

Ohio Bureau of Workers' Compensation Oversight Commission

RFP #B07016

Task A: Evaluation of Historical BWC Profitability

**Task B: Evaluation of BWC's Current Surplus
Adequacy and Premium Ratemaking
Methodologies**

**Task C: Evaluation of BWC's Current Practices
Relative to Industry Standards in the Areas of
Ratemaking and Reserve Development**

June 14, 2007

Aon Risk Consultants

Actuarial & Analytics Practice

1650 Market Street • Suite 1000 • Philadelphia, PA 19103 • Tel: +1.215.255.1827



Actuarial and Analytics Practice

June 14, 2007

Ohio Workers Compensation Oversight Commission
c/o Win McCausland
Columbus, OH

Re: RFP #B07016

Dear Win:

This document constitutes the final report of Aon Risk Consultants (ARC) prepared in response to RFP #B07016 issued by the Ohio Workers Compensation Oversight Commission (WCOC). In our report, we perform the following three tasks, as requested in the RFP:

- Task A - Provide an analysis of the Ohio Bureau of Workers' Compensation's (BWC) historical underwriting profit or loss for the past five years and identify underlying drivers.
- Task B - Evaluate the BWC's current surplus adequacy and premium ratemaking methodologies.
- Task C - Evaluate the BWC's current practices relative to insurance industry standards, both state and private, in the areas of ratemaking and reserve development.

The first section of our report contains a consolidated Executive Summary that encapsulates our findings and conclusions for all three tasks. The three sections that follow contain the individual reports for Task A, Task B and Task C, respectively.

We would like to thank the WCOC for the opportunity to provide actuarial consulting services. We would also like to acknowledge Liz Bravender and the Actuarial Section of the Ohio BWC, along with the consultants at Oliver Wyman for their support and assistance throughout the duration of the project.

Best Regards,

Joseph P. Kilroy, FCAS, MAAA
Director & Actuary

Aon Risk Consultants, Inc.

One Liberty Place • 1650 Market Street • Suite 1000 • Philadelphia, PA 19103
tel: 215.255.2000 • fax: 215.255.1893 • www.aon.com

Ohio Bureau of Workers' Compensation Oversight Commission

RFP #B07016

MASTER EXECUTIVE SUMMARY

June 14, 2007

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1650 Market Street • Suite 1000 • Philadelphia, PA 19103 • Tel: +1.215.255.1827

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I. Introduction

Purpose

Aon Risk Consultants (“ARC”) has been retained by the Ohio Bureau of Workers’ Compensation Oversight Commission (“WCOC”) to supply actuarial consulting services in support of the WCOC’s evaluation of the performance of the Ohio workers’ compensation system and in comparing Ohio’s system to other state and private compensation systems.

Specifically, ARC has been engaged to perform the following three tasks:

- Task A. Provide an analysis of the Ohio Bureau of Workers’ Compensation’s (“BWC”) historical underwriting profit or loss for the past five years and identify underlying drivers.
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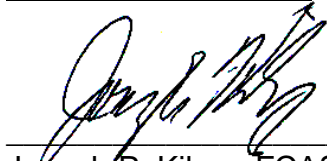
Scope

In this section, we present a consolidated Executive Summary. Its purpose is to summarize our findings and conclusions for all three tasks in one self-contained document. More detailed information is contained in the individual reports which are included in subsequent sections.

Please contact the undersigned if you have any questions regarding this report.

Respectfully submitted,

Aon Risk Consultants



Joseph P. Kilroy, FCAS, MAAA
Director & Actuary
(215) 255-1827

II. Conditions and Limitations

Inherent Uncertainty

Actuarial calculations produce estimates of inherently uncertain future contingent events. We believe that the estimates provided represent reasonable provisions based on the appropriate application of actuarial techniques to the available data. However, there is no guarantee that actual future payments will not differ from estimates included herein.

Data Reliance

In conducting this analysis, we relied upon the provided data without audit or independent verification. Any inaccuracies in quantitative data or qualitative representations could have a significant effect on the results of our review and analysis.

Use and Distribution

Use of this report is limited to the WCOC for the specific purpose described in the Introduction section. Other uses are prohibited without an executed release with ARC.

Distribution by the WCOC is unrestricted. We request that ARC be notified of further distribution of this report. The report should only be distributed in its entirety including all supporting exhibits.

III. Task A

Note: This, Part A of a three-part report, is focused on the five-year historical results of the Bureau of Workers Compensation (BWC). Parts B and C have conclusions which are integral to this report and must be taken in conjunction with the findings herein. Further, in providing this historical look, we provide examples of alternative views (for example, increased capital) of certain components of the BWC's financial statements for comparison and educational purposes. Full evaluations of new potential operational structures (for example, privatization) related to these alternative views are beyond the scope of this assignment.

We evaluated the five-year historical results of the BWC by:

- Reviewing historical financial and actuarial documents.
- Personal interviews of the BWC staff.
- Testing the financial performance by restating results based on underlying drivers (including loss reserve discounting and a hindsight review of ultimate losses).
- Reviewing individual fund performance after cost allocation of the Administrative Cost Fund.
- Comparing key performance metrics to those of two current and two former state monopolistic funds.

Our principal findings are as follows:

Insurance results stable. Results have been relatively stable for the key insurance components of exposures insured, premiums collected, and losses paid. This is important as these are the underlying factors of overall performance. Over the period 2002-2006, these factors showed stability and a modest degree of movement. The table below shows the values (\$Millions) and the overall rates of change for Exposures (as measured by payroll of the insured entities, Premiums (before discounts and rebates) and Paid Loss amounts.

Fiscal Year	PA+PEC Payroll	PA+PEC Premiums	Paid Losses
2002	97,272	1,601	1,965
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2002-2006 Change	9%	14%	7%
Average Change	2%	3%	2%

The derivation of these figures is shown in Appendix 3.

Financial aspects more variable. Year-to-year swings in results have been driven from the financial side including variations in carried loss reserves, shifting levels of premium discounts and refunds, fluctuations in investment returns, and an accounting restatement.

The table below shows the values of Premium Discounts and Rebates, Loss Reserve Movement, and Investment Return over the period 2002 to 2006.

Fiscal Year	Premium Discounts and Rebates	Loss Reserve Movements	Accounting Return on Investments
2002	1,474	969	-2.22%
2003	641	1,281	3.15%
2004	416	542	6.79%
2005	233	767	5.35%
2006	(8)	(173)	4.71%

The premium discounts and rebates (from Exhibit 1 page 23) and loss reserve movements (from Appendix 3) are in millions of dollars. The accounting return on investments is shown in Appendix 4 and is derived from the financial statements.

In addition to these 3 items, in the 2005 year there was a significant accounting change for the assessment funds. This created a restatement of the opening balance sheet that increased liabilities by \$2.5 billion and assets by \$0.7 billion, with a consequent reduction of \$1.8 billion in net assets.

Group Rating. As detailed in Task B, group rating has had a significant adverse effect on pricing equity—prices for various groups are not reflective of underlying costs and therefore there exists substantial cross-subsidization. In Task A we did not evaluate these pricing inequities, but rather focused on whether the mere presence of group rating had a material effect on the overall financial results of the BWC.

We concluded that from an overall financial perspective alone, group rating did not have a material effect on the overall premiums collected (revenue neutral) or losses incurred by the BWC. We also concluded that the expenses of administering the group rating plan have a slightly negative, but immaterial, effect on overall financial performance.

In this report the discussion of Group Rating begins on page 14.

Peer Comparisons. Two of the peer entities are monopolistic state funds – North Dakota and Washington. The other peer entities are private insurance companies in Nevada and West Virginia. Both of these were previously monopolistic state funds. Nevada was privatized in 1999, taking on the prior liabilities and reinsuring them at a cost of \$775 million. West Virginia was privatized in 2005, did not assume the prior liabilities, and received \$400 million from the state (of which \$200 million is a “surplus note” bearing interest at 1.5%).

From an insurance operations viewpoint, as measured by the “underwriting ratio”, Ohio’s recent results are in line with the peer group, as shown in the chart on page 18.

Individual WC Funds. With respect to the individual funds within the BWC, while the individual funds have different performance, the overall driver of results is the State Insurance Fund with a negative operating return on assets and historical ROE. In this report the discussion of individual funds begins on page 16, and the related exhibits are in Appendix 2.

Contingencies. Historically, Ohio BWC has not focused on maintaining a margin for contingencies – the role that is played by net assets in government accounting and net worth in private insurance companies. Therefore BWC resembles a social insurance mechanism rather than a private sector insurer.

In the past this has not caused any difficulty. However, due to the lack of such a contingency margin, there are several risks going forward including:

- That the perceived financial condition of the BWC could adversely affect the credit rating of the State of Ohio.
- That a sudden adverse change in the workers compensation environment that would create a need for large market-disruptive price increases.
- That privatization would require an infusion of capital from the state. While this may seem remote today, the peer group that we analyzed includes two entities that have been privatized.

A BWC policy to build up the level of net assets would mitigate these risks.

Actuarial Reports. We also have two suggestions with respect to the actuarial reports prepared for BWC:

-
- While the actuarial reports contain comprehensive information that includes all the changes between reports, considerable effort is required to identify the effects that are the most significant from a financial viewpoint. A simple one-page overview of all the changes would be helpful.
 - The actuarial reports do not reflect the revised accounting treatment of the assessment funds. They continue to carry the DWRP at a zero balance, even though the liabilities are now booked by BWC. This creates a difference between the actuarial figures and the financial figures, and leaves the user with the burden of remembering it and making appropriate adjustments. We recommend that the actuarial reports contain figures that conform to the presentation in the financial statements.

IV. Task B

This report contains two distinct parts. The first part covers surplus adequacy, while the second part evaluates premium ratemaking methodologies. Conclusions drawn in this executive summary are based on the detailed analysis contained in later sections of this report.

Surplus Adequacy Evaluation

Our evaluation begins by defining surplus as the reserve of last resort and examines why it is needed to prevent insurer insolvency. The various risks threatening insurer solvency are reviewed and various methods of measuring these risks are summarized. An overview of several surplus adequacy calculation methodologies is then presented.

ARC believes that a good starting point for the analysis of the BWC's surplus adequacy is a comparison to industry benchmarks. We present three surplus benchmarks in the table below: NAIC Risk Based Capital, A.M. Best Capital Adequacy Ratio, and Standard & Poor's Capital Adequacy Ratio. While we have applied three industry methodologies to the BWC's data, each methodology relies on subjectivity to varying degrees and should be interpreted only as an estimate of the required surplus had the calculations been made by the NAIC, A.M. Best, or Standard & Poor.

Ohio Bureau of Workers' Compensation Indicated Surplus Requirements vs. Surplus @ 6/30/2006

Amounts Shown in Millions

	<u>NAIC</u>	<u>A.M. Best</u>	<u>S&P</u>
(1) BWC Reported Total Surplus 6/30/2006	(127)	(127)	(127)
(2) Adjustment for Discount*	10,843	0	0
(3) Adjustment for Asset Risk & Credit Risk	0	0	434
(4) Risk Adjusted Surplus 6/30/2006 = (1) - (2) - (3)	<u>(10,970)</u>	<u>(127)</u>	<u>(560)</u>
(5) Required Surplus	2,651	7,235	1,958
(6) Adequacy Ratio = (4) / (5)	-413.8%	-1.8%	-28.6%
(7) Indicated Additional Surplus Need = (5) - (4)	13,621	7,362	2,518

Note: * - Estimated amount of discount related to future payments that are neither fixed nor reasonably determinable.

BWC financial statements show that the BWC was technically insolvent as of June 30, 2006 due to negative carried surplus. Had the BWC been under NAIC jurisdiction, significant regulatory action would have been triggered. Although the rating agencies consider factors in addition to surplus, surplus is central to the rating process. Based on both the A.M. Best and Standard & Poor's required

capital indications, the BWC is unlikely to have received a secure financial strength rating. While the results of the three methods cannot be directly compared with each other, they all tell similar stories: maintaining surplus at the current level seriously restricts the BWC's ability to withstand unexpected adverse events.

The specific surplus indications result both from the goal each method was designed to meet as well as from the specific calibration of each method. The NAIC approach is used by insurance regulators to identify companies at risk of becoming insolvent early enough to take corrective action, while the two rating agency approaches are considered as part of the financial strength rating process. The NAIC RBC methodology was specifically developed and calibrated by US regulators for the purpose of insurance solvency regulation. Therefore, ARC considers NAIC RBC to be more appropriate than the alternative benchmarks developed by rating agencies.

ARC therefore recommends that the WCOC consider using the NAIC required risk based capital indication as a minimum surplus goal equivalent to \$2.65 billion as of June 30, 2006. If the BWC were a commercial insurer, surplus less than \$2.65 billion would cause it to fall short of the NAIC Company Action Level, thereby triggering regulatory action. Approval of policyholder dividends should be resisted until the BWC's surplus exceeds the NAIC RBC Company Action Level.

The additional funds needed by the BWC to achieve this minimum surplus goal depend on one's perspective. If the BWC is viewed as a state agency subject to Governmental Accounting Standards, then reserve discounting would be appropriate, implying additional funds of \$2.78 billion [= 2.651 – (0.127)]. However, if the BWC is viewed as a commercial insurance book of business available for sale, then it would be subject to NAIC regulation and Statutory Accounting Principles ("SAP") would apply. The NAIC and SAP do not allow discounting of future payments that are neither fixed nor reasonably determinable, implying additional funds of \$13.62 billion [= 2.651 – (10.970)].

Note that the NAIC surplus requirement is dynamic in the sense that it adjusts as the risks faced by an insurer change. For example, the surplus requirement an insurer must meet will increase as invested assets are reallocated from risk-free US treasuries to equities.

ARC further recommends that the BWC consider developing a probabilistic-type surplus model. Industry practice for analyzing surplus adequacy among large commercial insurers relies heavily on scenario-based and probabilistic surplus approaches, rather than on RBC-type methods. In addition, rating agencies are

developing more sophisticated models built around scenario-based and probabilistic algorithms.

Probabilistic models have the advantage of being able to quantify the financial impacts from many risk sources simultaneously as well as allowing the introduction of scenario testing. Many diverse risk sources can be incorporated into such models: asset risk, premium risk, and reserving risk, among others.

Typically, the largest risk facing commercial insurers, and the BWC, is underwriting risk, a combination of premium risk and reserving risk. Therefore, ARC recommends that any surplus model developed reflect both the reserve variability inherent in the various funds administered by the BWC as well as any significant correlations between the funds.

The steps involved in constructing a probabilistic surplus model include:

1. Choosing a method for measuring each risk, e.g. Value-at-Risk, Tail Value-at-Risk, or Probability of Ruin.
2. Establishing a risk tolerance standard, e.g. sufficient surplus should be retained to prevent insolvency with 99.5% confidence over the next year.
3. Set the dividend policy so that sufficient surplus is retained to satisfy the selected risk tolerance.

Surplus in excess of that required to satisfy the selected risk tolerance could be treated as free or excess surplus and either approved as policyholder dividends or retained as an additional safety margin. Any dividend plan should incorporate a method of fairly and equitably distributing any declared dividend among policyholders. For example, one consideration that may be addressed through the dividend plan is the extent to which the amount returned to a specific policyholder depends on the losses experienced by that policyholder. A properly structured dividend allocation plan has the potential to complement existing workplace safety programs further reducing overall costs. Although the design of a dividend allocation plan is extremely important, it is beyond the scope of this study.

Premium Ratemaking Methodology Evaluation

The overall results of the ratemaking process appear to be actuarially sound, i.e. enough premiums are collected in total to cover losses and loss adjustment expenses. However, significant cross subsidies exist between group rated and non-group rated insureds indicating that rates are not actuarially sound between these two rating groups.

Our main observation is that the rate recommendation report is not a self-contained document. It is only after a review of several external documents that the process can be fully understood. The rate recommendation should ideally be a stand alone document that includes or explicitly references all items impacting the rates so that an outside party can easily follow the derivation. After reviewing the Ohio Workers Compensation Rate Recommendation prepared by Oliver Wyman, we suggest the following recommendations to enhance the process:

1. The rate recommendation analysis should provide more support for the deviations between the baseline, optimistic and conservative rate indication scenarios. An explanation as to how the scenarios were derived and any changes in assumptions should be included. As these additional scenarios provide the basis for the confidence interval contained in the rate recommendation, it is important that the assumptions underlying them are understood.
2. Consideration should be given to increasing the weight applied to the claims experience from more recent years, and to indications based on policy year data as well as on calendar/accident year data. The use of more years of data can actually decrease the credibility of rate indications as the older years are less likely to be indicative of future results. Policy year data generally provides a better matching of losses and premiums in ratemaking analyses.
3. The rate recommendation should provide a more detailed explanation of the changes in rate indications from one year to the next. In the most recent filing, there was a significant shift in the indications for all scenarios. A summary of any changes in assumptions, benefit level changes, or other factors causing such a shift should be documented.
4. The rate recommendation should include a detailed analysis of changes in expense provisions. The exact details of the expense provisions do not necessarily need to be disclosed, but the impact on the rate indication resulting from a change to the expense ratio should be documented.
5. Given its current unfairness, the Group Rating Program should not continue in its current form. While the general concept of group rating has merit, the program as it currently exists does not produce rates that are actuarially sound (reasonable and not excessive, inadequate, or unfairly discriminatory). Group rated companies consistently produce loss ratios well in excess of non-group rated companies, indicating that non-group rated companies are subsidizing the group rated companies.

In prior group rating studies, Oliver Wyman made several valuable recommendations that should be considered during the development of

any new Group Rating Program. Oliver Wyman's recommendations are discussed in the Group Rating section of this report.

V. Task C

In this report we evaluate the BWC's current actuarial practices and processes in the areas of ratemaking and reserve development against industry standards. As a result of our review, we conclude that the current ratemaking and reserving methods employed by the BWC and their independent actuarial consultant, Oliver Wyman, are reasonable and appropriate. The methods are applied using generally accepted actuarial principles and adhere to all relevant Actuarial Standards of Practice. The focus of our report is to document areas where current BWC practices or those of its actuarial consultant differ from industry standards. However, reliance on a practice other than the industry standard does not automatically imply that changing to the industry standard is appropriate. Often legal, regulatory, or technical restrictions prevent such a change. Our goal is to point out differences so that the BWC can evaluate whether implementing changes would enhance their processes.

A summary of our findings and conclusions is presented in this Executive Summary. A more detailed discussion of the analyses performed is contained in Section IV.

Ratemaking

We have reviewed the methodologies employed by Oliver Wyman in their Rate Recommendations (Private, Public, and Ancillary Funds) and the supporting document for Private Employers, Actuarial Audit of the Private Employer, MIF, and DWRF, Reserves for Rate Recommendation Support. In addition, we reviewed the ratemaking process for several states, including both independent bureau and National Council on Compensation Insurance (NCCI) states.

We have compared the BWC methodology to industry ratemaking standards. The main areas where the BWC process differs from industry standards include the following:

1. The BWC examines ten full years of historical experience in determining the overall rate indication. The industry standard is to use the most recent two years of experience. For instance, the NCCI typically uses the latest two policy years or the latest one calendar/accident year with the latest one policy year.
2. The BWC considers future investment income expected to be earned on premium in the rate structure by using discounted losses in the determination of the overall rate indication. The industry standard is to perform an internal rate of return analysis where an explicit profit and

contingencies load is developed. The profit and contingencies load so determined accounts for the impact of investment income.

3. The BWC uses calendar/accident year data. The industry standard is to use either policy year data exclusively, or to use a combination of calendar/accident year and policy year data.
4. The current Group Rating Plan in Ohio has resulted in a much larger off-balance adjustment than industry standards in the calculation of rates for individual classifications. As a result, non-group rated employers are paying exorbitantly high base rates, and subsidizing the group rated employers in the process.

In the Analysis section, the following aspects of the ratemaking process are focused on in more detail:

1. Data used to determine the rate indication
2. Adjustments to the data
3. Expenses
4. Determination of classification rates

Reserve Development

We have reviewed the methodologies employed by Oliver Wyman in their actuarial audits valued as of June 30, 2005 and June 30, 2006. We find the methods to be reasonable given the exposures being analyzed. There are certain calculations contained in the analyses that could be enhanced or clarified. Our specific comments in this regard are presented in the Analysis section.

It is important to note that the Oliver Wyman reserve analyses rely primarily on paid loss data. Case reserves on Ohio Workers' Compensation claims are developed using the MIRA reserving system and are not generally considered in the Oliver Wyman analyses. The MIRA system has not been in place long enough to produce a credible incurred loss development history. As such, we have introduced herein an alternative reserving method, used widely throughout the insurance industry, which also relies on paid loss data.

The alternative method uses a statistical software package known as ICRFS-PLUS ("ICRFS"). ICRFS is marketed by *Insureware Pty Ltd*, a company based in Australia. ICRFS is a system designed to help actuaries produce aggregate reserve estimates. It is not a system designed to produce case reserve estimates on individual claims.

ICRFS allows the analyst to build probabilistic models around paid loss development arrays. In addition to generating expected aggregate reserve estimates, the ICRFS system also allows for the estimation of the following:

1. Distribution of the aggregate reserve by business segment
2. Value at risk
3. Correlations in reserve distributions among business segments
4. Capital allocation by business segment
5. Distribution of the aggregate reserve for all business segments combined

In conjunction with the consultants at *Insureware*, we have performed an independent reserve analysis on the PA, PEC and PES employer group segments using the ICRFS software. The major conclusions reached in our analysis are summarized below.

1. There is strong evidence that the Oliver Wyman reserve estimate posited as of June 30, 2006 is too low for the PA segment and too high for the PEC and PES segments.
2. For the three segments combined, the Oliver Wyman reserve estimate as of June 30, 2006 is slightly higher than our expected reserve estimate.
3. Separate analyses should continue to be performed for individual benefit types, due to the existence of different underlying trend structures.
4. There is significant positive correlation among the reserve distributions of the three segments.
5. Our analysis produces capital allocation percentages which can be used in executing a dividend policy.
6. The total reserve estimate put forth by Oliver Wyman in their June 30, 2006 analysis for the PA, PEC and PES segments combined is at the very high end of the reserve distribution.

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I. Introduction

Purpose

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- Task C. Evaluate the BWC’s current practices relative to insurance industry standards, both state and private, in the areas of ratemaking and reserve development.

Each of these tasks will be addressed in a separate report, with this report covering Task A.

Scope

For Task A, as stated in the original Request for Proposal, ARC is to:

***“Provide an analysis of the BWC’s historical underwriting profit or loss for the past five years and identify underlying drivers.*”**

“The WCOC desires the CONSULTANT to develop a full report and executive summary to the Investment Committee of the WCOC. As a part of these reports, the CONSULTANT will produce a written report whose intended audience will be the BWC, the Workers’ Compensation Oversight Commission and its subcommittees, BWC stakeholders, which stakeholders include but are not limited to employer groups and associations, labor unions, elected officials, etc.”

“The report to the stakeholders must include an explanation of the historical results regarding the State Insurance Fund and Related Funds as well as an explanation of the process used to analyze the results. BWC will be responsible for distribution of this report to its stakeholders.”


In subsequent discussions with the WCOC members, the project scope for Task A was expanded to include an additional analysis that compares BWC results against those of peer public entities and/or industries.

We performed this analysis using generally accepted actuarial principles and in accordance with all relevant Actuarial Standards of Practice.

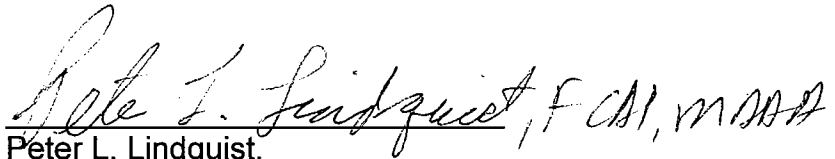
Please contact us if you have any questions regarding this report.

Respectfully submitted,

Aon Risk Consultants



Mark Brissman,
MSIA, CPCU, FCAS, MAAA
Director and Actuary
(212) 441-1474



Peter L. Lindquist,
FCAS, MAAA
Assistant Director and Actuary
(212) 441-2198



Ni Qin-Feng,
FCAS, MAAA
Assistant Director and Actuary
(212) 479-3501



Brenda Reddick,
ACAS, MAAA
Senior Consultant and Actuary
(952) 656-8038

II. Conditions and Limitations

Inherent Uncertainty

Actuarial calculations produce estimates of inherently uncertain future contingent events. We believe that the estimates provided represent reasonable provisions based on the appropriate application of actuarial techniques to the available data. However, there is no guarantee that actual future payments will not differ from estimates included herein.

Extraordinary Future Emergence

Our projections make no provision for the extraordinary future emergence of losses or types of losses not sufficiently represented in the historical data or which are not yet quantifiable.

Data Reliance

In conducting this analysis, we relied upon the provided data without audit or independent verification. Any inaccuracies in quantitative data or qualitative representations could have a significant effect on the results of our review and analysis.

Use and Distribution

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2005	233	767	5.35%
2006	(8)	(173)	4.71%

The premium discounts and rebates (from Exhibit 1 page 23) and loss reserve movements (from Appendix 3) are in millions of dollars. The accounting return on investments is shown in Appendix 4 and is derived from the financial statements.

In addition to these 3 items, in the 2005 year there was a significant accounting change for the assessment funds. This created a restatement of the opening balance sheet that increased liabilities by \$2.5 billion and assets by \$0.7 billion, with a consequent reduction of \$1.8 billion in net assets.

Group Rating. As detailed in Task B, group rating has had a significant adverse effect on pricing equity—prices for various groups are not reflective of underlying costs and therefore there exists substantial cross-subsidization. In Task A we did not evaluate these pricing inequities, but rather focused on whether the mere presence of group rating had a material effect on the overall financial results of the BWC.

We concluded that from an overall financial perspective alone, group rating did not have a material effect on the overall premiums collected (revenue neutral) or losses incurred by the BWC. We also concluded that the expenses of administering the group rating plan have a slightly negative, but immaterial, effect on overall financial performance.

In this report the discussion of Group Rating begins on page 14.

Peer Comparisons. Two of the peer entities are monopolistic state funds – North Dakota and Washington. The other peer entities are private insurance companies in Nevada and West Virginia. Both of these were previously monopolistic state funds. Nevada was privatized in 1999, taking on the prior liabilities and reinsuring them at a cost of \$775 million. West Virginia was privatized in 2005, did not assume the prior

liabilities, and received \$400 million from the state (of which \$200 million is a “surplus note” bearing interest at 1.5%).

From an insurance operations viewpoint, as measured by the “underwriting ratio”, Ohio’s recent results are in line with the peer group, as shown in the chart on page 18.

Individual WC Funds. With respect to the individual funds within the BWC, while the individual funds have different performance, the overall driver of results is the State Insurance Fund with a negative operating return on assets and historical ROE. In this report the discussion of individual funds begins on page 16, and the related exhibits are in Appendix 2.

Contingencies. Historically, Ohio BWC has not focused on maintaining a margin for contingencies – the role that is played by net assets in government accounting and net worth in private insurance companies. Therefore BWC resembles a social insurance mechanism rather than a private sector insurer.

In the past this has not caused any difficulty. However, due to the lack of such a contingency margin, there are several risks going forward including:

- That the perceived financial condition of the BWC could adversely affect the credit rating of the State of Ohio.
- That a sudden adverse change in the workers compensation environment that would create a need for large market-disruptive price increases.
- That privatization would require an infusion of capital from the state. While this may seem remote today, the peer group that we analyzed includes two entities that have been privatized.

A BWC policy to build up the level of net assets would mitigate these risks.

Actuarial Reports. We also have two suggestions with respect to the actuarial reports prepared for BWC:

- While the actuarial reports contain comprehensive information that includes all the changes between reports, considerable effort is required to identify the effects that are the most significant from a financial viewpoint. A simple one-page overview of all the changes would be helpful.
- The actuarial reports do not reflect the revised accounting treatment of the assessment funds. They continue to carry the DWRP at a zero balance, even though the liabilities are now booked by BWC. This creates a difference between the actuarial figures and the financial figures, and leaves the user with the burden of remembering it and making appropriate adjustments. We recommend that the actuarial reports contain figures that conform to the presentation in the financial statements.

IV. Analysis

Background

Results of Insurance Operations - Underwriting Profit

Results of insurance operations are generally measured by “profit.” The concept of “profitability” in the insurance industry has evolved throughout its history. For much of the 20th century, *profitability* mainly focused on underwriting profit (premiums earned less claims and other operating expenses incurred). This *statutory underwriting profit* is defined through *statutory accounting* as promulgated by the National Association of Insurance Commissioners (NAIC) and its set of instructions for the Annual Statement Blank. Generally, for pricing purposes, a five percent (5%) underwriting profit was deemed acceptable for most lines of business with two percent (2%) targeted for workers compensation. This lower rate for Workers Compensation ostensibly recognized the longer payout pattern and resulting discounted value of the losses compared to other lines.

The benchmark calculation for underwriting profitability is the *underwriting ratio to premiums* which was defined as follows:

$$= [\text{claims expenses} + \text{operating expenses}] / \text{earned premium}$$

For this measure, values less than 100% indicate underwriting profitability whereas values greater than 100% represent a loss. This benchmark has been and continues to be used for:

- comparison of the underwriting profitability of an entity over time, or,
- comparison across entities with a single time period.

Results of the Entity - Return on Equity (ROE)

There was little public discussion about the appropriate levels of insurer profitability until the 1970's when the economy hit new records in inflation, interest rates, and stock market returns:

- With the potential for expanded investment in the less-traditional equities, high-yield bonds, and other investment vehicles, insurers' investment portfolios had the promise of record returns with risk increasing commensurately.
- Regulators (and the consumerist organizations pressuring them) were concerned with rising insurance prices and in preventing windfall insurer profits.
- Soon, *cash flow underwriting* practices drove significant insurer reliance on investment returns as well as underwriting returns and eventually resulted in notable insurer insolvencies.

-
- On the other hand, regulators continued to be concerned with solidity and preventing future insolvencies.

The result was a need to measure both the risk and the return of insurers in a manner similar to the return on equity approaches commonly used in finance for other industries.

A distinct difference with other industries is in the defining of equity. In other industries the assets and liabilities, and therefore the equity or net worth, are relatively clearly defined. Thus, projected revenue can be divided by investment to determine a ROE.

For the insurance industry, the answer is not quite so clear as to the appropriate amount of capital needed to support the investment in a single policy, or a portfolio of policies. The debate as to the correct approach continues to this day. A complete exposition of this topic is beyond the scope of this report but the following are some of the methodologies currently in use to define equity (or surplus):

1. Reserves divided by a (commonly accepted) reserves-to-surplus ratio.
2. The amount required by AM Best to receive an A- rating (or A, A+...)
3. The amount required by financial rating agencies (Standard and Poors, Moody's, Fitch) to receive a desired rating.
4. The amount defined through Dynamic Financial Analysis (simulation of the firm) to lower the risk of insolvency or adverse financial results to some acceptably low level.

Options #2 and #3 are not immediately useful for evaluating the profitability of a monopolistic state fund such as the Ohio BWC. Our approach will use #1 and the results from the Task B team to produce an internal rate of return analysis testing the historical profitability.

Approach

Our approach includes steps both outlined in our Proposal and additional steps which we thought to be beneficial to the WCOC.

As our response to the Request for Proposal, we outlined several steps which are commented on individually:

“We believe it is important to have an overview of the operations of the Bureau of Workers' Compensation (BWC). We propose to have two Aon Risk Consultant (ARC) Fellows of the Casualty Actuarial Society meet with personnel from the Actuarial Section of BWC and Mercer Oliver Wyman (Mercer) to gain an understanding of the current Workers' Compensation environment in Ohio, the administration of the BWC, as well as changes over time in the Ohio Workers' Compensation system.”

Members of our ARC Team representing each of the three major tasks met in Columbus with members of the BWC, WCOC, and the Oliver Wyman teams. It was an extremely productive meeting and helped us move the project along in the following areas:

- Understanding of the workers compensation environment and history in Ohio.
- A more exhaustive understanding of the needs of the WCOC from these reports.
- A better view of the BWC operation as it applies to the issues in this RFP.
- Insight into the Oliver Wyman (Mercer) loss reserving reports, issues they faced, solutions they employed, data concerns, etc.
- Clearer insight into data issues, additional data requests, resolution of some current data requests.

“We will then review the latest available actuarial report and analysis prepared by Mercer. This review will focus on the actuarial assumptions and methodologies. We will perform a limited review of the calculations in the report. To the extent we consider alternative assumptions and/or methodologies to be improvements on the current actuarial analysis or to different conclusions reached in the current actuarial analysis, we will either independently perform these calculations or request assistance from Mercer. Our review will include, but not be limited to, such items as data organization, method(s), and trend assumptions.”

