

Arkansas State Police Retirement System

GASB Statement Nos. 67 and 68 Accounting and
Financial Reporting for Pensions
June 30, 2018



November 16, 2018

Board of Trustees
Arkansas State Police Retirement System
Little Rock, Arkansas

Ladies and Gentlemen:

This report provides information required by the Retirement System in connection with the Governmental Accounting Standards Board (GASB) Statement No. 67 “Financial Reporting for Pension Plans” and Governmental Account Standards Board (GASB) Statement No. 68 “Accounting and Financial Reporting for Pensions.”

Our actuarial calculations for this report were prepared for the purpose of complying with the requirements of GASB Statement Nos. 67 and 68. These calculations have been made on a basis that is consistent with our understanding of these accounting standards.

Our calculation of the liability associated with the benefits described in this report was performed for the purpose of satisfying the requirements of GASB Statement Nos. 67 and 68. The calculation of the plan’s liability for this report may not be applicable for funding purposes of the plan. A calculation of the plan’s liability for purposes other than satisfying the requirements of GASB Statement Nos. 67 and 68 may produce significantly different results. This report may be provided to parties other than the Arkansas State Police Retirement System only in its entirety and only with the permission of the Board of Trustees. GRS is not responsible for unauthorized use of this report.

This report is based upon information, furnished to us by Retirement System staff, concerning retirement and ancillary benefits, active members, deferred vested members, retirees and beneficiaries, and financial data. If your understanding of this information is different, please let us know. This information was checked for internal consistency, but it was not audited.

This information is presented in draft form for review by the plan’s auditor. Please let us know if there are any items that the auditor changes so that we may maintain consistency with the plan’s financial statements.


Please see the actuarial valuation report as of June 30, 2018 for additional discussions of the nature of actuarial calculations and more information related to participant data, economic and demographic assumptions, and benefit provisions.

To the best of our knowledge, this report is complete, accurate, and in accordance with generally recognized actuarial methods. Mita D. Drazilov is a Member of the American Academy of Actuaries (MAAA) and meets the Qualification Standards of the Academy of Actuaries to render the actuarial opinions herein. The signing individuals are independent of the plan sponsor.

Respectfully submitted,



Heidi G. Barry, ASA, FCA, MAAA



David L. Hoffman

MDD/DLH:bd



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SECTION A

EXECUTIVE SUMMARY

Executive Summary as of June 30, 2018

Actuarial Valuation Date	June 30, 2018
Measurement Date of the Net Pension Liability	June 30, 2018
Employer's Fiscal Year Ending Date (Reporting Date)	June 30, 2018

Membership

Number of	
- Retirees and Beneficiaries and DROP Members	729
- Inactive, Nonretired Members	84
- Active Members	467
- Total	1,280
Covered Payroll #	\$ 29,593,145

Net Pension Liability

Total Pension Liability	\$ 446,878,220
Plan Fiduciary Net Position	324,938,251
Net Pension Liability	\$ 121,939,969
Plan Fiduciary Net Position as a Percentage of Total Pension Liability	72.71%
Net Pension Liability as a Percentage of Covered Payroll	412.05%

Development of the Single Discount Rate

Single Discount Rate	7.15%
Long-Term Expected Rate of Investment Return	7.15%
Long-Term Municipal Bond Rate*	3.62%
Last year ending June 30 in the 2019 to 2118 projection period for which projected benefit payments are fully funded	2118

Total Pension Expense \$ 23,003,885

Deferred Outflows and Deferred Inflows of Resources by Source to be Recognized in Future Pension Expenses

	Deferred Outflows of Resources	Deferred Inflows of Resources
Difference between expected and actual experience	\$ 1,058,145	\$ 2,281,952
Changes in assumptions	10,639,051	3,540,196
Net difference between projected and actual earnings on pension plan investments	11,417,637	12,742,292
Total	\$ 23,114,833	\$ 18,564,440

* Source: Fixed-income municipal bonds with 20 years to maturity that include only federally tax-exempt municipal bonds as reported in Fidelity Index's "20-Year Municipal GO AA Index" as of June 30, 2018. In describing this index, Fidelity notes that the municipal curves are constructed using option-adjusted analytics of a diverse population of over 10,000 tax-exempt securities.

Including pay for DROP participants.

Discussion

Accounting Standard

For pension plans that are administered through trusts or equivalent arrangements, Governmental Accounting Standards Board (GASB) Statement No. 67 establishes standards of financial reporting for separately issued financial reports and specifies the required approach for measuring the pension liability. Similarly, GASB Statement No. 68 establishes standards for state and local government employers (as well as non-employer contributing entities) to account for and disclose the net pension liability, pension expense, and other information associated with providing retirement benefits to their employees (and former employees) on their basic financial statements.

The following discussion provides a summary of the information that is required to be disclosed under these accounting standards. A number of these disclosure items are provided in this report. However, certain information, such as notes regarding accounting policies and investments, is not included in this report and the retirement system and/or plan sponsor will be responsible for preparing and disclosing that information to comply with these accounting standards.

Financial Statements

GASB Statement No. 68 requires state or local governments to recognize the net pension liability and the pension expense on their financial statements. The net pension liability is the difference between the total pension liability and the plan's fiduciary net position. In traditional actuarial terms, this is analogous to the accrued liability less the market value of assets (not the smoothed actuarial value of assets that is often encountered in actuarial valuations performed to determine the employer's contribution requirement).

Paragraph 57 of GASB Statement No. 68 states, "Contributions to the pension plan from the employer subsequent to the measurement date of the collective net pension liability and before the end of the employer's reporting period should be reported as a deferred outflow of resources related to pensions." The information contained in this report does not incorporate any contributions made to Arkansas State Police Retirement System (ASPRS) subsequent to the measurement date of June 30, 2018.

The pension expense recognized each fiscal year is equal to the change in the net pension liability from the beginning of the year to the end of the year, adjusted for deferred recognition of the liability and investment experience.

Pension plans that prepare their own, stand-alone financial statements are required to present two financial statements – a statement of fiduciary net position and a statement of changes in fiduciary net position in accordance with GASB Statement No. 67. The *statement of fiduciary net position* presents the assets and liabilities of the pension plan at the end of the pension plan's reporting period. The *statement of changes in fiduciary net position* presents the additions, such as contributions and investment income, and deductions, such as benefit payments and expenses, and net increase or decrease in the fiduciary net position.

Notes to Financial Statements

GASB Statement No. 68 requires the notes of the employer's financial statements to disclose the total pension expense, the pension plan's liabilities and assets, and deferred outflows and inflows of resources related to pensions.

GASB Statement Nos. 67 and 68 require the notes of the financial statements for the employers and pension plans, to include certain additional information. The list of disclosure items should include:

- a description of benefits provided by the plan;
- the type of employees and number of members covered by the pension plan;
- a description of the plan's funding policy, which includes member and employer contribution requirements;
- the pension plan's investment policies;
- the pension plan's fiduciary net position, net pension liability, and the pension plan's fiduciary net position as a percentage of the total pension liability;
- the net pension liability using a discount rate that is 1% higher and 1% lower than used to calculate the total pension liability and net pension liability for financial reporting purposes;
- significant assumptions and methods used to calculate the total pension liability;
- inputs to the discount rates; and
- certain information about mortality assumptions and the dates of experience studies.

Retirement systems that issue stand-alone financial statements are required to disclose additional information in accordance with GASB Statement No. 67. This information includes:

- the composition of the pension plan's Board and the authority under which benefit terms may be amended;
- a description of how fair value is determined;
- information regarding certain reserves and investments, which include concentrations of investments greater than or equal to 5%, receivables, and insurance contracts excluded from plan assets;
- annual money-weighted rate of return; and
- a description of the terms of the plan's Deferred Retirement Option Program (DROP) and the total DROP balance for those members currently participating in the DROP.

Required Supplementary Information

GASB Statement No. 67 requires a 10-year fiscal history of:

- sources of changes in the net pension liability;
- information about the components of the net pension liability and related ratios, including the pension plan's fiduciary net position as a percentage of the total pension liability, and the net pension liability as a percent of covered-employee payroll; and
- a comparison of the actual employer contributions to the actuarially determined contributions based on the plan's funding policy.

Timing of the Valuation

An actuarial valuation to determine the total pension liability is required to be performed at least every two years. The net pension liability and pension expense should be measured as of the pension plan's fiscal year end (measurement date) on a date that is within the employer's prior fiscal year. If the actuarial valuation used to determine the total pension liability is not calculated as of the measurement date, the total pension liability is required to be rolled forward from the actuarial valuation date to the measurement date.

The total pension liability shown in this report is based on an actuarial valuation performed as of June 30, 2018 and a measurement date of June 30, 2018.

Single Discount Rate

Projected benefit payments are required to be discounted to their actuarial present values using a Single Discount Rate that reflects (1) a long-term expected rate of return on pension plan investments (to the extent that the plan's fiduciary net position is projected to be sufficient to pay benefits) and (2) tax-exempt municipal bond rate based on an index of 20-year general obligation bonds with an average AA credit rating as of the measurement date (to the extent that the contributions for use with the long-term expected rate of return are not met).

For the purpose of this valuation, the expected rate of return on pension plan investments is 7.15%; the municipal bond rate is 3.62% (based on the weekly rate closest to but not later than the measurement date of the Fidelity "20-Year Municipal GO AA Index"; and the resulting Single Discount Rate is 7.15%.

