Teachers' Retirement System
of Oklahoma

ACTUARIAL VALUATION
June 30, 2005

GABRIEL, ROEDER, SMITH & COMPANY
Consultants & Actuaries

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October 26, 2005

Board of Trustees
Teachers' Retirement System of Oklahoma
Oliver Hodge Education Building
2500 N. Lincoln Boulevard, 5th Floor
Oklahoma City, Oklahoma 73105

Dear Members of the Board:

Subject: Actuarial Valuation as of June 30, 2005

We certify that the information contained in this report is accurate and fairly presents the actuarial position of the Teachers' Retirement System of Oklahoma (the System) as of June 30, 2005.

All calculations have been made in conformity with generally accepted actuarial principles and practices, and with the Actuarial Standards of Practice issued by the Actuarial Standards Board. In our opinion, the results presented comply with the requirements of the Oklahoma statutes and, where applicable, the Internal Revenue Code, ERISA, and the Statements of the Governmental Accounting Standards Board. The undersigned are independent actuaries. They are Enrolled Actuaries and Members of the American Academy of Actuaries, and they are experienced in performing valuations for large public retirement systems. They meet the Qualification Standards of the American Academy of Actuaries.

Actuarial Valuation

The primary purposes of the valuation report are to determine the adequacy of the current employer contribution rate, to describe the current financial condition of the System, and to analyze changes in the System's condition. In addition, the report provides information required by the System in connection with Governmental Accounting Standards Board Statement No. 25 (GASB 25), and it provides various summaries of the data.

Valuations are prepared annually, as of June 30 of each year, the last day of the System's plan and fiscal year.

Financing Objectives

The member, state, federal and local employer contribution rates are established by law. Members contribute 7.00% of covered compensation. The state contributes 4.00% of its revenues from sales taxes, use taxes, corporate income taxes, and individual income taxes. Local employers contribute 7.05% of covered compensation. Additionally, OTRS receives "federal matching contributions" for positions whose funding comes from federal sources or certain grants. The federal matching contribution rate for FY 2006 is 5.0%.

In the fiscal year ending June 30, 2005, the state's contribution plus the federal contribution was equivalent to a contribution of 5.51% of covered payroll. Combined with the 7.05% employer contribution rate, the employing entities contributed 12.56% of covered payroll for FY 2005. However, the state's contribution rate as a percent of the specified revenues is scheduled to increase from 3.75% in FY 2005 to 4.00% in FY 2006, 4.50% in FY 2007, and 5.00% in FY 2008. Federal contributions should also increase in the same pattern. This should raise the state and federal contributions to 7.67% of covered payroll by the end of the transition period, and should result in a total employer contribution of about 14.72% of covered payroll by FY 2008.

The state, local and federal contributions, when combined with the contributions made by members, are intended to pay for the normal cost and to amortize the unfunded actuarial accrued liability (UAAL).

Progress Toward Realization of Financing Objectives

The UAAL at June 30, 2004 was $7,419 million, and it decreased to $7,100 million this year. The funded ratio - actuarial value of assets divided by actuarial accrued liability – increased from 47.3% to 49.5%.

Last year, the period required to completely amortize the UAAL (the funding period) based on the contribution schedule in effect at that time was infinite, measured from June 30, 2004. This year, the funding period is 42.6 years. The decrease in the funding period and the increase in the funded ratio are primarily due to the impact of the new actuarial assumptions adopted as a result of the experience study conducted in 2005 and approved by the board in August, 2005.

Based on the current statutes for determining the state, federal and employer contribution rates, the UAAL is expected to increase until FY 2030 after which it will become completely amortized in FY 2048.

Deferred Asset Losses/Gains

All of the figures above (the UAAL, the funded ratio, and the funding period) are based on actuarial calculations that make use of the actuarial value of assets, not the market value. The actuarial value of assets is based on the market value, but asset gains and losses – earnings greater or less than the 8.00% investment return assumption – are recognized at a rate of 20% per year for five years. The current actuarial value, $6,953 million, is $285 million smaller than the market value of $7,238 million. The actuarial value is now 4% below the market value. The funded ratio determined using the market value rather than the actuarial value is 51.5%.

Benefit Provisions

The actuarial valuation reflects the benefit provisions as set forth in current statutes, including those adopted in the 2005 legislative session. There were no changes affecting the current valuation since the prior valuation.