In preparation for the work on their individual tasks A, B, and C, the ARC team did an exhaustive review of all pertinent reports (Mercer, Pinnacle) performing the reasonability tests as discussed above.

As part of the profitability analysis, we will also review historical administration expenses of the BWC.

Based on the work described above, we will create a full written report and executive summary documenting our findings regarding BWC's historical underwriting profit or loss for the past five years.

The specific analysis that we performed is described in the following sections of this report.

Results

Five-Year Historical Calendar Year Profitability

For this part of the study we created a simplified 1-page presentation of BWC's balance sheet and income statement for the periods 2002 through 2006.

The BWC figures as published are shown on Exhibit 1 on page 23.

The approach we used was to first identify factors that affected the published financial statements, and then remove their effects and examine the adjusted figures for other patterns that might be present.

After review of the financial statements, we decided to make four adjustments to the as-published figures.

1. As a result of the Price decision, reserves were increased by \$200 million in 2003. As a result of the reversal of the Price decision, the reserves were decreased by \$200 million in 2006. The first adjustment removes both of these effects.
2. There was a restatement that reflected a change in the accounting treatment of the assessment funds. This restatement appears in the 2005 and 2006 published figures. The second adjustment carries the re-statement back to the 2002 through 2004 periods.
3. Each year the actuarial estimates of ultimate loss amounts can change. The third adjustment carries back the most recent actuarial assessment to the prior years' financial statements, by replacing the actual booked reserves with "hindsight estimates" of reserves.
4. The published reserves were discounted using interest rates that were higher – in some cases significantly higher – than the actual rates of return achieved by the BWC investment portfolio. The fourth adjustment reduces these rates to a more reasonable level. For those periods where actual returns were less than 3% we used a 3% interest rate.

The individual financial statement effects of these adjustments are shown on Exhibit 2 on page 24. Exhibit 3 on page 25 shows the combined effects of these adjustments.

Because the fourth adjustment – for interest rate shortfall – introduces significant variability into the by-year figures, we have produced adjusted financial figures both without and with this adjustment. The adjusted figures are shown on Exhibit 4 on page 26 and Exhibit 5 on page 27.

We also created an exhibit (Exhibit 6 on page 28) that shows the effect of not discounting the reserves. This is based on the as-published figures, and does not include the four adjustments noted above.

Significant “drivers” in the 2002-2006 period

The primary driver in the observed year-to-year results of the BWC's operations has been the level of premiums, rather than losses. The net premiums are substantially

more variable than the gross premiums, which indicates that the driver of premiums has been the level of premium discounts and rebates.

Over the 2002-2006 period, gross premiums (before discounts) have been relatively flat – showing a slight decline from \$2.4 billion to \$2.2 billion. Over this period of time payrolls rose slightly (2% per year). These small changes have only a small effect on the BWC’s operating results.

The level of operating expenses has been basically flat in the 2002-2006 period. These are not large enough to have a significant effect on BWC’s operating results.

With respect to loss and loss adjustment expense, over the 2002-2006 period the incurred amounts have ranged as follows:

	High	Low	Average
As published	3.4 billion	1.9 billion	2.7 billion
Adjusted (ex interest change)	3.3 billion	12.0 billion	2.6 billion
Adjusted (with interest change)	7.8 billion	(2.9 billion)	2.4 billion

We note that over the 2002-2006 period, the paid loss amounts have been more stable than the incurred amounts. This means that the year-to-year differences in incurred amounts have been driven by changes in reserves. Because the financial statements do not reveal the breakdown of reserves between “case reserves” and “IBNR reserves”, we cannot tell how much of the reserve variability is due to “the actual” versus “the actuary.”

However, we can observe that the interest rate used for discounting losses has had an effect on the operating results. We note that, because the actual investment returns have been significantly more volatile than the actuarial interest rate assumption, the actuarial interest assumptions have stabilized the perceived results of the BWC’s insurance operations.

Finally, we observe that a shift to using undiscounted reserves would have these effects:

- (Income statement) It would change the incurred amounts for each individual year, but over the five year period the total incurred amount would increase only slightly – from 13.7 billion to 14.0 billion.
- (Balance sheet) It would increase the loss reserves, with a corresponding decrease in the net assets. These changes would be substantial, and the net assets over the period would range from \$-13.8 billion in 2002 to \$-18.9 billion in 2006.

The Role of Net Assets

After reviewing the BWC financial statements, it appears that the BWC has been acting more like a “social insurance mechanism” than a private sector insurance company. The three factors that lead to this conclusion are:

- the low-to-negative level of “net assets”
- the historical pattern of giving back large discounts and rebates
- the collection of premiums in arrears without an interest charge.

These factors are indicative of the belief that adverse outcomes – either from underwriting or investment – can always be dealt with by raising prices in the future, and there is no need to provide for them in advance.

A private sector insurance company would not be permitted to engage in these practices.

As long as the BWC remains a monopolistic government-backed entity providing a legally mandated coverage, it can continue to operate in this fashion without danger of bankruptcy. However, because future adverse outcomes are not pre-funded through a buildup of net assets, they will need to be funded by sudden price increases sometime in the future. This raises the possibility of future “market shocks” and adverse customer reactions (ranging from individually leaving the state to collectively lobbying for the BWC’s discontinuance.)

We note that in the last few years, Nevada has moved from a monopolistic fund to a competitive environment, and West Virginia is scheduled to complete the same transition by July 1, 2008. It would be prudent to consider the possibility that Ohio might move in this direction.

For these reasons, the BWC should consider adopting a pricing policy that provides for the buildup of net assets over a relatively short period of years. This would minimize the potential for market disruptions, and reduce the potential contribution from the State of Ohio that would be required in the event of privatization.

Calculations of Return on Equity (ROE)

In this analysis, we calculate the internal rate of return given the BWC’s premium and loss level, the structure of asset mix, the rate of investment return and the required capital amount that corresponds to the current operation.

There are several key assumptions worthy of note:

a. Reserve to Surplus Ratio

Two approaches are used. Scenario 1 divides the BWC’s reserve as of 6/30/2006 by the theoretical amount of capital (\$2.6 billion) under the NAIC RBC formula. This results in 6.94 as the reserve to surplus ratio. Scenario 2

assumes 1.86 as the reserve to surplus ratio based on the NCCI May 2007 WC study “State of the Line”.

Tax Rate

We assume no tax liability for the BWC.

b. Investment return & Expense ratios

We use 5% as the investment return rate and 4% as the expense ratio. Both ratios are based on the review of the BWC’s financial statement over the past nine years.

c. Loss & ALAE Ratio

To determine the undiscounted ultimate loss and ALAE ratio, we relied on the loss and premium information provided by the BWC and by Oliver Wyman. We estimated the Loss and ALAE ratio to be 183.7%.

d. Loss payment pattern

We derived the average loss payout pattern based on the combined PA, PEC and PES paid loss triangles (GASB 10 loss development triangle) provided by Oliver Wyman.

e. Loss reporting pattern

We selected the average loss reporting pattern based on the payout pattern derived above.

f. Annual premium amount

The current year (2006) premium of \$2.1 billion is used as a proxy for the average premium going forward.

g. ULAE ratio

The unallocated loss expense relates to the part of claim settling expense such as employee salary, rent, overhead expense, advertise expense, etc. which is not assigned to a particular claim. Since the BWC does not incur the “normal” insurance company expense such as commission expense, we assume one fourth of the general expense relates to the ULAE cost. Also, we assume that 50% of the ULAE expense is paid when a claim is opened and the remaining 50% of the ULAE expense is paid as loss is paid (a common assumption under actuarial projections).

The results of our calculations are summarized below.

Under Scenario 1, we estimate the BWC’s internal rate of return to be -2.40%. These calculations are shown on page 1 of Appendix 1.

Under Scenario 2, we estimate BWC's internal rate of return to be -7.73%. These calculations are shown on page 2 of Appendix 1.

Using Scenario 1, we estimate that an undiscounted loss ratio of 130% would result in a break-even return on equity. To achieve a 5% return, we estimate that an undiscounted loss ratio of 120% would be required. To achieve a 10% return, we estimate that an undiscounted loss ratio of 110% would be required.

The Impact of Group Rating on Overall Financial Performance

The BWC identified *Group Rating* as a major issue in the overall administration and pricing of workers compensation insurance in Ohio. *Group Rating* allows certain employers to combine their collective loss experience with the intended benefit of receiving preferential premium rates. As reported by the BWC, no matter how well-intended the original concept, *Group Rating*—in conjunction with other pricing components—has created the opportunity for employer groups to exploit its provisions and to game the system for their benefit (and some other employers' detriment). The result has been unintended pricing dislocations and cross-subsidies in a highly-charge political environment.

The issues and ramifications of *Group Rating* will be explored in significantly more detail in the report for Task B. In this report, we have focused solely on the question of whether the pricing dislocations and cross-subsidies that have resulted from the use of *Group Rating* have created an impact on the overall financial performance of workers compensation insurance in Ohio.

As a part of the process for Task B and with specific focus on overall financial performance questions, we conducted an in-depth review of available information on *Group Rating* including:

- Group Rating Pricing Studies, March 1990 to present. (The Actuarial Section of the Bureau of Workers Compensation in conjunction with Mercer, Oliver, Wyman Actuarial Consultants)
- Analysis of Group Rating Plan with Recommendations, December, 2006. (Pinnacle Actuarial Resources, Inc.)
- Annual Financial Statements
- Historical usage of premium discounts and reductions
- Direct interview with BWC personnel.

If Ohio were a competitive state for workers compensation, the answer would clearly be that an inefficient rating plan—group rating—would adversely effect overall financial performance since employers would have the freedom to seek other insurance sources. Adverse selection would cause less profitable business to stay and more profitable business to leave thereby creating an overall negative effect.

Given that the BWC is a monopoly, the question is more refined and difficult to answer. Four potential effects on financial performance from *Group Rating* were identified:

1. That the propensity for loss—claim frequency or severity—changes. For example, if the effect were that employer groups would implement effective safety programs that would not have existed without Group Rating, losses might decrease. On the other hand, employers with significantly reduced premiums from *Group Rating* might have a disincentive to implement accident safety programs.

We found no evidence suggesting a proven change in loss propensity has occurred.

2. That the average collected premium changes. *Group Rating* pricing has resulted in significant discounts being given from a much-higher base rate. If the overall base rate increases have not offset the awarded discounts, premium would decrease even though injuries and loss dollars remain unchanged.

It appears that this has not been a factor as the BWC has been successful at collecting total needed premium and it has been in a position of returning premium through discounts and reductions. It was confirmed by the OBWC staff that they have been able to collect all required premium even with the existence of *Group Rating*. We concur.

3. That the size of the customer universe changes. For example, potential employers may be deterred from locating in Ohio because of a perceived cost difference with neighboring states caused by confusion over bases rates and group discounts.

The analysis of this potential phenomenon is beyond the scope of this review. However, we believe that even if this deterrent effect exists to some extent, it would involve more issues than just group rating. Furthermore, the effect would occur so slowly that the BWC could respond adequately to changing premium needs without threatening financial solvency or performance.

4. That the cost of administration of Group Rating raises rate need. While detailed expense data were not made available, *Group Rating* is clearly a complicated, politically contentious pricing feature that involves significant staff time and requires regular research and analyses. This adds expense costs and therefore increasing premium rate needs.

From the above, we draw two conclusions:

- **While there are several potential effects from *Group Rating* (identified in points 1-4 above) that could change overall financial performance, we view *Group Rating* as a zero-sum game with respect to overall financial results.** From a financial performance perspective, points 1 (losses) and 2 (premium) are the most important, but we believe their effects to be modest, if any. We view the workers compensation effect of point 3 (appeal to employers) as having a minor effect in the near term. Yet, we recognize that point 3 has broader social ramifications to the State of Ohio than the worker's compensation issues alone. We believe point 4 (expenses) to be adverse, but immaterial.
- **While we believe there is an immaterial overall effect, *Group Rating* clearly has created significant pricing inequities and inefficiencies at more refined subdivisions of employer groups.** This point of view has been well-documented by the Actuarial Section of the BWC and various actuarial studies.

Profitability Review of Ancillary Funds

The financial statements of the BWC cover several ancillary funds. A list of these funds along with selected financial information is shown below.

<u>Fund</u>	<u>Assets (\$M)</u>	<u>Return on Assets#</u>
* State Insurance	17,115	-3%
* Public Work-Relief Employees	21	5%
* Self-Insuring Employers Guaranty	661	0%
* Administrative Cost	428	
Disabled Workers' Relief	1,234	2%
Coal-Workers Pneumoconiosis	223	-2%
Marine Industry	15	9%

** The Administrative Cost Fund is essentially the only non-claim paying fund and serves as a funding and payment mechanism for BWC expenses for the administration of these identified funds. The expenses of the other funds are funded independently.*

#Operating Return on Assets is based on an average of 2004-2006 adjusted operating income, before transfers and premium reductions, compared to 2006 Total Assets.

The return on assets calculation was developed using the approach detailed in the paragraphs that follow.

We have assembled the five-year balance sheet and income statements for these funds based upon the audited financial statements. These summaries are presented in the Appendix.

From these exhibits, we assembled the three-year operating performance by fund as presented in the top section of Exhibit 7. The numbers are consistent with the audited financial statements. However, for a more effective income statement review, it was necessary to allocate the financial results from the Administrative Cost Fund to the insurance funds that it supports. We did so using the following methods:

- *Loss adjustment expenses* were allocated based upon actual losses experienced by the various funds.
- All other values were allocated based upon revenue which consisted of premium plus assessments minus premium reductions and refunds.
- An average of three years was used for stability.

This adjustment is presented in the bottom section of Exhibit 7.

The adjusted results by fund are presented in Exhibit 8. The effect of the adjustments was to allocate the Administrative Cost Funds net revenue to its supported funds.

Four observations are noted:

- The financial results of the State Insurance Fund, because of its relative size, drive the overall financial performance of Workers Compensation in Ohio. As shown, even after adjustments and before premium reductions, the SIF has operated at a loss of about \$1.3 Billion over the last three years. Better loss performance in 2006 improved that result significantly. Based on the return on assets measure, this fund performed the worst over three years at about -3%.
- The best performing funds have been the Public Work-Relief Employees Fund, the Disabled Workers' Relief Fund, and the Marine Industry Fund which have generally had positive returns and a positive return on assets.
- Based upon operating performance alone (before investment income), it is difficult to justify premium reductions.
- Overall administrative costs are low compared to the size of the total funds managed. Thus, reallocation of these costs to the funds has minimal effect on their financial picture.

Our review of the comparative operating results of the funds did not find any material differences between the funds. For this review we allocated the Administrative Cost Fund to the three funds to which it applies. These calculations are shown on Exhibit 7.

Comparisons to other Entities

We performed comparisons of the BWC financial performance with the financial performance of four similar workers compensation entities.

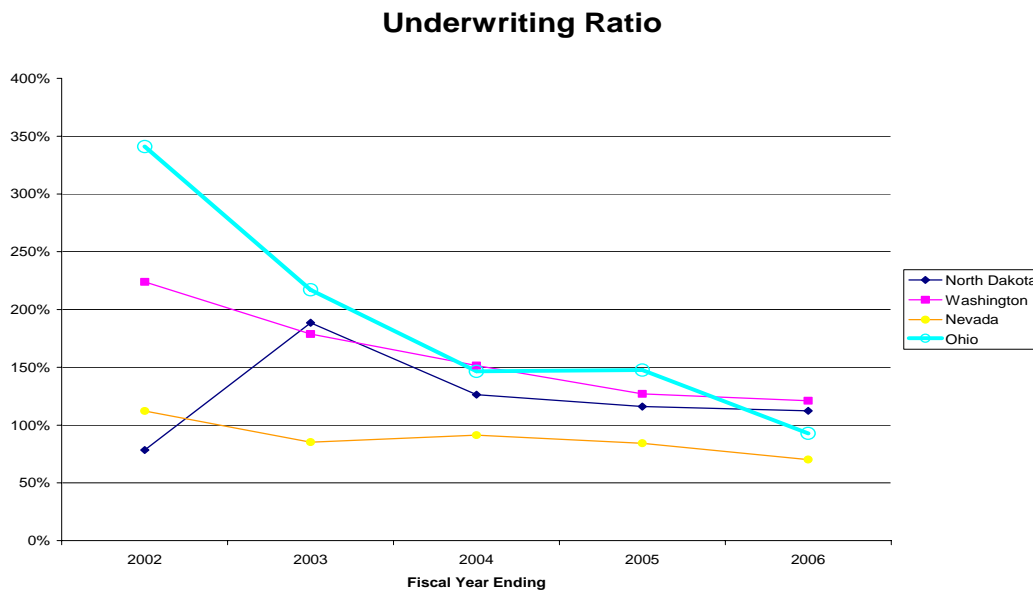
Two of the peer entities are monopolistic state funds – North Dakota and Washington. The other peer entities are private insurance companies in Nevada and West Virginia. Both of these were previously monopolistic state funds. Nevada was privatized in 1999, taking on the prior liabilities and reinsuring them at a cost of \$775 million. West Virginia was privatized in 2005, did not assume the prior liabilities, and received \$400 million from the state (of which \$200 million is a “surplus not” bearing interest at 1.5%.)

From an insurance operations viewpoint, as measured by the “underwriting ratio”, Ohio’s recent results are in line with the peer group, as shown in the chart below.

Results of Insurance Operations

With respect to the results of insurance operations, the “Underwriting Ratio” chart below shows a comparison of the five most recent fiscal years. The Underwriting Ratio is the ratio of losses and expenses incurred to net earned premiums. For this measurement, smaller ratios are better than larger ones.

As can be seen from the chart, there is an improving trend for all the entities. Also, except for the earliest year (2002) the BWC’s results are not that different from the other entities. We note that the high 2002 ratio for the BWC was caused by low premiums.



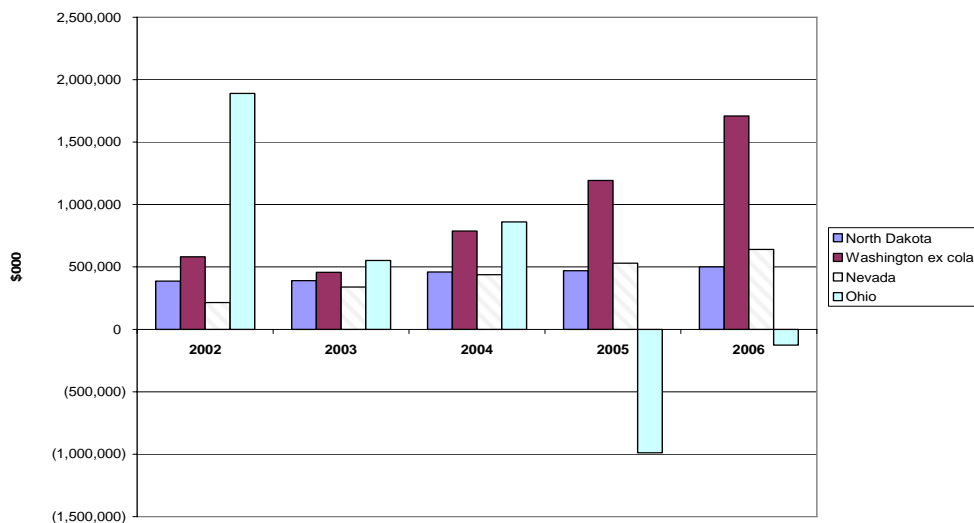
Financial Strength

With respect to financial strength, the “Net Assets (a.k.a. “Surplus”)” chart below shows a comparison of the five most recent fiscal years. For this measurement, larger amounts are better than smaller ones.

On this chart the BWC shows two larger declines – between 2002 and 2003, and between 2004 and 2005. Approximately half of the first decline is due to low premiums. The second decline is due to the restatement of the assessment funds. For 2005 and subsequent, the accounting for the DWRP provides for booking the liability for future claims payments, but does not permit booking the corresponding future assessments. Prior to 2005 the liability was not booked. The restatement for the SIEGF affected both assets and liabilities.

In looking at the comparative figures, it should be noted that Washington has a similar situation with respect to unfunded future cost-of-living increases. However, the Washington financial statements do not include these as liabilities. If Washington used the same accounting approach as the BWC, the Washington net assets would be negative for all the years shown. In particular, the Washington 2006 net assets would be approximately -7 billion dollars.

Net Assets (a.k.a. "Surplus")



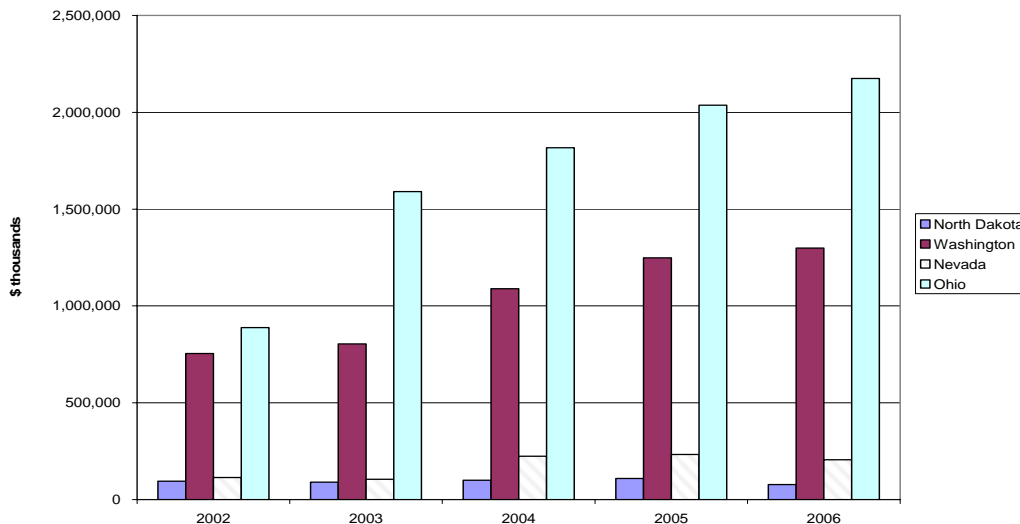
Relative Size

To show the relative size of these entities, the “Net Premiums” chart below shows a comparison of the five most recent fiscal years. For this measurement, larger amounts are better than smaller ones.

Ohio and Washington are considerably larger than Nevada and North Dakota. It should be recalled that the Nevada company, because it is competitive, does not reflect the entire insurance market in that state.

The chart shows considerable growth in the net premiums for Ohio, due to the progressive reduction of premium discounts and rebates.

Net Premiums



We note that the comparative charts do not include the West Virginia entity, because we cannot obtain consistent figures for the pre and post privatization periods. However, the analysis that follows does include the West Virginia company.

We compared the BWC discounting assumptions to those used by two other monopolistic state funds, and found that the assumptions used by the other funds would imply a smaller discount than the amount generated by the BWC assumptions:

	Ohio	North Dakota	Washington
Time to payout of average reserve dollar	13.5 years	10.3 years	7.2 years (ex cola)
Interest rate assumption	5.25%	5%	2.5%

We also examined two insurance companies that were formerly monopolistic state funds – Nevada and West Virginia. The Nevada entity is currently competing with other private insurers, and the West Virginia company will experience competition as of July 1, 2008. While neither company discounts its reserves, we note that the Nevada company has generated the equivalent effect by the use of reinsurance (a “loss portfolio transfer”).

We observed that the historical rate of turnover of the investment portfolio was extremely high. In 2006 there were asset sales of \$62 million and purchases of \$64 million, compared to the previous-year-end total portfolio amount of \$17 million. The restructuring of the portfolio would account for \$17 million of the sales and purchases, implying a non-restructuring turnover of approximately \$46 million, or approximately 2.5

times the total portfolio amount. This corresponds to a complete portfolio turnover every 5 months. We note that previous years had similar portfolio turnover rates.

By comparison, the Washington state fund has a rate that implies a complete turnover every 8 years, and the Nevada company has a rate that implies a complete portfolio turnover every 6 years.

We cannot perform a similar calculation for the other two peer entities. The asset portfolio for the North Dakota fund is not displayed in their financial statements – the fund is a participant in a statewide pool. The West Virginia company is a start-up, and its entire portfolio was new in 2006.

We cannot determine how much additional expense was generated by the large amount of portfolio activity.

Insurance Operations – Performance Ratios

In evaluating the efficiency and effectiveness of insurance operations, there is one key indicator for each. Efficiency is measured by the ratio of operating expenses to premiums (the “expense ratio”.) Effectiveness is measured by the ratio of insured loss and loss expense to premiums (the “loss ratio”.) For each of these ratios, smaller is better.

2006 peer comparison

	premiums	exp	loss	exp ratio	loss ratio	total ratio
North Dakota	94.4	12.2	88.2	13%	93%	106%
Washington	1,758	267	1,998	15%	114%	129%
Nevada	208	67	79	32%	38%	70%
West Virginia	761	26	703	3%	92%	96%
Ohio published	2,174	86	1,933	4%	89%	93%
Ohio adjusted	2,174	86	1,624	4%	75%	79%

Measurements of Leverage

Traditionally, premium leverage is measured by the ratio of net premiums to “surplus”. (“Surplus” is the insurance industry’s term for fund accounting’s “net assets”.) Reserve leverage is measured by the ratio of loss and loss expense reserves to surplus.

These leverage ratios are important, because they measure the multiplier effects of mispricing and mis-reserving.

The peer comparisons show the following results for the 2006 fiscal year:

2006 peer comparison

	net premiums	loss reserves	net assets	premium leverage	reserve leverage
North Dakota	94.4	686.9	501.3	19%	137%
Washington (ex cola)	1,340	8,329	1,709	79%	487%
Nevada	208	641	641	32%	100%
West Virginia	761	561	268	284%	209%
Ohio published	2,174	18,928	-126	#N/A	#N/A
Ohio adjusted	2,174	18,446	356	611%	5,181%

The Ohio ratios are unusual, because the net assets are near or less than zero. We note that the Washington ratios would also be “N/A” if the cost-of-living liabilities were included.

Use of Reinsurance

The primary function of reinsurance is to protect the purchaser from claims-related financial effects that exceed the purchaser’s risk-bearing capacity.

The Ohio BWC does not purchase any reinsurance. Based on our review of the peer group financial statements:

- The North Dakota fund buys reinsurance for occurrences greater than \$1 million.
- The Washington fund does not buy reinsurance.
- The West Virginia company buys reinsurance for occurrences greater than \$10 million.
- The Nevada fund purchases reinsurance for occurrences greater than \$4 million.

Of these 4, the Washington fund, while not as large as Ohio’s, is considerably larger than the other 3.

Ohio’s decision to not purchase reinsurance is consistent with the behavior of the peer group – reinsurance is typically purchased by entities that are smaller than the Ohio BWC.

V. Appendix / Exhibits

Exhibit 1 - Ohio BWC Financial Information – as published

Balance Sheet	2002	2003	2004	2005	2006
ASSETS					
cash	2.377	2.078	1.618	1.283	0.194
invested	16.937	16.166	16.777	17.201	16.036
other	2.879	3.131	2.937	4.250	3.335
total	22.193	21.375	21.332	22.734	19.565
LIABILITIES					
loss & lae	14.888	15.982	16.267	19.299	18.928
other	5.415	4.841	4.204	4.424	0.763
total	20.303	20.823	20.471	23.723	19.691
NET ASSETS	1.890	0.552	0.861	(0.989)	(0.126)
Income Statement	2002	2003	2004	2005	2006
UNDERWRITING INCOME					
premiums	1.880	1.723	1.744	1.733	1.755
assessments	0.482	0.508	0.489	0.537	0.411
gross premiums	2.362	2.231	2.233	2.270	2.166
discounts & rebates	1.474	0.641	0.416	0.233	(0.008)
net premiums	0.888	1.590	1.817	2.037	2.174
loss & lae	2.934	3.361	2.549	2.917	1.933
other expenses	0.094	0.091	0.113	0.090	0.086
total	3.028	3.452	2.662	3.007	2.019
underwriting income	(2.140)	(1.862)	(0.845)	(0.970)	0.155
OTHER INCOME					
investment income	(0.430)	0.575	1.250	0.988	0.764
miscellaneous income	(0.056)	(0.051)	(0.096)	(0.051)	(0.055)
total income	(2.626)	(1.338)	0.309	(0.033)	0.864

Exhibit 2 – Adjustments to Ohio BWC Financial Information

1. Removal of the 200 million Supreme Court additional reserve

Balance Sheet	2002	2003	2004	2005	2006	
loss & lae		(0.200)	(0.200)	(0.200)		
Income Statement						2002-06
loss & lae		(0.200)	0.000	0.000	0.200	0.000

2. Restating assessment funds to an accrual basis 27.5% of loss & lae is premium effect

Balance Sheet	2002	2003	2004	2005	2006	
premiums unbilled	0.672	0.747	0.697	0.000	0.000	
loss & lae	2.444	2.718	2.534			
Income Statement						2002-06
premiums	(0.110)	0.075	(0.051)			(0.086)
loss & lae	(0.401)	0.274	(0.184)			(0.311)

3. Adjusting for current reserve needs - per latest actuarial study

Balance Sheet	2002	2003	2004	2005	2006	
loss & lae	(0.330)	(0.476)	(0.309)	(0.373)	(0.482)	
Income Statement						2002-06
loss & lae	(0.176)	(0.145)	0.166	(0.064)	(0.109)	(0.327)

4. Adjusting the interest rates to a portfolio-appropriate basis.

	0.436329	0.382311	0.382311	0.022063		
Balance Sheet	2002	2003	2004	2005	2006	
loss & lae	6.500	6.100	6.200	0.400		
Income Statement						2002-06
loss & lae	5.400	(0.400)	0.100	(5.800)	(0.400)	(1.100)

Exhibit 3 – Effects of Adjustments

Balance Sheet	2002	2003	2004	2005	2006	
ASSETS						
cash	0.000	0.000	0.000	0.000	0.000	
invested	0.000	0.000	0.000	0.000	0.000	
other	0.672	0.747	0.697	0.000	0.000	adjustment 2
total	0.672	0.747	0.697	0.000	0.000	
LIABILITIES						
loss & lae	8.614	8.142	8.225	(0.173)	(0.482)	adjustments 1,2,3,4
other	0.000	0.000	0.000	0.000	0.000	
total	8.614	8.142	8.225	(0.173)	(0.482)	
NET ASSETS	(7.941)	(7.395)	(7.528)	0.173	0.482	
Income Statement						
	2002	2003	2004	2005	2006	
UNDERWRITING INCOME						
premiums	(0.110)	0.075	(0.051)	0.000	0.000	adjustment 2
assessments	0.000	0.000	0.000	0.000	0.000	
gross premiums	(0.110)	0.075	(0.051)	0.000	0.000	
discounts & rebates	0.000	0.000	0.000	0.000	0.000	
net premiums	(0.110)	0.075	(0.051)	0.000	0.000	
loss & lae	4.823	(0.471)	0.082	(5.864)	(0.309)	adjustments 1,2,3,4
other expenses	0.000	0.000	0.000	0.000	0.000	
total	4.823	(0.471)	0.082	(5.864)	(0.309)	
underwriting income	(4.933)	0.546	(0.133)	5.864	0.309	
OTHER INCOME						
investment income	0.000	0.000	0.000	0.000	0.000	
miscellaneous income	0.000	0.000	0.000	0.000	0.000	
total income	(4.933)	0.546	(0.133)	5.864	0.309	

Exhibit 4 - Ohio BWC Financial Information with Adjustments 1, 2, 3

Balance Sheet	2002	2003	2004	2005	2006
ASSETS					
cash	2.377	2.078	1.618	1.283	0.194
invested	16.937	16.166	16.777	17.201	16.036
other	3.551	3.878	3.634	4.250	3.335
total	22.865	22.122	22.029	22.734	19.565
LIABILITIES					
loss & lae	17.002	18.024	18.292	18.726	18.446
other	5.415	4.841	4.204	4.424	0.763
total	22.417	22.865	22.496	23.150	19.209
NET ASSETS	0.449	(0.743)	(0.467)	(0.416)	0.356
Income Statement					
UNDERWRITING INCOME					
premiums	1.770	1.798	1.693	1.733	1.755
assessments	0.482	0.508	0.489	0.537	0.411
gross premiums	2.252	2.306	2.182	2.270	2.166
discounts & rebates	1.474	0.641	0.416	0.233	(0.008)
net premiums	0.778	1.665	1.766	2.037	2.174
loss & lae	2.357	3.290	2.531	2.853	2.024
other expenses	0.094	0.091	0.113	0.090	0.086
total	2.451	3.381	2.644	2.943	2.110
underwriting income	(1.673)	(1.716)	(0.878)	(0.906)	0.064
OTHER INCOME					
investment income	(0.430)	0.575	1.250	0.988	0.764
miscellaneous income	(0.056)	(0.051)	(0.096)	(0.051)	(0.055)
total income	(2.159)	(1.192)	0.276	0.031	0.773