SECTION B

FINANCIAL STATEMENTS

Statement of Pension Expense Under GASB Statement No. 68

Fiscal Year Ended June 30, 2018

Total Pension Expense

1. Service Cost	\$ 6,577,148
2. Interest on the Total Pension Liability	30,678,211
3. Current-Period Benefit Changes	-
4. Employee Contributions (made negative for addition here)	-
5. Projected Earnings on Plan Investments (made negative for addition here)	(21,294,131)
6. Pension Plan Administrative Expense	228,430
7. Other Changes in Plan Fiduciary Net Position	0
8. Recognition of Outflow (Inflow) of Resources due to Liabilities	3,329,990
9. Recognition of Outflow (Inflow) of Resources due to Assets	<u>3,484,237</u>
10. Total Pension Expense	\$ 23,003,885

Statement of Outflows and Inflows Arising from Current Reporting Period Fiscal Year Ended June 30, 2018

A. Outflows (Inflows) of Resources due to Liabilities

1. Difference between expected and actual experience of the Total Pension Liability (gains) or losses	\$ 467,389
2. Assumption Changes (gains) or losses	\$ (4,529,133)
3. Recognition period for Liabilities: Average of the expected remaining service lives of all employees {in years}	4.5798
4. Outflow (Inflow) of Resources to be recognized in the current pension expense for the difference between expected and actual experience of the Total Pension Liability	\$ 102,054
5. Outflow (Inflow) of Resources to be recognized in the current pension expense for Assumption Changes	\$ (988,937)
6. Outflow (Inflow) of Resources to be recognized in the current pension expense due to Liabilities	<u>\$ (886,882)</u>
7. Deferred Outflow (Inflow) of Resources to be recognized in future pension expenses for the difference between expected and actual experience of the Total Pension Liability	\$ 365,334
8. Deferred Outflow (Inflow) of Resources to be recognized in future pension expenses for Assumption Changes	\$ (3,540,196)
9. Deferred Outflow (Inflow) of Resources to be recognized in future pension expenses due to Liabilities	<u>\$ (3,174,862)</u>

B. Outflows (Inflows) of Resources due to Assets

1. Net difference between projected and actual earnings on pension plan investments (gains) or losses	\$ (7,529,201)
2. Recognition period for Assets {in years}	5.0000
3. Outflow (Inflow) of Resources to be recognized in the current pension expense due to Assets	\$ (1,505,840)
4. Deferred Outflow (Inflow) of Resources to be recognized in future pension expenses due to Assets	\$ (6,023,361)

Statement of Outflows and Inflows Arising from Current and Prior Reporting Periods

Fiscal Year Ended June 30, 2018

A. Outflows and Inflows of Resources due to Liabilities and Assets to be Recognized in Current Pension Expense

	Outflows of Resources	Inflows of Resources	Net Outflows of Resources
1. Due to Liabilities	\$ 5,609,127	\$ 2,279,137	\$ 3,329,990
2. Due to Assets	7,229,720	3,745,483	3,484,237
3. Total	\$ 12,838,847	\$ 6,024,620	\$ 6,814,227

B. Outflows and Inflows of Resources by Source to be Recognized in Current Pension Expense

	Outflows of Resources	Inflows of Resources	Net Outflows of Resources
1. Differences between expected and actual experience	\$ 457,013	\$ 1,290,200	\$ (833,187)
2. Assumption Changes	5,152,114	988,937	4,163,177
3. Net Difference between projected and actual earnings on pension plan investments	7,229,720	3,745,483	3,484,237
4. Total	\$ 12,838,847	\$ 6,024,620	\$ 6,814,227

C. Deferred Outflows and Deferred Inflows of Resources by Source to be Recognized in Future Pension Expenses

	Deferred Outflows of Resources	Deferred Inflows of Resources	Net Deferred Outflows of Resources
1. Differences between expected and actual experience	\$ 1,058,145	\$ 2,281,952	\$ (1,223,807)
2. Assumption Changes	10,639,051	3,540,196	7,098,855
3. Net Difference between projected and actual earnings on pension plan investments	11,417,637	12,742,292	(1,324,655)
4. Total	\$ 23,114,833	\$ 18,564,440	\$ 4,550,393

D. Deferred Outflows and Deferred Inflows of Resources by Year to be Recognized in Future Pension Expenses

Year Ending June 30	Net Deferred Outflows of Resources
2019	\$ 6,566,961
2020	2,586,753
2021	(2,583,268)
2022	(2,020,053)
2023	-
Thereafter	-
Total	\$ 4,550,393

Statement of Fiduciary Net Position as of June 30, 2018

Any Additional Required Information to Be Provided by System

Assets

Cash and Deposits	\$	-
Receivables		
Contributions		-
Accounts Receivable - Other		-
Total Receivables		-
Investments		
Securities Lending Collateral	\$	-
Investment Assets		-
Other		-
Total Investments		-
Total Assets		-

Liabilities

Payables		
Accrued Expense and Other Liabilities	\$	-
Investment Principal Payable		-
Securities Lending Liability		-
Total Liabilities		-

Net Position Restricted for Pensions		<u><u>\$ 324,938,251</u></u>
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Statement of Changes in Fiduciary Net Position for Year Ended June 30, 2018

Additions

Contributions		
Employer		\$ 21,003,650
Employee		-
Other		-
Total Contributions		\$ 21,003,650
Investment Income		
Net Appreciation in Fair Value of Investments		\$ 30,402,944
Interest and Dividends		-
Less Investment Expense		(1,579,612)
Net Investment Income		\$ 28,823,332
Other		\$ -
Total Additions		\$ 49,826,982

Deductions

Benefit payments, including refunds of employee contributions		\$ 24,185,418
Pension Plan Administrative Expense		228,430
Other		-
Total Deductions		\$ 24,413,848
Net Increase in Net Position		\$ 25,413,134

Net Position Restricted for Pensions

Beginning of Year		\$ 299,525,117
End of Year		\$ 324,938,251

SECTION C

REQUIRED SUPPLEMENTARY INFORMATION

Schedules of Required Supplementary Information
Schedule of Changes in Net Pension Liability and Related Ratios
Current Period
Fiscal Year Ended June 30, 2018

A. Total pension liability	
1. Service Cost	\$ 6,577,148
2. Interest on the Total Pension Liability	30,678,211
3. Changes of benefit terms	-
4. Difference between expected and actual experience of the Total Pension Liability	467,389
5. Changes of assumptions	(4,529,133)
6. Benefit payments, including refunds of employee contributions	<u>(24,185,418)</u>
7. Net change in total pension liability	\$ 9,008,197
8. Total pension liability – beginning	<u>437,870,023</u>
9. Total pension liability – ending	<u><u>\$ 446,878,220</u></u>
B. Plan fiduciary net position	
1. Contributions – employer	\$ 21,003,650
2. Contributions – employee	-
3. Net investment income	28,823,332
4. Benefit payments, including refunds of employee contributions	(24,185,418)
5. Pension Plan Administrative Expense	(228,430)
6. Other	-
7. Net change in plan fiduciary net position	\$ 25,413,134
8. Plan fiduciary net position – beginning	<u>299,525,117</u>
9. Plan fiduciary net position – ending	<u><u>\$ 324,938,251</u></u>
C. Net pension liability	<u><u>\$ 121,939,969</u></u>
D. Plan fiduciary net position as a percentage of the total pension liability	72.71%
E. Covered-employee payroll #	\$ 29,593,145
F. Net pension liability as a percentage of covered-employee payroll	412.05%

Includes pay for DROP participants.

Schedules of Required Supplementary Information

Schedule of Changes in Net Pension Liability and Related Ratios Multiyear

Fiscal year ending June 30,	2018	2017	2016	2015	2014
Total Pension Liability					
Service Cost	\$ 6,577,148	\$ 5,473,626	\$ 5,488,445	\$ 6,101,608	\$ 4,866,199
Interest on the Total Pension Liability	30,678,211	30,322,786	29,469,678	29,218,802	28,558,511
Benefit Changes	-	-	-	-	-
Difference between Expected and Actual Experience	467,389	(3,052,763)	1,757,687	(3,107,531)	(454,349)
Assumption Changes	(4,529,133)	15,875,267	-	8,703,080	8,970,858
Benefit Payments	(24,185,418)	(24,631,787)	(26,035,466)	(23,358,801)	(21,688,239)
Refunds	-	-	-	-	-
Net Change in Total Pension Liability	9,008,197	23,987,129	10,680,344	17,557,158	20,252,980
Total Pension Liability - Beginning	437,870,023	413,882,894	403,202,550	385,645,392	365,392,412
Total Pension Liability - Ending (a)	<u>\$ 446,878,220</u>	<u>\$ 437,870,023</u>	<u>\$ 413,882,894</u>	<u>\$ 403,202,550</u>	<u>\$ 385,645,392</u>
Plan Fiduciary Net Position					
Employer Contributions	\$ 21,003,650	\$ 19,961,066	\$ 19,713,295	\$ 19,784,130	\$ 19,501,684
Employee Contributions	-	-	-	94,814	-
Pension Plan Net Investment Income	28,823,332	31,484,250	(210,045)	6,131,684	43,307,746
Benefit Payments	(24,185,418)	(24,631,787)	(26,035,466)	(23,358,801)	(21,688,239)
Refunds	-	-	-	-	-
Pension Plan Administrative Expense	(228,430)	(208,424)	(205,342)	(196,231)	(189,658)
Other	-	-	-	6	-
Net Change in Plan Fiduciary Net Position	25,413,134	26,605,105	(6,737,558)	2,455,602	40,931,533
Plan Fiduciary Net Position - Beginning	299,525,117	272,920,012	279,657,570	277,201,968	236,270,435
Plan Fiduciary Net Position - Ending (b)	<u>\$ 324,938,251</u>	<u>\$ 299,525,117</u>	<u>\$ 272,920,012</u>	<u>\$ 279,657,570</u>	<u>\$ 277,201,968</u>
Net Pension Liability - Ending (a) - (b)	121,939,969	138,344,906	140,962,882	123,544,980	108,443,424
Plan Fiduciary Net Position as a Percentage of Total Pension Liability	72.71 %	68.41 %	65.94 %	69.36 %	71.88 %
Covered-Employee Payroll #	\$ 29,593,145	\$ 29,076,764	\$ 29,448,593	\$ 29,929,358	\$ 28,548,873
Net Pension Liability as a Percentage of Covered-Employee Payroll	412.05 %	475.79 %	478.67 %	412.79 %	379.85 %
Notes to Schedule:	N/A	N/A	N/A	N/A	N/A

In 2017, actual DROP participant pays were used. In 2016, \$67,241 was used as an estimate of average annual pay for DROP participants. In 2015, \$75,000 was used as an estimate of average annual pay for DROP participants.

