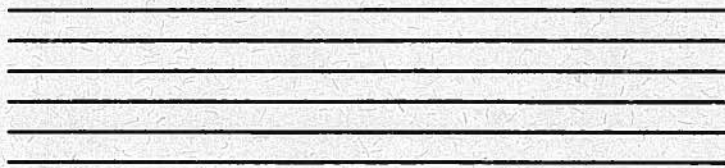


**Actuarial Audit Report**

**The Ohio State  
Highway Patrol Retirement  
Systems**



**June 2000**

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4600 Cox Road, Suite 400  
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**804 747 0275**

June 12, 2000

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The Ohio State Highway Patrol Retirement System  
6161 Busch Boulevard, Suite 119  
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**Subject: Actuarial Audit Report**

Dear Mr. Hutras and Mr. Curtis:

The enclosed report presents our findings and comments resulting from a detailed review of the following reports performed by Gabriel, Roeder, Smith, & Company:

- Actuarial Valuation as of December 31, 1998
- 5-Year Investigation of Decrement Experience, January 1, 1990 through December 31, 1994

This report includes a detailed discussion of all of the elements of our review. The major issues are categorized in one of three levels of significance:

- Level 1: Areas where changes will result in a financial impact on the actuarial findings;
- Level 2: Areas where we recommend changes based on our professional opinions or preferences; or
- Level 3: Areas which are not material, but where improvements could be made in the actuarial processes or reporting of the findings.

These issues, as well as our overall findings, are summarized in the Executive Summary. More detailed commentary on our review process and suggested considerations for refinements in actuarial procedures or presentations are included in subsequent sections of this report.

WILLIAM M.  
**MERCER**

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Mr. Aristotle Hutras  
Mr. Richard A. Curtis  
June 12, 2000  
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We wish to express our appreciation for the cooperation provided to us by the consultants from the Gabriel, Roeder, Smith & Company, as well as both of you and your staffs.

Sincerely,



Stephen T. McElhaney, FSA

Enclosure

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## Executive Summary

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### Purpose and Scope of the Actuarial Audit Review

William M. Mercer, Incorporated was engaged by the Ohio Retirement Study Council (ORSC) to conduct an actuarial audit of the following reports which were prepared by Gabriel, Roeder, Smith & Company (GRS), consulting actuary to the Ohio State Highway Patrol Retirement System (HPRS):

- Annual Actuarial Valuation as of December 31, 1998 including:
  - Valuation of Retirement, Survivor, and Disability Allowances
  - Valuation of Post-retirement Health Care and Medicare Reimbursement
- 5-Year Actuarial Investigation of Decrement Experience, January 1, 1990 through December 31, 1994.

The primary purpose of the audit was to perform an independent verification and analysis of the assumptions, procedures, and methods used by GRS in preparing these reports.

### Statement of Key Findings

*Based upon a thorough review of (a) the Valuation of Retirement and Disability Allowances and (b) the 5-Year Actuarial Investigation of Decrement Experience, we are pleased to report that we found the work to be reasonable and performed in accordance with generally accepted actuarial principles and practices. We found that the actuarial methods and assumptions are reasonable and appropriate and that the work was performed by fully qualified actuaries. However our review of the Valuation of Post-retirement Health Care and Medicare Reimbursement includes exceptions to the methodology in the selection of certain actuarial assumptions which we consider to be of a material nature.*

It is important to understand that in selecting and recommending actuarial methods and assumptions, there is a great deal of professional judgment involved. In making the above statement, we have not attempted to substitute our judgment for that of the consulting actuary to the Fund. However, even where we conclude that methods and assumptions are reasonable, we have identified a number of areas where HRPS and its consulting actuary should undertake further investigation or study. The major issues are categorized in one of three levels of significance to the overall funding status of HRPS.

- Level 1: Areas where changes will result in a financial impact on the actuarial findings.
- Level 2: Areas where we recommend changes based on our professional opinions or preferences.

Level 3: Areas which are not material but where improvements could be made in the actuarial processes or reporting of the findings.

