedure is explained in a CAS Proceedings Paper "Credibility of the Pure Premium" by Mayerson, Jones and Bowers. The full credibility standard is based on a normal distribution with a 90% probability of the pure premium being within 5% of the expected value. The full credibility standard for the owners forms is 240,000 house years.

Q. Could you please explain what line 16 entitled "Fixed Expense per Policy" on page C-1 refers to and what it represents?

A. Line 16 "Fixed Expense per Policy" refers to the dollars of the prospective premium that the general expenses will be on policies written between October 1, 2007 and September 30, 2008. General expenses along with other acquisition expenses constitute the so-called fixed expenses. They are fixed in that they do not vary as a direct function of the premium dollar. For example, employee salaries (other than claims employees) would be among the items classified as either general expenses or other acquisition expenses. Those salaries are fixed in the sense that they do not vary directly as a function of premium. Such things as commissions and premium taxes, on the other hand, are examples of expenses which do rise or fall directly with premium. The number shown on line 16 - $19.31 - represents the dollars of general expenses trended to the levels anticipated to prevail during the periods from October 1, 2007 to September 30, 2008 (the average date of which is April 1, 2008) and the projected premiums for business written during the same period. This is appropriate because general expenses are generally incurred at the time a policy is written.

Q. Could you explain how the figure $19.31 was derived?

A. The derivation of the 19.31 is shown on page D-27 in line (4) "Factor for trending GE, OP expenses based on Current Expense Index." It starts out with an untrended general expense ratio of .0348 which is based on the rounded average of the 2002, 2003 and 2004 general expense ratios. These are shown on page D-25. The average of these represents the average expense ratio corresponding to 2003. In order to trend these to the cost levels anticipated to prevail between October 1, 2007 and September 30, 2008, we project these by using the Current Expense Index described earlier. This is done by means of a two step process. First the expenses are trended by a factor based on the annual rate of change in the Current Expense Index. This is the factor of 1.151 shown under Section (4) next to the label "All Forms" on page D-27. Since we are dealing with a ratio of expenses to premium we must project the amount of insurance from 2003 levels to the level anticipated to be in effect on business written between September 1, 2007 and October 30, 2008. This is done by using the current amount factor for 2003 of 1.227 and the premium projection factor of 1.081. The resulting calculation is

$$\frac{.0348 \times 1.151}{1.227 \times 1.081} = .03.$$

A similar calculation is done in order to get the trended other acquisition (OA) expenses ratio. The sum of these two fixed expense ratios (.03 and .041) is then multiplied by the average current base rate of 272.00. The result is a statewide fixed expense loading of 19.31.

Q. What does Line 17 "Total Loss & Fixed Expenses" show on page C-1?

A. Line 17 is a combination of the trended base class loss cost and the trended general expense and other acquisition expenses. The figure $181.21 is the dollar amount that is required to cover the portion of the insurance base rate that covers losses, loss adjustment expenses, general expenses and other acquisition expenses

Q. What does line 18 on page C-1 entitled "Expected Loss Ratio" show?

A. This line takes into account the expenses and other items to which I just referred. If you look at page D-25 of the filing, you can see that the commissions and brokerages round to 14.3% of the premium dollar and taxes, licenses and fees round to 2.7% of the premium dollar. The provision utilized in this filing for underwriting profit is 8.0%. This filing also contains a 1% margin for contingencies and a 18.3% factor for net cost of reinsurance. All those items add up to 44.23%. These items are what are known as variable expenses. They vary in direct proportion with the premium dollar. You know that out of every dollar of premium, 44.23 cents will have to go to pay for these expenses and you are left with 55.77 cents to pay for losses, loss adjustment expenses and general expenses and other acquisition expenses. The expected loss and fixed expense ratio shows the percentage of the premium dollar you will have available to pay for trended losses, trended loss adjustment expenses and trended general expenses and other acquisition expenses.

Q. What is the source of the percentage on page D-25 for contingencies?

A. The 1% contingency factor is a standard factor used across the country and in past Bureau filings. It was selected by the Bureau committees upon recognition of the systematic bias that causes actual underwriting experience to be worse than the provision assumed in the rates. Reasons for this bias are many and include the potential for conflagration and other catastrophic type losses that are not adequately recognized in normal ratemaking, law changes and court interpretations expanding coverage under the policies, regulatory delay in obtaining necessary rate level increases and other such factors.

Q. What is the source of the percentages on page D-25 with respect to commissions and brokerage and taxes, licenses, and fees?

A. They were calculated from the 2003, 2004 and 2005 North Carolina expense call for 2002, 2003 and 2004 data undertaken by the North Carolina Rate Bureau.

Q. Would you explain line 19 on page C-1 entitled "Net Base Rate per Policy"?

A. The Net Base Rate per Policy is calculated by dividing the Loss and Fixed expenses in line 17 by the expected loss ratio in line 18. This is the net base rate before incorporating the anticipated deviation.

Q. What is the source of the percentages used on line 20 for anticipated deviations?

A. As done in past homeowners filings, the Rate Bureau has elected to use a total provision for deviations of 5%. This 5% factor corresponds to the magnitude of the amount found by the Commissioner in several previous automobile insurance cases to be the appropriate amount of deviations and dividends to policyholders to anticipate when setting manual rates. However, whereas the Commissioner did not actually include the 5% provision in his rate calculations, the Rate Bureau does explicitly include the 5% provision in the rate calculations in this filing. The explicit inclusion of deviations in the rate calculations is necessary in order for the target profit to be achieved. The selection of the 5% provision is conservative and represents an attempt by the Rate Bureau to reach a compromise on this issue.

Q. What is the source of the 18.32% item for net cost of reinsurance?

A. The source of the 18.32% item for net cost of reinsurance is an analysis performed for the Rate Bureau by Dr. David Appel. In that analysis he determines the net cost of reinsurance incurred by mobilehomes insurers in North Carolina because of the need to buy catastrophe reinsurance for the MH-F program. The net cost of reinsurance is the expense and profit component of the reinsurance premium paid by mobilehomes insurers (the loss component is in the direct losses used in the overall rate determination). One of the principle factors driving this calculation is the fact that reinsurers, because of the variability in the loss exposure they face, write business at a significantly different premium to surplus ratio than primary insurers. More details of the analysis are included in Dr. Appel's direct testimony.

Q. Would you explain line 21 on page C-1 entitled "Deviation Amount per Policy"?

A. Line 21 is the dollar amount of deviation that needs to be in the final rate to ensure that the selected 5.0% deviation amount is accounted for.

Q. Would you explain line 22 on page C-1 entitled "Required Base Rate per Policy"?

A. Line 22 is the required base rate that is needed to ensure that sufficient revenue is collected to cover the losses, expenses that are expected to result from the policies written during the year following the effective date of this filing and a reasonable profit.

Q. Would you explain line 23 on page C-1 entitled "Current Base Rate"?

A. Line 23 is the current base rate for all of the policies written in the most recent year included in the review. This rate assumes that each policyholder is buying only the base coverage.

Q. Would you explain line 24 on page C-1 entitled "Indicated Rate Level Change"?

A. Line 24 is the percentage change in the current rates which will be necessary to make the rates adequate for the conditions that are expected to prevail in the one year period following the effective date of the filing. It is determined by taking the required base rate per policy on line 22 and dividing it by the current base rate from line 23. This results in an indicated rate level change for the MHF owners form of 25.7%.

Q. Does the filing contain a revision of the present territory rate levels?

A. Yes. In connection with the overall rate level change we have been discussing, new territory rates are displayed; these are shown on page A-3. Currently there is a single statewide rate for MH-F. This filing is introducing rates that vary for two territories - coastal (5, 6, 42, 43) and remainder of state. The Rate Bureau's Governing Committee determined that the territory rate level changes should be capped at a maximum of 100%. As a result, the new territorial rates for the owners forms were determined such that the overall statewide filed rate level change is reduced from 25.8% to 11.1%.

The development of the indicated relative change by territory is computed in such a way that the overall effect of the territory relativities is to balance to no overall change before application of the statewide rate level change. This is shown in Column 10 of page C-5. In calculating the indicated rate levels by territory, these indicated changes are then multiplied by the overall statewide rate level change.

Q. Are the calculations for MH F Tenants, on page C-2 similar to the calculations you have described for Page C-1?

A. Yes they are, except that for MH-F Tenants there is no long term non-modeled excess procedure used in determining the statewide rate level change.

Q. What other changes does the filing make for mobilehomes insurance?

A. The filing revises the credit for the Windstorm or Hail Exclusion that is available in Territories 05, 06, 42 and 43.

Q. How is this revised credit calculated?

A. The indicated credit for the exclusion is developed using the following formulas:

The credit as a percentage of premium is:

$C = 1 - (\underline{Ld + F})$, where

$$(1 - V)*R$$

C = indicated percentage credit
F = provision in proposed rates for fixed expenses
V = provision in proposed rates for variable expenses
L = provision in proposed rates for losses and loss adjustment expenses
R = territory risk load factor
d = percentage of losses remaining after wind losses are excluded

The formula for determining the value of d is:

$$d = \frac{N}{N+W}, \text{ where}$$

N = 5 year non-wind losses
W = X+Y, where
X= 5 year modeled hurricane losses; and
Y= 5 year non-hurricane wind losses

The filed credit is determined by first determining the indicated non-wind base class rate by subtracting the indicated wind credit from the indicated base rate, and then subtracting the indicated non-wind base rate from the filed base rate.

The dollar credit net of deviations is determined by the following formula:

Dollar Credit (Net of deviations) = Filed Wind Rate x Avg. Prot/Const Relativity x Average Form Relativity.

The final dollar credit is then determined by applying the same 5% loading for deviations as the base rate. Note that if the filed rate is not implemented the wind exclusion credit will need to be adjusted accordingly.

Q. Please turn to page A-1 of Exhibit RB-1 and explain what is shown on that page?

A. Page A-1 of Exhibit RB-1 shows the filed statewide rate level changes.

Q. What is shown on Page A-2 of Exhibit RB-1?

A. Page A-2 shows the average rate level change filed for each territory.

Q. Do you have an opinion as to whether the data utilized and the method of calculating the filed rate level and other changes contained in the filing are sound and actuarially reliable and if so, what is that opinion?

A. Yes, I have an opinion. In my opinion they are.

Q. Do you have an opinion satisfactory to yourself as an actuary as to whether the filed rate level changes contained in Exhibit RB-1 are fully justified and, if so, what is that opinion?

A. In my opinion they are fully justified.

Q. Are there any potential costs to Mobilehome insurers that are not reflected in this review?

A. Yes. Currently, there is no provision in the rates for the expected cost of assessments that could occur if the North Carolina Beach or Fair Plan does not have sufficient funds to pay for losses after a catastrophe. It would be appropriate to include a factor in the rates to reflect the expected cost of potential assessments related to deficits in the residual market for which insurers would have responsibility, or to include an additional profit margin to compensate insurers for this additional risk. Therefore the calculated rates in this filing could be viewed as conservative estimates of the ultimate costs to Mobilehome insurers.

PREFILED TESTIMONY OF SHANTELLE THOMAS
2008 FILING
MOBILEHOME MH-F INSURANCE
NORTH CAROLINA RATE BUREAU

Q. Please state your name and business address.

A. My name is Shantelle Thomas. My business address is 2775 Sanders Road, Northbrook, IL 60062.

Q. By whom are you employed?

A. I am employed by Allstate Insurance Company and have been so employed since 1996.

Q. What is your educational background?

A. I received a Bachelor of Arts degree in Integrated Science and Mathematics from Northwestern University in Evanston, IL in 1996.

Q. What is your employment background?

A. I was employed by Allstate as an analyst in property insurance pricing upon graduation from Northwestern University in Evanston, IL. From 1996 through July 1999 and from July 2000 to March 2006 I had various actuarial pricing responsibilities for homeowners insurance pricing in various states, including North Carolina. Between March 2006 and February 2008 I had responsibility for pricing countrywide for Allstate's Specialty Product Lines, which includes Renters, Condo, Mobilehome and Dwelling Fire and Extended Coverage insurance. I currently have overall actuarial responsibility for homeowners and auto pricing for the Eastern half of the United States, including North Carolina.

Q. Are you a member of any professional organizations?

A. Yes. I have been a Fellow of the Casualty Actuarial Society since 2004. I have been on the Examination Committee of the Casualty Actuarial Society since 2004. I have been a member of the American Academy of Actuaries since 2001.

Q. Are you familiar with ratemaking for residential property throughout the country?

A. Yes. With a few exceptions such as North Carolina, Allstate makes its own filings in virtually all of the United States, and I have had responsibility for filings in most states at some point in my career.

Q. Are you familiar with mobilehome insurance ratemaking in North Carolina and how it differs from other states?

A. Yes. As part of my duties at Allstate, property pricing has been one of my responsibilities since 1996. This has included numerous states, including North Carolina. In addition, Allstate chairs the Property Rating Subcommittee (the "Subcommittee") of the North Carolina Rate Bureau (the "Bureau"). Since April, 2006, I have served as Allstate's representative and chaired the Subcommittee.

In North Carolina, unlike other states, companies are not able to independently set rates. Instead, companies rely on the Bureau to establish the maximum rate level. This process adds time, uncertainty, and additional administrative burdens to the process and makes doing business in North Carolina unique.

Q. Are you familiar with mobilehome insurance ratemaking in other states?

A. Yes. I previously had responsibility for filings in all states in which Allstate sells mobilehome insurance. In those other states we independently make our rates and do not have to rely on a rating bureau to make needed rate changes to an industry-wide maximum rate.

Q. What is the function of the Subcommittee?

A. Generally, the Subcommittee is concerned with ratemaking matters pertaining to the property insurance coverages subject to the Bureau's jurisdiction, including the development of classifications, rules, rates and rating plans.

Q. What companies were members of the Subcommittee that reviewed the filing?

A. The current members of the Subcommittee are Allstate Insurance Company, Nationwide Mutual Insurance Company, North Carolina Farm Bureau Mutual Insurance Company, State Farm Mutual Insurance Company, Travelers Property and Casualty Company, Foremost Insurance Company, American Modern Insurance Group and USAA. Representatives of these member companies attend the meetings of the Subcommittee and conduct the work of the Subcommittee. Allstate Insurance Company chairs the Subcommittee. All representatives on the Subcommittee are actuaries or have extensive experience in actuarial matters.

Q. Can you identify Exhibit RB-1?

A. Yes. This is a large portion of the filing submitted by the Bureau to the Honorable James E. Long, Commissioner of Insurance, with respect to revised mobilehome insurance rates in North Carolina.

Q. Can you identify the document marked Exhibit RB-2 and entitled "Mobile-Homeowners Policy Program (Fire Form) Manual"?

A. Yes. This exhibit is also part of the filing. It includes the manual of rules, rates and classifications used to write mobilehome insurance in North Carolina. This manual and any approved amendments are on file with the Department. A copy of this manual is maintained at the offices of the Bureau.

Q. Would you describe generally how the Subcommittee was involved in the preparation of this filing?

A. Over the years the Subcommittee has developed the methodologies it has felt were appropriate for ratemaking in North Carolina and has recommended those methodologies to the Bureau's Property Committee and Governing Committee. Generally speaking, the process is as follows. Insurance Services Office ("ISO") consolidates various premium, loss and expense data in the format historically reviewed by the Subcommittee and sends that out to the members. These data include data for business written at or below the Bureau manual rates and business written under consent to rate procedures. The North Carolina Rate Bureau assembles expense data and furnishes it to the Subcommittee. In addition, AIR runs its hurricane simulation model to produce estimated hurricane loss costs that are furnished to ISO. Then, the Subcommittee meets by telephone conference and/or in person to consider the data and to formulate its final recommendations to the Property Committee and Governing Committee of the Bureau.

With this review the same procedure was followed. A loss cost methodology was used to determine the rate indication. This is consistent with the last homeowners filing and is similar to the method utilized by the Auto Committee.

Q. Would you describe the basic ratemaking methodology that underlies the filing?

A. The indicated rate change was determined by first projecting the losses and loss adjustment expenses for the policy period that the filed rates are expected to be in effect. The projected loss and loss adjustment expenses are then divided by historical earned house years to produce loss costs. These loss costs are then adjusted to the base class level. The trended base class loss costs are then credibility weighted with the expected base class loss cost. The measure of credibility is based on the number of house years in the experience period used to develop the loss costs, and in this instance, the data for each of the policy forms is considered fully credible.

Then, other anticipated costs associated with policies expected to be in effect, along with provisions for underwriting profit and contingencies, were added to derive the required base rate per policy. The required base rate was compared to the current base rate to determine the indicated rate level change. This comparison of base rates is an actuarially sound method of developing indicated rate changes. In determining each component of the ratemaking formula, the Subcommittee analyzed the data presented to it and considered the recommendations of ISO's actuary, Robert Curry, and economic consultants, Dr. David Appel and Dr. James Vander Weide as well as data from AIR Worldwide.

Q. Did the Subcommittee consider the accuracy of data in its review?

A. Yes. Companies and statistical agents employ extensive procedures to assure the quality of ratemaking data. In addition, the Subcommittee requested the statistical agents to produce exhibits displaying exposure distributions for key factors such as territory, amount of insurance and protection class for the years in the filing for the top 10 companies. Each company was asked to review and evaluate the accuracy of its data as reported to its statistical agent. Companies have confirmed that they have performed these reviews and that to the best of their knowledge their data are correct in all material aspects.

The Subcommittee believes that the data underlying the 2008 rate filing are reliable and appropriate for ratemaking purposes.

Q. How were the premiums used in the rate level calculations in the filing determined?

A. The calculations are based on premiums expected to be produced by current manual rates. The premiums are determined by applying current manual rates to the exposures in effect during the experience period. This is known as the extended exposure method. Earned premiums at present rates are used to determine average rating factors. The average rating factor is the ratio of the average rate (earned premium at manual level divided by corresponding house-years) and the current manual base rate by territory. The average rating factor is used to convert the pure-premiums incurred during the experience period to the base class level.

Q. How were anticipated losses determined?

A. The starting point for losses is accident years 2000-2004 incurred losses evaluated at 63, 51, 39, 27 and 15 months of development respectively. Loss development factors were of 1.00 were selected and applied to estimate ultimate settlement amounts. Historical loss development patterns were not available for mobilehomes. Based on loss development observed for other residential property lines, the losses may be slightly understated.

In order to insure stability in rate levels while maintaining adequacy in the event of wide swings in hurricane and other wind losses, an excess wind procedure and a hurricane loss model have been utilized. Hence, violent shifts in rate level (both upward and downward), which might result from reflecting large hurricane and other wind losses only in the year in which they occur will be avoided. The incurred non-modeled excess losses are those losses that result from unusually severe wind activity (other than hurricane). They are removed from the experience used in developing rates. In order to reflect the impact of excess wind losses (that are not related to hurricanes and not accounted for in the hurricane model) on a long-term basis, non-modeled losses are multiplied by an excess wind factor. A particular year's excess wind losses and the long-term excess wind factors are determined using ISO's standard excess wind procedure. However, sufficient mobilehome loss data was unavailable. The data from the excess exhibit from the last homeowners filing was used for 1950-1999. Mobilehome MH-F data was used for 2000-2004. Total excess losses for each year, which are the sum of the capped excess wind and the excess wind losses, are removed from the actual non-modeled losses for the experience period. The long-term excess factor is 1.0 plus the ratio of the long-term average of the excess wind ratios to the sum of 1 plus the long-term average of the capped wind ratio less the long-term average of the capped excess wind ratio.

Expected hurricane losses are derived from the modeled damage ratios provided by AIR Worldwide. The model was run with aggregate demand surge included. This option accounts for the expected additional cost for supplies and labor if a large hurricane event occurs. The model was also run with the storm surge component included reflecting the fact the policy provides flood coverage. These damage ratios are provided by territory and represent the expected hurricane loss per thousand dollars of coverage in effect for one year. The damage ratios are multiplied by each year's insurance years to determine the expected hurricane losses by territory for that year. The statewide expected annual hurricane losses are the sum of the territory expected annual losses.

Losses were trended from the midpoint of each experience period to the midpoint of the trend period. As in past years, the Subcommittee reviewed external trend information and pure premium information. The Boeckh Residential Index and the Modified Consumer Price Index are used; these indices are averaged on an appropriately weighted basis and comprise the Current Cost Index.

The loss trending procedure is accomplished in two steps. In the first step Current Cost Factors are applied to each year's losses. The Current Cost Factors are derived from the external indices and, when applied to given year's losses, adjust these losses to a cost level as of November 15, 2006. In order to trend losses from 11/15/06 to the trend date, a Loss Projection Factor is applied. This projection factor is based on the annual change inherent in the latest twelve quarterly points of the Current Cost Index.

In reviewing the loss trends, the annual rates of change in pure-premium during the 2000-2004 experience period are similar to the observed annual changes in the external indices. Therefore, to project losses to a 2004 level, a 0% additional annual trend was selected for the Mobilehome MH-F form.

Since the external indices necessarily ignore the effect of policy deductibles, a first dollar procedure to trend from the first dollar of loss is also incorporated into the calculation of the Loss Projection Factor.

Q. Are you familiar with the procedures used to collect the expense experience?

A. Yes. The Bureau sends a data call to all companies annually. Companies complete the expense call, which includes reporting expense dollars as well as premiums at collected level and adjusted to manual level. The Bureau checks and compiles this information for all companies and sends it to ISO for their use in the rate filing. The Bureau also obtains information appearing in the annual statements and the insurance expense exhibits of the companies. This information is part of the official records maintained at the Department. Data from this information is provided to ISO.

Q. How were the anticipated expense provisions used in the filing determined?

A. Commissions and brokerage, taxes, licenses, and fees are a function of premium, and the ratios for these expenses from the North Carolina special calls for expense experience were used. For general and other acquisition expenses, dollar amounts were determined based on the data collected in the Bureau's special calls for expense experience.

The allocated and unallocated loss adjustment expenses are included with losses by use of a factor derived from the Bureau's calls for expense experience. Experience from calendar years 2000-2004 was used. After removing the highest and lowest value, the average of the remaining three years was used. This was done in order to reduce the fluctuation in the ratio due to the variation in incurred losses from year to year.

The Subcommittee reviewed Current Expense Index trends. Based on the review, the Subcommittee selected a 3.0% trend. This factor was then used to trend expense dollars from the midpoint of the base period to the midpoint of the trend period.

The provision for reinsurance costs reflects the Bureau's projection of reinsurers' expenses and profit as a percentage of premium that would be required for reinsurance purchased for North Carolina insurance. The Subcommittee reviewed the analysis performed by Dr. Appel to determine the provision for the net cost of reinsurance in developing the indicated rates and considers this provision to be appropriate. In particular, the Subcommittee recommended the use of AIR's near-term event set as the basis for the determining the provision for reinsurance costs since reinsurers have been using near-term event sets to determine their rates. More details of the analysis are included in Dr. Appel's direct testimony.

Q. Did the Subcommittee make a determination of the underwriting profit provision to be used in calculating rates in the filing?

A. Yes. The Subcommittee adopted a conservative position with respect to the selection of an underwriting profit provision. Under the law in North Carolina, the Rate Bureau is entitled to utilize in its rates an underwriting profit provision such that the anticipated return on insurance operations (the sum of underwriting profit and investment income from insurance operations) is commensurate with the total return expected from industries of comparable risk. In this filing, the selected underwriting profit, when combined with investment income from insurance operations, produces a return on net worth that does not exceed the cost of capital estimates provided by our consultants. However, because of the conservative selections made by the Subcommittee, it is also the case that the underwriting profit, when combined with both investment income from insurance operations and investment income from surplus, produces a return that does not exceed the cost of capital. The 8.0% provision was tested in the profit analysis by Dr. Appel. The range of cost of capital estimates provided by Dr. Vander Weide was found to be reasonable and accepted by the Subcommittee.

An issue related to underwriting profit is the need for the ratemaking methodology to adequately recognize a systematic bias that causes actual underwriting experience to be different from the provision allowed in the rates. Sources of this systematic bias include, but are not limited to, economic variations, changes in the judicial environment, legislative changes, regulatory delay or reduction of rate filings and catastrophic events not sufficiently recognized in the normal ratemaking process. Note that these events are unpredictable in terms of both when they will occur and what the magnitude will be on the relevant premiums and losses. Note however that what is not unpredictable is the direction of the bias; the bias that these events introduce is always upward in terms of expected loss costs or downward in terms of expected premium. For example, rate filings are virtually never implemented before the assumed effective date or for more than the original requested amount; judicial decisions with regard to contract language almost never restrict coverage beyond what was intended by the Bureau when it filed policy forms, but such decisions often expand it beyond what was contemplated in the rate level.

Thus, estimated premium that does not reflect a provision for these contingencies will always fall short of needed premium. When these premiums are inadequate and underwriting losses are observed, an insurer must borrow from surplus to properly indemnify its policyholders or claimants. The contingency provision is intended to provide for these variations in a stable method over time. The Subcommittee believe that a contingency provision is appropriate and necessary, and has conservatively selected a 1% factor in this filing.

Q. Have dividends to policyholders been considered in the filing?

A. Yes. The ratemaking statutes require consideration of policyholder dividends. Dividends to policyholders are a return of a portion of the premiums paid by the policyholders. Dividends are an additional cost associated with policies written because they are payments anticipated to be made to policyholders as part of the insurance transaction. The ratemaking formula must recognize all costs that are expected to be associated with the risk transfer, consistent with ratemaking principles. The Subcommittee recognizes the discretionary nature of dividends on an individual company basis. The data shows that the industry, as a whole, pays dividends to policyholders. To ignore dividends would result in rates that would not allow the aggregate industry to realize a fair rate of return. However, since dividends have been small in recent years, a factor of zero was employed in this filing.

Q. Have deviations been considered in the filing?

A. Yes. Deviations have also been recognized as one of the statutory elements required to be considered in North Carolina. Deviations are an up front reduction from the manual rates. Once a deviation is approved by the Department for an individual insurer, that lower rate must be charged until the deviation is changed in accordance with the statutory provisions. Therefore, deviations are an additional cost associated with the policies written because they represent the portion of manual premiums that will not be collected by the aggregate industry. The ratemaking formula must recognize all costs associated with the risk transfer, consistent with ratemaking principles. Deviations in the marketplace are driven by competition. To exclude deviations in the ratemaking process would have both short-run and long-run ramifications. In the short-run, the industry would be denied a fair return because companies would be reluctant to remove deviations due to the effect on their ability to compete for policyholders they have identified as the better risks in the state. In the long-run, companies would be forced to remove deviations in order to compensate for the inadequacy of rates, and some companies may leave the market or may have to change their manner of doing business simply because the rates would be inadequate to allow them to continue providing the same level of service. The end result would be a less competitive market with a narrower range of services, and the impact of the increased rates would be borne primarily by the best risks in the state. Ignoring deviations would not only be counter to sound actuarial principles, but would also have serious negative implications for the competitive market in North Carolina.

The Subcommittee has selected 5% as the deviation level to be recognized in developing the proposed rates. The 5% provision reflects the Subcommittee's consideration of downward deviations and the upward premium differential due to consent to rate policies. This 5% provision, which has been employed in past homeowners filings, is also based in part on findings made by the Commissioner of Insurance in previous automobile insurance rate cases to the effect that 5% of premium is the appropriate amount of deviations to anticipate when setting manual rates. The Subcommittee recognized that the Commissioner did not actually include a 5% provision for deviations in his ordered rates in those cases, but for the reasons described earlier, it is necessary and appropriate to include an explicit provision of 5% for deviations in developing the proposed rates in this filing. The 5% factor is less than the level of net deviations, i.e., after reductions for the premium differential on consent to rate business.

Q. Did the Subcommittee review rate level adequacy by territory?

A. Yes. There is currently a single, statewide rate for the Mobilehome MH-F program. With this filing, a two territory rating structure will be introduced. One territory is coastal (5, 6, 42, 43) and the other consists of the remainder of state. The Subcommittee reviewed indicated relative changes for these territories.

The indicated relative changes suggest to what extent the existing territorial rate needs to change in order to more equitably spread the overall rate level. The indicated rate level change for a particular territory is determined by comparing the required base class rate to the current base class rate.

The indicated base class loss cost by territory is determined by calculating the total loss cost by territory and applying the resulting territorial relativity to the indicated statewide base loss cost. A credibility value, based on the number of house years underlying the loss cost, is assigned to each territory. Actual hurricane losses have been removed and replaced by estimated loss costs based on the damage ratios provided by AIR.

The territorial indicated base class loss cost is converted to the required base class rate by performing expense, profit and deviation adjustments at the territorial level similar to those performed at the statewide level.

At the direction of the Subcommittee, Dr. David Appel prepared a risk load analysis that was used to allocate the net cost of reinsurance and the underwriting profit in the rates, based on territorial differences in risk. The measures of risk that were developed by Dr. Appel provide indicated relative levels of return, or profit, necessary for each zone. Conceptually, this methodology reflects the principle that required return is related to risk, and that a varying level of required return should be reflected in the premiums. The statewide impact of the methodology is revenue neutral; the effect is to increase the needed premium on the coast and decrease the needed premium in the western part of the state by way of an underwriting profit and reinsurance provision that varies by zone.

The Subcommittee examined various issues relating to hurricane modeling and made refinements with respect to the AIR methodology. First, based on the experience following a number of hurricanes, particularly those in 2004 and 2005, the Subcommittee chose to employ the demand surge component of the AIR model. This component reflects the fact that following significant hurricanes, the net cost of virtually everything paid by insurance rises. This includes lumber, bricks, plywood, labor, shingles, hotel rooms and other such items. In addition to actual experience, economic theory dealing with supply and demand supports the use of the demand surge component.

The Subcommittee also considered recent advances in the science of hurricane climatology and forecasting, both on a short term basis and on an intermediate term basis. Most in the scientific community agrees that the Southeastern United States, including North Carolina, is now in a period of intense hurricane activity and that this intense activity is expected to continue for the next several years for which rates are being made, at a minimum. There are various schools of thought as to why the activity in recent years has been and continues to be more intense than average. Some scientists argue that there is a long term climactic shift resulting from global warming. Under this theory, warming of ocean temperatures will continue to occur and will result in more frequent and more severe hurricanes. Other scientists claim that we are simply in the early stages of the intense portion of a multi-decade long cycle of increased hurricane activity resulting from high sea surface temperatures. Under this theory, the increased intensity of hurricane activity will ultimately subside, as the cycle turns several decades in the future.

The Subcommittee does not currently take a position as to the cause of the current intense period of hurricane activity, but the Subcommittee feels that it is demonstrably true that we are in a period of intense activity and that it is expected to continue at least in the short term. This being the case, the Subcommittee felt that merely employing an average of the last 105 years of hurricane activity (using meteorological data back to 1900) would under-predict the risk of hurricanes over the period when this filing will be effective.

Following discussions with AIR, the Subcommittee instructed AIR to run its model using its near term event set In addition, the Bureau instructed AIR to prepare an analysis in its traditional manner. Losses from the near-term model were employed in the reinsurance factor analysis by Dr. Appel, but the traditional AIR data set was employed in the general losses as in past years. The Subcommittee feels that this is a conservative approach.

The use of AIR's near-term model by Dr. Appel in his reinsurance analysis reflects the fact that reinsurers now employ short term forecasting of hurricanes to negotiate reinsurance treaties with primary insurers.

Q. Do you have an opinion as to whether the rate level changes contained in the filing are fully justified and actuarially sound and reliable?

A. Yes.

Q. What is that opinion?

A. First let me note that I have relied on the accuracy of the data supplied by the statistical agents and the Bureau as reviewed and checked and on the profit analyses performed by Dr. Appel and Professor Vander Weide. I must also note that while it would be appropriate, this filing does not include a provision to reflect estimated Beach Plan and Fair Plan assessments that would result from significant hurricane events. With these qualifications, it is my opinion that the rate level changes are fully justified and actuarially sound and reliable.

Due to the magnitude of indicated increases, rate level changes by territory were capped at 100%. The remaining rate need would be implemented in future rate changes. Applying this cap results in a 100% filed increase for the coastal territory. The filed overall change for Mobilehome MH-F is 11.2%.

Q. Does this conclude your prefiled testimony?

A. Yes.

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2008 MOBILE HOME INSURANCE RATE FILINGS BY THE NORTH CAROLINA RATE BUREAU

1. Q. What is your name and address?

A. My name is David Lalonde. I live at 1073 Augustus Drive, Burlington, Ontario.

2. Q. What is your occupation?

A. I am Senior Vice President of AIR Worldwide Corporation, a corporation in Boston, Massachusetts.

3. Q. What is AIR Worldwide Corporation?

A. AIR Worldwide Corporation is a company that analyzes and models the characteristics and impacts of natural and man-made extreme events such as hurricanes, severe thunderstorms (hail, tornadoes, and straight-line winds), earthquakes, and terrorism to estimate the potential property losses from these hazards.

4. Q. What is your educational background?

A. I have a Bachelors of Mathematics (Honours) in Actuarial Science with Statistics from University of Waterloo, and I am a Fellow of the Casualty Actuarial Society.

5. Q. What is your work experience?

A. I was employed at Economical Group from 1985-89, becoming Manager, Actuarial Services; I was employed at Insurance Corporation British Colombia 1989-1993 becoming Chief Actuary; I was employed at Coopers & Lybrand 1993-95 as Director, Casualty Actuarial Risk Management Consulting; and from 1995 to the present I have been employed by AIR Worldwide Corporation and its predecessor company Applied Insurance Research, Inc.

6. Q. Please describe your technical publications and speaking engagements relating to computer models and insurance.

A. I have made numerous speaking engagements on the subject of catastrophe modeling, including presentations at AIR's Annual Spring and Fall Conferences. External speaking engagements have included:

- In July 2007, I spoke at the Aon Client Conference in Dallas, TX.
- In June 2007, I spoke at the CAS Spring Meeting in Orlando, FL.
- In March 2007, I spoke at the CAS Ratemaking Seminar in Atlanta, GA.
- In December 2006, I spoke at the Southwest Actuarial Forum meeting in San Antonio, TX.
- In November 2006, I spoke at the Southern Risk and Insurance Association meeting in Hilton Head, SC. and at the CAS Annual Meeting in San Francisco, CA.
- In October 2006, I spoke at the Society of Insurance Research Annual Meeting in Charleston, SC.
- In June 2006, I spoke at CPCU Annual Meeting in Nashville, TN.
- In May 2006, I spoke at CAS Spring Meeting in Fajardo, Puerto Rico.
- In March 2006, I spoke at CAS Ratemaking Seminar in Salt Lake City, UT.
- In March 2006, I spoke at the NAIC meeting in Orlando, FL.
- In June 2005, I spoke at the Summer meeting of the Southwest Actuarial Forum in Austin, TX.
- In May 2005, I spoke at the Enterprise Risk Management Symposium in Chicago, IL.
- In April 2005, I spoke at Watson Wyatt Client Conference in Orlando, FL.
- In March 2005, I spoke at CAS Ratemaking Seminar in New Orleans, LA.
- In November 2004, I spoke at the Fall Meeting of the CAS in Montreal, PQ.

— In September 2004, I spoke at the Casualty Actuaries in Reinsurance Meeting in New York, NY.

— In May 2004, I spoke at American Academy of Actuaries Annual Meeting in Washington, DC.

— In April 2004, I spoke at International Accounting and Statistical Association Annual Meeting in Las Vegas, NV.

— In March 2004, I spoke at the CAS Ratemaking Seminar in Philadelphia, PA.

— In June 2003, I spoke at the Annual Meeting of the Canadian Institute of Actuaries (CIA) in Victoria, BC.

— In June 2003, I spoke at the Spring Meeting of the Casualty Actuaries of Greater New York in New York, NY.

— In June 2003, I spoke at the Casualty Actuaries in Reinsurance (CARE) Meeting in Philadelphia, PA.

— In May 2003, I spoke at the Spring Meeting of the CAS in Marcos Island, FL.

— In March 2003, I spoke at the CAS Seminar on ratemaking in San Antonio, TX.

— In February 2003, I spoke at the Windstorm Insurance Network Conference in Orlando, FL.

— In October 2002, I spoke at the CAS Special Interest Seminar on Catastrophe Risk Management in Atlanta, GA.

— In April 2002, I spoke at the CAS Special Interest Seminar in Dallas, TX.

7. Q. Please describe your experience with respect to the issue of computer modeling of windstorms, including tornadoes, hurricanes, hailstorms and other storms.

A. I began modeling insurance risk in 1985; while at ICBC I implemented a Stochastic Planning Model to manage overall corporate risk. I began work on the modeling of natural hazard risk including tornadoes, hurricanes, hailstorms and other, storms in 1995. My work involves review of model components and responsibility for the review of the Atlantic Tropical Cyclone model by the Florida Commission on Hurricane Loss Projection Methodology.

8. Q. Please describe the companies or organizations for which you have consulted in connection with the computer modeling of windstorm losses.

A. AIR provides catastrophe risk assessment and management products and services to primary insurance companies, reinsurers, coastal FAIR and Beach plans, intermediaries, involuntary markets, state funds, and other insurance industry organizations. We also provide services to investment banks and investors in catastrophe bonds.