Schedules of Required Supplementary Information

Schedule of the Net Pension Liability Multiyear

Ultimately 10 Fiscal Years Will Be Displayed

FY Ending June 30,	Total Pension Liability	Plan Net Position	Net Pension Liability	Plan Net Position as a % of Total Pension Liability	Covered Payroll#	Net Pension Liability as a % of Covered Payroll
2014	\$385,645,392	\$277,201,968	\$ 108,443,424	71.88%	\$28,548,873	379.85%
2015	403,202,550	279,657,570	123,544,980	69.36%	29,929,358	412.79%
2016	413,882,894	272,920,012	140,962,882	65.94%	29,448,593	478.67%
2017	437,870,023	299,525,117	138,344,906	68.41%	29,076,764	475.79%
2018	446,878,220	324,938,251	121,939,969	72.71%	29,593,145	412.05%

In 2017 and thereafter, actual DROP participant pays were used. In 2016, \$67,241 was used as an estimate of average annual pay for DROP participants. In 2015, \$75,000 was used as an estimate of average annual pay for DROP participants.

Schedule of Contributions Multiyear (\$ in Millions)

Last 10 Fiscal Years

FY Ending June 30,	Actuarially Determined Contribution	Actual Contribution	Contribution Deficiency (Excess)	Covered Payroll#	Actual Contribution as a % of Covered Payroll
2008	\$ 10.0	\$ 11.7	\$ (1.7)	\$ 26.4	44.32%
2009	10.5	12.1	(1.6)	27.6	43.84%
2010	12.7	20.5	(7.8)	28.5	71.93%
2011	12.6	14.1	(1.5)	28.2	50.00%
2012	14.1	19.7	(5.6)	29.5	66.78%
2013	13.6	19.5	(5.9)	28.1	69.40%
2014	14.0	19.5	(5.5)	29.1	67.01%
2015	14.2	19.8	(5.6)	29.9	66.22%
2016	14.3	19.7	(5.4)	29.4	67.01%
2017	14.1	20.0	(5.9)	29.1	68.73%
2018	15.6	21.0	(5.4)	30.0	70.00%

In 2017 and thereafter, actual DROP participant pays were used. In 2016, \$67,241 was used as an estimate of average annual pay for DROP participants. In 2015, \$75,000 was used as an estimate of average annual pay for DROP participants.

Notes to Schedule of Contributions

Valuation Date: June 30, 2017

Methods and Assumptions Used to Determine Contribution Rates for Fiscal Year Ending June 30, 2018:

Actuarial Cost Method	Entry Age Normal
Amortization Method	Level Percentage of Payroll, Closed
Remaining Amortization Period	22 years
Asset Valuation Method	4-Year smoothed market
Inflation	2.50% price inflation
Salary Increases	3.25% to 10.25% including inflation
Investment Rate of Return	7.15%
Retirement Age	Experience-based table of rates that are specific to the type of eligibility condition.
Mortality	Based on RP-2000 Combined Healthy mortality table, projected to 2020 using Projection Scale BB, set-forward 2 years for males and 1 year for females, with an approximate 14% margin for future mortality improvement.

Other Information:

Notes: There were no benefit changes during the year.

Schedule of Investment Returns Multiyear

To Be Provided by System

Last 10 Fiscal Years

FY Ending June 30,	Annual Return¹
2009	
2010	
2011	
2012	
2013	
2014	
2015	
2016	
2017	
2018	

¹ Annual money-weighted rate of return, net of investment expenses.

SECTION D

NOTES TO FINANCIAL STATEMENTS

Long-Term Expected Return on Plan Assets

The long-term expected rate of return on pension plan investments was determined using a building-block method in which best-estimate ranges of expected future real rates of return are developed for each major asset class. These ranges are combined to produce the long-term expected rate of return by weighting the expected future real rates of return by the current asset allocation percentage and by adding expected price inflation. Best estimates of arithmetic real rates of return for the 10-year period from 2018 to 2028 were based upon capital market assumptions provided by the plan's investment consultant(s). For each major asset class that is included in the pension plan's current asset allocation as of June 30, 2018, these best estimates are summarized in the following table:

Asset Allocation

Asset Class	Target Allocation	Long-Term Expected Real Rate of Return
Broad Domestic Equity	37%	5.97%
International Equity	24%	6.07%
Real Assets	16%	4.59%
Absolute Return	5%	3.15%
Domestic Fixed	18%	0.83%
Total	100%	
Total Real Rate of Return		4.71%
Plus: Price Inflation - Actuary's Assumption		2.50%
Less: Investment Expenses (Passive)		0.00%
Net Expected Return		7.21%

Single Discount Rate

A Single Discount Rate of 7.15% was used to measure the total pension liability. This Single Discount Rate was based on the expected rate of return on pension plan investments of 7.15%. The projection of cash flows used to determine this Single Discount Rate assumed that plan member contributions will be made at the current contribution rate and that employer contributions will be made at rates equal to the difference between actuarially determined contribution rates and the member rate. Based on these assumptions, the pension plan's fiduciary net position was projected to be available to make all projected future benefit payments of current plan members. Therefore, the long-term expected rate of return on pension plan investments was applied to all periods of projected benefit payments to determine the total pension liability.

Regarding the sensitivity of the net pension liability to changes in the Single Discount Rate, the following presents the plan's net pension liability, calculated using a Single Discount Rate of 7.15%, as well as what the plan's net pension liability would be if it were calculated using a Single Discount Rate that is one percent lower or one percent higher:

Sensitivity of Net Pension Liability to the Single Discount Rate Assumption

	1% Decrease 6.15%	Current Single Discount Rate 7.15%	1% Increase 8.15%
Total Pension Liability (TPL)	\$ 500,810,579	\$ 446,878,220	\$ 402,055,762
Net Position Restricted for Pensions	<u>324,938,251</u>	<u>324,938,251</u>	<u>324,938,251</u>
Net Pension Liability (NPL)	\$ 175,872,328	\$ 121,939,969	\$ 77,117,511

Disclosure Regarding the Deferred Retirement Option Program

To Be Provided by System

Summary of Population Statistics As of June 30, 2018

Inactive Plan Members or Beneficiaries Currently Receiving Benefits (Including DROP participants)	729
Inactive Plan Members Entitled to But Not Yet Receiving Benefits	84
Active Plan Members	<u>467</u>
Total Plan Members	1,280

SECTION E

SUMMARY OF BENEFITS

Summary of Non-Contributory Benefit Provisions (Last Changed as of 7-1-2009)

The Non-Contributory Plan was created by Act 793 of 1977 and was effective January 1, 1978. All non-retired members are now covered by non-contributory benefits. Act 1071 of 1997 created a Tier Two benefit plan for all officers hired on or after April 3, 1997. Existing members of the plan in effect prior to this date (Tier One) had one year to elect coverage under Tier Two.

Voluntary Retirement

With a full benefit, after 30 years of actual service, regardless of age, or at age 65 with 5 actual years of service for Tier One and Tier Two. The age requirement is reduced by 1 month for every 2 months of Public Safety service credit, but not below age 52 for Tier One or age 55 for Tier Two members.

Public Safety service credit is granted at the rate of 1.5 months of credit for each month of actual Public Safety employment for Tier One. Service is credited at a rate of one for one in Tier Two.

With a reduced benefit, once a member's age is within 10 years of becoming eligible for full benefits. The reduction for Tier One is equal to 1/2 of 1% for each month retirement precedes Normal Retirement Age. The reduction for Tier Two is equal to 3/4 of 1% for each month retirement precedes Normal Retirement Age.

Final Average Pay (FAP)

Average of the highest 60 calendar months' pays for Tier One or 48 calendar months for Tier Two.

Full Age & Service Retirement Benefit

Tier One: 1.55% of FAP times years and months of credited service. Tier Two: 2.475% of FAP times credited service. If retirement is prior to age 62, an additional .322% of FAP times credited service will be paid until the retiree attains age 62 for Tier One or .513% of FAP times credited service for Tier Two.

Public Safety service credit is granted at the rate of 1.5 months of credit for each month of actual Public Safety employment for Tier One. Service is credited at a rate of one for one in Tier Two.

