

**ACTUARIAL AUDIT REPORT**

**STATE OF OKLAHOMA**  
**UNIFORM RETIREMENT SYSTEM**  
**FOR JUSTICES AND JUDGES**

**MELLON**  
**HUMAN RESOURCES AND INVESTOR SOLUTIONS**

**FEBRUARY 19, 2004**

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# I. EXECUTIVE SUMMARY

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## PURPOSE AND SCOPE OF THE ACTUARIAL AUDIT

Mellon was engaged by the Oklahoma Public Employees Retirement System (OPERS) to conduct an actuarial audit of the July 1, 2003 actuarial valuation of the State of Oklahoma Uniform Retirement System for Justices and Judges (the System). The actuarial valuation was prepared by Mercer Human Resource Consulting, Inc. (Mercer), current actuary to OPERS.

The purpose of this audit was to provide assurance to the Board that all work is being carried out correctly. The scope of the audit included both a technical review to determine the accuracy of the actuarial results, and a professional peer review of the experience study and the actuarial assumptions and methods used by Mercer, and of the information provided in the actuarial valuation report. The technical review covered a verification of the valuation work performed on account of the active and retired members of the System, while the peer review covered the major actuarial assumptions and methods as well as the full valuation report.

## PRINCIPAL FINDINGS

We are pleased to report that we found liabilities and costs reported by the actuary are reasonably close to the liabilities calculated by Mellon. For the most part, we found the work to be reasonable and performed in accordance with generally accepted actuarial principles and practices. The audit exceptions, while important, did not materially impact the basic actuarial findings. Our report does include some suggestions with regard to the actuarial assumptions and methods, which we hope will be considered.

## AUDIT EXCEPTIONS

We found one major item of exception.

Liability for members who terminate prior to retirement: Although not clearly defined in the statutes, members who terminate prior to eligibility for retirement are able to commence payment of benefits as soon as they would have met the age requirement. This is known as "growing" into the age requirement. It appears from the wide discrepancy in liabilities for these potential benefits, that Mercer was not valuing this benefit consistently with System practice. We found that this difference resulted in an understatement of liabilities by nearly \$2 million. When considering that the entire liability is \$141 million, this is not a substantial deviation, however, we believe that the correct liability can and should be measured in future actuarial valuations.

We wish to point out that the statute is not particularly clear in describing this benefit, although we know that OPERS policy is to administer the benefit as if members can grow into the benefit.

As an example, consider a judge who terminates at age 55 with 24 years of service. This judge is not yet eligible for a retirement benefit. One reading of the statute would be that this judge would not receive an unreduced benefit until age 65, and that appears to be the methodology used by Mercer. But OPERS indicates that their policy is that such a member would be eligible to begin receiving an unreduced benefit in one year when their age (56) plus service (24) satisfies the rule of 80. As mentioned this methodology results in liabilities approximately \$2 million higher than otherwise.

## **II. TECHNICAL REVIEW OF ACTUARIAL COMPUTATIONS**

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### **PRINCIPAL FINDINGS**

Based on the actuarial assumptions and methods adopted by the Board, it is our opinion that the liabilities for the groups reviewed are reasonably accurately presented in the July 1, 2003 actuarial valuation report prepared by Mercer. Because of the understatement of benefits for current and future terminated members with deferred benefits, the calculation of the required contribution rate is understated by about a third.

### **COMMENTS**

The technical review covered the following items:

- Verification that the benefits and liabilities (present value of future benefits and normal cost) are being calculated correctly, and that all significant benefits are being accounted for.
- Verification that the employer contribution rate is being calculated correctly.
- Review of experience study methodologies and findings.

For the technical review, Mercer provided us with valuation-ready data for active and retired members of the System. We programmed their benefits into our valuation system and performed side-by-side comparisons of our valuation results with the results obtained by Mercer for selected individual members, and for each group in the aggregate. In order to ensure the accuracy of our conclusions, we had discussions with both OPERS staff and Mercer about methodology, System benefits, and about our preliminary findings.