Exhibit 5 - Ohio BWC Financial Information with Adjustments 1, 2, 3 and 4

Balance Sheet	2002	2003	2004	2005	2006
ASSETS					
cash	2.377	2.078	1.618	1.283	0.194
invested	16.937	16.166	16.777	17.201	16.036
other	3.551	3.878	3.634	4.250	3.335
total	22.865	22.122	22.029	22.734	19.565
LIABILITIES					
loss & lae	23.502	24.124	24.492	19.126	18.446
other	5.415	4.841	4.204	4.424	0.763
total	28.917	28.965	28.696	23.550	19.209
NET ASSETS	(6.051)	(6.843)	(6.667)	(0.816)	0.356
Income Statement	2002	2003	2004	2005	2006
UNDERWRITING INCOME					
premiums	1.770	1.798	1.693	1.733	1.755
assessments	0.482	0.508	0.489	0.537	0.411
gross premiums	2.252	2.306	2.182	2.270	2.166
discounts & rebates	1.474	0.641	0.416	0.233	(0.008)
net premiums	0.778	1.665	1.766	2.037	2.174
loss & lae	7.757	2.890	2.631	(2.947)	1.624
other expenses	0.094	0.091	0.113	0.090	0.086
total	7.851	2.981	2.744	(2.857)	1.710
underwriting income	(7.073)	(1.316)	(0.978)	4.894	0.464
OTHER INCOME					
investment income	(0.430)	0.575	1.250	0.988	0.764
miscellaneous income	(0.056)	(0.051)	(0.096)	(0.051)	(0.055)
total income	(7.559)	(0.792)	0.176	5.831	1.173

Exhibit 6 – Ohio BWC Financial Information using Undiscounted Reserves

Balance Sheet	<u>2002</u>	<u>2003</u>	<u>2004</u>	<u>2005</u>	<u>2006</u>
ASSETS					
cash	2.377	2.078	1.618	1.283	0.194
invested	16.937	16.166	16.777	17.201	16.036
<u>other</u>	<u>2.879</u>	<u>3.131</u>	<u>2.937</u>	<u>4.250</u>	<u>3.335</u>
total	22.193	21.375	21.332	22.734	19.565
LIABILITIES					
loss & lae	30.600	32.300	33.100	38.600	37.700
<u>other</u>	<u>5.415</u>	<u>4.841</u>	<u>4.204</u>	<u>4.424</u>	<u>0.763</u>
total	36.015	37.141	37.304	43.024	38.463
NET ASSETS	(13.822)	(15.766)	(15.972)	(20.290)	(18.898)
Income Statement	<u>2002</u>	<u>2003</u>	<u>2004</u>	<u>2005</u>	<u>2006</u>
UNDERWRITING INCOME					
premiums	1.880	1.723	1.744	1.733	1.755
<u>assessments</u>	<u>0.482</u>	<u>0.508</u>	<u>0.489</u>	<u>0.537</u>	<u>0.411</u>
gross premiums	2.362	2.231	2.233	2.270	2.166
<u>discounts & rebates</u>	<u>1.474</u>	<u>0.641</u>	<u>0.416</u>	<u>0.233</u>	<u>(0.008)</u>
net premiums	0.888	1.590	1.817	2.037	2.174
loss & lae	3.131	4.036	3.097	2.285	1.470
<u>other expenses</u>	<u>0.094</u>	<u>0.091</u>	<u>0.093</u>	<u>0.090</u>	<u>0.086</u>
total	3.225	4.127	3.190	2.375	1.556
underwriting income	(2.337)	(2.537)	(1.373)	(0.338)	0.618
OTHER INCOME					
investment income	(0.430)	0.575	1.250	0.988	0.764
<u>miscellaneous income</u>	<u>(0.056)</u>	<u>(0.051)</u>	<u>(0.096)</u>	<u>(0.051)</u>	<u>(0.055)</u>
total income	(2.823)	(2.013)	(0.219)	0.599	1.327

Exhibit 7

SUPPLEMENTAL SCHEDULE OF REVENUES, EXPENSES AND CHANGES IN NET ASSETS - FOR THE YEAR ENDED JUNE 30

	ADMINISTRATIVE COST FUND			STATE INSURANCE FUND ACCOUNT			PUBLIC WORK-RELIEF EMPLOYEES' FUND ACCOUNT			SELF-INSURING EMPLOYERS' GUARANTY FUND			TOTAL		
	2004	2005	2006	2004	2005	2006	2004	2005	2006	2004	2005	2006	2004	2005	2006
Operating revenues:															
Premium Income	-	-	-	1,741,880	1,730,396	1,752,108	866	478	811	-	-	-	1,742,746	1,730,874	1,752,919
Assessment Income	357,139	317,777	297,039	-	-	-	-	-	-	14,450	102,931	(17,179)	371,589	420,708	279,860
Provision for uncollectibles	(6,342)	(1,888)	(4,799)	(92,747)	(63,893)	(62,164)	-	-	-	(2,248)	(551)	638	(101,337)	(66,332)	(66,325)
Other income	2,310	3,298	6,496	9,542	8,689	8,830	-	-	-	-	-	-	11,852	11,987	15,326
Total operating revenues	353,107	319,187	298,736	1,658,675	1,675,192	1,698,774	866	478	811	12,202	102,380	(16,541)	2,024,850	2,097,237	1,981,780
Operating expenses:															
Workers' compensation benefits	-	-	-	2,021,690	2,317,277	1,475,907	138	(1,245)	414	20,226	95,231	(17,651)	2,042,054	2,411,263	1,458,670
Compensation adjustment expenses	184,915	336,511	137,983	204,175	161,289	185,523	-	-	-	-	-	-	389,090	497,800	323,506
Personal services	62,505	51,707	44,564	-	-	-	-	-	-	-	-	-	62,505	51,707	44,564
General and administrative	17,433	-	-	-	-	-	-	-	-	-	-	-	17,433	-	-
Other expenses	15,358	20,555	17,322	17,788	17,618	22,999	-	-	-	49	71	-	33,195	38,244	40,321
Total operating expenses	280,211	408,773	199,869	2,659,176	2,729,020	1,676,200	138	(1,245)	414	20,275	95,302	(17,651)	2,959,800	3,231,850	1,858,832
Net income (loss) before prem. Reductions/refunds & operating transfers	72,896	(89,586)	98,867	(1,000,501)	(1,053,828)	22,574	728	1,723	397	(8,073)	7,078	1,110	(934,950)	(1,134,613)	122,948
Operating transfers	3,435	3,841	3,399	(11,115)	(3,841)	(3,399)	-	-	-	-	-	-	(7,680)	-	-
Premium reductions and refunds	-	-	-	415,523	232,836	(8,229)	-	-	-	-	-	-	415,523	232,836	(8,229)
Net operating income (loss)	76,331	(85,745)	102,266	(1,011,616)	(1,057,669)	19,175	728	1,723	397	(8,073)	7,078	1,110	(942,630)	(1,134,613)	122,948

Reallocation of Administrative Cost Fund

	ADMINISTRATIVE COST FUND			STATE INSURANCE FUND ACCOUNT			PUBLIC WORK-RELIEF EMPLOYEES' FUND ACCOUNT			SELF-INSURING EMPLOYERS' GUARANTY FUND			TOTAL		
	2004	2005	2006	2004	2005	2006	2004	2005	2006	2004	2005	2006	2004	2005	2006
Operating revenues:															
Premium Income		(Actual)		1,741,880	1,730,396	1,752,108	866	478	811	-	-	-	1,742,746	1,730,874	1,752,919
Assessment Income		(Alloc: 3-yr avg prem+assmt-reduc)		349,339	310,837	290,552	164	146	137	22,086	109,725	(10,828)	371,589	420,708	279,860
Provision for uncollectibles		(Alloc: 3-yr avg prem+assmt-reduc)		(98,950)	(65,740)	(66,858)	(3)	(1)	(2)	(2,384)	(591)	535	(101,337)	(66,332)	(66,325)
Other income		(Alloc: 3-yr avg prem+assmt-reduc)		11,802	11,915	15,184	1	2	3	49	71	139	11,852	11,987	15,326
Total operating revenues				2,004,070	1,987,408	1,990,986	1,028	625	948	19,752	109,204	(10,154)	2,024,850	2,097,237	1,981,780
Operating expenses:															
Workers' compensation benefits		(Actual)		2,021,690	2,317,277	1,475,907	138	(1,245)	414	20,226	95,231	(17,651)	2,042,054	2,411,263	1,458,670
Compensation adjustment expenses		(Alloc. by losses)		387,246	484,684	325,137	12	(174)	39	1,832	13,290	(1,670)	389,090	497,800	323,506
Personal services		(Alloc: 3-yr avg prem+assmt-reduc)		61,140	50,578	43,591	29	24	20	1,336	1,106	953	62,505	51,707	44,564
General and administrative		(Alloc: 3-yr avg prem+assmt-reduc)		17,052	-	-	8	-	-	373	-	-	17,433	-	-
Other expenses		(Alloc: 3-yr avg prem+assmt-reduc)		32,811	37,724	39,943	7	9	8	377	510	370	33,195	38,244	40,321
Total operating expenses				2,519,939	2,890,262	1,884,577	194	(1,386)	482	24,144	110,137	(17,998)	2,544,277	2,999,014	1,867,061
Net income (loss) before prem. Reductions/refunds & operating transfers				(515,869)	(902,854)	106,409	834	2,010	467	(4,392)	(933)	7,844	(519,427)	(901,777)	114,719
Operating transfers		(Actual)		(7,680)			-	-	-	-	-	-	(7,680)	-	-
Premium reductions and refunds		(Actual)		415,523	232,836	(8,229)	-	-	-	-	-	-	415,523	232,836	(8,229)
Net operating income (loss)				(939,072)	(1,135,690)	114,638	834	2,010	467	(4,392)	(933)	7,844	(942,630)	(1,134,613)	122,948

SUPPLEMENTAL SCHEDULE OF REVENUES, EXPENSES AND CHANGES IN NET ASSETS - FOR THE YEAR ENDED JUNE 30

	ADMINISTRATIVE COST FUND			STATE INSURANCE FUND ACCOUNT			PUBLIC WORK-RELIEF EMPLOYEES' FUND ACCOUNT			SELF-INSURING EMPLOYERS' GUARANTY FUND			TOTAL		
	2004	2005	2006	2004	2005	2006	2004	2005	2006	2004	2005	2006	2004	2005	2006
Operating revenues:															
Premium Income	-	-	-	1,741,880	1,730,396	1,752,108	866	478	811	-	-	-	1,742,746	1,730,874	1,752,919
Assessment Income	357,139	317,777	297,039	-	-	-	-	-	-	14,450	102,931	(17,179)	371,589	420,708	279,860
Provision for uncollectibles	(6,342)	(1,888)	(4,799)	(92,747)	(63,893)	(62,164)	-	-	-	(2,248)	(551)	638	(101,337)	(66,332)	(66,325)
Other income	2,310	3,298	6,496	9,542	8,689	8,830	-	-	-	-	-	-	11,852	11,987	15,326
Total operating revenues	353,107	319,187	298,736	1,658,675	1,675,192	1,698,774	866	478	811	12,202	102,380	(16,541)	2,024,850	2,097,237	1,981,780
Operating expenses:															
Workers' compensation benefits	-	-	-	2,021,690	2,317,277	1,475,907	138	(1,245)	414	20,226	95,231	(17,651)	2,042,054	2,411,263	1,458,670
Compensation adjustment expenses	184,915	336,511	137,983	204,175	161,289	185,523	-	-	-	-	-	-	389,090	497,800	323,506
Personal services	62,505	51,707	44,564	-	-	-	-	-	-	-	-	-	62,505	51,707	44,564
General and administrative	17,433	-	-	-	-	-	-	-	-	-	-	-	17,433	-	-
Other expenses	15,358	20,555	17,322	17,788	17,618	22,999	-	-	-	49	71	-	33,195	38,244	40,321
Total operating expenses	280,211	408,773	199,869	2,659,176	2,729,020	1,676,200	138	(1,245)	414	20,275	95,302	(17,651)	2,959,800	3,231,850	1,858,832
Net income (loss) before prem. Reductions/refunds & operating transfers	72,896	(89,586)	98,867	(1,000,501)	(1,053,828)	22,574	728	1,723	397	(8,073)	7,078	1,110	(934,950)	(1,134,613)	122,948
Operating transfers	3,435	3,841	3,399	(11,115)	(3,841)	(3,399)	-	-	-	-	-	-	(7,680)	-	-
Premium reductions and refunds	-	-	-	415,523	232,836	(8,229)	-	-	-	-	-	-	415,523	232,836	(8,229)
Net operating income (loss)	76,331	(85,745)	102,266	(1,011,616)	(1,057,669)	19,175	728	1,723	397	(8,073)	7,078	1,110	(942,630)	(1,134,613)	122,948

Reallocation of Administrative Cost Fund

	ADMINISTRATIVE COST FUND			STATE INSURANCE FUND ACCOUNT			PUBLIC WORK-RELIEF EMPLOYEES' FUND ACCOUNT			SELF-INSURING EMPLOYERS' GUARANTY FUND			TOTAL		
	2004	2005	2006	2004	2005	2006	2004	2005	2006	2004	2005	2006	2004	2005	2006
Operating revenues:															
Premium Income		(Actual)		1,741,880	1,730,396	1,752,108	866	478	811	-	-	-	1,742,746	1,730,874	1,752,919
Assessment Income		(Alloc: 3-yr avg prem+assmt-reduc)		349,339	310,837	290,552	164	146	137	22,086	109,725	(10,828)	371,589	420,708	279,860
Provision for uncollectibles		(Alloc: 3-yr avg prem+assmt-reduc)		(98,950)	(65,740)	(66,858)	(3)	(1)	(2)	(2,384)	(591)	535	(101,337)	(66,332)	(66,325)
Other income		(Alloc: 3-yr avg prem+assmt-reduc)		11,802	11,915	15,184	1	2	3	49	71	139	11,852	11,987	15,326
Total operating revenues				2,004,070	1,987,408	1,990,986	1,028	625	948	19,752	109,204	(10,154)	2,024,850	2,097,237	1,981,780
Operating expenses:															
Workers' compensation benefits		(Actual)		2,021,690	2,317,277	1,475,907	138	(1,245)	414	20,226	95,231	(17,651)	2,042,054	2,411,263	1,458,670
Compensation adjustment expenses		(Alloc. by losses)		387,246	484,684	325,137	12	(174)	39	1,832	13,290	(1,670)	389,090	497,800	323,506
Personal services		(Alloc: 3-yr avg prem+assmt-reduc)		61,140	50,578	43,591	29	24	20	1,336	1,106	953	62,505	51,707	44,564
General and administrative		(Alloc: 3-yr avg prem+assmt-reduc)		17,052	-	-	8	-	-	373	-	-	17,433	-	-
Other expenses		(Alloc: 3-yr avg prem+assmt-reduc)		32,811	37,724	39,943	7	9	8	377	510	370	33,195	38,244	40,321
Total operating expenses				2,519,939	2,890,262	1,884,577	194	(1,386)	482	24,144	110,137	(17,998)	2,544,277	2,999,014	1,867,061
Net income (loss) before prem. Reductions/refunds & operating transfers				(515,869)	(902,854)	106,409	834	2,010	467	(4,392)	(933)	7,844	(519,427)	(901,777)	114,719
Operating transfers		(Actual)		(7,680)			-	-	-	-	-	-	(7,680)	-	-
Premium reductions and refunds		(Actual)		415,523	232,836	(8,229)	-	-	-	-	-	-	415,523	232,836	(8,229)
Net operating income (loss)				(939,072)	(1,135,690)	114,638	834	2,010	467	(4,392)	(933)	7,844	(942,630)	(1,134,613)	122,948

Calculation of BWC Internal Rate of Return -Scenario 1

Assumptions

a.	Reserve to Surplus:	6.94
b.	Tax Rate:	0%
c.	Investment return:	5.0%
d.	General Expense:	3.0%
e.	ULE Expense:	1.0%
f.	Loss ALAE Ratio	183.7%
g.	Combined Ratio	187.7%

Notes: a. NCCI study
 c,d,f. derived from BWC Annual Report & Actuarial Report as of 6/30/2006
 e. selected by Aon
 g. d+e+f

Time Period		Premium			Expense			Losses + ALAE						Stat UW Income	Surplus				Avg Inv Assets	Investment Income	Equity Flow						
Year	Mid	Written	Collected	Earned	Comm, Gnr, Tx, Rein	ULAE	Total	Incurred	Case Incurred	Paid	Reserves				PreTax	R/S: TI Loss Rsvr	6.94 Required Surplus		P/S: 0.39	Avg	5.0% Amt						
											IBNR	Case	End	Total Avg			End	Avg					Chg				
0	-	0	2,095,060	0%	2,095,060	-	-	-	0%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(301,882)			
1	1.00	1/2	100%	-	2,095,060	-	1,047,530	62,852	12,099	74,950	3,849,106	44%	1,704,313	15%	596,482	2,144,794	1,107,830	3,252,624	1,626,312	(1,828,997)	3,252,624	468,678	385,280	166,796	2,011,592	100,580	(1,895,213)
2	2.00	1 1/2	0%	-	-	-	-	-	21%	806,487	17%	668,783	1,338,307	1,245,534	2,583,841	2,918,232	(1,820)	2,583,841	372,311	420,495	(96,366)	3,338,727	166,936	261,483			
3	3.00	2 1/2	-	-	-	-	-	-	14%	535,601	11%	439,047	802,706	1,342,088	2,144,794	2,364,317	(1,195)	2,144,794	309,048	340,680	(63,263)	2,704,997	135,250	197,318			
4	4.00	3 1/2	-	-	-	-	-	-	11%	404,532	9%	327,767	398,173	1,418,853	1,817,027	1,980,910	(892)	1,817,027	261,819	285,434	(47,229)	2,266,344	113,317	159,654			
5	5.00	4 1/2	-	-	-	-	-	-	10%	398,173	7%	250,466	-	1,566,561	1,566,561	1,691,794	(682)	1,566,561	225,729	243,774	(36,090)	1,935,568	96,778	132,187			
6	6.00	5 1/2	-	-	-	-	-	-	0%	-	6%	228,255	-	1,338,307	1,338,307	1,452,434	(621)	1,338,307	192,840	209,284	(32,890)	1,661,718	83,086	115,354			
7	7.00	6 1/2	-	-	-	-	-	-	0%	-	5%	211,625	-	1,126,682	1,126,682	1,232,494	(576)	1,126,682	162,346	177,593	(30,493)	1,410,087	70,504	100,422			
8	8.00	7 1/2	-	-	-	-	-	-	0%	-	4%	170,868	-	955,814	955,814	1,041,248	(465)	955,814	137,725	150,036	(24,621)	1,191,284	59,564	83,720			
9	9.00	8 1/2	-	-	-	-	-	-	0%	-	4%	153,108	-	802,706	802,706	879,260	(417)	802,706	115,664	126,694	(22,062)	1,005,954	50,298	71,943			
10	10.00	9 1/2	-	-	-	-	-	-	0%	-	4%	144,518	-	658,187	658,187	730,446	(393)	658,187	94,840	105,252	(20,824)	835,698	41,785	62,216			
11	11.00	10 1/2	-	-	-	-	-	-	0%	-	4%	135,439	-	522,749	522,749	590,468	(369)	522,749	75,324	85,082	(19,516)	675,550	33,777	52,925			
12	12.00	11 1/2	-	-	-	-	-	-	0%	-	3%	124,575	-	398,173	398,173	460,461	(339)	398,173	57,374	66,349	(17,950)	526,810	26,341	43,952			
13	13.00	12 1/2	-	-	-	-	-	-	0%	-	3%	112,007	-	286,167	286,167	342,170	(305)	286,167	41,234	49,304	(16,139)	391,474	19,574	35,408			
14	14.00	13 1/2	-	-	-	-	-	-	0%	-	2%	88,810	-	197,356	197,356	241,761	(242)	197,356	28,438	34,836	(12,797)	276,597	13,830	26,385			
15	15.00	14 1/2	-	-	-	-	-	-	0%	-	2%	63,815	-	133,541	133,541	165,449	(174)	133,541	19,242	23,840	(9,195)	189,289	9,464	18,486			
16	16.00	15 1/2	-	-	-	-	-	-	0%	-	3%	133,541	-	-	-	66,771	(363)	0	0	9,621	(19,242)	76,392	3,820	22,698			
Total-Annualized			2,095,060	100%	2,095,060		1,047,530	62,852	20,951	83,802	3,849,106	100%	3,849,106	100%	3,849,106		(1,837,849)	19,879,587	2,864,494	2,713,553		1,024,904		-7.73%			

Calculation of BWC Internal Rate of Return -Scenario 2

Assumptions

a.	Reserve to Surplus:	1.86
b.	Tax Rate:	0%
c.	Investment return:	5.0%
d.	General Expense:	3.0%
e.	ULE Expense:	1.0%
f.	Loss ALAE Ratio	183.7%
g.	Combined Ratio	187.7%

Notes: a. NCCI study
 c,d,f. derived from BWC Annual Report & Actuarial Report as of 6/30/2006
 e. selected by Aon
 g. d+e+f

Time Period		Premium			Expense			Losses + ALAE						Stat UW Income	Surplus				Avg Inv Assets	Investment Income	Equity Flow			
Year	Mid	Written	Collected	Earned	Comm, Gnr, Tx, Rein	ULAE	Total	Incurred	Case Incurred	Paid	Reserves				PreTax	R/S:	1.86	P/S:	0.10	Avg	5.0%	Amt		
											IBNR	Case	End	Total									Tl Loss Rsvr	Required
0	-	0	2,095,060	0%	2,095,060	-	-	0%	-	-	-	-	-	-	-	2,095,060	1,126,376	-	1,126,376	-	-	(1,126,376)		
1	1.00	1/2	100%	2,095,060	62,852	12,099	74,950	3,849,106	44%	1,704,313	15%	596,482	2,144,794	1,107,830	3,252,624	1,626,312	(1,828,997)	3,252,624	1,748,723	1,437,549	622,346	3,063,861	153,193	(2,298,150)
2	2.00	1 1/2	0%	-	-	1,820	1,820	-	21%	806,487	17%	668,783	1,338,307	1,245,534	2,583,841	2,918,232	(1,820)	2,583,841	1,389,162	1,668,942	(359,561)	4,487,174	224,359	582,099
3	3.00	2 1/2	-	-	-	1,195	1,195	-	14%	535,601	11%	439,047	802,706	1,342,088	2,144,794	2,364,317	(1,195)	2,144,794	1,153,115	1,271,138	(236,047)	3,635,456	181,773	416,625
4	4.00	3 1/2	-	-	-	892	892	-	11%	404,532	9%	327,767	398,173	1,418,853	1,817,027	1,980,910	(892)	1,817,027	976,896	1,065,005	(176,219)	3,045,916	152,296	327,623
5	5.00	4 1/2	-	-	-	682	682	-	10%	398,173	7%	250,466	-	1,566,561	1,566,561	1,691,794	(682)	1,566,561	842,237	909,567	(134,659)	2,601,360	130,068	264,045
6	6.00	5 1/2	-	-	-	621	621	-	0%	-	6%	228,255	-	1,338,307	1,338,307	1,452,434	(621)	1,338,307	719,520	780,878	(122,717)	2,233,312	111,666	233,762
7	7.00	6 1/2	-	-	-	576	576	-	0%	-	5%	211,625	-	1,126,682	1,126,682	1,232,494	(576)	1,126,682	605,743	662,631	(113,777)	1,895,126	94,756	207,957
8	8.00	7 1/2	-	-	-	465	465	-	0%	-	4%	170,868	-	955,814	955,814	1,041,248	(465)	955,814	513,878	559,811	(91,865)	1,601,058	80,053	171,453
9	9.00	8 1/2	-	-	-	417	417	-	0%	-	4%	153,108	-	802,706	802,706	879,260	(417)	802,706	431,562	472,720	(82,316)	1,351,980	67,599	149,498
10	10.00	9 1/2	-	-	-	393	393	-	0%	-	4%	144,518	-	658,187	658,187	730,446	(393)	658,187	353,864	392,713	(77,698)	1,123,160	56,158	133,463
11	11.00	10 1/2	-	-	-	369	369	-	0%	-	4%	135,439	-	522,749	522,749	590,468	(369)	522,749	281,048	317,456	(72,816)	907,924	45,396	117,844
12	12.00	11 1/2	-	-	-	339	339	-	0%	-	3%	124,575	-	398,173	398,173	460,461	(339)	398,173	214,072	247,560	(66,976)	708,021	35,401	102,038
13	13.00	12 1/2	-	-	-	305	305	-	0%	-	3%	112,007	-	286,167	286,167	342,170	(305)	286,167	153,853	183,962	(60,219)	526,132	26,307	86,221
14	14.00	13 1/2	-	-	-	242	242	-	0%	-	2%	88,810	-	197,356	197,356	241,761	(242)	197,356	106,106	129,979	(47,747)	371,741	18,587	66,093
15	15.00	14 1/2	-	-	-	174	174	-	0%	-	2%	63,815	-	133,541	133,541	165,449	(174)	133,541	71,796	88,951	(34,309)	254,400	12,720	46,856
16	16.00	15 1/2	-	-	-	363	363	-	0%	-	3%	133,541	-	-	-	0	(363)	0	0	35,898	(71,796)	102,669	5,133	76,566
Total-Annualized			2,095,060	100%	2,095,060	1,047,530	62,852	20,951	83,802	3,849,106	100%	3,849,106	100%	3,849,106			(1,837,849)	19,879,587	10,687,950	10,124,762		1,395,464		-2.40%

OHIO BUREAU OF WORKERS' COMPENSATION
AND
INDUSTRIAL COMMISSION OF OHIO

STATE INSURANCE FUND ACCOUNT

SUPPLEMENTAL SCHEDULE OF NET ASSETS - JUNE 30

		2002	2003	2004	2005	2006
ASSETS						
Current assets						
	Cash and cash equivalents	\$ 2,221,516	\$ 1,813,445	\$ 1,477,660	\$ 1,149,128	\$ 141,423
	Collateral on loaned securities	2,020,359	1,926,616	1,889,613	1,565,393	-
	Premiums in course of collection	133,032	804,111	657,778	844,690	754,175
	Assessments in course of collection	-	-	-	-	-
	Accounts receivable, net of allowance	129,101	148,768	134,533	141,472	126,679
	Interfund receivables	4,484	8,142	18,153	18,437	19,159
	Investment trade receivables	1,013,998	381,854	345,450	770,914	-
	Accrued investment income	85,118	73,281	62,460	60,371	2,254
	Other current assets	2,103	2,005	2,659	2,142	1,713
	Total current assets	5,609,711	5,158,222	4,588,306	4,552,547	1,045,403
Noncurrent assets:						
	Fixed maturities	7,905,533	7,611,380	6,806,514	7,032,342	14,285,602
	Domestic equity securities:					
	Common stocks	3,977,781	3,362,023	4,035,829	4,299,694	1,241
	Preferred stocks	32,531	28,773	23,067	22,429	9,822
	International securities	1,500,545	1,391,386	1,774,188	1,995,648	922
	Investments in limited partnerships	359,562	631,556	999,037	940,083	427,339
	Unbilled premiums receivable	776,751	941,121	1,003,553	977,147	1,049,182
	Retrospective premiums receivable	230,592	266,505	247,321	252,463	271,552
	Capital assets	36,557	39,530	37,892	24,138	23,695
	Restricted cast	-	-	-	-	-
	Total noncurrent assets	14,819,852	14,272,274	14,927,401	15,543,944	16,069,355
	Total assets	\$ 20,429,563	\$ 19,430,496	\$ 19,515,707	\$ 20,096,491	\$ 17,114,758
LIABILITIES						
Current liabilities:						
	Reserve for compensation	1,629,808	1,687,058	1,763,043	1,745,142	1,748,743
	Reserve for compensation adjustment expenses	152,298	160,988	169,213	171,034	172,429
	Warrants payable	34,301	34,448	36,033	42,701	44,390
	Deferred revenue	-	-	-	-	-
	Bonds payable	-	-	-	-	-
	Investment trade payables	2,433,261	1,969,739	1,451,130	1,933,453	-
	Accounts payable	518	875	3,162	598	1,046
	Interfund payables	24,677	53,638	116,373	131,297	109,509
	Premium refund payable	66,539	-	-	-	-
	Obligations under securities lending	2,020,359	1,926,616	1,889,613	1,565,393	-
	Other current liabilities	-	-	-	-	50,019
	Total current liabilities	6,361,761	5,833,362	5,428,567	5,589,618	2,126,136
Noncurrent liabilities:						
	Reserve for compensation	11,583,192	12,560,942	12,793,957	13,310,858	13,059,257
	Reserve for compensation adjustment expenses	516,702	535,412	557,887	546,366	557,671
	Premium payment security deposits	81,123	82,843	85,156	86,467	87,166
	Deferred revenue	-	-	-	-	-
	Bonds payable	-	-	-	-	-
	Other noncurrent liabilities	-	-	5,696	55,691	5,683
	Total noncurrent liabilities	12,181,017	13,179,197	13,442,696	13,999,382	13,709,777
	Total liabilities	\$ 18,542,778	\$ 19,012,559	\$ 18,871,263	\$ 19,589,000	\$ 15,835,913

OHIO BUREAU OF WORKERS' COMPENSATION
AND
INDUSTRIAL COMMISSION OF OHIO

STATE INSURANCE FUND ACCOUNT

NET ASSETS (DEFICIT)					
Invested in capital assets, net of related debt	36,557	39,530	37,892	24,138	23,696
Restricted for Surplus Fund	(818,184)	(954,915)	(1,082,918)	(1,236,953)	(1,394,378)
Restricted for Premium Payment Security Fund	113,110	113,541	119,319	117,131	117,451
Restricted for workers' compensation benefits	2,555,102	1,219,781	1,570,151	1,603,175	2,532,076
Total net assets (deficit)	\$ 1,886,585	\$ 417,937	\$ 644,444	\$ 507,491	\$ 1,278,845

SUPPLEMENTAL SCHEDULE OF REVENUES, EXPENSES AND CHANGES IN NET ASSETS - FOR THE YEAR ENDED JUNE 30

Operating revenues:					
Premium Income	1,878,105	1,721,581	1,741,880	1,730,396	1,752,108
Assessment Income	-	-	-	-	-
Provision for uncollectibles	(61,778)	(52,214)	(92,747)	(63,893)	(62,164)
Other income	3,710	5,023	9,542	8,689	8,830
Total operating revenues	1,820,037	1,674,390	1,658,675	1,675,192	1,698,774
Operating expenses:					
Workers' compensation benefits	2,338,416	2,730,319	2,021,690	2,317,277	1,475,907
Compensation adjustment expenses	223,626	196,038	204,175	161,289	185,523
Premium reductions and refunds	1,473,880	640,563	415,523	232,836	(8,229)
Personal services	-	-	-	-	-
General and administrative	-	-	-	-	-
Other expenses	16,400	12,942	17,788	17,618	22,999
Total operating expenses	4,052,322	3,579,862	2,659,176	2,729,020	1,676,200
Net income (loss) before operating transfers	(2,232,285)	(1,905,472)	(1,000,501)	(1,053,828)	22,574
Operating transfers	(25,753)	(18,540)	(11,115)	(3,841)	(3,399)
Net operating income (loss)	(2,258,038)	(1,924,012)	(1,011,616)	(1,057,669)	19,175
Non-operating revenues (expenses)					
Net investment income (loss)	(498,728)	455,364	1,238,123	914,607	752,179
Loss on disposal of capital assets	-	-	-	6,108	-
Total non-operating revenues	(498,728)	455,364	1,238,123	920,715	752,179
Increase (decrease in net assets (deficit)	(2,756,766)	(1,468,648)	226,507	(136,954)	771,354
Net assets (deficit), beginning of year	4,643,351	1,886,585	417,937	644,444	507,491
Net assets (deficit), end of year	\$ 1,886,585	\$ 417,937	\$ 644,444	\$ 507,490	\$ 1,278,845