For Tier One, the portion of the SPRS benefit based on service before 1978 cannot be less than the amount provided by contributory provisions in effect at time of retirement; and if there is credited service for time prior to July 1, 1991, the benefit cannot be less than under the provisions in effect July 1, 1990, (using Social Security offset), plus increases granted since that date.

For Tier One, the minimum monthly benefit is \$150 minus any age and beneficiary option reductions.

Vested and Reduced Early Retirement Benefits

5 years of actual service, and leaving System-covered employment before full retirement age.

Deferred full retirement benefit, based on service and pay at termination, begins when full retirement age would have been reached by continuing covered employment.

In place of a deferred full benefit, a qualifying member may elect an immediate reduced benefit, provided the member is within 10 years of full retirement age. The reduced amount is the full amount reduced by 1/2 of 1% for Tier One and/or 3/4 of 1% for Tier Two for each month of difference in benefit commencement ages.

Death While in System Covered Employment

Member's accumulated contributions before 1978 are refundable.

If the deceased member has 5 or more years of service and has qualifying dependents, monthly benefits are payable instead. A surviving spouse receives a benefit as if the member had retired and elected the joint & 75% survivor option. Payment begins immediately if the member was eligible for a full age and service benefit or had 20 years of service; or payment begins at the spouse's age 50 if the member had 15 or more years of service; or payment begins at the spouse's age 62 if the member had less than 15 years of service.

If a member is killed while in the official line of duty and the surviving spouse is eligible for a deferred benefit, then the surviving spouse may elect to receive a reduced benefit immediately. The reduction of the benefit shall be 1/2 of 1% per month for each of the first 60 months that the benefit commences before when it would have otherwise commenced, plus; 1/4 of 1% per month for each month more than 60 months that the benefit commences before when it would have otherwise commenced. However, the total reduction shall not be more than 50%.

Each dependent child receives a benefit of 10% of annual pay (maximum of 25% of annual pay for all children).

Dependent parents' benefits are payable if neither spouse nor children's benefits are payable.

Total And Permanent Disability

Tier One eligibility: Disabled after 5 years of service.

Tier Two eligibility: Disabled after 5 years of service.

Amount is computed as an age and service benefit, based on service and pay to the time of disability.

Death After Retirement

Retiring member can provide protection for a beneficiary by electing an option which provides beneficiary protection by reducing the retired employee's benefit amount.

Under Tier One, if a straight life annuity is paid, upon the retiree's death, 50% of the retiree's benefit is continued to a surviving spouse. If the deceased retiree leaves children under age 18, 75% of the retiree's benefit is continued to the surviving spouse. If there is no surviving spouse, the 75% will be divided among the children under age 18.

Under Tier Two, if a straight life annuity is elected, no survivor benefit is payable.

Benefit Increases After Retirement

Annually, there is a cost-of-living adjustment equal to 3% of the current benefit amount.

Member Contributions

None.

Arkansas State Police Officers Deferred Retirement Option Plan – Tier I (Act 967 of 1995)

Tier One members with 30 years of credited service and who are eligible to receive a service retirement pension may participate.

Participating members may continue in employment for up to 7 years and have their accrued monthly benefit (at date of participation) credited to an individual account in the Deferred Retirement Option Plan in lieu of any further benefit accruals.

The Deferred Retirement Option Plan accounts accumulate with interest and are paid to the member at termination of active membership in either a lump sum or as an annuity of equivalent value. Interest is credited annually at a rate established by the Board of Trustees.

Arkansas State Police Officers Deferred Retirement Option Plan – Tier II (Act 1242 of 2009)

Tier Two members with at least 30 years of actual service and are eligible to receive a service retirement pension may participate.

Participating members may continue in employment for up to 7 years and have seventy-two percent (72%) of their accrued monthly benefit (at date of participation) credited to an individual account in the Deferred Retirement Option Plan in lieu of any further benefit accruals.

The Deferred Retirement Option Plan accounts accumulate with interest and are paid to the member at termination of active membership in either a lump sum or as an annuity of equivalent value. Interest is credited annually to participant accounts at a rate established by the Arkansas State Police Retirement System Board of Trustees that shall not be greater than five percent (5%) nor less than one percent (1%) per annum.

SECTION F

ACTUARIAL COST METHOD AND ACTUARIAL ASSUMPTIONS

Summary of Actuarial Assumptions Used for State Police Actuarial Valuations Assumptions Adopted by Board of Trustees after Consulting with Actuary

In accordance with Section 24-6-204 of the Arkansas Code, the Board of Trustees adopts the actuarial assumptions used for actuarial valuation purposes.

The actuarial assumptions used in the valuation are shown in this section. Assumptions were established based upon an Experience Study covering the period July 1, 2012 through June 30, 2017 (please see our report dated August 9, 2018). The actuarial assumptions represent estimates of future experience.

Economic Assumptions

The investment return rate used in making the valuation was 7.15% per year, compounded annually (net after administrative and investment expenses). The assumed real rate of return is the portion of investment return which is more than the wage inflation rate. Considering assumed wage inflation of 3.25%, the 7.15% investment return rate translates to an effective assumed real rate of return of 3.90%. The wage inflation assumption was revised for the June 30, 2015 valuation and the investment assumption was revised for the June 30, 2017 valuation.

Pay increase assumptions for individual active members are shown on page 28. Part of the assumption for each age is for a merit and/or seniority increase, and the other 3.25% recognizes wage inflation. The wage inflation assumption consists of 2.5% for price inflation and 0.75% for real wage growth. The pay increase assumption for individual active members was revised for the June 30, 2018 valuation.

Total active member payroll is assumed to increase 3.25% a year, which is the portion of the individual pay increase assumptions recognizing wage inflation.

The number of active members is assumed to continue at the present number.

Non-Economic Assumptions

The mortality tables used to measure retired life mortality were the RP-2006 Healthy Annuitant benefit weighted generational mortality tables for males and females. The disability post-retirement mortality tables used were the RP-2006 Disabled Retiree benefit weighted generational mortality tables for males and females. The death-in-service mortality tables used were the RP-2006 Employee benefit weighted generational mortality tables for males and females. Mortality rates are multiplied by 135% for males and 125% for females and are adjusted for fully generational mortality improvements using Scale MP-2017. This assumption was first used for the June 30, 2018 valuation.

The probabilities of retirement for members eligible to retire are shown on page 27. The assumption was revised for the June 30, 2018 valuation.

The probabilities of death-in-service, disability and withdrawal from service are shown for sample ages on page 28. The assumption for death-in-service was revised for the June 30, 2018 valuation.

The individual entry-age normal actuarial cost method of the valuation was used in determining liabilities and normal cost.

Differences in the past between assumed experience and actual experience (“actuarial gains and losses”) become part of actuarial accrued liabilities.

Unfunded actuarial accrued liabilities are amortized to produce contribution amounts (principal & interest) which are level percent-of-payroll contributions.

Present assets (cash & investments) were valued on a market related basis in which differences between actual and assumed returns are phased-in over a four year period.

The data about persons now covered and about present assets was furnished by the System’s administrative staff. Although examined for general reasonableness, the data was not audited by the Actuary.

The actuarial valuation computations were made by or under the supervision of a Member of the American Academy of Actuaries (MAAA).

Single Life Retirement Values Based on the RP-2006 Healthy Annuitant Generational Mortality Tables and 7.15% Interest

Sample Attained Ages	Present Value of \$1.00 Monthly for Life		Present Value of \$1.00 Monthly for Life Increasing 3% Annually		Future Life Expectancy (Years) 2018 *	
	Men	Women	Men	Women	Men	Women
40	\$ 155.86	\$ 159.76	\$ 228.83	\$ 238.62	40.85	44.56
45	150.67	155.71	215.75	227.14	35.96	39.59
50	144.07	150.25	200.67	213.41	31.19	34.66
55	135.97	143.05	183.75	197.25	26.62	29.83
60	126.16	134.08	165.01	179.03	22.29	25.20
65	114.46	123.16	144.61	158.86	18.22	20.82
70	100.62	109.76	122.59	136.46	14.43	16.66
75	84.59	93.92	99.31	112.42	10.95	12.82
80	67.26	76.39	76.15	88.07	7.90	9.42
85	50.25	58.64	55.03	65.27	5.41	6.59

* Applicable to calendar year 2018. Life expectancies and rates in future years are determined by the fully generational MP-2017 projection scale.

Sample Attained Ages	\$100 Benefit Increasing 3% Yearly
55	\$100.00
60	115.93
65	134.39
70	155.79
75	180.60
80	209.36

Probabilities of Retirement for Members Eligible to Retire

Retirement Ages	Percent of Eligible Active Members Retiring Within Next Year		Years of Service	Percent of Eligible Active Members Retiring Within Next Year
	Tier One	Tier Two		Tier Two
47	1%	-		
48	1%	-		
49	1%	-		
50	6%	1%	30	25%
51	6%	1%	31	15%
52	8%	1%	32	15%
53	8%	6%	33	20%
54	8%	6%	34	35%
55	10%	25%	35	40%
56	10%	20%	36 & Over	100%
57	10%	18%		
58	25%	18%		
59	40%	20%		
60	50%	25%		
61	60%	30%		
62	80%	100%		
63	80%	100%		
64	100%	100%		
65	100%	100%		

A member is assumed to be eligible to retire at age 52 (55 for Tier Two) with 17 years of service, or at any age with 30 years of service (Tier Two). A member is assumed to be eligible to retire early at age 47 (50 for Tier 2) with 17 years of service. For a Tier 2 member with 30 or more years of service at the beginning of a year, the percents shown for service based retirement (30 or more years) take precedence over the percents associated with age based retirement.