AIR has been directly involved in ratemaking proceedings in the states of Florida and North Carolina.

9. Q. Have these companies and organizations relied upon your hurricane loss computer simulation methodology?

A. Yes.

10. Q. How have these companies and organizations relied upon your computer simulated hurricane loss estimates?

A. Reinsurers use AIR Software Systems (CATRADER®, CLASIC/2™, CATStation®) to estimate expected and potential large losses on the reinsurance treaties of primary ceding companies. Based on these expected loss estimates, as well as other underwriting information, reinsurers can develop rates for catastrophe treaties and decide how much, if any, to participate in catastrophe, aggregate excess or pro rata treaties. AIR's CATRADER also helps reinsurers to estimate the potential losses on their total portfolios of property treaties.

Primary companies use our services and software systems to estimate their windstorm and/or earthquake loss potential. They are also interested in estimating large loss potential. This information helps them to decide how much catastrophe reinsurance to buy. Companies want to make sure that they are not overly exposed to a single catastrophic event. Primary companies are becoming increasingly interested in estimating catastrophe pure premiums and loss costs in various geographical areas.

The coastal FAIR and Beach Plans provide their member companies with the results of our analyses so that they can estimate their potential losses and assessments due to catastrophic events.

Intermediaries use our services to provide catastrophe loss analyses to their primary company clients.

AIR also provides hurricane loss estimation services to the investment community in conjunction with various catastrophe bond offerings that have been issued. Investment bond rating companies use the probabilistic estimates derived from the AIR catastrophe models as the primary basis for assigning catastrophe bond ratings.

11. Q. Have you been asked by the North Carolina Rate Bureau to prepare an analysis based on your models of windstorm loss potential for the state of North Carolina?

A. Yes.

12. Q. What specifically have you prepared for the North Carolina Rate Bureau relating to North Carolina mobile home insurance?

A. We have prepared a report for the North Carolina Rate Bureau based on an analysis using a simulated sample of 100,000 "years" of potential hurricane experience based on a standard view of the hurricane risk. A copy of our report is attached hereto as Exhibit A.

We have also prepared a report using a simulated sample of 10,000 "years" of potential hurricane experience based on a near-term view of the hurricane risk ("near-term" catalog simulation). The near-term view of hurricane risk incorporates the impact of sea surface temperatures (SSTs) in the North Atlantic on hurricane activity over the next several years. A copy of our report is attached hereto as Exhibit B.

A simulated "year" in this context represents a hypothetical year of hurricane experience that could happen in the current year. For the North Carolina Rate Bureau, we used exposures for 2004, which was then the most recent year available. These large samples of simulated loss experience enabled us to estimate pure premiums and loss costs as well as the probabilities of hurricane losses of various magnitudes.

13. Q. What is meant by the term "pure premiums"?

A. Pure premiums are calculated by dividing the long term average annual aggregate losses by the number of risks, i.e., the house years.

14. Q. What is meant by the term "loss costs"?

A. Loss costs are calculated by dividing the long term average annual aggregate losses by the insurance in force, i.e., the insurance years plus the liabilities for contents and other coverages.

15. Q. When were you asked by the North Carolina Rate Bureau to do your study?

A. Early 2007.

16. Q. Please describe the approach that you used to develop your reports.

A. Our approach is that of a computer simulation model. AIR was the first company to develop probabilistic catastrophe modeling as an alternative to the standard actuarial or "rule of thumb" approaches on which insurance companies had to rely for the estimation of potential catastrophe losses. In 1987, AIR introduced to the insurance industry a modeling methodology based on simulation techniques and mathematical approaches long-accepted in a wide variety of scientific disciplines. Since the inception of this new approach, the AIR hurricane model has undergone a comprehensive process of refinement, enhancement, validation, and review.

Standard actuarial techniques rely on data on past losses to project future losses, but the scarcity of historical loss data resulting from the infrequency of these events makes standard actuarial techniques of loss estimation inappropriate for catastrophe losses. Furthermore, the usefulness of the loss data that does exist is limited because of the constantly changing landscape of insured properties. Property values change, along with the costs of repair and replacement. Building materials and designs change, and new structures may be more or less vulnerable to catastrophe events than were the old ones. New properties continue to be built in areas of high hazard. Therefore, the limited loss information that is available is not suitable for directly estimating future losses.

By way of example in North Carolina, if recent historical insurance loss data were used, the only significant hurricane events would be Hugo in 1989, Fran in 1996, Bonnie in 1998, and Floyd in 1999. Hugo entered North Carolina in the Charlotte area and continued through the central and western parts of the state. While Hurricane Fran made direct landfall on the North Carolina coast and did significant damage to coastal exposures, it caused even more damage inland in the Raleigh area. Raleigh incurred more loss than one would normally expect for an inland area because the two weeks of rain prior to Hurricane Fran's arrival left the ground saturated. This resulted in significantly more damage from uprooted trees than would normally be expected for a storm of Fran's size.

If the data from these storms were the only data used in ratemaking, it could well be the case that rates for the Raleigh and Charlotte areas would be higher than for coastal areas. Such a result would not fairly reflect the relative wind loss vulnerability of the territories in the state.

17. Q. Do you know how many years of mobile home insurance data exist for North Carolina?

A. I am advised that five years data (2000 – 2004) of mobile homeowners insurance data were used in basic ratemaking analyses. However for the excess wind portion of the rate, homeowners non-hurricane wind experience has been used as a proxy for mobile homeowners experience. I am advised that data for homeowners insurance exists back to approximately 1960.

18. Q. What is your opinion as to whether homeowners insurance data is appropriate to use as a proxy for mobile homeowners experience?

A. In my opinion, it is appropriate to consider the experience of similar risks when the experience of an individual risk or set of risks does not provide a credible basis for estimating loss costs.

19. Q. What is your opinion as to whether homeowners insurance data for the period from 1960 to 2004 adequately represents the state's likely exposure to hurricanes?

A. In my opinion, 45 years of insurance data is not sufficient to estimate the true hurricane loss potential in North Carolina. Hurricanes, particularly intense hurricanes, are low frequency events. The absence or presence of even one Category 4 or Category 5 hurricane (under the Saffir-Simpson scale) can dramatically influence the loss potential calculated over such a short time horizon.

Furthermore, the usefulness of the loss data that does exist is limited because of the constantly changing landscape of insured properties. Property values change, as do the costs of repair and replacement. Building materials and designs change, and new structures may be either more or less vulnerable to catastrophic events than the old ones were. New properties continue to be built in areas of high hazard. Therefore, the limited loss information that is available is not suitable for estimating future losses.

For these reasons, a better measure of North Carolina's exposure to hurricanes can be gained by using a computer simulation model such as ours, which is based on historical data and meteorological information.

20. Q. What is a computer simulation model?

A. Basically, a computer simulation model is a series of computer programs which describe or model the particular system under study. All of the system's significant variables and interrelationships are included. A computer then "simulates" the activity of the system and outputs the measures of interest. Our simulation models incorporate random variables. In such simulation models, numbers are generated from the probability distributions of random variables to assign values to the variables for each model simulation. These probability distributions are usually standard statistical distributions selected on the basis of good fits with empirical data. Many simulations or iterations are performed to derive estimates from simulation models. Many simulations are necessary so that the output distribution converges to the true distribution and that model-derived estimates are "stable."

21. Q. Is computerized modeling commonly used and relied on in meteorology?

A. Yes. In current operational hurricane forecasting practice, experts at the National Hurricane Center rely heavily on various computer models. These models range in complexity from relatively simple statistical models to more complex three-dimensional numerical models. The statistical and two-dimensional models are maintained by the Tropical Prediction Center (TPC). The three-dimensional models are maintained by the National Centers for Environmental Prediction's (NCEP) Environmental Modeling Center (EMC). More detailed information regarding the forecast numerical weather prediction (NWP) models used by NHC can be found at http://www.nhc.noaa.gov/aboutmodels.html.

22. Q. How long have computer simulation models been used in insurance?

A. AIR pioneered the probabilistic catastrophe modeling technology that is used today by the world's leading insurers, reinsurers and financial institutions. The AIR hurricane simulation model has been in use by our clients since 1987.

23. Q. How many simulations are typically performed?

A. There is no standard number of simulations that are performed. The required number is a function of the number of random variables and the probability distributions of those variables. The required number also depends on the geographical resolution of the data and the convergence level desired. The number of iterations can, however, be estimated using a formula which is based on the Central Limit Theorem. The Central Limit Theorem states that for a large number of samples, the normal distribution is a good approximation of the mean of the samples. Additionally, model output is tested for convergence by re-calculating the various moments or percentiles of the output distributions after adding more simulations, to ensure that the additional simulations do not significantly change the output distributions.

24. Q. How many simulations did you perform for your study as to North Carolina mobile home insurance?

A. We performed two analyses, each with a different number of simulation "years."

One analysis was performed with 100,000 "years" of simulations, based on a standard view of the hurricane risk. This analysis formed the basis of the work performed for the NCRB.

Additionally, we performed an analysis with 10,000 "years" of simulations, based on a near-term view of the hurricane risk.

25. Q. What is the implication of using 100,000 simulated "years" vs. 10,000 simulated "years," and is each an appropriate number of simulations?

A. A 100,000 "year" simulation yields results that are stable and appropriate for base rate-making purposing, where results are drilled down to the relatively high geographical resolution of territory(s).

A 10,000 "year" simulation yields results that are stable and appropriate for use at a lower geographical resolution, such as state(s) or zones.

Our approach was based on the Monte Carlo simulation method, which is a generally accepted mathematical technique that has been used extensively in the fields of insurance, operations research, and nuclear physics, among others.

26. Q. In general, what are the uses of Monte Carlo simulation models?

A. One of the first real uses of Monte Carlo simulation as a research tool was for work on the atomic bomb during World War II. With the advent of powerful computers, the uses for this technique expanded. Computer simulation models are particularly useful tools for the analysis of problems that involve solutions that are difficult to obtain analytically.

As noted authorities Law and Kelton have stated: "Most complex, real-world systems cannot be accurately described by a mathematical model which can be evaluated analytically. Thus, a simulation is often the only type of investigation possible." The natural hazard loss-producing system is one such system.

27. Q. What is the natural hazard simulation model?

A. The natural hazard simulation model is a model of the natural disaster "system." The primary variables are meteorological in nature. The AIR research team collects the available scientific data pertaining to the meteorological variables critical to the characterization of hurricanes and therefore to the simulation process. These primary model variables include landfall location, central pressure, radius of maximum winds, forward speed, and track direction. Data sources used in the development of the AIR hurricane model include the most complete databases available from various agencies of the National Weather Service, including the National Hurricane Center.

After rigorous data analysis, AIR researchers develop probability distributions for each of the variables, testing them for goodness-of-fit and robustness. The selection and subsequent refinement of these distributions are based not only on the expert application of statistical techniques, but also on well-established scientific principles and an understanding of how hurricanes behave.

These probability distributions are then used to produce a large catalog of simulated events. By sampling from the various probability distributions, the model generates simulated "years" of event activity. A simulated year in this context represents a hypothetical year of hurricane experience that could happen in the current year. The AIR models allow for the possibility of multiple events occurring within a single year. That is, each simulated year may have no, one, or multiple hurricanes, just as might be observed in an actual year. Many thousands of these scenario years are generated to produce the complete and stable range of potential annual experience of tropical cyclone activity. The pattern and distribution of the simulated years approximates the pattern of historical and future years because their derivation is based on a scientific extrapolation of actual historical data.

Once values for each of the important meteorological characteristics have been stochastically assigned, each simulated storm is propagated along its track. Peak wind speeds and wind duration are estimated for each geographical location affected by the storm. Based on peak winds and duration, damages are estimated at each location for different types of structures. Finally, policy conditions are applied to estimate the insured losses resulting from each event.

As opposed to purely deterministic simulation models, probabilistic simulation models enable the estimation of the complete probability distribution of losses from hurricanes. Once this probability distribution is estimated, hurricane loss can be derived.

28. Q. What are the meteorological data sources that underlie your model?

A. The following are key data sources that underlie the model.

Source	Years of Data
Monthly Weather Review	1900-present
NWS-23	1900-1976
NMW-38	1900-1984
Neumann, Charles J., "Tropical Cyclones of the North Atlantic Ocean, 1871-1998." NCDC, NOAA*	1871-1998
National Hurricane Center Preliminary Reports for Specific Hurricanes[1]	1977-2004
Tropical Cyclone Data Tape for the North Atlantic Basin, HURDAT	1886-2004
http://weather.unisys.com/hurricane/index.html	1886-present

29. Q. Are all of these sources governmental reports?

A. All are except for the Monthly Weather Review, which is a peer-reviewed journal published by AMS and the Unisys web site which is maintained by Unisys Corporation.

[1] Supplemental data added to report by NHC upon request by AIR.

30. Q. Are these sources generally relied upon in the meteorological and insurance communities?

A. Yes.

31. Q. What steps were taken to assure that the meteorological data underlying the model were correctly input into the model?

A. When the meteorological and other data are input into the model, we consistently follow the policy of carefully cross-checking and verifying the numbers for accuracy. We continually review our models and their underlying meteorological data to make sure that the data have been input correctly. We also compare our model-generated data with the actual historical data to make sure that there is a close match. For example, we overlay maps of our simulated wind speeds on maps of the actual wind speeds for actual historical events.

32. Q. What is a hurricane?

A. Hurricanes form when warm ocean water evaporates, is further warmed by the sun, and rises to create a high, thick layer of humid air. This rising of warm, dense air creates an area of low pressure, technically known as a depression, near the ocean's surface. Surface winds converge and, due to the earth's Coriolis force, display a clear cyclonic pattern.

The inward rush of peripheral surface winds toward the central area of low pressure, the rise of warm humid air in the center, and the subsequent outflow away from the system at high altitude, combine to create a self-sustaining heat engine. The warmer the water temperature, the faster the air in the center of the system rises. The faster this air rises, the greater will be the difference between the surface air pressures inside and outside the vortex.

Air flows from areas of relative high pressure to relative low pressure. The greater the difference between peripheral and central pressures, the faster the inflow. When wind speeds reach 40 miles per hour, the depression reaches tropical storm status. When wind speeds reach 74 miles per hour, the storm is designated a hurricane or typhoon. Note that the terms "hurricane" and "typhoon" are regionally specific names for the same phenomenon. Severe tropical cyclones that occur in the Atlantic and eastern Pacific are referred to as hurricanes, and in the western Pacific as typhoons. The term "super-typhoon" is used for tropical cyclones that reach maximum sustained 1-minute surface winds of at least 130 knots, which is the equivalent of a strong Category 4 or Category 5 hurricane in the Atlantic basin.

33. Q. What is meant by sustained wind speed?

A. Sustained wind speed refers to the wind averaged over a given period of time, such as one or ten minutes, or an hour. Generally for the purpose of this testimony as to hurricanes, a one minute sustained wind is used. The speed of shorter period gusts or lulls may be considerably higher or lower than the sustained wind. Surface wind speed is defined as the wind at 33 feet (10 meters) above ground for this purpose.

34. Q. What are the categories of hurricanes?

A. Under the Saffir-Simpson Hurricane Scale, there are five categories of hurricanes. They are categorized according to sustained wind speeds and central pressure as follows:

Saffir-Simpson Hurricane Scale

Category	Wind Speed (mph)	Central Pressure
1	74-95	≥ 980
2	96-110	965-979
3	111-130	945-964
4	131-155	920-944
5	>155	<920

35. Q. How many hurricanes made landfall in the historical experience period?

A. There were one hundred and sixty-three hurricanes making landfall in the U.S. during the sample period (1900-2004). A single hurricane may comprise several landfalls; for example, hurricane Donna in 1960 had three landfall points. By landfall point, I mean the latitude and longitude coordinates of the place where the center of the wind circulation of the hurricane crossed from the ocean to land. In addition to landfalling hurricanes, AIR scientists have analyzed historical data on the storm tracks of bypassing events. A bypass is defined as an event causing hurricane force winds over land.

36. Q. What was the most intense hurricane to directly strike North Carolina during the period 1900-2004?

A. Hazel, a Category 4 hurricane, in 1954 was the most intense hurricane, from a meteorological standpoint, to hit North Carolina during this period.

37. Q. What are "by-passing" storms and how are they handled?

A. By-passing storms are hurricanes which do not actually make landfall but cause winds of hurricane strength (74 mph or higher) to be recorded on shore. By-passing storms are modeled like all other hurricanes, starting with estimates of the frequency and location of such storms. As is the case with landfalling hurricanes, the frequency and location distributions of by-passing hurricanes have been derived from the historical record and other scientific information.

38. Q. Are there any climatological factors influencing hurricane frequency and intensity in general and with respect to North Carolina in particular?

A. There are a number of climate signals that are correlated with mechanisms within the earth's environment that impact hurricane activity in the Atlantic Basin. These include the Atlantic Multidecadal Oscillation (AMO), the El Nino Southern Oscillation (ENSO), the Quasi-Biennial Oscillation (QBO), and the North Atlantic

Oscillation (NAO). The AMO is the oscillation of sea surface temperatures in North Atlantic, which fluctuates over a period of several decades. The ENSO is the oscillation of sea surface temperatures in Eastern Pacific Ocean, which fluctuates over a period of approximately 2.5 to 7 years. The QBO is the oscillation in wind directions over the tropics in the upper atmosphere, which fluctuates about every 2 years. The NAO is the large scale oscillation in atmospheric pressure in the Atlantic Ocean between the subtropic high and the polar low pressure system, which fluctuates over a period of days, weeks, or months. These factors have different impacts on hurricane activity in the Atlantic basin.

39. Q. How are these factors incorporated into the model?

A. These factors are not explicitly accounted for in AIR's standard 100,000 "year" hurricane catalog. The standard catalog is based on the past 105 years of historical hurricane activity, which includes multiple observations of each of these climatological signals and oscillations.

Additionally, AIR has developed a near-term hurricane catalog which incorporates the impact of sea surface temperatures (SSTs) in the North Atlantic on hurricane activity over the next several years.

A correlation has been drawn between SST cycles and hurricane activity in the Atlantic basin. There is an increased probability of hurricane activity during warm cycles, and a decreased probability of hurricane activity during cool cycles. As with many meteorological matters, this correlation is subject to uncertainty and continues to be an area of active research.

SSTs have been considered in the generation of the near term hurricane catalog because they vary over the longest time period, specifically multi-decadal periods.

40. Q. Based on this information, what conclusions can be drawn about the probability of hurricane activity in the Atlantic basin in the coming years?

A. We are currently in an SST warm cycle. This condition results in an increased probability of hurricane activity. While other cycles might oscillate to result in an increased or decreased probability of hurricane activity from one season to the next, the SST varies over a longer period of time and thus results in an overall increased probability of hurricane activity in the coming years. This does not mean that every year or in any given year there will be greater activity in the SST warm cycle, but it does mean that there is a higher risk of hurricane activity.

41. Q. Is the AIR modeling methodology a sound and appropriate method of projecting the wind losses used in the filing for mobile home insurance in North Carolina?

A. Yes. AIR's simulation methodology is based on mathematical/statistical models that represent real-world systems. As with all models, these representations are not exact, but the simulation methodology is a superior technique for estimating potential hurricane losses. The best approach is to consider the longest period of consistently maintained and reported meteorological data available, as AIR's models do.

AIR's standard hurricane catalog incorporates the best and longest period of data available, and analyses performed using this catalog yield the long run average wind loss for the modeled exposure set. AIR's near-term hurricane catalog also incorporates the best and longest period of data available, with modifiers applied to account for the impact of SST on hurricane activity in the near-term. Analyses performed using this catalog yield the average wind losses given the forecasted SSTs in the near-term.

42. Q. How does the hurricane model simulate hurricanes affecting the U.S. and North Carolina?

A. For each simulated year, the model first determines the number of landfalls that occur during that year. If a landfall occurs, the landfall location is generated using a probability distribution for landfall location. Having simulated the location, values for landfall angle, central pressure, radius of maximum wind, and forward speed are generated using probability distributions derived from historical data and meteorological knowledge. As the hurricane moves from its landfall location, the track of the hurricane is simulated using probability distribution derived from historical data and meteorological knowledge. As the hurricane moves from its landfall location, the track of the hurricane is simulated using a Markov procedure with transition probabilities estimated using historical data.

43. Q. How is hurricane frequency modeled?

A. The AIR hurricane model uses a negative binomial distribution to generate the number of landfalling storms per year. Actual historical data from 1900-2004 is compared to the modeled distribution for the entire Gulf and East Coasts. The modeled distribution fits the historical data very closely. The average number of hurricanes per year making landfall in the U.S. is 1.6. The average number of landfalling and bypassing storms is 1.7. We make no other assumptions as to future hurricane activity.

44. Q. How is landfall location modeled?

A. In the AIR hurricane model, there are 3,100 possible landfall points at each one nautical mile of smoothed coastline from Texas to Maine. Historical hurricane occurrences since 1900 are used to estimate a smoothed locational frequency distribution. The actual smoothing technique employed was selected because it has been utilized in other climatological studies and because it produces a smoothed distribution that maintains areas of high versus low frequency while smoothing out variations due to limitations on completeness in the historical record.

45. Q. How is hurricane severity modeled?

A. The hurricane model generates values for the severity variables. There are five primary variables which account for hurricane severity. These variables are the minimum central pressure, the radius of maximum winds, the forward speed, the angle at which the storm enters the coast, and the track of the storm once on shore.

46. Q. What is the central pressure variable?

A. Central pressure is defined as the minimum atmospheric pressure measured in a hurricane. The central pressure distribution is based on the historical database and is determined for each 100 nautical mile coastline segment.

47. Q. What is meant by the radius of maximum winds?

A. The radius of maximum winds is the distance from the center of circulation to the location of maximum wind speeds. The radius distribution is based on the historical database and is determined for each 100 nautical mile segment.

48. Q. What is forward speed?

A. Forward speed is the speed at which a hurricane moves from point to point. The forward speed distribution is based on the historical database and is determined for each 100 nautical mile segment.

49. Q. Does the combination of forward speed and wind speed affect the damage caused by a given hurricane?

A. Yes, this is what is referred to as the asymmetrical effect of hurricane winds. Hurricane winds move in a counter-clockwise direction around the eye of the hurricane, which means that winds on the right side are moving with the forward direction of the storm, thereby creating a higher effective wind speed at any location on the right side of the hurricane. Conversely, the effective wind speed at any given location on the left side of the storm is reduced by the effect of the hurricanes rotational winds moving in the opposite direction from the translational winds.

50. Q. What is the track angle at landfall?

A. Track angle at landfall is the angle between track direction and due north at landfall location.

51. Q. What is the storm track?

A. Storm track is the path the hurricane takes. The procedure that AIR has developed to simulate storm tracks, which is described in more detail for question 57 below, allows the tracks to curve and recurve in the same way and to the same extent that actual historical storms do.

52. Q. Does the location of the hurricane make a difference?

A. Yes. Hurricane intensity and frequency vary by location. In general, as latitude increases, average hurricane intensity decreases and we model this effect accordingly. When a hurricane moves over cooler waters, its primary source of energy (latent heat from warm water vapor) is reduced so that the intensity of circulation decreases in the absence of outside forces. For this reason, the parameters of the severity variable probability distributions were estimated separately for each of the 100-mile coastal segments using state-of-the-art statistical techniques combined with published scientific information.

53. Q. How does the simulation model generate values for the distribution of hurricane central pressures?

A. The AIR hurricane model utilizes central pressure as the primary hurricane intensity variable. Using the historical data, Weibull distributions are fitted to the data for each of the 31 100-nautical-mile coastal segments as well as for larger regional segments, with the final distribution for each segment being a weighted combination of the two. The Weibull form was selected based on "goodness-of-fit" tests with actual historical data. The use of the Weibull distribution for storm central pressure is documented in the scientific literature.

54. Q. How does the model generate values for the radius of maximum winds?

A. The radius of maximum wind is simulated using a regression model that relates the mean radius to central pressure and latitude. The error term in this model is assumed to follow a Normal distribution. The parameters are estimated using the least squares method and standard diagnostic tests are used to evaluate the adequacy of the fit. The resulting values are bounded based on central pressure to produce a final distribution for the radius.

55. Q. How does the model generate values for forward speed?

A. Probability distributions are estimated for forward speed for each 100 nautical mile segment of coastline with bounds based on the historical record. Separate distributions are estimated for each of the segments because the likely range and probabilities of values within the range for these variables depend upon geographical location, particularly latitude.

56. Q. How does the model generate values for track angle at landfall?

A. Separate distributions for track angle at landfall are estimated for variable length segments of coastline with bounds based on the historical record. The length of each segment is governed by the general orientation of that segment. Standard 100 mile segments cannot be used because the orientation of the coastline might change dramatically within these segments. The corresponding probability distributions are combined normal distributions with bounds based on the historical record and meteorological expertise.

57. Q. How does the model generate values for storm track?

A. AIR has developed a unique and scientific procedure to simulate storm tracks. Our scientists and engineers have collected and analyzed historical data about the tracks of more than 900 Atlantic tropical cyclones, both landfalling and non-landfalling. Using this data, they have created conditional probability matrices from which the tracks of simulated events are generated.

There are 16 primary directional probabilities. Within each of these 16 primary directions there is a continuous probability distribution, resulting in an infinite number of potential track directions. For each of 16 directional probabilities of storm arrival, these matrices specify the probability of a directional change to each of the other 16 directional probabilities.

The advantage of this probabilistic approach is that the storm tracks generated for simulated tropical cyclones will closely resemble the curving and recurving tracks that are actually observed. Furthermore, the simulated storm tracks are fully probabilistic, which means that any possible storm track can be generated, not just historical tracks. Other approaches that use either straight-line tracks or historical tracks are not as realistic because future hurricanes will not travel in perfectly straight lines, nor will they follow the exact path of previous hurricanes.

In order to model hurricanes with multiple landfalls, or combination of landfall and bypass, selected storm tracks are joined statistically. The criteria used to select tracks to be joined are consistency in the following storm parameters: central pressure, forward speed and radius of maximum wind. The number of bypasses and landfalls selected to be joined is determined based on the historical record for the region. The tracks are joined using a cubic spline and the storm parameters are interpolated along the joining path to ensure appropriate hurricane behavior. This procedure ensures that multiple landfalling storms, such as triple-landfalling Donna in 1960, which affect more than one area of the U.S. coastline, are accurately reflected in the catalog.

58. Q. How does the model calculate maximum wind speeds?

A. Once values are obtained for all of the severity variables, the maximum sustained wind speed is calculated using generally accepted meteorological formulas. For each simulated event, the AIR hurricane model simulates the storm's movement along its track. A complete time profile of wind speeds is developed for each location affected by the storm, thus capturing the effect of duration of wind on structures as well as peak wind speed. Calculations of local intensity take into account the effects of the asymmetric nature of the hurricane windfield, storm filling over land, surface friction, and relative wind speeds as the distance from the radius of maximum winds increases.

59. Q. You have explained how the model generates values determining the frequency and severity of hurricanes. Now please explain how insured damages are computed.

A. AIR scientists and engineers have developed mathematical functions called damageability relationships, which describe the interaction between buildings — both their structural and nonstructural components and their contents — and the local intensity to which they are exposed.

Damageability functions have also been developed for estimating time element losses. These functions relate the mean damage level and variability of damage to the measure of storm intensity at each location. Because different structural types will experience different degrees of damage, the damageability relationships vary according to construction materials and occupancy. The AIR model estimates a complete distribution around the mean level of damage for each local intensity and each structural type, and from there constructs an entire family of probability distributions. Losses are calculated by applying the appropriate damage function to the replacement value of the insured property.

The AIR damageability relationships incorporate the results of well-documented engineering studies, tests, and structural calculations. AIR engineers continually survey the engineering literature and consult with other experienced engineers to verify our damage functions, and if necessary, they refine these relationships. AIR also performs post-disaster field surveys and analyses for all U.S. landfalling hurricanes. We have analyzed over $10 billion of actual claims data from recent hurricanes. Much of the loss data is by zip code, coverage, and construction.

60. Q. Has the model been independently peer reviewed?

A. Yes.

61. Q. By whom?

A. All hurricane characteristics were reviewed by Dr. Walter Lyons in 1986. Dr. Lyons, a Certified Consulting Meteorologist, was contracted by the E.W. Blanch Company to review the AIR hurricane simulation model. There are no unresolved issues. The near-term catalog generation process has been reviewed by well-respected meteorological experts.

During 1996 and 1997, Duff & Phelps, Fitch, Moody's and Standard & Poor's all reviewed AIR's hurricane model in conjunction with their rating of a USAA catastrophe bond.

The vulnerability functions have been reviewed by Dr. Joseph Minor, P.E. every year since 2001. There are no unresolved issues.

62. Q. What types of reviews have been performed?

A. In 1986 Dr. Lyons was asked to independently review and make suggestions regarding AIR's hurricane and tornado simulation models and our sources of meteorological information. Dr. Lyons reviewed the meteorological variables and relationships used in the models. In 1986, Dr. Lyons recommended and provided copies of a few additional meteorological papers for our review and made several suggestions for change. For example, he made a suggested correction to our approximation of the air density term in the gradient wind equation. Our original formula could have resulted in up to a 5 percent error in the estimation of peak wind speeds near the center of the storm. This correction was made immediately following Dr. Lyons' recommendation. In 1993 Dr. Lyons again reviewed these models, including how the climatology had been updated to reflect storms since 1986 and validation results based on actual events.

The testing conducted by Duff & Phelps, Fitch, Moody's and Standard & Poors was particularly extensive because the USAA catastrophe bond was the first such bond to be assigned a corporate bond rating by all four agencies, and the probabilistic estimates derived from the AIR hurricane model were the primary bases for the assigned ratings. Over a period of 18 months, AIR staff met with employees and consultants hired by the rating agencies representing many fields, including insurance, statistics, and finance, to explain in detail the AIR hurricane model.

In addition, a number of sensitivity analyses and stress tests were performed at the requests of the rating agencies during this year and half period of time. These tests, performed by outside experts whose primary interest is the protection of their investors, confirm the robustness of the AIR model. Moody's wrote, "Moody's did not simply accept AIR's modeling results at face value. Rather, we followed an examination and calibration procedure, aiming to provide Moody's with a high degree of confidence in the reliability and stability of the simulation results." Similarly, "Fitch evaluated the underlying technical integrity of the AIR model on the basis of model specification and model structure." Because of the first-time nature of such a large catastrophe bond issuance, the rating agencies very carefully scrutinized model assumptions, data, and methodology. These rating agencies have continued their scrutiny of the model in the course of several subsequent securitization transactions.

63. Q. What information did you provide the reviewers about your methodology?

A. In 2006 AIR provided Dr. Minor with the 2005 submission of the AIR Hurricane Model to the Florida Commission and documents describing the Commission's process for determining the acceptability of a computer simulation. Dr. Minor had access to the full AIR hurricane modeling team in two days of briefings and discussion. His training and experience as a structural/wind engineer provided for a principal focus on the vulnerability functions in the AIR model.

In the review of the AIR model in 1996 and 1997 by the bond rating companies, access was given to the probability distributions assumed by AIR and the estimation methods employed to fit the parameters of those distributions. Also reviewed were the mathematical functions used in the model to approximate the interactions between simulated storm parameters. For the validation testing and sensitivity analysis, the rating companies reviewed model output under various distributional assumptions.

In 1986 we provided to Dr. Lyons technical documents describing our methodology. For example, the hurricane simulation model technical document describes the model variables, the estimated probability distributions that we fit to the model variables, the variable interrelationships, such as the formula relating minimum central pressure to maximum wind speed, our filling equations, how we account for the effects of surface terrain on wind speed, and how we estimate storm surge heights at various coastal locations. In 1993 we additionally provided him with copies of our original documentation along with information regarding validation of the hurricane model. Validation information included a comparison of simulated losses and actual losses, for several hurricanes such as Alicia (1983), Elena (1985), Gloria (1985), Kate (1985), Hugo (1989), Bob (1991) and Andrew (1992).

64. Q. Has your model been reviewed by the Florida Commission on Hurricane Loss Projection Methodology?

A. Yes. The Florida Commission on Hurricane Loss Projection Methodology was established in 1995 with the mission to "assess the effectiveness of various methodologies that have the potential for improving the accuracy of projecting insured Florida losses resulting from hurricanes and to adopt findings regarding the accuracy or reliability of these methodologies for use in residential rate filings." The Commission has established 35 standards that need to be met before a catastrophe model is acceptable for ratemaking purposes in the state of Florida. The AIR hurricane model was the only model approved under the 1996 standards, and it has consistently been approved under the standards of subsequent years.

In addition, AIR has been working with insurance departments in other states for the past several years in meeting their informational requirements. Rates based on the AIR models have been filed and approved in an increasing number of states.

65. Q. What sorts of specialists comprise the Florida Commission's professional team?

A. The Florida Commission professional team includes two people from each of the following professions: actuary, computer scientist, statistician, structural engineer, and meteorologist.

66. Q. Does AIR have a staff meteorologist?

A. Yes, AIR has numerous staff meteorologists. Dr. Peter Dailey, who joined the company in 2001, is the Director of Atmospheric Science at AIR.

67. Q. Have the meteorological components of your model been reviewed?

A. Yes, staff meteorologists have thoroughly reviewed all meteorological components of AIR's hurricane model.

68. Q. Have you validated the models?

A. Yes. AIR scientists and engineers validate the models at every stage of development by comparing model results with actual data from historical events. The simulated event characteristics parallel patterns observed in the historical record, and resulting loss estimates correspond closely to actual claims data provided by clients. Internal peer review is a standard procedure and is conducted by the AIR professional staff of scientists and engineers, over 20 of whom hold Ph.D. credentials in their area of expertise. AIR models have also undergone extensive external review, beginning with Dr. Walter Lyons' systematic review of the AIR hurricane model in 1986.

69. Q. What are the advantages of computer simulation?

A. There are several advantages of the computer simulation approach. First, it is able to capture the effects on the catastrophe loss distribution of changes over time in population patterns, building codes, amounts insured and construction costs. Second, this estimation procedure provides a complete picture of the probability distribution of losses rather than just estimates of probable maximum losses. As opposed to using actual loss data, this procedure also leads to more stability in the estimated expected annual losses. Simulation models can be tested much more easily than other approaches to catastrophe loss estimation. Disadvantages of the simulation approach include long model development time and potential high development costs. Overall the benefits provided by the model and the value of the model output outweigh the costs. The simulation approach provides much more reliable and consistent loss estimates than traditional approaches to catastrophe risk assessment and management.

70. Q. Have your models been updated and refined since they were originally constructed?

A. Yes. The AIR hurricane model was first developed in 1985. Since that time the model has been updated at least once each year. At a minimum, the ZIP code database is updated each year. For each new ZIP code centroid, the following data needs to be re-estimated: distance from coastline, elevation, surface terrain, and any other special topographical features. This is a technical update.

Additionally, all of the probability distributions for all of the meteorological variables have been re-estimated to include additional years of actual hurricane experience every two to three years. These updates are not substantive and do not result in major changes to loss estimates.

Damageability relationships are continually reviewed and validated as actual events occur and new loss data is received from our client companies. Usually, changes to loss estimates are not significant.

The updates listed above are ongoing and reflect the efforts of AIR professionals to incorporate the most current data available, particularly those relating to recent hurricane activity. There are other revisions to the model, however, that represent one-time refinements to various model components. These are undertaken when new data becomes available or when the results of new research, which may be conducted either by AIR scientists and engineers or by outside experts, warrant such revision.

71. What were the significant model updates in the past 3 years?

A. The main updates to the model from 2003 to 2006 are detailed below.

2003:

- Update of historical storm set to include all landfalling and bypassing hurricanes through 2001
- Incorporation of a new regression model for estimating radius of maximum winds

- Incorporation of higher resolution land use/land cover data for more accurate estimation of local wind speeds (Florida only)
- Increased temporal resolution (time step increased from one hour to 30 minutes) for fast moving storms

2004:

- Update of historical storm set to include all landfalling and bypassing hurricanes through 2002
- Incorporation of higher resolution land use/land cover data for all of U.S. Gulf and East coasts for more accurate estimation of local wind speeds (Florida updated in 2003)
- Implementation of a new component-based methodology for the derivation of commercial damage functions that explicitly account for building height

2005:

- Update of historical storm set to include all landfalling and bypassing hurricanes through 2004
- Implementation of an aggregate demand surge function

2006:

- Refinement of distribution governing radius of maximum winds to allow for larger radii for intense hurricanes
- Enhanced storm surge model
- Updated wind damage functions to incorporate finding of AIR's analysis of claims data and post-disaster survey findings
- Updated demand surge function that reflects findings from the 2004 and 2005 hurricane seasons; the update produces a more refined demand surge by coverage

72. Q. What has been your role as to model development?

A. I have been involved in the model development process, and I oversee the process of submitting the model to Florida Commission on Hurricane Loss Prediction Methodology.

73. Q. Did you receive any data from Insurance Services Office on which you relied in preparing your analyses?

A. Yes, we received a data set reflecting the 2004 number of earned house years and the 2004 earned insurance years by territory, construction class, policy form and coverage for North Carolina, for the mobile homeowners lines of business.