OHIO BUREAU OF WORKERS' COMPENSATION
AND
INDUSTRIAL COMMISSION OF OHIO

DISABLED WORKERS' RELIEF FUND

SUPPLEMENTAL SCHEDULE OF NET ASSTS - JUNE 30

		2002	2003	2004	2005	2006
ASSETS	Current assets					
	Cash and cash equivalents	\$ 41,009	\$ 122,849	\$ 116,979	\$ 92,007	\$ 6,154
	Collateral on loaned securities	89,034	144,220	137,374	152,469	-
	Premiums in course of collection	-	-	-	-	-
	Assessments in course of collection	54,626	51,447	50,353	48,891	50,096
	Accounts receivable, net of allowance	23,295	24,419	21,924	21,267	19,576
	Interfund receivables	13,793	21,654	34,070	38,202	43,562
	Investment trade receivables	140	114	5,022	67	-
	Accrued investment income	12,720	11,989	8,825	9,444	29
	Other current assets	-	-	-	-	-
	Total current assets	234,617	376,692	374,547	362,347	119,417
	Noncurrent assets:					
	Fixed maturities	859,024	889,610	867,643	934,278	1,050,088
	Domestic equity securities:					
	Common stocks	8,999	-	3,370	-	-
	Preferred stocks	-	9,819	9,867	24,927	-
	International securities	-	-	-	-	-
	Investments in limited partnerships	-	-	-	-	-
	Unbilled premiums receivable	-	-	-	57,653	64,107
	Retrospective premiums receivable	-	-	-	-	-
	Capital assets	22	22	22	22	22
	Restricted cast	-	-	-	-	-
	Total noncurrent assets	868,045	899,451	880,902	1,016,880	1,114,217
	Total assets	\$ 1,102,662	\$ 1,276,143	\$ 1,255,449	\$ 1,379,227	\$ 1,233,634
	LIABILITIES	Current liabilities:				
Reserve for compensation		-	-	-	120,349	114,783
Reserve for compensation adjustment expenses		-	-	-	693	694
Warrants payable		-	-	-	-	-
Deferred revenue		12,034	14,535	16,930	17,181	17,925
Bonds payable		-	-	-	-	-
Investment trade payables		-	20,892	-	-	-
Accounts payable		-	-	-	-	-
Interfund payables		2,488	6,210	11,250	16,259	16,787
Premium refund payable		-	-	-	-	-
Obligations under securities lending		89,034	144,220	137,374	152,469	-
Other current liabilities		17	18	14	18	17
Total current liabilities		103,573	185,875	165,568	306,969	150,206
Noncurrent liabilities:						
Reserve for compensation		-	-	-	1,597,350	1,636,765
Reserve for compensation adjustment expenses		-	-	-	50,807	51,806
Premium payment security deposits		-	-	-	-	-
Deferred revenue		398,823	387,901	377,389	367,574	354,922
Bonds payable		-	-	-	-	-
Other noncurrent liabilities		-	-	-	-	-
Total noncurrent liabilities	398,823	387,901	377,389	2,015,731	2,043,493	
Total liabilities	\$ 502,396	\$ 573,776	\$ 542,957	\$ 2,322,700	\$ 2,193,699	

OHIO BUREAU OF WORKERS' COMPENSATION
AND
INDUSTRIAL COMMISSION OF OHIO

DISABLED WORKERS' RELIEF FUND

NET ASSETS (DEFICIT)

Invested in capital assets, net of related debt	22	22	22	22	22
Restricted for Surplus Fund	-	-	-	-	-
Restricted for Premium Payment Security Fund	-	-	-	-	-
Restricted for workers' compensation benefits	600,244	702,345	712,470	(943,495)	(960,087)
Total net assets (deficit)	<u>\$ 600,266</u>	<u>\$ 702,367</u>	<u>\$ 712,492</u>	<u>\$ (943,473)</u>	<u>\$ (960,065)</u>

SUPPLEMENTAL SCHEDULE OF REVENUES, EXPENSES AND CHANGES IN NET ASSETS - FOR THE YEAR ENDED JUNE 30

Operating revenues:					
Premium Income	-	-	-	-	-
Assessment Income	118,906	114,429	117,300	115,933	130,644
Provision for uncollectibles	(2,401)	(1,593)	(4,536)	(1,738)	(3,713)
Other income	-	-	-	-	-
Total operating revenues	<u>116,505</u>	<u>112,836</u>	<u>112,764</u>	<u>114,195</u>	<u>126,931</u>
Operating expenses:					
Workers' compensation benefits	127,503	121,986	113,110	10,839	145,222
Compensation adjustment expenses	-	-	-	(3,200)	1,000
Premium reductions and refunds	-	-	-	-	-
Personal services	472	512	488	376	354
General and administrative	231	146	55	105	157
Other expenses	-	-	-	-	-
Total operating expenses	<u>128,206</u>	<u>122,644</u>	<u>113,653</u>	<u>8,120</u>	<u>146,733</u>
Net income (loss) before operating transfers	<u>(11,701)</u>	<u>(9,808)</u>	<u>(889)</u>	<u>106,075</u>	<u>(19,802)</u>
Operating transfers	21,747	15,554	7,680	-	-
Net operating income (loss)	<u>10,046</u>	<u>5,746</u>	<u>6,791</u>	<u>106,075</u>	<u>(19,802)</u>
Non-operating revenues (expenses)					
Net investment income (loss)	50,378	96,355	3,334	54,586	3,210
Loss on disposal of capital assets	-	-	-	-	-
Total non-operating revenues	<u>50,378</u>	<u>96,355</u>	<u>3,334</u>	<u>54,586</u>	<u>3,210</u>
Increase (decrease in net assets (deficit)	60,424	102,101	10,125	160,661	(16,592)
Net assets (deficit), beginning of year (as restated)	539,842	600,266	702,367	(1,104,134)	(943,473)
Net assets (deficit), end of year	<u>\$ 600,266</u>	<u>\$ 702,367</u>	<u>\$ 712,492</u>	<u>\$ (943,473)</u>	<u>\$ (960,065)</u>

OHIO BUREAU OF WORKERS' COMPENSATION
AND
INDUSTRIAL COMMISSION OF OHIO

COAL-WORKERS PNEUMOCONIOSIS FUND

SUPPLEMENTAL SCHEDULE OF NET ASSTS - JUNE 30

		2002	2003	2004	2005	2006
ASSETS	Current assets					
	Cash and cash equivalents	\$ 15,680	\$ 42,779	\$ 15,165	\$ 17,647	\$ 1,762
	Collateral on loaned securities	354	7,073	12,506	5,188	-
	Premiums in course of collection	-	-	-	-	-
	Assessments in course of collection	-	-	-	-	-
	Accounts receivable, net of allowance	-	(2)	1	-	1
	Interfund receivables	-	2	-	-	(1)
	Investment trade receivables	12	9	8	5	-
	Accrued investment income	2,428	2,261	1,992	1,969	7
	Other current assets	-	-	-	-	-
	Total current assets	18,474	52,122	29,672	24,809	1,769
	Noncurrent assets:					
	Fixed maturities	162,046	153,063	184,720	193,784	220,125
	Domestic equity securities:					
	Common stocks	-	-	-	-	-
	Preferred stocks	5,595	6,105	6,135	6,146	-
	International securities	-	-	-	-	-
	Investments in limited partnerships	-	-	-	-	-
	Unbilled premiums receivable	-	-	-	-	-
	Retrospective premiums receivable	-	-	-	-	-
	Capital assets	-	-	-	-	-
	Restricted cast	-	-	-	-	-
	Total noncurrent assets	167,641	159,168	190,855	199,930	220,125
Total assets	\$ 186,115	\$ 211,290	\$ 220,527	\$ 224,739	\$ 221,894	
LIABILITIES	Current liabilities:					
	Reserve for compensation	989	979	1,065	1,157	1,226
	Reserve for compensation adjustment expenses	51	49	46	61	55
	Warrants payable	-	-	-	-	-
	Deferred revenue	-	-	-	-	-
	Bonds payable	-	-	-	-	-
	Investment trade payables	-	-	-	-	-
	Accounts payable	-	-	-	-	-
	Interfund payables	64	74	77	103	124
	Premium refund payable	-	-	-	-	-
	Obligations under securities lending	354	7,073	12,506	5,188	-
	Other current liabilities	1	3	3	4	5
	Total current liabilities	1,459	8,178	13,697	6,513	1,410
	Noncurrent liabilities:					
	Reserve for compensation	45,801	48,221	51,335	52,843	56,574
	Reserve for compensation adjustment expenses	3,349	3,351	3,254	3,439	3,245
	Premium payment security deposits	149	148	523	525	527
	Deferred revenue	-	-	-	-	-
	Bonds payable	-	-	-	-	-
	Other noncurrent liabilities	-	-	-	-	-
	Total noncurrent liabilities	49,299	51,720	55,112	56,807	60,346
	Total liabilities	\$ 50,758	\$ 59,898	\$ 68,809	\$ 63,320	\$ 61,756

OHIO BUREAU OF WORKERS' COMPENSATION
AND
INDUSTRIAL COMMISSION OF OHIO

COAL-WORKERS PNEUMOCONIOSIS FUND

NET ASSETS (DEFICIT)					
Invested in capital assets, net of related debt	-	-	-	-	-
Restricted for Surplus Fund	-	-	-	-	-
Restricted for Premium Payment Security Fund	-	-	-	-	-
Restricted for workers' compensation benefits	135,357	151,392	151,718	161,419	160,138
Total net assets (deficit)	\$ 135,357	\$ 151,392	\$ 151,718	\$ 161,419	\$ 160,138

SUPPLEMENTAL SCHEDULE OF REVENUES, EXPENSES AND CHANGES IN NET ASSETS - FOR THE YEAR ENDED JUNE 30

	2002	2003	2004	2005	2006
Operating revenues:					
Premium Income	1,232	267	256	824	921
Assessment Income	-	-	-	-	-
Provision for uncollectibles	-	-	-	-	-
Other income	31	-	-	-	-
Total operating revenues	1,263	267	256	824	921
Operating expenses:					
Workers' compensation benefits	13,393	3,438	4,294	2,808	5,025
Compensation adjustment expenses	731	54	(40)	266	(147)
Premium reductions and refunds	-	-	-	-	-
Personal services	7	13	21	18	32
General and administrative	-	1	-	-	-
Other expenses	-	-	-	-	-
Total operating expenses	14,131	3,506	4,275	3,092	4,910
Net income (loss) before operating transfers	(12,868)	(3,239)	(4,019)	(2,268)	(3,989)
Operating transfers	-	-	-	-	-
Net operating income (loss)	(12,868)	(3,239)	(4,019)	(2,268)	(3,989)
Non-operating revenues (expenses)					
Net investment income (loss)	13,984	19,274	4,345	11,969	2,708
Loss on disposal of capital assets	-	-	-	-	-
Total non-operating revenues	13,984	19,274	4,345	11,969	2,708
Increase (decrease in net assets (deficit))	1,116	16,035	326	9,701	(1,281)
Net assets (deficit), beginning of year	134,241	135,357	151,392	151,718	161,419
Net assets (deficit), end of year	\$ 135,357	\$ 151,392	\$ 151,718	\$ 161,419	\$ 160,138

OHIO BUREAU OF WORKERS' COMPENSATION
AND
INDUSTRIAL COMMISSION OF OHIO

PUBLIC WORK-RELIEF EMPLOYEES' FUND ACCOUNT

SUPPLEMENTAL SCHEDULE OF NET ASSTS - JUNE 30

		2002	2003	2004	2005	2006
ASSETS	Current assets					
	Cash and cash equivalents	\$ 16,077	\$ 16,767	\$ 2,211	\$ 5,413	\$ 113
	Collateral on loaned securities	128	124	113	-	-
	Premiums in course of collection	262	27	60	(136)	97
	Assessments in course of collection	-	-	-	-	-
	Accounts receivable, net of allowance	21	41	137	247	75
	Interfund receivables	418	739	399	313	252
	Investment trade receivables	7	6	5	3	-
	Accrued investment income	7	6	143	156	-
	Other current assets	-	-	-	-	-
	Total current assets	16,920	17,710	3,068	5,996	537
	Noncurrent assets:					
	Fixed maturities	399	315	15,722	13,781	20,085
	Domestic equity securities:					
	Common stocks	-	-	-	-	-
	Preferred stocks	-	-	-	-	-
	International securities	-	-	-	-	-
	Investments in limited partnerships	-	-	-	-	-
	Unbilled premiums receivable	-	-	-	-	-
	Retrospective premiums receivable	-	-	-	-	-
	Capital assets	-	-	-	-	-
	Restricted cast	-	-	-	-	-
	Total noncurrent assets	399	315	15,722	13,781	20,085
	Total assets	\$ 17,319	\$ 18,025	\$ 18,790	\$ 19,777	\$ 20,622
	LIABILITIES	Current liabilities:				
Reserve for compensation		170	176	167	200	188
Reserve for compensation adjustment expenses		-	-	-	-	-
Warrants payable		-	-	-	-	-
Deferred revenue		-	-	-	-	-
Bonds payable		-	-	-	-	-
Investment trade payables		-	-	-	-	-
Accounts payable		-	-	-	-	-
Interfund payables		10	12	16	25	7
Premium refund payable		-	-	-	-	-
Obligations under securities lending		128	124	113	-	-
Other current liabilities		-	-	-	-	-
Total current liabilities		308	312	296	225	195
Noncurrent liabilities:						
Reserve for compensation		5,340	5,546	5,561	3,981	4,281
Reserve for compensation adjustment expenses		-	-	-	-	-
Premium payment security deposits		-	-	-	-	-
Deferred revenue		-	-	-	-	-
Bonds payable		-	-	-	-	-
Other noncurrent liabilities		-	-	-	-	-
Total noncurrent liabilities		5,340	5,546	5,561	3,981	4,281
Total liabilities		\$ 5,648	\$ 5,858	\$ 5,857	\$ 4,206	\$ 4,476

OHIO BUREAU OF WORKERS' COMPENSATION
AND
INDUSTRIAL COMMISSION OF OHIO

PUBLIC WORK-RELIEF EMPLOYEES' FUND ACCOUNT

NET ASSETS (DEFICIT)

Invested in capital assets, net of related debt	-	-	-	-	-
Restricted for Surplus Fund	-	-	-	-	-
Restricted for Premium Payment Security Fund	-	-	-	-	-
Restricted for workers' compensation benefits	11,671	12,167	12,933	15,571	16,146
Total net assets (deficit)	<u>\$ 11,671</u>	<u>\$ 12,167</u>	<u>\$ 12,933</u>	<u>\$ 15,571</u>	<u>\$ 16,146</u>

SUPPLEMENTAL SCHEDULE OF REVENUES, EXPENSES AND CHANGES IN NET ASSETS - FOR THE YEAR ENDED JUNE 30

Operating revenues:					
Premium Income	439	613	866	478	811
Assessment Income	-	-	-	-	-
Provision for uncollectibles	-	-	-	-	-
Other income	-	-	-	-	-
Total operating revenues	<u>439</u>	<u>613</u>	<u>866</u>	<u>478</u>	<u>811</u>
Operating expenses:					
Workers' compensation benefits	2,058	373	138	(1,245)	414
Compensation adjustment expenses	-	-	-	-	-
Premium reductions and refunds	-	-	-	-	-
Personal services	-	-	-	-	-
General and administrative	-	-	-	-	-
Other expenses	-	-	-	-	-
Total operating expenses	<u>2,058</u>	<u>373</u>	<u>138</u>	<u>(1,245)</u>	<u>414</u>
Net income (loss) before operating transfers	<u>(1,619)</u>	<u>240</u>	<u>728</u>	<u>1,723</u>	<u>397</u>
Operating transfers	-	-	-	-	-
Net operating income (loss)	<u>(1,619)</u>	<u>240</u>	<u>728</u>	<u>1,723</u>	<u>397</u>
Non-operating revenues (expenses)					
Net investment income (loss)	388	256	38	915	178
Loss on disposal of capital assets	-	-	-	-	-
Total non-operating revenues	<u>388</u>	<u>256</u>	<u>38</u>	<u>915</u>	<u>178</u>
Increase (decrease in net assets (deficit)	(1,231)	496	766	2,638	575
Net assets (deficit), beginning of year	12,902	11,671	12,167	12,933	15,571
Net assets (deficit), end of year	<u>\$ 11,671</u>	<u>\$ 12,167</u>	<u>\$ 12,933</u>	<u>\$ 15,571</u>	<u>\$ 16,146</u>

OHIO BUREAU OF WORKERS' COMPENSATION
AND
INDUSTRIAL COMMISSION OF OHIO

MARINE INDUSTRY FUND

SUPPLEMENTAL SCHEDULE OF NET ASSTS - JUNE 30

		2002	2003	2004	2005	2006
ASSETS	Current assets					
	Cash and cash equivalents	\$ 10,406	\$ 11,272	\$ 3,309	\$ 4,969	\$ 267
	Collateral on loaned securities	976	1,014	915	868	-
	Premiums in course of collection	-	-	-	-	-
	Assessments in course of collection	-	-	-	-	-
	Accounts receivable, net of allowance	-	-	-	-	-
	Interfund receivables	314	32	29	65	178
	Investment trade receivables	8	6	6	4	-
	Accrued investment income	34	33	52	154	1
	Other current assets	-	-	-	-	-
	Total current assets	<u>11,738</u>	<u>12,357</u>	<u>4,311</u>	<u>6,060</u>	<u>446</u>
	Noncurrent assets:					
	Fixed maturities	1,417	1,309	9,624	8,767	14,255
	Domestic equity securities:					
	Common stocks	-	-	-	-	-
	Preferred stocks	-	-	-	-	-
	International securities	-	-	-	-	-
	Investments in limited partnerships	-	-	-	-	-
	Unbilled premiums receivable	-	-	-	-	-
	Retrospective premiums receivable	-	-	-	-	-
	Capital assets	-	-	-	-	-
	Restricted cast	-	-	-	-	-
	Total noncurrent assets	<u>1,417</u>	<u>1,309</u>	<u>9,624</u>	<u>8,767</u>	<u>14,255</u>
	Total assets	<u>\$ 13,155</u>	<u>\$ 13,666</u>	<u>\$ 13,935</u>	<u>\$ 14,827</u>	<u>\$ 14,701</u>
	LIABILITIES	Current liabilities:				
Reserve for compensation		623	487	553	392	380
Reserve for compensation adjustment expenses		37	39	37	41	35
Warrants payable		-	-	-	-	-
Deferred revenue		-	-	-	-	-
Bonds payable		-	-	-	-	-
Investment trade payables		-	-	-	-	-
Accounts payable		-	-	-	-	-
Interfund payables		278	22	7	27	16
Premium refund payable		-	-	-	-	-
Obligations under securities lending		976	1,014	915	868	-
Other current liabilities		290	243	251	252	324
Total current liabilities		<u>2,204</u>	<u>1,805</u>	<u>1,763</u>	<u>1,580</u>	<u>755</u>
Noncurrent liabilities:						
Reserve for compensation		1,249	3,962	4,192	1,441	1,703
Reserve for compensation adjustment expenses		97	265	262	79	85
Premium payment security deposits		-	-	-	-	-
Deferred revenue		-	-	-	-	-
Bonds payable		-	-	-	-	-
Other noncurrent liabilities		-	-	-	-	-
Total noncurrent liabilities		<u>1,346</u>	<u>4,227</u>	<u>4,454</u>	<u>1,520</u>	<u>1,788</u>
Total liabilities		<u>\$ 3,550</u>	<u>\$ 6,032</u>	<u>\$ 6,217</u>	<u>\$ 3,100</u>	<u>\$ 2,543</u>

OHIO BUREAU OF WORKERS' COMPENSATION
AND
INDUSTRIAL COMMISSION OF OHIO

MARINE INDUSTRY FUND

NET ASSETS (DEFICIT)

Invested in capital assets, net of related debt	-	-	-	-	-
Restricted for Surplus Fund	-	-	-	-	-
Restricted for Premium Payment Security Fund	-	-	-	-	-
Restricted for workers' compensation benefits	9,605	7,634	7,718	11,727	12,158
Total net assets (deficit)	<u>\$ 9,605</u>	<u>\$ 7,634</u>	<u>\$ 7,718</u>	<u>\$ 11,727</u>	<u>\$ 12,158</u>

SUPPLEMENTAL SCHEDULE OF REVENUES, EXPENSES AND CHANGES IN NET ASSETS - FOR THE YEAR ENDED JUNE 30

Operating revenues:					
Premium Income	687	833	764	865	754
Assessment Income	-	-	-	-	-
Provision for uncollectibles	-	-	-	-	-
Other income	-	-	-	-	-
Total operating revenues	<u>687</u>	<u>833</u>	<u>764</u>	<u>865</u>	<u>754</u>
Operating expenses:					
Workers' compensation benefits	(1,478)	2,817	600	(2,802)	504
Compensation adjustment expenses	(145)	211	33	(137)	33
Premium reductions and refunds	-	-	-	-	-
Personal services	10	10	14	11	20
General and administrative	-	-	-	-	-
Other expenses	59	64	90	103	4
Total operating expenses	<u>(1,554)</u>	<u>3,102</u>	<u>737</u>	<u>(2,825)</u>	<u>561</u>
Net income (loss) before operating transfers	2,241	(2,269)	27	3,690	193
Operating transfers	-	-	-	-	-
Net operating income (loss)	<u>2,241</u>	<u>(2,269)</u>	<u>27</u>	<u>3,690</u>	<u>193</u>
Non-operating revenues (expenses)					
Net investment income (loss)	354	298	57	319	238
Loss on disposal of capital assets	-	-	-	-	-
Total non-operating revenues	<u>354</u>	<u>298</u>	<u>57</u>	<u>319</u>	<u>238</u>
Increase (decrease) in net assets (deficit)	2,595	(1,971)	84	4,009	431
Net assets (deficit), beginning of year	7,010	9,605	7,634	7,718	11,727
Net assets (deficit), end of year	<u>\$ 9,605</u>	<u>\$ 7,634</u>	<u>\$ 7,718</u>	<u>\$ 11,727</u>	<u>\$ 12,158</u>

OHIO BUREAU OF WORKERS' COMPENSATION
AND
INDUSTRIAL COMMISSION OF OHIO

INTENTIONAL TORT

SUPPLEMENTAL SCHEDULE OF NET ASSTS - JUNE 30

		2002		2003
ASSETS	Current assets			
	Cash and cash equivalents	\$	65,710	\$ 66,608
	Collateral on loaned securities		-	-
	Premiums in course of collection		-	-
	Assessments in course of collection		-	-
	Accounts receivable, net of allowance		15	-
	Interfund receivables		2	-
	Investment trade receivables		-	-
	Accrued investment income		-	-
	Other current assets		-	-
		Total current assets	<u>65,727</u>	<u>66,608</u>
		Noncurrent assets:		
		Fixed maturities	-	-
		Domestic equity securities:		
		Common stocks	-	-
		Preferred stocks	-	-
		International securities	-	-
		Investments in limited partnerships	-	-
		Unbilled premiums receivable	-	-
		Retrospective premiums receivable	-	-
		Capital assets	-	-
		Restricted cast	-	-
		Total noncurrent assets	<u>-</u>	<u>-</u>
		Total assets	<u>\$ 65,727</u>	<u>\$ 66,608</u>
	LIABILITIES	Current liabilities:		
Reserve for compensation			-	-
Reserve for compensation adjustment expenses			-	-
Warrants payable			-	-
Deferred revenue			-	-
Bonds payable			-	-
Investment trade payables			-	-
Accounts payable			-	-
Interfund payables			32	-
Premium refund payable			-	-
Obligations under securities lending			-	-
Other current liabilities			-	66,608
		Total current liabilities	<u>32</u>	<u>66,608</u>
		Noncurrent liabilities:		
		Reserve for compensation	-	-
		Reserve for compensation adjustment expenses	-	-
		Premium payment security deposits	-	-
		Deferred revenue	-	-
		Bonds payable	-	-
		Other noncurrent liabilities	65,695	-
		Total noncurrent liabilities	<u>65,695</u>	<u>-</u>
		Total liabilities	<u>\$ 65,727</u>	<u>\$ 66,608</u>

OHIO BUREAU OF WORKERS' COMPENSATION
AND
INDUSTRIAL COMMISSION OF OHIO

INTENTIONAL TORT

NET ASSETS (DEFICIT)

Invested in capital assets, net of related debt	-	-
Restricted for Surplus Fund	-	-
Restricted for Premium Payment Security Fund	-	-
Restricted for workers' compensation benefits	-	-
Total net assets (deficit)	\$ -	\$ -
	\$ -	\$ -

SUPPLEMENTAL SCHEDULE OF REVENUES, EXPENSES AND CHANGES IN NET ASSETS - FOR THE YEAR ENDED JUNE 30

Operating revenues:		
Premium Income	-	-
Assessment Income	-	-
Provision for uncollectibles	-	-
Other income	-	-
Total operating revenues	-	-
Operating expenses:		
Workers' compensation benefits	-	-
Compensation adjustment expenses	-	-
Premium reductions and refunds	-	-
Personal services	-	-
General and administrative	-	-
Other expenses	-	-
Total operating expenses	-	-
Net income (loss) before operating transfers	-	-
Operating transfers	-	-
Net operating income (loss)	-	-
Non-operating revenues (expenses)		
Net investment income (loss)	-	-
Loss on disposal of capital assets	-	-
Total non-operating revenues	-	-
Increase (decrease) in net assets (deficit)	-	-
Net assets (deficit), beginning of year	-	-
Net assets (deficit), end of year	\$ -	\$ -

OHIO BUREAU OF WORKERS' COMPENSATION
AND
INDUSTRIAL COMMISSION OF OHIO

SELF-INSURING EMPLOYERS' GUARANTY FUND

SUPPLEMENTAL SCHEDULE OF NET ASSTS - JUNE 30

		2002	2003	2004	2005	2006
ASSETS	Current assets					
	Cash and cash equivalents	\$ 4,864	\$ 2,283	\$ 186	\$ 6,727	\$ 32,819
	Collateral on loaned securities	-	-	-	-	-
	Premiums in course of collection	-	-	-	-	-
	Assessments in course of collection	-	-	-	-	-
	Accounts receivable, net of allowance	1,149	3,024	1,917	2,073	725
	Interfund receivables	574	200	920	1,129	931
	Investment trade receivables	28	-	-	-	-
	Accrued investment income	76	-	-	-	130
	Other current assets	-	-	-	-	-
	Total current assets	6,691	5,507	3,023	9,929	34,605
	Noncurrent assets:					
	Fixed maturities	11,624	4	-	-	-
	Domestic equity securities:					
	Common stocks	-	-	-	-	-
	Preferred stocks	-	-	-	-	-
	International securities	-	-	-	-	-
	Investments in limited partnerships	-	-	-	-	-
	Unbilled premiums receivable	-	-	-	665,429	626,778
	Retrospective premiums receivable	-	-	-	-	-
	Capital assets	-	-	-	-	-
	Restricted cast	-	-	-	-	-
	Total noncurrent assets	11,624	4	-	665,429	626,778
	Total assets	\$ 18,315	\$ 5,511	\$ 3,023	\$ 675,358	\$ 661,383
	LIABILITIES	Current liabilities:				
Reserve for compensation		-	-	-	21,231	21,618
Reserve for compensation adjustment expenses		-	-	-	-	-
Warrants payable		-	-	-	-	-
Deferred revenue		2,229	-	-	-	21,471
Bonds payable		-	-	-	-	-
Investment trade payables		-	-	-	-	-
Accounts payable		-	-	-	-	-
Interfund payables		2,419	3,009	8,591	3,793	3,986
Premium refund payable		-	-	-	-	-
Obligations under securities lending		-	-	-	-	-
Other current liabilities		-	-	-	-	-
Total current liabilities		4,648	3,009	8,591	25,024	47,075
Noncurrent liabilities:						
Reserve for compensation		-	-	-	644,198	605,160
Reserve for compensation adjustment expenses		-	-	-	-	-
Premium payment security deposits		-	-	-	-	-
Deferred revenue		-	-	-	4,577	5,676
Bonds payable		-	-	-	-	-
Other noncurrent liabilities		-	-	-	-	-
Total noncurrent liabilities		-	-	-	648,775	610,836
Total liabilities		\$ 4,648	\$ 3,009	\$ 8,591	\$ 673,799	\$ 657,911

SELF-INSURING EMPLOYERS' GUARANTY FUND

NET ASSETS (DEFICIT)					
Invested in capital assets, net of related debt	-	-	-	-	-
Restricted for Surplus Fund	-	-	-	-	-
Restricted for Premium Payment Security Fund	-	-	-	-	-
Restricted for workers' compensation benefits	13,667	2,502	(5,568)	1,559	3,472
Total net assets (deficit)	<u>\$ 13,667</u>	<u>\$ 2,502</u>	<u>\$ (5,568)</u>	<u>\$ 1,559</u>	<u>\$ 3,472</u>

SUPPLEMENTAL SCHEDULE OF REVENUES, EXPENSES AND CHANGES IN NET ASSETS - FOR THE YEAR ENDED JUNE 30

Operating revenues:					
Premium Income	-	-	-	-	-
Assessment Income	14,117	5,463	14,450	102,931	(17,179)
Provision for uncollectibles	-	(4)	(2,248)	(551)	638
Other income	-	-	-	-	-
Total operating revenues	<u>14,117</u>	<u>5,459</u>	<u>12,202</u>	<u>102,380</u>	<u>(16,541)</u>
Operating expenses:					
Workers' compensation benefits	14,117	17,360	20,226	95,231	(17,651)
Compensation adjustment expenses	-	-	-	-	-
Premium reductions and refunds	-	-	-	-	-
Personal services	-	-	-	-	-
General and administrative	-	-	-	-	-
Other expenses	-	-	49	71	-
Total operating expenses	<u>14,117</u>	<u>17,360</u>	<u>20,275</u>	<u>95,302</u>	<u>(17,651)</u>
Net income (loss) before operating transfers	-	(11,901)	(8,073)	7,078	1,110
Operating transfers	-	-	-	-	-
Net operating income (loss)	-	(11,901)	(8,073)	7,078	1,110
Non-operating revenues (expenses)					
Net investment income (loss)	1,390	736	3	50	803
Loss on disposal of capital assets	-	-	-	-	-
Total non-operating revenues	<u>1,390</u>	<u>736</u>	<u>3</u>	<u>50</u>	<u>803</u>
Increase (decrease) in net assets (deficit)	1,390	(11,165)	(8,070)	7,128	1,913
Net assets (deficit), beginning of year (as restated)	12,277	13,667	2,502	(5,569)	1,559
Net assets (deficit), end of year	<u>\$ 13,667</u>	<u>\$ 2,502</u>	<u>\$ (5,568)</u>	<u>\$ 1,559</u>	<u>\$ 3,472</u>

OHIO BUREAU OF WORKERS' COMPENSATION
AND
INDUSTRIAL COMMISSION OF OHIO

OCCUPATIONAL SAFETY LOAN FUND

SUPPLEMENTAL SCHEDULE OF NET ASSTS - JUNE 30

2002

ASSETS	Current assets		\$ -
	Cash and cash equivalents		-
	Collateral on loaned securities		-
	Premiums in course of collection		-
	Assessments in course of collection		-
	Accounts receivable, net of allowance		-
	Interfund receivables		-
	Investment trade receivables		-
	Accrued investment income		-
	Other current assets		-
	Total current assets		-
	Noncurrent assets:		
	Fixed maturities		-
	Domestic equity securities:		
	Common stocks		-
	Preferred stocks		-
	International securities		-
	Investments in limited partnerships		-
	Unbilled premiums receivable		-
	Retrospective premiums receivable		-
	Capital assets		-
	Restricted cast		-
	Total noncurrent assets		-
	Total assets		\$ -
LIABILITIES	Current liabilities:		
	Reserve for compensation		-
	Reserve for compensation adjustment expenses		-
	Warrants payable		-
	Deferred revenue		-
	Bonds payable		-
	Investment trade payables		-
	Accounts payable		-
	Interfund payables		-
	Premium refund payable		-
	Obligations under securities lending		-
	Other current liabilities		-
	Total current liabilities		-
	Noncurrent liabilities:		
	Reserve for compensation		-
	Reserve for compensation adjustment expenses		-
	Premium payment security deposits		-
	Deferred revenue		-
	Bonds payable		-
	Other noncurrent liabilities		-
	Total noncurrent liabilities		-
	Total liabilities		\$ -

OHIO BUREAU OF WORKERS' COMPENSATION
AND
INDUSTRIAL COMMISSION OF OHIO

OCCUPATIONAL SAFETY LOAN FUND

NET ASSETS (DEFICIT)	
Invested in capital assets, net of related debt	-
Restricted for Surplus Fund	-
Restricted for Premium Payment Security Fund	-
Restricted for workers' compensation benefits	-
Total net assets (deficit)	<u>\$ -</u>