It was assumed that members eligible to enter the DROP will do so to maximize the value of their benefits.

Separations from Active Employment Before Age and Service Retirement & Individual Pay Increases

Sample Ages	Percent of Active Members Separating Within the Next Year				Pay Increase Assumptions for Active Members		
	Death		Disability	Other	Merit & Seniority	Base (Economic)	Increase Next Year
	Male	Female					
20	0.05%	0.02%	0.06%	5.50%	4.50%	3.25%	7.75%
25	0.07%	0.02%	0.09%	5.50%	3.90%	3.25%	7.15%
30	0.07%	0.03%	0.19%	5.50%	2.90%	3.25%	6.15%
35	0.08%	0.04%	0.31%	4.18%	1.90%	3.25%	5.15%
40	0.09%	0.06%	0.43%	2.64%	1.38%	3.25%	4.63%
45	0.13%	0.08%	0.55%	1.43%	1.10%	3.25%	4.35%
50	0.23%	0.14%	0.67%	0.55%	0.80%	3.25%	4.05%
55	0.38%	0.22%	0.79%	0.00%	0.60%	3.25%	3.85%

Miscellaneous and Technical Assumptions

June 30, 2018

Marriage Assumption:	95% of males and 95% of females are assumed to be married for purposes of death-in-service benefits. 90% of males and 90% of females are assumed to be married for purposes of death-after-retirement benefits. Male spouses are assumed to be three years older than female spouses for active member valuation purposes.
Pay Increase Timing:	Beginning of year. This is equivalent to assuming that reported pays represent amounts paid to members during the year ended on the valuation date.
Decrement Timing:	Decrements are assumed to occur mid-year.
Eligibility Testing:	Eligibility for benefits is determined based upon the age nearest birthday and service nearest whole year on the date the decrement is assumed to occur.
Decrement Relativity:	Decrement rates are used directly from the experience study, without adjustment for multiple decrement table effects.
Decrement Operation:	Disability and withdrawal decrements do not operate during the period a member is assumed to be eligible for an unreduced benefit.
DROP Participants:	It was assumed that members will participate in the forward DROP to the extent that participating in the forward DROP would provide the highest value of benefits.
Incidence of Contributions:	Contributions are assumed to be received continuously throughout the year.
Benefit Service:	Exact fractional service is used to determine the amount of benefit payable.
Tier One DROP Interest Credit:	Interest is assumed to be credited at 3.25%.
Tier Two DROP Interest Credit:	Interest is assumed to be credited at 3.25%.
Administrative Expenses	The normal cost was increased by 0.70% of payroll to fund administrative expenses.

SECTION G

CALCULATION OF THE SINGLE DISCOUNT RATE

Calculation of the Single Discount Rate

GASB Statement No. 67 includes a specific requirement for the discount rate that is used for the purpose of the measurement of the Total Pension Liability. This rate considers the ability of the fund to meet benefit obligations in the future. To make this determination, employer contributions, employee contributions, benefit payments, expenses and investment returns are projected into the future. The Plan Net Position (assets) in future years can then be determined and compared to its obligation to make benefit payments in those years. As long as assets are projected to be on hand in a future year, the assumed valuation discount rate is used. In years where assets are not projected to be sufficient to meet benefit payments, the use of a municipal bond rate is required, as described in the following paragraph.

The *Single Discount Rate* (SDR) is equivalent to applying these two rates to the benefits that are projected to be paid during the different time periods. The SDR reflects (1) the long-term expected rate of return on pension plan investments (during the period in which the fiduciary net position is projected to be sufficient to pay benefits) and (2) tax-exempt municipal bond rate based on an index of 20-year general obligation bonds with an average AA credit rating as of the measurement date (to the extent that the contributions for use with the long-term expected rate of return are not met).

For the purpose of this valuation, the expected rate of return on pension plan investments is 7.15%; the municipal bond rate is 3.62%; and the resulting Single Discount Rate is 7.15%.

The tables in this section provide background for the development of the Single Discount Rate.

The **Projection of Contributions** table shows the development of expected contributions in future years. Normal Cost contributions for future hires are not included (nor are their liabilities).

The **Projection of Plan Fiduciary Net Position** table shows the development of expected asset levels in future years.

The **Present Values of Projected Benefit Payments** table shows the development of the SDR. It breaks down the benefit payments into present values for funded and unfunded portions and shows the equivalent total at the SDR.

Single Discount Rate Development Projection of Contributions

Fiscal Year Ending 6/30	Contributions from Current Employees	Normal Cost and Expense Contributions	UAL Contributions	Total Contributions
2019	\$ -	\$ 6,716,900	\$ 8,576,446	\$ 15,293,346
2020	-	6,538,238	8,923,261	15,461,499
2021	-	6,373,359	8,848,644	15,222,004
2022	-	6,183,877	8,967,848	15,151,725
2023	-	5,971,603	9,259,303	15,230,906
2024	-	5,773,484	9,560,230	15,333,713
2025	-	5,568,080	9,870,938	15,439,018
2026	-	5,349,813	10,191,744	15,541,557
2027	-	5,143,348	10,522,976	15,666,324
2028	-	4,946,372	10,864,972	15,811,344
2029	-	4,733,310	11,218,083	15,951,393
2030	-	4,512,289	11,582,670	16,094,960
2031	-	4,308,433	11,959,108	16,267,541
2032	-	4,115,103	12,347,778	16,462,881
2033	-	3,905,071	12,749,082	16,654,153
2034	-	3,675,818	13,163,427	16,839,245
2035	-	3,427,541	13,591,238	17,018,779
2036	-	3,194,404	14,032,952	17,227,356
2037	-	2,988,968	14,489,025	17,477,993
2038	-	2,803,826	14,959,917	17,763,744
2039	-	2,638,727	15,446,115	18,084,842
2040	-	2,458,913	-	2,458,913
2041	-	2,231,217	-	2,231,217
2042	-	1,981,579	-	1,981,579
2043	-	1,743,636	-	1,743,636
2044	-	1,505,906	-	1,505,906
2045	-	1,280,779	-	1,280,779
2046	-	1,073,155	-	1,073,155
2047	-	884,664	-	884,664
2048	-	705,600	-	705,600
2049	-	537,182	-	537,182
2050	-	398,719	-	398,719
2051	-	287,071	-	287,071
2052	-	192,075	-	192,075
2053	-	110,798	-	110,798
2054	-	58,776	-	58,776
2055	-	22,312	-	22,312
2056	-	-	-	-
2057	-	-	-	-
2058	-	-	-	-
2059	-	-	-	-
2060	-	-	-	-
2061	-	-	-	-
2062	-	-	-	-
2063	-	-	-	-
2064	-	-	-	-
2065	-	-	-	-
2066	-	-	-	-
2067	-	-	-	-
2068	-	-	-	-

Single Discount Rate Development

Projection of Plan Fiduciary Net Position

Fiscal Year	Projected	Projected	Projected	Projected	Projected	Projected
Ending	Beginning Plan	Projected Total	Benefit	Administrative	Investment	Projected Ending
6/30	Net Position	Contributions	Payments	Expenses	Earnings at 7.15%	Plan Net Position
	(a)	(b)	(c)	(d)	(e)	(f)=(a)+(b)-(c)-(d)+(e)
2019	\$ 324,938,251	\$ 15,293,346	\$ 31,761,955	\$ 209,437	\$ 22,647,138	\$ 330,907,343
2020	330,907,343	15,461,499	30,490,454	203,977	23,124,699	338,799,110
2021	338,799,110	15,222,004	30,436,850	198,964	23,682,605	347,067,905
2022	347,067,905	15,151,725	30,913,503	193,196	24,254,812	355,367,742
2023	355,367,742	15,230,906	31,740,918	186,737	24,822,189	363,493,182
2024	363,493,182	15,333,713	31,808,333	180,692	25,404,614	372,242,485
2025	372,242,485	15,439,018	31,238,146	174,444	26,054,141	382,323,053
2026	382,323,053	15,541,557	32,165,359	167,860	26,746,160	392,277,551
2027	392,277,551	15,666,324	32,224,302	161,612	27,460,438	403,018,399
2028	403,018,399	15,811,344	33,218,788	155,604	28,198,776	413,654,127
2029	413,654,127	15,951,393	34,493,853	149,003	28,919,586	423,882,250
2030	423,882,250	16,094,960	35,552,970	142,082	29,618,974	433,901,131
2031	433,901,131	16,267,541	36,559,329	135,728	30,306,254	443,779,869
2032	443,779,869	16,462,881	37,502,885	129,717	30,986,508	453,596,656
2033	453,596,656	16,654,153	38,236,461	123,229	31,669,584	463,560,703
2034	463,560,703	16,839,245	38,998,128	116,174	32,362,004	473,647,650
2035	473,647,650	17,018,779	40,385,922	108,492	33,041,041	483,213,057
2036	483,213,057	17,227,356	40,422,585	101,210	33,731,263	493,647,881
2037	493,647,881	17,477,993	40,950,991	94,747	34,467,822	504,547,958
2038	504,547,958	17,763,744	40,883,280	88,963	35,259,798	516,599,257
2039	516,599,257	18,084,842	41,397,051	83,815	36,114,878	529,318,111
2040	529,318,111	2,458,913	41,881,113	78,162	36,458,485	526,276,234
2041	526,276,234	2,231,217	43,043,079	70,952	36,192,421	521,585,841
2042	521,585,841	1,981,579	43,516,357	63,037	35,831,938	515,819,965
2043	515,819,965	1,743,636	44,173,102	55,461	35,388,511	508,723,550
2044	508,723,550	1,505,906	44,455,918	47,851	34,863,097	500,588,785
2045	500,588,785	1,280,779	44,746,277	40,646	34,263,604	491,346,244
2046	491,346,244	1,073,155	44,870,658	34,032	33,591,330	481,106,039
2047	481,106,039	884,664	45,492,866	28,027	32,830,884	469,300,694
2048	469,300,694	705,600	45,344,485	22,320	31,985,925	456,625,413
2049	456,625,413	537,182	45,313,669	16,965	31,074,996	442,906,957
2050	442,906,957	398,719	44,964,915	12,551	30,101,669	428,429,880
2051	428,429,880	287,071	44,207,244	9,007	29,089,380	413,590,080
2052	413,590,080	192,075	43,523,174	6,010	28,049,135	398,302,106
2053	398,302,106	110,798	42,575,500	3,463	26,986,573	382,820,514
2054	382,820,514	58,776	41,181,721	1,840	25,926,836	367,622,564
2055	367,622,564	22,312	40,648,162	698	24,857,687	351,853,703
2056	351,853,703	-	38,988,554	-	23,787,761	336,652,911
2057	336,652,911	-	37,976,529	-	22,736,460	321,412,842
2058	321,412,842	-	36,936,162	-	21,683,346	306,160,026
2059	306,160,026	-	35,840,731	-	20,631,255	290,950,550
2060	290,950,550	-	34,753,661	-	19,581,969	275,778,858
2061	275,778,858	-	33,640,978	-	18,536,285	260,674,165
2062	260,674,165	-	32,483,044	-	17,496,981	245,688,102
2063	245,688,102	-	31,283,386	-	16,467,625	230,872,341
2064	230,872,341	-	30,047,118	-	15,451,732	216,276,955
2065	216,276,955	-	28,779,965	-	14,452,680	201,949,670
2066	201,949,670	-	27,487,849	-	13,473,675	187,935,496
2067	187,935,496	-	26,176,796	-	12,517,723	174,276,422
2068	174,276,422	-	24,853,051	-	11,587,606	161,010,977