Due to limitations of the data reported to ISO, only two territories were available for mobile homeowners: a "beach" territory and a "rest-of-state" territory. ISO also provided a method for mapping these two territories to the seventeen ISO homeowners' territories.

74. Q. What use did you make of such data?

A. For each territory, the house years and insurance years provided were distributed to the five-digit ZIP codes within each territory using a territory-to-ZIP mapping scheme developed by AIR in conjunction with the NCRB and AIR's proprietary industry exposure database by five-digit ZIP code.

A flat $250 deductible was applied.

The data was then analyzed in AIR's CLASIC/2™ software application using the U.S. hurricane model in order to yield loss estimates. For reporting purposes, these loss estimates were rolled up to the homeowners' territory level using the ISO mapping scheme referenced previously, in the response to question 73.

75. Q. What are the areas of highest hurricane frequency in North Carolina?

A. The figures convincingly show that the higher risk areas are the coastal zones. The hurricane is at maximum force in coastal areas just as it crosses over land. As it travels inland, the storm dissipates because of the elimination of its primary energy source (heat and moisture from the sea) and because of surface frictional effects.

76. Q. Between the northern and southern coasts of North Carolina, which one experiences greater hurricane frequency?

A. The highest frequency of hurricanes occurs in a 100-mile segment which includes Cape Lookout, Cape Hatteras, and Pamlico Sound. The coastline in this area juts out into the Atlantic Ocean where it is exposed as storms move up the coastline. The far northern coast towards Virginia suffers relatively few hurricane landfalls because of the westerly orientation of the coastline in this region.

77. Q. Are there any changes that you have made to your model for North Carolina?

A. No. The model version and settings used for North Carolina were the same as those accepted by the Florida Commission on Hurricane Loss Projection Methodologies.

78. Q. What is demand surge and how is it calculated in the model?

A. Demand Surge, according to the Actuarial Standards Board, is a sudden and usually temporary increase in the cost of materials, services and labor due to the increased demand for them following a catastrophe. Historical evidence from major catastrophic events in past 15 years suggests that after a major event, increased demand for materials and services to repair and rebuild damaged property can put pressure on prices, resulting in temporary inflation. This phenomenon is often referred to as demand surge and it results in increased losses to the insurers.

After Hurricane Andrew in 1992, AIR developed a rudimentary demand surge function to provide companies with the capability to assess the potential impact on losses due to demand surge. In order to develop a default demand surge function AIR reviewed several studies on the impact on prices of material and labor after Hurricane Andrew and the Northridge Earthquake. It was commonly accepted that the demand surge from an event the size of Hurricane Andrew ($15.5 billion) was 8-12 %.

AIR continues to review the impact that catastrophic events have had on material and labor prices. We have found that Hurricane Hugo, for example, had a significant temporary impact on personal incomes in the construction industry in South Carolina. Analyses performed after the 2004 hurricane season in Florida revealed that demand surge had a significant impact on insured losses. Specifically, empirical data reveals that roof rebuilding costs increased substantially in the period following the hurricane season, and losses resulting from Additional Living Expense (Time Element) coverage were significantly impacted due to the amount of time it took to repair damages from the multiple events.

79. Q. Was demand surge used for the analyses you performed for the NCRB?

A. Yes, demand surge was used for both analyses.

80. Q. What does the demand surge factor depend on and how is it applied?

A. AIR's demand surge function relates the level of demand surge to the amount of industry loss. Each event is assigned a demand surge factor based on the amount of industry loss caused by the event, as well as by other events that occur close to the given event in both time and space. The factor is then applied to losses from the specific exposure set to calculate the loss with demand surge.

81. Q. What is storm surge?

A. Storm surge is an abnormal rise in sea level accompanying a hurricane or other storm.

The dominant pattern of the tide in virtually every coastal region of the world is well known and predictable. Sometimes, however, the regular tidal pattern is modified by meteorological events, producing extreme water levels that can cause coastal flooding. Storm surge is the difference between these storm-induced extremes and normal levels.

Physically, two effects contribute to the sea level increase during a storm: direct wind interaction with the sea, and low barometric pressure within the storm system. The direct action of wind stress on the sea surface produces a flux of water away from, and generally at an angle to, the direction of the wind. Low barometric pressure, while small in its effect, can cause an increase in water level beneath low-pressure centers of the storm. The combined effects of these forces cause water to "pile up", producing water levels that can far exceed local tide levels.

Storm surge flooding is a complex process, influenced by wind-sea interaction, the propagation of waves in shallow coastal regions, tidal effects, and the effectiveness of man-made sea defenses subjected to high water and wave attack.

82. Q. How is storm surge applied in the model?

A. The storm surge module is a fully probabilistic component of the AIR U.S. Hurricane model. In addition to each simulated storm's meteorological parameters, the model incorporates detailed data concerning coastal elevation and geometry, tide heights, and bathymetry (the slope of the continental shelf below the sea level). Certain of these parameters are discussed below.

— *Central Barometric Pressure*: Low barometric pressure relative to standard sea level barometric pressure raises the sea surface level. In terms of hurricane pressures, this increase in sea surface level forms as a dome beneath the hurricane and travels with the hurricane.

— *Forward Speed*: Storm surge is not only caused by low barometric pressure in the eye, but also by winds pushing the ocean's surface ahead of the storm. Friction of ocean water with the ocean floor inhibits the water from moving around and out of the way of the oncoming winds. Water begins to pile up in a dome on the right side of the storm track. The faster the forward speed of the storm, the more pronounced this effect will be.

— *Storm Track Angle at Landfall*: Hurricanes that make landfall perpendicular to the coastline cause greater levels of surge than hurricanes that make landfall at more oblique angles or that skirt along the coast. Storm surge forms primarily on the right side of the storm track because, on the right-hand side of the storm, the circulating winds of the hurricane and the winds that determine the storm's forward speed are moving in the same direction. This combined effect produces higher "effective" winds to the right of the storm center. A perpendicular track brings this enormous volume of water on shore. A parallel track exposes the coast to the weaker side of the storm system and the effects of storm surge are thus diminished.

— *Coastline Orientation*: The geographic configuration of the coastline relative to the landfall angle can exacerbate high surge levels. For example, high surge levels may result from minor surges that are forced into narrow inlets or bays.

— *Bathymetry (Water Depth)*: Another factor that affects the potential for destructive storm surge is the depth of the ocean. The shallower the ocean, the easier it is for significant storm surges to be formed.

— *Tide Height*: The total sea surface elevation is the product of the storm surge generated by the hurricane and the height of the astronomical tide. The higher the tide, the greater the sea level elevation. This is the reason that some minor hurricanes have had associated high surge levels reported.

— *Bays and Estuaries:* The orientation (relative to hurricane track angle) and bathymetry of bays and estuaries can amplify the impact of storm surge. Specifically, the wave heights may be amplified because a larger volume of water is forced into a smaller area.

The variables above dictate the likely maximum storm surge generated from a hurricane; those below are used directly in the loss calculation.

— *Overland Elevation and Surge Attenuation:* The height of the storm surge is calculated, taking into account the hurricane intensity and the physical parameters at the locations of interest, namely coastline orientation, bathymetry and tide height. As the surge comes onshore, its progress is impeded by the friction it experiences with the local terrain. This loss of momentum is referred to as attenuation. Steeper slopes lead to more rapid attenuation, as does rougher terrain; gradual slopes and smoother terrain lead to slower attenuation.

— *Damage Calculation:* The height of the surge is the main parameter used in the loss calculation. Observation data available from FEMA and the Army Corps of Engineers and AIR's post-disaster surveys was used in the development of the damage functions.

Building damage from storm surge is modeled as a function of construction type, height and occupancy. Contents damage is a function of occupancy, as occupancy gives insight into the kinds of contents present. For time element, the model estimates the effective downtime (days of loss of use) before the facility is restored or usable. Time element damage is a function of both construction type and occupancy, as some occupancy types may be usable before full restoration.

83. Q. Was storm surge used for the analyses you performed for the NCRB?

A. Yes. The NCRB instructed AIR to run the analyses with 100% storm surge applied, as all of the mobile homeowners policies cover flood.

84. Q. Now let me ask you several questions concerning Exhibit A to your prefiled testimony. What is the significance of the figure from the column called "Estimated Hurricane Loss Cost per 100" from the exhibit titled Loss Costs by Territory?

A. The figures show the estimated loss costs per $100 of exposure, including contents and all other coverages.

85. Q. On the page near the beginning of Exhibit A titled "Exposure Information and Assumptions," there is reference to the estimation of ZIP code distribution using certain information. One such type of information is "the 2004 total earned insurance years by mobile home sub-line, form/status, construction class, and territory." Please explain to what that phrase refers.

A. This phrase refers to the insured values under mobile home policies. The source of this data is ISO.

86. Q. On the same page there is also reference to AIR's "proprietary database of insured mobile home properties by line of business, construction class, and five-digit ZIP code." Please explain what is referred to by that phrase.

A. We have developed a database of estimated total insured property values by five-digit ZIP code including estimates for mobile homes, single family homes, tenants, and condominiums. Our estimates of the number of insured mobile homes are based primarily on census data. Our estimates of replacement values are based primarily on census, property tax and residential construction cost data. We continually verify our estimated numbers with actual insurance company exposure data.

87. Q. On the same page there is reference to a "five-digit ZIP code to territory mapping." Please explain what was referred to by that phrase.

A. Since we had to relate our ZIP code-level data to ISO-supplied territory data, we needed a ZIP code to territory mapping. The mapping simply shows which ZIP codes are included in each territory. Note that some ZIP codes can cross territories. In our mapping procedure, however, each ZIP code is assigned to only one territory. The assignment is based on the territory in which-the population centroid of the ZIP code lies.

88. Q. Beginning on page 6, your Exhibit A shows exposure by territory. What is the source of your data on this exhibit?

A. The exposure by the two mobile homeowners territories was provided by ISO. As requested by the NCRB, all results shown in the exhibits are by homeowners' territories. ISO provided a scheme by which to map mobile homeowners territories to homeowners' territories.

89. Q. Page 9 of your Exhibit A shows the average annual aggregate losses by territory. What is source of the data on these exhibits?

A. The average annual aggregate loss is the sum of all losses caused by all simulated events, divided by the number of simulation years. It represents the long term average annual hurricane loss potential by territory. As the exhibit shows, the territory with the highest average annual aggregate loss is territory #42. This fact is a function of that territory's population and its exposure to hurricanes.

90. Q. What is the source of the data on page 10 of Exhibit A?

A. The data for this exhibit comes from exhibits titled "Insured Value by Territory" and "Average Annual Loss by Territory."

91. Q. What does "Distribution of Exposure and Loss by Territory" on page 10 of Exhibit A show?

A. It shows the distribution of exposures and average annual losses by territory. Obviously, coastal territories account for a much higher percentage of losses than exposures because of their vulnerability to hurricanes. For instance, this exhibit demonstrates that territory 60 has 34.6% of the statewide insurance in force and accounts for 4.9% of total annual hurricane losses. Territory 5, on the other hand, accounts for only 0.4% of insurance in force, but its average annual hurricane loss is 4.2% of the statewide total.

92. Q. What is the source of the data on pages 11-13 of Exhibit A?

A. The data for this exhibit comes from exhibits titled "Insured Value by Territory" and "Average Annual Loss by Territory."

93. Q. What does "Loss Costs by Territory" in Exhibit A show?

A. It shows the estimated hurricane pure premiums and loss costs, per $100 of exposure, by territory for all coverages and broken down by mobile homeowners. As can be seen from these exhibits, loss costs are highest in territories 5, 6, 42 and 43.

94. Q. On page 11 of Exhibit A, please explain the significance of the number "270.85" for territory 05 in the column entitled "Pure Premium."

A. $270.85 is the amount, exclusive of expenses and provisions for profit and contingencies, that on average needs to be collected each year to cover the long run hurricane loss potential on homeowners policies in territory 05. This number is based on 2004 values. By comparison, only $3.89 needs to be collected to cover that same potential in territory 60.

95. Q. Do the explanations set forth above for Exhibit A also follow for similar pages in Exhibit B?

A. Yes. The explanations follow of the format of the numbers. The loss costs and pure premiums in Exhibit RB-6B reflect those appropriate to the near-term analysis.

96. Q. Are the numbers used in your model true and accurate to the best of your knowledge, information and belief?

A. Yes. The AIR research team collects the available scientific data pertaining to the meteorological variables critical to the characterization of hurricanes and therefore to the simulation process. Data sources used in the development of the AIR hurricane model include the most complete databases available from various agencies of the National Weather Service, including the National Hurricane Center. All data is cross-verified. If data from different sources conflict, detailed analysis and the use of expert judgment are applied to prepare the data for modeling purposes. Furthermore, to the extent possible, we cross-check and verify the numbers that go into our models as well as the numbers that come out of the models.

To the best of my knowledge, information and belief, the data that we use are the most reliable and accurate data that is publicly available.

97. Q. Are the Exhibits to your prefiled testimony true and accurate to the best of your knowledge, information and belief?

A. Yes.

98. Q. Do you have an opinion as to whether your model is a reasonable method of projecting the wind losses used in the filing for mobile home insurance in North Carolina, and if so what is that opinion?

A. Yes. It is a reasonable, consistent, and reliable method of doing so. The projected hurricane losses in the filing are reasonable projections of insured hurricane losses on the policy forms reviewed.

INTRODUCTION

This report contains the results of the Catastrophe Loss Analysis Service (CLAS™) for Mobile Home policies in the state of North Carolina as requested by the North Carolina Rate Bureau (NCRB). Loss estimates are provided using AIR Worldwide's (AIR) Atlantic Tropical Cyclone model.

The NCRB provided AIR with information that represents the exposures analyzed. AIR reviewed and reformatted the exposure data as necessary and used them as input to the AIR hurricane model, which generated the loss estimates that form the core of this analysis. The AIR model is a system of computer programs that incorporate the fundamental physical characteristics, expressed mathematically, of hurricanes. These characteristics are then overlaid on the geographical distribution of the NCRB's exposures. Building, contents, and time element damage are estimated by applying AIR's proprietary damageability relationships. Finally, insured losses are calculated by applying policy conditions to the total damage estimates.

The AIR model simulated 100,000 years of potential hurricane experience. The results of the model are expressed in terms of probability distributions of event losses. These distributions represent a range of possible losses and the relative likelihood of occurrence of various levels of loss. The analysis includes storm surge.

All aspects of the AIR hurricane model undergo extensive validation tests. The stochastic model variables have been compared to the actual characteristics of historical hurricanes occurring in North Carolina since 1900. The simulated event characteristics parallel patterns seen in the historical record, and resulting loss estimates correspond closely to actual claims data provided by clients.

The model has also undergone extensive internal and external peer review. Internal peer review is a standard part of AIR's operating process and is conducted by AIR's technical staff of over 100 professionals, over 20 of whom hold Ph.D. credentials in their fields of expertise. The AIR hurricane model has also undergone extensive external review, beginning with Dr. Walter Lyons' systematic review in 1986. Dr. Lyons, a Certified Consulting Meteorologist, was contracted by the E.W. Blanch Company. A further independent review was conducted by engineer Dr. Joseph E. Minor. During 1996 and 1997, Duff & Phelps, Fitch, Moody's and Standard & Poors reviewed all aspects of AIR's hurricane model in conjunction with their rating of the USAA catastrophe bond.

Probably the most extensive peer review of the AIR hurricane model has been conducted by the Florida Commission on Hurricane Loss Projection Methodology (FCHLPM). The FCHLPM was established in 1995 with the mission to "assess the effectiveness of various methodologies that have the potential for improving the accuracy of projecting insured Florida losses resulting from hurricanes and to adopt findings regarding the accuracy or reliability of these methodologies for use in residential rate filings." The Commission has established 48 standards that need to be met before a catastrophe model is acceptable for ratemaking purposes in the state of Florida. The AIR hurricane model has been reviewed and has met the standards of the Commission annually since 1996.

Catastrophe modeling has become widely used and accepted. AIR was the first organization to have its model approved under the rigorous standards of the Florida Hurricane Commission. AIR's simulation methodology is a robust technique for estimating potential hurricane losses. It is based on mathematical/statistical models that represent real-world systems. As with all models, these representations are not intended to represent specific prior or future events.

The hurricane model used in this report is Atlantic Tropical Cyclone v.8.00.208, CLASIC/2 V8.5.1.

EXECUTIVE SUMMARY

To estimate the hurricane loss potential for NCRB, AIR simulated 100,000 years of potential hurricanes. The simulation included aggregate demand surge, which is demand surge caused by a given event, as well as by other events that occur close to the given event in both time and space.

The long-term average annual aggregate hurricane loss for the NCRB Mobile Home policies is $10.1 million including aggregate demand surge. In the 100,000-year sample, 47,796 hurricanes resulted in losses to North Carolina's insured properties net of deductibles. Given that a hurricane has occurred, the estimated average hurricane loss is $21.2 million.

The largest simulated hurricane loss is $1.0 billion including aggregate demand surge. This loss resulted from a category 5 hurricane with landfall in Pender County, North Carolina. Note that higher occurrence losses, that is, losses in excess of $1.0 billion, are possible. They have, however, a very low probability of occurrence. Nevertheless, it should be understood that the largest simulated hurricane losses do not represent the worst possible scenarios.

Hurricane events of specified probabilities of exceedance and estimated return times appear below.

Annual Maximum Occurrence Loss

Hurricane Occurrence ($millions)	Estimated Probablility of Exceedance	Estimated Average Return Time (years)
16	0.100	10
47	0.050	20
120	0.020	50
208	0.010	100
338	0.004	250
440	0.002	500
553	0.001	1000

Actual hurricane losses are influenced by a number of characteristics, the most important of which is intensity as measured by wind speed, commonly expressed in terms of Saffir-Simpson (SS) category. Given the same landfall point, storms with higher wind speeds typically result in larger losses than do storms with lower wind speeds. Other characteristics that influence loss amounts include radius of maximum winds, forward speed, and storm track.

Actual losses also depend on the geographical distribution of exposures in relation to the area affected by the storm. That is, a severe hurricane could result in a smaller overall loss than a less severe hurricane if the less severe hurricane strikes an area of higher property value.

EXPOSURE INFORMATION AND ASSUMPTIONS

The NCRB provided exposure information used to generate the loss estimates. The exposure file contained information on number of risks, coverage amounts of insurance and construction class by subline of business and by Mobile Home territory. NCRB requested that AIR allocate territory exposure to ZIP Code. This was completed using AIR's database of industry exposure by ZIP Code using the following information:

- The 2004 total earned insurance years by mobile home sub-line, form/status, construction class, and territory
- AIR's proprietary database of insured mobile home properties by line of business, construction class, and five-digit ZIP Code
- A five-digit ZIP Code to territory mapping algorithm

The information on house-years and insurance-years by sub-line of business, form/status construction class, coverage, and territory was provided by the Insurance Services Office (ISO) and represents the Full Statistical Plan experience of companies reporting to either ISO or the National Association of Independent Insurers. House years and insurance years were then distributed to the five digit ZIP Codes within each territory using a territory to zip mapping developed by AIR in conjunction with the NCRB and AIR's proprietary database of insured residential properties by five digit ZIP Code. This database was developed using U.S. Census data and other information. NCRB requested that the results of the analysis be reported by Homeowners territories rather than Mobile Home territories.

Exhibit Insured Value by Territory shows total insured values, number of risks, and average values by territory.

Insured Value by Territory
North Carolina

Territory	*MH-C*	*MH-F*	*Total*
5			
Value	26,468,512	25,682,501	52,151,012
Num. Risks	1,130	452	1,582
Avg. Value	23,423	56,820	32,965
Avg. Ded $	250	250	250
6			
Value	5,650,214	5,482,424	11,132,638
Num. Risks	241	96	337
Avg. Value	23,445	57,109	33,035
Avg. Ded $	250	250	250
32			
Value	90,208,785	81,349,129	171,557,914
Num. Risks	3,971	1,395	5,366
Avg. Value	22,717	58,315	31,971
Avg. Ded $	250	250	250
34			
Value	188,536,687	170,019,974	358,556,661
Num. Risks	8,299	2,915	11,214
Avg. Value	22,718	58,326	31,974
Avg. Ded $	250	250	250
36			
Value	90,992,925	82,056,257	173,049,181
Num. Risks	4,005	1,407	5,412
Avg. Value	22,720	58,320	31,975
Avg. Ded $	250	250	250
38			
Value	57,961,023	52,268,510	110,229,532
Num. Risks	2,551	896	3,447
Avg. Value	22,721	58,335	31,978
Avg. Ded $	250	250	250
39			
Value	181,757,142	163,906,268	345,663,410
Num. Risks	8,000	2,810	10,810
Avg. Value	22,720	58,330	31,976
Avg. Ded $	250	250	250
41			
Value	363,171,223	327,503,167	690,674,390
Num. Risks	15,986	5,615	21,601
Avg. Value	22,718	58,326	31,974
Avg. Ded $	250	250	250

Territory	MH-C	MH-F	Total
42			
Value	252,378,934	244,884,272	497,263,206
Num. Risks	10,774	4,310	15,084
Avg. Value	23,425	56,818	32,966
Avg. Ded $	250	250	250
43			
Value	207,357,116	201,199,425	408,556,541
Num. Risks	8,852	3,541	12,393
Avg. Value	23,425	56,820	32,967
Avg. Ded $	250	250	250
44			
Value	116,722,522	105,258,879	221,981,401
Num. Risks	5,138	1,805	6,943
Avg. Value	22,718	58,315	31,972
Avg. Ded $	250	250	250
45			
Value	613,442,607	553,194,703	1,166,637,309
Num. Risks	27,002	9,484	36,486
Avg. Value	22,718	58,329	31,975
Avg. Ded $	250	250	250
46			
Value	226,763,517	204,492,441	431,255,958
Num. Risks	9,982	3,506	13,488
Avg. Value	22,717	58,326	31,973
Avg. Ded $	250	250	250
47			
Value	830,551,399	748,980,636	1,579,532,035
Num. Risks	36,559	12,841	49,400
Avg. Value	22,718	58,327	31,974
Avg. Ded $	250	250	250
53			
Value	230,455,510	207,821,833	438,277,343
Num. Risks	10,144	3,563	13,707
Avg. Value	22,718	58,328	31,975
Avg. Ded $	250	250	250
57			
Value	544,095,216	490,658,112	1,034,753,328
Num. Risks	23,950	8,412	32,362
Avg. Value	22,718	58,328	31,974
Avg. Ded $	250	250	250
60			
Value	2,141,764,346	1,931,415,714	4,073,180,060
Num. Risks	94,275	33,113	127,388
Avg. Value	22,718	58,328	31,975
Avg. Ded $	250	250	250

Territory	*MH-C*	*MH-F*	*Total*
Total			
Value	6,168,277,675	5,596,174,245	11,764,451,920
Num. Risks	270,859	96,161	367,020
Avg. Value	22,773	58,196	32,054
Avg. Ded $	250	250	250

* US Dollars

LONG-TERM AVERAGE LOSSES

Exhibit Average Annual Loss by Territory shows the long run average annual hurricane loss potential by territory including aggregate demand surge.

Exhibit titled Distribution of Exposure and Loss by Territory shows North Carolina's distribution of Mobile Home average annual hurricane losses including aggregate demand surge and total insurance in force by territory. The coastal territories account for much higher shares of loss than exposure due to their vulnerability to the hurricane peril.

Average Annual Loss by Territory
North Carolina

Territory	MH-C	MH-F	Total*
5	215,848	212,631	428,479
6	49,155	48,367	97,522
32	45,320	40,070	85,390
34	160,324	143,012	303,336
36	17,245	15,084	32,329
38	12,485	10,952	23,436
39	40,192	35,281	75,473
41	457,104	410,806	867,910
42	1,265,494	1,238,987	2,504,481
43	1,021,258	1,003,338	2,024,596
44	52,487	46,433	98,919
45	779,664	697,657	1,477,321
46	79,647	70,078	149,725
47	550,072	487,996	1,038,068
53	111,676	98,743	210,420
57	124,005	108,716	232,721
60	264,940	230,984	495,925
Total	**5,246,916**	**4,899,134**	**10,146,050**

*US Dollars

Distribution of Exposure and Loss by Territory
North Carolina

Territory	Insured Value*	Percent of Total	Est. Avg. Annual Loss*	Percent of Total
5	52,151,012	0.4%	428,479	4.2%
6	11,132,638	0.1%	97,522	1.0%
32	171,557,914	1.5%	85,390	0.8%
34	358,556,661	3.0%	303,336	3.0%
36	173,049,181	1.5%	32,329	0.3%
38	110,229,532	0.9%	23,436	0.2%
39	345,663,410	2.9%	75,473	0.7%
41	690,674,390	5.9%	867,910	8.6%
42	497,263,206	4.2%	2,504,481	24.7%
43	408,556,541	3.5%	2,024,596	20.0%
44	221,981,401	1.9%	98,919	1.0%
45	1,166,637,309	9.9%	1,477,321	14.6%
46	431,255,958	3.7%	149,725	1.5%
47	1,579,532,035	13.4%	1,038,068	10.2%
53	438,277,343	3.7%	210,420	2.1%
57	1,034,753,328	8.8%	232,721	2.3%
60	4,073,180,060	34.6%	495,925	4.9%
Total	**11,764,451,920**	**100.0%**	**10,146,050**	**100.0%**

* US Dollars

ESTIMATED PURE PREMIUMS AND LOSS COSTS

Loss Costs by Territory shows the estimated hurricane loss costs and pure premiums by territory. Results are also shown separately for the Mobile Home Subline-C and Subline-F exposure. Clearly, the coastal territories are most vulnerable to hurricane losses. The estimated loss costs are highest in coastal territories 5 and 6, as well as territories 42 and 43. These territories form part of the eastern tip of North Carolina, an area of relatively high hurricane frequency.

For all exhibits, the estimated loss costs are per $100 of exposure. The estimated hurricane pure premiums are calculated by dividing the estimated average annual losses by the number of risks. The estimated hurricane pure premiums show the amounts, exclusive of expenses and provisions for profit and contingencies, that need to be collected each year to cover only the long run hurricane loss potential.

Loss Costs by Territory- All Lines

North Carolina

Territory	Insured Value	Risk Count	Average Annual Loss	Pure Premium	Loss Cost (Per $100)
5	52,151,012	1,582	428,479	270.85	0.8216
6	11,132,638	337	97,522	289.38	0.8760
32	171,557,914	5,366	85,390	15.91	0.0498
34	358,556,661	11,214	303,336	27.05	0.0846
36	173,049,181	5,412	32,329	5.97	0.0187
38	110,229,532	3,447	23,436	6.80	0.0213
39	345,663,410	10,810	75,473	6.98	0.0218
41	690,674,390	21,601	867,910	40.18	0.1257
42	497,263,206	15,084	2,504,481	166.04	0.5037
43	408,556,541	12,393	2,024,596	163.37	0.4955
44	221,981,401	6,943	98,919	14.25	0.0446
45	1,166,637,309	36,486	1,477,321	40.49	0.1266
46	431,255,958	13,488	149,725	11.10	0.0347
47	1,579,532,035	49,400	1,038,068	21.01	0.0657
53	438,277,343	13,707	210,420	15.35	0.0480
57	1,034,753,328	32,362	232,721	7.19	0.0225
60	4,073,180,060	127,388	495,925	3.89	0.0122
Total	**11,764,451,920**	**367,020**	**10,146,050**	**27.64**	**0.0862**

* US Dollars

Loss Costs by Territory – Mobile Home, Subline C

North Carolina

Territory	Insured Value	Risk Count	Average Annual Loss	Pure Premium	Loss Cost (Per $100)
5	26,468,512	1,130	215,848	191.02	0.8155
6	5,650,214	241	49,155	203.96	0.8700
32	90,208,785	3,971	45,320	11.41	0.0502
34	188,536,687	8,299	160,324	19.32	0.0850
36	90,992,925	4,005	17,245	4.31	0.0190
38	57,961,023	2,551	12,485	4.89	0.0215
39	181,757,142	8,000	40,192	5.02	0.0221
41	363,171,223	15,986	457,104	28.59	0.1259
42	252,378,934	10,774	1,265,494	117.46	0.5014
43	207,357,116	8,852	1,021,258	115.37	0.4925
44	116,722,522	5,138	52,487	10.22	0.0450
45	613,442,607	27,002	779,664	28.87	0.1271
46	226,763,517	9,982	79,647	7.98	0.0351
47	830,551,399	36,559	550,072	15.05	0.0662
53	230,455,510	10,144	111,676	11.01	0.0485
57	544,095,216	23,950	124,005	5.18	0.0228
60	2,141,764,346	94,275	264,940	2.81	0.0124
Total	**6,168,277,675**	**270,859**	**5,246,916**	**19.37**	**0.0851**

* US Dollars

Loss Costs by Territory – Mobile Home, Subline F

North Carolina

Territory	Insured Value	Risk Count	Average Annual Loss	Pure Premium	Loss Cost (Per $100)
5	25,682,501	452	212,631	470.42	0.8279
6	5,482,424	96	48,367	503.82	0.8822
32	81,349,129	1,395	40,070	28.72	0.0493
34	170,019,974	2,915	143,012	49.06	0.0841
36	82,056,257	1,407	15,084	10.72	0.0184
38	52,268,510	896	10,952	12.22	0.0210
39	163,906,268	2,810	35,281	12.56	0.0215
41	327,503,167	5,615	410,806	73.16	0.1254
42	244,884,272	4,310	1,238,987	287.47	0.5059
43	201,199,425	3,541	1,003,338	283.35	0.4987
44	105,258,879	1,805	46,433	25.72	0.0441
45	553,194,703	9,484	697,657	73.56	0.1261
46	204,492,441	3,506	70,078	19.99	0.0343
47	748,980,636	12,841	487,996	38.00	0.0652
53	207,821,833	3,563	98,743	27.71	0.0475
57	490,658,112	8,412	108,716	12.92	0.0222
60	1,931,415,714	33,113	230,984	6.98	0.0120
Total	**5,596,174,245**	**96,161**	**4,899,134**	**50.95**	**0.0875**

* US Dollars

INTRODUCTION

This report contains the results of the Catastrophe Loss Analysis Service (CLAS™) for Mobile Home policies in the state of North Carolina as requested by the North Carolina Rate Bureau (NCRB). Loss estimates are provided using AIR Worldwide's (AIR) Atlantic Tropical Cyclone model and the 10,000-year near-term hurricane catalog.

The NCRB provided AIR with information that represents the exposures analyzed. AIR reviewed and reformatted the exposure data as necessary and used them as input to the AIR hurricane model, which generated the loss estimates that form the core of this analysis. The AIR model is a system of computer programs that incorporate the fundamental physical characteristics, expressed mathematically, of hurricanes. These characteristics are then overlaid on the geographical distribution of the NCRB's exposures. Building, contents, and time element damage are estimated by applying AIR's proprietary damageability relationships. Finally, insured losses are calculated by applying policy conditions to the total damage estimates.

All aspects of the AIR hurricane model undergo extensive validation tests. The stochastic model variables have been compared to the actual characteristics of historical hurricanes occurring in North Carolina since 1900. The simulated event characteristics parallel patterns seen in the historical record, and resulting loss estimates correspond closely to actual claims data provided by clients.

The model has also undergone extensive internal and external peer review. Internal peer review is a standard part of AIR's operating process and is conducted by AIR's technical staff of over 100 professionals, over 20 of whom hold Ph.D. credentials in their fields of expertise. The AIR hurricane model has also undergone extensive external review, beginning with Dr. Walter Lyons' systematic review in 1986. Dr. Lyons, a Certified Consulting Meteorologist, was contracted by the E.W. Blanch Company. A further independent review was conducted by engineer Dr. Joseph E. Minor. During 1996 and 1997, Duff & Phelps, Fitch, Moody's and Standard & Poors reviewed all aspects of AIR's hurricane model in conjunction with their rating of the USAA catastrophe bond.

Probably the most extensive peer review of the AIR hurricane model has been conducted by the Florida Commission on Hurricane Loss Projection Methodology (FCHLPM). The FCHLPM was established in 1995 with the mission to "assess the effectiveness of various methodologies that have the potential for improving the accuracy of projecting insured Florida losses resulting from hurricanes and to adopt findings regarding the accuracy or reliability of these methodologies for use in residential rate filings." The Commission has established 48 standards that need to be met before a catastrophe model is acceptable for ratemaking purposes in the state of Florida. The AIR hurricane model has been reviewed and has met the standards of the Commission annually since 1996.

Catastrophe modeling has become widely used and accepted. AIR was the first organization to have its model approved under the rigorous standards of the Florida Hurricane Commission. AIR's simulation methodology is a robust technique for estimating potential hurricane losses. It is based on mathematical/statistical models that represent real-world systems. As with all models, these representations are not intended to represent specific prior or future events.

Catastrophe models combine the latest scientific and engineering knowledge with computer simulation technology to develop probability distributions of long-run potential losses. They are not forecasting tools.

Forecasting hurricane activity on a short term time horizon, such as a year or a few years ahead, is difficult because of the many climatological factors that influence hurricane activity—and landfall activity in particular—in the North Atlantic. There are several important mechanisms within the earth's environment that are reported to affect hurricane activity. These mechanisms are correlated with a variety of climate signals, which are measurements of the natural feedback systems of the earth in its effort to maintain equilibrium. Climate signals are typically presented as a measurement of anomalies.

For example, the energy source of the hurricane "engine" is heat and moisture from the ocean's surface. The warmer the ocean, the more heat energy is available to tropical storms. Scientists have observed that sea surface temperatures (SSTs) in the North Atlantic undergo fluctuations above and below their mean values in phases lasting multiple decades. (Some scientists refer to this fluctuation as the Atlantic Multi-Decadal Oscillation, or AMO.)

Other climate signals include the:

- El Niño Southern Oscillation (ENSO), which measures sea surface temperature anomalies in the Pacific Ocean off the coast of Peru. These SSTs alternate over an approximate three- to eight-year cycle with an opposite cold phase known as "La Niña." Certain researchers have concluded that the presence of El Niño has a mitigating effect on the frequency of hurricane activity in the Atlantic and the opposite effect in the Pacific.

- Quasi-Biennial Oscillation (QBO), a signal tracking the direction of the equatorial winds in the stratosphere. One theory hypothesizes that when these winds blow from west to east, they have a positive impact on hurricane formation. The QBO has an approximate two-year cycle.

- North Atlantic Oscillation (NAO), a pressure pattern between the high pressure system near the Azores and the low pressure system near Iceland. Scientists have observed that the large-scale general circulation associated with the NAO steers North Atlantic tropical cyclones in a characteristic pattern to the west and eventually to the north. Informally known as the "Bermuda High," when it is in a more southwesterly position, hurricanes are more likely to make landfall than when it is further north and east, off the northern African Coast. The location of the Bermuda High can change several times during a single hurricane season.

These last three climate fluctuations have various relatively short periods so it is difficult to use the above signals for estimating hurricane activity over a five year time horizon or longer. On the other hand, scientists have found that the multi-decadal periods of warm and cool phases of SSTs in the North Atlantic are useful for forecasting SSTs to predict near-term hurricane activity.

Since 1995, SSTs in the North Atlantic have been in a warm phase characterized by elevated SSTs and above-normal hurricane activity. However there is uncertainty associated with quantifying the time horizon and magnitude of this elevated risk and its impact on insured losses.

While recognizing these challenges, AIR has reviewed current scientific research and conducted extensive internal analyses. Based on this research, AIR has developed an alternative catalog of simulated hurricanes ("near-term sensitivity catalog") that incorporates the impact of SST anomalies on hurricane activity over the next several years.

The first step in the development of the near-term sensitivity catalog is forecasting SSTs over a five-year horizon. For short-term forecasts, climate models, such as general circulation models, perform quite well. However, the forecast skill of such models does not extend beyond a few months. Therefore, to project hurricane activity for a multi-year horizon, scientists rely on statistical modeling techniques. AIR used a blend of well-accepted time series models and SST data from NOAA.

Forecasted SSTs were then used as input into a generalized linear model (GLM) to capture the correlation between SST variations and landfall hurricane activity. The GLM model provides a method for computing the regional relationship between climate and hurricane risk. GLM output was used to develop a revised landfall frequency distribution by coastal segment.

The results presented in this report are provided based on the results of AIR's research on the relationship between SSTs and near-term risk. However, the interaction of other shorter-term climate fluctuations, such as those listed above (ENSO, QBO, NAO), can affect the likelihood that hurricanes will make landfall in any given year. This analysis is limited by a number of other additional factors, including but not limited to the following: uncertainty in forecasting SST conditions; uncertainty in translating higher SSTs to increased hurricane frequency; fewer years of data from periods of warm SST conditions compared to more than 100 years of data used in creating the long-term catalog; random events that influence climate (for example, volcanic eruptions) cannot be predicted or accounted for.

The AIR model simulated 10,000 years of potential hurricane experience. The results of the model are expressed in terms of probability distributions of event losses. These distributions represent a range of possible losses and the relative likelihood of occurrence of various levels of loss. The hurricane model used in this report is Atlantic Tropical Cyclone v.8.00.208, CLASIC/2 V8.5.1. The analysis includes storm surge.