#### **Level 1 – Areas of Potential Financial Impact:**

Claim cost projections: This area is our most major exception to the actuarial valuation results. We do not agree with the current methodology of projecting claim costs for the health care valuation. Our report includes a number of recommendations for change. These changes could result in different conclusions with regard to the long-term solvency of the fund. For example, if these changes resulted in higher long term claims costs, this would result in greater funding requirements or lower plan benefits than are currently anticipated.

Inflation assumptions: The valuation includes an overall inflation assumption of 5%, which we consider to be an overstatement. Lowering this rate would most likely *decrease* the unfunded actuarial accrued liability and normal cost by decreasing assumed future salary growth.

Mortality after age and service retirement: Our review of the experience indicates that these rates may be overstated. In other words, fewer retirees are dying than would be expected from the current tables. Changing the mortality to more closely match plan experience would result in an *increase* in the unfunded actuarial accrued liability and in the normal cost.

#### **Level 2 – Areas of Professional Opinion or Preference**

Rates of Disability: The plan provides a different disability benefit for on-duty and off-duty disabilities. In the HRPS valuation, all future disabilities are assumed to be on-duty. While this approach is conservative, our preference would be for a separate off-duty disability assumption.

#### **Level 3 – Areas of Potential Improvement in Actuarial Reporting**

Summary of Actuarial Method and Assumptions: This Summary in the valuation report does not include all of the assumptions used. For Actuarial methods, the descriptions are incomplete, although in some instances the descriptions appear elsewhere in the valuation report. We recommend that this Summary include all actuarial assumptions used in the valuation and complete descriptions of actuarial methods.

Recommended new tables in experience study: The experience investigation does not include commentary justifying the reasons for each of the recommended new actuarial

tables. Such commentary would be helpful in assessing the reasonableness of the recommendations.

## **Review of the December 31, 1998 Actuarial Valuation for Retirement, Survivor and Disability Allowances**

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Our review of the December 31, 1998 actuarial valuation for retirement, survivor and disability allowances included the following areas:

- Verification of data used for the valuation
- Review of funding methodology
- Review of actuarial assumptions
- Checking the computation of valuation asset value
- Checking test cases to determine whether plan provisions and assumptions were programmed properly
- Recreate the actual results of the actuarial valuation
- Review of report for conformance with actuarial standards of practice

### **Verification of data used for the valuation**

Mercer requested and received the data file that HPRS provided to GRS for the 1998 valuation, as well as GRS's actual valuation database. All of the data from the HPRS file matched the valuation data file except for salary information for three active members. However, for these individuals, HPRS provided Mercer with different salary data than had originally been provided to GRS for the valuation. GRS actually used the information as provided. In any event the differences are small and would have a very immaterial effect on valuation results.

We have therefore concluded that the membership data as used by GRS for the Actuarial Valuation was reasonable and appropriate.

### **Review of funding methodology**

The valuation defines an actuarial cost method and a valuation asset method.

Actuarial Cost Method: The Entry Age Normal Actuarial Cost Method is used. This method is the most common cost method used by public sector retirement plans. The 1996 *Study of Public Employees Retirement Systems* published by the Society of Actuaries showed that 79% of plans covering public safety workers used entry age normal. Another 7% used a variation of the method known as the frozen initial liability method.



The number of total members is overstated slightly since rehired retirees are counted within both the active and retiree groups. However, this does not affect the plan liabilities.

There is no description of the method in the Summary of Valuation Methods and Assumptions, other than stating its name. *Although a more complete description exists in Section A of the report, we would recommend that this description also be shown in the Summary.*

Valuation asset method: The actuarial asset method phases in differences between actual and assumed rates of return over a four year period. This method is very commonly used and is one of the methods for which the IRS provides automatic approval for private sector retirement plans. Smoothing methods are also very common among public sector retirement plans. The 1996 Society of Actuaries study indicated that 71% use a method that smoothes market value fluctuations, and over three-fourth of these used a smoothing period of more than three years.

Using a smoothing method mitigates the effect of short-term changes (market fluctuations) in the fair market value of plan assets to reduce the volatility of annual funding contribution requirements, thus making it easier to budget contributions and expense. We believe that the method is reasonable and appropriate for purposes of the actuarial valuation.