Assumptions and Methods

Assumptions are set by the Board of Trustees, taking into account the recommendations of the plan's actuaries. The actuarial assumptions and methods used in this report are changed from last year. The Board adopted a new set of assumptions based on the experience study conducted by the actuary in 2005. This included a revised set of retirement incidence, disability incidence, withdrawal incidence and salary increase tables. Also, the post-retirement morality tables and the disabled post-retirement mortality tables for males were modified. All actuarial assumptions are internally consistent and are reasonably based on the actual experience of the System. Similarly, the computation of the GASB No. 25 contribution amount was changed from a 40-year, level dollar contribution amount to a 30-year, level percent of pay contribution amount.

We believe the assumptions are internally consistent and are reasonable, based on the actual experience of the plan

The results of the actuarial valuation are dependant on the actuarial assumptions used. Actual results can and almost certainly will differ, as actual experience deviates from the assumptions. Even seemingly minor changes in the assumptions can materially change the liabilities, calculated contribution rates and funding periods. The actuarial calculations are intended to provide information for rational decision making.

The Retirement Board is required to submit actuarial information about the System to the Oklahoma State Pension Commission. The required information is based on a prescribed set of actuarial assumptions which is different from the assumption set used in preparing the actuarial valuation. This information appears as an addendum to this report in Appendix IV.

Data

Member data for retired, active, and inactive participants was supplied as of June 30, 2005 by the System's staff. We have not subjected this data to any auditing procedures, but have examined the data for reasonableness and consistency with the prior year's data. Asset information was supplied by the auditors and by the System's staff.

We thank both the staff and the auditors for their assistance.

Sincerely,

Gabriel, Roeder, Smith & Company

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APPENDICES

Executive Summary

Item	2005	2004
Membership		
• Number of		
- Active members	84,286	81,683
- Retirees and beneficiaries	40,879	39,593
- Inactive, vested	6,008	5,731
- Inactive, nonvested	7,072	7,536
- Total	138,245	134,543
• Payroll	$ 3,175 million	$ 3,031 million
Statutory contribution rates		
• State (% of tax revenues)	4.00%	3.75%
• Local district (% of pay)	7.05%	7.05%
• Member (% of pay)	7.00%	7.00%
Assets		
• Market value	$ 7,238 million	$ 6,666 million
• Actuarial value	$ 6,953 million	$ 6,661 million
• Return on market value	10.0%	20.2%
• Return on actuarial value	5.7%	4.6%
• State/local/federal contributions	$ 406 million	$ 375 million
• External cash flow %	-1.3%	-1.1%
• Ratio of actuarial to market value	96.1%	99.9%
Actuarial Information		
• Normal cost %	10.52%	10.91%
• Unfunded actuarial accrued liability (UAAL)	$ 7,100 million	$ 7,419 million
• Funded ratio	49.5%	47.3%
• Funding period	42.6 years	Infinite
GASB 25 ARC	30 year, level percent	40 year, level dollar
• Dollar amount	$535,228,038	$722,095,783
• Percent of pay	16.32%	23.21%
Gains/(losses)		
• Asset experience	($150) million	($215) million
• Liability experience	28 million	6 million
• Benefit changes	0 million	(538) million
• Assumption changes	721 million	(1,056) million
• Total	$ 600 million	($1,803) million

Introduction

The results of the June 30, 2005 actuarial valuation of the Teachers' Retirement System of Oklahoma are presented in this report.

The purposes of any actuarial valuation report are to describe the financial condition of the System, to assess the adequacy of the current contributions, and to analyze changes in the funding requirements. In addition, this report presents information required by the System in connection with Governmental Accounting Standards Board Statement No. 25 (GASB 25).

Section C discusses the determination of the current funding period. Section D analyzes the changes in the Unfunded Actuarial Accrued Liability. This section also discusses the gains and losses resulting from differences between actual experience and the actuarial assumptions.

Section E deals with the System's assets, while Section F discusses the changes in the benefit and contribution provisions since the previous valuation. Section G discusses liabilities calculated for GASB 25 purposes. Sections H and I discuss the actuarial assumptions and methods used and the membership data. Section J discusses the alternative valuation results based on the set of assumptions prescribed for reporting to the State's Pension Commission. (Results of this alternative valuation are shown in Appendix IV.)

All of the tables referenced by the other sections appear in Section K.

Funded Status

Because the employer contribution rates are set by statute, this report determines the funding period required to amortize the Unfunded Actuarial Accrued Liability (UAAL).