ENTAL SCHEDULE OF REVENUES, EXPENSES AND CHANGES IN NET ASSETS - FOR THE YEAR ENDED JUNE 30

Operating revenues:	
Premium Income	-
Assessment Income	-
Provision for uncollectibles	-
Other income	-
Total operating revenues	<u>-</u>
Operating expenses:	
Workers' compensation benefits	-
Compensation adjustment expenses	-
Premium reductions and refunds	-
Personal services	-
General and administrative	-
Other expenses	-
Total operating expenses	<u>-</u>
Net income (loss) before operating transfers	-
Operating transfers	<u>(1,376)</u>
Net operating income (loss)	<u>(1,376)</u>
Non-operating revenues (expenses)	
Net investment income (loss)	18
Loss on disposal of capital assets	-
Total non-operating revenues	<u>18</u>
Increase (decrease in net assets (deficit)	(1,358)
Net assets (deficit), beginning of year	<u>1,358</u>
Net assets (deficit), end of year	<u>\$ -</u>

OHIO BUREAU OF WORKERS' COMPENSATION
INDUSTRIAL COMMISSION OF OHIO

ADMINISTRATIVE COST FUND
SUPPLEMENTAL SCHEDULE OF NET ASSETS - JUNE 30

	2002	2003	2004	2005	2006
ASSETS					
Current assets					
Cash and cash equivalents	\$ 1,791	\$ 1,638	\$ 2,397	\$ 6,750	\$ 11,068
Collateral on loaned securities	599	600	980	4,037	6,285
Premiums in course of collection	-	-	-	-	-
Assessments in course of collection	174,998	194,246	182,818	155,614	146,482
Accounts receivable, net of allowance	6,957	9,288	5,884	6,862	4,154
Interfund receivables	11,136	32,750	82,743	93,358	66,348
Investment trade receivables	-	-	-	-	-
Accrued investment income	-	-	-	-	-
Other current assets	-	-	-	-	1,450
Total current assets	195,481	238,522	274,822	266,621	235,787
Noncurrent assets:					
Fixed maturities	-	-	-	-	-
Domestic equity securities:					
Common stocks	-	-	-	-	-
Preferred stocks	-	-	-	-	-
International securities	-	-	-	-	-
Investments in limited partnerships	-	-	-	-	-
Unbilled premiums receivable	53,325	61,800	60,101	102,399	91,736
Retrospective premiums receivable	-	-	-	-	-
Capital assets	129,074	115,000	104,128	103,909	99,225
Restricted cast	12,911	1,891	1,768	1,675	1,540
Total noncurrent assets	195,310	178,691	165,997	207,983	192,501
Total assets	\$ 390,791	\$ 417,213	\$ 440,819	\$ 474,604	\$ 428,288
LIABILITIES					
Current liabilities:					
Reserve for compensation	-	-	-	-	-
Reserve for compensation adjustment expenses	285,569	289,662	272,569	295,384	247,643
Warrants payable	-	-	-	-	-
Deferred revenue	-	-	-	-	-
Bonds payable	10,000	-	5,300	13,190	14,150
Investment trade payables	-	-	-	-	-
Accounts payable	11,117	4,615	4,652	10,090	7,762
Interfund payables	753	554	-	-	-
Premium refund payable	-	-	-	-	-
Obligations under securities lending	599	600	980	4,037	6,285
Other current liabilities	7,682	7,630	10,493	11,232	13,867
Total current liabilities	315,720	303,061	293,994	333,933	289,707
Noncurrent liabilities:					
Reserve for compensation	-	-	-	-	-
Reserve for compensation adjustment expenses	662,231	683,938	643,931	732,636	642,835
Premium payment security deposits	-	-	-	-	-
Deferred revenue	-	-	-	-	-
Bonds payable	158,770	148,745	143,090	129,012	113,902
Other noncurrent liabilities	21,731	23,089	22,771	23,161	19,159
Total noncurrent liabilities	842,732	855,772	809,792	884,809	775,896
Total liabilities	\$ 1,158,452	\$ 1,158,833	\$ 1,103,786	\$ 1,218,742	\$ 1,065,603
NET WORTH					
Invested in capital assets, net of related debt	(27,897)	(32,929)	(43,451)	(37,303)	(27,683)
Restricted for Surplus Fund	-	-	-	-	-
Restricted for Premium Payment Security Fund	-	-	-	-	-
Restricted for workers' compensation benefits	(739,764)	(708,691)	(619,516)	(706,835)	(609,632)
Total net assets (deficit)	\$ (767,661)	\$ (741,620)	\$ (662,967)	\$ (744,138)	\$ (637,315)

ADMINISTRATIVE COST FUND

SUPPLEMENTAL SCHEDULE OF REVENUES, EXPENSES AND CHANGES IN NET ASSETS - FOR THE YEAR ENDED JUNE 30

	2002	2003	2004	2005	2006
Operating revenues:					
Premium Income	-	-	-	-	-
Assessment Income	349,199	388,147	357,139	317,777	297,039
Provision for uncollectibles	(2,374)	(2,584)	(6,342)	(1,888)	(4,799)
Other income	9,826	4,231	2,310	3,298	6,496
Total operating revenues	<u>356,651</u>	<u>389,794</u>	<u>353,107</u>	<u>319,187</u>	<u>298,736</u>
Operating expenses:					
Workers' compensation benefits	-	-	-	-	-
Compensation adjustment expenses	216,132	288,186	184,915	336,511	137,983
Premium reductions and refunds	-	-	-	-	-
Personal services	44,553	49,810	62,505	51,707	44,564
General and administrative	15,745	11,298	17,433	-	-
Other expenses	16,522	16,400	15,358	20,555	17,322
Total operating expenses	<u>292,952</u>	<u>365,694</u>	<u>280,211</u>	<u>408,773</u>	<u>199,869</u>
Net income (loss) before operating transfers	63,699	24,100	72,896	(89,586)	98,867
Operating transfers	5,382	2,786	3,435	3,841	3,399
Net operating income (loss)	<u>69,081</u>	<u>26,886</u>	<u>76,331</u>	<u>(85,745)</u>	<u>102,266</u>
Non-operating revenues (expenses)					
Net investment income (loss)	2,069	3,119	3,989	5,994	4,496
Loss on disposal of capital assets	(3,848)	(3,964)	(1,667)	(1,420)	61
Total non-operating revenues	<u>(1,779)</u>	<u>(845)</u>	<u>2,322</u>	<u>4,574</u>	<u>4,557</u>
Increase (decrease in net assets (deficit)	67,302	26,041	78,653	(81,171)	106,823
Net assets (deficit), beginning of year	(834,963)	(767,661)	(741,620)	(662,967)	(744,138)
Net assets (deficit), end of year	<u>\$ (767,661)</u>	<u>\$ (741,620)</u>	<u>\$ (662,967)</u>	<u>\$ (744,138)</u>	<u>\$ (637,315)</u>

Calculation of payrolls and premiums on a fiscal year basis

Jan-Dec year	PA premiums	PA payroll	PEC premiums	PEC payroll	PA+PEC premiums	PA+PEC payroll	fiscal year	PA+PEC premiums	PA+PEC payroll
2001	1,361	80,397	235	15,809	1,596	96,206	2001	1,601	97,272
2002	1,350	81,621	255	16,717	1,605	98,338	2002	1,627	99,388
2003	1,352	82,433	296	18,004	1,648	100,437	2003	1,700	101,731
2004	1,433	84,502	318	18,523	1,751	103,025	2004	1,762	104,021
2005	1,438	86,461	335	18,556	1,773	105,017	2005	1,830	106,376
2006	772	44,311	171	9,556	943	53,867	2006		

Payroll and premiums are from the June 2006 Mercer report (Mercer Exh 4 pages 1 and 9.)
Because the Mercer report shows years beginning January 1, the fiscal year amounts are estimated.
For example, the 2006 fiscal year is the first half of the 2006 calendar year
plus the last half of the 2005 calendar year.

Losses on a fiscal year basis

Amounts in millions from BWC financial statements

fiscal year	cash flow losses	published incurred	change in reserves	undiscounted incurred
2002	1,965	2,934	969	3,131
2003	2,080	3,361	1,281	4,036
2004	2,027	2,569	542	3,097
2005	2,150	2,917	767	2,285
2006	<u>2,106</u>	<u>1,933</u>	<u>(173)</u>	<u>1,470</u>
	10,328	13,714	3,386	14,019

Table for Executive Summary (point #1)

	PA+PEC payroll	PA+PEC premiums	cash flow losses
2002	97,272	1,601	1,965
2003	99,388	1,627	2,080
2004	101,731	1,700	2,027
2005	104,021	1,762	2,150
2006	106,376	1,830	2,106
2002-2006 change	9%	14%	7%
average change	2%	3%	2%

Table for Executive Summary (point #2)

fiscal year	premium discounts and rebates	loss reserve movements	return on investments
2002	1,474	969	-2.22%
2003	641	1,281	3.15%
2004	416	542	6.79%
2005	233	767	5.35%
2006	(8)	(173)	4.71%

Ohio BWC - Investment Returns amounts in billions

fiscal year	cash & invested assets	average in year	total investment income	investment rate with cap gains
2001	20.867			
2002	19.326	20.097	(0.430)	-2.22%
2003	18.245	18.786	0.575	3.15%
2004	18.396	18.321	1.250	6.79%
2005	18.483	18.440	0.988	5.35%
2006	16.230	17.357	<u>0.764</u>	4.71%
last 5 years total			3.147	3.43% \$ wtd avg

Ohio Bureau of Workers' Compensation Oversight Commission

RFP # B07016

Task B: Evaluation of BWC's Current Surplus Adequacy
and Premium Ratemaking Methodologies

June 14, 2007

Aon Risk Consultants

Actuarial & Analytics Practice

1650 Market Street • Suite 1000 • Philadelphia, PA 19103 • Tel: +1.215.255.1827

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I. Introduction

Purpose

Aon Risk Consultants (“ARC”) has been retained by the Ohio Bureau of Workers’ Compensation Oversight Commission (“WCOC”) to supply actuarial consulting services in support of the evaluation of the performance of the Ohio workers’ compensation system and in comparing Ohio’s system to other state and private compensation systems.

Specifically, ARC has been engaged to perform the following three tasks:

- Task A. Provide an analysis of the Ohio Bureau of Workers’ Compensation’s (“BWC”) historical underwriting profit or loss for the past five years and identify underlying drivers.
- Task B. Evaluate the BWC’s current surplus adequacy and premium ratemaking methodologies.
- Task C. Evaluate the BWC’s current practices relative to insurance industry standards (state and private) in the areas of ratemaking and reserve development.

Each of these tasks will be addressed in a separate report, with this report covering Task B.

Scope

Under Task B, ARC is to assist the WCOC’s Investment Committee in the development of surplus adequacy requirements and criteria to be used for approving proposed dividends as recommended by the BWC Administrator. The purpose of these criteria will be to preserve the integrity of the asset allocation from the impact of proposed return of “excess” surplus.

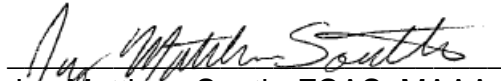
In addition, ARC is to review and evaluate current premium ratemaking methodologies in order to assist the WCOC in evaluating premium rate recommendations presented by the BWC Administrator.

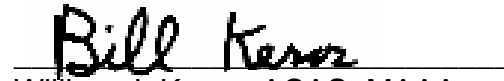
We compiled this report and performed all analysis contained herein using generally accepted actuarial principles and in accordance with all relevant Actuarial Standards of Practice.

Please contact us if you have any questions regarding this report.

Respectfully submitted,

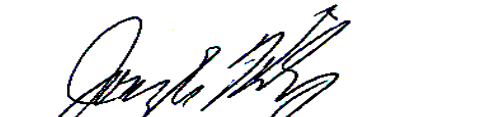
Aon Risk Consultants


Jay Matthew South, FCAS, MAAA
Assistant Director & Actuary
(610) 834-2291


William J. Keros, ACAS, MAAA
Senior Consultant & Actuary
(214) 989-2373


Ni Qin-Feng, FCAS, MAAA
Assistant Director & Actuary
(212) 479-3501


Zoe Rico, ACAS, MAAA
Consultant & Actuary
(214) 989-2545


Joseph P. Kilroy, FCAS, MAAA
Director & Actuary
(215) 255-1827

II. Conditions and Limitations

Data Reliance

In conducting this analysis, we relied upon the provided data without audit or independent verification. Any inaccuracies in quantitative data or qualitative representations could have a significant effect on the results of our review and analysis.

Use and Distribution

Use of this report is limited to the WCOC for the specific purpose described in the Introduction section. Other uses are prohibited without an executed release with ARC.

Distribution by the WCOC is unrestricted. We recognize that this report may be distributed to certain third parties. We request that ARC be notified of further distribution of this report. The report should only be distributed in its entirety including all supporting exhibits.

III. Executive Summary

This report contains two distinct parts. The first part covers surplus adequacy, while the second part evaluates premium ratemaking methodologies. Conclusions drawn in this executive summary are based on the detailed analysis contained in later sections of this report.

Surplus Adequacy Evaluation

Our evaluation begins by defining surplus as the reserve of last resort and examines why it is needed to prevent insurer insolvency. The various risks threatening insurer solvency are reviewed and various methods of measuring these risks are summarized. An overview of several surplus adequacy calculation methodologies is then presented.

ARC believes that a good starting point for the analysis of the BWC's surplus adequacy is a comparison to industry benchmarks. We present three surplus benchmarks in the table below: NAIC Risk Based Capital, A.M. Best Capital Adequacy Ratio, and Standard & Poor's Capital Adequacy Ratio. While we have applied three industry methodologies to the BWC's data, each methodology relies on subjectivity to varying degrees and should be interpreted only as an estimate of the required surplus had the calculations been made by the NAIC, A.M. Best, or Standard & Poor.

Ohio Bureau of Workers' Compensation
Indicated Surplus Requirements vs. Surplus @ 6/30/2006
Amounts Shown in Millions

	<u>NAIC</u>	<u>A.M. Best</u>	<u>S&P</u>
(1) BWC Reported Total Surplus 6/30/2006	(127)	(127)	(127)
(2) Adjustment for Discount*	10,843	0	0
(3) Adjustment for Asset Risk & Credit Risk	0	0	434
(4) Risk Adjusted Surplus 6/30/2006 = (1) - (2) - (3)	<u>(10,970)</u>	<u>(127)</u>	<u>(560)</u>
(5) Required Surplus	2,651	7,235	1,958
(6) Adequacy Ratio = (4) / (5)	-413.8%	-1.8%	-28.6%
(7) Indicated Additional Surplus Need = (5) - (4)	13,621	7,362	2,518

Note: * - Estimated amount of discount related to future payments that are neither fixed nor reasonably determinable.

BWC financial statements show that the BWC was technically insolvent as of June 30, 2006 due to negative carried surplus. Had the BWC been under NAIC jurisdiction, significant regulatory action would have been triggered. Although the rating agencies consider factors in addition to surplus, surplus is central to the rating process. Based on both the A.M. Best and Standard & Poor's required capital indications, the BWC is unlikely to have received a secure financial

strength rating. While the results of the three methods cannot be directly compared with each other, they all tell similar stories: maintaining surplus at the current level seriously restricts the BWC's ability to withstand unexpected adverse events.

The specific surplus indications result both from the goal each method was designed to meet as well as from the specific calibration of each method. The NAIC approach is used by insurance regulators to identify companies at risk of becoming insolvent early enough to take corrective action, while the two rating agency approaches are considered as part of the financial strength rating process. The NAIC RBC methodology was specifically developed and calibrated by US regulators for the purpose of insurance solvency regulation. Therefore, ARC considers NAIC RBC to be more appropriate than the alternative benchmarks developed by rating agencies.

ARC therefore recommends that the WCOB consider using the NAIC required risk based capital indication as a minimum surplus goal equivalent to \$2.65 billion as of June 30, 2006. If the BWC were a commercial insurer, surplus less than \$2.65 billion would cause it to fall short of the NAIC Company Action Level, thereby triggering regulatory action. Approval of policyholder dividends should be resisted until the BWC's surplus exceeds the NAIC RBC Company Action Level.

The additional funds needed by the BWC to achieve this minimum surplus goal depend on one's perspective. If the BWC is viewed as a state agency subject to Governmental Accounting Standards, then reserve discounting would be appropriate, implying additional funds of \$2.78 billion [= 2.651 – (0.127)]. However, if the BWC is viewed as a commercial insurance book of business available for sale, then it would be subject to NAIC regulation and Statutory Accounting Principles ("SAP") would apply. The NAIC and SAP do not allow discounting of future payments that are neither fixed nor reasonably determinable, implying additional funds of \$13.62 billion [= 2.651 – (10.970)].

Note that the NAIC surplus requirement is dynamic in the sense that it adjusts as the risks faced by an insurer change. For example, the surplus requirement an insurer must meet will increase as invested assets are reallocated from risk-free US treasuries to equities.

ARC further recommends that the BWC consider developing a probabilistic-type surplus model. Industry practice for analyzing surplus adequacy among large commercial insurers relies heavily on scenario-based and probabilistic surplus approaches, rather than on RBC-type methods. In addition, rating agencies are developing more sophisticated models built around scenario-based and probabilistic algorithms.

Probabilistic models have the advantage of being able to quantify the financial impacts from many risk sources simultaneously as well as allowing the introduction of scenario testing. Many diverse risk sources can be incorporated into such models: asset risk, premium risk, and reserving risk, among others.

Typically, the largest risk facing commercial insurers, and the BWC, is underwriting risk, a combination of premium risk and reserving risk. Therefore, ARC recommends that any surplus model developed reflect both the reserve variability inherent in the various funds administered by the BWC as well as any significant correlations between the funds.

The steps involved in constructing a probabilistic surplus model include:

1. Choosing a method for measuring each risk, e.g. Value-at-Risk, Tail Value-at-Risk, or Probability of Ruin.
2. Establishing a risk tolerance standard, e.g. sufficient surplus should be retained to prevent insolvency with 99.5% confidence over the next year.
3. Set the dividend policy so that sufficient surplus is retained to satisfy the selected risk tolerance.

Surplus in excess of that required to satisfy the selected risk tolerance could be treated as free or excess surplus and either approved as policyholder dividends or retained as an additional safety margin. Any dividend plan should incorporate a method of fairly and equitably distributing any declared dividend among policyholders. For example, one consideration that may be addressed through the dividend plan is the extent to which the amount returned to a specific policyholder depends on the losses experienced by that policyholder. A properly structured dividend allocation plan has the potential to complement existing workplace safety programs further reducing overall costs. Although the design of a dividend allocation plan is extremely important, it is beyond the scope of this study.

Premium Ratemaking Methodology Evaluation

The overall results of the ratemaking process appear to be actuarially sound, i.e. enough premiums are collected in total to cover losses and loss adjustment expenses. However, significant cross subsidies exist between group rated and non-group rated insureds indicating that rates are not actuarially sound between these two rating groups.

Our main observation is that the rate recommendation report is not a self-contained document. It is only after a review of several external documents that the process can be fully understood. The rate recommendation should ideally be

a stand alone document that includes or explicitly references all items impacting the rates so that an outside party can easily follow the derivation. After reviewing the Ohio Workers Compensation Rate Recommendation prepared by Oliver Wyman, we suggest the following recommendations to enhance the process:

1. The rate recommendation analysis should provide more support for the deviations between the baseline, optimistic and conservative rate indication scenarios. An explanation as to how the scenarios were derived and any changes in assumptions should be included. As these additional scenarios provide the basis for the confidence interval contained in the rate recommendation, it is important that the assumptions underlying them are understood.
2. Consideration should be given to increasing the weight applied to the claims experience from more recent years, and to indications based on policy year data as well as on calendar/accident year data. The use of more years of data can actually decrease the credibility of rate indications as the older years are less likely to be indicative of future results. Policy year data generally provides a better matching of losses and premiums in ratemaking analyses.
3. The rate recommendation should provide a more detailed explanation of the changes in rate indications from one year to the next. In the most recent filing, there was a significant shift in the indications for all scenarios. A summary of any changes in assumptions, benefit level changes, or other factors causing such a shift should be documented.
4. The rate recommendation should include a detailed analysis of changes in expense provisions. The exact details of the expense provisions do not necessarily need to be disclosed, but the impact on the rate indication resulting from a change to the expense ratio should be documented.
5. Given its current unfairness, the Group Rating Program should not continue in its current form. While the general concept of group rating has merit, the program as it currently exists does not produce rates that are actuarially sound (reasonable and not excessive, inadequate, or unfairly discriminatory). Group rated companies consistently produce loss ratios well in excess of non-group rated companies, indicating that non-group rated companies are subsidizing the group rated companies.

In prior group rating studies, Oliver Wyman made several valuable recommendations that should be considered during the development of any new Group Rating Program. Oliver Wyman's recommendations are discussed in the Group Rating section of this report.

IV. Surplus Adequacy Evaluation

Background

As described in the introduction, ARC is to assist the Investment Committee in the development of surplus adequacy requirements and criteria to be used for approving proposed dividends as recommended by the BWC Administrator. The purpose of these criteria will be to preserve the integrity of the asset allocation from the impact of proposed return of excess surplus. In order to provide a framework for what follows, we first present a brief overview of some concepts related to insurance and surplus.

Insurance, Surplus and Technical Insolvency

At its most basic level, insurance is a promise. Insurance entities collect premiums from those they insure and promise to pay covered losses suffered by the insureds during the policy's term. In addition, premiums must cover the insurer's expenses. The insurance promise is made in advance without knowing how much it will ultimately cost to fulfill.

The portion of premiums intended to cover insured losses is an estimated amount called the Loss Cost or Pure Premium. Collected premiums are usually invested until needed to pay claims, thereby reducing the insureds' upfront cost. At the same time, the company establishes loss reserves representing the amount the company expects will be needed to settle all claims. As claims are paid, these reserves are reduced. If at any point the insurer cannot meet all of its promises, i.e. cannot pay all claims, it is deemed technically insolvent.

The distinction between insolvency and technical insolvency is one of degree. An insolvent company is bankrupt; it has paid out all of its assets, but still has unpaid liabilities that cannot be satisfied. While a technically insolvent company still possesses assets, they are exceeded by its liabilities. Insurance companies and their regulators focus on technical insolvency because threats to the company's continued existence and harm to its policyholders can still be minimized or avoided by prudent action.

Technical insolvency occurs when an insurer's surplus, i.e. total assets less total liabilities, becomes negative and can result from many causes or risks. Some examples include:

- premiums were set too low

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- premium discounts were set too high
 - actual investment returns were lower than expected
 - claims were under-reserved
 - past dividends to policyholders were too generous.

Evaluation of Surplus Adequacy

To avoid technical insolvency from these and other risks, insurers must maintain their assets at a level greater than their liabilities. Surplus is often referred to as an insurer's reserve of last resort. The more assets a company has in relation to its liabilities, the "safer" it is considered to be. If an unforeseen event materializes, a company with higher surplus is more capable of absorbing the negative financial impact while still keeping its promises to policyholders.

Surplus adequacy is evaluated by quantifying the financial threat posed by each risk facing the company, combining these amounts together and comparing the resulting required surplus to the company's actual surplus. If actual surplus is less than required surplus, the company, while technically solvent, is considered at risk. If actual surplus exceeds required surplus, the excess may either be returned to policyholders, or retained as an added safety margin.

The critical question of how much surplus is enough is difficult and its answer depends somewhat on who is answering it. Historically, three groups have had an interest in evaluating surplus adequacy and have contributed to the development of methods for doing so,

1. Insurance Regulators
2. Rating Agencies
3. Company Management

Each group answers the surplus adequacy question from its own perspective.

Insurance Regulators and Solvency

One of the central duties of insurance regulators is to ensure that insurance companies maintain sufficient financial resources to pay all of their policyholders' claims. This duty is known as solvency regulation and its goal is to protect policyholders by identifying early those insurers likely to become technically insolvent and to take corrective action before this occurs. To this end, insurance regulators in the United States developed a set of accounting rules known as Statutory Accounting Principles ("SAP") that tend to minimize the value of assets and maximize the value of liabilities, thereby valuing surplus on a conservative basis.

Solvency regulation has evolved over time, tending to become more sophisticated in order to meet the regulators' duty to policyholders.

Rating Agencies

Rating agencies such as A.M. Best, Standard & Poor, and Moody's, among others, calculate insurers' required risk capital or risk equity, representing an amount needed to offset unforeseen risks. Risk capital is then considered in the process used by rating agencies to assign financial strength and credit ratings to insurance companies.

Rating agencies are more concerned about a company's ability to meet obligations on a "going concern" basis and so rely more on assets and liabilities valued under Generally Accepted Accounting Principles ("GAAP"). GAAP equity tends to be greater than SAP surplus. Each rating agency applies its own proprietary method to calculate the equity a company needs to absorb potential risks and remain in business.

Internal Company Management

Insurance company management is interested in risk capital for various reasons including the efficient deployment of available capital in support of different lines of business, evaluation of profitability by sub-units, and evaluation of reinsurance program structures. Management is focused on the continued operation of the company and therefore tends to use GAAP accounting, although SAP accounting cannot be ignored given its importance to regulators.

Risk and Risk Measurement

The concept of risk does not have a precise definition, meaning different things to different people. Some define corporate risk as anything that keeps a company's executive officers awake at night. Applying this definition in the context of evaluating surplus adequacy leads to the question, "which risks have historically threatened insurers' surplus?" The next natural question is how these risks can be measured.

Sources of Risk

A number of studies have examined past insurer insolvencies and concluded that threats to solvency exist throughout the insurance process. Historically, the main causes of insolvencies included one or more of the following:

1. Occurrence of large losses including catastrophe losses
2. Under-pricing of insurance policies

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3. Under-reserving of past losses
 4. Management incompetence and inexperience
 5. Fraud
 6. Rapid and uncontrolled new business growth or expansion
 7. Over-reliance on uncollectible reinsurance
 8. Inappropriate reinsurance programs
 9. Overstatement of asset values and imprudent investments

Often, these risks are organized into broader categories similar to the following,

1. Asset Risk
The risk to the market value of a company's assets due to changes in interest rates and market conditions, including bond default risk
2. Credit Risk
The risk a company will not be able to collect amounts it is owed
3. Underwriting Risk
Comprising the following two distinct risks
 - a. Premium Risk – the risk that future business will be unprofitable
 - b. Reserving Risk – the risk that the current reserves carried by the company will be inadequate
4. Off-Balance Sheet Risk
The risk that certain items are not fully reflected in a company's financial statements

Having identified the main risks to insurer solvency, the next step is how to measure them.

Common Risk Measures

A risk measure is a mathematical formula for measuring the financial impact of a given risk. Any risk will have a range of possible outcomes, e.g. annual hurricane related losses can range from zero to multi-billion dollar events. Risk measures condense this range of possibilities down to a single number.

Many popular risk measures are variations of the following,

1. Probability of Ruin

The probability of ruin risk measure answers the question, “how likely is surplus to be exhausted?”

2. Value-at-Risk

The value-at-risk (“VaR”) risk measure answers the question, “how much surplus is needed to absorb a risk’s financial impact over the chosen time horizon at a given confidence level, e.g. 99.5%?”

3. Tail Value-at-Risk

The tail value-at-risk (“TVaR”) risk measure answers the question, “how much surplus is needed to absorb a risk’s average financial impact, given that a specified threshold is exceeded?”

Surplus Adequacy Approaches

The methods used to analyze surplus adequacy have evolved over time. The methods developed to date may be classified as belonging to one of the following broad approaches, ranging from least to most complex:

1. Fixed Ratio Approaches
2. Risk Based Capital Approaches
3. Scenario-Based Approaches
4. Probabilistic Approaches

Any method of analyzing surplus adequacy consists of two components, a model or and a set of parameters. The model represents the general design of the calculation, while the parameters fine-tune the model; they are the factors applied during the calculation of required surplus. If the choice of parameters is poor, the calculated required surplus will be either overstated, leading to higher costs for policyholders, or understated, increasing the possibility of insolvency.

Static or Fixed Ratios

Fixed ratio methods use simple formulas that apply fixed ratios to various financial statement values. For example, the ratio of net written premiums to surplus must be less than 3-to-1. The financial statement values used represent proxies or substitutes for the underlying risks. These methods are the least complex, easiest to apply and easiest to understand of the various approaches.

There are several disadvantages to fixed ratio methods. Most implementations focus on a limited number of risks, usually related to underwriting. Some risks such as the quality and benefits of ceded reinsurance are difficult to incorporate into the models. Some of the financial statement quantities used in the models

can be manipulated. For example, arbitrarily reducing carried reserves would improve the company's one-year reserve development-to-surplus ratio, but would not actually decrease the likelihood of insolvency. These methods provide no incentive for good internal risk management, diversification among lines of business and territories, or strong reserving practices. For these reasons, the calculated surplus requirements are in some sense arbitrary. Finally, these methods do not have significant predictive power; they tend to indicate there is a problem after it is too late to correct.

Both the current European Union Solvency I method and the US NAIC Insurance Regulatory Information System ("IRIS") are examples of this approach. The drawbacks inherent in these approaches led the regulators who relied on them to develop more sophisticated approaches.

Risk Based Capital

Risk Based Capital ("RBC") methods are similar to Fixed Ratio methods in that separate surplus requirements are calculated for each risk category by applying factors to risk proxies. These individual surplus requirements are then combined, using a more sophisticated mathematical formula, into a RBC surplus requirement. Actual surplus is compared to this RBC requirement and, depending on the ratio, various actions can or must be taken by company management and regulatory authorities.

In contrast to fixed ratio methods, which focus primarily on underwriting and reserving risks, RBC methods use more risk proxies such as asset risks, credit risks, and off-balance sheet risks. By risk-weighting the individual surplus requirements for assets and liabilities to determine required surplus, RBC required surplus reflects the nature of the business written and the assets held to meet the company's obligations to policyholders.

Further advantages of RBC methods include the adjustment of risk factors to company-specific levels and their objective application based on historic accounting values. Although RBC methods are more complex than Fixed Ratio methods, they do not require complex systems or models to calculate.

There are a number of disadvantages to RBC methods. Similar to Fixed Ratio methods, the use of premiums and reserves as risk proxies can have unintended consequences leading to under-pricing and under-reserving. For example, arbitrarily reducing reserves will directly increase surplus and decrease the RBC surplus requirement intended to absorb reserving risk.

RBC methods are not dynamic and are not forward looking, i.e. they do not model possible future movements of risk variables like interest rates and do not

project future company cash flows or balance sheets. Dissatisfaction with the weaknesses of the RBC approach led to the Scenario-Based approach.

Scenario-Based

Scenario-based approaches analyze the impact of selected risk variables on financial models of companies. The financial models project future cash flows and balance sheets, given the values of the selected risk variables. Scenario-based approaches proceed by choosing a limited number of plausible worst-case “scenarios”, assigning specific values to each of the key risk variables. The financial models then project cash flows and balance sheets under the scenarios, indicating the surplus required to withstand each.

Key risk variables might include projected premium income, future loss experience and reserve development, the incidence of catastrophes and other large losses, future inflation, the movement of interest rates and returns on assets among others.

These approaches have a number of advantages. They directly estimate a company’s surplus need for each scenario from all risk sources simultaneously. The results may be presented in a straightforward way and easily interpreted by those familiar with financial statements. Certain impacts like ceded reinsurance can be more easily incorporated. Interactions between various risk variables can be modeled directly, rather than indirectly through a mathematical formula. The more sophisticated scenario-based models can be used to analyze what-if type situations, representing a valuable tool for internal risk management.

Scenario-based approaches also have a number of drawbacks. The results of the approach are critically dependent on which scenarios are chosen, due to the limited number of scenarios analyzed. Introduction of subjectivity is unavoidable during the scenario selection process. Finally, increased model complexity general increases the need for detailed data.

Despite their drawbacks, scenario-based methods represent improvements over Fixed Ratio and RBC approaches. However, dissatisfaction with some of the technical limitations combined with the availability of increased computer power stimulated the development of the final type of approach.

Probabilistic

The probabilistic approach is closely related to the scenario-based approach. The approaches differ mainly in the number of scenarios investigated and the manner in which these are selected. The probabilistic approach simulates the

impact of thousands of scenarios or iterations on a company's cash-flows and balance sheet, while the scenario-based approach looks at only a small number.

The probabilistic approach takes observed historic relationships between the key risk variables into account during their selection process. This key risk selection process is repeated once for each of the thousands of iterations rather than being subjectively determined for a limited number of scenarios.