### **VARIATIONS IN RESULTS**

It is normal for two different actuarial firms to calculate slightly different liabilities or contribution rates for a given retirement system. Actuarial valuations are performed to estimate the cost of future events, and the computer models used by different firms will differ in subtle ways. Many times, there may be more than one acceptable approach or procedure. For example, the Mellon model assumes that events (retirement, death, etc.) occur in the middle of each fiscal year, while the Mercer model assumes that these events occur at the beginning of the fiscal year. Both approaches are common in the actuarial community, and the two different approaches lead to minor differences in valuation results. Overall, we believe that the liabilities calculated by the two firms should differ by no more than 1% or 2%.

#### Actuarial Assumptions

We found that Mercer is correctly applying the various actuarial decrements: rates of retirement, death, disability, and withdrawal from service. The actuarial interest rate was used correctly.

#### Benefit Liabilities

As shown on the following table, with the exception of the liability for current and future deferred vested participants, we found that the benefits are being correctly valued.

## II. TECHNICAL REVIEW OF ACTUARIAL COMPUTATIONS

- Our liability for deferred benefits for terminating members exceeded Mercer's by nearly 59%
- Our liability for all other benefits was within 0.17% of Mercer's

The following table illustrates our comparisons for the valuation report of July 1, 2003:

	Mercer	Mellon	Deviation
1. Active Member Salaries	\$ 25,652,805	\$ 25,652,805	0.00%
2. Normal Cost at Mid-year	6,000,596	6,151,192	+2.51%
3. Present Value of Benefits			
Active Members	\$ 129,141,649	\$ 131,828,618	+2.08%
Retirees	51,509,700	51,876,998	+0.71%
Beneficiaries	6,175,449	6,396,489	+3.58%
Members with Deferred Benefits	1,861,669	2,631,116	+41.33%
Disabled Members	1,131,310	1,140,658	+0.83%
Unclaimed Contributions	284,355	284,355	0.00%
Medical Insurance Premiums	909,465	927,468	1.98%
COLA Reserve	1,170,462	1,182,354	+1.02%
Total	\$ 192,184,059	\$ 196,268,056	+2.13%
4. Actuarial Accrued Liability	\$ 140,856,203	\$ 144,175,681	+2.36%
5. Total Required Contribution	\$ 1,211,396	\$ 1,653,688	+36.51%

A further breakdown of the active member present value of projected benefits is as follows

	Mercer	Mellon	Deviation
Present Value of Benefits for Active Members			
Retirement	\$ 102,146,924	\$ 100,888,136	-1.23%
Withdrawal	4,555,192	7,558,002	+65.92%
Death	17,102,138	18,056,821	+5.58%
Medical Insurance	1,321,946	1,310,210	-0.89%
Members who have not yet applied	4,015,449	4,015,449	0.00%
Total	\$ 129,141,649	\$ 131,828,618	+2.08%

## II. TECHNICAL REVIEW OF ACTUARIAL COMPUTATIONS

To evaluate the impact of the deferred vested benefit valuation, Mellon performed the valuation incorporating a consistent valuation methodology to what Mercer is using. By doing so, we found that:

- Mercer's liability (present value of future benefits) for future deferred vested members was within 3.60%, rather than 65.92%
- Mercer's liability for current deferred vested members was within 10.02%, rather than 41.33%
- Mercer's Normal Cost was within 0.63%, rather than 2.51%.
- Mercer's Present Value of Benefits was within 0.08%, rather than 2.13%
- Mercer's Actuarial Liability was within 0.90%, rather than 2.36%
- Mercer's Total Required Contribution was within 6.01%, rather than 36.51%

### Calculation of Required Contribution Requirement

The required contribution requirement is the sum of:

1. Normal Cost, mid-year,
2. Amortization of the Unfunded Liability over 40 years from July 1, 1987, mid-year, and
3. Budgeted expenses

This is a reasonable calculation and amortization period and Mercer correctly implemented the methodology.