EXECUTIVE SUMMARY

To estimate the hurricane loss potential for NCRB, AIR simulated 10,000 years of potential hurricanes using AIR Worldwide's near-term hurricane catalog. The simulation included aggregate demand surge, which is demand surge caused by a given event, as well as by other events that occur close to the given event in both time and space.

The long-term average annual aggregate hurricane loss for the NCRB Mobile Home policies is \$15.5 million including aggregate demand surge. In the 10,000-year sample, 6,487 hurricanes resulted in losses to North Carolina's insured properties net of deductibles. Given that a hurricane has occurred, the estimated average hurricane loss is \$23.9 million.

The largest simulated hurricane loss is \$928.4 million including aggregate demand surge. This loss resulted from a category 5 hurricane with landfall in Brunswick County, North Carolina. Note that higher occurrence losses, that is, losses in excess of \$928.4 million, are possible. They have, however, a very low probability of occurrence. Nevertheless, it should be understood that the largest simulated hurricane losses do not represent the worst possible scenarios.

Hurricane events of specified probabilities of exceedance and estimated return times appear below.

Annual Maximum Occurrence Loss

Hurricane Occurrence ($millions)	Estimated Probablility of Exceedance	Estimated Average Return Time (years)
34	0.100	10
74	0.050	20
161	0.020	50
260	0.010	100
406	0.004	250
525	0.002	500
631	0.001	1000

Actual hurricane losses are influenced by a number of characteristics, the most important of which is intensity as measured by wind speed, commonly expressed in terms of Saffir-Simpson (SS) category. Given the same landfall point, storms with higher wind speeds typically result in larger losses than do storms with lower wind speeds. Other characteristics that influence loss amounts include radius of maximum winds, forward speed, and storm track.

Actual losses also depend on the geographical distribution of exposures in relation to the area affected by the storm. That is, a severe hurricane could result in a smaller overall loss than a less severe hurricane if the less severe hurricane strikes an area of higher property value.

EXPOSURE INFORMATION AND ASSUMPTIONS

The NCRB provided exposure information used to generate the loss estimates. The exposure file contained information on number of risks, coverage amounts of insurance and construction class by subline of business and by Mobile Home territory. NCRB requested that AIR allocate territory exposure to ZIP Code. This was completed using AIR's database of industry exposure by ZIP Code using the following information:

- The 2004 total earned insurance years by mobile home sub-line, form/status, construction class, and territory
- AIR's proprietary database of insured mobile home properties by line of business, construction class, and five-digit ZIP Code
- A five-digit ZIP Code to territory mapping algorithm

The information on house-years and insurance-years by sub-line of business, form/status construction class, coverage, and territory was provided by the Insurance Services Office (ISO) and represents the Full Statistical Plan experience of companies reporting to either ISO or the Property Casualty Insurers Association of America. House years and insurance years were then distributed to the five digit ZIP Codes within each territory using a territory to zip mapping developed by AIR in conjunction with the NCRB and AIR's proprietary database of insured residential properties by five digit ZIP Code. This database was developed using U.S. Census data and other information. NCRB requested that the results of the analysis be reported by Homeowners territories rather than Mobile Home territories.

Exhibit Insured Value by Territory shows total insured values, number of risks, and average values by territory.

Insured Value by Territory
North Carolina

Territory	*MH-C*	*MH-F*	*Total*
5			
Value	26,468,512	25,682,501	52,151,012
Num. Risks	1,130	452	1,582
Avg. Value	23,423	56,820	32,965
Avg. Ded $	250	250	250
6			
Value	5,650,214	5,482,424	11,132,638
Num. Risks	241	96	337
Avg. Value	23,445	57,109	33,035
Avg. Ded $	250	250	250
32			
Value	90,208,785	81,349,129	171,557,914
Num. Risks	3,971	1,395	5,366
Avg. Value	22,717	58,315	31,971
Avg. Ded $	250	250	250
34			
Value	188,536,687	170,019,974	358,556,661
Num. Risks	8,299	2,915	11,214
Avg. Value	22,718	58,326	31,974
Avg. Ded $	250	250	250
36			
Value	90,992,925	82,056,257	173,049,181
Num. Risks	4,005	1,407	5,412
Avg. Value	22,720	58,320	31,975
Avg. Ded $	250	250	250
38			
Value	57,961,023	52,268,510	110,229,532
Num. Risks	2,551	896	3,447
Avg. Value	22,721	58,335	31,978
Avg. Ded $	250	250	250
39			
Value	181,757,142	163,906,268	345,663,410
Num. Risks	8,000	2,810	10,810
Avg. Value	22,720	58,330	31,976
Avg. Ded $	250	250	250
41			
Value	363,171,223	327,503,167	690,674,390
Num. Risks	15,986	5,615	21,601
Avg. Value	22,718	58,326	31,974
Avg. Ded $	250	250	250

Territory	MH-C	MH-F	Total
42			
Value	252,378,934	244,884,272	497,263,206
Num. Risks	10,774	4,310	15,084
Avg. Value	23,425	56,818	32,966
Avg. Ded $	250	250	250
43			
Value	207,357,116	201,199,425	408,556,541
Num. Risks	8,852	3,541	12,393
Avg. Value	23,425	56,820	32,967
Avg. Ded $	250	250	250
44			
Value	116,722,522	105,258,879	221,981,401
Num. Risks	5,138	1,805	6,943
Avg. Value	22,718	58,315	31,972
Avg. Ded $	250	250	250
45			
Value	613,442,607	553,194,703	1,166,637,309
Num. Risks	27,002	9,484	36,486
Avg. Value	22,718	58,329	31,975
Avg. Ded $	250	250	250
46			
Value	226,763,517	204,492,441	431,255,958
Num. Risks	9,982	3,506	13,488
Avg. Value	22,717	58,326	31,973
Avg. Ded $	250	250	250
47			
Value	830,551,399	748,980,636	1,579,532,035
Num. Risks	36,559	12,841	49,400
Avg. Value	22,718	58,327	31,974
Avg. Ded $	250	250	250
53			
Value	230,455,510	207,821,833	438,277,343
Num. Risks	10,144	3,563	13,707
Avg. Value	22,718	58,328	31,975
Avg. Ded $	250	250	250
57			
Value	544,095,216	490,658,112	1,034,753,328
Num. Risks	23,950	8,412	32,362
Avg. Value	22,718	58,328	31,974
Avg. Ded $	250	250	250
60			
Value	2,141,764,346	1,931,415,714	4,073,180,060
Num. Risks	94,275	33,113	127,388
Avg. Value	22,718	58,328	31,975
Avg. Ded $	250	250	250

Territory	*MH-C*	*MH-F*	*Total*
Total			
Value	6,168,277,675	5,596,174,245	11,764,451,920
Num. Risks	270,859	96,161	367,020
Avg. Value	22,773	58,196	32,054
Avg. Ded $	250	250	250

* US Dollars

LONG-TERM AVERAGE LOSSES

Exhibit Average Annual Loss by Territory shows the long run average annual hurricane loss potential by territory including aggregate demand surge.

Exhibit titled Distribution of Exposures and Loss by Territory shows North Carolina's distribution of Mobile Home average annual hurricane losses including aggregate demand surge and total insurance in force by territory. The coastal territories account for much higher shares of loss than exposure due to their vulnerability to the hurricane peril.

Average Annual Loss by Territory
North Carolina

Territory	MH-C	MH-F	Total*
5	300,501	296,537	597,038
6	76,009	74,790	150,799
32	72,604	64,268	136,872
34	256,773	229,218	485,991
36	28,985	25,392	54,377
38	21,203	18,650	39,853
39	68,911	60,669	129,581
41	744,984	670,634	1,415,618
42	1,964,084	1,922,953	3,887,036
43	1,426,160	1,401,010	2,827,170
44	85,074	75,334	160,408
45	1,184,698	1,059,958	2,244,656
46	123,021	108,227	231,248
47	865,886	768,354	1,634,240
53	180,553	159,825	340,378
57	208,874	183,403	392,277
60	427,937	373,423	801,359
Total	**8,036,256**	**7,492,643**	**15,528,900**

*US Dollars

Distribution of Exposure and Loss by Territory
North Carolina

Territory	Insured Value*	Percent of Total	Est. Avg. Annual Loss*	Percent of Total
5	52,151,012	0.4%	597,038	3.8%
6	11,132,638	0.1%	150,799	1.0%
32	171,557,914	1.5%	136,872	0.9%
34	358,556,661	3.0%	485,991	3.1%
36	173,049,181	1.5%	54,377	0.4%
38	110,229,532	0.9%	39,853	0.3%
39	345,663,410	2.9%	129,581	0.8%
41	690,674,390	5.9%	1,415,618	9.1%
42	497,263,206	4.2%	3,887,036	25.0%
43	408,556,541	3.5%	2,827,170	18.2%
44	221,981,401	1.9%	160,408	1.0%
45	1,166,637,309	9.9%	2,244,656	14.5%
46	431,255,958	3.7%	231,248	1.5%
47	1,579,532,035	13.4%	1,634,240	10.5%
53	438,277,343	3.7%	340,378	2.2%
57	1,034,753,328	8.8%	392,277	2.5%
60	4,073,180,060	34.6%	801,359	5.2%
Total	**11,764,451,920**	**100.0%**	**15,528,900**	**100.0%**

* US Dollars

ESTIMATED PURE PREMIUMS AND LOSS COSTS

Exhibit Loss Costs by Territory shows the estimated hurricane loss costs and pure premiums by territory. Results are also shown separately for the Mobile Home Subline-C and Subline-F exposure. Clearly, the coastal territories are most vulnerable to hurricane losses. The estimated loss costs are highest in coastal territories 5 and 6, as well as territories 42 and 43. These territories form part of the eastern tip of North Carolina, an area of relatively high hurricane frequency.

For all exhibits, the estimated loss costs are per $100 of exposure. The estimated hurricane pure premiums are calculated by dividing the estimated average annual losses by the number of risks. The estimated hurricane pure premiums show the amounts, exclusive of expenses and provisions for profit and contingencies, that need to be collected each year to cover only the long run hurricane loss potential.

Loss Costs by Territory- All Lines

North Carolina

Territory	Insured Value	Risk Count	Average Annual Loss	Pure Premium	Loss Cost (Per $100)
5	52,151,012	1,582	597,038	377.39	1.1448
6	11,132,638	337	150,799	447.48	1.3546
32	171,557,914	5,366	136,872	25.51	0.0798
34	358,556,661	11,214	485,991	43.34	0.1355
36	173,049,181	5,412	54,377	10.05	0.0314
38	110,229,532	3,447	39,853	11.56	0.0362
39	345,663,410	10,810	129,581	11.99	0.0375
41	690,674,390	21,601	1,415,618	65.53	0.2050
42	497,263,206	15,084	3,887,036	257.69	0.7817
43	408,556,541	12,393	2,827,170	228.13	0.6920
44	221,981,401	6,943	160,408	23.10	0.0723
45	1,166,637,309	36,486	2,244,656	61.52	0.1924
46	431,255,958	13,488	231,248	17.14	0.0536
47	1,579,532,035	49,400	1,634,240	33.08	0.1035
53	438,277,343	13,707	340,378	24.83	0.0777
57	1,034,753,328	32,362	392,277	12.12	0.0379
60	4,073,180,060	127,388	801,359	6.29	0.0197
Total	**11,764,451,920**	**367,020**	**15,528,900**	**42.31**	**0.1320**

* US Dollars

Loss Costs by Territory – Mobile Home, Subline C

North Carolina

Territory	Insured Value	Risk Count	Average Annual Loss	Pure Premium	Loss Cost (Per $100)
5	26,468,512	1,130	300,501	265.93	1.1353
6	5,650,214	241	76,009	315.39	1.3452
32	90,208,785	3,971	72,604	18.28	0.0805
34	188,536,687	8,299	256,773	30.94	0.1362
36	90,992,925	4,005	28,985	7.24	0.0319
38	57,961,023	2,551	21,203	8.31	0.0366
39	181,757,142	8,000	68,911	8.61	0.0379
41	363,171,223	15,986	744,984	46.60	0.2051
42	252,378,934	10,774	1,964,084	182.30	0.7782
43	207,357,116	8,852	1,426,160	161.11	0.6878
44	116,722,522	5,138	85,074	16.56	0.0729
45	613,442,607	27,002	1,184,698	43.87	0.1931
46	226,763,517	9,982	123,021	12.32	0.0543
47	830,551,399	36,559	865,886	23.68	0.1043
53	230,455,510	10,144	180,553	17.80	0.0783
57	544,095,216	23,950	208,874	8.72	0.0384
60	2,141,764,346	94,275	427,937	4.54	0.0200
Total	**6,168,277,675**	**270,859**	**8,036,256**	**29.67**	**0.1303**

* US Dollars

Loss Costs by Territory – Mobile Home, Subline F

North Carolina

Territory	Insured Value	Risk Count	Average Annual Loss	Pure Premium	Loss Cost (Per $100)
5	25,682,501	452	296,537	656.05	1.1546
6	5,482,424	96	74,790	779.06	1.3642
32	81,349,129	1,395	64,268	46.07	0.0790
34	170,019,974	2,915	229,218	78.63	0.1348
36	82,056,257	1,407	25,392	18.05	0.0309
38	52,268,510	896	18,650	20.81	0.0357
39	163,906,268	2,810	60,669	21.59	0.0370
41	327,503,167	5,615	670,634	119.44	0.2048
42	244,884,272	4,310	1,922,953	446.16	0.7852
43	201,199,425	3,541	1,401,010	395.65	0.6963
44	105,258,879	1,805	75,334	41.74	0.0716
45	553,194,703	9,484	1,059,958	111.76	0.1916
46	204,492,441	3,506	108,227	30.87	0.0529
47	748,980,636	12,841	768,354	59.84	0.1026
53	207,821,833	3,563	159,825	44.86	0.0769
57	490,658,112	8,412	183,403	21.80	0.0374
60	1,931,415,714	33,113	373,423	11.28	0.0193
Total	**5,596,174,245**	**96,161**	**7,492,643**	**77.92**	**0.1339**

* US Dollars

Exhibit RB-7

PREFILED TESTIMONY
OF
JAMES H. VANDER WEIDE

2008 MOBILE HOME INSURANCE RATE FILINGS BY THE NORTH CAROLINA RATE BUREAU

Q. WHAT IS YOUR NAME, OCCUPATION, AND BUSINESS ADDRESS?

A. My name is James H. Vander Weide. I am Research Professor of Finance and Economics at Duke University, the Fuqua School of Business. I am also President of Financial Strategy Associates, a firm that provides strategic and financial consulting services to corporate clients. My business address is 3606 Stoneybrook Drive, Durham, North Carolina.

Q. PLEASE DESCRIBE YOUR EDUCATIONAL BACKGROUND AND PRIOR ACADEMIC EXPERIENCE.

A. I graduated from Cornell University with a Bachelor's Degree in Economics and then attended Northwestern University where I earned a Ph.D. in Finance. I joined the faculty of the School of Business at Duke University where I was subsequently named Assistant Professor, Associate Professor, and then Professor.

Since joining the faculty I have taught courses in corporate finance, investment management, and management of financial institutions. I have also taught a graduate seminar on the theory of public utility pricing and lectured in executive development seminars on the cost of capital, financial analysis, capital budgeting, mergers and acquisitions, cash management, short-run financial planning, and competitive strategy.

I have served as Program Director and taught in numerous executive education programs at Duke, including the Duke Advanced Management Program, the Duke Management Challenge, the Duke Executive Program in Telecommunications, Competitive Strategies in Telecommunications, and the Duke Program for Manager Development for managers from the former Soviet Union. I also teach in tailored programs developed for corporations such as ABB, Accenture, Allstate, AT&T, Progress Energy, GlaxoSmithKline, Lafarge, MidAmerican Energy, Norfolk Southern, The Rank Group, Siemens, TRW, and Wolseley PLC.

In addition to my teaching and executive education activities, I have written research papers on such topics as portfolio management, the cost of capital, capital budgeting, the effect of regulation on the performance of public utilities, and cash management. My articles have been published in *American Economic Review, Financial Management, International Journal of Industrial Organization, Journal of Finance, Journal of Financial and Quantitative Analysis,* *Journal of Bank Research, Journal of Accounting Research, Journal of Cash Management, Management Science, The Journal of Portfolio Management, Atlantic Economic Journal, Journal of Economics and Business*, and *Computers and Operations Research*. I have written a book titled *Managing Corporate Liquidity: an Introduction to Working Capital Management*, and a chapter for *The Handbook of Modern Finance*, "Financial Management in the Short Run."

Q. HAVE YOU PREVIOUSLY PRESENTED EVIDENCE ON THE COST OF CAPITAL AND OTHER REGULATORY ISSUES?

A. Yes. As an expert on financial and economic theory, I have testified on the cost of capital, competition, risk, incentive regulation, forward-looking economic cost, economic pricing guidelines, depreciation, accounting, valuation, and other financial and economic issues in approximately 400 cases before the U.S. Congress, the Federal Communications Commission, the National Telecommunications and Information Administration, the Federal Energy Regulatory Commission, the Canadian Radio-Television and Telecommunications Commission, The National Energy Board (Canada),the public service commissions of 42 states and the District of Columbia, the insurance commissions of five states, the Iowa State Board of Tax Review, and the National Association of Securities Dealers.

In addition, I have testified as an expert witness in proceedings before the U.S. District Court for the Northern District of California; U.S. District Court for the District of Nebraska; United States District Court for the District of New Hampshire; U.S. District Court for the Eastern District of North Carolina; Superior Court, North Carolina; the U.S. Bankruptcy Court for the Southern District of West Virginia; and the U.S. District Court for the Eastern District of Michigan.

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A. I have been asked by the North Carolina Rate Bureau to make an independent appraisal of the aggregate cost of equity capital for the companies writing mobile home insurance in North Carolina and to recommend a rate of return on equity that is fair, that allows those companies in the aggregate to attract and retain capital on reasonable terms, that is commensurate with returns on investments of comparable risk, and that maintains the financial integrity of those companies in the aggregate.

Q. Are you aware that the Rate Bureau is submitting two separate rate filings for mobile home insurance?

A. Yes. My understanding is that mobile home insurance in North Carolina is written on two distinct policy programs, and that these are referred to as the MH-C program and the MH-F program. I am aware that the Rate Bureau is submitting separate filings for the two different policy programs. My testimony is identical in the two filings.

I also note that I performed my analysis for these filings in June 2007 and that, consistent with usual Rate Bureau procedures, I have not been requested to update the analysis since it was relied upon by the committees when performing their review.

Q. WHAT DO YOU MEAN BY THE PHRASE "COST OF EQUITY CAPITAL?"

A. A firm's cost of equity capital is the rate of return expectation that is required in the marketplace on equity investments of comparable risk. If an investor does not expect to earn a return on an equity investment in a firm that is at least as large as the return the investor could expect to earn on other investments of comparable risk, then the investor will not invest in that firm's shares. Thus, a firm's cost of equity capital is also the rate of return expectation that is required in the marketplace in order to induce equity investors to purchase shares in that firm.

Q. IS THE COST OF EQUITY CAPITAL THE SAME AS THE RETURN ON EQUITY?

A. No. The cost of equity capital is a market-based concept that reflects investors' future expectations, while the return on equity is an accounting concept that measures results of past performance. The return on equity is equal to income available for common equity divided by the book value of common equity.

Q. HAVE YOU FORMED AN OPINION REGARDING THE COST OF EQUITY CAPITAL FOR THE AVERAGE COMPANY WRITING MOBILE HOME INSURANCE IN NORTH CAROLINA?

A. Yes.

Q. WHAT IS YOUR OPINION IN THAT REGARD?

A. The cost of equity capital for such a company is in the range 11.0 percent to 13.6 percent.

Q. WHAT ECONOMIC PRINCIPLES DID YOU CONSIDER IN ARRIVING AT THAT OPINION?

A. There are two primary economic principles relevant to my appraisal of the cost of equity capital. The first, relating to the demand for capital, states that a firm should continue to invest in its business only so long as the return on its investment is greater than or equal to its cost of capital. In the context of a regulated firm, this principle suggests that the regulatory agency should establish revenue levels which will offer the firm an opportunity to earn a return on its investment that is at least equal to its cost of capital.

The second principle, relating to the supply of capital, states that rational investors are maximizing their total return on capital only if the returns they expect to receive on investments of comparable risk are equal. If these returns are not equal, rational investors will reduce or completely eliminate investments in those activities yielding lower expected returns for a given level of risk and will increase investments in those activities yielding higher expected returns. The second principle implies that regulated firms will be unable to obtain the capital required to expand service on reasonable terms unless they are able to provide investors returns equal to those expected on investments of comparable risk.

Q. DO THESE ECONOMIC PRINCIPLES APPLY TO THE SETTING OF INSURANCE RATES?

A. Yes. These are general economic principles, which apply to investing in any business activity, including insurance.

Q. HOW DID YOU GO ABOUT DETERMINING THE COST OF EQUITY CAPITAL FOR THE AVERAGE COMPANY WRITING MOBILE HOME INSURANCE IN NORTH CAROLINA?

A. I used two generally accepted methods to estimate the cost of equity: (i) the Discounted Cash Flow (DCF) Model, and (ii) the Risk Premium Approach.

Q. PLEASE DESCRIBE THE DCF MODEL.

A. The DCF Model suggests that investors value an asset on the basis of the future cash flows they expect to receive from owning the asset. Thus, investors value an investment in a bond because they expect to receive a sequence of semi-annual coupon payments over the life of the bond and a terminal payment equal to the bond's face value at the time the bond matures. Likewise, investors value an investment in a firm's stock because they expect to receive a sequence of dividend payments and, perhaps, expect to sell the stock at a higher price sometime in the future.

A second fundamental principle of the DCF approach is that investors value a dollar received in the future less than a dollar received today. This is because, if they had the dollar today, they could invest it in an interest earning account and increase their wealth. This principle is called the time value of money.

Applying the two fundamental DCF principles noted above to an investment in a bond suggests that investors should value their investment in the bond on the basis of the present value of the bond's future cash flows. Thus, the price of the bond should be equal to:

Equation 1

$$P_B = \frac{C}{(1+i)} + \frac{C}{(1+i)^2} + K + \frac{C+F}{(1+i)^n}$$

where:

P_B	=	Bond price;
C	=	Cash value of the coupon payment (assumed for notational convenience to occur annually rather than semi-annually);
F	=	Face value of the bond;
i	=	The rate of interest the investor could earn by investing his money in an alternative bond of equal risk; and
n	=	The number of periods before the bond matures.

Applying these same principles to an investment in a firm's stock suggests that the price of the stock should be equal to:

Equation 2

$$P_S = \frac{D_1}{(1+k)} + \frac{D_2}{(1+k)^2} + K + \frac{D_n + P_n}{(1+k)^n}$$

where:

P_S	=	Current price of the firm's stock;
$D_1, D_2 \ldots D_n$	=	Expected annual dividend per share on the firm's stock;
P_n	=	Price per share of stock at the time the investor expects to sell the stock; and
k	=	Return the investor expects to earn on alternative investments of the same risk, i.e., the investor's required rate of return.

Equation (2) is frequently called the Annual Discounted Cash Flow (DCF) Model of stock valuation.

Q. HOW DO YOU USE THE DCF MODEL TO DETERMINE THE COST OF EQUITY CAPITAL?

A. The "k" in the equation is the cost of equity capital. We make certain simplifying assumptions regarding the other factors in the equation and then mathematically solve for "k."

Q. WHAT ARE THE ASSUMPTIONS YOU MAKE?

A. Most analysts make three simplifying assumptions. First, they assume that dividends are expected to grow at the constant rate ("g") into the indefinite future. Second, they assume that the stock price at time "n" is simply the present value of all dividends expected in periods subsequent to "n." Third, they assume that the investors' required rate of return, "k," exceeds the expected dividend growth rate, "g."

Q. DOES THE ANNUAL DCF MODEL OF STOCK VALUATION PRODUCE APPROPRIATE ESTIMATES OF A FIRM'S COST OF EQUITY CAPITAL?

A. No. The Annual DCF Model of stock valuation produces appropriate estimates of a firm's cost of equity capital only if the firm pays dividends just once a year. Since most firms pay dividends quarterly, the Annual DCF Model produces downwardly biased estimates of the cost of equity. Investors can expect to earn a higher annual effective return on an investment in a firm that pays quarterly dividends than in one which pays the same amount of dollar dividends once at the end of each year. A complete analysis of the implications of the quarterly payment of dividends on the DCF Model is provided in Exhibit RB-10. For the reasons cited there, I employed the Quarterly DCF Model throughout my calculations.

Q. PLEASE DESCRIBE THE QUARTERLY DCF MODEL YOU USED.

A. The Quarterly DCF Model I used is described by Equation 10 on page 11 in Exhibit RB-10. This equation shows that the cost of equity is: the sum of the dividend yield and the growth rate, where the dividend in the dividend yield is the equivalent dividend at the end of the year, and the growth rate is the expected growth in dividends or earnings per share.

Q. HOW DID YOU APPLY THE DCF APPROACH TO OBTAIN THE COST OF EQUITY CAPITAL FOR THE COMPANIES WRITING MOBILE HOME INSURANCE IN NORTH CAROLINA?

A. I applied the DCF approach to two groups of companies: Value Line's group of property/casualty insurance companies and the S&P 500.

Q. WHY DID YOU APPLY THE DCF APPROACH TO THE S&P 500 AS WELL AS TO VALUE LINE'S PROPERTY/CASUALTY INSURANCE COMPANIES?

A. As I noted previously, the cost of equity is defined as the rate of return investors expect to earn on investments in other companies of comparable risk. I applied the DCF approach to the S&P 500 because they are a large group of companies that, on average, are typically viewed as being comparable in risk to the property/casualty insurance industry. The use of a larger set of comparable risk companies should provide an accurate estimate of the cost of equity for the companies writing mobile home insurance in North Carolina.

Q. DID YOU INCLUDE ALL THE VALUE LINE PROPERTY/CASUALTY INSURANCE COMPANIES?

A. No. Among the Value Line property/casualty insurance companies, I deleted any firm which had recently lowered its dividend and which had fewer than three five-year earnings forecasts available from I/B/E/S (formerly known as the Institutional Brokers Estimate System, now part of Thomson Financial). The Value Line property/casualty companies I used are shown in Exhibit RB-8.

Q. WHAT CRITERIA DID YOU USE TO SELECT COMPANIES IN THE S&P 500?

A. I included those firms which pay dividends and which have at least three five-year earnings forecasts available from I/B/E/S. I excluded the insurance companies in the S&P 500, as identified by I/B/E/S Thomson Financial, because I had already calculated DCF results for the Value Line property/casualty insurance companies. To be conservative, I also eliminated those companies whose DCF results exceeded the mean by one standard deviation. The S&P 500 companies I used are shown in Exhibit RB-9.

Q. WHY DID YOU ELIMINATE ANY COMPANY WHICH HAD RECENTLY LOWERED ITS DIVIDEND OR WHICH FAILS TO PAY DIVIDENDS?

A. I eliminated those companies because it is difficult to make a reliable estimate of the future dividend growth rate for companies that have recently lowered their dividends or do not pay dividends. If a company has recently lowered its dividend, investors do not know whether the company will again lower its dividend in the future, or whether the company will attempt to increase its dividend back toward its previous level. If a company does not pay a dividend, one cannot mathematically apply the DCF approach.

Q. HOW DID YOU ESTIMATE THE GROWTH COMPONENT OF THE QUARTERLY DCF MODEL?

A. I used the average of analysts' estimates of future earnings per share (EPS) growth reported by I/B/E/S. As part of their research, financial analysts working at Wall Street firms periodically estimate EPS growth for each firm they follow. The EPS forecasts for each firm are then published. The forecasts are used by investors who are contemplating purchasing or selling shares in individual companies.

Q. WHAT IS I/B/E/S?

A. I/B/E/S is a collection of analysts' forecasts for a broad group of companies expressed in terms of a mean forecast and a standard deviation of forecast for each firm. The mean forecast is used by investors as an estimate of future firm performance.

Q. WHY DID YOU USE THE I/B/E/S GROWTH ESTIMATES?

A. The I/B/E/S growth rates (1) are widely circulated in the financial community, (2) include the projections of a large number of reputable financial analysts who develop estimates of future growth, (3) are reported on a timely basis to investors, and (4) are widely used by institutional and other investors. For these reasons, I believe these estimates represent unbiased estimates of investors' expectations of each firm's long-term growth prospects and, accordingly, are incorporated by investors into their return requirements. Consequently, in my opinion, they provide the best available estimate of investors' long-term growth expectations.

Q. WHY DID YOU RELY EXCLUSIVELY ON ANALYSTS' PROJECTIONS OF FUTURE EPS GROWTH IN ESTIMATING THE INVESTORS' EXPECTED GROWTH RATE RATHER THAN LOOKING AT PAST HISTORICAL GROWTH RATES?

A. There is considerable empirical evidence that analysts' forecasts are more highly correlated with stock prices than are firms' historical growth rates, and, thus, that investors actually use these forecasts.

Q. HAVE YOU PERFORMED ANY STUDIES CONCERNING THE USE OF ANALYSTS' FORECASTS AS THE BEST ESTIMATE OF INVESTORS' EXPECTED GROWTH RATE, G?

A. Yes, I prepared a study in conjunction with Willard T. Carleton, Karl Eller Professor of Finance at the University of Arizona, on why analysts' forecasts provide the best estimate of investors' expectations of future long-term growth. This study is described in a paper entitled "Investor Growth Expectations and Stock Prices: the Analysts versus Historical Growth Extrapolation," published in the Spring 1988 edition of *The Journal of Portfolio Management*.

Q. PLEASE SUMMARIZE THE RESULTS OF YOUR STUDY.

A. First, we performed a correlation analysis to identify the historically-oriented growth rates which best described a firm's stock price. Then we did a regression study comparing the historical growth rates with the consensus analysts' forecasts. In every case, the regression equations containing the average of analysts' forecasts statistically outperformed the regression equations containing the historical growth estimates. These results are consistent with those found by Cragg and Malkiel, the early major research in this area. These results are also consistent with the hypothesis that investors use analysts' forecasts, rather than historically-oriented growth calculations, in making buy and sell decisions. They provide overwhelming evidence that the analysts' forecasts of future growth are superior to historically-oriented growth measures in predicting a firm's stock price.

Q. WHAT PRICE DID YOU USE IN YOUR DCF MODEL?

A. I used a simple average of the monthly high and low stock prices for each firm for the three-month period, March, April, and May 2007. These high and low stock prices were obtained from Thomson Financial.

Q. WHY DID YOU USE THE THREE-MONTH AVERAGE STOCK PRICE, P_0, IN APPLYING THE DCF METHOD?

A. I used a three-month average stock price in applying the DCF method because stock prices fluctuate daily, while financial analysts' forecasts for a given company are generally changed less frequently, often on a quarterly basis. Thus, to match the stock price with an earnings forecast, it is appropriate to average stock prices over a three-month period.

Q. PLEASE EXPLAIN YOUR INCLUSION OF FLOTATION COSTS.

A. All firms that have sold securities in the capital markets have incurred some level of flotation costs, including underwriters' commissions, legal fees, printing expense, etc. These costs are paid from the proceeds of the stock sale and must be recovered over the life of the equity issue. Costs vary depending upon the size of the issue, the type of registration method used and other factors, but in general these costs range between four percent and five percent of the proceeds from the issue. In addition to these costs, for large equity issues there is likely to be a decline in price associated with the sale of shares to the public. On average, the decline due to market pressure has been estimated at two percent to three percent.

These cost ranges have been developed and confirmed in a number of generally accepted studies. I believe a combined five percent allowance for flotation costs and market pressure is a conservative estimate that can be used in applying the DCF Model in this proceeding.

Q. PLEASE SUMMARIZE THE RESULTS OF YOUR APPLICATION OF THE DCF METHOD TO THE PROPERTY/CASUALTY INSURANCE COMPANIES AND THE S&P 500.

A. As shown in Exhibits RB-8 and RB-9, the average DCF cost of equity capital for my group of Value Line property/casualty companies is 12.8 percent; and for the S&P 500 companies, 13.6 percent.

Q. WHAT CONCLUSION DO YOU REACH FROM YOUR DCF ANALYSIS ABOUT THE COST OF EQUITY CAPITAL FOR COMPANIES WRITING MOBILE HOME INSURANCE IN NORTH CAROLINA?

A. On the basis of my DCF analysis, I would conclude that for companies writing mobile home insurance in North Carolina the cost of equity is in the range 12.8 percent to 13.6 percent.

Q. YOU SAID THE SECOND METHOD YOU USED TO ESTIMATE THE COST OF EQUITY CAPITAL FOR COMPANIES WRITING MOBILE HOME INSURANCE IN NORTH CAROLINA WAS A RISK PREMIUM APPROACH. PLEASE DESCRIBE THAT APPROACH.

A. I performed a study of the comparable returns received by bond and stock investors over the last 80 years. I estimated the returns on stock and bond portfolios, using stock price and dividend yield data on the S&P 500 stock portfolio and bond yield data on Moody's A-rated utility bonds.

My study consisted of analyzing the historically achieved returns on broadly based stock and bond portfolios going back to 1926. For stocks, I used the S&P 500 stock portfolio and for bonds I used Moody's A-rated utility bonds. The resulting annual returns on the stock and bond portfolios purchased in each year from 1926 through 2005 are shown on Exhibit RB-11. The difference between the stock return and the bond return over that period of time on an arithmetic average basis was 5.1 percentage points.

Q. WHAT CONCLUSIONS DO YOU DRAW FROM YOUR RISK PREMIUM ANALYSES?

A. My own studies, combined with my analysis of other studies, provide strong evidence for the belief that investors today require an equity return of approximately 5.1 percentage points above the expected yield on A-rated long-term debt issues.

Interest rates on Moody's seasoned A-rated utility bonds during the three months March through May 2007 ranged from 5.9 percent to 6.0 percent. On the basis of this information and my knowledge of bond market conditions, I conclude that the long-term yield on A-rated utility bonds is approximately 5.9 percent. Adding a 5.1 percentage point risk premium to the 5.9 percent expected yield on A-rated utility bonds, I obtain an expected return on equity of approximately 11.0 percent.

Q. BASED ON YOUR ANALYSES, WHAT IS YOUR OPINION AS TO THE COST OF CAPITAL FOR THE AVERAGE INSURANCE COMPANY WRITING MOBILE HOME INSURANCE IN NORTH CAROLINA?

A. Based on my review and studies, I believe that a conservative estimate of the cost of common equity capital for the average insurance company writing mobile home insurance in North Carolina is in the range 11.0 percent to 13.6 percent.

Q. IS THE COST OF EQUITY A FAIR RETURN ON EQUITY?

A. No. The cost of equity is a market-based concept that reflects the return investors expect on the market value of their investment. The fair return on equity is an accounting concept that expresses the accounting rate of return the company earns on the book value of its investment. The cost of equity and the fair return on equity will be equal only when the market value of equity is equal to the book value of equity. Generally, the market value of equity is greater than the book value of equity for both the average firm and the average property/casualty insurer. When the market value of equity is greater than the book value of equity, the fair rate of return on equity must exceed the cost of equity capital for equity investors to have a reasonable expectation of earning their required return on investment.

Q. DID YOU CONVERT YOUR COST OF EQUITY CAPITAL TO A FAIR RETURN ON EQUITY?

A. No. In this proceeding I have not converted my cost of equity capital to the fair return on equity. The data that I previously used to convert my cost of equity to a fair return on equity has not been updated in several years. Given recent experience in the capital markets, I am confident that the fair return on equity would exceed the cost of equity. However, in the absence of data necessary to perform an explicit study, to be conservative, I recommend that my cost of equity estimate also be used as an estimate of the fair return on equity.

SUMMARY OF DISCOUNTED CASH FLOW ANALYSIS FOR
PROPERTY/CASUALTY INSURANCE COMPANIES

COMPANY	D_0	P_0	G	K
ACE Limited	0.250	58.568	12.56	14.6%
Allstate Corp.	0.380	61.218	9.49	12.2%
Assured Guaranty	0.040	28.300	11.00	11.6%
Berkley (W.R.)	0.050	32.642	14.00	14.6%
Chubb Corp.	0.290	52.618	9.87	12.2%
Everest Re Group Ltd.	0.480	99.313	9.08	10.6%
HCC Insurance Hldgs.	0.100	31.347	15.33	16.9%
Max Capital Group	0.070	26.145	12.50	13.8%
PMI Group	0.053	46.217	11.50	12.0%
RenaissanceRe Hldgs.	0.220	53.068	11.20	13.1%
SAFECO Corp.	0.300	65.538	9.88	12.0%
Selective Ins. Group	0.120	25.722	8.60	10.6%
Travelers Cos.	0.290	53.467	9.80	12.1%
Average				12.8%

Notes:

d_0 = Latest quarterly dividend.

d_1, d_2, d_3, d_4, = Expected next four quarterly dividends, calculated by multiplying the last four quarterly dividends per Value Line, by the factor (1 + g).