There is no description of the method in the Summary of Valuation Methods and Assumptions. *Although a description appears in Section D of the report under the calculation of the asset value, we would recommend that this description also be shown in the Summary.*

### **Review of actuarial assumptions**

Our comments on the following specific **demographic actuarial assumptions** are addressed in the section on the Review of the 5-year Actuarial Investigation of Decrement Experience:

- Withdrawal rates
- Mortality rates
- Retirement rates
- Disability rates
- Merit & longevity component of pay increases

The following demographic actuarial assumptions used by GRS are not listed in the summary of actuarial assumptions in the report:

Percentage of members assumed to be married: For purposes of the valuation, it is assumed that 100% of all members are married. This assumption is conservative and using a lower percentage would not have a material effect on valuation results. Nevertheless, if actual data is available we recommend adopting an assumption based upon such data. It is also assumed that male spouses are three years older than female spouses (except for vested terminations where it is assumed that all former members are three years older than their spouses). This latter assumption appears to be reasonable.

Number and ages of dependent children assumed: It is assumed that each active member has two children with the children's benefits payable for approximately 10 years. This assumption appears reasonable.

Load for purchase of military service: Normal cost is increased by .60% for purchase of military service. No experience or analysis was provided for us to determine whether this assumption is reasonable.

*We recommend that the above three assumptions be included within the summary for future actuarial valuations.*

The **economic actuarial assumptions** include the following:

- Assumed interest rate
- Salary increase rate
- Inflation rate

Interest rate: The assumed interest rate is 7.75%. The rate is described in the report as the combination of an inflation rate of 5.0% and a real rate of return of 2.75%. The rate was last evaluated for the December 31, 1994 valuation based upon an economic experience study prepared in February 1995. The interest rate was evaluated within this economic experience study in several different contexts:

- Comparison to other economic assumptions
- Comparison to market indices
- Comparison to other retirement systems (nationwide and in Ohio)
- Effects on valuation results

It is generally agreed that the most important determinant of investment returns for a retirement fund is asset allocation. However, the analysis did not include any discussion of asset allocation as a part of selecting the interest rate assumption. The current investment policy established by the Trustees as shown on page 36 of the December 31, 1998 Comprehensive Annual Financial Report is as follows:

Domestic Equity	55%
International Equity	10%
Fixed Income	25%
Real Estate	10%

In order to assess the reasonableness of the interest rate assumption, we have used an investment model developed by Mercer Investment Consulting with the asset allocation shown above. Using this model, we have determined that there is greater than a 60% probability of attaining a return of 7.75% after expenses over the long term. We therefore conclude that the assumed rate of return of 7.75% is reasonable for purposes of the actuarial valuation, although somewhat on the conservative side. *We recommend that the asset allocation of the fund be considered at the next time HPRS and its actuary evaluate a change in the interest rate assumption.*

We also evaluated the interest rate using a technique known as “building block” approach. Under this approach, the interest rate is determined as the sum of an assumed long-term inflation rate plus a long-term real rate of return. The inflation rate is usually determined by estimating the long-term growth in the Consumer Price Index (CPI). Using this model under the current economic and investment environment, we would expect to derive an inflation rate in the range of 2.5% to 3.5% and a real rate of return in the range of 4.5% to 5.5%. Adding the mid-points of each of these ranges gives us a result of 8.0%, very close to the assumed rate of 7.75%, further validating our conclusion that the assumed interest rate is reasonable. However, it should be noted that GRS indicates that the inflation rate is 5.0% and the real rate of return is 2.75%. We believe that this split overstates inflation and understates the real rate of return.

Salary increase: The salary increase assumption is a combination of the inflation assumption and the merit and longevity portion of pay increases. As indicated above, we believe that the inflation assumption of 5.0% overstates reasonable expectations of future inflation. In addition we have some concern about the merit and longevity portion of the overall salary increase assumption (see comments regarding this portion in the section of this report on the 5-Year Actuarial Investigation of Decrement Experience). This assumption will require further analysis at the time of the next experience investigation. Nevertheless, the overall salary assumption seems reasonable compared to other similar retirement systems.