### Postretirement Medical Insurance Premium

Mercer correctly valued the \$105 medical premium. The Retirement Medical Benefit Fund is a sub-account that is composed of assets used to pay the retiree health insurance premium benefit, and is administered as a IRS Section 401(h) account.

### Data Issues

We noted some discrepancies in the data used in the actuarial valuation. The most significant relates to members who had not completed an application, which included 15 members this year. It is our understanding that, for the Judges, usually all of the data is supplied. Since this is a small population, we recommend that complete data be used if available at the date of the valuation.

## II. TECHNICAL REVIEW OF ACTUARIAL COMPUTATIONS

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Mercer uses an averaging method to estimate the liabilities related to these "no applicant" participants. Mercer reports that:

*Included in the valuation are "members without applications." These members are contributing to the System but have not yet filled out an enrollment application. For these members, amounts are added to the active liability and normal cost based on the average liability and normal cost for a new member. They are also assigned the average compensation for new members. Additional compensation equal to the average for new members is added to the total earnings so that these members would be reflected in the normal cost contributions.*

This procedure essentially counts up the 15 members with no application and assumes that they have characteristics identical to the average of other new members. One problem is that an extraordinary group of new members who do complete applications will skew the results. This may have occurred this year as one of the new members was a rehired member with over 20 years of service, meaning that years of past service were also attributed to the 15 members without applications.

A better procedure, if an estimate is required, would be to determine the average age, sex and salary of new Judges based on several years of experience, and then develop a valuation assumption.

Other data concerns were more minor. The data included one more disabled retiree and one less deferred vested member than Mercer reported. The total number of beneficiaries was off by one. The 2002 valuation report showed no change in the disabled retiree population, but the benefits decreased substantially.

Another minor discrepancy is that the report indicated that benefit distributions are based on attained age. We found that they were based on nearest age. "Attained age" is the age that an individual was on their last birthday. It is the answer to the question: "How old are you". "Nearest age" is another way actuaries use age. It's the age an individual is on the closest birthday. For example, someone who will have a birthday in the next six months will use there age on that birthday as their "nearest age".

### III. REVIEW OF VALUATION REPORT

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#### PRINCIPAL FINDINGS

The report generally meets professional standards and fairly represents the actuarial condition of the System.

#### COMMENTS

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. In general, the information contained in the report should be such that:

- the report would be properly interpreted and applied by the persons to whom it is directed; and
- another actuary in pension practice could form an opinion about the reasonableness of conclusions drawn in the report.

ASB No. 4 also specifies that an actuarial report should include the following items:

- The name of the person or firm retaining the actuary and the purpose of the report
- 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 findings, conclusions or recommendation necessary to satisfy the purpose of the report

With minor exceptions, the July 1, 2003 actuarial valuation report prepared by Mercer meets all of these requirements.

The first exception is that the Rule of 80 early retirement provision does not mention the requirement that the members also must have eight years of service.

A second issue involves a table indicating average annual rates of investment return. In particular, it shows a cumulative ten-year average rate of return of 11.0% on an actuarial value basis, and 8.7% on a market value basis. These numbers are particularly sensitive to the time period selected. In this instance, both the beginning and ending period create a particularly misleading statistic. In the long run, the average actuarial return and market return will be essentially the same. To have a 2.3% difference for a ten year period seems inappropriate, and

### III. REVIEW OF VALUATION REPORT

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can easily be misunderstood. We recommend that this column of average actuarial return not be calculated and reported.

We also reviewed the May 14, 2002 letter on Judicial Plan Valuation Assumptions.

The letter develops the recommended changes in actuarial assumptions. We found that while the assumption changes may be appropriate, the report did not support the experience with objective criteria other than the impact of the change on the liabilities. Actuarial standards of practice require that assumptions be based on the actuaries' best estimate of future experience. A reading of this May 14, 2002, report seems to suggest that the assumptions were chosen based on their impact on the liability. No mention was made of the actuaries' best estimate of future experience. The only support for the change was the statement: "... there are currently many judges who continue to work beyond [Normal Retirement] age."