P_0 = Average of the monthly high and low stock prices during the three months ending May 2007 per Thomson Financial.

FC = Flotation costs.

g = I/B/E/S forecast of future earnings growth May 2007.

k = Cost of equity using the quarterly version of the DCF Model and a five percent allowance for flotation costs and market pressure (selling costs) as shown by the formula below:

$$k = \frac{d_1(1+k)^{.75} + d_2(1+k)^{.50} + d_3(1+k)^{.25} + d_4}{P_0(1 - FC)} + g$$

SUMMARY OF DISCOUNTED CASH FLOW ANALYSIS FOR
S&P 500 COMPANIES

COMPANY	D_0	P_0	G	K
3M	1.92	80.24	10.90%	13.7%
Abbott Labs.	1.30	56.46	11.28%	14.0%
Abercrombie & Fitch	0.70	79.01	15.75%	16.8%
Aetna	0.04	46.69	15.82%	15.9%
Air Prds.& Chems.	1.52	75.83	11.45%	13.8%
Alcoa	0.68	35.37	9.16%	11.4%
Altera	0.16	21.80	16.50%	17.4%
Altria Group	2.76	67.61	7.25%	11.9%
Ambac Financial	0.72	89.81	11.50%	12.4%
Amer.Standard	0.72	55.07	12.75%	14.3%
Ameren	2.54	51.84	6.90%	12.5%
American Express	0.60	59.23	12.54%	13.7%
Ameriprise Finl.	0.60	58.87	10.70%	11.9%
Amerisourcebergen	0.20	52.10	13.75%	14.2%
Anheuser-Busch Cos.	1.18	50.71	8.61%	11.3%
Applera Appd.Bios.	0.17	29.78	10.40%	11.1%
Applied Mats.	0.24	19.04	15.09%	16.6%
Archer-Danls.-Midl.	0.46	36.51	9.83%	11.3%
AT&T	1.42	38.93	9.50%	13.8%
Automatic Data Proc.	0.83	45.69	15.20%	17.4%
Avery Dennison	1.60	64.38	11.00%	13.9%
Avon Products	0.74	38.31	10.50%	12.8%
Ball	0.40	49.47	12.33%	13.3%
Bank Of America	2.24	50.86	8.15%	13.3%
Bank Of New York Co.	0.88	40.35	11.08%	13.7%
Bard C R	0.56	81.67	14.93%	15.8%
Bausch & Lomb	0.52	57.16	12.34%	13.4%
Baxter Intl.	0.67	54.41	12.81%	14.3%
BB&T	1.68	41.34	9.23%	14.0%
Bear Stearns	1.28	150.27	10.56%	11.6%
Becton Dickinson	0.98	77.36	12.49%	14.0%
Bemis	0.84	33.47	10.67%	13.6%
Best Buy	0.40	47.42	15.90%	16.9%
Black & Decker	1.68	87.88	8.75%	11.0%
Brown-Forman 'B'	1.21	65.61	9.93%	12.1%
Brunswick	0.60	32.77	9.16%	11.3%
Burl.Nthn.Santa Fe C	1.00	86.22	14.16%	15.6%
CA	0.16	26.48	10.25%	11.0%
Capital One Finl.	0.11	75.73	12.11%	12.3%
Cardinal Health	0.48	71.55	15.00%	15.8%
Caterpillar	1.20	70.12	13.37%	15.4%
CBS 'B'	0.88	31.35	8.49%	11.7%
Ch Robinson Wwd.	0.72	51.74	15.83%	17.5%
Charles Schwab	0.20	19.35	15.78%	17.0%
Cintas	0.39	37.63	13.00%	14.2%
Circuit City Stores	0.16	17.65	15.79%	16.9%
CIT Gp.	1.00	56.13	11.90%	14.0%
Citigroup	2.16	52.30	9.73%	14.6%
Citizens Comms.	1.00	15.33	4.76%	12.1%

COMPANY	D_0	P_0	G	K
Clear Chl.Comms.	0.75	36.17	12.83%	15.3%
Clorox	1.60	65.28	10.63%	13.5%
Coca Cola	1.36	49.91	9.11%	12.3%
Colgate-Palm.	1.44	66.97	10.64%	13.2%
Com.Banc.	0.52	33.69	13.30%	15.2%
Comerica	2.56	60.92	6.47%	11.3%
Conagra Foods	0.72	24.86	7.33%	10.6%
Cooper Inds.	0.84	47.70	10.64%	12.7%
Costco Wholesale	0.58	54.69	12.92%	14.2%
CSX	0.60	42.25	13.07%	14.8%
D R Horton	0.60	23.08	9.80%	12.8%
Danaher	0.12	71.59	14.85%	15.1%
Darden Restaurants	0.46	41.88	12.03%	13.3%
Devon Energy	0.56	71.64	11.24%	12.2%
Dollar General	0.20	20.53	12.13%	13.3%
Dominion Res.	2.84	88.90	7.40%	11.1%
Donnelley R R & Sons	1.04	39.45	9.75%	12.8%
Dover	0.74	48.64	12.67%	14.5%
Dow Chemicals	1.68	45.08	10.73%	15.1%
Dow Jones & Co	1.00	39.21	12.32%	15.4%
DTE Energy	2.12	49.86	6.00%	10.8%
Du Pont E I De Nemours	1.48	50.09	7.27%	10.6%
Eaton	1.72	87.20	10.90%	13.2%
El Paso	0.16	15.15	11.00%	12.2%
Eli Lilly	1.70	56.38	7.68%	11.1%
Emerson Electric	1.05	45.06	10.50%	13.2%
Entergy	2.16	109.03	8.25%	10.5%
Eog Res.	0.36	73.16	9.80%	10.4%
Estee Lauder Cos.'A'	0.50	48.97	10.91%	12.1%
Exelon	1.76	71.92	8.30%	11.1%
Family Dollar Stores	0.46	31.24	12.36%	14.1%
Fannie Mae	1.60	57.79	11.08%	14.4%
Federated Invrs.'B'	0.84	37.29	11.41%	14.1%
Fedex	0.40	109.04	15.33%	15.8%
Fidelity Nat.Info.Svs.	0.20	48.59	12.75%	13.2%
Fifth Third Bancorp	1.68	40.18	9.83%	14.7%
First Data	0.12	30.29	12.42%	12.9%
First Horizon National	1.80	40.22	7.14%	12.3%
Firstenergy	2.00	67.68	7.67%	11.1%
Fluor	0.80	94.40	16.30%	17.3%
Fortune Brands	1.56	79.63	10.15%	12.4%
Fpl Group	1.64	62.21	8.33%	11.4%
Frank.Res.	0.60	126.21	16.35%	16.9%
Gannett	1.24	58.45	8.12%	10.6%
Gap	0.32	18.18	10.71%	12.8%
General Dynamics	1.16	78.44	10.83%	12.6%
General Electric	1.12	36.13	10.40%	14.0%
General Mills	1.48	58.69	8.21%	11.1%
Genuine Parts	1.46	49.64	9.63%	13.1%
Genworth Financial	0.36	35.30	10.76%	12.0%
Goldman Sachs Gp.	1.40	213.55	12.33%	13.1%
Goodrich	0.80	54.06	15.61%	17.4%
Grainger W W	1.40	80.50	12.96%	15.0%

COMPANY	D_0	P_0	G	K
H & R Block	0.54	21.79	13.67%	16.7%
Harley-Davidson	1.00	62.36	11.56%	13.5%
Harrahs Entm.	1.60	84.68	13.61%	15.9%
Hasbro	0.64	30.59	11.00%	13.5%
Heinz Hj	1.52	46.79	7.40%	11.1%
Hewlett-Packard	0.32	41.61	13.95%	14.9%
Hilton Hotels	0.16	35.03	12.94%	13.5%
Home Depot	0.90	38.30	12.05%	14.8%
Honeywell Intl.	1.00	51.11	10.86%	13.2%
Huntington Bcsh.	1.06	22.24	6.00%	11.4%
Illinois Tool Wks.	0.84	52.01	12.55%	14.5%
IMS Health	0.12	29.84	12.24%	12.7%
Ingersoll-Rand	0.72	45.79	11.33%	13.2%
Integrys Energy Group	2.64	55.96	5.33%	10.7%
Intel	0.45	20.75	13.68%	16.3%
International Bus.Mach.	1.60	98.48	10.63%	12.5%
Intl.Game Tech.	0.52	39.42	14.87%	16.5%
Johnson & Johnson	1.66	62.48	8.31%	11.4%
Johnson Controls	1.32	100.30	14.00%	15.6%
Jones Apparel Group	0.56	31.68	8.43%	10.5%
JP Morgan Chase & Co.	1.52	50.14	10.26%	13.8%
Kb Home	1.00	45.30	11.65%	14.3%
Kellogg	1.24	52.15	9.18%	11.9%
Kimberly-Clark	2.12	69.65	7.48%	11.0%
Kraft Foods	1.00	32.20	7.08%	10.6%
Kroger	0.30	28.53	10.05%	11.3%
L3 Communications	1.00	89.37	13.95%	15.3%
Legg Mason	0.96	99.00	14.38%	15.6%
Leggett&Platt	0.72	23.46	10.00%	13.6%
Lehman Bros.Hdg.	0.60	73.73	11.20%	12.2%
Lennar 'A'	0.64	44.42	11.70%	13.4%
Limited Brands	0.60	27.01	13.56%	16.2%
Liz Claiborne	0.22	40.86	12.67%	13.3%
Lockheed Martin	1.40	96.44	11.67%	13.4%
Lowe'S Companies	0.32	31.54	14.58%	15.8%
M&T Bk.	2.40	112.33	10.00%	12.5%
Macy'S	0.52	43.75	12.47%	13.9%
Manor Care	0.68	60.14	15.00%	16.4%
Marriott Intl.'A'	0.30	47.37	14.11%	14.9%
Marshall & Ilsley	1.24	48.01	9.36%	12.4%
Masco	0.92	28.63	11.00%	14.8%
Mattel	0.65	28.04	9.45%	12.1%
Mbia	1.36	67.71	10.33%	12.7%
Mccormick & Co Nv.	0.80	37.75	9.63%	12.1%
Mcdonalds	1.00	47.09	8.71%	11.2%
Mcgraw-Hill	0.82	65.42	12.34%	13.8%
Mckesson	0.24	59.03	14.54%	15.0%
Medtronic	0.44	50.96	13.63%	14.7%
Mellon Finl.	0.88	43.10	12.25%	14.7%
Merck & Co.	1.52	48.43	10.01%	13.7%
Meredith	0.74	58.93	11.83%	13.3%
Merrill Lynch & Co.	1.40	86.78	13.36%	15.3%
Microsoft	0.40	29.09	12.25%	13.9%

COMPANY	D_0	P_0	G	K
Molex	0.30	29.39	15.33%	16.6%
Molson Coors Brewing 'B'	1.28	92.51	10.90%	12.5%
Moodys	0.32	66.15	13.86%	14.4%
Morgan Stanley	1.08	80.78	11.56%	13.1%
Motorola	0.20	18.16	9.65%	10.9%
Murphy Oil	0.60	55.43	9.59%	10.8%
Mylan Laboratories	0.24	21.03	15.38%	16.8%
National City	1.56	36.48	7.20%	12.1%
National Semicon.	0.16	25.82	13.38%	14.1%
New York Times 'A'	0.92	24.52	7.10%	11.4%
Newell Rubbermaid	0.84	30.90	9.00%	12.2%
Newmont Mining	0.40	42.23	14.77%	15.9%
Nike 'B'	0.74	53.92	13.70%	15.4%
Nordstrom	0.54	53.36	13.15%	14.4%
Norfolk Southern	0.88	52.51	14.25%	16.3%
Northern Trust	1.00	61.77	12.01%	13.9%
Northrop Grumman	1.48	74.44	12.67%	15.0%
Officemax	0.60	49.38	15.83%	17.3%
Omnicom Gp.	0.60	104.32	11.54%	12.2%
Paccar	1.00	80.29	11.33%	12.8%
Pall	0.48	39.92	11.00%	12.4%
Parker-Hannifin	1.04	90.11	11.05%	12.4%
Penney Jc	0.80	80.00	15.70%	16.9%
Pepsi Bottling Gp.	0.56	32.54	9.47%	11.5%
Pepsico	1.50	65.35	10.95%	13.7%
Perkinelmer	0.28	24.71	13.67%	15.0%
Pg & E	1.44	49.28	7.84%	11.2%
Pitney-Bowes	1.32	46.95	10.00%	13.3%
Plum Creek Timber	1.68	39.65	6.53%	11.4%
Pnc Finl.Svs.Gp.	2.52	72.94	9.81%	13.9%
Polo Ralph Lauren 'A'	0.20	91.14	15.88%	16.1%
Ppg Industries	2.00	72.43	9.72%	12.9%
Ppl	1.22	42.95	12.17%	15.6%
Praxair	1.20	64.48	12.68%	14.9%
Procter & Gamble	1.40	62.90	11.69%	14.3%
Pub.Ser.Enter.Gp.	2.34	85.23	8.67%	11.8%
Quest Diagnostics	0.40	47.73	13.83%	14.8%
Questar	0.98	94.49	9.25%	10.4%
Radioshack	0.25	28.79	9.44%	10.4%
Regions Finl.New	1.44	35.25	7.57%	12.3%
Reynolds American	3.00	63.43	6.25%	11.6%
Rockwell Collins	0.64	66.76	14.24%	15.4%
Rohm & Haas	1.48	51.83	13.16%	16.6%
Ryder System	0.84	51.59	11.57%	13.5%
Safeway	0.28	35.85	10.55%	11.5%
Sara Lee	0.40	16.89	8.49%	11.2%
Scripps E W 'A'	0.56	43.84	10.52%	12.0%
Sealed Air	0.40	32.48	11.50%	13.0%
Sigma Aldrich	0.46	41.95	9.77%	11.0%
SLM	1.00	48.29	13.94%	16.4%
Snap-On	1.08	51.48	10.67%	13.1%
Southwest Airlines	0.02	14.86	13.80%	14.0%
Sovereign Banc.	0.32	24.26	10.13%	11.7%

COMPANY	D_0	P_0	G	K
Stanley Works	1.20	57.97	11.14%	13.6%
Staples	0.29	25.55	15.78%	17.2%
Starwood Htls.& Rsts. Worldwide	1.68	67.60	13.60%	16.6%
State Street	0.84	66.66	12.92%	14.4%
Suntrust Banks	2.92	84.81	8.45%	12.4%
Supervalu	0.66	42.45	9.33%	11.1%
Synovus Finl.	0.82	32.53	12.14%	15.1%
Sysco	0.76	33.19	12.88%	15.6%
T Rowe Price Gp.	0.68	48.62	14.30%	16.0%
Target	0.48	60.27	14.77%	15.7%
Tektronix	0.24	29.05	13.13%	14.1%
Textron	1.55	97.22	13.00%	14.9%
The Hershey Company	1.08	54.38	9.32%	11.6%
Tiffany & Co	0.48	47.34	12.20%	13.4%
Time Warner	0.22	20.49	13.43%	14.7%
Tjx Cos.	0.36	27.77	13.00%	14.5%
Tribune	0.72	31.90	7.81%	10.4%
Txu	1.73	64.80	9.50%	12.6%
Tyco Intl.	0.40	31.90	11.20%	12.7%
United Parcel Ser.	1.68	70.82	12.19%	15.0%
United Technologies	1.06	66.76	11.04%	12.9%
Unitedhealth Gp.	0.03	53.80	15.89%	16.0%
US Bancorp	1.60	34.78	8.27%	13.6%
UST	2.40	58.10	7.00%	11.7%
V F	2.20	85.26	9.89%	12.9%
Verizon Comms.	1.62	38.60	6.30%	11.1%
Vulcan Materials	1.84	117.48	11.33%	13.2%
Wachovia	2.24	55.20	8.88%	13.6%
Wal Mart Stores	0.88	47.56	12.22%	14.4%
Walgreen	0.31	45.40	15.66%	16.5%
Walt Disney	0.31	35.05	13.84%	14.9%
Washington Mutual	2.20	41.65	10.79%	17.1%
Wells Fargo & Co	1.12	35.12	10.47%	14.2%
Wendy'S Intl.	0.34	35.25	12.58%	13.7%
Western Union	0.04	21.97	12.50%	12.7%
Whirlpool	1.72	97.84	15.33%	17.5%
Williams Cos.	0.40	28.90	13.33%	15.0%
Windstream	1.00	14.74	3.47%	11.1%
Wrigley William Jr.	1.16	54.91	10.43%	12.9%
Xcel Energy	0.92	23.94	6.17%	10.5%
Xilinx	0.48	27.58	14.81%	16.9%
Xto En.	0.48	55.06	15.58%	16.6%
Yum! Brands	0.60	60.97	11.45%	12.6%
Zions Bancorp.	1.72	83.35	9.41%	11.8%
Average				13.6%

Notes: In applying the DCF Model to the S&P 500, I included in the DCF analysis only those companies in the S&P 500 group which pay a dividend, have a positive growth rate, and have at least three analysts' long-term growth estimates. In addition, I excluded all companies in the I/B/E/S group of insurance companies. I also eliminated those companies with DCF results that varied from the mean by one standard deviation or more.

Notes:

D_0	=	Latest dividend per Thomson Financial.
d_0	=	Latest quarterly dividend.
P_0	=	Average of monthly high and low stock prices March, April, and May 2007 per Thomson Financial.
FC	=	Selling and flotation costs.
g	=	I/B/E/S forecast of future earnings growth May 2007.
k	=	Cost of equity using the quarterly version of the DCF Model and a five percent allowance for flotation costs and market pressure (selling costs) as shown by the formula below:

$$k = \left[\frac{d_0(1+g)^{\frac{1}{4}}}{P_0(1-FC)} + (1+g)^{\frac{1}{4}} \right]^4 - 1$$

THE QUARTERLY DCF MODEL

The simple DCF Model assumes that a firm pays dividends only at the end of each year. Since firms in fact pay dividends quarterly and investors appreciate the time value of money, the annual version of the DCF Model generally underestimates the value investors are willing to place on the firm's expected future dividend stream. In this appendix, we review two alternative formulations of the DCF Model that allow for the quarterly payment of dividends.

When dividends are assumed to be paid annually, the DCF Model suggests that the current price of the firm's stock is given by the expression:

$$P_0 = \frac{D_1}{(1+k)} + \frac{D_2}{(1+k)^2} + \mathrm{K} + \frac{D_n + P_n}{(1+k)^n} \qquad \textbf{(1)}$$

where

P_0	=	current price per share of the firm's stock,
$D_1, D_2, \ldots, D_n$	=	expected annual dividends per share on the firm's stock,
P_n	=	price per share of stock at the time investors expect to sell the stock, and
k	=	return investors expect to earn on alternative investments of the same risk, i.e., the investors' required rate of return.

Unfortunately, expression (1) is rather difficult to analyze, especially for the purpose of estimating k. Thus, most analysts make a number of simplifying assumptions. First, they assume that dividends are expected to grow at the constant rate g into the indefinite future. Second, they assume that the stock price at time n is simply the present value of all dividends expected in periods subsequent to n. Third, they assume that the investors' required rate of return, k, exceeds the expected dividend growth rate g. Under the above simplifying assumptions, a firm's stock price may be written as the following sum:

$$P_0 = \frac{D_0(1+g)}{(1+k)} + \frac{D_0(1+g)^2}{(1+k)^2} + \frac{D_0(1+g)^3}{(1+k)^3} + \mathrm{K}\ , \tag{2}$$

where the three dots indicate that the sum continues indefinitely.

As we shall demonstrate shortly, this sum may be simplified to:

$$P_0 = \frac{D_0(1+g)}{(k-g)}$$

First, however, we need to review the very useful concept of a geometric progression.

Geometric Progression

Consider the sequence of numbers 3, 6, 12, 24,…, where each number after the first is obtained by multiplying the preceding number by the factor 2. Obviously, this sequence of numbers may also be expressed as the sequence 3, 3 x 2, 3 x 2^2, 3 x 2^3, … This sequence is an example of a geometric progression.

Definition: A geometric progression is a sequence in which each term after the first is obtained by multiplying some fixed number, called the common ratio, by the preceding term.

A general notation for geometric progressions is: a, the first term, r, the common ratio, and n, the number of terms. Using this notation, any geometric progression may be represented by the sequence:

$$a, ar, ar^2, ar^3, \ldots, ar^{n-1}.$$

In studying the DCF Model, we will find it useful to have an expression for the sum of n terms of a geometric progression. Call this sum S_n. Then

$$S_n = a + ar + \mathrm{K} + ar^{n-1} . \qquad (3)$$

However, this expression can be simplified by multiplying both sides of equation (3) by r and then subtracting the new equation from the old. Thus,

$$rS_n = ar + ar^2 + ar^3 +\ldots + ar^n$$

and

$$S_n - rS_n = a - ar^n \quad ,$$

or

$$(1 - r)\ S_n = a\ (1 - r^n) \quad .$$

Solving for S_n, we obtain:

$$S_n = \frac{a(1-r^n)}{(1-r)} \tag{4}$$

as a simple expression for the sum of n terms of a geometric progression. Furthermore, if $|r| < 1$, then S_n is finite, and as n approaches infinity, S_n approaches $a \div (1 - r)$. Thus, for a geometric progression with an infinite number of terms and $|r| < 1$, equation (4) becomes:

$$S = \frac{a}{1 - r} \tag{5}$$

<u>Application to DCF Model</u>

Comparing equation (2) with equation (3), we see that the firm's stock price (under the DCF assumption) is the sum of an infinite geometric progression with the first term

$$a = \frac{D_0(1+g)}{(1+k)}$$

and common factor

$$r = \frac{(1+g)}{(1+k)}$$

Applying equation (5) for the sum of such a geometric progression, we obtain

$$S = a \bullet \frac{1}{(1-r)} = \frac{D_0(1+g)}{(1+k)} \bullet \frac{1}{1-\frac{1+g}{1+k}} = \frac{D_0(1+g)}{(1+k)} \bullet \frac{1+k}{k-g} = \frac{D_0(1+g)}{k-g}$$

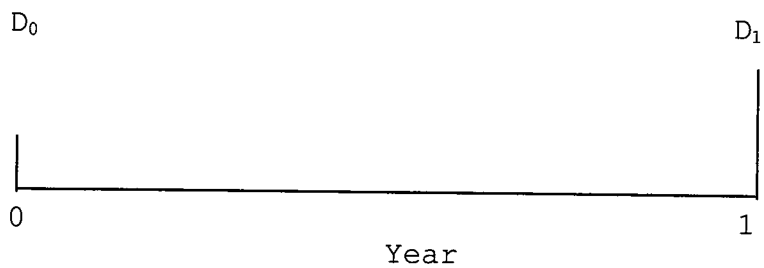
as we suggested earlier.

Quarterly DCF Model

The Annual DCF Model assumes that dividends grow at an annual rate of g% per year (see Figure 1).

Figure 1

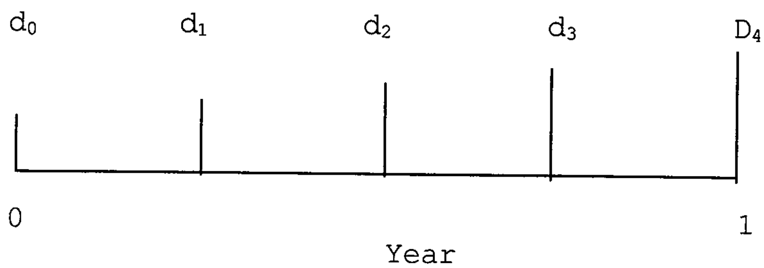
Annual DCF Model



$D_0 = 4d_0$ $\qquad$ $D_1 = D_0(1 + g)$

Figure 2

Quarterly DCF Model (Constant Growth Version)



$d_1 = d_0(1+g)^{.25}$ $\qquad$ $d_2 = d_0(1+g)^{.50}$

$d_3 = d_0(1+g)^{.75}$ $\qquad$ $d_4 = d_0(1+g)$

In the Quarterly DCF Model, it is natural to assume that quarterly dividend payments differ from the preceding quarterly dividend by the factor $(1 + g)^{.25}$, where g is expressed in terms of percent per year and the decimal .25 indicates that the growth has only occurred for one quarter of the year. (See Figure 2.) Using this assumption, along with the assumption of constant growth and ***k*** > ***g***, we obtain a new expression for the firm's stock price, which takes account of the quarterly payment of dividends. This expression is:

$$P_0 = \frac{d_0(1+g)^{\frac{1}{4}}}{(1+k)^{\frac{1}{4}}} + \frac{d_0(1+g)^{\frac{2}{4}}}{(1+k)^{\frac{2}{4}}} + \frac{d_0(1+g)^{\frac{3}{4}}}{(1+k)^{\frac{3}{4}}} + \mathrm{K} \qquad \textbf{(6)}$$

where d_0 is the last quarterly dividend payment, rather than the last annual dividend payment. (We use a lower case d to remind the reader that this is not the annual dividend.)

Although equation (6) looks formidable at first glance, it too can be greatly simplified using the formula [equation (4)] for the sum of an infinite geometric progression. As the reader can easily verify, equation (6) can be simplified to:

$$P_0 = \frac{d_0(1+g)^{\frac{1}{4}}}{(1+k)^{\frac{1}{4}} - (1+g)^{\frac{1}{4}}} \qquad \textbf{(7)}$$

Solving equation (7) for ***k***, we obtain a DCF formula for estimating the cost of equity under the quarterly dividend assumption:

$$k = \left[\frac{d_0(1+g)^{\frac{1}{4}}}{P_0} + (1+g)^{\frac{1}{4}} \right]^4 - 1 \qquad \textbf{(8)}$$

An Alternative Quarterly DCF Model

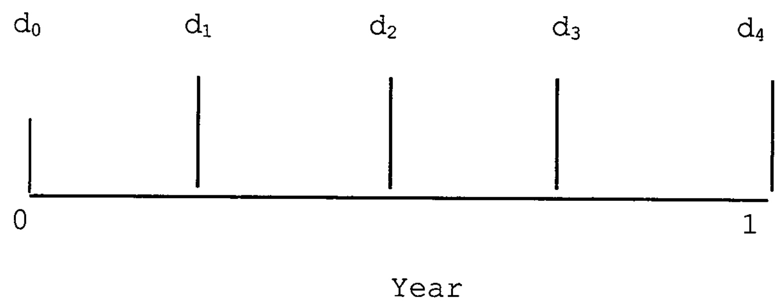
Although the constant growth Quarterly DCF Model [equation (8)] allows for the quarterly timing of dividend payments, it does require the assumption that the firm increases its dividend payments each quarter. Since this assumption is difficult for some analysts to accept, we now discuss a second Quarterly DCF Model that allows for constant quarterly dividend payments within each dividend year.

Assume then that the firm pays dividends quarterly and that each dividend payment is constant for four consecutive quarters. There are four cases to consider, with each case distinguished by varying assumptions about where we are evaluating the firm in relation to the time of its next dividend increase. (See Figure 3.)

Figure 3

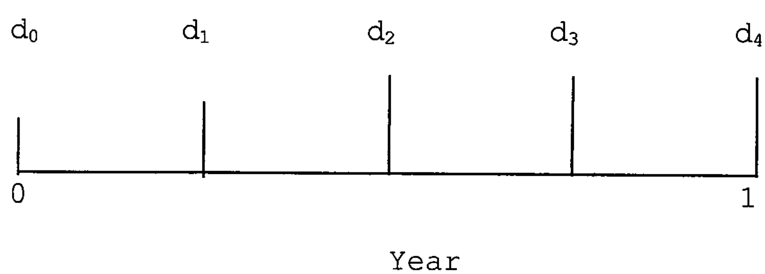
Quarterly DCF Model (Constant Dividend Version)

Case 1



$$d_1 = d_2 = d_3 = d_4 = d_0(1+g)$$

Case 2

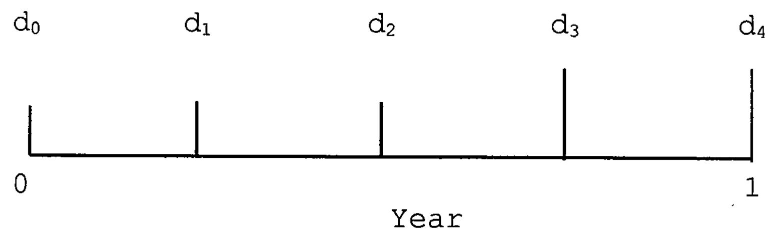


$$d_1 = d_0$$

$$d_2 = d_3 = d_4 = d_0(1+g)$$

Figure 3 (continued)

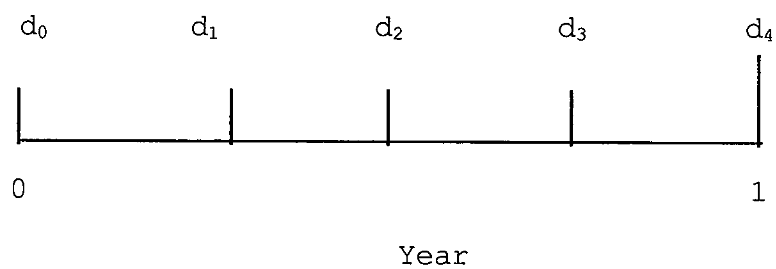
Case 3



$$d_1 = d_2 = d_0$$

$$d_3 = d_4 = d_0(1+g)$$

Case 4



$$d_1 = d_2 = d_3 = d_0$$

$$d_4 = d_0(1+g)$$

If we assume that the investor invests the quarterly dividend in an alternative investment of the same risk, then the amount accumulated by the end of the year will in all cases be given by

$$D_1^* = d_1 (1+k)^{3/4} + d_2 (1+k)^{1/2} + d_3 (1+k)^{1/4} + d_4$$

where d_1, d_2, d_3 and d_4 are the four quarterly dividends. Under these new assumptions, the firm's stock price may be expressed by an Annual DCF Model of the form (2), with the exception that

$$D_1^* = d_1 (1 + k)^{3/4} + d_2 (1 + k)^{1/2} + d_3 (1 + k)^{1/4} + d_4 \qquad \textbf{(9)}$$

is used in place of $D_0(1+g)$. But, we already know that the Annual DCF Model may be reduced to

$$P_0 = \frac{D_0(1+g)}{k-g}$$

Thus, under the assumptions of the second Quarterly DCF Model, the firm's cost of equity is given by

$$k = \frac{D_1^*}{P_0} + g \qquad \textbf{(10)}$$

with D_1^* given by (9).

Although equation (10) looks like the Annual DCF Model, there are at least two very important practical differences. First, since D_1^* is always greater than $D_0(1+g)$, the estimates of the cost of equity are always larger (and more accurate) in the Quarterly Model (10) than in the Annual Model. Second, since D_1^* depends on k through equation (9), the unknown "k" appears on both sides of (10), and an iterative procedure is required to solve for k.

COMPARATIVE RETURNS ON S&P 500 STOCKS
AND MOODY'S A-RATED UTILITY BONDS 1926-2006

Year	S&P 500 Stock Price	Stock Dividend Yield	Stock Return	A-rated Bond Price	Bond Return
2006	1,278.72	0.0183		75.25	
2005	1,181.41	0.0177	10.01%	74.91	5.80%
2004	1,132.52	0.0162	5.94%	70.87	11.34%
2003	895.84	0.0180	28.22%	62.26	20.27%
2002	1140.21	0.0138	-20.05%	57.44	15.35%
2001	1335.63	0.0116	-13.47%	56.40	8.93%
2000	1425.58	0.0118	-5.13%	52.60	14.82%
1999	1248.77	0.0130	15.46%	63.03	-10.20%
1998	963.35	0.0116	31.25%	62.43	7.38%
1997	766.22	0.0195	27.68%	56.62	17.32%
1996	614.42	0.0231	27.02%	60.91	-0.48%
1995	465.25	0.0287	34.93%	50.22	29.26%
1994	472.99	0.0269	1.05%	60.01	-9.65%
1993	435.23	0.0288	11.56%	53.13	20.48%
1992	416.08	0.0290	7.50%	49.56	15.27%
1991	325.49	0.0382	31.65%	44.84	19.44%
1990	339.97	0.0341	-0.85%	45.60	7.11%
1989	285.41	0.0364	22.76%	43.06	15.18%
1988	250.48	0.0366	17.61%	40.10	17.36%
1987	264.51	0.0317	-2.13%	48.92	-9.84%
1986	208.19	0.0390	30.95%	39.98	32.36%
1985	171.61	0.0451	25.83%	32.57	35.05%
1984	166.39	0.0427	7.41%	31.49	16.12%
1983	144.27	0.0479	20.12%	29.41	20.65%
1982	117.28	0.0595	28.96%	24.48	36.48%
1981	132.97	0.0480	-7.00%	29.37	-3.01%
1980	110.87	0.0541	25.34%	34.69	-3.81%
1979	99.71	0.0533	16.52%	43.91	-11.89%
1978	90.25	0.0532	15.80%	49.09	-2.40%
1977	103.80	0.0399	-9.06%	50.95	4.20%
1976	96.86	0.0380	10.96%	43.91	25.13%
1975	72.56	0.0507	38.56%	41.76	14.75%
1974	96.11	0.0364	-20.86%	52.54	-12.91%
1973	118.40	0.0269	-16.14%	58.51	-3.37%
1972	103.30	0.0296	17.58%	56.47	10.69%
1971	93.49	0.0332	13.81%	53.93	12.13%
1970	90.31	0.0356	7.08%	50.46	14.81%
1969	102.00	0.0306	-8.40%	62.43	-12.76%
1968	95.04	0.0313	10.45%	66.97	-0.81%
1967	84.45	0.0351	16.05%	78.69	-9.81%
1966	93.32	0.0302	-6.48%	86.57	-4.48%
1965	86.12	0.0299	11.35%	91.40	-0.91%
1964	76.45	0.0305	15.70%	92.01	3.68%
1963	65.06	0.0331	20.82%	93.56	2.61%
1962	69.07	0.0297	-2.84%	89.60	8.89%
1961	59.72	0.0328	18.94%	89.74	4.29%
1960	58.03	0.0327	6.18%	84.36	11.13%
1959	55.62	0.0324	7.57%	91.55	-3.49%
1958	41.12	0.0448	39.74%	101.22	-5.60%

COMPARATIVE RETURNS ON S&P 500 STOCKS
AND MOODY'S A-RATED UTILITY BONDS 1926-2006

Year	S&P 500 Stock Price	Stock Dividend Yield	Stock Return	A-rated Bond Price	Bond Return
1957	45.43	0.0431	-5.18%	100.70	4.49%
1956	44.15	0.0424	7.14%	113.00	-7.35%
1955	35.60	0.0438	28.40%	116.77	0.20%
1954	25.46	0.0569	45.52%	112.79	7.07%
1953	26.18	0.0545	2.70%	114.24	2.24%
1952	24.19	0.0582	14.05%	113.41	4.26%
1951	21.21	0.0634	20.39%	123.44	-4.89%
1950	16.88	0.0665	32.30%	125.08	1.89%
1949	15.36	0.0620	16.10%	119.82	7.72%
1948	14.83	0.0571	9.28%	118.50	4.49%
1947	15.21	0.0449	1.99%	126.02	-2.79%
1946	18.02	0.0356	-12.03%	126.74	2.59%
1945	13.49	0.0460	38.18%	119.82	9.11%
1944	11.85	0.0495	18.79%	119.82	3.34%
1943	10.09	0.0554	22.98%	118.50	4.49%
1942	8.93	0.0788	20.87%	117.63	4.14%
1941	10.55	0.0638	-8.98%	116.34	4.55%
1940	12.30	0.0458	-9.65%	112.39	7.08%
1939	12.50	0.0349	1.89%	105.75	10.05%
1938	11.31	0.0784	18.36%	99.83	9.94%
1937	17.59	0.0434	-31.36%	103.18	0.63%
1936	13.76	0.0327	31.10%	96.46	11.12%
1935	9.26	0.0424	52.84%	82.23	22.17%
1934	10.54	0.0336	-8.78%	66.78	29.13%
1933	7.09	0.0542	54.08%	79.55	-11.03%
1932	8.30	0.0822	-6.36%	70.67	18.23%
1931	15.98	0.0550	-42.56%	84.49	-11.63%
1930	21.71	0.0438	-22.01%	81.19	8.99%
1929	24.86	0.0336	-9.31%	83.95	1.48%
1928	17.53	0.0431	46.12%	86.71	1.43%
1927	13.40	0.0502	35.84%	83.28	8.92%
1926	12.65	0.0446	10.39%	80.81	8.01%

Average Return	
Common Stocks	11.7%
A-rated Utility Bonds	6.7%
RISK PREMIUM[1]	5.1%

Note: See Page 3 for an explanation of how stock and bond returns are derived and the source of the data presented.

[1] Apparent discrepancy due to rounding.