Inflation assumption: As discussed above, we believe that the inflation rate of 5% overstates reasonable expectations of inflation. In addition to its impact on interest rate and salary increase, the assumption is also used to determine the level of future cost-of-living increases for retirees. However, since these increases are limited to the first 3% of CPI increase, any assumed rate in excess of 3% has no effect on valuation results.

*The inflation assumption is not specifically stated with the Summary of Valuation Method and Assumptions. We would recommend that there be specific mention of it in this Summary.*

### **Checking the computation of valuation asset value**

We were provided by HPRS with the source information that was used in the computation of valuation asset value. We were able to reproduce the value as used within the 1998 actuarial valuation. We have concluded that the value was computed accurately based upon the description of the method as it appears within the actuarial valuation report.

### **Checking test cases to determine whether plan provisions and assumptions were programmed properly**

We requested from HPRS copies of eleven actual benefit calculations that occurred during the first several months following the date of the actuarial valuation. We then requested test cases from GRS for these same eleven members. We would normally expect to see the benefit in the test case for the first year nearly identical to the actual benefit calculation. We found this to be true in our comparison of the test cases to the actual benefit calculations with the following exceptions.

- Off-duty disability: Two of the test cases were off-duty disabilities. Since GRS assumes that all disability retirements are on-duty, the test cases did not match the actual retirement calculation.
- Vested-termination: One of the test cases was for a vested-termination with less than 20 years of service. GRS assumes that all terminations with less than 20 years of service receive a return of contributions rather than a vested benefit. Therefore, a vested benefit had not been computed within the test case.

We requested from GRS nine test cases of inactive plan members with a wide range of benefit types and ten test cases of active plan members selected from among various age and service combinations. These test cases are carefully selected to check all of the plan provisions rather than being selected randomly. Many of the test cases involve situations that occur very infrequently.

For the inactive life test cases, we reviewed benefit amounts as well as the calculations of actuarial liabilities. We found the calculations accurate.

For the test cases of active plan members, our review included checking closely the projected benefits for each member (known as "benefit arrays") as well as reviewing the actuarial present values computed from such benefit arrays. From this review we found no issues to report.

### Recreate the actual results of the actuarial valuation

We have independently calculated the actual results of the December 31, 1998 actuarial valuation using the same actuarial methods and assumptions as used by GRS in their report. The results are shown below, with a comparison to the original results obtained by GRS.

For our calculation of the actuarial accrued liability, we obtained a value almost identical to GRS as shown in the table below:

(all figures in thousands)

	GRS	Mercer	Ratio
Actuarial Accrued Liability			
Active	\$241,890	\$239,146	98.9%
Vested Terminations	1,285	1,303	101.4%
Retirees & Beneficiaries	289,781	289,601	99.9%
Total	\$532,957	\$530,050	99.5%

For our calculation of normal cost we again obtained a value almost identical to GRS:

	GRS	Mercer	Ratio
Total Normal Cost Percent	24.96%	24.92%	99.8%

Since all of the major actuarial firms have developed their actuarial valuation systems independently of each other, there are certain inherent differences in calculation procedures. The standard usually used is based upon a 5% corridor. Since our results for normal cost and actuarial accrued liability are well within 5% of the results obtained by GRS, we conclude that the valuation calculation results of GRS are reasonable and accurate. This conclusion is supported by our favorable review of test cases.

### Review of report for conformance with actuarial standards of practice

The communication of actuarial valuation results for pension plans is covered in the Actuarial Standards Board (ASB) Standard of Practice No. 4, *Measuring Pension Obligations*. Generally, sufficient information should be presented such that:

- it would be properly interpreted and applied by the persons or persons to whom the communication is directed, and
- another actuary in pension practice could form an opinion about the reasonableness of the conclusion.