GASB Statement 25 requires a presentation of "actuarial determined information, from a long-term perspective, about the funded status of the plan and the progress being made in accumulating sufficient assets to pay benefits when due." The information, covering a minimum of six years, is to be provided in two schedules of historical trend information – a Schedule of Funding Progress and a Schedule of Employer Contributions. In addition, the Statement 25 disclosure should present the following additional information as of the latest actuarial valuation:

- Valuation date
- Actuarial cost method
- Amortization method
- Remaining amortization period
- Asset valuation method
- Actuarial assumptions:
  - Investment rate of return\*
  - Projected salary increases\*

\*Includes inflation at cost-of-living adjustments

GASB Statement 25 became effective for the fiscal year ending June 30, 1997. The Statement has a provision which allows plans to exclude information from the required schedules for years prior to implementation if calculations were not made in accordance with the parameters of the Statement. However, Q&A 111 of the Guide to Implementation of GASB Statements 25, 26, and 27 on Pension Reporting and Disclosure by State and Local Government Plans and Employers, published by GASB, specifically provides that plans may not delay implementation beyond the effective date of the Statement.

### **III. REVIEW OF VALUATION REPORT**

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The Statement 25 disclosure in the July 1, 2003 actuarial valuation report currently includes such information.

The Government Finance Officers' Association (GFOA) has published Guidelines for the Preparation of a Public Employee Retirement System Comprehensive Annual Financial Report. While these are requirements for a CAFR, and not specifically for the actuarial report itself, we think it makes good sense for the actuarial report to provide the information needed for the Actuarial Assumptions and Methods Section of the CAFR. Based on a review of the GFOA guidelines, we recommend that Mercer add the following information to the Actuarial Basis section of the actuarial report.

- The date(s) of adoption of the actuarial cost method, the asset valuation method, and each of the actuarial assumptions.
- The date of the most recent experience study and an indication of which of the current assumptions are based on the results of that study. If any of the actuarial assumptions are not based on an experience study, indicate upon what basis the assumptions were determined.

## IV. REVIEW OF ACTUARIAL ASSUMPTIONS AND METHODS

The current actuarial assumptions were adopted for the July 1, 2003 actuarial valuation based upon the results of the May 14, 2002 study. The standards of the actuarial profession require that actuarial assumptions should be reasonable both individually and on an aggregate basis. However, it should be recognized that in the setting of actuarial assumptions, there is not one answer that reflects the best estimate of future experience. There is a best-estimate range within which reasonable assumptions lie, and two different actuarial firms may easily choose different assumptions which lie within this best-estimate range.

- Economic Assumptions

Inflation: 3.0% per annum is the inflation rate. We believe that this is an appropriate rate, in light of both past history and the market estimates of inflation. Inflation indexed bonds are currently yielding 2.10% plus inflation. Long Term Treasury Bonds currently yield 4.92%. This implies an anticipated inflation rate of approximately 2.76%, below the actuarially assumed rate of 3.0%. If inflation and inflation expectations continue to be low for the next five years, Mercer may wish to consider a further reduction in the anticipated inflation rate.

COLA: Mercer indicated that the cost-of-living-allowance is projected based on an increase in base salary equal to two-thirds of inflation. We believe that this is reasonable, but more accurate analysis might be appropriate.

Salary Increase: Rates of salary increase are assumed to be a constant 5.50%. This was based on the results of the last five years. Mercer indicated that:

*We reviewed salary experience over the past five years. It appears that annual salary increases had [sic] averaged approximately 4.7% compared to the valuation assumption of 5.5% .... Therefore, it would be reasonable to reduce the salary scale assumption. ... However, most of the gain resulted from one of the five years included in the study: a year with average increases of 0.3%. In fact, average salary increases for the remaining four years were actually slightly higher than 5.5%.*

*We recommend monitoring this assumption during upcoming valuations to assess the appropriateness of the 5.5% assumption*

We disagree with Mercer's logic here. The objective is not to get close in most years, it's to get it close in the long run. For example, let's assume that the pattern of salary increases is 5% in four out of five years and nothing in the fifth year. The average over any five-year period would be 4%, but the most likely increase in any one-year is 5%. In this case, a 4% inflation assumption will be wrong in all five years, but correct in the long run. This is the purpose of a valuation: to measure long run liabilities as reasonably as possible. It is not the objective to get as close as possible in as many years as possible. We do not believe that it was appropriate to simply ignore the year when judges received 0.3% increases. Consequently, we may have recommended decreasing salary growth assumption from 5.5% to 5.0%.