Probabilistic approaches then collect and analyze the results of the thousands of cash-flow and balance sheet iterations in light of the selected risk measure (VaR, Tail-VaR, Expected Policyholder Deficit, etc.). The results and analysis are used to make statements about the probability of various financial outcomes and associated surplus needs.

The probabilistic approach is very flexible with respect to the risks that can be incorporated. In addition, unlike the three preceding approaches, the probabilistic approach allows correlations between the key risks to be reflected. A further strength is the ability to describe the entire range of possible surplus needs and the probability of each. Due to its ability to simulate future cash-flows and balance sheets, this approach has the potential to be a valuable addition to the internal risk management process.

The disadvantages of the probabilistic approach stem mainly from its complexity. The results of the approach are not necessarily intuitive and are therefore more difficult to interpret. The data demands of this approach can be high and when data is unavailable, subjective assumptions are introduced. Finally, the approach's complexity usually implies added cost.

Specific Surplus Adequacy Methods

As a first step in assisting the Investment Committee to develop surplus adequacy requirements, a sample of various methodologies developed by insurance regulators, rating agencies and internal company management is presented below. This presentation is intended as an overview and as such only a limited amount of detail is provided on each.

Insurance Regulators

Current European Union Solvency I

The current European Union ("EU") solvency monitoring system is known as Solvency I and is a fairly simple Fixed Ratio method. Solvency I was introduced in the early 1970's and applies only to primary companies as reinsurers are not currently subject to solvency regulation within the EU.

Required surplus is calculated as the largest of the following three items:

1. Premium Basis

18% of the first 10 million Euros Gross Written Premium plus 16% of the remaining Gross Written Premium for the year

The above amount is then netted down for the effect of reinsurance based on gross to net incurred claims; maximum 50% reduction

2. Claim Basis

26% of the first 7 million Euros of the average annual incurred loss over the past 3 years (7 years for Credit, Storm, Hail or Frost lines of business) plus 23% of the remaining average annual incurred loss over the analogous period

The above amount is then netted down for the effect of reinsurance based on gross to net incurred claims; maximum 50% reduction

3. Minimum Guarantee Fund

Varies between 200,000 and 1,400,000 Euros depending on the lines of business written

The EU is developing a new, more sophisticated solvency regulation system known as Solvency II. Although Solvency II has not yet been finalized, its proposed form is described below.

U.S. NAIC Risk Based Capital

Traditionally, US regulatory solvency monitoring involved periodically auditing insurer financial statements and evaluating these statements using the Insurance Regulatory Information System (“IRIS”) financial ratio tests with the goal of identifying companies warranting closer review. Gradually, it became clear that this approach did not identify problems early enough to implement corrective measures. In addition, even when weak companies were identified by this system, it was left to the discretion of state regulators if and how problems would be addressed.

The NAIC attempted to address these problems by adopting Risk-Based Capital (“RBC”) standards and model laws for insurance companies in 1994. The intent of the NAIC RBC standards is to assist regulators in monitoring the financial health of insurance companies. The model laws provide the legal basis for initiating remedial action if a company’s actual surplus falls below the RBC required surplus.

The RBC surplus requirement represents the theoretical surplus needed to absorb various risks involved in the operation of an insurance company. Financial statement values related to each NAIC risk category component are multiplied by RBC factors prescribed by the NAIC. The product of these two quantities represents the amount of risk capital required to absorb potential adverse financial impacts stemming from each component. The various risk category components are then combined into risk groups R_0 through R_5 as documented in Appendix B. The risk group surplus charges R_0 through R_5 are then combined through a mathematical Square Root formula into the Required Risk Based Capital.

The various risk group charges are combined using the square root formula rather than simple addition in order to reflect the statistical independence of the risks. Simply adding the risk charges together implies that the risks are correlated, moving together in lockstep, e.g. were equity prices to fall, so would loss reserves. In reality, changes in the stock market have little impact on the level of loss reserves and the two risks are said to be independent. The square root formula implicitly assumes that each term under the square root is independent of the others.

Although the risk groups actually exhibit some correlation, it tends to be rather weak in practice with one exception: reserving risk and uncollectible reinsurance risk. This exception is adjusted for in the formula by adding $\frac{1}{2}$ of the Credit Risk charge (R_3) to the Reserving Risk charge (R_4) before squaring; thereby assuming that when one goes up or down, the other will behave in a similar manner. Details of the formula are provided in the Exhibits section.

Note that the proposed Solvency II methodology attempts to reflect the small dependencies between risk groups by incorporating the “covariance” between each risk.

The NAIC uses a graduated approach to solvency regulation that is stated in terms of the Authorized Control Level (“ACL”), rather than in terms of the required RBC capital. The ACL equals 50% of the required RBC capital and represents the surplus threshold under which regulators are authorized, but not required, to assume control of the company.

Once the ACL has been calculated, it is compared to the company’s adjusted surplus. If the insurer’s adjusted surplus is positive, but less than specified multiples of the ACL, the company is deemed at risk, although still technically solvent. The following four RBC action levels are stated relative to the ACL and each has specific consequences and requirements for both the company and regulators.

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1. Company Action Level
Company surplus is between 150% and 200% of ACL.
 2. Regulatory Action Level
Company surplus is between 100% and 150% of ACL.
 3. Authorized Control Level
Company surplus is between 70% and 100% of ACL.
 4. Mandatory Control Level
Company surplus is less than 70% of ACL.

Identifying at risk companies before they become insolvent allows regulators and company management the time needed to take corrective action. In addition, the NAIC hoped RBC would encourage companies to improve internal risk management.

Proposed European Union Solvency II

The proposed EU Solvency II represents a more refined and much more complex implementation of the RBC approach. Under Solvency II, two capital requirements are calculated: 1) the Solvency Capital Requirement (“SCR”) and 2) the Minimum Capital Requirement (“MCR”). As currently envisaged, regulatory action could be triggered when a company’s actual capital fell below the SCR. In a manner similar to NAIC RBC action levels, EU regulatory action would increase as actual capital fell further towards the MCR. The viability of a company whose capital fell below the MCR would be in doubt and the company subject to possible regulatory control. Although the details of the SCR and MCR calculations have not been finalized, a framework containing a number of alternatives has been released for discussion and the following description is based on it.

The main refinement of Solvency II is the reflection of partial dependencies or covariance between risk components in the formula used to combine the individual risk charges when determining the SCR. Additional details concerning the calculation of the SCR are given in Appendix C.

Proposals for the calculation of the MCR include setting the MCR equal to 1/3 of the SCR, or equal to a company’s current Solvency I required solvency margin. The current implementation timeline calls for the details of the calculations to have been finalized and codified by the end of 2008, so that Solvency II can be in place by the end of 2010.

Rating Agencies

Rating agencies such as A.M. Best, Standard & Poor, and Moody's among others calculate insurers' risk capital as part of the process they use to assign financial strength and credit ratings to insurance companies. These models tend to be similar to the NAIC RBC approach, but more judgment is used in the process, specifically in determining the actual risk capital factors and in adjusting certain aspects of the calculations to reflect specific characteristics of individual insurers. We therefore stress that the calculations presented in this report that are based on rating agency methods must be viewed only as approximations of the results which would be obtained by rating agencies applying proprietary methodologies to BWC data.

A.M. Best's Capital Adequacy Ratio ("BCAR")

A.M. Best's objective in assigning financial strength ratings to companies is, "to provide an opinion of an insurer's financial strength and ability to meet its obligations to policyholders." Three areas are evaluated and compared with A.M. Best's quantitative and qualitative standards during this process: 1) balance sheet strength, 2) operating performance, and 3) business profile.

A.M. Best states that balance sheet strength is, "the most important to evaluate, since it is the foundation for policyholder security", while operating performance indicates how balance sheet strength will develop in the future.

Mechanically, BCAR's calculations are very similar to those of the NAIC's RBC method. A.M. Best segregates risks the categories B₁ through B₇ and applies risk factors. Individual BCAR risk factors are calibrated using a 1% expected policyholder deficit¹ risk measurement basis. This approach allows the surplus requirements produced for the various risk categories to be more consistent.

In contrast to the NAIC RBC method, BCAR adjusts company reserves based on A.M. Best's perception of their adequacy. This adjustment may well reduce the incentive companies have under NAIC RBC to understate reserves. BCAR makes a number of "Concentration", "Growth", "Diversification" and similar adjustments, the details of which may be found in "Understanding BCAR", available through the A.M. Best website.

The categories B₁ through B₇ are then combined into the Net Required Capital ("NCL") using a square root method very similar the NAIC's.

¹ The Expected Policyholder Deficit risk measure reflects the expected cost of insolvency rather than only its probability.

A number of adjustments are then made to the company's reported surplus with the intent of restating surplus on a more "economic" basis. Details regarding the types of surplus adjustments are shown in the Exhibits section.

Finally, the A.M. Best's Capital Adequacy Ratio ("BCAR") is calculated as the ratio of Adjusted Surplus to Net Required Capital.

$$BCAR = \frac{\text{Adjusted Surplus}}{\text{Net Required Capital}}$$

The following table shows the minimum BCAR levels a company must achieve to receive a given balance sheet strength rating.

Minimum BCAR Levels	
Implied Balance Sheet Strength Rating	Minimum BCAR
Secure Ratings	
A++	175
A+	160
A	145
A-	130
B++	115
B+	100
Vulnerable Ratings	
B	90
B-	80
C++	70
C+	60
C	50
C-	40
D	0

A.M. Best stresses that its BCAR method, although very useful for evaluating a company's balance sheet, is "only one component of that analysis. In addition, balance-sheet strength is only one component of the overall financial strength rating, which also includes operating performance and market profile. BCAR very often is a minimum requirement to support a rating, but other factors deriving expectations of future balance-sheet strength drive the rating as well."

Standard & Poor and Moody's have developed very similar RBC-like models, differing only in detail from the two described above. This report will therefore not describe them further.

Fitch Ratings Insurance Capital Assessment Methodology (“Prism”)

Fitch Ratings presented its Insurance Capital Assessment Methodology, known as Prism, in June 2006. This model represents the probabilistic approach of assessing surplus adequacy and uses a Tail-VaR risk measure.

Prism is described by Fitch as an economic simulation model used to project cash flows for up to 30 years and reflects the following risks:

1. Asset Risk

Cash flows are generated reflecting the current investment portfolio composition and the following investment return risks,

- Interest Rate Risk
- Non-Interest Rate Risk on Fixed Income Assets
- Equity Market Risk
- Real Estate Risk

2. Underwriting Risk

Quantifies the risk losses and expenses exceed premiums for 1 additional year of writings net of ceded reinsurance

3. Loss Reserve Risk

Variability in future loss payments is incorporated via the Mack Method of estimating loss development variability

4. Property Catastrophe Risk

Reflects the company’s exposure to natural catastrophes over the next 12 months

5. Credit Risk on Current and Contingent Reinsurance Recoveries

Represents uncollectible reinsurance recoveries

6. Latent Claim Risk

Reflects the possibility that carried reserves will be insufficient to expansion of liabilities due to future adverse legal decisions or government actions (e.g. Asbestos & Environmental liabilities)

7. Asbestos & Environmental Liability Adjustments

Reflects an adjustment for inadequate carried Asbestos & Environmental reserves

Prism relies on published financial and regulatory statements for its required input data. The method produces a “Required Capital Loss Distribution Curve” based on the results of 5,000 randomly generated runoff scenarios of the company’s current book of business. Underlying each runoff scenario are simulated values of the above risks. Asset risks are simulated through an economic scenario generator; while reserve risks are modeled using a method developed by Dr. Thomas Mack based on paid loss development triangles.

Prism begins each of the 5,000 scenarios by assuming the company has assets just equal to its liabilities. A single year’s worth of additional premium is assumed under the model. Then for each future year, investment income is generated, losses and expenses are paid, uncollectible reinsurance is written off and the ending reserve balance is calculated. This ending reserve balance forms the beginning reserve balance for the next year. Any negative ending reserve balances are topped up with “required capital” at the end of each year. The discounted value of these required capital amounts represents the surplus needed today in order to satisfy all policyholder claims.

The resulting 5,000 required surplus amounts are used to estimate how likely it is that the company will be unable to meet its policyholder obligations, given its current surplus. This probability is then compared to cumulative corporate bond default rates by rating category to establish which rating threshold an insurer’s surplus meets.

Internal Company Management

Insurance industry management uses a wide variety of methods to analyze surplus adequacy. Methods range from fairly simple to complex depending on the purposes for which they have been designed. While describing these methods in detail is beyond the scope of this report, some brief comments are provided.

Few companies rely on fixed ratios other than as part of required regulatory calculations. Given management’s goals of efficiently deploying capital by line of business, evaluating profitability by sub-units, and evaluating reinsurance program structures, many companies rely on either the scenario-based or probabilistic approach. These two approaches allow management the opportunity to ask “what-if” type questions and analyze the likely outcomes of various alternatives.

V. Premium Ratemaking Methodology Evaluation

Background

ARC is to assist the Ohio Workers' Compensation Oversight Committee in evaluating the premium ratemaking recommendations presented by the BWC Administrator by reviewing and evaluating the current methodologies.

The BWC's actuarial consultant, Oliver Wyman, follows Ohio regulatory requirements that the rate adequacy for private and public employers be reviewed separately. Below is ARC's review of Oliver Wyman's ratemaking process. Following the evaluation of the premium ratemaking process, the Group Rating Plan is reviewed in detail.

Oliver Wyman Actuarial Evaluation

Oliver Wyman performs two actuarial evaluations each year that serve as starting points for the rate recommendations. The first report is titled Actuarial Audit of the Private Employer, MIF and DWRP Reserves for Rate Recommendation Support. A corresponding report for Public Employers was not provided to us however we were assured by Mercer that the evaluation follows the same basic processes. The analysis contained in each report forms the basis for the baseline scenario used in the rate recommendation. This baseline is essentially a mid-range rate indication and is accompanied by optimistic and conservative selections. A detailed review of the Oliver Wyman actuarial audit is outside the scope of this assignment and is contained in the report for Task C. The scenarios used in the rate recommendation are discussed in the Private Employers Section below.

Private Employers (PA) Rate Recommendation

This section of Oliver Wyman's report pulls the pure premiums directly from the Oliver Wyman Private Employers Actuarial Evaluation. These pure premiums are the starting point to determine the recommended rate change indication for private employers.

Scenarios

Oliver Wyman considers three scenarios in their rate review:

1. Baseline
2. Reasonable Expectation Optimistic
3. Reasonable Expectation Conservative

The baseline is analogous to a best estimate selection. The remaining scenarios utilize optimistic and conservative assumptions, and act as confidence intervals. Each of these three scenarios considers two discount rates that are applied to ultimate losses to calculate their present values: 5.00% and 5.25%.

Oliver Wyman provides the following explanation in the PA 7-1-2007 Rate Recommendation:

The indicated rate change in one of the scenarios contemplates maintaining the “baseline” experience, the second scenario considers an additional improvement of 9.54% in the loss rate from the baseline, including further reductions in claim frequency, and the third scenario assumes a projected loss rate that is 3.12% higher than the baseline loss rate.

While the deviations for the Reasonable Expectation scenarios as compared to the Baseline are provided, how the deviations were derived is not clear.

Discounting

We understand from the Oliver Wyman reserve review that the discount rates have historically been developed using BWC calculations and its position paper “Reserve for Compensation Discount Rate – Selection of Rate”. We did not have a copy of this position paper available to review. The rate recommendation reports do not clearly document the source of the discount rates used, in contrast to the reserving reports.

Selected Indications

The scenarios in the PA 7-1-2007 Rate Recommendation provide a wide range of possible rate changes, from -13.1% to 0.9%. The recommended change of 0.0% is at the conservative end of the range. The overall range has shifted compared to the last several years where an increase was recommended. Given the large shift in the indications, taking Oliver Wyman’s recommended change of 0.0% appears reasonable.

Experience Period

The rate change is based on more years of historical experience than the industry standard. NCCI generally assigns full credibility to the two most recent available policy years. Several other non-NCCI states also use this method. One state uses a blend of the most recent policy and accident year. The use of more years can actually decrease the credibility of the indication because the older years are likely less indicative of future results. Actuarial factors are intended to

adjust these years to future conditions, but they lose accuracy as the time lag increases.

The rate change is also calculated using Calendar/Accident Year data (Calendar Year Premium and Accident Year Losses). While this data is relatively easy to obtain and verify, it is generally considered to be less reliable for rate-making than policy year data because of the mismatch in premiums and losses. Policy Year indications are generally considered more accurate and predictive for future policy periods because the losses and premiums relate to the same period, however, policy year data takes longer to compile. Calendar/Accident Year data is more timely, but less accurate than Policy Year. We recommend either a full conversion to the Policy Year approach, or the application of both methods, from which one selection would be made.

Reconciliation of Rate Changes

A table on Page 2 of Oliver Wyman’s Executive Summary raises some questions. The table shows the historical indications and approved rate changes. For the periods incepting 7-1-2003 to 7-1-2006, the scenarios gave positive rate indications with the exception of the Reasonable Expectation Optimistic indication in 7-1-2006. From 7-1-2006 to 7-1-2007, the indications changed as follows:

PERIOD	REASONABLE EXPECTATION OPTIMISTIC	BASELINE	REASONABLE EXPECTATION CONSERVATIVE
7-1-2006	-1.8%	+3.9%	+8.8%
7-1-2007 @ 5.25%	-13.1%	-3.9%	-0.9%
7-1-2007 @ 5.00%	-11.9%	-2.2%	+0.9%

Note how the range of 7-1-2006 indicated rate changes is predominately positive, while the subsequent 7-1-2007 ranges are essentially negative. A change in Ohio benefit levels or other trends could adjust the historical losses so that the rate indications would reflect the impact and explain the shift in the indications. However, no such explanation was provided.

Other Issues

No documentation was provided for how the expenses are determined. Appendix A: Bureau of Workers’ Compensation NCCI Base Rates and Expected Loss Rates Effective July 1, 2006 was provided, but contained no support for expense loadings. Several things including payroll trend and investment income can impact expenses and this in turn will influence the premium rate need. It is not necessary to provide the specific input used to set the expense provisions, but a detailed summary of what the expenses consider should be included. Part

C of this report will provide a list of the expense items mentioned in other workers' compensation rate filings.

Premium discounts due to expense gradation can also impact the amount of premium that will be collected in the future.

Public Employers (PE) Rate Recommendation

Ohio law requires that Public Employer ("PE") rates be determined separately from Private Employer ("PA") rates. This approach is reasonable from an actuarial perspective if the two employer types exhibit different loss patterns or if there are other underlying issues that impact the employer types differently.

The same concerns mentioned in the PA section also apply to PE. Note that we did not receive a copy of the Oliver Wyman Actuarial Evaluation for Public Employers. It would be expected that the rate review process would be similar for both PA and PE. One notable exception is that, while all three scenarios are shown discounted at 5.25%, the 5.00% discount rate is only utilized in the Baseline Scenario for PE. This review was completed prior to the PA review, so it is possible that the additional scenarios would be considered in future reviews.

Marine Industry, Coal Workers Pneumoconiosis, and Disabled Workers' Relief Fund

The rate indication for these ancillary funds is determined with a traditional loss ratio approach. The target loss ratio is not well documented and, in some cases, is simply selected judgmentally. The target loss ratio is equal to one minus the expense ratio. Therefore, assumptions made regarding expenses can have a significant impact on the target loss ratio selected and the final rate indication. As such, more support should be provided for the assumptions underlying the expenses and target loss ratio.

Group Rating

Approximately a quarter of the Ohio market is group rated and the discounts are significant. Since the inception of the plan, there has been concern over the level of discount and the required ratemaking off-balance. In the Statement of Principles Regarding Property and Casualty Ratemaking adopted by the Casualty Actuarial Society in 1988, Principle 4 states that "a rate is reasonable and not excessive, inadequate, or unfairly discriminatory if it is an actuarially sound estimate of the expected value of all future costs associated with an individual risk transfer". In its 2004 study of the Group Rating Program, Oliver Wyman showed that the Group Incurred Loss Ratio is consistently higher than the Non Group Incurred Loss Ratio. If the rates were reasonable and not

excessive, inadequate, or unfairly discriminatory, then the loss ratio for both groups should be fairly close and not exhibit any obvious patterns.

In the past, Oliver Wyman has suggested the following changes to improve the Group Rating Program:

1. Add restrictions to the Plan to minimize the opportunities for manipulation
2. Adopt the NCCI Plan
3. Lower the Maximum Credibility in the Ohio Plan

It seemed that keeping the Ohio Plan and lowering the credibility was the most favorable suggestion as it would be very easy to implement. Oliver Wyman first suggested in a 1994 Group Rating Pricing Study, that the maximum credibility be reduced to 70%, close to NCCI's maximum credibility. In an August 1995 report, Oliver Wyman suggested reducing the maximum credibility to 70% using 10% increments to phase in the change. In the 2004 study, the maximum credibility was listed at 95%. The current maximum credibility is 93% for Private Employers.

Group Rating has been an issue for Ohio since it was introduced in 1991. In 1990, the actuarial consultant Robert Finger warned that the potential for manipulation in the plan would lead to a large off-balance adjustment. Mr. Finger made three specific suggestions:

1. Membership should not be dependent on claim experience
 - a. Ohio has the One Claim Program which limits the impact of significant claims for a group member
 - b. This seems to imply that claim experience is a criteria
2. All members of the sponsoring organization should be given the opportunity to join the group to prevent the formation of groups with abnormally good experience
3. Members of the rating group should be compelled to keep the group's rating for at least 3 years
 - c. Members must reapply every year

In the 1991 review of the plan, Oliver Wyman points out that the rating method does not support the forming of groups for loss control for two reasons:

1. The oldest 4 of the last 5 calendar years are used for experience rating and group membership has no obligation to continue with that group. Over time, only groups with better than average experience will persist.

-
2. Experience can be double counted as employers move from group to group. This can lead to the formation of splinter groups to capitalize on good experience.

The intent of group rating was to help small- to medium-sized employers with good experience not otherwise eligible for experience rating. We did not come across any limitations on the size of members, so it is possible that employers are joining to get a larger discount than under individual experience rating. Participation in Group Rating has increased very significantly, indicating that members recognize the significant benefit they are receiving.

Finally, we point out that any overall subsidy of group-rated employers shows up as higher base-rates and thus higher Workers' Compensation costs to non group-rated employers. This will likely reduce Ohio's competitiveness in attracting and retaining employers to the state. Employers considering relocating to or from Ohio may be misled by comparing Ohio's Workers' Compensation base rates to those of surrounding states.

While group rating can be a useful tool, especially as a way to equitably adjust rates for small employers, its current implementation in Ohio is not actuarially sound. Considering both the difficulty experienced to date in adjusting the Plan's structure to a more actuarially sound basis and the increasing rate inequity between group and non-group employers, we see little alternative but to recommend the elimination of the Group Rating Program as it exists today.

Should the Group Rating Program be eliminated, we would also recommend introducing a credit for those employers not eligible for experience rating who have had no claims during the experience rating period.

VI. Data

In compiling this report we have relied on a number data sources and additional documents.

Surplus Adequacy Evaluation

1. Ohio Bureau of Workers' Compensation and Industrial Commission of Ohio Financial Statements and Supplementary Financial Information for the Years Ended June 30, 2006 and 2005 and Independent Auditors' Report Thereon
2. Actuarial Audit of the Workers' Compensation State Insurance Fund and Related Funds Administered by the Ohio Bureau of Workers' Compensation as of June 30, 2006 prepared by Oliver Wyman
3. Ruhm, et al. "Elicitation and Elucidation of Risk Preferences" *Casualty Actuarial Society Forum* (Fall 2005): 1-27.
4. Feldblum. "NAIC Property/Casualty Insurance Company Risk-Based Capital Requirements" *Proceedings of the Casualty Actuarial Society, Volume LXXXIII* (1996): 297-435.
5. Kaye. "Risk Measurement in Insurance: A Guide to Risk Measurement, Capital Allocation and Related Decision Support Issues" *Primer on Enterprise Risk Management* (May 2005): 1-33.
6. "Exposure Draft: Insurance Capital Assessment Methodology and Model (Prism) – Executive Summary" (2006): www.fitchratings.com
7. "Exposure Draft: Prism – Insurance Capital Model – Technical Document" (2006): www.fitchratings.com
8. Cummins, et al. "Insolvency Experience, Risk-Based Capital and Prompt Corrective Action in Property-Liability Insurance" *The Wharton Financial Institutions Center* (1995)
9. "Understanding BCAR – A.M. Best's Capital Adequacy Ratio for Property/Casualty Insurers and Its Implications for Ratings" (November 2003): www.ambest.com
10. KPMG. "Study into the Methodologies to Assess the Overall Financial Position of an Insurance Undertaking from the Perspective of Prudential

Supervision” (May 2002): ec.europa.eu/internal_market/insurance/docs/solvency/solvency2-study-kpmg_en.pdf

11. “CEA Working Paper on the MCR and Proposed Ladder of Intervention” (October 2006): www.cea.assur.org
12. “Solvency II: Understanding the Process” (February 2007): www.cea.assur.org
13. “Solvency Assessment Models Compared” (2005): www.cea.assur.org
14. “QIS 3: Guidance on the QIS3 Package” (April 2007): www.ceiops.org
15. “QIS 3: Technical Specifications - Part I: Instructions” (April 2007): www.ceiops.org
16. “QIS 3: Technical Specifications - Part II: Background Information” (April 2007): www.ceiops.org
17. “Request for Comment: Revisions in the Risk-Based Insurance Capital Model” (November 2006): www2.standardandpoors.com
18. Filipovic and Rost. “Benchmarking Study of Internal Models” Chief Risk Officer Forum (April 2005)

Premium Ratemaking Methodology Evaluation

1. Group Rating Pricing Studies Executive Summaries, March 1990 to Present
2. Historical Oliver Wyman Rate Recommendations
3. Actuarial Audit of the Private Employer, MIF and DWRP Reserves for Rate Recommendation as of December 31, 2006
4. Statement of Principles Regarding Property and Casualty Insurance Ratemaking
5. Actuarial Standard of Practice No 13, Trending Procedures in Property/Casualty Insurance Ratemaking
6. Actuarial Standard of Practice No 20, Discounting of Property and Casualty Loss and Loss Adjustment Expense Reserves

VII. Exhibits

Surplus Adequacy Evaluation

Ohio BWC - NAIC RBC Calculation Detail

The following presents the estimated surplus requirement for the BWC using the NAIC RBC formula as calculated by ARC. In making these calculations, ARC relied on information contained in the BWC's 2006 Audited Annual Report and the June 30, 2006 Actuarial Audit prepared by Oliver Wyman.

Section I - Asset Risk RBC

NAIC RBC formula prescribes RBC factors that are applied to various asset categories such as fixed income securities (e.g. bonds, short term investments and cash), equity investment (e.g. common stocks and preferred stocks), investments in insurance affiliates, etc.

The BWC's invested assets were grouped into NAIC asset categories. The following table shows ARC's assumptions for fixed income securities.

S&P Rating	NAIC Classes
AAA	1 - Highest Quality
AA+, AA, AA-	2 - High Quality
A+, A, A-	3 - Medium Quality
BBB+, BBB, BBB-	4 - Low Quality
BB+, BB, BB-, B+, B, B-	5 - Lower Quality
CCC+, CCC-, other	6 - In or Near Default

The resulting Asset Risk RBC charge is \$212.3 Million for the BWC. The supporting, detailed calculations may be found in Exhibit 1.

Section 2 –Underwriting Risk RBC

Underwriting risk consists of two components, reserving risk and premium risk. The surplus charge for reserving risk under NAIC RBC formula represents the dominant portion of the total RBC charge.

The NAIC RBC formula considers the individual company's own loss experience and adjusts both underwriting RBC factors to reflect whether the company's experience has been better or worse than the industry's.

For reserving risk, average historical loss development is used to measure the degree of adverse development in relation to the industry's experience.

$$\text{Average Loss Development} = \frac{\text{Current Incurred Loss} - \text{Initial Incurred Loss}}{\text{Initial Incurred Loss}}$$

For premium risk, the average historical loss ratio is used to measure the profitability of future business.

The RBC formula considers the time value of money by applying an interest discount factor to the RBC charge, derived from US Treasury issues. In addition, the RBC formula provides an offset to RBC for loss sensitive contracts (risks in retrospective rating plans).

The Underwriting Risk RBC charge is \$3.3 Billion for the BWC. The supporting, detailed calculations may be found in Exhibit 2.

Section 3 – Credit Risk RBC & Other

Based on the historical BWC information, both the Credit Risk RBC and Growth RBC charges are minimal. The BWC does not purchase ceded reinsurance and given its position as a monopolistic state fund, the opportunity for rapid expansion is minimal.

Section 4 – Putting it Together – The Square Root Rule

The NAIC Risk Based Capital formula recognizes that the various risks facing insurance enterprises are unlikely to all occur simultaneously; the risks are independent of each other. For example, one study has demonstrated that non-insurance asset risk is independent of underwriting risk.

As described earlier, the component capital charges are combined into six categories, termed as R_0 to R_5 and the total capital requirement or Authorized Control Level is then calculated using the square root rule.

$$\text{Required RBC} = R_0 + \sqrt{R_1^2 + R_2^2 + \left(\frac{1}{2} \times R_3\right)^2 + \left(\frac{1}{2} \times R_3 + R_4\right)^2 + R_5^2}$$

The RBC requirement for BWC is calculated as \$2.651 Billion. The details of this calculation are shown in the Summary Exhibit.