Standard of Practice No. 4 also indicates specific requirements for content of actuarial reports including:

- The name of the person or firm retaining the actuary and the purpose
- An outline of the benefits being valued
- The effective date of the calculation
- A summary of participant data
- A summary of asset information
- A description of the actuarial methods and assumptions
- A statement of the findings, conclusions or recommendations necessary to satisfy the purpose of the communication

We have reviewed the 1998 valuation report as well as the valuation reports for several prior years to determine compliance with professional standards. Our conclusion is that the actuarial valuation reports prepared by GRS generally conform to these standards. *However, we would prefer a more complete description of actuarial methods and assumptions, as we have indicated in other sections of this audit report.*

## **Review of the 5-Year Actuarial Investigation of Decrement Experience**

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The most recent 5-year actuarial investigation of decrement experience covered the period from January 1, 1990 to December 31, 1994. The report prepared by Gabriel, Roeder, Smith & Company analyzes the decrement experience of the Fund during this period and makes recommendations with regard to modifications in actuarial assumptions. An actuarial experience study is an extremely important part of an actuary's professional responsibility to a pension system.

Our review of this study asked the following questions:

- Was the study conducted in accordance with generally accepted actuarial principles and practices?
- Did the report cover all material actuarial assumptions and fully measure the experience under such assumptions?
- Are the conclusions supported by the results?

### **Was the study conducted in accordance with generally accepted actuarial principles and practices?**

We would have preferred additional commentary in the report supporting the recommendations made for new assumptions. In other words, why are the "new rates" being recommended, versus a different set of rates? Since the new rates shown in the study generally do not fully reflect the experience measured, some justification should be offered to support the choice of table. Also, it would be helpful if the mortality analysis disclosed the mortality table being used in addition to the mortality rates. However, the results are presented clearly and show compliance with generally accepted actuarial principles and practices.

### **Did the report cover all material actuarial assumptions and fully measure the experience under such assumptions?**

All material actuarial assumptions were covered by the study. We have identified several areas where it might have been helpful to analyze the experience in more detail:

**Salary increase:** The experience investigation included a table detailing the merit and longevity component of the pay increase assumption. The analysis would have been more complete if it had also shown the total pay increase experience and then subtracted the portion due to inflation during the period. The assumption in effect during the period studied was age-related, but the analysis focused on a service related table only, making it difficult to determine the effect of the change in assumptions.

Reviewing the results shown in the study, we do not understand why the current assumptions for pay increase were adopted. The pay increase assumption recommended as the new assumption is greater than shown in the experience at all periods of service except after one year, and is usually more than 1% in excess of the actual experience. While this could be due to conservatism or expectation of changes yet to occur, the study should have included justification of the recommendation.

Mortality after disability retirement: The recommended table is reasonable based upon the experience as measured for the study. This table is the same as the table for mortality after age and service retirement, except that ages are advanced 10 years to reflect higher mortality of disability retirees, however this is not indicated as such in the Summary of Actuarial Method and Assumptions. *We recommend that the assumption be described as such in the Summary.*

Rates of disability: The plan provides different levels of disability benefits depending upon whether the disability occurred on-duty or off-duty. Neither the experience study nor the assumptions differentiate between on-duty or off-duty. GRS is valuing all disability benefits as though they are on-duty. Such treatment would be conservative since on-duty disability benefits are greater than off-duty disability benefits. *However, we recommend that these benefits be valued separately and that separate assumptions be developed at the next experience study. Also, if GRS is assuming that all disabilities are on-duty, then this should be stated as such in the Summary of Actuarial Method and Assumptions.*

#### **Are the conclusions supported by the results?**

Overall, the conclusions and recommendations provided by GRS were supported by the results of the experience study. The following are areas where we view the results differently and might have reached different conclusions:

Mortality after age and service retirement: Prior to the experience investigation, the assumed mortality table was the 1971 Group Annuity Mortality Table Male and Female Tables, projected to 1984. After this investigation the same table was used except that each rate in the table was reduced by multiplying by 95% in order to recognize mortality improvement. It would appear from the experience that the change does not go far enough. There were only 33 deaths of age and service retirees during the experience period, whereas 57 would have been expected under the new assumptions. On the other hand, the number of retirees covered by the plan is probably not large enough to produce fully credible results.