## IV. REVIEW OF ACTUARIAL ASSUMPTIONS AND METHODS

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Interest Rate: The current assumed rate is 7.5% per annum. We concur with Mercer's recommendation to maintain a 7.5% interest rate assumption, although a more robust discussion of the asset allocation issue would have been useful, particularly in contrast to OPERS, which also uses the 7.5% assumption.

As an additional point of reference, the 2003 Wilshire Report on State Retirement Systems: Funding Levels and Asset Allocation indicated that the average public pension fund was utilizing an 8.05% return assumption and had 59% of assets in equities. This System uses a 7.5% assumption and has only 50% target assets allocated to equities. This does seem consistent with the Wilshire data.

- Demographic Assumptions

Mortality: Mercer recommended considering the 1994 GAM table with projection at the next experience study. We do not understand the logic of waiting, but do not have a major concern as long as the mortality table is corrected in the near future.

Withdrawal: Mercer utilizes a flat 2% turnover assumption irrespective of age. Mercer did not discuss this in the experience study. Our experience with Judicial plans is that 2% is a bit high. Most plans also study withdrawal by age or service. Such an analysis may have provided better information for setting withdrawal assumptions.

Retirement: In addition to the process of setting retirement rates which was discussed above, we question the appropriateness of the assumption change. Although the statement that many judges work beyond normal retirement age may be correct, we believe that the July 1, 2002 change in normal retirement age suggests extreme caution in changing actuarial assumptions.

Prior to July 1, 2002, the normal retirement age (NRA) was the earlier of:

- Age 65 with 10 years of service, or
- Age 70 with 8 years of service.

Effective July 1, 2002, the provisions were changed to the earlier of:

- Age 60 with 10 years of service, or
- Age 65 with 8 years of service

We believe that there is a strong likelihood that this change will modify behavior and that the assumption change will create an understatement of liabilities.

This being said, retirement experience is very unpredictable, and it is certainly possible that the new assumptions will prove to be better than the old assumptions. Mellon would not have recommended such a significant assumption change, but the Mercer assumptions may be reasonable.

## IV. REVIEW OF ACTUARIAL ASSUMPTIONS AND METHODS

### Actuarial Cost Method

Mercer is using the entry age normal actuarial cost method. This is the most common method used by public systems. As shown below:

Actuarial Cost Method	Survey 1 <sup>(1)</sup>	Survey 2 <sup>(2)</sup>
Entry Age	60%	75%
Aggregate	11%	11%
Frozen Initial Liability	6%	0%
Projected Unit Credit	11%	14%
Other/Miscellaneous	12%	0%
Total	100%	100%

<sup>(1)</sup> 2001 Survey of State and Local Government Employee Retirement Systems (152 systems)

<sup>(2)</sup> 2003 Wilshire Report on State Retirement Systems: Funding Levels and Asset Allocation (116 systems)

It produces stable costs and is somewhat conservative. We believe that the method is appropriate for the System.

### Asset Valuation Method

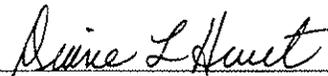
Mercer uses a five-year write-up method to calculate the actuarial value of assets. This is a common method that produces reasonable, smooth results. In periods of continued strong asset performance, such a method tends to create actuarial values that lag market value. With the recent reduced investment returns, this is no longer much of a concern.

The Arizona State Employees Retirement System has extended their averaging period to ten years. We are not aware of any other system making a similar change.

Respectfully submitted:



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