Single Discount Rate Development

Projection of Plan Fiduciary Net Position

(Concluded)

Fiscal Year Ending 6/30	Projected Beginning Plan Net Position	Projected Total Contributions	Projected Benefit Payments	Projected Administrative Expenses	Projected Investment Earnings at 7.15%	Projected Ending Plan Net Position
	(a)	(b)	(c)	(d)	(e)	(f)=(a)+(b)-(c)-(d)+(e)
2069	\$ 161,010,977	\$ -	\$ 23,523,206	\$ -	\$ 10,685,848	\$ 148,173,619
2070	148,173,619	-	22,193,751	-	9,814,684	135,794,553
2071	135,794,553	-	20,870,455	-	8,976,072	123,900,171
2072	123,900,171	-	19,557,942	-	8,171,736	112,513,964
2073	112,513,964	-	18,259,733	-	7,403,232	101,657,463
2074	101,657,463	-	16,978,928	-	6,671,991	91,350,526
2075	91,350,526	-	15,718,437	-	5,979,329	81,611,418
2076	81,611,418	-	14,481,287	-	5,326,448	72,456,579
2077	72,456,579	-	13,270,938	-	4,714,400	63,900,040
2078	63,900,040	-	12,091,336	-	4,144,050	55,952,754
2079	55,952,754	-	10,947,189	-	3,616,016	48,621,581
2080	48,621,581	-	9,843,849	-	3,130,601	41,908,332
2081	41,908,332	-	8,786,710	-	2,687,744	35,809,366
2082	35,809,366	-	7,780,643	-	2,287,014	30,315,737
2083	30,315,737	-	6,830,233	-	1,927,610	25,413,114
2084	25,413,114	-	5,940,103	-	1,608,345	21,081,355
2085	21,081,355	-	5,114,361	-	1,327,635	17,294,629
2086	17,294,629	-	4,356,192	-	1,083,521	14,021,958
2087	14,021,958	-	3,667,820	-	873,709	11,227,847
2088	11,227,847	-	3,050,431	-	695,621	8,873,037
2089	8,873,037	-	2,504,310	-	546,439	6,915,165
2090	6,915,165	-	2,028,292	-	423,175	5,310,048
2091	5,310,048	-	1,619,475	-	322,772	4,013,344
2092	4,013,344	-	1,273,609	-	242,209	2,981,943
2093	2,981,943	-	985,320	-	178,592	2,175,215
2094	2,175,215	-	748,795	-	129,221	1,555,640
2095	1,555,640	-	558,144	-	91,619	1,089,116
2096	1,089,116	-	407,413	-	63,558	745,261
2097	745,261	-	290,740	-	43,072	497,593
2098	497,593	-	202,466	-	28,465	323,591
2099	323,591	-	137,296	-	18,313	204,609
2100	204,609	-	90,468	-	11,451	125,592
2101	125,592	-	57,819	-	6,948	74,721
2102	74,721	-	35,776	-	4,086	43,031
2103	43,031	-	21,389	-	2,325	23,966
2104	23,966	-	12,336	-	1,280	12,911
2105	12,911	-	6,861	-	682	6,732
2106	6,732	-	3,681	-	352	3,403
2107	3,403	-	1,907	-	176	1,672
2108	1,672	-	957	-	86	801
2109	801	-	468	-	41	373
2110	373	-	223	-	19	169
2111	169	-	104	-	8	74
2112	74	-	46	-	4	31
2113	31	-	20	-	2	12
2114	12	-	8	-	1	5
2115	5	-	3	-	0	2
2116	2	-	1	-	0	1
2117	1	-	0	-	0	0
2118	0	-	0	-	0	0