An alternative table that is widely used by actuaries is the Group Annuity Table of 1983 (GA83). Adopting this table would reflect additional improvements in mortality beyond the change made to the mortality assumption after the 1990-94 experience investigation. Using this table would have reduced the number of expected deaths to approximately 50.



There is even a case to be made for using lower mortality rates than the GA83 Table. For example, it has been expressed by HPRS that their group of retirees is healthier compared to other retirees as evidenced by low claim rates on retiree medical insurance. While the assumption is described as "on watch" we believe that GRS should have addressed this assumption more aggressively at the last review since there may be a risk that actuarial liabilities are being understated relative to post-retirement mortality. For example, if the GA83 Table were used, plan liabilities would be increased by 2% and even this table does not fully reflect the System's experience.

Withdrawal Rates: Under the assumptions used prior to 1994, 171 withdrawals would have been expected during the period of the experience investigation. Only 54 occurred. Lower withdrawal rates were adopted; however, even under these rates 87 withdrawals would have occurred which is over 60% more than the actual experience. If this experience continues, using this assumption will have the effect of understating plan liabilities. Nevertheless, we believe that the rates adopted were reasonable given the possible volatility of the decrement over any given time period.

## **Review of the December 31, 1998 Actuarial Valuation for Post-retirement Health Care and Medicare Reimbursement**

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The December 31, 1998 Actuarial Valuation of the Post-retirement Health Care and Medicare Reimbursement is presented as a section within the actuarial valuation report. The purpose of the valuation is to determine whether the contribution rate being allocated to these benefits will be able to support payment of benefits over the long term. The results are presented as a projection of contributions, benefits and fund balances over periods ranging from 50 to 100 years.

Three different assumptions are used for the projections (the descriptions of each are as provided by GRS within the valuation report):

Alternate A (Valuation): This assumption assumes that benefits will be periodically adjusted so that the employer share of per capita costs will increase no faster than 5% per year.

Alternate B (Pessimistic): This scenario views the recent declines in health care trends as just a temporary relief from the levels of the 1980's and early 1990's.

Alternate C (Intermediate): In the middle of the range of probable conditions is the view that short-term health trends will rise somewhat over the next few years before declining to the level of overall GPD growth.

Our review included the following:

- Review of the actuarial assumptions used in the forecast.
- Review of the report exhibits for consistency and conformance with generally accepted actuarial principles and practices.
- Review of conclusions and recommendations.

### **Review of the actuarial assumptions used in the forecast**

Many of the actuarial assumptions for the forecast are the same as those in the actuarial valuation. Our comments on these appear elsewhere in this report. The following are our comments on certain of the assumptions used specifically for the forecast:

Claims cost aging: Claim cost aging refers to the expected increase in claims that is solely attributable to an individual's age. Simply stated, we expect people to incur greater claims as they get older. Generally accepted actuarial standards, therefore, recognize a claim cost aging factor as a key variable in performing long-term healthcare projections.

The December 31, 1998 Actuarial Valuation of the Post-retirement Health Care and Medicare Reimbursement report did not indicate claims cost aging factors were used as a variable in the projection. Ignoring aging factors assumes that the demographics of the retired population will remain the same over the long term. This is usually not a reasonable assumption given that the general population is aging. Note that the claim cost arguments below would lead one to believe that even higher than normal aging factors would be appropriate for HPRS.

*We feel that if claim cost aging factors were included in the valuation the forecasted values would likely be materially different.*

**Claims rates:** The actuarial valuation uses separate claim cost assumptions for pre-Medicare and post-Medicare eligible individuals. This is an important distinction because the cost of coverage post-Medicare is significantly lower. It is important because the amount of years we expect an individual to be retired post-Medicare is greater than their pre-Medicare retirement years.

Both the pre-Medicare and the post-Medicare claim rates used in the valuation fall well below what we would generally consider reasonable for a retiree population. However, the claim rates do reproduce the current level of claims when applied to the current group of retirees. The reasons provided to us during our review for the low claim rate included:

- The physical requirements for a highway patrolman during active employment are such that after retirement, the group is healthier than a typical retiree group.
- Many retirees have other health coverage and the coverage through HPRS is secondary to this.