The UAAL decreased by $319 million, from $7.419 billion to $7.100 billion. The funded ratio – the ratio of the actuarial value of assets to actuarial accrued liability – increased from 47.3% to 49.5%. The funding period – the number of years that would be required under the current contribution schedule to amortize the UAAL – has gone from infinite to 42.6 years.

These effects are primarily due to the adoption of new actuarial assumptions by the Board determined from the experience study conducted in 2005.

OTRS remains among the most poorly funded of all statewide plans. The market value of assets is just sufficient to cover the liabilities for currently retired members.

The current combined state/local/federal contribution rate of about 12.56% of pay for FY 2005 is not large enough to pay the normal cost and pay the interest on the UAAL. Therefore, negative amortization results. The UAAL is projected to increase until larger state contributions are effective and for a number of years thereafter. The UAAL is scheduled to be amortized completely in FY 2048.

This report also determines the GASB Annual Required Contributions (ARC). This is the contribution required to fund the normal cost and to amortize the UAAL as a level percent of pay over 30 years. This amount is shown in Table 1. The method for calculating the ARC has changed from last year. Previously, the ARC was equal to the employer normal cost plus an amount needed to amortize the UAAL in level payments (not as a level percentage of payroll) over 40 years. The Board changed the definition of the ARC at the same time it adopted new actuarial assumptions, in part because the 40-year amortization period is not permitted under GASB 25 after FY 2006.

Analysis of Changes

UAAL

Table 12a shows an analysis of the change in the UAAL. The UAAL, which was $7,419.2 million last year, has decreased to $7,099.7 million this year. However, an increase of $321.8 million was expected, since the current statutory employer/state/federal contribution rate is not large enough to pay for the normal cost and for interest on the UAAL. Therefore, negative amortization is expected to occur.

The recognition of prior deferred asset losses also added to the UAAL. The asset loss increased the UAAL by $149.7 million. The loss was due to 80% of the FY 2005 gain and 60% of the FY 2004 gain being deferred and recognition of an additional 20% of asset losses from FY03 and FY02. The return on the actuarial value was 5.7%, compared with the assumed 8.00% investment return rate. The actual return on market value was 10.0%. This is the fourth consecutive year since 1994 that the actuarial return was less than the assumed 8.00% rate.

There was a gain of $721.3 million primarily due to the revision of actuarial assumptions determined by the experience study conducted in 2005. In particular, these included:

1. Reduce basic salary scale.
2. Reduce retirement rates.
3. Revise withdrawal rates.
4. Modify various mortality rates.
5. Reduce disability incidence rates.

Funding Period

The funding period (the period required to amortize the UAAL) decreased from infinite to 42.6 years due primarily to the aforementioned 2005 experience study and adoption of revised actuarial assumptions.

System Assets

This report contains several tables that summarize key information with respect to the System's assets. Assets are reported at market value as required under GASB 25.

Table 6a summarizes the assets held by class. The total market value of assets increased from \$6.666 billion to \$7.238 billion. This excludes the value of the Teachers' Deposit Fund, which is subtracted from the assets in determining actuarial liabilities and costs. (The Teachers' Deposit Fund is the fund that holds the 403(b) plan assets.) Table 6b shows a comparison of the distribution of assets by category at the current and prior valuation dates. Equity investments decreased from 70% to about 68% of total invested assets.

Table 7 reconciles the changes in the fund during the year. Employer contributions increased from \$219.1 million to \$227.8 million (7.05% of pay in the year just ended which is unchanged from the year before). The state's contribution increased from \$143.1 million to \$163.9 million, reflecting the increase in state tax revenues and the fact that the system received 3.75% of these revenues in FY 2005, compared to 3.54% in FY 2004. Active member contributions increased from \$233.1 million to \$235.0 million, including state credits for contributions.

Table 8 shows the development of the actuarial value of assets. Rather than use the System's market value of assets, the valuation reflects a smoothed asset value. This actuarial value is calculated using a five-year average of the difference between expected and actual earnings. The actuarial value is 96.1% of market.

Table 9a provides a calculation of the estimated investment return for the year. As shown, the approximate investment return for 2004/2005 is 10.0% when measured on market value, and 5.7% when measured on actuarial value. Table 9b shows a history of return rates since the 1990/1991 plan year.

Table 10 shows an external cash flow history. External cash flow is a negative 1.3% of assets this year. However, the negative cash flow is small enough that it is currently covered by dividend and coupon receipts.