COMPARATIVE RETURNS ON S&P 500 STOCKS
AND MOODY'S A-RATED UTILITY BONDS 1926-2006

Risk Premium Approach

Source of Data

Stock price and yield information is obtained from Standard & Poor's *Security Index Price Record*. Standard & Poor's derives the stock dividend yield by dividing the aggregate cash dividends (based on the latest known annual rate) by the aggregate market value of the stocks in the group. The bond price information is obtained by calculating the present value of a bond due in 30 years with a $4.00 coupon and a yield to maturity of a particular year's indicated Moody's A-rated Utility bond yield. The values shown on pages 1 and 2 are the January values of the respective indices.

Calculation of Stock and Bond Returns

Sample calculation of "Stock Return" column:

$$\text{Stock Return (2005)} = \left[\frac{\text{Stock Price (2006)} - \text{Stock Price (2005)} + \text{Dividend (2005)}}{\text{Stock Price (2005)}}\right]$$

where Dividend (2005) = Stock Price (2005) x Stock Div. Yield (2005).

Sample calculation of "Bond Return" column:

$$\text{Bond Return (2005)} = \left[\frac{\text{Bond Price (2006)} - \text{Bond Price (2005)} + \text{Interest (2005)}}{\text{Bond Price (2005)}}\right]$$

where Interest = $4.00.

Exhibit RB-12

PREFILED TESTIMONY OF DAVID APPEL

2008 MOBILE HOMEOWNERS – F INSURANCE RATE FILING BY THE NORTH CAROLINA RATE BUREAU

I. QUALIFICATIONS AND SUMMARY

Q. Please state your name and present business address.

A. My name is David Appel, and my business address is 1 Pennsylvania Plaza, New York, NY.

Q. What is your occupation?

A. I am Director of Economics Consulting and a Principal with the firm of Milliman - USA.

Q. What is Milliman - USA?

A. Milliman - USA (formerly Milliman & Robertson) is one of the nation's largest independently owned firms of actuaries and consultants. The company operates offices in 30 cities in the U.S., and, through our international network, Milliman Global, is affiliated with similar firms in more than 20 countries worldwide. Our U.S. employees number over 1,800 and our clients number in the thousands. They include insurers, self-insured entities, Federal and State Governments, private corporations, non-profit organizations, unions, and many others. I am a Principal with the firm, and I am in charge of its Economics Consulting practice.

Q. Please describe your educational and employment history.

A. A complete statement of my educational, employment and academic credentials is included as Exhibit RB-13 filed with this testimony.

To summarize, I have a B.A. in economics from Brooklyn College, City University of New York, and M.A. and Ph.D. degrees in economics from Rutgers University. Prior to joining Milliman, I was employed for nine years by the National Council on Compensation Insurance (NCCI), the nation's largest workers compensation insurance statistical, research and ratemaking organization. I joined NCCI as Research Economist in 1980, and held progressively responsible positions as Senior Research Economist, Director of Research, Assistant Vice President and finally Vice President beginning in July 1985. Prior to 1980, I was an instructor in economics at Rutgers University.

Q. Would you please describe some of your other professional activities?

A. Yes. Throughout my professional career, I have participated in a variety of academic and business activities related to insurance. I have been a member of the Board of Directors of the American Risk and Insurance Association, the leading learned society of insurance academics. I am currently a member of the editorial board of the Journal of Insurance Regulation (the official research publication of the National Association of Insurance Commissioners), as well as the journal Benefits Quarterly. I act as a peer referee for a number of scholarly journals in economics and insurance, and I maintain an active program of research and publication on issues of current interest in insurance economics. In addition, I was, for twelve years, an Adjunct Professor of Economics at Rutgers University.

Q. Have you ever published any papers or books?

A. Yes. In the last ten years I have authored many papers on various aspects of insurance that have been published in refereed books or scholarly journals. In addition, I have published a large number of papers in non-refereed journals as well. I have also co-edited three volumes of research papers dealing with various aspects of workers compensation and property-casualty insurance. My refereed publications are listed in Exhibit RB-13 filed with this testimony.

Q. Are you a member of any professional associations?

A. Yes, the American Economic Association and the American Risk and Insurance Association.

Q. Have you ever testified in insurance rate regulatory proceedings?

A. Yes. I have testified on many occasions in such proceedings, including several occasions in North Carolina in the past several years. A complete list is contained in Exhibit RB-13 filed with this testimony.

Q. What was the general nature of your testimony in these cases?

A. I have addressed a wide variety of insurance issues during public testimony, including such diverse topics as the impact of economic and demographic factors on insurance costs, the effects of regulation on insurance availability, the use of econometric and statistical models in insurance forecasting, and the use of modern financial theory in developing insurance prices. In North Carolina, my testimony in recent years has focused primarily on the last of these issues, specifically on matters relating to the cost of capital and the expected returns attributable to insurance operations.

Q. Have you been retained by the North Carolina Rate Bureau as a consultant with respect to the subject of profitability in this rate case?

A. Yes. I have considered the following specific matters in connection with this case:

1. The reasonableness of Dr. Vander Weide's estimation of the cost of capital.

2. Whether other factors – notably interest rate sensitivity and the small firm size typical of mobile homeowners insurers in North Carolina – create additional sources of risk which affect insurers' cost of capital.

3. Whether the expected costs of catastrophe reinsurance should be incorporated into the mobile homeowners insurance rates filed by the Rate Bureau and whether those costs should be apportioned to regions within the state proportional to the regional risk of the mobile homeowners insurance.

4. Whether the profits associated with underwriting mobile homeowners insurance in North Carolina should be apportioned to territories within the state proportional to the territorial risk of that insurance.

5. Whether the returns insurers would expect to earn from underwriting mobile homeowners insurance in North Carolina, given that the filed underwriting profit provision is realized, would be fair and reasonable.

I have performed various studies and analyses on these matters, however I should mention that most of my work was produced during the latter part of 2007, and except for some minor, nonsubstantive edits, this testimony and the referenced exhibits were prepared at that time.

I note one other important thing in connection with the filings at issue in this case. Since mobile homeowners insurance in North Carolina is sold under two different policy forms – one denoted MH-C and the other MH-F – there are two separate filings in this case, one for each policy form. As a consequence, I have produced two separate testimonies, to accompany the separate filings. I note, however, that the substantive issues in both filings are the same, hence the testimonies are identical with the exception that the numerical values differ due to differing underlying data for the two forms. This testimony refers to the MH-F filing specifically.

Q. Have you reached any conclusions in regard to these matters?

A. Yes. I will summarize them in bullet form here, and then discuss them each more fully later in the testimony.

1. I have reviewed Dr. Vander Weide's cost of capital estimates, which rely on the two most widely recognized models used for this purpose, and find them to be reasonable. However, Dr. Vander Weide's estimates are based on the implicit assumption that insurers present investors with roughly average risk, relative to all possible investment activities. I believe that investors in the property-casualty insurance industry are subject to an above average degree of risk, and therefore I think it would

be prudent to view Dr. Vander Weide's estimates as a conservative estimate of the return to which insurers are entitled.

2. I have considered the impact of two other factors on the risk and required return for insurers – interest rate sensitivity and the small firm size. As regards interest rate sensitivity, because of the high degree of financial leverage and the substantial share of medium and long term bonds in insurer asset portfolios, insurers are particularly subject to interest rate risk that cannot be diversified away. Based on my previous analyses, I have found that investors must be compensated for this risk in the form of an additional risk premium above that required for the average security. As regards firm size, I have on many occasions studied the size distribution of insurers in North Carolina and found that the firms providing insurance coverage in the state tend to be smaller than those used in Dr. Vander Weide's cost of capital analysis. Since there is conclusive evidence that, over the long run, smaller firms have earned higher returns, this finding must be considered evidence that investors expect higher returns from small firms.

   These analyses provide support for my opinion that Dr. Vander Weide's cost of capital estimates should be viewed as a conservative estimate of the return to which insurers are entitled.

3. I have considered the differential risk associated with underwriting mobile homeowners insurance in different regions within North Carolina, and have concluded that the risk due to catastrophe exposure is substantially greater in and around the coastal regions of the state. I have also considered the high cost of catastrophe reinsurance that is regularly purchased by property casualty insurance companies writing mobile homeowners insurance, and have concluded that standard ratemaking procedures fail to account for this cost. As a result, I recommend that an additional charge be included in the rates to cover the cost of a typical catastrophe reinsurance program. Furthermore, I believe that it is appropriate to apportion this additional charge across regions of the state, proportional to the relative risk by region.

4. Even after the benefits of reinsurance are taken into account, the residual risk of writing mobile homeowners insurance in North Carolina may still differ across regions within the state. As a consequence, I believe that it is appropriate to allocate the statewide profit built into mobile homeowners rates across regions, proportional to the relative risk by region after consideration of reinsurance.

5. In order to test the underwriting profit provision selected and filed by the NCRB, I have estimated the returns insurers would expect to earn from North Carolina mobile homeowners coverage assuming the filed underwriting profit provision is fully earned. I am aware that North Carolina law provides that insurers are entitled to expect to earn a return equal to the returns of industries of comparable risk, and that in calculating that expected return, investment income from capital and surplus funds is not to be considered. I refer to that operating return as the statutory return. However, as is evident from the attached exhibits, I have estimated insurer pro forma returns both including and excluding expected investment income from capital and surplus. (I refer to the return including investment income on surplus as the total

return.) I have done this to demonstrate that if the filed underwriting profit is actually realized, and even if investment income on surplus is considered, insurer returns will not be excessive. Obviously, if returns are not excessive including investment income from capital and surplus, they will be non-excessive excluding such income.

Based on my calculations, the selected underwriting profit provision generates a statutory return on net worth of 6.8% and a total return on net worth of 11.3% for MH-F coverage. Since these returns, even the return that includes investment income on surplus funds, are near the lower bound of Dr. Vander Weide's range for the fair rate of return, I conclude that the underwriting profit provisions are clearly not excessive.

II. COST OF CAPITAL REVIEW

Q. You said your first assignment was to review Dr. Vander Weide's estimate of the cost of capital. Are you familiar with Dr. Vander Weide's approach to estimating the cost of capital in insurance rate cases?

A. Yes. I am aware of the methodology upon which Dr. Vander Weide relies to estimate the cost of capital and have reviewed it on a number of occasions in the course of previous rate cases in North Carolina. Dr. Vander Weide has used the most widely recognized and accepted models for this purpose, namely the Discounted Cash Flow (DCF) model and the risk premium method. These models, when taken together and properly applied to a reasonably selected data set, provide acceptable estimates of the cost of capital for regulated insurers.

Q. What has Dr. Vander Weide concluded with respect to the fair rate of return in this case?

A. Dr. Vander Weide has concluded that the fair rate of return for insurers is in the range of 11.0% - 13.6% on net worth as determined under generally accepted accounting principles (GAAP).

Q. In your opinion, is this an appropriate estimate of the required rate of return?

A. Yes, however as I indicated a moment ago, I believe that Dr. Vander Weide may have been conservative in his calculation of the required rate of return. Dr. Vander Weide has assumed that the property-casualty industry presents investors with average risk. However, based on my studies, I conclude the following:

1. There is evidence that the industry is considerably above average with respect to the volatility of the returns that it provides to investors. This higher volatility of returns makes the property-casualty industry an investment of above average risk.

2. Since investors require higher returns from smaller firms, and since the firms in Dr. Vander Weide's cost of capital analysis are significantly larger than the average property-casualty insurer in North Carolina, his approach tends to underestimate the true cost of capital for North Carolina mobile homeowners insurers.

III. INTEREST RATE RISK, INSURER SIZE AND THE COST OF CAPITAL

Q. Please turn to the impact of interest rate sensitivity on insurers' risk and required return and describe your analysis.

A. I considered whether there was any reason to believe that the interest rate sensitivity of insurers' asset portfolios contributed to insurer risk. To address this question, I considered both the theoretical and empirical dimensions of the issue. Based on these analyses, I have concluded that the high degree of financial leverage and large share of intermediate and long term bonds in insurer asset portfolios combine to create a significant exposure to interest rate changes. This high degree of interest rate risk causes property-casualty stock returns to have a high degree of volatility, which requires additional compensation above that demanded for the average security.

Q. You have made reference to the term interest rate risk. Can you please define this term?

A. Yes. Interest rate risk refers to the risk that the value of fixed income investments (such as bonds) will fluctuate with changes in interest rates. This means that there is a risk associated with holding bonds, particularly those with a relatively long term to maturity. While investments in equities are still considerably riskier than investments in long term bonds, as evidenced by the fact that returns to large company stocks have had a much higher mean and standard deviation than returns on long term government bonds over the past 80 years, bonds investments impose risk as well.

Q. Does interest rate risk affect investments in property-casualty insurance stocks?

A. Yes. Property-casualty insurance companies invest large amounts of funds in bonds issued by both corporations and governmental bodies. The risk that investors face is that when interest rates change, the values of the bonds also change, and hence their investments in property-casualty stocks are subject to interest rate risk. This fact is widely recognized by the financial community. Since investors cannot diversify away interest rate risk, only the prospect of higher returns will induce them to purchase interest-sensitive stocks. That is, investors must be compensated for purchasing interest-sensitive stocks because they are increasing their exposure to interest rate risk.

Q. Why is interest rate risk different from market risk?

A. Interest rate risk is a separate source of volatility for insurance stocks. Interest rates often change as a result of changes in expectations of future inflation. These changes primarily affect firms that hold what are called nominal assets and liabilities. Nominal assets and liabilities have cash flows that are fixed in nominal terms (for example, accounts receivable, most contracts, and bonds) and are thus subject to erosion in value due to inflation. On the other hand, the cash flows associated with manufacturing and service operations tend to fluctuate with the price level. Since most non-financial firms hold relatively few nominal assets and liabilities, their stocks are not particularly sensitive to changes in interest rates that are due to changes in expected inflation. Therefore interest rate risk adds additional risk to insurance stocks, above and beyond market risk, that is not diversifiable.

Changes in interest rates that are not associated with changes in expected inflation will affect all stocks. This accounts for the moderate degree of correlation between changes in long term interest rates and returns to common stocks. However, the fact that most stocks are not very sensitive to changes in interest rates that are due to changes in expected inflation means that interest rate risk is not fully captured in measures of market risk.

Q. Is it possible to measure interest rate risk?

A. Yes, and I have conducted a number of studies designed specifically to address this issue during the past several years. A more detailed discussion of these studies is available in the testimony I submitted with the 2003 auto rate filing.

Q. Can you please briefly summarize the principal conclusions of your work in this area?

A. Yes. Since insurer assets on average have a substantially longer financial duration than insurance liabilities, when interest rates change, the value of insurer equity is subject to potentially wide fluctuation. While the market risk for insurers as measured by beta is roughly average, the degree of interest rate risk to which the industry is exposed is considerably higher than average. Since this risk cannot be entirely diversified away, the overall risk associated with an investment in property/casualty insurance is greater than average. As a consequence, insurers are entitled to a rate of return above that allowed for the average risk investment in the U.S. economy.

Q. Have you also conducted an empirical study of the risks of investing in the property-casualty insurance industry?

A. Yes. I calculated the mean and standard deviation of the returns to investing in the property-casualty insurance industry, and compared them to the same statistics for investments in a portfolio of average risk common stocks (i.e., the S&P 500). In order to do this, I gathered data on prices, dividends, and number of shares outstanding from the December 31, 1998 edition of Compustat Research Insight. This data source contains up to 20 years of historical information on 141 property-casualty insurance stocks; to my knowledge, this is one of the largest collections of data on property-casualty insurance companies that has ever been assembled for this purpose. My studies show that the standard deviation of returns to investors in property-casualty insurance stocks was greater than the standard deviation of returns on the S&P 500 while the mean return was higher over the entire period from 1980 to 1998.

These data indicate that insurance stocks are more volatile, and hence riskier, than the average security in the economy. In addition, the higher than average returns for these securities indicate that investors have been compensated for this additional risk.

Q. Why are returns to investing in property-casualty insurance stocks more volatile than investing in the stocks that make up the Standard & Poor's 500?

A. I believe that there are three main reasons for this.

First, the high degree of financial leverage and mismatched durations of assets and liabilities contributes to the volatility of returns to investors in insurance stocks.

Second, the insurance industry is in the business of bearing risk. Individuals and corporations transfer to property-casualty insurers potential liability for a wide range of possible adverse events, ranging from property damage to professional liability. In light of the unforeseen events that can occur, and, in the recent past, actually have occurred, investors in property-casualty insurance stocks are subject to considerable risk.

Finally, insurance is in the unique position of being a highly competitive industry that is also subject to a high degree of regulation. This combination of regulation and competition creates an environment in which insurers are subject not only to the demands of the market but also to the pressures of the political process. There is substantial evidence that regulation can increase risk for a regulated enterprise, and when that is combined with an aggressively competitive industrial structure, risk is increased.

Q. You said that the combination of regulation and competition increased risk for insurers. Can you describe what you mean?

A. Yes. Traditionally, direct price and rate of return regulation has been imposed on industries known as "public utilities," such as generation and transmission of electric power, distribution of natural gas, provision of local water and sewer service and the like. Because of the nature of the production process, these industries are characterized as "natural monopolies," meaning that it is most efficient for a single producer to provide the service in question. In such circumstances, the state normally grants a monopoly to a single provider and then regulates that firm directly to prevent abuse of monopoly power.

Property-casualty insurance differs dramatically from this model. Rather than a single firm providing service, there are in most states literally hundreds of firms competing in the market, none of which typically have significant market power. These firms compete aggressively to increase market share and attract the best insureds by offering a variety of price and quality combinations that are best tailored to their business objectives. This vigorous competition provides discipline in the marketplace, and, when combined with direct rate of return regulation, the risk for insurers is increased.

I should note that in the past a number of competitively structured industries (such as airlines, trucking, and telecommunications) were subject to regulation, but in the past several decades there has been a movement to deregulate these activities. This is due in part to the widespread agreement that competition itself is an adequate regulator.

Q. You also said that you considered whether the size distribution of North Carolina insurers should impact the cost of capital in this case. Can you please describe this issue briefly and discuss its implications for this case?

A. Yes. It is a well established fact of empirical finance that small stocks tend to outperform large stocks. Ibbotson Associates, for instance, reports that firms in the tenth decile of stocks listed on the principal U.S. stock exchanges have outperformed the market as a whole by approximately 3.9 percentage points over the period 1926 to 2006, even after accounting for the fact that these firms have above average betas. Therefore an adjustment should be made to the cost of capital to the extent that the property-casualty insurance industry is composed of small stocks.

Q. Have you conducted any studies with respect to the significance of the small stock effect?

A. Yes. As with interest rate risk, I have conducted a number of studies of this issue in previous years, and in each instance I have found that (1) investors have earned higher returns from small stocks than from large stocks, and (2) the insurers in Dr. Vander Weide's cost of capital analysis are among the largest companies in the U.S. economy. The insurers in Dr. Vander Weide's analysis are larger, on average, than the companies in the property-casualty insurance industry, and they are larger, on average, than the companies writing mobile homeowners insurance in North Carolina.

These facts suggest that the cost of capital for insurers writing mobile homeowners insurance in North Carolina should be higher than for those firms contained in Dr. Vander Weide's cost of capital analysis. This reaffirms my conclusion that the cost of capital that Dr. Vander Weide has presented is conservative.

Q. Without describing in detail the studies you have undertaken in the past, what are your conclusions from the evidence you have reviewed on firm size and investors' required returns?

A. There are two principal findings from my analysis of firm size, rates of return, and cost of capital:

1. There is conclusive evidence that, over the long run, smaller firms have earned higher returns, and this finding must be considered evidence that investors expect higher returns from small firms.

2. The firms in Dr. Vander Weide's cost of capital analysis are among the larger firms in the U.S. economy, and they are significantly larger than the average property-casualty insurer, both nationally and in the North Carolina mobile homeowners insurance market.

In summary, the estimates from Dr. Vander Weide's cost of capital analysis should be viewed as a lower-bound estimate for property-casualty insurers writing North Carolina mobile homeowners insurance.

Q. Can you please summarize your testimony on the cost of capital of the property-casualty insurance industry?

A. Yes. Professor Vander Weide has assumed that the property-casualty insurance industry presents investors with risks comparable to the average investment in equities. My analysis has shown that property-casualty insurance stocks are subject to additional volatility due to interest rate sensitivity, and are relatively small when compared with the broad cross section of publicly traded firms in the U.S. economy. Since these additional risks require compensation in the form of a higher return, I conclude that Professor Vander Weide has been conservative in his calculation of the required rate of return on property-casualty insurance investments.

IV. NET COST OF REINSURANCE & REGIONAL ALLOCATION OF STATEWIDE PROFIT

Q. In your summary, you said you considered whether the net cost of reinsurance should be included in mobile homeowners rates in North Carolina, and whether the profit in the rates should be allocated proportional to risk. Can you please discuss your evaluation of these issues?

A. Yes. I have previously addressed these issues in both homeowners and dwelling fire/extended coverage rate filings in North Carolina, where I have recommended that the indicated rates be developed to include the net cost of reinsurance. The same logic applies to mobile homeowners rates; thus I will briefly outline the problem and then discuss each of the issues separately.

To begin with, mobile homeowners is one of several lines of insurance that is subject to the potential for catastrophic loss. In such lines (homeowners, earthquake, allied lines and other property coverages), individual catastrophic events can result in enormous losses, far in excess of what the typical insurer could bear. Thus, in these lines of business, insurers routinely purchase reinsurance to manage their exposure to extreme events. This raises several concerns from a ratemaking perspective, since typically direct ratemaking procedures do not provide for the cost of reinsurance.

Second, the exposure to catastrophic loss varies substantially by geographic region within North Carolina. It is well known that the coastal counties in the state are subject to severe exposure to the hurricane peril, while the interior regions to the west are subject to considerably less exposure. Since the need for reinsurance is a function of the degree of catastrophe exposure, the cost of reinsurance should reflect such regional differences as exist within the state. Accordingly, in considering the cost of reinsurance in primary rates, we allocate the statewide cost across regions, proportional to risk.

Finally, even after the consideration of reinsurance, substantial differences in risk across regions remain. Therefore, to the extent that the underwriting profit in the rates is intended to compensate the insurer for risk, that profit should also be spread regionally proportional to the risk that remains after the benefits of reinsurance are considered. Similar to the cost of reinsurance, the profit in the statewide rates is also allocated across regions, proportional to the residual risk that remains after the benefits of reinsurance.

Q. You mentioned that direct ratemaking does not include the cost of reinsurance. Can you please explain?

A. Yes. Consider the following observations regarding direct ratemaking:

Direct ratemaking is the typical approach used when making insurance rates on an industrywide basis. In insurance, the use of the terminology "direct" refers to an analysis done without consideration of reinsurance. Typically a primary insurer sells policies to the public, and earns "direct premiums" in exchange for bearing the risk of future losses and expenses. The primary insurer, however, may "reinsure" some its exposure by ceding a portion of the direct premium in exchange for the commitment by the reinsurer to bear a specified portion of future losses and expenses. When an analysis is done including the consideration of reinsurance, it is termed a "net" analysis.

The direct approach depends on calculating a premium that covers the costs of direct losses and expenses and provides a fair rate of return on the capital used to support the insurance transaction. Because everything is done on a direct basis, reinsurance costs are never explicitly considered. However, when the fair rate of return and the amount of capital at risk are determined, these values are based on actual market data, which reflect the effects of reinsurance, as respects both the amount of capital and the fair rate of return on that capital. If reinsurance were unavailable, primary insurers would have to hold substantially more capital and would be viewed as riskier than they currently are.

The direct ratemaking procedure implicitly considers reinsurance costs, in the sense that it includes an allowance for all losses (both primary and reinsured) and a provision for expenses and profit based on those total losses. However, the manner in which the profit is determined effectively assumes that the reinsured loss layer has the same capitalization and requires the same rate of return as the primary layer, an assumption which is demonstrably untrue. Even if the fair rate of return for reinsurance is no higher than average, we know that reinsurers have significantly higher amounts of surplus relative to premium than primary insurers, particularly for reinsurers that underwrite catastrophe coverage. To the extent that the ratemaking procedure includes only the average return on average capital, it understates the actual cost of insurance.

Q. Is this a problem in ratemaking in lines where reinsurance is prevalent?

A. Yes. So long as markets require reinsurers to carry more capital per unit of exposure than primary insurers, the traditional ratemaking procedure will not properly provide for the true cost of reinsurance. In fact, the traditional procedure provides a rate that is biased downward, because it assumes that the reinsured layer has the same capital costs as the primary layer of coverage. While this bias may be small for certain lines of business, it is large for mobile homeowners insurance in North Carolina, because of the significant catastrophe potential in the state and the large portion of expected mobile homeowners losses that are attributable to hurricanes.

Q. Did you perform any analysis to address this issue?

A. Yes. To address this issue and provide for a rate that will cover all the costs of the insurance transaction, I developed a procedure to include the "net cost of reinsurance" as an expense in the direct mobile homeowners rates in North Carolina. (By net cost of reinsurance, I mean the expense and profit components of the reinsurance rate, since the loss costs are already included in the direct premium.) This procedure is conceptually identical to that employed in Florida, where insurers make rates using direct losses and expenses, but then add in a provision which covers the cost (to the primary insurer) of the reinsurer's profit and expense.

Q. Please describe your analysis.

A. To implement this procedure, I adopted the standard ratemaking assumption used in North Carolina – i.e., that there is a single aggregate company that is the composite of all carriers in the state. I then assumed that company was subject to a reinsurance program that is typical of property insurers in North Carolina, with provisions as follows:

- An attachment point equal to twice the annual average hurricane loss. (The attachment point is the loss level at which the reinsurer begins to share in the loss.)
- A limit equal to the one in a hundred year event (the 99th percentile of the statewide aggregate loss distribution from AIR). (The limit is the maximum loss amount upon which the reinsurer will share the costs under the contract.)
- A 10% quota share retention in the reinsured layer. (Quota share refers to a provision where the primary insurers share a specified percentage of the reinsured loss).

These provisions were based on a review of publicly available information on the reinsurance programs of a number of the largest writers in North Carolina and discussions with actuaries, risk managers and reinsurance brokers familiar with these types of exposures. However, I should note that I developed these provisions several years ago, and I believe they are relatively conservative in today's environment. That is, in light of recent catastrophe experience, it is my impression that primary insurers will be seeking greater reinsurance protection in the future than may have been typical prior to the last several years. (For example, insurers may elect lower attachment points, higher limits and/or a smaller quota share in the reinsured layers.) If this were the case, the amount of reinsured losses would increase relative to losses retained, and the ultimate cost of providing mobile homeowners coverage in the state would increase.

Given the program described above and the AIR statewide aggregate loss distributions, I then determined the amount of losses that would be subject to reinsurance coverage, as a share of the total hurricane losses in the state. Based on the estimated reinsured losses, I then developed an estimated "competitive market" reinsurance premium, following a series of steps that are described below. Before describing the individual steps in that process, however, I should note two considerations in connection with the use of the AIR model in this filing.

First, in developing the hurricane loss estimates for use in this filing, AIR ran two separate models, one based on 100,000 iterations of its proprietary model using the full 100+ year history of hurricane activity as the basis for projected hurricane frequency, and the other based on 10,000 iterations of the model using an alternative event file. This alternative event file, also known as the "near-term" event set, reflects the higher frequency and severity of hurricanes that has been observed in recent years.

When calculating the base rates for this filing, the NCRB relied upon the AIR model using the full 100+ year storm set to estimate the level of hurricane losses to be included in the rates. However, I am aware that reinsurers are currently relying on models that use substantially higher hurricane frequencies and/or severities to estimate expected losses for property exposures, to reflect the widespread recognition that we are in a phase of increased activity in the hurricane cycle. Since it is appropriate to rely on the models used in the reinsurance market in setting the price of reinsurance, and later, in allocating that cost to region, I relied on the AIR model loss estimates using the alternative near term event set.

Second, I also note that in projecting losses using either model, AIR's estimates reflect the phenomenon of "demand surge." Demand surge refers to the fact that, subsequent to the occurrence of a large natural catastrophe, the prices of labor and materials required to repair or replace damaged property tend to increase because of the surge in demand for such resources. This is exactly what one would expect given the underlying dynamics of supply and demand; with resources (particularly labor) that are relatively fixed in supply in the short run, a rapid increase in demand is expected to increase prices. This phenomenon has been observed following natural disasters such as Hurricane Andrew, the Northridge earthquake, Hurricane Katrina and the like. In estimating the damages attributable to catastrophic events, it is appropriate to include all factors that affect the level of expected losses, including, of course, factors that affect the price of the resources required to respond to those events.

Given the program described above and the AIR statewide aggregate loss distributions, I then determined the amount of losses that would be subject to reinsurance coverage, as a share of the total hurricane losses in the state. Based on the estimated reinsured losses, I then developed an estimated "competitive market" reinsurance premium, as follows:

- I loaded the reinsured loss for LAE, using the Incurred Loss/Incurred LAE ratio from the filing.
- I assumed that the reinsurer incurred fixed expenses equal to 10% of losses plus LAE.
- I assumed the reinsurer set an underwriting profit provision that would yield a return on net worth, after consideration of all investment income, of 13.0%. I determined the reinsurer's net worth such that the reinsurer premium to surplus ratio would be .40, the historical average ratio for professional reinsurers from Best's Aggregates and Averages.

Having determined the reinsurance premium that a competitive reinsurance market would produce under the assumptions described above, I then subtracted expected losses and LAE from the premium to leave the net cost of reinsurance. This latter amount was then divided by projected direct written premium to determine the expected net cost of reinsurance as a percent of direct premium, which turned out to be 18.22% (comprised of the reinsurance expense cost of 0.82% and the cost of reinsurer capital of 17.40%). In the next step, that amount was added as an expense in the rates.

Q. Are the results of your calculations shown in an exhibit?

A. Yes. Exhibit RB-14 shows the calculations giving rise to the estimated net cost of reinsurance of 18.22%. This exhibit contains two pages; the first page shows the derivation of the statewide premium, part of which is required to determine the reinsurer's premium. The second page shows the derivation of the reinsurance premium, based on the portion of insured hurricane losses and the reinsurer's capitalization and required return. As can be seen in the second page, the reinsurance premium is 23.35% of statewide direct premium, while the net cost of reinsurance is 18.22% of premium. (The net cost of reinsurance is the total premium less the primary insurer's loss and expense recovery, which is in turn equal to the reinsurer's expense cost and the cost of the reinsurer's capital).

Q. In your opinion, it is appropriate to include the net cost of reinsurance in mobile homeowners insurance rates in North Carolina?

A. Yes. Insurers in North Carolina incur a substantial cost for bearing the risk of mobile homeowners insurance in the state. The market cost of bearing that risk (whether the risk is retained by the insurer or transferred to a reinsurer) must be included in the rates. In the analysis described above, I have estimated a competitive market reinsurance premium that reasonably reflects the net cost of reinsurance to the primary insurer. Since this is a legitimate cost of the risk transfer inherent in the purchase of mobile homeowners insurance, it should properly be included in the rates.

Q. You said that the next step was to allocate the cost of reinsurance across regions in the state proportional to risk. Can you please discuss your analysis of this issue?

A. Yes. It is widely agreed that mobile homeowners insurance in North Carolina is subject to substantial catastrophe exposure due to the possibility that hurricanes and other serious windstorms may strike the state. However that catastrophe potential differs significantly from region to region within the state; in coastal counties, for example, the hurricane risk is far higher than it is in the interior mountainous regions to the west. As a consequence, the risk to which insurers and reinsurers are exposed differs across the state as well. Since the need for reinsurance arises from the catastrophe exposure, it seems clear that regional differences in relative risk should be taken into account when determining the allocation of reinsurance costs within the state.

Q. How did you analyze the regional differences in risk and allocate reinsurance costs to region?

A. To address this issue, I developed a general simulation model that calculates regional differences in risk within North Carolina. Based on the model results, costs can be allocated to different territories in proportion to the risk each territory contributes to the state as a whole. I used this model to allocate both the cost of reinsurance as well as the underwriting profit to the two different mobile homeowners territories in the state. As a general rule, since the risk in the coastal areas is far greater than the risk in the interior, the cost of reinsurance and the required profit in those territories is greater, as a percent of premium, than in the less risky territories. This approach is in contrast to the Bureau's prior ratemaking practice, in which all expenses and profit were effectively allocated to territory proportional to premium (because the expenses and profit factors in the rates were constant across all territories).

Q. Can you please describe the model you developed?

A. In broad terms, my approach involved the following steps:

(1) Determine appropriate measures of risk;
(2) Build a Monte Carlo simulation model to calculate the risk measures in each territory;
(3) Allocate statewide total profit proportional to risk.

I describe each of these steps briefly below.

(1) Determine Appropriate Measures of Risk: To select appropriate risk measures, I reviewed relevant citations from the actuarial and economics literature relating to this issue. Based on this review, I selected three bases for measuring risk: variance of losses, standard deviation of losses and probability of ruin. Each of these has merit, and support in the literature, as a measure of relative risk across the various territories within the state.

(2) Build a Simulation Model To Calculate Risk by Territory: Calculating risk by territory using the measures noted above involves estimating the distribution of annual aggregate losses by territory. To do this, I built a two part simulation model that separately estimates hurricane and non-hurricane losses. For the hurricane loss estimates, Applied Insurance Research (AIR) ran 100,000 iterations of its proprietary model, and provided estimated losses by territory. For non-hurricane losses, I built a Monte Carlo simulation model based on ISO data to estimate the annual aggregate loss distribution across all non-hurricane perils. I then summed hurricane and non-hurricane losses from each iteration to derive the distribution of total losses by territory. From this distribution, I was able to calculate the variance and standard deviation of losses, as well as the probability of ruin.

I should note that I applied this model separately to both the reinsurer and the primary insurer, for two distinct purposes. In the case of the reinsurer, my intention was to allocate the net cost of reinsurance – that is, the reinsurance expense cost and the cost of reinsurer capital – to territory proportional to the risk borne by the reinsurer. In the case of the primary insurer, my intention was to allocate the underwriting profit in the rates – that is, the primary insurer's compensation for risk – to territory, proportional to the residual risk retained by the primary insurer after considering the losses ceded to the reinsurer.

(3) Allocate Reinsurance Costs and Statewide Profit Proportional to Risk: For the variance and standard deviation methods of measuring risk, I calculated the values of both variables in each territory, and then took the sum across all the territories as an

estimate of the statewide total value. (The assumption that the statewide total variance is the sum of the individual territory variances is equivalent to assuming that there is zero correlation of losses across territories, and the assumption that the total standard deviation is the sum of the individual territory standard deviations is equivalent to assuming that there is perfect correlation of losses across territories. The actual result is clearly somewhere in between the two.) This was done separately for the reinsurer, based on ceded losses, and for the primary insurer, based on net (retained) losses. Each territory was then allocated a share of the net cost of reinsurance and total profit based on its share of total risk. Under the probability of ruin method, I ranked total losses (hurricane plus non-hurricane) across all iterations from largest to smallest, and found the iteration in which actual losses were equal to the losses that would produce ruin (i.e., the level of losses that would just exceed the sum of premium net of expenses, plus investment income and surplus). I then determined the proportion of those losses attributable to each territory, and allocated reinsurance costs and profit according to those percentages.

As I mentioned earlier, it is important to emphasize that the departure point for the risk based allocation process is the total cost of reinsurance and required profit in the state as a whole. That is, only after these amounts are determined are they then allocated to territory. Thus, there is no additional profit or return resulting from our analysis, and the allocation is independent of the methodology used to determine the cost of reinsurance or the overall profit.

Q. Can you please describe the results of your analysis?

A. The details of the analysis are contained in Exhibit RB-15 attached to this testimony. This exhibit, comprised of three pages, shows the allocation of reinsurance costs and statewide profit to territories depending on the selected allocation method. (The total statewide profit and reinsurance cost was determined in Exhibit RB-14, described above.)

The underwriting profit , cost of reinsurer capital and reinsurer expenses for each territory, all as a percentage of premium, based on the three methods just described, are summarized in the table below.

Summary: MH-F Reinsurance Costs and Profit by Territory

		Zone 1	*Zone 2*	*Sum*
Standard Deviation Method	Underwriting Profit	16.6%	4.7%	8.0%
	Reinsurer Profit (Percent)	30.0%	12.7%	17.4%
	Reinsurer Expenses (Percent)	1.5%	0.6%	0.8%
	Total Profit plus Reinsurance Cost	**48.1%**	**17.9%**	**26.2%**
Variance Method	Underwriting Profit	15.9%	5.1%	8.0%
	Reinsurer Profit (Percent)	29.8%	12.9%	17.4%
	Reinsurer Expenses (Percent)	1.6%	0.6%	0.8%
	Total Profit plus Reinsurance Cost	**47.2%**	**18.6%**	**26.2%**
Probability of Ruin Method	Underwriting Profit	11.1%	7.0%	8.0%
	Reinsurer Profit (Percent)	32.9%	12.2%	17.4%
	Reinsurer Expenses (Percent)	1.6%	0.5%	0.8%
	Total Profit plus Reinsurance Cost	**45.6%**	**19.7%**	**26.2%**
	Average Profit plus Reinsurance Cost	**47.0%**	**18.7%**	**26.2%**

Because each of the aforementioned methods has some support in the risk measurement literature, and the results under the various models are reasonably similar, I averaged the per territory total profit and reinsurance cost factors from the three methods. The final values used in the calculations were then selected by the Rate Bureau.