The first bullet point would indicate that retiree claims at early retirement ages would be slightly lower than a normative population. The reasons for the slight impact are because we would not expect spouses of highway patrolmen to be healthier than an average population, and the impact of the health status while active will wear off with age.

The second bullet point could result in a very significant reduction in claim costs. This item is easily verifiable by looking at the amount of coordination of benefits (COB) claims that were credited to the trust (this is a standard item in claim reports). We would expect the percentage of highway patrolmen who get other jobs with health coverage to decrease rapidly with age, being near zero once age 65 is obtained. Again, this emphasizes the importance of claims cost aging factors.

Combined, the two bullet points indicate that the pre-Medicare cost could deviate significantly from a normative population, but the post-Medicare cost should be much closer to a normative population.

For purposes of the valuation, the HPRS rates are derived from the HPRS claim history, which they appear to support in the aggregate, but are split into pre and post-Medicare rates by using ratios from the Ohio Public Employees Retirement System (PERS). The

PERS rates are consistent with what we would normally expect for a retiree population and are significantly higher than the HPRS rates. The claim level difference between HPRS and PERS and the two bullet points above indicate that the HPRS and the PERS have very different characteristics. We, therefore, feel that using the ratios of pre and post-Medicare rates from PERS will result in long-term claim rates and claim amounts that are not consistent with the underlying characteristics of HPRS retirees. Claim rates should be derived from a more thorough examination of the HPRS claim experience. At the very least, such examination should include having the carrier separate the claim experience between pre and post-Medicare claims. *We believe that this change could have a material impact on the forecast.*

Medical trend assumptions: The trend assumptions shown on page B-5 of the report are not unreasonable, but the near-term intermediate trends are lower than what we would consider to be “best estimate” even though GRS did increase these trend rates somewhat from the 1997 valuation. Further it is difficult to justify having the same trends for pre- and post-Medicare coverages given the drastic differences between the two. For example, prescription drugs have been trending upwards of 20% annually and constitute 50% to 75% of a typical Medicare carve-out plan versus 10% to 20% of a pre-Medicare retiree plan.

Payroll Growth: In order to project payroll for the forecasts, GRS is using the same assumption (5% per year) as for the retirement valuation. Over the near-term, payroll increases in the forecasts, average 5.6% over the next 10 years. In contrast, payroll increases over the last five and last ten years were only about 3.5%. If such payroll experience continues and if medical trends meet or exceed GRS assumptions, then the projected fund balances over the next 10 years will be lower than shown.

#### **Review of the report exhibits for consistency and conformance with generally accepted actuarial principles and practices**

Our review of report exhibits identified the following items for comment:

- The projections of contributions and claims require assumptions for new entrants into the system. In fact this is a very critical assumption since it affects the base level of compensation upon which the contributions are derived. GRS used such an assumption but it is not identified within the report. We recommend that the specifics of this assumption be added to the report.
- The claims projections for Alternate B and Alternate C are not consistent with Alternate A. If we assume that Alternate A is correct, then the claims for B and C would appear to be about 10% and 5% understated during the first 10 years. As the projections go further out, the claims for B and C would appear to be somewhat overstated relative to Alternate A.

## **Review of conclusions and recommendations**

The following conclusions were reached based upon the results shown in the various cash flow projections:

- For Alternate A (valuation) assumptions, contributions fall short of benefits, but the fund remains solvent indefinitely.
- For Alternate B (pessimistic) assumptions, the employer rate will need to be raised prior to 2044 to maintain solvency of the fund.
- For Alternate C (intermediate) assumptions, the employer rate will need to be raised prior to 2065 to maintain the solvency of the fund.

These conclusions are consistent with the cash flow projections shown in the valuation. However these conclusions are wholly dependent upon the assumptions used. Different conclusions will likely result if changes in claim cost aging, claim rates and medical trend were adopted, as we had recommended earlier in this section. *We recommend that GRS begin using such methodology in the valuation of the health care benefits in order that conclusions with regard to long-term solvency of the fund have a greater degree of credibility.*