Single Discount Rate Development

Present Values of Projected Benefits

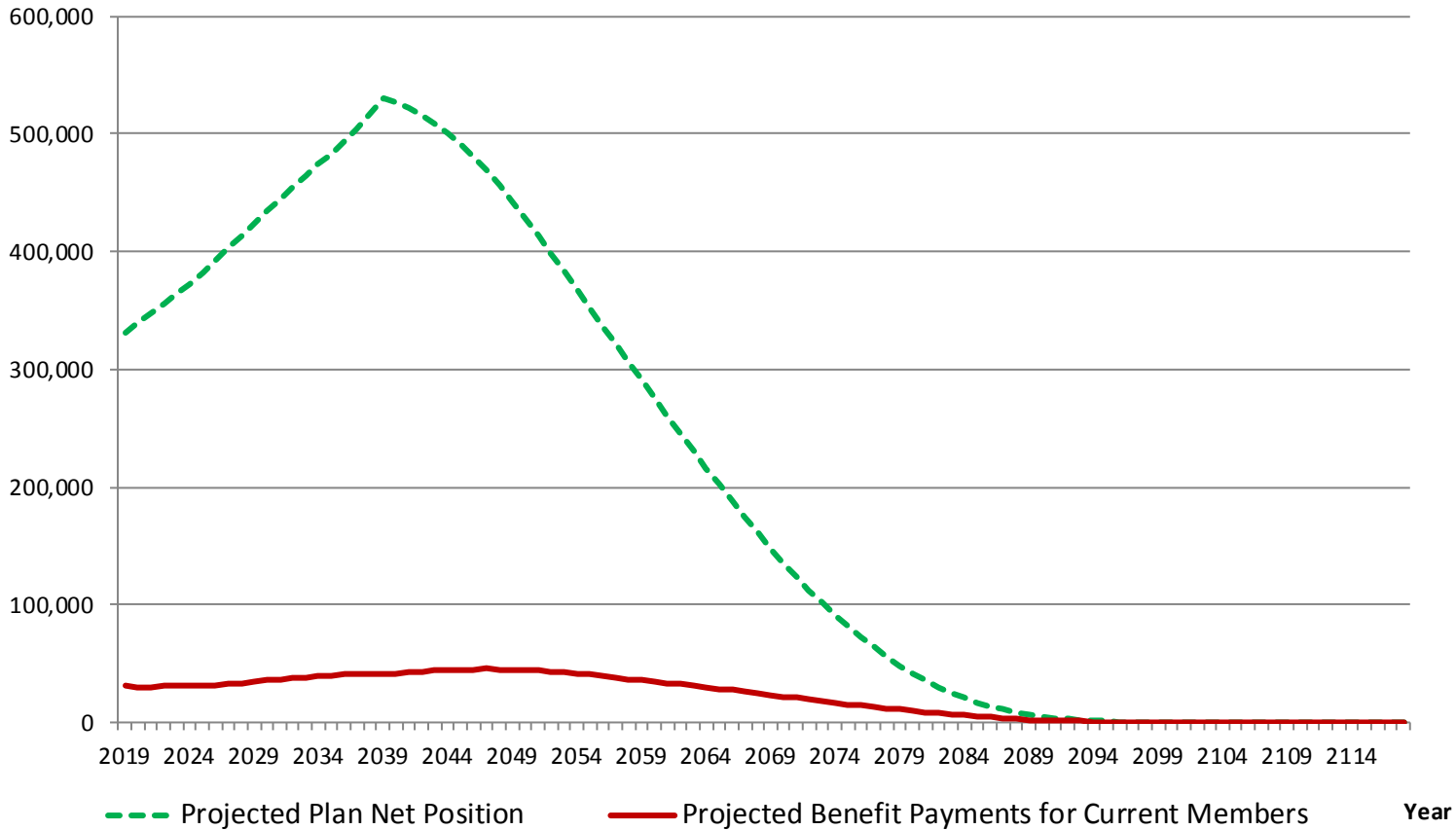
Fiscal Year Ending 6/30	Projected		Funded Portion of		Unfunded Portion	Present Value of	Present Value of	Present Value of
	Beginning Plan Net Position	Projected Benefit Payments	Funded Portion of Benefit Payments	of Benefit Payments	of Benefit Payments	Funded Benefit Payments using Expected Return Rate (v)	Unfunded Benefit Payments using Municipal Bond Rate (vf)	Benefit Payments using Single Discount Rate (sdr)
(a)	(b)	(c)	(d)	(e)	(f)=(d)*v [^] ((a)-.5)	(g)=(e)*vf [^] ((a)-.5)	(h)=(c)/((1+sdr) [^] (a-.5))	
2019	\$ 324,938,251	\$ 31,761,955	\$ 31,761,955	\$ -	\$ -	\$ 30,683,941	\$ -	\$ 30,683,941
2020	330,907,343	30,490,454	30,490,454	-	-	27,490,056	-	27,490,056
2021	338,799,110	30,436,850	30,436,850	-	-	25,610,571	-	25,610,571
2022	347,067,905	30,913,503	30,913,503	-	-	24,275,915	-	24,275,915
2023	355,367,742	31,740,918	31,740,918	-	-	23,262,410	-	23,262,410
2024	363,493,182	31,808,333	31,808,333	-	-	21,756,245	-	21,756,245
2025	372,242,485	31,238,146	31,238,146	-	-	19,940,503	-	19,940,503
2026	382,323,053	32,165,359	32,165,359	-	-	19,162,276	-	19,162,276
2027	392,277,551	32,224,302	32,224,302	-	-	17,916,370	-	17,916,370
2028	403,018,399	33,218,788	33,218,788	-	-	17,236,859	-	17,236,859
2029	413,654,127	34,493,853	34,493,853	-	-	16,704,130	-	16,704,130
2030	423,882,250	35,552,970	35,552,970	-	-	16,068,150	-	16,068,150
2031	433,901,131	36,559,329	36,559,329	-	-	15,420,414	-	15,420,414
2032	443,779,869	37,502,885	37,502,885	-	-	14,762,854	-	14,762,854
2033	453,596,656	38,236,461	38,236,461	-	-	14,047,245	-	14,047,245
2034	463,560,703	38,998,128	38,998,128	-	-	13,371,036	-	13,371,036
2035	473,647,650	40,385,922	40,385,922	-	-	12,922,874	-	12,922,874
2036	483,213,057	40,422,585	40,422,585	-	-	12,071,494	-	12,071,494
2037	493,647,881	40,950,991	40,950,991	-	-	11,413,246	-	11,413,246
2038	504,547,958	40,883,280	40,883,280	-	-	10,634,041	-	10,634,041
2039	516,599,257	41,397,051	41,397,051	-	-	10,049,161	-	10,049,161
2040	529,318,111	41,881,113	41,881,113	-	-	9,488,257	-	9,488,257
2041	526,276,234	43,043,079	43,043,079	-	-	9,100,796	-	9,100,796
2042	521,585,841	43,516,357	43,516,357	-	-	8,586,900	-	8,586,900
2043	515,819,965	44,173,102	44,173,102	-	-	8,134,851	-	8,134,851
2044	508,723,550	44,455,918	44,455,918	-	-	7,640,629	-	7,640,629
2045	500,588,785	44,746,277	44,746,277	-	-	7,177,352	-	7,177,352
2046	491,346,244	44,870,658	44,870,658	-	-	6,717,035	-	6,717,035
2047	481,106,039	45,492,866	45,492,866	-	-	6,355,743	-	6,355,743
2048	469,300,694	45,344,485	45,344,485	-	-	5,912,284	-	5,912,284
2049	456,625,413	45,313,669	45,313,669	-	-	5,514,014	-	5,514,014
2050	442,906,957	44,964,915	44,964,915	-	-	5,106,464	-	5,106,464
2051	428,429,880	44,207,244	44,207,244	-	-	4,685,411	-	4,685,411
2052	413,590,080	43,523,174	43,523,174	-	-	4,305,094	-	4,305,094
2053	398,302,106	42,575,500	42,575,500	-	-	3,930,336	-	3,930,336
2054	382,820,514	41,181,721	41,181,721	-	-	3,547,989	-	3,547,989
2055	367,622,564	40,648,162	40,648,162	-	-	3,268,335	-	3,268,335
2056	351,853,703	38,988,554	38,988,554	-	-	2,925,705	-	2,925,705
2057	336,652,911	37,976,529	37,976,529	-	-	2,659,601	-	2,659,601
2058	321,412,842	36,936,162	36,936,162	-	-	2,414,131	-	2,414,131
2059	306,160,026	35,840,731	35,840,731	-	-	2,186,219	-	2,186,219
2060	290,950,550	34,753,661	34,753,661	-	-	1,978,451	-	1,978,451
2061	275,778,858	33,640,978	33,640,978	-	-	1,787,315	-	1,787,315
2062	260,674,165	32,483,044	32,483,044	-	-	1,610,635	-	1,610,635
2063	245,688,102	31,283,386	31,283,386	-	-	1,447,645	-	1,447,645
2064	230,872,341	30,047,118	30,047,118	-	-	1,297,654	-	1,297,654
2065	216,276,955	28,779,965	28,779,965	-	-	1,159,990	-	1,159,990
2066	201,949,670	27,487,849	27,487,849	-	-	1,033,981	-	1,033,981
2067	187,935,496	26,176,796	26,176,796	-	-	918,959	-	918,959
2068	174,276,422	24,853,051	24,853,051	-	-	814,267	-	814,267

Single Discount Rate Development Present Values of Projected Benefits (Concluded)

Fiscal Year Ending 6/30	Projected		Funded Portion of Benefit Payments	Unfunded Portion of Benefit Payments	Present Value of Funded Benefit Payments using Expected Return Rate (v)	Present Value of Unfunded Benefit Payments using Municipal Bond Rate (vf)	Present Value of Benefit Payments using Single Discount Rate (sdr)
	Beginning Plan Net Position	Projected Benefit Payments			(f)=(d)*v^(a)-.5	(g)=(e)*vf^(a)-.5	(h)=(c)/(1+sdr)^(a-.5)
(a)	(b)	(c)	(d)	(e)	(f)=(d)*v^(a)-.5	(g)=(e)*vf^(a)-.5	(h)=(c)/(1+sdr)^(a-.5)
2069	\$ 161,010,977	\$ 23,523,206	\$ 23,523,206	\$ -	\$ 719,270	\$ -	\$ 719,270
2070	148,173,619	22,193,751	22,193,751	-	633,335	-	633,335
2071	135,794,553	20,870,455	20,870,455	-	555,831	-	555,831
2072	123,900,171	19,557,942	19,557,942	-	486,118	-	486,118
2073	112,513,964	18,259,733	18,259,733	-	423,566	-	423,566
2074	101,657,463	16,978,928	16,978,928	-	367,574	-	367,574
2075	91,350,526	15,718,437	15,718,437	-	317,579	-	317,579
2076	81,611,418	14,481,287	14,481,287	-	273,059	-	273,059
2077	72,456,579	13,270,938	13,270,938	-	233,539	-	233,539
2078	63,900,040	12,091,336	12,091,336	-	198,582	-	198,582
2079	55,952,754	10,947,189	10,947,189	-	167,794	-	167,794
2080	48,621,581	9,843,849	9,843,849	-	140,814	-	140,814
2081	41,908,332	8,786,710	8,786,710	-	117,305	-	117,305
2082	35,809,366	7,780,643	7,780,643	-	96,942	-	96,942
2083	30,315,737	6,830,233	6,830,233	-	79,422	-	79,422
2084	25,413,114	5,940,103	5,940,103	-	64,462	-	64,462
2085	21,081,355	5,114,361	5,114,361	-	51,798	-	51,798
2086	17,294,629	4,356,192	4,356,192	-	41,175	-	41,175
2087	14,021,958	3,667,820	3,667,820	-	32,355	-	32,355
2088	11,227,847	3,050,431	3,050,431	-	25,113	-	25,113
2089	8,873,037	2,504,310	2,504,310	-	19,242	-	19,242
2090	6,915,165	2,028,292	2,028,292	-	14,544	-	14,544
2091	5,310,048	1,619,475	1,619,475	-	10,838	-	10,838
2092	4,013,344	1,273,609	1,273,609	-	7,954	-	7,954
2093	2,981,943	985,320	985,320	-	5,743	-	5,743
2094	2,175,215	748,795	748,795	-	4,073	-	4,073
2095	1,555,640	558,144	558,144	-	2,834	-	2,834
2096	1,089,116	407,413	407,413	-	1,930	-	1,930
2097	745,261	290,740	290,740	-	1,286	-	1,286
2098	497,593	202,466	202,466	-	836	-	836
2099	323,591	137,296	137,296	-	529	-	529
2100	204,609	90,468	90,468	-	325	-	325
2101	125,592	57,819	57,819	-	194	-	194
2102	74,721	35,776	35,776	-	112	-	112
2103	43,031	21,389	21,389	-	62	-	62
2104	23,966	12,336	12,336	-	34	-	34
2105	12,911	6,861	6,861	-	17	-	17
2106	6,732	3,681	3,681	-	9	-	9
2107	3,403	1,907	1,907	-	4	-	4
2108	1,672	957	957	-	2	-	2
2109	801	468	468	-	1	-	1
2110	373	223	223	-	0	-	0
2111	169	104	104	-	0	-	0
2112	74	46	46	-	0	-	0
2113	31	20	20	-	0	-	0
2114	12	8	8	-	0	-	0
2115	5	3	3	-	0	-	0
2116	2	1	1	-	0	-	0
2117	1	0	0	-	0	-	0
2118	-	-	-	-	-	-	-
Totals	\$ 501,602,035	\$ 501,602,035	\$ 501,602,035	\$ -	\$ 501,602,035	\$ -	\$ 501,602,035