Q. Have you recommended regional profit differentials in any other lines of insurance when you have testified in North Carolina?

A. Yes, but only in homeowners and extended coverage, since the other lines of insurance subject to the jurisdiction of the Rate Bureau are not subject to such extreme regional variation in risk. In the case of mobile homeowners insurance, however, it is important for reasons of equity and economic efficiency to address this question forthrightly.

Q. Does your methodology result in a higher overall costs than would have been the case without the allocations?

A. No, it does not; the allocation method itself is simply a manner in which to spread the costs across policyholders consistent with risk. Thus, it does not impose any additional costs on North Carolina policyholders in the aggregate; rather it simply apportions the costs in a manner that is consistent with the risks different policyholders impose.

Q. In your opinion, is it appropriate to allocate statewide profit and reinsurance costs proportional to these measures of risk?

A. Yes. It is both intuitively and empirically obvious that the relative risk of mobile homeowners insurance varies geographically. As such, the cost for bearing that risk should be allocated proportional to the measurement of the risk. The three measures selected for this analysis have broad support in the actuarial and economic literature, and in my opinion are quite reasonable for the purpose to which they are put.

V. PROJECTED RETURN ATTRIBUTABLE TO INSURANCE OPERATIONS

Q. Earlier you said that you had calculated the statutory return insurers would expect from underwriting mobile homeowners insurance in North Carolina. Have you conducted such an analysis?

A. Yes, I have. I developed a model using traditional insurance profitability analyses and have calculated the statutory returns on equity that would be expected to arise assuming that actual underwriting and investment results materialize exactly as projected in this filing. The results are contained in Exhibit RB-16 filed with this testimony.

Q. What do you mean when you use the term pro forma in that exhibit in connection with rate of return?

A. I use this term to indicate that the rate of return presented in these exhibits is based on a series of assumptions regarding such inputs as underwriting profit, investment gain, leverage and the like. If these assumptions actually materialize, then the "pro forma" rates of return calculated in the exhibits will prevail. However, to the extent that these assumptions are not realized, the rate of return will differ from that calculated in the exhibits.

Q. Can you please now describe the components of the model you developed?

A. Yes. The model really consists of a single page for each line of business that calculates the rate of return on equity attributable to undertaking the insurance activity. It sets forth estimates of income derived from underwriting, installment fees and investment of reserves and estimates of costs, comprised of losses, expenses and taxes. This exhibit is supported by several other exhibits which provide calculations of investment yield rates, tax rates, premium to surplus and net worth to surplus ratios, and installment fee income. I will describe the principal elements of these exhibits below.

1. Underwriting profit is the difference between earned premiums and projected incurred losses and expenses. This provision was selected by the Rate Bureau.

2. Installment fee income is projected based on historical installment revenues, taking into consideration the most recent information on the installment fee program.

3. Taxes are calculated assuming that the regular corporate tax rate applies to statutory underwriting (plus installment fee) income, and that an additional tax liability applies due to the reserve discounting and revenue offset provisions that are applicable to property casualty insurers. Taxes on

investment income are calculated assuming that the current statutory tax rates apply to the various classes of investment income earned.

4. Investment gain on the insurance transaction is estimated as the product of an investment yield rate and the investible funds available from loss, loss adjustment expense and unearned premium reserves (i.e., policyholder supplied funds). The investment yield rate is derived as the average of the "embedded yield" and the "current yield," based on the actual portfolios of securities held by insurers. This estimated yield rate includes income from interest, dividends, real estate, and other assets, as well as realized capital gains. The investible funds in this calculation are estimated using the well known ISO State-X model, with one modification as described below.

Q. In previous testimony in North Carolina, you identified certain changes you made to the traditional rate of return analysis that is performed using this model. Did you continue these changes for this year's filing?

A. Yes. I removed the reduction of investible funds by the amount of agents' balances from the ISO State-X calculation. However, it continues to be true that the funds represented by agents' balances are not available for investment by insurers. Therefore, in the rate of return calculation, the investment income from this modified State-X calculation is reduced by the investment income attributable to agents' balances. This calculation recognizes (1) that the majority of agents' balances represent premiums not yet paid by insureds because of installment payment plans, and hence is unavailable for investment and (2) that for the small minority of agents' balances that is premiums collected by agents but not yet remitted to the companies, the investment income on that premium is additional compensation to the agents and a cost to the companies as part of the insurance transaction.

In addition, I adjusted the trended loss, LAE and fixed expense ratios to reflect the proposed rate change. That is to say, I have divided the trended loss and expense ratios at present rates by one plus the proposed rate change to reflect the change in these ratios that occurs when rates are changed.

Q. Could you please clarify how you selected your investment yield rate and premium to surplus ratio?

A. Yes. To select the investment yield rate, I was asked by the Rate Bureau to compute the average of what are known as the "embedded" and "current" yields, where each was based on the actual asset portfolios insurers currently hold. There has been a long-standing debate regarding the choice between embedded and current yields in insurance profitability calculations. Since the Commissioner himself adopted an approach of averaging the embedded and current yields in his 1994 automobile decision (and in his decision in the 1996 case, he selected a yield which approximated the yield obtained from this approach), the Rate Bureau has chosen to follow that methodology.

To estimate the embedded yield, I calculated the ratio of 2006 investment income divided by average invested assets and added to that an estimate of the ten year average ratio of realized capital gains to invested assets. The sum of these two is the estimated embedded yield.

To estimate the current yield, I determined the yields available in today's capital markets for the portfolio of securities currently held by the property-casualty insurance industry. I then calculated a weighted average of these yield rates based on the proportion of assets held by the industry in each of the various securities such as stocks, bonds, real estate and the like.

As far as the premium to surplus ratio is concerned, I also relied on information which reflects the actual degree of leverage for insurers writing mobile homeowners insurance in North Carolina. The premium to surplus ratio I used is the ten year (1996-2005) average premium to surplus ratio for the top 30 company groups which wrote mobile homeowners insurance in North Carolina in each of those years.

Q. Can you please provide the results of your calculations regarding the projected rate of return to the insurance transaction if your underlying assumptions are realized?

A. Yes. Based on my calculations, North Carolina mobile homeowners insurers should expect to earn statutory returns on net worth of 6.8% and total returns on net worth of 11.0% for MH-F coverage. Since these returns, even those that include investment income on surplus funds, are near the lower bound of Dr. Vander Weide's range for the fair rate of return, I conclude that the underwriting profit provisions are clearly not excessive.

Q. I understand that the Rate Bureau has incorporated an assumption in its development of the indicated rate change that insurers will provide savings to policyholders (i.e., deviations) in the amount of 5% of premium. What happens to these projected returns if the savings to policyholders are greater than 5%?

A. Assuming losses, expenses and investment results turn out exactly as projected in the filing, and savings to policyholders (either deviations or dividends) are exactly 5% of premium, then the aggregate industry will earn the rate of return projected in my analysis. However, if the savings to policyholders exceed 5%, these projected returns will not be realized by the aggregate industry – in fact, the aggregate returns will be lower than projected in my analysis.

Q. Are there any factors that might impact the realization of these projected returns?

A. Yes. In order for the aggregate industry to achieve the returns projected in these exhibits, every assumption in the model must be realized exactly. However, even if every other projection in the filing is exactly realized, the industry will still not realize these projected returns because the filing does not reflect the current surplus position of the aggregate industry. For the sake of stability in the ratemaking process, the premium to surplus ratios used in my calculations are based on long term historical data. The most recent data show that the aggregate industry writing mobile homeowners insurance in North Carolina has more surplus in relation to premiums that the historical averages used in my calculations. Therefore, even if all other assumptions were realized exactly, the calculated rate of return would overstate the returns the aggregate industry would reasonably expect.

VII. CONCLUSION

Q. Based on the studies you have conducted, have you come to any conclusions regarding the underwriting profit provision that has been filed by the Rate Bureau in this case?

A. Yes. Based on my evaluation of Dr. Vander Weide's cost of capital estimates, my consideration of insurer specific risk characteristics, and my estimation of projected and expected returns, I believe that the filed underwriting profit provision complies with North Carolina law and the return expected to be realized by insurers will not be excessive.

Q. Does this conclude your testimony?

A. Yes, it does.

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1989 to present	**MILLIMAN, INC.** Principal & Director - Economics Consulting
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1980 to 1989	**NATIONAL COUNCIL ON COMPENSATION INSURANCE** Economic and Social Research Division
1985 to 1989	Vice President
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1982	Director of Economic and Social Research
1981	Senior Research Economist
1980	Associate Research Economist
1976 to 1997	**RUTGERS UNIVERSITY**
1981-97	Associate of the Graduate Faculty, Department of Economics, Newark, New Jersey
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1978-80	Instructor, Department of Economics, New Brunswick, New Jersey
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1980	Ph.D., Economics, Rutgers University
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"The Impact of Lifetime Work on Mortality: Do Unisex Pensions Matter?" (with Richard J. Butler)

"Regulatory Survival: Rate Changes in Workers' Compensation" (with Richard J. Butler and John D. Worrall)

"Framing, Firm Size and Financial Incentives in Workers' Compensation Insurance" (with Richard J. Butler and John D. Worrall)

"Application of NAIC Profitability Models to Long Tailed Lines of Insurance" (with James Gerofsky)

INVITED PRESENTATIONS

Pinehurst, North Carolina, May 21, 2007
Workers Compensation Insurance Organizations Annual Meeting
"Enterprise Risk Management: What Is It and Why Is It Important?"

Salt Lake City, Utah, March 13, 2006
CAS Ratemaking Seminar
"Including Reinsurance Costs in Primary Insurance Rates"

New Orleans, Louisiana, March 11, 2005
CAS Ratemaking Seminar
"Including Reinsurance Costs in Primary Insurance Rates"

Philadelphia, Pennsylvania, March 11, 2004
CAS Ratemaking Seminar
"The Consideration of Risk Loads and Reinsurance Costs in Primary Insurance Ratemaking"

New York, New York, December 12, 2003
Goldman Sachs Insurance Conference
"Interest Rate Changes and Insurance Underwriting"

San Antonio, Texas, March 28, 2003
CAS Ratemaking Seminar
"The Consideration of Risk Loads and Reinsurance Costs in Primary Insurance Ratemaking"

San Antonio, Texas, March 27, 2003
CAS Ratemaking Seminar
"Rate of Return Models in Insurance Ratemaking"

San Diego, California, May 20, 2002
CAS Annual Meeting
"The Actuary as an Expert Witness"

Tampa, Florida, March 7, 2002
CAS Ratemaking Seminar
"Parameterizing Rate of Return Models in Insurance Ratemaking"

Chicago, Illinois, December 10, 2001
NAIC Meeting
"The Impact of Proposition 103 in California"

Kansas City, Missouri, April 30, 2001
NAIC Meeting
"Personal Lines Regulation"

Las Vegas, Nevada, March 12, 2001
CAS Ratemaking Seminar
"Parameterizing Rate of Return Models in Insurance Ratemaking"

Washington DC, January 18, 2001
Brookings Institution Conference on Insurance Regulation
"Auto Insurance Experience in California"

Bermuda, September 14, 2000
Ace Insurance Worldwide Actuarial Conference
"Rate of Return Models In Property Casualty Insurance Ratemaking"

Orlando, Florida, June 9, 1998
Florida Managed Care Institute Annual Conferennce
"Issues in Integrated Health Care"

Seattle, Washington, July 21, 1997
CAS Dynamic Financial Analysis Seminar
"Dynamic Financial Analysis of a Workers Compensation Insurer"

Boston, Massachusetts, March 14, 1997
CAS Ratemaking Seminar
"Discounted Cash Flow Models in Insurance Ratemaking"

East Lansing, Michigan, July 15, 1996
National Symposium on Workers Compensation
"Managed Care in Workers Compensation"

New Orleans, Louisiana, March 20, 1996
Global Business Research Seminar: Partnerships Between Insurers and Providers
"Integrating the Data Systems"

Orlando, Florida, November 15, 1995
Global Business Research Seminar: Documenting Savings From Managed Care
"Evaluating Savings From Managed Care"

Orlando, Florida, October 27, 1995
Self Insurance Association of America Annual Meeting
"Managed Care in Workers Compensation: A Magic Act or Humbug?"

San Diego, California, October 16, 1995
Global Business Research Seminar: Documenting Savings From Managed Care
"Technical Issues in Measuring Savings From Managed Care"

Durham, North Carolina, September 6, 1995
North Carolina HMO Association Annual Meeting
"Workers Compensation in North Carolina: Risks and Opportunities for HMO's"

Washington, DC, May 22, 1995
Global Business Research Seminar: Outcomes for Workers' Compensation Managed Care
"Measuring and Reporting the Savings"

Orlando, Florida, April 13, 1995
NCCI Annual Meeting
"Managed Care in Workers Compensation"

Phoenix, Arizona, April 3, 1995
Casualty Actuarial Society Seminar on Profitability
"Rate of Return Models - Selecting the Parameters"

New Orleans, Louisiana, March 16, 1995
Casualty Actuarial Society Ratemaking Seminar
"Discounted Cash Flow Models for Insurance Ratemaking"

Orlando, Florida, March 14, 1995
Standard & Poor's Rating Conference
"Consolidation in the Property/Casualty Insurance Industry"

Minneapolis, Minnesota, October 11, 1994
Casualty Actuarial Society Seminar on Medical Cost Containment
"Managed Care and Workers' Compensation"

Toronto, Ontario, August 22, 1994
American Risk and Insurance Association Annual Meeting
"Current Issues in Workers' Compensation"

Boston, Massachusetts, May 17, 1994
Casualty Actuarial Society Annual Meeting
"Standard Of Practice on Profit and Contingency"

Hartford, Connecticut, April 20, 1994
University of Connecticut Blue Cross/Blue Shield Symposium
"24 Hour Coverage - What Will It Involve"

Atlanta, Georgia, March 10, 1994
Casualty Actuarial Society Ratemaking Seminar
"Cash Flow Models for Insurance Ratemaking"

Cambridge, Massachusetts, March 2, 1994
Workers' Compensation Research Institute Health Care Reform Conference
"Early Results of the Florida Pilot Project"

Phoenix, Arizona, November 15, 1993
Casualty Actuarial Society Annual Meeting
"The Use Of Managed Care in Workers' Compensation"

New York, New York, October 20, 1993
Insurance Information Institute/Reinsurance Association of America Research Conference
The Impact of Health Care Reform on Casualty Insurance"

Somerset, New Jersey, July 13, 1993
National Symposium on Workers' Compensation
"Economic Analysis of Workers' Compensation Issues"

Boston, Massachusetts, June 30, 1993
Institute of Actuaries of Japan Special Meeting
"Health Care Costs in Workers' Compensation"

Dallas, Texas, June 15, 1993
Stirling-Cooke Workers' Compensation Seminar
"Workers' Compensation Medical Costs: Trends, Causes and Solutions"

New York, New York, June 3, 1993
New York Business Group On Health
"The Crisis in Workers' Compensation Health Care"

Mauna Lani Bay, Hawaii, May 3, 1993
Western Association of Insurance Brokers Annual Meeting
"Trends in Insurance Insolvency"

Kingston, Ontario, April 28, 1993
Queen's University Workers' Compensation Conference
"Exposure Bases for Workers' Compensation: Equity vs. Practicality"

Sanibel Island, Florida, March 29, 1993
Workers' Compensation Reinsurance Bureau Annual Meeting
"The Use of Managed Care in Workers' Compensation"

Baltimore, Maryland, March 23, 1993
CAMAR Annual Meeting
"Estimating the Cost of Capital in Insurance Ratemaking"

Philadelphia, Pennsylvania, December 1, 1992
Economic Issues in Workers' Compensation Seminar,
"Rate of Return Regulation in Workers' Compensation"

Seattle, Washington, October 16, 1992
Casualty Actuarial Society Seminar on Profitability
"Risk Based Capital Standards for Property Casualty Insurers"

Washington, DC, August 18, 1992
American Risk and Insurance Association Annual Meeting
"The Crisis in Workers' Compensation"

New York, New York, May 19, 1992
Executive Enterprises Institute Seminar: Winning Approval of Rate and Form Filings
"Determining a Fair Rate of Return for Property/Casualty Insurers"

Palm Beach, Florida, April 23, 1992
NCCI Annual Meeting
"Is the Workers' Compensation Industry Competitive?"

Philadelphia, Pennsylvania, March 20, 1992
University of Pennsylvania/Duncanson & Holt Special Seminar
"Current Issues in Workers' Compensation"

Dallas, Texas, March 12, 1992
Casualty Actuarial Society Ratemaking Seminar
"Profitability Models in Insurance Ratemaking: Estimating the Parameters"

Houston, Texas, December 11, 1991
NCCI/NAIC Commissioners Symposium
"Rate Adequacy: Solvency and Safety Implications"

New York, New York, November 17, 1991
Executive Enterprises Institute Seminar: Winning Approval of Rate and Form Filings
"Determining a Fair Rate of Return for Property/Casualty Insurers"

Philadelphia, Pennsylvania, November 12, 1991
Casualty Actuarial Society Annual Meeting
"The Impact of Medical Costs on Casualty Coverages"

New York, New York, May 17, 1991
Executive Enterprises Institute Seminar: Winning Approval of Rate and Form Filings
"Determining a Fair Rate of Return for Property/Casualty Insurers"

Kiawah Island, South Carolina, April 15 & 16, 1991
Casualty Actuarial Society Seminar on Profitability
"Cost of Capital Estimation: Lessons From Public Utilities"

Chicago, Illinois, March 14, 1991
Casualty Actuarial Society Ratemaking Seminar
"The Use of Profitability Models in Insurance Ratemaking"

Orlando, Florida, October 24, 1990,
Financial Management Association Annual Meeting,
"Current Issues in Insurance Rate Regulation: California Prop. 103 and Pennsylvania Act 6"

New Brunswick, New Jersey, May 18, 1990,
Joint Conference on Workers' Compensation,
"Current State Issues and Benefit Reforms"

Orlando, Florida, May 8, 1990,
National Association of Insurance Commissioners Southeast Zone Raters Conference,
"Loss Cost Rating for Workers' Compensation"

Orlando, Florida, April 3, 1990,
Workers' Compensation Reinsurance Bureau Annual Meeting,
"Medical Costs in Workers' Compensation: Recent Trends in Cost Containment"

Philadelphia, Pennsylvania, March 15, 1990,
CAS Ratemaking Seminar,
"Rate of Return Models in Insurance Regulation: Return on Sales vs. Return on Equity"

Chicago, Illinois, November 10, 1989,
Alliance of American Insurers Research Committee,
"Recent Developments in Rate Regulation: California Proposition 103"

New York, New York, October 5, 1989,
NCCI Legal Trends Seminar,
"Medical Cost Containment in Workers' Compensation"

Philadelphia, Pennsylvania, September 7, 1989,
Workers' Compensation Congress,
"Medical Cost Containment in Workers' Compensation"

Denver, Colorado, August 21, 1989,
American Risk and Insurance Association Annual Meeting,
"Regulatory Survival: Rate Changes in Workers' Compensation" (with Richard J. Butler)

Hilton Head, South Carolina, April 4,1989,
Workers' Compensation Reinsurance Bureau Annual Meeting,
"Prospects for Workers' Compensation in the 1990's"

Mountain Lakes, New Jersey, March 29, 1989,
St. Clares-Riverside Medical Center,
"Stress in the Workplace"

Dallas, Texas, March 16, 1989,
Casualty Actuarial Society Ratemaking Seminar,
"The Impact of Tax Reform on Insurance Profitability"

New Orleans, Louisiana, December 15, 1988,
NAIC-NCCI Commissioners School,
"A Forecast for Workers' Compensation"

Philadelphia, Pennsylvania, November 17,1988,
Economic Issues in Workers' Compensation Seminar,
"The Impact of Regulation on the Probability of Insolvency" (with John D. Worrall and David Durbin)

Boston, Massachusetts, November 14, 1988,
American Public Health Association Annual Meeting,
"Stress in the Workplace"

Atlanta, Georgia, September 14, 1988,
Casualty Loss Reserve Seminar,
"Estimating the Cost of Social Inflation in Workers' Compensation"

Reno, Nevada, August 15, 1988,
American Risk and Insurance Association Annual Meeting,
"Benefit Increases in Workers' Compensation"

New York, New York, June 13, 1988,
National Association Of Insurance Commissioners Annual Meeting,
"Alternative Rate of Return Models for Insurance Regulation"

Syracuse, New York, May 5, 1988,
Current Issues in Workers' Compensation Symposium,
"Workers' Compensation Stress Claims"

Hilton Head, South Carolina, April 22, 1988,
Workers' Compensation Reinsurance Bureau Annual Meeting,
"A Forecast for Workers' Compensation Insurers"

Absecon, New Jersey, April 19, 1988,
Pennsylvania Coal Mine Rating Bureau Annual Meeting,
"The Use of Rate of Return Models in Insurance Rate Regulation"

Philadelphia, Pennsylvania, November 17, 1987,
Economic Issues in Workers' Compensation Seminar,
"The Transition to Permanent Disability Status" (with John D. Worrall and David Durbin)

Charlotte, North Carolina, October 20, 1987,
American Insurance Association Government Affairs Conference,
"Prospects for Workers' Compensation in 1988"

Minneapolis, Minnesota, September 29, 1987,
Minnesota Workers' Compensation Reinsurance Association Annual Meeting,
"Economic and Demographic Characteristics of Workers' Compensation Claims"

Airlie, Virginia, July 7, 1987,
National Symposium on Workers' Compensation,
"Forecasting Workers' Compensation Experience"

Santa Clara, California, June 30, 1987,
Symposium on Recent Advances in Ratemaking,
"Econometric Models of Workers' Compensation Losses"

Storrs, Connecticut, May 1, 1987,
University of Connecticut Symposium on Current Issues in Workers' Compensation,
"Current Research in Workers' Compensation"

Philadelphia, Pennsylvania, April 16, 1987,
Wharton School Graduate Seminar Series,
"Impact of Tax Reform on Workers' Compensation Profitability"

Boca Raton, Florida, December 4, 1986,
National Association of Insurance Commissioners/NCCI Commissioners School,
Panel Discussion on Current Issues in Workers' Compensation

Philadelphia, Pennsylvania, November 7, 1985,
Wharton School, University of Pennsylvania, Graduate Seminar Series,
"Litigation in Workers' Compensation"

Vancouver, British Columbia, August 19, 1985,
American Risk and Insurance Association Annual Meeting,
"Earnings Loss and Permanent Disability"

Washington, D.C., April 23, 1985,
Washington Conference on the Economics of Disability,
"Employment Effects of Workers' Compensation Insurance"

Schenectady, New York, January 18, 1985,
Union University Graduate Business Seminar Series,
"The Use of Modern Portfolio Theory in Insurance Regulation"

EXPERT TESTIMONY

Tallahassee, Florida, January 23, 2008
Hartford Insurance Group Homeowners Insurance Rate Hearing

Boston, Massachusetts, January 9, 2008
Commerce Insurance Group Auto Insurance Rate Hearing

San Francisco, California, November 29, 2007
Explorer Insurance Company Automobile Rate Hearing

Santa Fe, New Mexico, November 19, 2007
Annual Title Insurance Rate Hearing

Reno, Nevada, June 14, 2007
Public Hearing Regarding Merger Between UnitedHealth Group and Sierra Health Systems

Austin, Texas, May 31, 2007
State Farm Lloyds Homeowners Rate Hearing

Reno, Nevada, October 26, 2006
Public Hearing Regarding Demutualization of Employers Insurance Group

San Francisco, California, August 30, 2006
Hearing on Proposed Title Insurance Rate Regulations

Austin, Texas, August 14, 2006
Biennial Title Insurance Rate Hearing

Raleigh, North Carolina, September 28, 2005
Auto Insurance Rate Hearing

Providence, Rhode Island, September 27, 2005
Norcal Medical Malpractice Insurance Rate Hearing

San Francisco, California, August 23, 2005
Safeco Insurance Company Earthquake Rate Hearing

Boston, Massachusetts, April 15, 2005
Massachusetts Workers Compensation Rate Hearing

Lawrence, Massachusetts, February 14, 2005
Highground, Inc. v. Mazonson

New York, NY, January 21, 2005
NFHA v. Prudential Deposition

Austin, Texas, July 13, 2004
Medical Protective Insurance Company Medical Malpractice Insurance Rate Hearing

Austin, Texas, December 16, 2003
Biennial Title Insurance Rate Hearing

Providence, Rhode Island, November 17, 2003
Norcal Medical Malpractice Insurance Rate Hearing

San Francisco, California, September 16, 2003
Century National Proposition 103 Rollback Hearing

Austin, Texas, September 11, 2003
Farmers Insurance Exchange Homeowner Rate Rollback Hearing

Austin, Texas, September 2, 2003
State Farm Lloyds Homeowners Rate Rollback Hearing

Austin, Texas, May 21, 2003
Farmers Insurance Group Settlement Hearing

Boston, Massachusetts, April 29, 2003
Massachusetts Workers Compensation Rate Hearing

Los Angeles, California, March 12, 2003
SCPIE Medical Malpractice Rate Hearing

Raleigh, North Carolina, July 17, 2002
Auto Insurance Rate Hearing

Tallahassee, Florida, February 25, 2002
NCCI Workers Compensation Insurance Rate Hearing

Austin, Texas, February 5, 2002
Biennial Title Insurance Rate Hearing

Raleigh, North Carolina, September 24, 2001
Auto Insurance Rate Hearing

Boston, Massachusetts, August 14, 2001
Massachusetts Auto Insurance Bureau Rate Hearing

Austin, Texas, March 6, 2001
Texas Auto Benchmark Rate Hearing

Boston, Massachusetts, August 23, 2000
Massachusetts Auto Insurance Bureau Rate Hearing

Austin, Texas, December 7, 1999
Texas Auto Insurance Plan Association Rate Hearing

Raleigh, North Carolina, December 3, 1999
Auto Insurance Rate Hearing

Austin, Texas, November 3, 1999
Biennial Title Insurance Rate Hearing

Austin, Texas, September 8, 1999
Texas Auto Benchmark Rate Hearing

Boston, Massachusetts, August 13, 1999
Massachusetts Auto Insurance Bureau Rate Hearing

Austin, Texas, June 22, 1999
Texas Property Benchmark Rate Hearing

Honolulu, Hawaii, December 16, 1998
NCCI Workers Compensation Insurance Rate Hearing

Richmond, Virginia, November 15, 1998
NCCI Workers Compensation Insurance Rate Hearing

Boston, Massachusetts, October 9, 1998
Massachusetts Auto Insurance Bureau Rate Hearing

Austin, Texas, May 19, 1998
Texas Auto Insurance Plan Association Rate Hearing

Austin, Texas, April 7, 1998
Auto Insurance Benchmark Rate Hearing

Austin, Texas, February 17, 1998
Property Insurance Benchmark Rate Hearing

Austin, Texas, November 18, 1997
Biennial Title Insurance Rate Hearing

Tallahassee, Florida, September 8, 1997
NCCI Workers Compensation Insurance Rate Hearing

Austin, Texas, April 8, 1997
Texas Auto Insurance Plan Association Rate Hearing

Austin, Texas, March 10, 1997
Auto Insurance Benchmark Rate Hearing

San Francisco, California, March 4, 1997
Insurance Department Hearing on Rating Factors

Raleigh, North Carolina, July 16, 1996
Auto Insurance Rate Hearing

San Francisco, California, March 11, 1996
Century National Proposition 103 Rollback Hearing

Sacramento, California, January 30, 1996
Hartford Steam Boiler Proposition 103 Rollback Hearing

San Francisco, California, January 8, 1996
SAFECO Insurance Company Earthquake Rate Hearing

Austin, Texas, December 21, 1995
Residential Property Insurance Benchmark Rate Hearing

Clearwater, Florida, December 8, 1995
Florida Windstorm Underwriting Association Rate Hearing

Austin, Texas, November 28, 1995
Private Passenger Auto Insurance Benchmark Rate Hearing

Austin, Texas, October 31, 1995
Texas Automobile Insurance Plan Association Rate Hearing

Sacramento, California, April 18, 1995
California Insurance Department Hearing on Auto Insurance Rating Factors

Portland, Maine, April 13, 1995
Workers Compensation Assigned Risk Pool Fresh Start Hearing

San Francisco, California, February 6, 1995
Farmers Insurance Group Earthquake Insurance Rate Hearing

Austin, Texas, January 6, 1995
Special Hearing on Classification Rules for Automobile Insurance

Austin, Texas, December 15, 1994
Residential Property Insurance Benchmark Rate Hearing

Austin, Texas, October 4, 1994
Texas Automobile Insurance Plan Association Rate Hearing

Austin, Texas, September 27, 1994
Private Passenger Auto Insurance Benchmark Rate Hearing

Raleigh, North Carolina, July 19, 1994
Private Passenger Auto Insurance Rate Hearing

San Francisco, California, December 22, 1993
Century National Homeowner's Insurance Rate Hearing

Raleigh, North Carolina, October 13, 1993
Homeowners/Farmowners Insurance Rate Hearing

Tallahassee, Florida, October 4, 1993
Workers' Compensation Insurance Rate Hearing

Boston, Massachusetts, September 9, 1993
Automobile Insurance Rate Hearing

Austin, Texas, March 4, 1993
Residential Property Insurance Benchmark Rate Hearing

Austin, Texas, February 10, 1993
Automobile Insurance Benchmark Rate Hearing

Honolulu, Hawaii, November 18, 1992
Liberty Mutual Insurance Automobile Rate Hearing

Raleigh, North Carolina, November 13, 1992
Workers' Compensation Insurance Rate Hearing

Tallahassee, Florida, October 29, 1992
Workers' Compensation Insurance Rate Hearing

San Francisco, California, October 14, 1992
Workers' Compensation Insurance Rate Hearing

Atlanta, Georgia, September 24, 1992
Workers' Compensation Insurance Rate Hearing

Nashville, Tennessee, May 27, 1992
Workers' Compensation Insurance Rate Hearing

San Francisco, California, May 13, 1992
Workers' Compensation Insurance Rate Hearing

Los Angeles, California, April 10, 1992
Mercury General Proposition 103 Rollback Proceedings

Austin, Texas, January 27, 1992
Texas Automobile Insurance Plan Rate Hearing

Austin, Texas, December 17, 1991
Automobile Insurance Rate Hearing

Raleigh, North Carolina, December 16, 1991
Workers' Compensation Insurance Rate Hearing

San Francisco, California, October 22, 1991
Workers' Compensation Rate Hearing

Los Angeles, California, May 23, 1991,
Proposition 103 RCD-2 Proceedings

San Francisco, California, April 9, 1991
California Workers' Compensation Rate Study Commission

Nashville, Tennessee, March 20, 1991
Workers' Compensation Insurance Rate Hearing

Los Angeles, California, March 12, 1991,
California Workers' Compensation Rate Study Commission

Olympia, Washington, February 26, 1991,
House Financial Institutions/Insurance Committee Hearing on Rules for Insurance Regulatory Legislation

Olympia, Washington, November 27, 1990,
Insurance Department Public Hearing on Proposed Rules for Ratemaking

Harrisburg, Pennsylvania, November 12, 1990,
Allstate Insurance Company Automobile Insurance Rate Hearing

Tallahassee, Florida, November 1, 1990,
Scanlan v. Martinez, et.al., Superior Court of Leon County

San Bruno, California, October 1, 1990,
SAFECO Insurance Group Proposition 103 Rate Rollback Hearing

Austin, Texas, July 23, 1990,
Texas State Board of Insurance Special Hearing on Investment Income in Ratemaking

Harrisburg, Pennsylvania, July 18, 1990,
Pennsylvania National Mutual Insurance Company Automobile Insurance Rate Hearing

Harrisburg, Pennsylvania, June 28, 1990,
Harleysville Mutual Insurance Company Automobile Insurance Rate Hearing

Columbia, South Carolina, March 30, 1990,
Workers' Compensation Insurance Rate Hearing

San Bruno, California, March 19, 1990,
California Proposition 103 Generic Hearing

Denver, Colorado, December 12, 1989,
Workers' Compensation Insurance Rate Hearing

Tampa, Florida, October 23, 1989,
Workers' Compensation Insurance Rate Hearing

Austin, Texas, October 17, 1989,
Workers' Compensation Insurance Rate Hearing

Los Angeles, California, September 25, 1989,
SAFECO Insurance Company of America Proposition 103 Rate Hearing

Austin, Texas, August 29, 1989,
Texas Insurance Advisory Association Property Insurance Rate Hearing

Providence, Rhode Island, April 13, 1989,
Workers' Compensation Insurance Rate Hearing

Augusta, Maine, January 24, 1989,
Workers' Compensation Insurance Rate Hearing

Hartford, Connecticut, November 14, 1988,
Workers' Compensation Insurance Rate Hearing

Tallahassee, Florida, November 3, 1988,
Workers' Compensation Insurance Rate Hearing

Austin, Texas, November 2, 1988,
Workers' Compensation Insurance Rate Hearing

Montgomery, Alabama, June 30, 1988,
Workers' Compensation Insurance Rate Hearing

Augusta, Maine, March 24, 1988,
Workers' Compensation Insurance Rate Hearing

Austin, Texas, October 27, 1987,
Workers' Compensation Insurance Rate Hearing

Tallahassee, Florida, October 9, 1987,
Workers' Compensation Insurance Rate Hearing

Atlanta, Georgia, August 6, 1987,
Workers' Compensation Insurance Rate Hearing

Augusta, Maine, February 24, 1987,
Workers' Compensation Insurance Rate Hearing

Tallahassee, Florida, November 14, 1986,
Workers' Compensation Insurance Rate Hearing

Austin, Texas, November 18, 1986,
Workers' Compensation Insurance Rate Hearing

Augusta, Maine, May 28, 1986,
Workers' Compensation Insurance Rate Hearing

Tallahassee, Florida, December 6, 1985,
Workers' Compensation Insurance Rate Hearing

Oklahoma City, Oklahoma, October 10, 1985,
Workers' Compensation Insurance Rate Hearing

Austin, Texas, July 23, 1985,
Workers' Compensation Insurance Rate Hearing

Austin Texas, June 14, 1985,
Workers' Compensation Insurance Rate Hearing

Tallahassee, Florida, November 18, 1984,
Workers' Compensation Insurance Rate Hearing

Austin, Texas, August 29, 1984,
Workers' Compensation Insurance Rate Hearing

Portland, Oregon, March 6, 1984,
National Association of Insurance Commissioners,
Public Hearing on Investment Income and Insurance Profitability

Tallahassee, Florida, February 25, 1984,
Workers' Compensation Insurance Rate Hearing

Tallahassee, Florida, August 18, 1983,
Workers' Compensation Insurance Rate Hearing

Austin Texas, July 13, 1983,
Workers' Compensation Insurance Rate Hearing

Oklahoma City, Oklahoma, March 6, 1983,
Workers' Compensation Insurance Rate Hearing

Baton Rouge, Louisiana, March 16, 1982,
Louisiana Insurance Commission Public Hearing on Investment Income

Providence, Rhode Island, February 3, 1982,
Workers' Compensation Insurance Rate Hearing

Augusta, Maine, October 1, 1981,
Workers' Compensation Insurance Rate Hearing

NORTH CAROLINA RATING BUREAU
EXHIBIT RB-14, Sheet 1
MH - F
Underwriting Profit Calculation
Statewide Total

	Total
(1) Expected Value of Net Losses	21,458,748
(2) Expected Value of Ceded Losses	2,407,497
(3) Expected Value of All Losses (1)+(2)	23,866,245
(4) Commission and Brokerage	14.27%
(5) Other Acquisition	3.44%
(6) General	2.52%
(7) Taxes Licenses and Fees	2.73%
(8) Reinsurance Expense Cost	0.82%
(9) Cost of Reinsurer Capital	17.40%
(10) Net Profit	8.00%
(11) Loss Adjustment Expense Factor	1.089
(12) Total Indicated Premium ((3) x (11)) / (1-Sum[(4) to (10)])	51,149,801
(13) Total Indicated Underwriting Profit (10) x (12)	4,091,984
(14) Investment Income on Reserves as a Percentage of Losses & LAE	5.24%
(15) Total Indicated Investment Income on Reserves (1) x (11) x (14)	1,224,222
(16) Total Profit excluding Investment Income on Surplus (13) + (15)	5,316,206
(17) Premium/Allocated Surplus Ratio	1.19
(18) Total Available Surplus (12)/(17)	42,946,936
(19) Available for Allocation (16) + (18)	48,263,142

Notes:

1. (1)-(3) From Simulation
2. (4)-(7), (11) from ISO
3. (8), (9) See Exhibit RB-14, Sheet 2
4. (14), (17) Milliman Analysis

NORTH CAROLINA RATING BUREAU
EXHIBIT RB-14, Sheet 2
MH - F
Calculation of Reinsurance Cost
Statewide Total

	Total
(1) Hurricane Losses	7,221,348
(2) Loss Adjustment Expense Factor	1.089
(3) Hurricane Losses and Loss Expenses (1) x (2)	7,864,770
(4) Percent Reinsured	0.482
(5) Reinsured Losses (3) x (4)	3,790,628
(6) Reinsurance Expense Factor	0.90
(7) Reinsurance Loss+Expenses (5) / (6)	4,211,809
(8) Reinsurance Expense Cost (7)-(5)	421,181
(9) Reinsurance Premium to Surplus Ratio	0.26
(10) Reinsurer Underwriting Return Percent of Surplus	16.7%
(11) Reinsurer Underwriting Return Percent of Premium (10) / (9)	64.7%
(12) Reinsurance Premium (7) / (1.000-(11))	11,945,760
(13) Reinsurer Expected Underwriting Profit (12)-(7)	7,733,951
(14) Direct Losses	24,939,262
(15) Direct Losses and LAE (14) x (2)	27,161,350
(16) Direct Variable Expense (Excl Reinsurance)	30.95%
(17) Direct Premium Including Reinsurance Cost ((15) + (13) + (8)) / (1.000-(16))	51,149,801
(18) Reinsurance Expense Cost as % of Direct Premium (8) / (17)	0.82%
(19) Cost of Reinsurer Capital as % of Direct Premium	17.40%
(20) Reinsurance Premium as % of Direct Premium (12) / (17)	23 35%

Notes:

(1), (5) from Simulation, includes AEF
(2), (16) From Sheet 1
(4) Assumes 90% hurricane losses are reinsured from 2xmean to 1/100 year event.
(6) Judgment based on Professional Reinsurers Cat Expenses.
(9) Milliman Analysis.
(10) Underwriting return that produces reasonable after-tax return on surplus.
(14) From Simulation, includes AEF ceded losses
(19) =((13)+ (5) - Sheet1(2) x (2)) / (17)

NORTH CAROLINA RATING BUREAU

EXHIBIT RB-15, Sheet 1

Using Standard Deviation to Allocate Profit

	Zone 1	*Zone 2*	*Sum*
Allocation of Primary Company Amounts			
(1) Standard Deviation of Net Losses	6,515,047	7,442,024	13,957,071
(2) Allocation Percent [(1) / Sum(1)]	46.7%	53.3%	100.0%
(3) Expected Profit to Allocate	2,481,562	2,834,644	5,316,206
(4) Expected Losses	2,513,357	18,945,391	21,458,748
(5) Loss Adjustment Expense Factor	1.089	1.089	1.089
(6) Expected Losses and Loss Expenses [(4) x (5)]	2,737,297	20,633,426	23,370,723
(7) Expected Investment Income on Policy Reserves Percent	5.2%	5.2%	5.2%
(8) Underwriting Profit (3) - (6) x (7)	2,338,175	1,753,810	4,091,984
(9) Variable Expense Percent	22.95%	22.95%	22.95%
Allocation of Reinsurer Amounts			
(10) Standard Deviation of Ceded Losses	7,545,489	8,144,083	15,689,572
(11) Allocation Percent [(1) / Sum(1)]	48.1%	51.9%	100.0%
(12) Expected Profit to Allocate	3,814,935	4,117,579	7,932,514
(13) Expected Ceded Losses	1,218,970	1,188,527	2,407,497
(14) Additional AEF Ceded Losses	448,449	624,568	1,073,017
(15) Loss Adjustment Expense Factor	1.089	1.089	1.089
(16) Expected Losses and Loss Expenses [(13) +(14)] x (15)]	1,815,986	1,974,641	3,790,628
(17) Expected Investment Income on Policy Reserves Percent	5.2%	5.2%	5.2%
(18) Cost of Reinsurer Capital (12) - (16) x (17) + (14) x (15)	4,208,215	4,694,359	8,902,574
(19) Reinsurer Expenses (Total (19) allocated with (16))	213,253	207,927	421,181
Summary of Expense Provisions			
(20) Indicated Premium [((6) + (8) + (13) x (15) + (18) + (19)) / (1.000 - (9))]	14,049,571	37,100,230	51,149,801
(21) Underwriting Profit (Percent) (8) / (20)	16.6%	4.7%	8.0%
(22) Cost of Reinsurer Capital (Percent) (18) / (20)	30.0%	12.7%	17.4%
(23) Reinsurer Expenses (Percent) (19) / (20)	1.5%	0.6%	0.8%

Notes:
1. (1), (4), (10), (13), (14) From Simulation.
2. Sum(3) from Exhibit I, Zone amounts from Sum and Allocation Percentage (2).
3. (5), (7), (9), (15), (17) From Exhibit I.
4. Sum(12) from Exhibit I, Zone amounts from Sum and Allocation Percentage (11).
5. Sum(19) from Exhibit I, Zone amounts from Sum and Allocation based on (16).