Table 11a shows the development of the asset loss. Since the System earned less than the assumed rate of 8%, based on the actuarial value of assets, the UAAL has been increased by the loss. This increase was $149.7 million for the current year.

Benefit and Contribution Provisions

Appendix I provides a summary of benefit and contribution provisions of the System, while Appendix II is a historical summary of legislative changes.

There was no new legislation materially affecting the system adopted during the 2005 legislative session.

GASB 25 Disclosure

This report includes three Tables--4a, 4b and 4c--showing information required to be reported under GASB 25. Table 4a shows a history of funding progress.

This table shows a slight improvement in funded status after a downward trend towards decreased funded ratios over the last few valuations. The funded ratio increased from 47.3% at June 30, 2004 to 49.5% currently. The increase in the funded ratio at June 30, 2005 occurred due to the adoption of actuarial assumption changes determined from the experience study conducted in 2005.

Table 4b shows the Annual Required Contribution (ARC) as computed under GASB 25, and it shows what percent of this amount was actually received. The ARC is computed as the normal cost plus a 40-year amortization of the UAAL. The 40-year period is re-determined each year (i.e., this is an “open amortization method”). The actual contributions that were compared with the ARC were the contributions received from employers, plus federal matching funds, plus the state’s contribution.

Note that for the year ending June 30, 2005 the GASB 25 employer contribution is determined as a 40-year level dollar amount. For the plan year ending June 30, 2006 this contribution amount will be determined as a 30-year level percent of pay. This will be reflected in exhibit 4b in the next valuation report. GASB will require a 30-year period beginning FY 2007 and the level percent of pay method is an acceptable GASB method, which keeps payroll costs more stable than the level dollar method.

Table 4c shows other information that must be included in the financial report.

Actuarial Assumptions and Methods

Appendix III summarizes the actuarial assumptions used to determine the plan's liabilities and the actuarial methods used to determine the normal cost, UAAL and funding period.

The most significant assumptions are the investment return rate (8%) the salary increase rate (averages about 4.7%), the payroll growth rate (3.5%), and the state revenue growth rate (3.5%). Actuarial assumptions were changed in 2005, when the Board adopted changes recommended by the actuary, based on a review of System experience for the five-year period ending June 30, 2004. The changes made are summarized in section D.

When the System's experience does not match the actuarial assumptions, gains or losses arise. These gains and losses result in changes to the UAAL for the System, and in turn they change the funding period.

The method used to determine the normal cost, UAAL, and funding period is the Entry Age actuarial cost method. We continue to believe the Entry Age method is appropriate for the System.

The definition of the GASB ARC was also changed, as discussed in section C.

Membership Data

Data on all members of the System, whether active, receiving a benefit, or entitled to a future benefit, was supplied by the System. See Item V of Appendix III for more information.

We did not verify the correctness of the data at the source, but we did perform various tests to ensure the internal consistency of the data and its overall reasonableness. In our review of this data we encountered a small number of records with missing or inconsistent information. We made adjustments to these records, but this did not materially impact the results shown.

Tables 5a and 5b show some key statistics for the various groups included, and Table 15 shows the distribution of active members by age and service.

There was a 3.2% increase in the number of active members since the previous valuation, and a 4.8% increase in the payroll for active members.

Membership has grown an average of 0.3% over the last five years, and 0.6% over the last ten years. Payroll for covered members (without regard to the pay caps) has grown an average of 3.0% over the last five years, and it has grown at an average of 3.1% over the last ten years.

Over the last several years, the active group has slowly gotten older. As shown on Table 5b, the average active member is now 45.6 years old, the average age for the active group has increased 2.0 years during the last ten years, and during that period, the average tenure of members has increased 0.9 years.

Prescribed Assumptions for Reporting Purposes

During the 2002 legislative session, legislation was adopted that requires the Retirement Board to annually submit information on the System to the Oklahoma State Pension Commission based on the following prescribed set of assumptions.

Interest rate = 7.5%
COLA assumption = 2.0%
Mortality = RP 2000 Generational Mortality Tables / active members, healthy annuitants, and disabled annuitants
Amortization Period = 30 years open period, level dollar payments

All contributions and revenues, including dedicated fee revenue and federal monies, must be reflected. All other assumptions, methodologies, and plan provisions used must be consistent with those used in the regular actuarial valuation.

We have presented this information as an addendum to this report in Appendix IV.