Exhibit 1 Summary

**NAIC Risk Based Capital Requirement Calculation
Ohio Bureau of Workers' Compensation
As of 6/30/2006**

Calculation of Total Required RBC

<u>RBC Requirement</u>	<u>Amounts in (000)</u>
R0 - Subsidiary Insurance Company	-
R1 - Fixed Income	145,643
R2 - Equity	521
R3 - Credit	-
R4 - Underwriting Risk: Reserves	
Reserve Charge	2,528,410
One half of the Credit RBC	-
Excessive Reserve Growth Charge	-
R4 - Total	2,528,410
R5 - Underwriting Risk: Net Written Premium	
Premium	768,053
Excessive Premium Growth Charge	-
R5 - Total	768,053
Total Required RBC After Covariance	2,646,502
 <u>Capital</u>	
Reported Total Capital	(126,621)
Non-Tabular discount amount	10,843,130
Total Adjusted capital	(10,969,751)
 <u>Level of Action</u>	
Company Action Level = 200% of ACL	2,646,502
Regulatory Action Level = 150% of ACL	1,984,876
Authorized Control Level (ACL)	1,323,251
Mandatory Control Level = 70% of ACL	926,276

NAIC Risk Based Capital Requirement Calculation
Ohio Workers' Compensation Bureau
As of 6/30/2006

Calculation of Asset Risk RBC
Amounts in (000)

	(1)	(2)	(3) (1)(2)
	Fair Value	RBC %	RBC
<u>Bond</u>			
US Government	10,948,563	0.0%	-
Class 1	888,834	0.3%	2,667
Class 2	579,951	1.0%	5,800
Class 3	1,253,834	2.0%	25,077
Class 4	1,017,561	4.5%	45,790
Class 5	16,590	10.0%	1,659
Class 6	<u>215,503</u>	<u>30.0%</u>	<u>64,651</u>
Total Bonds	14,920,836		145,643
<u>Equity</u>			
Preferred Stock:	9,822	2.0%	196
Common Stock:	1,241	15.0%	186
<u>International Security</u>	<u>922</u>	<u>15.0%</u>	<u>138</u>
Total Equity	11,985		521
<u>Other</u>			
State Street money market fund	1,705,935	0.3%	5,118
Net trade payable bond index fund	(1,036,616)	0.3%	(3,110)
Security lending short-tem collateral	6,285	0.3%	19
<u>Inv. In limited partnerships</u>	<u>427,339</u>	<u>15.0%</u>	<u>64,101</u>
Total Other	1,102,943		66,128
Total	16,035,764		212,291

Exhibit 2

NAIC Risk Based Capital Requirement Calculation Ohio Workers Compensation Bureau As of 6/30/2006

Calculation of Reserve Risk RBC Amounts in (000)

	PA	PEC	PES	PA+PEC+PES	Other*	Total
(1) Industry Average Development	1.081	1.081	1.081		1.081	
(2) Company Average Development	0.880	0.870	0.853		0.868	
(3) $^{(2)}/(1)$	0.814	0.805	0.790		0.803	
(4) Industry Loss & LAE RBC Percentage	0.273	0.273	0.273		0.273	
(5) Company RBC Percentage	0.248	0.246	0.244		0.246	
(6) Loss & LAE Unpaid	11,236,416	2,560,397	835,622	14,632,435	3,633,048	18,265,483
(7) Non-tabular Disc included in (6)	6,372,341	2,453,428	929,084	9,754,853	1,088,276	10,843,130
(8) Adjustment for Inv. Income	0.872	0.872	0.872		0.872	
(9) Base Loss & ALE Reserve RBC	1,547,524	435,235	150,008	2,132,768	408,702	2,541,470
(10) Percentage Loss-Sensitive	0.7%	7.4%	0.0%		0.0%	
(11) Loss Sensitive Discount	3,364	9,696	-	13,060	-	13,060
(12) Loss & LAE RBC After Discount	1,544,160	425,539	150,008	2,119,708	408,702	2,528,410
(13) Loss Concentration Factor	1.0	1.0	1.0		1	
(14) Net Loss & LAE RBC Charge	1,544,160	425,539	150,008	2,119,708	408,702	2,528,410

Notes: (1), (4), (8): from NAIC 2006 RBC
 (2), (6), (7), (10): based on information provided by BWC and Mercer report. (7) reflects only non-tabular discount
 (5): $5 * [(3) * (4) + (4)]$
 (9): $[(6) + (7)] * [(1 + (5))] * (8) - 1$
 (11): $30\% * (9) * (10)$
 (12): $(9) - (11)$
 (13): factor of 1.0 because BWC has WC business only
 (14): $(13) * (12)$
 Other*: incl. all residual funds

Calculation of Premium RBC Amounts in (000)

	PA	PEC	PES	PA+PEC+PES	Other*	Total
(1) Industry Average Loss & LAE Ratio	0.856	0.856	0.856		0.856	
(2) Company Average Loss & LAE Ratio	1.55	2.11	4.36		2.67	
(3) $(2)/(1)$	1.81	2.46	5.09		3.12	
(4) Industry Loss & LAE Ratio	1.008	1.008	1.008		1.008	
(5) Company RBC Loss and LAE Ratio	1.416	1.746	3.071		2.078	
(6) Company Underwriting Expense Ratio	0.040	0.040	0.040		0.040	
(7) Adjustment for Inv. Income	0.836	0.836	0.836		0.836	
(8) C/Y Written Premium	1,544,000	342,000	139,668	2,025,668	69,392	2,095,060
(9) Base Written Premium RBC	345,385	170,853	224,495	740,732	53,909	794,641
(10) Percentage Loss-Sensitive WP	3.40%	45.00%				
(11) Loss Sensitive Discount - WP	3,523	23,065	-	26,588	-	26,588
(12) NWP RBC after Discount	341,862	147,787	224,495	714,144	53,909	768,053
(13) Premium Concentration Factor	1.0	1.0	1.0		1.0	
(14) Net Written Premium RBC Charge	341,862	147,787	224,495	714,144	53,909	768,053

Notes: (1), (4), (7): from NAIC 2006 RBC
 (2), (6), (8), (10): based on information provided by BWC and Mercer report.
 (5): $5 * [(3) * (4) + (4)]$
 (9): $[(5) * (7) + (6)] * (8)$
 (11): $30\% * (9) * (10)$
 (12): $(9) - (11)$
 (13): factor of 1.0 because BWC has WC business only
 (14): $(13) * (12)$
 Other*: incl. all residual funds

**NAIC Risk Based Capital Requirement Calculation
Ohio Workers Compensation Bureau
As of 6/30/2006**

Calculation of Credit Risk RBC
Amounts in (000)

	(1)	(2)	(3) (1)(2)
	Value	RBC %	RBC
Unbilled premium receivable	1,831,803	0.0%	-
<u>Retrospective premium receivable</u>	<u>271,552</u>	<u>0.0%</u>	<u>-</u>
Total	2,103,355		-

**NAIC Risk Based Capital Requirement Calculation
Ohio Workers Compensation Bureau
As of 6/30/2006**

RBC for Excessive Growth
Amounts in (000)

	(1)	(2) (1) / Sub. (1)	(3) (2) - 1
Calendar	<u>Premium</u>	<u>Premium</u>	<u>Annual</u>
<u>Year</u>		<u>Index</u>	<u>Change</u>
2006	2,095,060		
2005	2,201,134	95.2%	-4.8%
2004	2,300,661	95.7%	-4.3%
2003	<u>2,174,938</u>	<u>105.8%</u>	<u>5.8%</u>
Average			-1.1%
RBC Charge		0	

Ohio BWC - BCAR Calculation Detail

A.M. Best segregates risks into the following categories:

- (B1) Investment Risk (Fixed Income Securities)
- (B2) Investment Risk (Equity Securities)
- (B3) Interest Rate Risk
- (B4) Credit Risk
- (B5) Reserve Risk
- (B6) Net Written Premium Risk
- (B7) Off Balance Sheet Risk

Individual risks are combined into the A.M. Best Net Capital Charge using a square root formula.

$$NCL = B_7 + \sqrt{B_1^2 + B_2^2 + B_3^2 + \left(\frac{1}{2} \times B_4\right)^2 + \left(\frac{1}{2} \times B_4 + B_5\right)^2 + B_6^2}$$

A company's reported surplus is restated to reflect the following items, resulting in Adjusted Surplus ("AS").

1. Equity Adjustments
 - Unearned Premiums
 - Assets
 - Loss Reserves
 - Reinsurance
2. Debt Adjustments
 - Surplus Notes
 - Debt Service Requirements
3. Other Adjustments
 - Potential Catastrophe Losses
 - Future Operating Losses

Exhibit 5

**AM Best's Capital Adequacy Ratio
Ohio Workers Compensation Bureau
As of 6/30/2006**

	Amount in (000)
NET REQUIRED CAPITAL:	
Asset Risk:	
(B1) Fixed Income Securities	182,804
(B2) Equity Securities	67,907
Subtotal	250,710
 (B3) Interest Rate Risk	 103,559
Total Investment Risk	354,269
 (B4) Credit Risk	 118,745
Total Asset Risk	473,015
Underwriting Risk:	
(B5) Loss & LAE Reserves	7,123,538
(B6) Net Premiums Written	838,024
Total Underwriting Risk	7,961,562
 (B7) Business Risk	 -
Gross Required Capital (GRC)	8,434,577
Less Covariance Adjustment	1,199,332
Net Required Capital (NRC)	7,235,245
ADJUSTED SURPLUS RECAP (APHS):	
Reported Surplus	(126,621)
UPR Equity (Net of tax)	-
Loss Reserve Equity	-
Fixed Income Equity (Net of tax)	-
Sub Total	(126,621)
Surplus Notes	-
Off Balance Sheet Losses	-
Deferred Tax on CS Appreciation	-
Potential Losses (Including Cats)	-
Adjusted Surplus (APHS)	(126,621)
BEST'S CAPITAL ADEQUACY RATIO (BCAR)	
BCAR % (APHS/NRC)	-1.75%

A.M. Best's 2004 Capital Adequacy Scale		
Rating	Minimum	Median
A++	175	280
A+	160	236
A	145	233
A-	130	192
B++	115	166
B+	100	141

Ohio BWC - SPCAR Calculation Detail

Exhibit 6

**Standard & Poors Capital Adequacy Ratio
Ohio Workers Compensation Bureau
As of 6/30/2006**

		Amounts in (000)
TAC	Total Adjusted Capital	(126,621)
	a. Surplus as regards policyholders	-
	b. Adjustment for Redundancy/(Deficiency) of Reserves	-
	c. Discount for time value of money	-
	d. Adjustment to statement value subsidiaries	-
	e. Analyst's adjustments (e.g. surplus notes)	-
	S&P TOTAL ADJUSTED CAPITAL a+b+c+d+e	(126,621)
C-1	Asset Risk for:	
	Unaffiliated Bonds	324,497
	Mortgage Backed Securities Interest Rate Risk	-
	Unaffiliated Preferred Stock	589
	Unaffiliated Common Stock	64,425
	Mortgage Loans	-
	Real Estate Holdings	-
	Cash	2,027
	Other Invested Assets	-
	Aggregate Write-ins for Invested Assets	-
	Off Balance Sheet Items	-
	Additional Capital Needs for Asset Risks not already captured	-
	Required capital for ASSET RISK	391,539
	Required capital for ASSET RISK adj. By SIZE FACTOR	391,539
	Affiliated Bonds	-
	Affiliated Preferred & Common Stocks	-
	Concentration Risk	-
	TOTAL REQUIRED CAPITAL FOR ASSET RISK adj. By SIZE FACTOR	391,539
C-2	Credit Risk for:	
	Reinsurance Recoverables	-
	Other non-invested assets	42,067
	Aggregate write-ins for other than invested assets	-
	Additional capital needs for Credit Risks not already captured	-
	TOTAL REQUIRED CAPITAL FOR CREDIT RISK (C-2)	42,067
C-3	Premium Risk for:	
	Workers' Compensation	314,259
	TOTAL REQUIRED CAPITAL FOR PREMIUM RISK (C-3)	314,259
C-4	Reserve Risk for:	
	Workers' Compensation	1,643,893
	TOTAL REQUIRED CAPITAL FOR RESERVE RISK (C-4)	1,643,893
C-5	BUSINESS RISK AND OTHER LOSS NOT ALREADY CAPTURED	-
A	RISK ADJUSTED CAPITAL (S&P TAC - C1 - C2)	(560,227)
B	REQUIRED CAPITAL (C3+C4+C5)	1,958,152
	CAPITAL ADEQUACY RATIO (A / B)	-28.6%

S&P's Capital Adequacy Scale	
Rating	Guideline
AAA	175+
AA	150 to 175
A	125 to 149
BBB	100 to 124
BB	Below 100

VIII. Appendix A – NAIC IRIS Ratios

The following table shows the thirteen NAIC IRIS Ratios and their associated threshold values.

NAIC IRIS Ratios	Unusual Values Equal to or:	
	Over	Under
1 Gross Premium to Surplus	900%	
2 Net Premium to Surplus	300%	
3 Change in Net Writings	33%	-33%
4 Surplus Aid to Surplus	15%	
5 Two-Year Overall Operating Ratio	100%	
6 Investment Yield	6.5%	3.0%
7 Gross Change in Surplus	50%	-10%
8 Net Change in Adjusted Surplus	25%	-10%
9 Liabilities to Liquid Assets	105%	
10 Gross Agents' Balances to Surplus	40%	
11 One-Year Reserve Development to Surplus	20%	
12 Two-Year Reserve Development to Surplus	20%	
13 Estimated Current Reserve Deficiency to Surplus	25%	

IX. Appendix B – NAIC RBC Category Detail

Each of the six risk categories (R_0 through R_5) is comprised of a number of individual components as shown in the table below. NAIC RBC factors are applied to each component and various adjustments are made to account for diversification, rapid growth in business etc. The individual component capital charges are then summed to form the six categories (R_0 through R_5):

R_0 (Investments in Insurance Affiliates and Off-Balance Sheet Risks)

- Investments in Insurance Affiliates
- Non-Controlled Assets
- Guarantees to Affiliates
- Contingent Liabilities

R_1 (Fixed Income Investment Risk)

- Fixed Income Securities
 - Cash
 - Bonds
 - Bond Size Adjustment Factor
 - Mortgage Loans
- Short-term Investments
- Collateral Loans
- Asset Concentration Adjustment for Fixed Income Securities (doubles RBC charge on 10 largest investments, with a maximum of 30% of any one security)

R_2 (Equity Investment Risk)

- Equity Investments
 - Common Stocks
 - Preferred Stocks
 - Real Estate
- Other Invested Assets
- Aggregate write-ins for Invested Assets
- Asset Concentration Adjustment for Equity Investments (doubles RBC charge on 10 largest investments, with a maximum of 30% of any one security)

R_3 (Credit Risk)

- Reinsurance Recoverables

-
- Other Receivables

R₄ (Reserving Risk)

- Basic Reserving Risk Charge
- Offset for Loss-Sensitive Business
- Adjustment for Claims-Made Business
- Loss Concentration Factor
- Growth Charge for Reserving Risk

R₅ (Written Premium Risk)

- Basic Premium Risk Charge
- Offset for Loss-Sensitive Business
- Adjustment for Claims-Made Business
- Premium Concentration Factor
- Growth Charge for Premium Risk

The actual values of individual risk charge factors resulted from a process involving compromise. As such, the values were not necessarily set in a consistent fashion, i.e. some were judgmentally selected, while others were set using a probability of ruin equal to 1% etc.

The “Bond Size Adjustment Factor” adjusts the RBC charge to reflect the degree of diversification in the investment portfolio and is based on the number of bond issuers².

The “Asset Concentration Adjustment Factors” represent a penalty for not diversifying investments among different issuers. The 10 largest investments are determined by combining fixed income and equity investments in each issuer.

“Growth Charges” represent penalties for rapid business expansion. Companies whose average three-year premium growth rate exceeds 10% per year attract additional reserving and written premium risk charges.

Premium and Reserve “Concentration Factors” reflect an attempt to recognize the partial independence of different lines of business. Companies that concentrate on single lines of business receive no benefit.

² The factor is 250% for the first 50 issuers, 130% for the next 50, 100% for the next 300, and 90% for the remaining issuers.

The “Adjustment for Claims-Made Business” recognizes that claims-made policies are not subject to late reported claims, which are a major contributor to adverse loss development risk.

The “Offset for Loss-Sensitive Business” recognizes that the potential risk to the insurance company of unexpectedly poor reserve development or underwriting results on loss sensitive contracts is reduced by the nature of such contracts. As losses exceed expectations, the insurer has the right to receive additional premium from the insured, thereby leaving the company’s surplus unaffected.

X. Appendix C – Solvency II Detail

Solvency II considers the following Solvency Capital Requirement categories for a property and casualty (non-life) insurer:

SCR_{NL}	- Non-Life Insurance Operations
SCR_{MKT}	- Market Risk
SCR_{DEF}	- Counterparty Default Risk
SCR_{OP}	- Operational Risk

The Solvency II surplus requirement is calculated using the following formula, with the covariance adjustments appearing as the second through fourth lines under the square root.

$$SCR = SCR_{OP} + \sqrt{\begin{aligned} &SCR_{NL}^2 + SCR_{MKT}^2 + SCR_{DEF}^2 + \\ &2 \times (0.25 \times SCR_{NL} \times SCR_{MKT}) + \\ &2 \times (0.50 \times SCR_{NL} \times SCR_{DEF}) + \\ &2 \times (0.25 \times SCR_{MKT} \times SCR_{DEF}) \end{aligned}}$$

The Solvency II proposal is intended to reflect a value-at-risk risk measure calibrated to a 99.5% confidence level and a time horizon of one year. Note that the insurance operations category SCR_{NL} reflects premium and reserve risk charges on a combined basis, while the market risk category SCR_{MKT} reflects,

- interest rate risk
- equity risk
- property risk
- currency risk
- spread risk

Covariance adjustments similar to those in the formula above for SCR are used to combine the components of SCR_{NL} and SCR_{MKT}.

Ohio Bureau of Workers' Compensation Oversight Commission

RFP #B07016

Task C: Evaluation of BWC's Current Practices Relative to
Industry Standards in the Areas of Ratemaking
and Reserve Development

June 14, 2007

Aon Risk Consultants

Actuarial & Analytics Practice

1650 Market Street • Suite 1000 • Philadelphia, PA 19103 • Tel: +1.215.255.1827

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I. Introduction

Purpose

Aon Risk Consultants (“ARC”) has been retained by the Ohio Bureau of Workers’ Compensation Oversight Commission (“WCOC”) to supply actuarial consulting services in support of the WCOC’s evaluation of the performance of the Ohio workers’ compensation system and in comparing Ohio’s system to other state and private compensation systems.

Specifically, ARC has been engaged to perform the following three tasks:

- Task A. Provide an analysis of the Ohio Bureau of Workers’ Compensation’s (“BWC”) historical underwriting profit or loss for the past five years and identify underlying drivers.
- Task B. Evaluate the BWC’s current surplus adequacy and premium ratemaking methodologies.
- Task C. Evaluate the BWC’s current practices relative to insurance industry standards, both state and private, in the areas of ratemaking and reserve development.

Each of these tasks will be addressed in a separate report, with this report covering Task C.

Scope

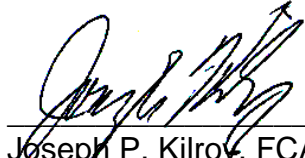
Under Task C, ARC is to review and evaluate BWC’s current actuarial practices and processes in the areas of ratemaking and reserve development and compare the current practices to accepted insurance industry standards. The ultimate goal of our review is to provide recommendations and alternatives for improving existing practices and implementing new procedures.

We performed this analysis using generally accepted actuarial principles and in accordance with all relevant Actuarial Standards of Practice.

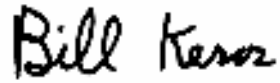
Please contact any of the undersigned us if you have any questions regarding this report.

Respectfully submitted,

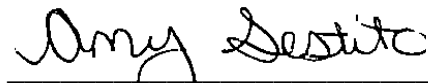
Aon Risk Consultants



Joseph P. Kilroy, FCAS, MAAA
Director & Actuary
(215) 255-1827



Bill Keros, ACAS, MAAA
Senior Consultant & Actuary
(214) 989-2373



Amy L. Sestito, FCAS, MAAA
Senior Consultant & Actuary
(215) 255-1719



Zoe Rico, ACAS, MAAA
Consultant & Actuary
(214) 989-2545

II. Conditions and Limitations

Inherent Uncertainty

Actuarial calculations produce estimates of inherently uncertain future contingent events. We believe that the estimates provided represent reasonable provisions based on the appropriate application of actuarial techniques to the available data. However, there is no guarantee that actual future payments will not differ from estimates included herein.

Data Reliance

In conducting this analysis, we relied upon the provided data without audit or independent verification. Any inaccuracies in quantitative data or qualitative representations could have a significant effect on the results of our review and analysis.

Use and Distribution

Use of this report is limited to the WCOC for the specific purpose described in the Introduction section. Other uses are prohibited without an executed release with ARC.

Distribution by the WCOC is unrestricted. We request that ARC be notified of further distribution of this report. The report should only be distributed in its entirety including all supporting exhibits.

III. Executive Summary

In this report we evaluate the BWC's current actuarial practices and processes in the areas of ratemaking and reserve development against industry standards. As a result of our review, we conclude that the current ratemaking and reserving methods employed by the BWC and their independent actuarial consultant, Oliver Wyman, are reasonable and appropriate. The methods are applied using generally accepted actuarial principles and adhere to all relevant Actuarial Standards of Practice. The focus of our report is to document areas where current BWC practices or those of its actuarial consultant differ from industry standards. However, reliance on a practice other than the industry standard does not automatically imply that changing to the industry standard is appropriate. Often legal, regulatory, or technical restrictions prevent such a change. Our goal is to point out differences so that the BWC can evaluate whether implementing changes would enhance their processes.

A summary of our findings and conclusions is presented in this Executive Summary. A more detailed discussion of the analyses performed is contained in Section IV.

Ratemaking

We have reviewed the methodologies employed by Oliver Wyman in their Rate Recommendations (Private, Public, and Ancillary Funds) and the supporting document for Private Employers, Actuarial Audit of the Private Employer, MIF, and DWRF, Reserves for Rate Recommendation Support. In addition, we reviewed the ratemaking process for several states, including both independent bureau and National Council on Compensation Insurance (NCCI) states.

We have compared the BWC methodology to industry ratemaking standards. The main areas where the BWC process differs from industry standards include the following:

1. The BWC examines ten full years of historical experience in determining the overall rate indication. The industry standard is to use the most recent two years of experience. For instance, the NCCI typically uses the latest two policy years or the latest one calendar/accident year with the latest one policy year.
2. The BWC considers future investment income expected to be earned on premium in the rate structure by using discounted losses in the determination of the overall rate indication. The industry standard is to perform an internal rate of return analysis where an explicit profit and

contingencies load is developed. The profit and contingencies load so determined accounts for the impact of investment income.

3. The BWC uses calendar/accident year data. The industry standard is to use either policy year data exclusively, or to use a combination of calendar/accident year and policy year data.
4. The current Group Rating Plan in Ohio has resulted in a much larger off-balance adjustment than industry standards in the calculation of rates for individual classifications. As a result, non-group rated employers are paying exorbitantly high base rates, and subsidizing the group rated employers in the process.

In the Analysis section, the following aspects of the ratemaking process are focused on in more detail:

1. Data used to determine the rate indication
2. Adjustments to the data
3. Expenses
4. Determination of classification rates

Reserve Development

We have reviewed the methodologies employed by Oliver Wyman in their actuarial audits valued as of June 30, 2005 and June 30, 2006. We find the methods to be reasonable given the exposures being analyzed. There are certain calculations contained in the analyses that could be enhanced or clarified. Our specific comments in this regard are presented in the Analysis section.

It is important to note that the Oliver Wyman reserve analyses rely primarily on paid loss data. Case reserves on Ohio Workers' Compensation claims are developed using the MIRA reserving system and are not generally considered in the Oliver Wyman analyses. The MIRA system has not been in place long enough to produce a credible incurred loss development history. As such, we have introduced herein an alternative reserving method, used widely throughout the insurance industry, which also relies on paid loss data.

The alternative method uses a statistical software package known as ICRFS-PLUS ("ICRFS"). ICRFS is marketed by *Insureware Pty Ltd*, a company based in Australia. ICRFS is a system designed to help actuaries produce aggregate reserve estimates. It is not a system designed to produce case reserve estimates on individual claims.

ICRFS allows the analyst to build probabilistic models around paid loss development arrays. In addition to generating expected aggregate reserve estimates, the ICRFS system also allows for the estimation of the following:

1. Distribution of the aggregate reserve by business segment
2. Value at risk
3. Correlations in reserve distributions among business segments
4. Capital allocation by business segment
5. Distribution of the aggregate reserve for all business segments combined

In conjunction with the consultants at *Insureware*, we have performed an independent reserve analysis on the PA, PEC and PES employer group segments using the ICRFS software. The major conclusions reached in our analysis are summarized below.

1. There is strong evidence that the Oliver Wyman reserve estimate posited as of June 30, 2006 is too low for the PA segment and too high for the PEC and PES segments.
2. For the three segments combined, the Oliver Wyman reserve estimate as of June 30, 2006 is slightly higher than our expected reserve estimate.
3. Separate analyses should continue to be performed for individual benefit types, due to the existence of different underlying trend structures.
4. There is significant positive correlation among the reserve distributions of the three segments.
5. Our analysis produces capital allocation percentages which can be used in executing a dividend policy.
6. The total reserve estimate put forth by Oliver Wyman in their June 30, 2006 analysis for the PA, PEC and PES segments combined is at the very high end of the reserve distribution.

IV. Analysis

Ratemaking

We have reviewed the ratemaking process used in several states for comparison with the BWC process. Our comparison will allow the BWC to benchmark their current ratemaking methodology against industry standards. Rate filings produced by the following states/entities were reviewed for this analysis:

State Compensation Insurance Fund of California
Workers' Compensation Insurance Rating Bureau of California
National Council on Compensation Insurance (Indiana and West Virginia)
Workers' Compensation Rating and Inspection Bureau of Massachusetts
New York Compensation Insurance Rating Board

Data Used for Determination of Statewide Indication

The industry standard is to use the latest two available policy years as the basis for the rate review. Policy year data is preferred because the losses and premiums emanate from the same time period. The New York filing used an average of the latest policy and calendar/accident year. In its filing for rates effective 1/1/2007, NCCI used policy years 2003 and 2004 evaluated as of 12/31/2005 for Indiana. West Virginia's last review (first year with NCCI) used the latest two and a half policy years. Both California filings used calendar/accident year data.

The Insurance Expense Exhibit (IEE) and Annual Statement required of insurers by the NAIC are used to support expense and profit provisions in the rates. Generally, three to five years are reviewed for the expense provisions. Some states have additional data calls.

The states reviewed generally kept twenty years of historical loss experience for determining loss development factors. After the twentieth report, a tail factor is applied to take the development factors to ultimate.

Adjustments to Losses

Several adjustments need to be made to the data before it can be used for ratemaking purposes. Effects of inflation, benefit changes and other trends need to be removed so that a true analysis of the rate adequacy can be completed without distortion from these historical effects. Premium and losses must also be developed to ultimate expected levels. This allows for an "apples to apples" comparison of the years of historical experience.

The first step to adjust the losses involves determining the development pattern used to estimate the ultimate value of losses. In general, a combination of paid and incurred (paid plus case) cumulative triangles is reviewed to determine the development pattern. The table below shows the distribution of development methods used in NCCI states.

Type of Triangles Used	Percent of States
Incurred Only	25%
Paid Only	36%
Both Paid and Incurred	39%

Of the non-NCCI states reviewed, Massachusetts and New York use incurred development patterns and California uses paid development patterns. Due to the insufficient loss history compiled since the implementation of the MIRA system, the BWC analysis uses only paid data to develop the losses. While this is within the industry standards of practice, it may be worth reviewing the incurred triangles at some point to see if they offer insight into the development patterns. NCCI states the following reasoning for reviewing both paid and incurred losses for Indiana:

1. “The paid losses reported in the experience period did not yet reflect large losses that were reported as case reserves. Indications based on the paid method alone may slightly understate the correct premium need.”
2. “The paid plus case losses reported in the experience period reflect the case reserves for large losses and are developed to ultimate using historical loss development patterns. The resulting estimated ultimate losses may overstate the premium need.”
3. “An average of the paid and paid plus case methodologies produces an indication that offsets the shortcomings observed in each methodology.”

The losses also need to be adjusted for any benefit level changes. This adjustment is state specific in that it depends on legislated benefit revisions. Similar to industry practices, the impact of benefit level changes in Ohio is considered in the BWC rate indication.

Adjustments to Premium

The Workers' Compensation premium that an employer pays is dependent on several items, one of which is payroll. When the premium is calculated for the upcoming policy year, the payroll for the coverage period is estimated and multiplied by the appropriate rate. After the policy period has expired, the payroll is audited and the premium is adjusted accordingly. Loss size limits and retrospective rating adjustments can also alter the final premium. Thus, any ratemaking analysis that uses policy year premium needs to include an adjustment to develop the premium to an ultimate basis. The common practice to develop the premium to ultimate is to use a method like the traditional age-to-age triangles.

The BWC currently uses calendar year premium and therefore this adjustment is not needed. Calendar year premium consists of premium from expired policy years, where the payroll has already been audited. We recommend that a policy year method be considered by the BWC in the future, and this will necessitate the premium development process just described.

The premium must also be adjusted for trend and prior rate changes, so that the historical premiums are reflective of the premium dollars that would be collected under the current rate structure. For purposes of this adjustment, it is common practice in ratemaking to assume that policies are written evenly through out the year. The Massachusetts Bureau determines the actual premium distribution, which seems more reasonable for the BWC since both are the single repository for statewide information.

Expenses

While the BWC considers how expenses impact workers' compensation rates, this area of the process is not well documented. What follows is a brief discussion of how expenses are commonly considered in industry ratemaking practices.

Expenses are commonly broken down into three categories: those that vary with loss, those that vary with premium and those that are fixed dollar amounts. Expenses that vary with losses are normally evaluated as part of the loss analysis and are not discussed here. Expense items that vary with premium are simply loaded into the final rate multiplicatively. Expenses that are fixed are typically collected by way of an expense constant. Expenses that vary with premium can include premium taxes, licenses and fees, commissions and other acquisition. Fixed expenses can include general expenses, policy issuance fees and other taxes. Most industry rate filings provide a detailed expense analysis.

Like premiums and losses, the expense provisions must be trended so that they reflect the period that the rates will be in effect. Expenses are generally trended with a combination of historical state data, the consumer price index or other external composite indices.

Another aspect of the expenses is the profit and contingencies provision. The profit and contingencies load is the portion of every premium dollar that needs to be set aside as profit in order to earn a reasonable rate of return on the capital put forth to support the underwriting process. Historically, the profit provision for Workers' Compensation was set judgmentally at an arbitrary amount such as 2.0%. As investment income levels rose, however, states began to pay more attention to the profit and contingencies load included in Workers' Compensation rate filings.

Most state rating agencies and the NCCI now perform a detailed internal rate of return analysis in support of their profit and contingency provisions. All the cash flows associated with underwriting Workers' Compensation insurance are considered (premium collection, loss and expense payments, investment income, etc.). The ultimate profit and contingencies load is determined by first establishing an overall target rate of return on capital, and then iteratively testing profit provisions until that target is achieved.

Determination of Classification Rates

After the statewide indication has been determined, it must be spread to the individual risk classifications. An iterative process is required, as there are many things that impact how the rate indication is spread. The process is not as simple as multiplying the new indication by the existing rate.

Many states first spread the indication over five to ten industry groups. The industry group indications are then spread to the member risk classifications. The BWC procedure limits the rate change for any one classification to +/- 30%. The industry standard is +/- 25%.

Given that the volume of the risk classification data may be less than credible, most states credibility weight the indication for an individual classification. The compliment of credibility is usually applied to a combination of the statewide indication, the industry group indication, or the current class rate. The BWC uses a similar approach.

Finally, the application of the experience rating modification (and group rating in the BWC plan) and other discount programs will impact the premium collected. This creates an off-balance between the premium needed to achieve the new rate indication and the premium that will be collected after the indication is

spread to the risk classes. The off-balance is based on the ratio of manual premium (payroll x rate) to standard premium (manual premium adjusted for discounts). Ideally, the overall off-balance should be close to unity (1.0). The ratio of manual premium to standard premium is a weighted average of the Experience Modification. Larger employers generally have better experience and therefore receive a credit modification. Since more premium is collected from larger employers, the ratio of manual to standard premium is usually slightly over unity. The Ohio ratio, well over unity, has been allowed to deteriorate largely due to the Group Rating Plan.

Reserve Development

Discussion of Current Methodology

The BWC has contracted with the actuarial consulting firm Mercer Oliver Wyman (now Oliver Wyman) since 1990 to produce estimates of the ultimate reserve needs for the State Insurance Fund (“SIF”) and the related funds administered by the BWC. In this section, we discuss the methodologies employed by Oliver Wyman in their actuarial audits valued as of June 30, 2005 and June 30, 2006. Our comments will be limited to the methodologies used in the development of reserves for the SIF, which account for more than 90% of the reserves held by the BWC.

One important comment regarding the data used by Oliver Wyman is worthy of note. Case reserve estimates on Ohio Workers’ Compensation claims are currently developed, and have been since 1997, using the MIRA reserving system marketed by *Fair Isaac Corp.* A discussion of the MIRA system is outside the scope of this report, however, it is important to note that the case reserve estimates so produced are used mainly by the BWC in the calculation of experience modification factors. The case reserves are not explicitly considered by Oliver Wyman in their reserve analysis. As such, the Oliver Wyman analysis relies almost exclusively on paid loss data.

The Oliver Wyman reserve analysis for the SIF is performed separately for three employer groups: Private Employers (“PA”), Public Employers – taxing districts (“PEC”) and Public Employers – state agencies (“PES”). The rationale for this breakdown is that each of these groups is required by law to be rated separately, and Oliver Wyman uses the results of the reserve analysis in their ratemaking work. Within each of the three employer groups, separate reserve estimates are developed for the following benefit types: Medical, Temporary Total, Permanent Total, Death and Other Compensation Benefits. Still another breakdown occurs in the Medical category, where reserves for lost time claims are developed separately for Hospitals, Physicians, Pharmacies, Chiropractors, Rehabilitation and Other health-related expenses. Reserves for Medical Only claims are computed for all provider types combined. In the June 30, 2006 analysis, the reserve estimates are discounted using an interest rate of 5.25%.

For the Medical, Temporary Total, Death and Living Maintenance (part of Other Compensation) benefit types, Oliver Wyman develops reserve estimates using a “persistency” method. In this approach, historical persistency factors are calculated as the ratio of calendar year payments for a particular age of development to payments made for the prior age of development. Typically, the historical persistency factors are calculated using payments adjusted by an index such as claim counts or some measure of exposure. Based on the historical

factors, persistency factors are selected for each development period. Future payments, or reserves, are estimated for each accident year by multiplying the payments made (or projected to be made) in the prior fiscal year by the appropriate persistency factor.

In general, the persistency method is a reasonable approach to reserve estimation for the subject benefit types. However, we make the following comments and observations regarding the Oliver Wyman analysis valued as of June 30, 2006:

1. In the Medical, Temporary Total, Death and Living Maintenance analyses, Oliver Wyman selects constant persistency rates for many of the development periods between ages 6 and 29. It appears that there is sufficient data to allow for the selection of individual persistency factors for at least some of these development periods.
2. In the Medical analysis, the persistency rate beyond the 29th development period is assumed to be a constant percentage of the theoretical Permanent Total mortality rate, where the percentage varies by provider. Given the information provided in the Oliver Wyman reports, we are not able to determine the actual percentages used nor are we able to determine the age assumed for the mortality rate. Although the logic underlying these calculations appears reasonable, Oliver Wyman's report contains insufficient detail for us to reproduce them.