Projection of Plan Net Position and Benefit Payments

\$ [thousands]



SECTION H

GLOSSARY OF TERMS

Glossary of Terms

<i>Actuarial Accrued Liability (AAL)</i>	The AAL is the difference between the actuarial present value of all benefits and the actuarial value of future normal costs. The definition comes from the fundamental equation of funding which states that the present value of all benefits is the sum of the Actuarial Accrued Liability and the present value of future normal costs. The AAL may also be referred to as "accrued liability" or "actuarial liability."
<i>Actuarial Assumptions</i>	These assumptions are estimates of future experience with respect to rates of mortality, disability, turnover, retirement, rate or rates of investment income and compensation increases. Actuarial assumptions are generally based on past experience, often modified for projected changes in conditions. Economic assumptions (compensation increases, payroll growth, inflation and investment return) consist of an underlying real rate of return plus an assumption for a long-term average rate of inflation.
<i>Accrued Service</i>	Service credited under the system which was rendered before the date of the actuarial valuation.
<i>Actuarial Equivalent</i>	A single amount or series of amounts of equal actuarial value to another single amount or series of amounts, computed on the basis of appropriate actuarial assumptions.
<i>Actuarial Cost Method</i>	A mathematical budgeting procedure for allocating the dollar amount of the actuarial present value of the pension trust benefits between future normal cost and actuarial accrued liability. The actuarial cost method may also be referred to as the actuarial funding method.
<i>Actuarial Gain (Loss)</i>	The difference in liabilities between actual experience and expected experience during the period between two actuarial valuations is the gain (loss) on the accrued liabilities.
<i>Actuarial Present Value (APV)</i>	The amount of funds currently required to provide a payment or series of payments in the future. The present value is determined by discounting future payments at predetermined rates of interest and probabilities of payment.
<i>Actuarial Valuation</i>	The actuarial valuation report determines, as of the actuarial valuation date, the service cost, total pension liability, and related actuarial present value of projected benefit payments for pensions.
<i>Actuarial Valuation Date</i>	The date as of which an actuarial valuation is performed.
<i>Actuarially Determined Contribution (ADC) or Annual Required Contribution (ARC)</i>	A calculated contribution into a defined benefit pension plan for the reporting period, most often determined based on the funding policy of the plan. Typically the Actuarially Determined Contribution has a normal cost payment and an amortization payment.

Glossary of Terms

<i>Amortization Payment</i>	The amortization payment is the periodic payment required to pay off an interest-discounted amount with payments of interest and principal.
<i>Amortization Method</i>	The method used to determine the periodic amortization payment may be a level dollar amount, or a level percent of pay amount. The period will typically be expressed in years, and the method will either be “open” (meaning, reset each year) or “closed” (the number of years remaining will decline each year).
<i>Cost-of-Living Adjustments</i>	Postemployment benefit changes intended to adjust benefit payments for the effects of inflation.
<i>Cost-Sharing Multiple-Employer Defined Benefit Pension Plan (cost-sharing pension plan)</i>	A multiple-employer defined benefit pension plan in which the pension obligations to the employees of more than one employer are pooled and pension plan assets can be used to pay the benefits of the employees of any employer that provides pensions through the pension plan.
<i>Covered-Employee Payroll</i>	The payroll of employees that are provided with pensions through the pension plan.
<i>Deferred Retirement Option Program (DROP)</i>	A program that permits a plan member to elect a calculation of benefit payments based on service credits and salary, as applicable, as of the DROP entry date. The plan member continues to provide service to the employer and is paid for the service by the employer after the DROP entry date; however, the pensions that would have been paid to the plan member are credited to an individual member account within the defined benefit pension plan until the end of the DROP period. Other variations for DROP exist and will be more fully detailed in the plan provision section of the valuation report.
<i>Deferred Inflows and Outflows</i>	The deferred inflows and outflows of pension resources are amounts used under GASB Statement No. 68 in developing the annual pension expense. Deferred inflows and outflows arise with differences between expected and actual experiences; changes of assumptions. The portion of these amounts not included in pension expense should be included in the deferred inflows or outflows of resources.
<i>Discount Rate</i>	For GASB purposes, the discount rate is the single rate of return that results in the present value of all projected benefit payments to be equal to the sum of the funded and unfunded projected benefit payments, specifically: <ol style="list-style-type: none">1. The benefit payments to be made while the pension plan’s fiduciary net position is projected to be greater than the benefit payments that are projected to be made in the period; and2. The present value of the benefit payments not in (1) above, discounted using the municipal bond rate.

Glossary of Terms

Entry Age Actuarial Cost Method (EAN)

The EAN is a cost method for allocating the costs of the plan between the normal cost and the accrued liability. The actuarial present value of the projected benefits of each individual included in an actuarial valuation is allocated on a level basis (either level dollar or level percent of pay) over the earnings or service of the individual between entry age and assumed exit ages(s). The portion of the actuarial present value allocated to a valuation year is the normal cost. The portion of this actuarial present value not provided for at a valuation date by the actuarial present value of future normal costs is the actuarial accrued liability. The sum of the accrued liability plus the present value of all future normal costs is the present value of all benefits.

GASB

The Governmental Accounting Standards Board is an organization that exists in order to promulgate accounting standards for governmental entities.

Fiduciary Net Position

The fiduciary net position is the market value of the assets of the trust dedicated to the defined benefit provisions.

Long-Term Expected Rate of Return

The long-term rate of return is the expected return to be earned over the entire trust portfolio based on the asset allocation of the portfolio.

Money-Weighted Rate of Return

The money-weighted rate of return is a method of calculating the returns that adjusts for the changing amounts actually invested. For purposes of GASB Statement No. 67, money-weighted rate of return is calculated as the internal rate of return on pension plan investments, net of pension plan investment expense.

Multiple-Employer Defined Benefit Pension Plan

A multiple-employer plan is a defined benefit pension plan that is used to provide pensions to the employees of more than one employer.

Municipal Bond Rate

The Municipal Bond Rate is the discount rate to be used for those benefit payments that occur after the assets of the trust have been depleted.

Net Pension Liability (NPL)

The NPL is the liability of employers and non-employer contributing entities to plan members for benefits provided through a defined benefit pension plan.

Non-Employer Contributing Entities

Non-employer contributing entities are entities that make contributions to a pension plan that is used to provide pensions to the employees of other entities. For purposes of the GASB accounting statements, plan members are not considered non-employer contributing entities.

Normal Cost

The portion of the actuarial present value allocated to a valuation year is called the normal cost. For purposes of application to the requirements of this Statement, the term normal cost is the equivalent of service cost.

Glossary of Terms

<i>Other Postemployment Benefits (OPEB)</i>	All postemployment benefits other than retirement income (such as death benefits, life insurance, disability, and long-term care) that are provided separately from a pension plan, as well as postemployment healthcare benefits regardless of the manner in which they are provided. Other post-employment benefits do not include termination benefits.
<i>Real Rate of Return</i>	The real rate of return is the rate of return on an investment after adjustment to eliminate inflation.
<i>Service Cost</i>	The service cost is the portion of the actuarial present value of projected benefit payments that is attributed to a valuation year.
<i>Total Pension Expense</i>	The total pension expense is the sum of the following items that are recognized at the end of the employer’s fiscal year: <ol style="list-style-type: none">1. Service Cost2. Interest on the Total Pension Liability3. Current-Period Benefit Changes4. Employee Contributions (made negative for addition here)5. Projected Earnings on Plan Investments (made negative for addition here)6. Pension Plan Administrative Expense7. Other Changes in Plan Fiduciary Net Position8. Recognition of Outflow (Inflow) of Resources due to Liabilities9. Recognition of Outflow (Inflow) of Resources due to Assets
<i>Total Pension Liability (TPL)</i>	The TPL is the portion of the actuarial present value of projected benefit payments that is attributed to past periods of member service.
<i>Unfunded Actuarial Accrued Liability (UAAL)</i>	The UAAL is the difference between actuarial accrued liability and valuation assets.
<i>Valuation Assets</i>	The valuation assets are the assets used in determining the unfunded liability of the plan. For purposes of GASB Statement Nos. 67 and 68, the valuation assets are equal to the market value of assets.

November 16, 2018

Ms. Gail H. Stone, Executive Director
Arkansas State Police Retirement System
One Union National Plaza
124 West Capitol, Suite 400
Little Rock, Arkansas 72201

Dear Gail:

Please find enclosed 15 copies of the June 30, 2018 GASB Statements No. 67 and No. 68 Accounting and Financial Reporting for Pensions report of the Arkansas State Police Retirement System.

Sincerely,



David L. Hoffman

DLH:bd
Enclosures