NORTH CAROLINA RATING BUREAU

EXHIBIT RB-15, Sheet 2

Using Variance to Allocate Profit

	Zone 1	*Zone 2*	*Sum*
Allocation of Primary Company Amounts			
(1) Variance of Net Losses (in billions)	42,446	55,384	97,830
(2) Allocation Percent [(1) / Sum(1)]	43.4%	56.6%	100.0%
(3) Expected Profit to Allocate	2,306,571	3,009,635	5,316,206
(4) Expected Losses	2,513,357	18,945,391	21,458,748
(5) Loss Adjustment Expense Factor	1.089	1.089	1.089
(6) Expected Losses and Loss Expenses [(4) x (5)]	2,737,297	20,633,426	23,370,723
(7) Expected Investment Income on Policy Reserves Percent	5.2%	5.2%	5.2%
(8) Underwriting Profit (3) - (6) x (7)	2,163,184	1,928,800	4,091,984
(9) Variable Expense Percent	22.95%	22.95%	22.95%
Allocation of Reinsurer Amounts			
(10) Variance of Ceded Losses (in billions)	56,934	66,326	123,260
(11) Allocation Percent [(1) / Sum(1)]	46.2%	53.8%	100.0%
(12) Expected Profit to Allocate	3,664,053	4,268,461	7,932,514
(13) Expected Ceded Losses	1,218,970	1,188,527	2,407,497
(14) Additional AEF Ceded Losses	448,449	624,568	1,073,017
(15) Loss Adjustment Expense Factor	1.089	1.089	1.089
(16) Expected Losses and Loss Expenses [(13) +(14)] x (15)]	1,815,986	1,974,641	3,790,628
(17) Expected Investment Income on Policy Reserves Percent	5.2%	5.2%	5.2%
(18) Cost of Reinsurer Capital (12) - (16) x (17) + (14) x (15)	4,057,333	4,845,241	8,902,574
(19) Reinsurer Expenses (Total (19) allocated with (16))	213,253	207,927	421,181
Summary of Expense Provisions			
(20) Indicated Premium [((6) + (8) + (13) x (15) + (18) + (19)) / (1.000 - (9))]	13,626,608	37,523,193	51,149,801
(21) Underwriting Profit (Percent) (8) / (20)	15.9%	5.1%	8.0%
(22) Cost of Reinsurer Capital (Percent) (18) / (20)	29.8%	12.9%	17.4%
(23) Reinsurer Expenses (Percent) (19) / (20)	1.6%	0.6%	0.8%

Notes:

1. (1), (4), (10), (13), (14) From Simulation.
2. Sum(3) from Exhibit I, Zone amounts from Sum and Allocation Percentage (2).
3. (5), (7), (9), (15), (17) From Exhibit I.
4. Sum(12) from Exhibit I, Zone amounts from Sum and Allocation Percentage (11).
5. Sum(19) from Exhibit I, Zone amounts from Sum and Allocation based on (16).

NORTH CAROLINA RATING BUREAU

EXHIBIT RB-15, Sheet 3

Using Losses at Probability of Ruin to Allocate Profit

	Zone 1	*Zone 2*	*Sum*
Allocation of Primary Company Amounts			
(1) Net Losses at Probability of Ruin	12,492,023	29,667,694	42,159,717
(2) Allocation Percent [(1) / Sum(1)]	29.6%	70.4%	100.0%
(3) Expected Profit to Allocate	1,575,204	3,741,002	5,316,206
(4) Expected Losses	2,513,357	18,945,391	21,458,748
(5) Loss Adjustment Expense Factor	1.089	1.089	1.089
(6) Expected Losses and Loss Expenses [(4) x (5)]	2,737,297	20,633,426	23,370,723
(7) Expected Investment Income on Policy Reserves Percent	5.2%	5.2%	5.2%
(8) Underwriting Profit (3) - (6) x (7)	1,431,817	2,660,167	4,091,984
(9) Variable Expense Percent	22.95%	22.95%	22.95%
Allocation of Reinsurer Amounts			
(10) Ceded Losses at Probability of Ruin	37,388,991	39,551,004	76,939,994
(11) Allocation Percent [(1) / Sum(1)]	48.6%	51.4%	100.0%
(12) Expected Profit to Allocate	3,854,805	4,077,709	7,932,514
(13) Expected Ceded Losses	1,218,970	1,188,527	2,407,497
(14) Additional AEF Ceded Losses	448,449	624,568	1,073,017
(15) Loss Adjustment Expense Factor	1.089	1.089	1.089
(16) Expected Losses and Loss Expenses [(13) +(14)] x (15)]	1,815,986	1,974,641	3,790,628
(17) Expected Investment Income on Policy Reserves Percent	5.2%	5.2%	5.2%
(18) Cost of Reinsurer Capital (12) - (16) x (17) + (14) x (15)	4,248,085	4,654,489	8,902,574
(19) Reinsurer Expenses (Total (19) allocated with (16))	213,253	207,927	421,181
Summary of Expense Provisions			
(20) Indicated Premium [((6) + (8) + (13) x (15) + (18) + (19)) / (1.000 - (9))]	12,924,923	38,224,878	51,149,801
(21) Underwriting Profit (Percent) (8) / (20)	11.1%	7.0%	8.0%
(22) Cost of Reinsurer Capital (Percent) (18) / (20)	32.9%	12.2%	17.4%
(23) Reinsurer Expenses (Percent) (19) / (20)	1.6%	0.5%	0.8%

Notes:
1. (1), (4), (10), (13), (14) From Simulation.
2. Sum(3) from Exhibit I, Zone amounts from Sum and Allocation Percentage (2).
3. (5), (7), (9), (15), (17) From Exhibit I.
4. Sum(12) from Exhibit I, Zone amounts from Sum and Allocation Percentage (11).
5. Sum(19) from Exhibit I, Zone amounts from Sum and Allocation based on (16).

NCRB - PRO FORMA STATUTORY RETURN

MOBILE HOME - F

		Pre-Tax	Tax Liability	Post-Tax
1	Premiums	100 00%		
	Loss & Loss Adjustment Expense	50 82%		
	Commission & Brokerage	14 27%		
	General Expense	2 52%		
	Other Acquisition Expense	3 44%		
	Taxes, Licenses and Fees	2 73%		
	Net Cost of Reinsurance	18.23%		
2	Pro-Forma Underwriting Profit	8 00%		
3	Installment Fee Income	0 38%		
4	Regular tax		2 93%	
5.	Additional tax due to TRA		0 31%	
6.	Return from Underwriting (post-tax)			5 13%
7	Investment Gain on Insurance Transaction	2.66%		
	Less Investment Income on Agents Balances	0 34%		
	Net Investment Gain on Insurance Transaction	2 33%	0 61%	1.71%
8	Statutory Return as a % of Premium (post-tax)			6 85%
9	Premium-to-Net Worth Ratio			1 000
10	Statutory Return as a % of Net Worth (post-tax)			6 85%

Note: Lines (1) to (8) are all expressed as a % of premium.

Assumptions

(a) UW Tax Rate =	35 00%
(b) Inv Income Tax Rate =	26 27%
(c) Inv. Yield =	5 71%
(d) P/S Ratio =	1 19
(e) NW/S Ratio =	1 19
(f) Installment Fee Income=	0 36%
(g) Additional TRA tax=	0 29%
(h) Deviations=	5 00%
(i) Net Cost of Reinsurance=	18 23%

NOTES TO EXHIBIT RB-16, Page 1

1. The expense provisions are those used in Exhibit RB-1.

2. Selected by Rate Bureau.

3. See assumption (f) below.

4. [(2)+(3)] x (a)

5. See assumption (g) below.

6. (2) + (3) - [(4) + (5)].

7. Pages 7-10. Investment income on agents' balances equals .139 x 1 031 x (c), where .139 is agents' balances for premiums due less than 90 days and 1.031 is the factor to include the effect of agents' balances or uncollected premiums overdue for more than 90 days.

8. (6) + (7).

9. (d)/(e).

10. (8) x (9)

ASSUMPTIONS

(a) Internal Revenue Code.

(b) See RB-16, pp. 11-13; 1-avg post-tax yield/avg pre-tax yield.

(c) See RB-16, pp. 11-13; average of current and embedded yields.

(d) See RB-16, p 14

(e) See RB-16, p. 15.

(f) See RB-16, p. 3

(g) See RB-16, pp. 4-6

(h) Rate Bureau selected value

(i) See RB-14

NCRB - PRO FORMA STATUTORY RETURN
ADJUSTED TO INCLUDE INVESTMENT INCOME ON SURPLUS
MOBILE HOME - F

		Pre-Tax	Tax Liability	Post-Tax
1	Premiums	100.00%		
	Loss & Loss Adjustment Expense	50 82%		
	Commission & Brokerage	14 27%		
	General Expense	2 52%		
	Other Acquisition Expense	3 44%		
	Taxes, Licenses and Fees	2.73%		
	Net Cost of Reinsurance	18 23%		
2	Pro-Forma Underwriting Profit	8 00%		
3	Installment Fee Income	0 38%		
4	Regular tax		2 93%	
5	Additional tax due to TRA		0 31%	
6	Return from Underwriting (post-tax)			5 13%
7	Investment Gain on Insurance Transaction	2 66%		
	Less Investment Income on Agents Balances	0 34%		
	Net Investment Gain on Insurance Transaction	2 33%	0.61%	1 71%
8	Investment Gain on Surplus (Including Prepaid Expense Adjustment)	6 08%	1 60%	4 48%
9.	Total Return as a % of Premium (post-tax)			11 33%
10.	Premium-to-Net Worth Ratio			1 000
11	Total Return as a % of Net Worth (post-tax)			11 33%

Note: Lines (1) to (9) are all expressed as a % of premium.

Assumptions

(a) UW Tax Rate =	35 00%
(b) Inv. Income Tax Rate =	26 27%
(c) Inv Yield =	5 71%
(d) P/S Ratio =	1 19
(e) NW/S Ratio =	1 19
(f) Installment Fee Income=	0 38%
(g) Additional TRA tax=	0 31%
(h) Deviations=	5 00%
(i) Net Cost of Reinsurance=	18 23%

NOTES TO EXHIBIT RB-16, Page 1

1 The expense provisions are those used in Exhibit RB-1.

2. Selected by Rate Bureau

3. See assumption (f) below.

4. [(2)+(3)] x (a).

5. See assumption (g) below.

6. (2) + (3) - [(4) + (5)]

7 Pages 7-10. Investment income on agents' balances equals .139 x 1.031 x (c), where .139 is agents' balances for premiums due less than 90 days and 1.031 is the factor to include the effect of agents' balances or uncollected premiums overdue for more than 90 days.

8 (c.)/(d.) + (prepaid expenses/premium)*(c.).

9. (6) + (7) + (8).

10. (d.) / (e.)

11. (9) x (10).

ASSUMPTIONS

(a) Internal Revenue Code.

(b) See RB-16, pp. 11-13; 1-avg post-tax yield/avg pre-tax yield.

(c) See RB-16, pp. 11-13; average of current and embedded yields.

(d) See RB-16, p. 14

(e) See RB-16, p. 15.

(f) See RB-16, p. 3

(g) See RB-16, pp. 4-6

(h) Rate Bureau selected value

(i) See RB-14

NORTH CAROLINA
MOBILE HOME INSTALLMENT PAYMENT INCOME
(in thousands)

Year	Post Tax Inst. Charges	Written Premium	Inst. Charges as a % of Prem.
2002	262,575	105,306,879	0.25%
2003	416,804	103,900,916	0.40%
2004	464,896	95,598,375	0.49%
Totals	1,144,275	304,806,170	0.38%
Selected Value			0.38%

Source: From ISO.

NORTH CAROLINA
MOBILE HOME - F

ESTIMATION OF TRA TAXABLE INCOME

1	Earned Premium (current year)	100.00%
2	UEPR (previous year)	48.66%
3	UEPR (current year)	52.80%
4	Increase = (3)-(2)	4.14%
5	20% of Increase = Taxable Income	0.83%
6	Tax Liability = (5)x.35	0.29%
7	Unpaid Losses (current year)	10.26%
8	Discounted unpaid losses (current year)	9.53%
9	Unpaid Losses (previous year)	9.46%
10	Discounted unpaid losses (previous year)	8.79%
11	Additional Income	0.06%
12	Tax Liability	0.02%
	Other Tax Liabilities	
13	UEP	0.29%
14	Discounting of Loss Reserves	0.02%
15	Total	0.31%

NORTH CAROLINA
MOBILE HOME - F
CALCULATION OF TAXABLE INCOME

(1) AY Avg Acc Date	(2) AY Pay Pattern	(3) Percent Unpaid	(4) Total Losses	(5) Unpaid Losses
0.5	80.90%	19.10%	50.818	9.7
1.5	98.90%	1.10%	46.833	0.5
2.5	99.90%	0.10%	43.161	0.0
3.5	100.00%	0.00%	39.776	0.0
4.5	100.00%	0.00%	36.657	0.0
5.5	100.00%	0.00%	33.782	0.0
6.5	100.00%	0.00%	31.133	0.0
7.5	100.00%	0.00%	28.692	0.0
8.5	100.00%	0.00%	26.442	0.0
9.5	100.00%	0.00%	24.368	0.0
10.5	100.00%	0.00%	22.457	0.0
11.5	100.00%	0.00%	20.696	0.0
12.5	100.00%	0.00%	19.073	0.0
13.5	100.00%	0.00%	17.578	0.0
14.5	100.00%	0.00%	16.199	0.0
15.5	100.00%	0.00%	14.929	0.0
16.5	100.00%	0.00%	13.758	0.0
17.5	100.00%	0.00%	12.679	0.0
18.5	100.00%	0.00%	11.685	0.0
19.5	100.00%	0.00%	10.769	0.0
20.5	100.00%	0.00%	9.924	0.0
21.5	100.00%	0.00%	9.146	0.0
22.5	100.00%	0.00%	8.429	0.0
23.5	100.00%	0.00%	7.768	0.0
24.5	100.00%	0.00%	7.159	0.0
25.5	100.00%	0.00%	6.597	0.0
26.5	100.00%	0.00%	6.080	0.0
27.5	100.00%	0.00%	5.603	0.0
28.5	100.00%	0.00%	5.164	0.0
29.5	100.00%	0.00%	4.759	0.0
30.5	100.00%	0.00%	4.386	0.0
31.5	100.00%	0.00%	4.042	0.0
32.5	100.00%	0.00%	3.725	0.0
33.5	100.00%	0.00%	3.433	0.0
34.5	100.00%	0.00%	3.163	0.0
35.5	100.00%	0.00%	2.915	0.0
36.5	100.00%	0.00%	2.687	0.0
37.5	100.00%	0.00%	2.476	0.0
38.5	100.00%	0.00%	2.282	0.0
39.5	100.00%	0.00%	2.103	0.0
40.5	100.00%	0.00%	1.938	0.0
41.5	100.00%	0.00%	1.786	0.0
42.5	100.00%	0.00%	1.646	0.0
43.5	100.00%	0.00%	1.517	0.0
44.5	100.00%	0.00%	1.398	0.0
45.5	100.00%	0.00%	1.288	0.0
46.5	100.00%	0.00%	1.187	0.0
47.5	100.00%	0.00%	1.094	0.0
48.5	100.00%	0.00%	1.008	0.0
49.5	100.00%	0.00%	0.929	0.0
50.5	100.00%	0.00%	0.856	0.0
51.5	100.00%	0.00%	0.789	0.0
52.5	100.00%	0.00%	0.727	0.0
53.5	100.00%	0.00%	0.670	0.0
54.5	100.00%	0.00%	0.618	0.0
55.5	100.00%	0.00%	0.569	0.0
56.5	100.00%	0.00%	0.525	0.0
57.5	100.00%	0.00%	0.484	0.0
58.5	100.00%	0.00%	0.446	0.0
59.5	100.00%	0.00%	0.411	0.0
60.5	100.00%	0.00%	0.378	0.0
61.5	100.00%	0.00%	0.349	0.0
62.5	100.00%	0.00%	0.321	0.0
63.5	100.00%	0.00%	0.296	0.0
64.5	100.00%	0.00%	0.273	0.0
65.5	100.00%	0.00%	0.252	0.0
66.5	100.00%		0.232	0.0
Sum				10.26

(6) AY at 12/31/2006	(7) Discount Factor	(8) Discounted Weight
2006	0.929914	9.0
2005	0.907672	0.5
2004	0.906059	0.0
2003	0.909698	0.0
2002	0.882964	0.0
2001	0.904149	0.0
2000	0.905202	0.0
1999	0.921567	0.0
1998	0.908007	0.0
1997	0.948644	0.0
1996	0.966061	0.0
1995	0.980675	0.0
1994	0.980675	0.0
1993	0.980675	0.0
1992	0.980675	0.0
1991	0.980675	0.0
1990	0.980675	0.0
1989	0.980675	0.0
1988	0.980675	0.0
1987	0.980675	0.0
1986	0.980675	0.0
1985	0.980675	0.0
1984	0.980675	0.0
1983	0.980675	0.0
1982	0.980675	0.0
1981	0.980675	0.0
1980	0.980675	0.0
1979	0.980675	0.0
1978	0.980675	0.0
1977	0.980675	0.0
1976	0.980675	0.0
1975	0.980675	0.0
1974	0.980675	0.0
1973	0.980675	0.0
1972	0.980675	0.0
1971	0.980675	0.0
1970	0.980675	0.0
1969	0.980675	0.0
1968	0.980675	0.0
1967	0.980675	0.0
1966	0.980675	0.0
1965	0.980675	0.0
1964	0.980675	0.0
1963	0.980675	0.0
1962	0.980675	0.0
1961	0.980675	0.0
1960	0.980675	0.0
1959	0.980675	0.0
1958	0.980675	0.0
1957	0.980675	0.0
1956	0.980675	0.0
1955	0.980675	0.0
1954	0.980675	0.0
1953	0.980675	0.0
1952	0.980675	0.0
1951	0.980675	0.0
1950	0.980675	0.0
1949	0.980675	0.0
1948	0.980675	0.0
1947	0.980675	0.0
1946	0.980675	0.0
1945	0.980675	0.0
1944	0.980675	0.0
1943	0.980675	0.0
1942	0.980675	0.0
1941	0.980675	0.0
1940	0.980675	0.0
Sum		9.53

(9) AY at 12/31/2005	(10) Weight	(11) Discount Factor	(12) Discounted Weight
2005	8.94513709	0.929914	8.3
2004	0.47476637	0.907672	0.4
2003	0.03977598	0.906059	0.0
2002	0	0.909698	0.0
2001	0	0.882964	0.0
2000	0	0.904149	0.0
1999	0	0.905202	0.0
1998	0	0.921567	0.0
1997	0	0.908007	0.0
1996	0	0.948644	0.0
1995	0	0.966061	0.0
1994	0	0.980675	0.0
1993	0	0.980675	0.0
1992	0	0.980675	0.0
1991	0	0.980675	0.0
1990	0	0.980675	0.0
1989	0	0.980675	0.0
1988	0	0.980675	0.0
1987	0	0.980675	0.0
1986	0	0.980675	0.0
1985	0	0.980675	0.0
1984	0	0.980675	0.0
1983	0	0.980675	0.0
1982	0	0.980675	0.0
1981	0	0.980675	0.0
1980	0	0.980675	0.0
1979	0	0.980675	0.0
1978	0	0.980675	0.0
1977	0	0.980675	0.0
1976	0	0.980675	0.0
1975	0	0.980675	0.0
1974	0	0.980675	0.0
1973	0	0.980675	0.0
1972	0	0.980675	0.0
1971	0	0.980675	0.0
1970	0	0.980675	0.0
1969	0	0.980675	0.0
1968	0	0.980675	0.0
1967	0	0.980675	0.0
1966	0	0.980675	0.0
1965	0	0.980675	0.0
1964	0	0.980675	0.0
1963	0	0.980675	0.0
1962	0	0.980675	0.0
1961	0	0.980675	0.0
1960	0	0.980675	0.0
1959	0	0.980675	0.0
1958	0	0.980675	0.0
1957	0	0.980675	0.0
1956	0	0.980675	0.0
1955	0	0.980675	0.0
1954	0	0.980675	0.0
1953	0	0.980675	0.0
1952	0	0.980675	0.0
1951	0	0.980675	0.0
1950	0	0.980675	0.0
1949	0	0.980675	0.0
1948	0	0.980675	0.0
1947	0	0.980675	0.0
1946	0	0.980675	0.0
1945	0	0.980675	0.0
1944	0	0.980675	0.0
1943	0	0.980675	0.0
1942	0	0.980675	0.0
1941	0	0.980675	0.0
1940	0	0.980675	0.0
Sum			8.79

NOTES TO PAGES 4 AND 5

<u>Page 4</u>

1 Current year earned premium

2 Estimated prior year UEPR as percent of current year earned premium given assumed premium growth rate

3 Annual Statement, page 15, UEPR/Earned Premium for all companies writing this line of private passenger automobile insurance in North Carolina

4 Line (3) - line (2)

5 Line (4) x .20.

6 Line (5) x 35

7 Unpaid current-year losses at year-end as a percent of premium. Sum of Page 5, Column (5)

8 Discounted unpaid current-year losses at year-end as a percent of premium Sum of Page 5, Column (8)

9 Unpaid prior-year losses at year-end as a percent of premium Sum of Page 5, Column (5) divided by (1+ assumed growth rate)

10 Discounted unpaid prior-year losses at year-end as a percent of premium. Sum of Page 5, Column (12).

11 Line (7) - Line (8) - [Line (9) - Line (10)]

12 Line (11) x 35

13 Line (6)

14 Line (12)

15 Line (13) + Line (14)

<u>Page 5</u>

1 Midpoint of number of years since end of accident period

2 Accident year payout pattern developed from policy year developed losses

3 1 - Column (2)

4 Losses, given assumed historical growth rate

5 Column (3) x Column (4)

6 Accident Year at current year end

7 Discount factor per IRS Regulations

8 Column (5) x Column (7)

9 Accident Year at prior year end

10 Column (3), previous period x Column (4), current period

11 Discount factor per IRS Regulations.

12 Column (10) x Column (11)

NCRB INVESTMENT INCOME CALCULATION
MOBILE HOME - F
Projected Investment Earnings on Loss, Loss
Adjustment Expense and Unearned Premium Reserves

A. UNEARNED PREMIUM RESERVES		
1. Direct Earned Premiums		1,000,000
2. Mean UEPR	52.44%	524,400
3. Deductions for prepaid expenses		
Commissions & Brokerage	14.27%	
Taxes, Licenses & Fees	2.28%	
One Half Other Acquisition Expense	1.72%	
One Half General Expense	1.26%	
Cost of Reinsurance	23.35%	
Total	42.87%	
4. Deduction for Prepaid Expenses: (2) x (3)		224,825
5. Net UEPR		498,180
6. Net UEPR Subject to Inv (5) - (4)		273,355
B. Loss and Loss Expense Reserves		
1. Direct Earned Premium		1,000,000
2. Expected Inc L & LAE to Premium Ratio	0.5082	508,183
3. Expected Mean L&LAE Reserve to Inc. L & LAE Ratio	0.379	192,839
C. Net PH Funds Subj to Inv (A6 + B3)		466,194
D. Average Rate of Return		5.71%
E. Investment Earnings from Net Reserves (D) x (E)		26,620
F. Average Rate of Return as a Percent of Direct Earned Premium (F) / (A1)		2.66%

ESTIMATED INVESTMENT EARNINGS ON UNEARNED PREMIUM RESERVES AND ON LOSS RESERVES

EXPLANATORY NOTES

Line A-1
All calculations are displayed per $1,000,000 direct earned premiums.

Line A-2
The mean unearned premium reserve is determined by multiplying the direct earned premiums in line (1) by the ratio of the mean unearned premium reserve to the collected earned premium for calendar year ended 12/31/04 for all companies writing Dwelling insurance in North Carolina. These data are from page 15 of the Annual Statement.

1. Collected Earned Premium for Calendar Year ended 12/31/04	43,201,179
2. Unearned Premium Reserve as of 12/31/03	22,499,561
3. Unearned Premium Reserve as of 12/31/04	22,808,702
4. Mean Unearned Premium Reserve 1/2 [(2) + (3)]	22,654,132
5. Ratio (4) ÷ (1)	0.5244

Line A-3
Deduction for prepaid expenses:
Production costs and a large part of the other company expenses in connection with the writing and handling of mobile home policies, exclusive of claim adjustment expenses, are incurred when the policy is written and before the premium is paid. The deduction for these expenses is determined from data provided by the NCRB for the year ended 12/31/04.

NORTH CAROLINA
MOBILE HOME - F

ESTIMATED INVESTMENT EARNINGS ON UNEARNED PREMIUM RESERVES AND ON LOSS RESERVES

EXPLANATORY NOTES

Line B-2
The expected loss and loss adjustment expense ratio reflects the expense provisions for the year ended 12/31/04.

Line B-3
The mean loss reserve is determined by multiplying the incurred losses in line (2) by the North Carolina ratio of the mean loss reserves to the incurred losses in 2004 for mobile home insurance. This ratio is based on North Carolina companies' Page 15 annual statement data and has been adjusted to include loss adjustment expense reserves.

1	Incurred Losses for CY	2000	534,064,358
2	Incurred Losses for CY	2001	467,635,393
3	Incurred Losses for CY	2002	615,781,446
4	Incurred Losses for CY	2003	776,431,232
5	Incurred Losses for CY	2004	564,832,213
6	Loss Reserves as of 12/31	1999	183,395,242
7	Loss Reserves as of 12/31	2000	172,331,938
8	Loss Reserves as of 12/31	2001	169,626,576
9	Loss Reserves as of 12/31	2002	270,561,755
10	Loss Reserves as of 12/31	2003	215,086,893
11	Loss Reserves as of 12/31	2004	231,943,893
12	Mean Loss Reserve	2000	177,863,590
13	Mean Loss Reserve	2001	170,979,257
14	Mean Loss Reserve	2002	220,094,166
15	Mean Loss Reserve	2003	242,824,324
16	Mean Loss Reserve	2004	223,515,393
17	Loss Reserve Ratio	2000	0.333
18	Loss Reserve Ratio	2001	0.366
19	Loss Reserve Ratio	2002	0.357
20	Loss Reserve Ratio	2003	0.313
22	Average Loss Reserve Ratio		0.353
23	Ratio of LAE Reserves to Loss Reserves		0.249
24	Ratio of Incurred LAE to Incurred Losses		0.161
25	Loss and LAE Reserve/Incurred Loss&LAE		0.379

ESTIMATED INVESTMENT EARNINGS ON UNEARNED PREMIUM RESERVES AND ON LOSS RESERVES

EXPLANATORY NOTES

Line E

The average rate of return is calculated as the arithmetic mean of the embedded and current yileds. The embedded yield is the sum of two ratios: the most recent ratio of investment income invested assets (shown below), plus the ten year average ratio of capital gains to invested assets (see page 12). The current yield is the estimated, currently available rate of return (including income and expected capital gains) on the property/casualty industry investment portfolio (see page 11).

Embedded Yield =	5.85%
Current Yield =	5.57%
Average =	5.71%

PORTFOLIO YIELD AND TAX RATE - CURRENT YIELD

(1) Investable Asset	(2) Percent of Assets	(3) Estimated Prospective Pre-Tax Return	(4) Tax Rate	(5) Estimated Prospective Post-Tax Return
Bonds				
U.S. Govt	12.91%	4.83%	35.00%	3.14%
States & territories	13.74%	3.69%	5.25%	3.50%
Special revenue	22.59%	3.63%	5.25%	3.44%
Public Utilities	1.55%	5.55%	35.00%	3.61%
Industrial	21.08%	5.45%	35.00%	3.54%
Preferred stock	1.03%	5.82%	14.18%	4.99%
Common stock	17.67%	12.49%	31.55%	8.55%
Mortgage Loans	0.26%	6.20%	35.00%	4.03%
Real estate	0.85%	8.79%	35.00%	5.71%
Cash & short-term invs.	8.32%	4.85%	35.00%	3.15%
Rate of Return Pre-Inv Exp	100.00%	5.95%	26.87%	4.35%
Investment Expenses		0.37%	35.00%	0.24%
Portfolio Rate of Return		**5.57%**	26.33%	**4.11%**

Sources:

Various issues of Federal Reserve Statistical Release, H.15(519).
Mergent Bond Record.
Standard & Poor's CreditWeek.
Value Line Investment Survey, Part II.
Ibbotson Associates, SBBI Valuation Edition 2007Yearbook.
Ibbotson and Siegel, AREUEA Journal, 1984.
A.M. Best's Aggregates & Averages, 2007 edition.

PORTFOLIO YIELD AND TAX RATE EMBEDDED YIELD	Income	Tax Rate
Bonds		
Taxable	23,254,464	35.00%
Non-Taxable	13,189,050	5.25%
Stocks		
Taxable	3,675,690	14.18%
Non-Taxable	3,597,641	5.25%
Mortgage Loans	194,195	35.00%
Real Estate	1,650,988	35.00%
Contract Loans	2,367	35.00%
Cash / Short Term Inv.	3,006,076	35.00%
All Other	7,530,681	35.00%
Total	56,101,152	24.73%
Inv. Expenses	4,363,521	35.00%
Net Inv. Income	51,737,631	23.86%
Mean Invested Assets	1,120,112,663	
Inv. Inc. Yield Rate	4.62%	23.86%
Capital Gains (10 yr. avg) (% Of Inv. Assets)	1.24%	35.00%
Invest. Yield Rate (pre-tax)	**5.85%**	**26.21%**
Invest. Yield Rate (post-tax)	**4.32%**	

Source: Best's Aggregates and Averages, 2006 Edition, p. 12 (Exhibit of Net Investment Income, Col. 2 (Earned During Year)).
Capital Gains: RB-16, page 13

CAPITAL GAINS OR LOSSES
AS A PERCENT OF MEAN ASSETS
(All amounts in thousands of dollars)

Calendar Year	Mean Total Invested Assets	Realized Capital Gains	
		Amount	Percent
1996	682,407,194	9,243,907	1.35%
1997	733,433,983	10,807,929	1.47%
1998	781,421,247	18,019,189	2.31%
1999	797,920,622	13,016,157	1.63%
2000	794,195,460	16,204,649	2.04%
2001	785,530,275	6,630,679	0.84%
2002	815,037,267	2,770,997	0.34%
2003	908,024,056	6,280,196	0.69%
2004	1,018,810,319	9,113,199	0.89%
2005	1,120,112,663	12,194,108	1.09%
Total	8,436,893,083	104,281,010	1.24%

*Mean total invested assets is the average of the current year and prior year values of total invested assets (annual statement page 2, Line 9).

Source: "Best's Aggregates & Averages--Property-Casualty," various editions

NORTH CAROLINA
MOBILE HOME - F

PREMIUM-TO-SURPLUS RATIOS

Year	P/S Ratio
1996	1.399
1997	1.076
1998	0.982
1999	0.976
2000	1.033
2001	1.198
2002	1.418
2003	1.372
2004	1.259
2005	1.197
Ten-Year Average	1.191

Notes:

1 Ratios based on net premium written.
2 From Best's Data Service and Best's Aggregate and Averages.
3 Top 30 groups each year.

NORTH CAROLINA PRIVATE PASSENGER AUTO
CALCULATION OF GAAP NET WORTH TO SURPLUS RATIO

	2001	2002	2003	2004	2005
Policyholder Surplus	289,605,554,159	285,385,631,797	347,020,052,576	391,294,425,276	425,759,944,800
+ Deferred Acquisition Costs	18,331,855,434	21,228,221,405	23,633,976,782	25,336,389,277	26,322,460,773
+ Non-Admitted DTA Provision	12,395,001,383	20,975,201,995	18,945,643,538	19,919,892,745	20,389,557,802
+ Non-admitted Assets (non-tax part)	14,452,932,464	15,273,483,824	16,495,566,662	22,629,830,486	23,050,311,315
+ Provision for Reinsurance	5,471,002,096	6,130,614,136	5,802,642,707	5,971,612,606	5,757,810,700
+ Provision for FASB 115(after-tax)	5,281,971,040	10,573,599,824	11,598,154,936	13,697,026,260	4,664,626,701
- Surplus Notes	(6,648,831,578)	(8,050,443,917)	(9,589,168,207)	(10,569,400,392)	(11,102,999,699)
GAAP-adjusted Net Worth	338,889,484,998	351,516,309,064	413,906,868,994	468,279,776,257	494,841,712,392
Ratio of GAAP Net Worth to Statutory Surplus	1.17	1.23	1.19	1.20	1.16
Five Year Average	1.19				

Source: ISO