For the Permanent Total and Other Compensation (excluding Living Maintenance) benefit types, Oliver Wyman uses a "weeks of benefits" method. In this approach the reserve calculation essentially reduces to the product of the remaining number of weeks per claim, the ultimate number of claims and the average weekly benefit by injury type and accident year.

In our opinion, the weeks of benefits method is a reasonable approach to reserve estimation for the subject benefit types. However, we have one comment on the Oliver Wyman analysis valued as of June 30, 2006:

1. The Permanent Total analysis relies on a rather large tail factor (139.94), whose derivation is undocumented. The tail factor has a material impact on the Permanent Total reserve estimates.

An Alternative Method

Most organizations employ a variety of actuarial methods in the determination of reserves. Some methods rely mainly on paid losses and some methods rely mainly on incurred losses. As stated in the previous section, the BWC incurred

losses are not deemed usable for reserve estimation purposes. Our discussion of alternative reserving methods is therefore limited to those methods that use paid loss data. In this section, we introduce an alternative method for estimating reserves using paid loss data.

The software package known as ICRFS-PLUS (“ICRFS”) is used to implement the alternative reserve estimation method. ICRFS is marketed by *Insureware Pty Ltd*, a company based in Australia.

ICRFS allows the user to build probabilistic models that estimate the distribution of values in each cell of a paid loss development array. ICRFS models capture and describe four components of the underlying data. The first three components are the trends in the three directions contained in any loss development triangle: development period (horizontally), accident period (vertically) and calendar period (diagonally). The fourth component is the random fluctuation about the trends. The random fluctuation component, or process variance, is just as important as the three trend components and is an integral part of the model. The ICRFS models thus decompose the data as follows:

Data = Trends + Random Fluctuations

All models identified are tested to ensure that the assumptions are consistent with the data, including validation testing by removal of years. The underlying paid loss triangle is regarded as a sample path from the fitted model. Thus data simulated from an optimal model should not be distinguishable from the original data in respect of trend structure and volatility about the trend structure. An identified model forecasts distributions in every cell in the future, conditional on a set of explicit and easily interpretable assumptions that can be directly related to the historical experience. Immediate benefits are easy calculation of Value-at-Risk and percentile tables that can be used to calculate reserve distributions and to match liabilities with assets.

ICRFS also contains a module that allows the user to design an optimal composite model for multiple loss development arrays. The composite model describes the variability in each loss development array and the relationships between them. This framework has applications to modeling multiple lines of business, multiple segments and multiple layers. A composite model produces additional information including correlations in reserve distributions and capital allocation by line of business or segment, with possible applications to surplus adequacy and dividend analyses investigated under Task B. Reserve distributions for aggregates of the segments are also obtained.

Application to BWC Data

In conjunction with the consultants at *Insureware*, we have performed a reserve analysis on the PA, PEC and PES segments using the ICRFS software. Individual models were designed for total PA losses, total PEC losses and total PES losses. For the PA segment, we also modeled the individual benefit types in order to determine if the underlying trend structures are different enough to justify analyzing them separately, as Oliver Wyman does currently. Finally, we produced a composite model for the three segments to measure the correlations among the segments and how they can impact the total reserve distribution and capital allocation. In this section, we present the results of our analysis.

Table 1 below contains a comparison of the mean reserve estimates produced in our ICRFS analysis with the estimates posited by Oliver Wyman in their June 30, 2006 analysis. All amounts are shown in millions of dollars and are discounted at 5.25%.

Segment	ICRFS Mean Reserve	Oliver Wyman Reserve	Dollar Difference	Percentage Difference
PA	\$11,894	\$11,236	\$658	5.9%
PEC	\$2,054	\$2,560	-\$506	-19.8%
PES	\$463	\$836	-\$373	-44.6%
Total	\$14,411	\$14,632	-\$221	-1.5%

Table 1

Based on the results, there is strong evidence that the Oliver Wyman reserve estimate is too low for the PA segment and too high for the PEC and PES segments. On a percentage basis, the differences are much larger for the smaller segments, PEC and PES. However, given the magnitude of the reserve for the PA segment, even a small percentage difference can result in a significant dollar impact to the BWC. For the three segments combined, the Oliver Wyman reserve estimate is slightly higher than our mean reserve estimate.

We modeled the individual benefit types for the PA segment separately. We found that there is a diversity of trend structures present in the individual benefit types. As an example, we found that Pharmacy medical payments display a much different calendar year trend pattern than other medical payments. One of the reasons for the trend differences could be that legislated benefit changes impact the individual benefit types differently. Analyzing each benefit type facilitates the understanding of legislative and other systemic changes. Our

conclusion is that the individual benefit types should continue to be analyzed separately.

The composite modeling exercise shows that there is significant positive correlation among the three segments. Table 2 below shows the reserve correlations estimated by our composite model.

	PA	PEC	PES
PA	1.00	0.25	0.19
PEC	0.25	1.00	0.14
PES	0.19	0.14	1.00

Table 2

The existence of positive correlation indicates that the variance of the total combined reserve estimate is greater than the sum of the variances of the reserve estimates for the individual segments. If the BWC reserving philosophy is to record liabilities at a confidence level higher than the mean estimate, then additional capital is required to account for the positive correlation.

As a byproduct of the correlation analysis, ICRFS can generate capital allocation percentages. Table 3 below presents two sets of capital allocation percentages by segment. The first set ignores the existence of correlations (i.e. assumes independence) among the segments. The second set considers the existence of correlations. This information would be very useful to the BWC in developing and executing a dividend plan.

Segment	Capital Allocation %	
	Without Correlations	With Correlations
PA	87.8%	80.3%
PEC	7.8%	12.3%
PES	4.4%	7.4%

Table 3

Finally, Table 4 on the next page presents the reserve distribution for the three segments combined, as generated by the composite model. Once again, all amounts are presented in millions of dollars and are discounted at 5.25%.

Confidence Level	Total Reserve Estimate
50.0%	14,535
60.0%	14,542
70.0%	14,549
80.0%	14,557
90.0%	14,570
95.0%	14,579
99.0%	14,597

Table 4

Given, these results, it is our conclusion that the total reserve estimate put forth by Oliver Wyman in their June 30, 2006 analysis for the PA, PEC and PES segments combined is at the very high end of the reserve distribution.

V. Data

In our analysis, we have relied upon the information listed below. The information was obtained from the BWC, Oliver Wyman and external sources.

Ratemaking

1. Oliver Wyman Historical Rate Recommendations for the Ohio BWC
2. Ohio BWC State Insurance Fund Manual 2006-2007
3. Indiana NCCI Rate Filing
4. West Virginia NCCI Rate Filing
5. California WCIRB Rate Filing
6. California State Fund Filing
7. Massachusetts Workers' Compensation Rate Filing
8. New York Workers' Compensation Rate Filing

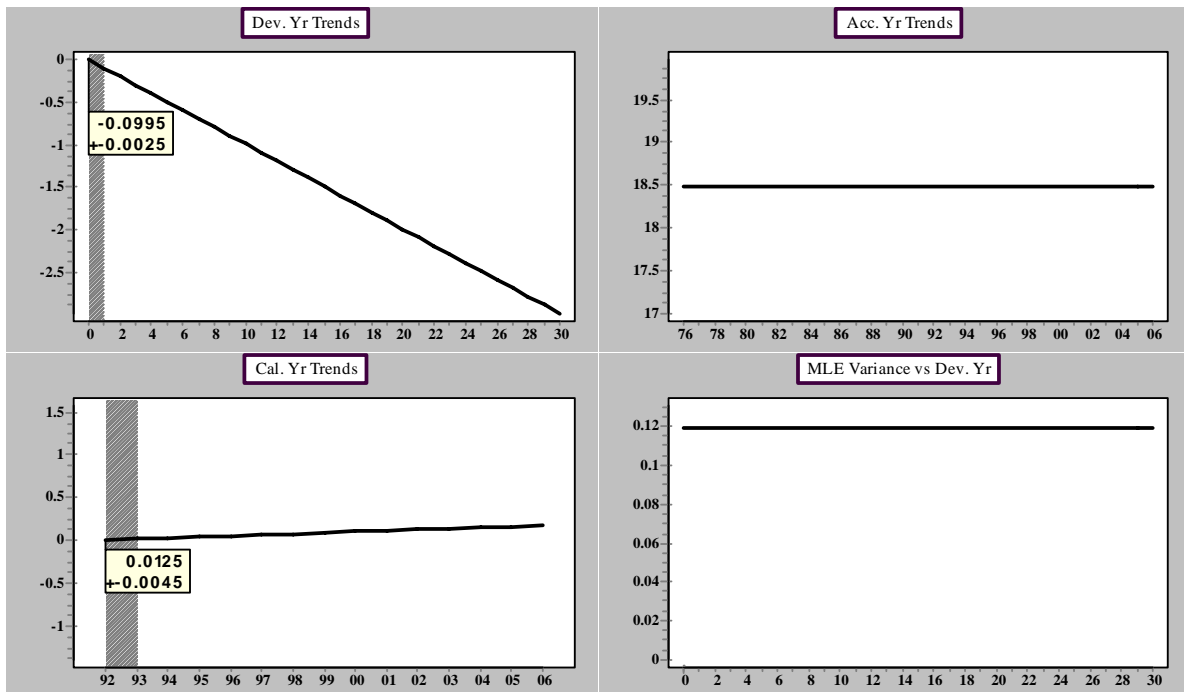
Reserve Development

1. *Actuarial Audit of the Workers Compensation State Insurance Fund and Related Funds Administered by the Ohio Bureau of Workers' Compensation as of June 30, 2006*, produced by Oliver Wyman
2. *Actuarial Audit of the Workers Compensation State Insurance Fund and Related Funds Administered by the Ohio Bureau of Workers' Compensation as of June 30, 2005*, produced by Oliver Wyman
3. *Actuarial Opinion of the Reserves for Compensation and Compensation Adjustment Expenses for the Ohio State Insurance Fund and Related Funds as of June 30, 2005*, produced by Pinnacle Actuarial Resources, Inc.
4. Paid loss triangles in electronic format by type of benefit for the PA, PEC and PES employer groups
5. Historical payroll in electronic format for the PA, PEC and PES employer groups

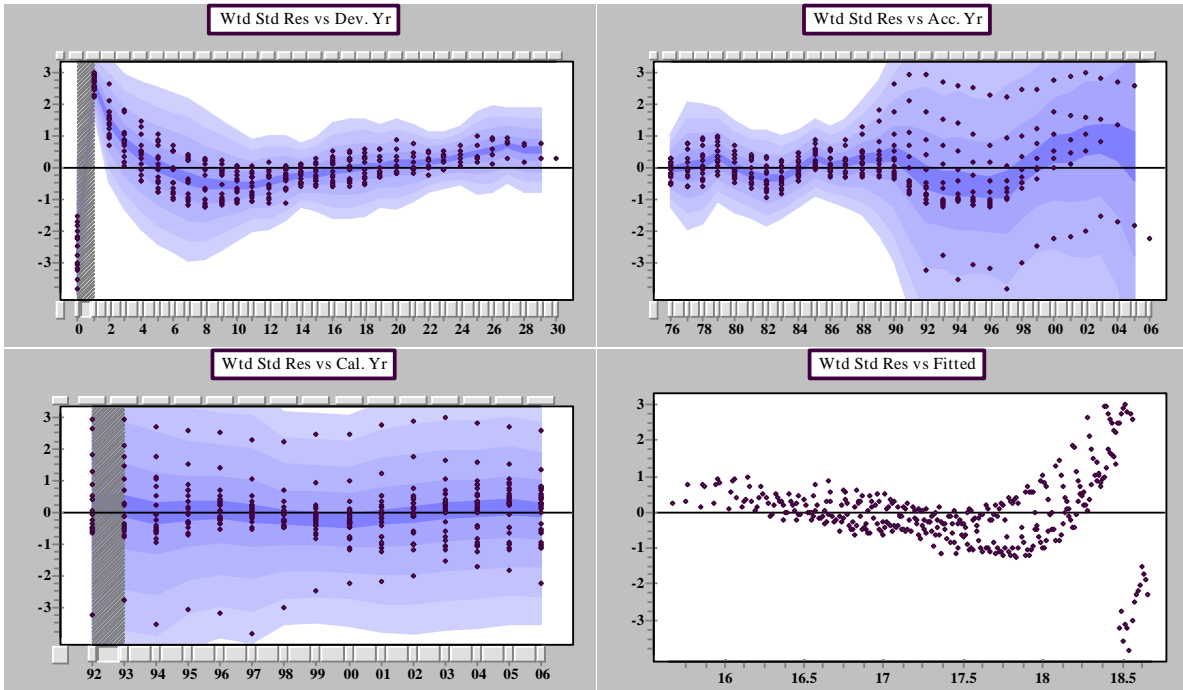
VI. Appendix – The ICRFS Model for PA

The purpose of this Appendix is to describe and display some of the steps used in building a probabilistic model around a paid loss data set with ICRFS. We have used the actual reserve model developed for the PA segment for illustrative purposes.

The initial default model used by ICRFS is a model with a single trend parameter in both the development year and calendar year directions. The initial model assumes that all accident years have the same average ultimate loss level. The default model is symbolized in ICRFS in the display below. The gray bars indicate the location of the parameters.

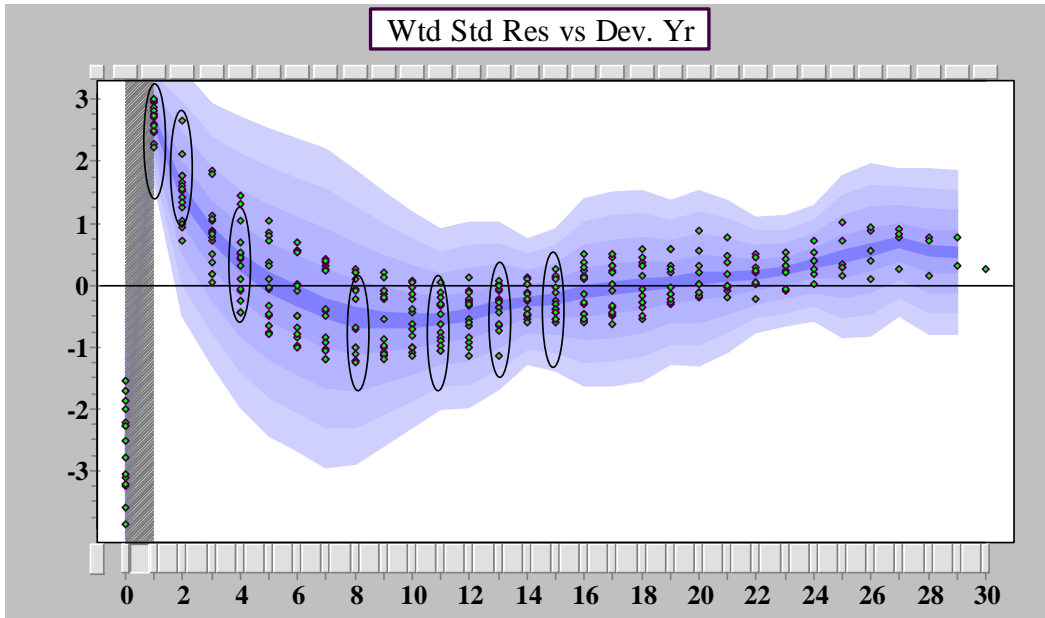


The resulting residuals under the default model are examined for changes in direction, or trends. Residuals are calculated as the difference between actual paid losses (per unit of exposure) minus the paid losses estimated by the model. The residual plots for the default model are shown on the next page.

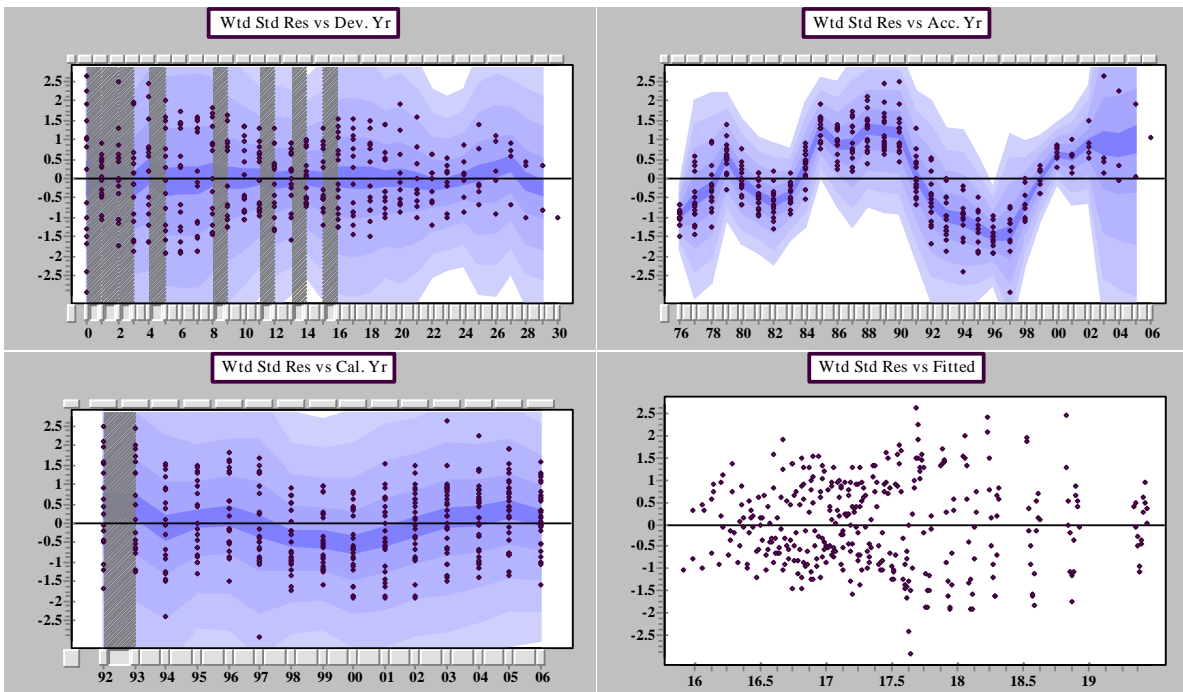


The goal in the modeling process is for the residuals to be randomly scattered around zero so that there are no remaining discernible trend or level changes. Obviously this goal is not accomplished with the default model.

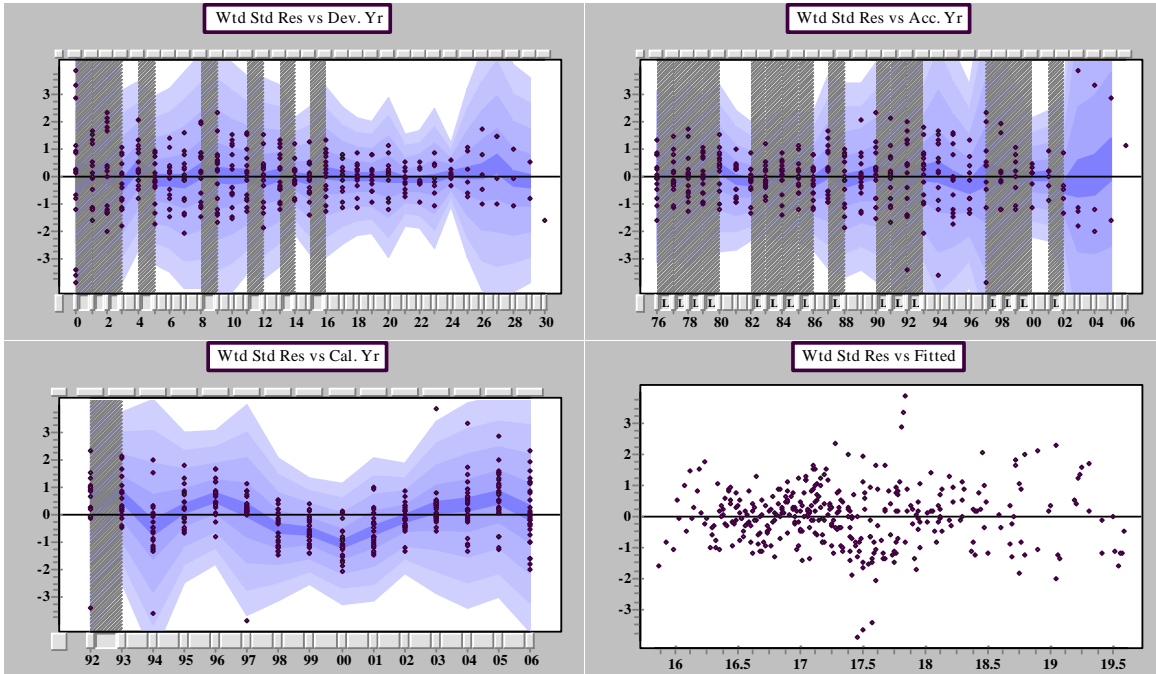
We therefore add parameters to the model based on where we see changes in direction of the residuals relative to the fitted single trend (or level for accident years). We focus on development period trend changes first and then add either accident year level changes or calendar year trend changes depending on which directions has the greatest change. The residuals in the development year direction under the default model are reproduced below.



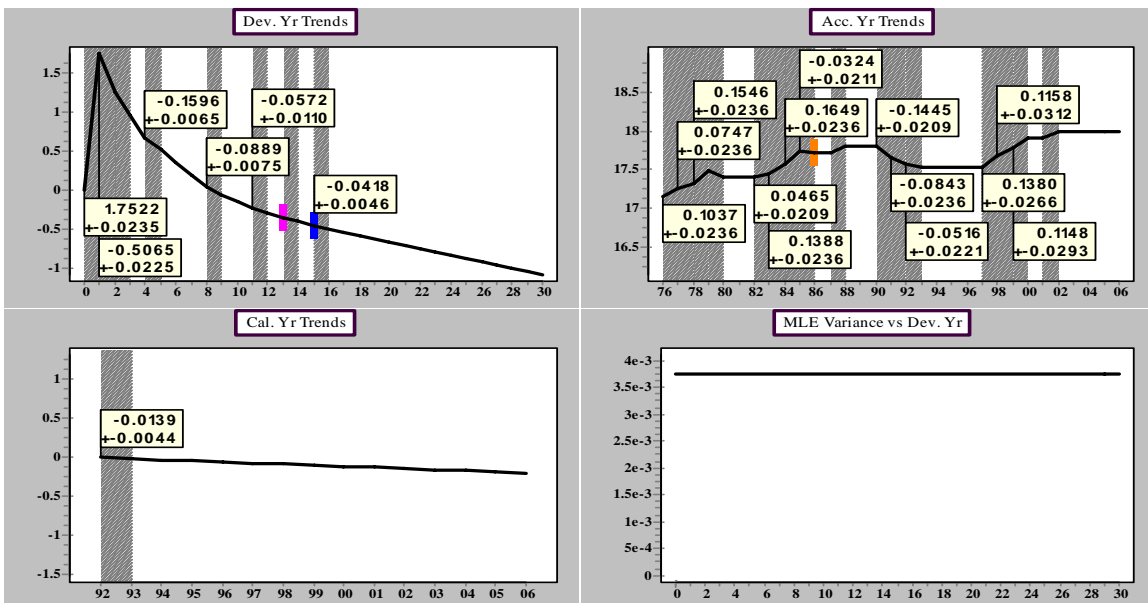
From this chart, using the central dark blue line, we can see that there is a change of direction in the residuals for the circled development years. After adding a few development parameters (the ones circled plus a few more), we end up with the following residual plot.



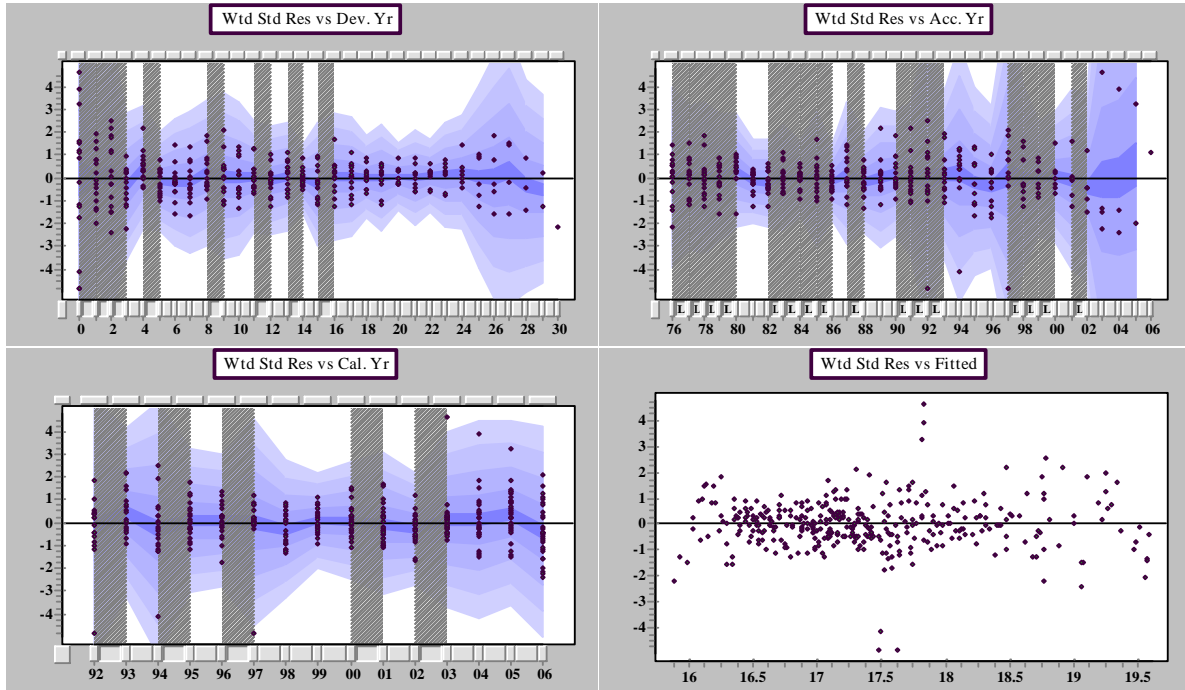
The structure in the development direction is now quite flat, however, we now observe significant level changes in the accident year direction. We therefore add parameters in the accident year direction to quantify the structure observed in the residuals. The next iteration of residuals appears in the chart below.



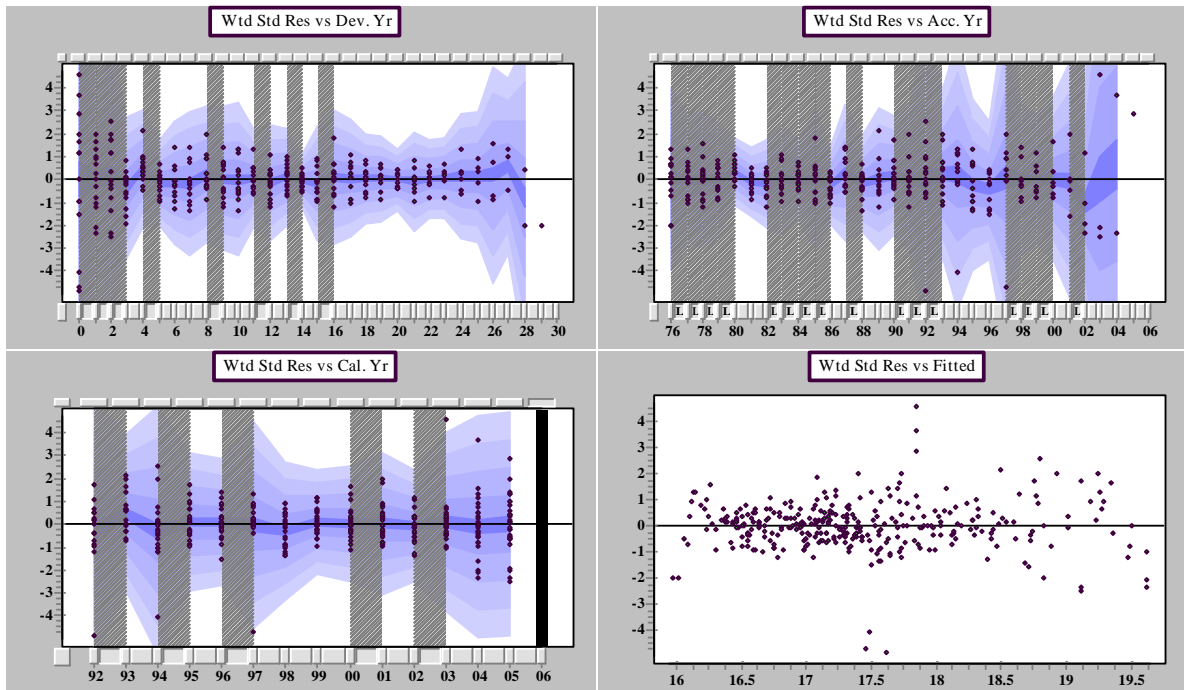
A depiction of model at this stage is displayed below.



After addressing the calendar year trend changes in a similar manner, the residuals appear as follows.



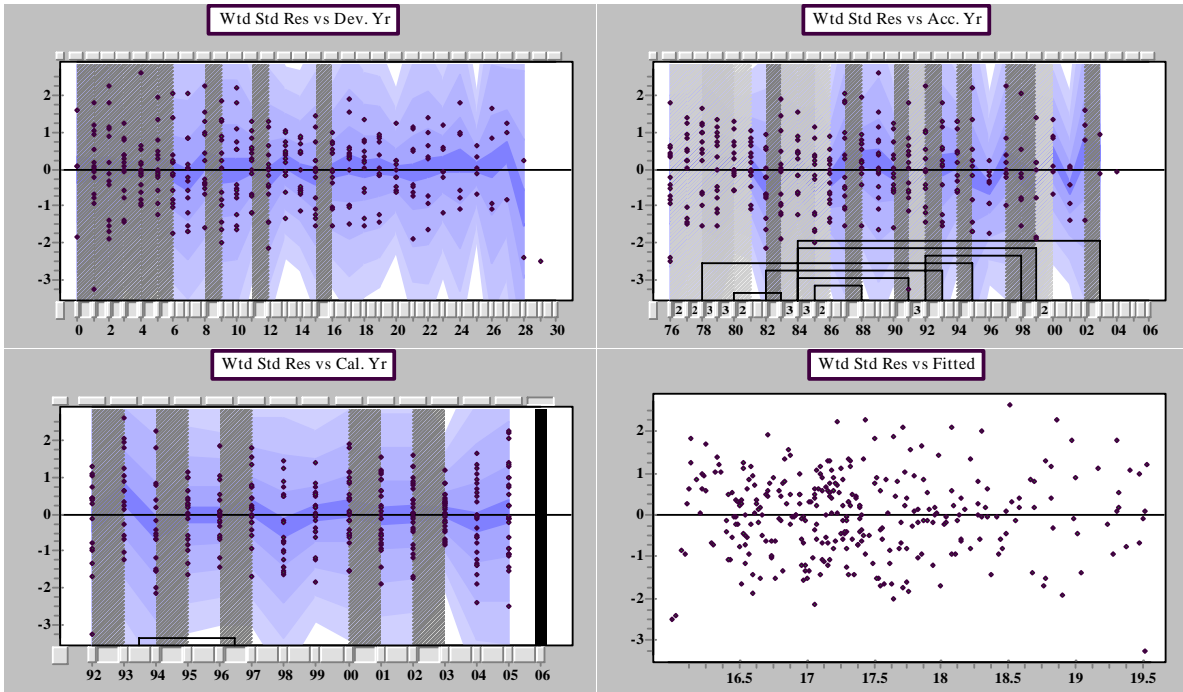
There appears to be a negative trend in the final calendar year. This makes sense given the fact the data used in our model is valued as of June 30, 2006 and therefore reflects only half of calendar year 2006 payments. As such, we exclude the calendar year 2006 data from our analysis. The residuals now appear as shown on the next page. The black bar indicates that calendar year 2006 data has been removed.



There are other adjustments that are now made in order to optimize the model. While the specific adjustments made are not detailed herein, a partial list would include:

1. Removal of outliers
2. Adjustment for heteroscedascity
3. Removal of insignificant parameters

After these adjustments are made, the residuals appear as shown on the next page. As shown, the residual patterns are now quite flat in all directions.



The final model display is as follows.

