

**THE ANNE ARUNDEL COUNTY
POLICE SERVICE
RETIREMENT PLAN**

**ACTUARIAL VALUATION
AS OF
JANUARY 1, 2008**

Bolton Partners, Inc.
575 South Charles Street
Suite 500
Baltimore, Maryland 21201

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BOLTON PARTNERS, INC.

April 10, 2008

PERSONAL & CONFIDENTIAL

Andrea Fulton
Personnel Officer
Anne Arundel County Government
P.O. Box 6675
Annapolis, MD 21401

Re: Police Service Retirement Plan Valuation

Dear Andrea:

The following report sets forth the actuarial valuation as of January 1, 2008 of the Anne Arundel County Police Service Retirement Plan, for the plan year beginning on that date. The valuation is based on participant data as submitted by the personnel department of Anne Arundel County, Aetna and CIGNA and unaudited asset data submitted by the County.

INVESTMENT PERFORMANCE

The market value of plan assets as of December 31, 2007 was \$453,718,459. The average investment return for the fund on a market basis for the year ended December 31, 2007 was 10.3% and 9.3% on an actuarial basis.

The plan utilizes an actuarial averaging method to smooth out swings in investment performance and thus in asset values from year to year. Under the method, investment gains or losses above or below the 8% actuarial assumption are phased in over a five year period. As of December 31, 2007, the actuarial value of assets was \$417,278,055. Details of the development of the actuarial value of assets are set forth later in this report.

ASSUMPTION CHANGES

The following assumptions were changed pursuant to the recently completed Experience Study:

- Increased retirement rates for under age 55 with 20 years of service.
- Slightly decreased termination rates.
- Increased disability rates.
- Adopted RP-2000 Blue Collar Mortality table projected to 2008 (by Male Scale AA).

Bolton Partners, Inc.

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Actuarial, Benefit and Investment Consultants

PRINCIPAL RESULTS

The principal purpose of the valuation is to set forth the County's contributions for the fiscal year ending June 30, 2009. In addition, the report sets forth the information on the plan for the County's financial statements and for the plan's own financial statements.

The total recommended employer contribution for the plan year and fiscal year ending June 30, 2009 increased from \$9,777,042 to \$11,268,277. This is in addition to employee contributions of 5% of pay for the Police Department. The increase can be broken down to the following material factors:

- On an actuarial basis the investment return was 9.3% and generated a large investment gain. On a market value basis the return was 10.3%. The difference is a deferred gain. The amount of the deferred gain increased from \$29.5 million to \$36.4 million.
- Salary increases for continuing actives (non-DROP) were 8.9%, which is above the assumption.
- Employee contributions for Category I employees were reduced from 6% to 5% of pay.
- The number of active employees increased. This increases the dollar cost of the plan but decreases the cost as a percentage of covered payroll.
- Actuarial assumptions were changed.

The above material factors had the following effect on the County's contribution (as a percentage of payroll) since last year's valuation.

January 1, 2007 valuation	25.9%
Investment Gain	(1.1%)
Pay Increases	1.2%
New Entrants/Change in Normal Cost	(0.3%)
Expenses	(0.1%)
COLA	(0.2%)
Assumption Changes	0.8%
Plan Change	0.8%
Demographics and Other Changes	0.5%
January 1, 2008 valuation	27.5%

The overall funded ratio for the plan decreased from 97.1% to 96.2%.

Andrea Fulton
April 10, 2008
Page Three

The balance of this report sets forth details of changes in participation in the plan and the results of the valuation. A statement of funding progress under GASB 25 is also included.

Sincerely,

BOLTON PARTNERS, INC.



Thomas B. Lowman, FSA



David W. Ballard, CEBS

TBL/DWB/mlg

Trust Fund Asset Statement

Anne Arundel County, Maryland
Police Service Retirement Plan

**TRUST FUND ASSET STATEMENT FOR
YEAR ENDED DECEMBER 31, 2007**

Original Market Value 1/1/2007	\$419,331,110
Audit Adjustment	\$ 56,136
Market Value 1/1/2007	\$419,387,246
Receipts:	
Employer Contributions	\$ 10,034,020
Employee Contributions	2,019,806
Interest and Dividends	14,583,631
Realized and Unrealized Gain/(Loss)	29,586,999
Other	<u>497,684</u>
Total Receipts:	\$ 56,722,140
Disbursements:	
Benefit Payments	\$ 21,073,229
Administrative Expenses	494,604
Investment Expenses	<u>1,777,111</u>
Total Disbursements	\$ 23,344,944
Net Increase/(Decrease)	\$ 33,377,196
Preliminary Ending Value	\$452,764,442
Contribution Receivable	\$ 954,016
Ending Value 12/31/2007	\$453,718,459

**Development of Actuarial
Value of Assets**

ACTUARIAL VALUE OF ASSETS

	<u>2006</u>	<u>2007</u>
1. Actuarial Value of Assets Beginning of Year	\$360,268,341	\$389,877,885
2. Contributions	11,403,335	12,053,826
3. Benefit Payments	15,649,304	21,073,229
4. Administrative Expenses	423,233	494,604
5. Expected 8% Return	28,634,699	30,809,671
6. Expected Asset Value (1. + 2. - 3. - 4. + 5.)	\$384,233,838	\$411,173,549
7. Market Value End of Year	\$419,331,110	\$452,764,442
8. Prior Deferred Gain/(Loss)	\$ 11,899,909	\$ 15,838,444
9. Asset Gain/(Loss) (7. - 8. - 6.)	\$ 23,197,363	\$ 25,752,449
10. 80% of 2006 Gain/(Loss) of \$23,197,363	\$ 18,557,890	
11. 60% of 2005 Gain/(Loss) of \$601,439	360,863	
12. 40% of 2004 Gain/(Loss) of \$8,397,252	3,358,901	
13. 20% of 2003 Gain/(Loss) of \$40,900,723	8,180,145	
14. Preliminary Actuarial Value of Assets 1/1/2007 (7. - 10. - 11. - 12. - 13.)	\$388,873,311	
15. Contribution Receivable	\$ 1,004,574	
16. Final Actuarial Value of Assets 1/1/2007 (14. + 15.)	\$389,877,885	
17. 80% of 2007 Gain/(Loss) of \$25,752,449		\$ 20,601,959
18. 60% of 2006 Gain/(Loss) of \$23,197,363		13,918,418
19. 40% of 2005 Gain/(Loss) of \$601,439		240,576
20. 20% of 2004 Gain/(Loss) of \$8,397,252		1,679,450
21. Actuarial Value of Assets 1/1/2008 (7. - 17. - 18. - 19. - 20.)		\$416,324,039
22. Contribution Receivable		\$ 954,016
23. Final Actuarial Value of Assets 1/1/2008 (21. + 22.)		\$417,278,055
Rate of Return on Actuarial Value of Assets (net of investment expenses)	9.3%	9.3%

Participant Schedules

PARTICIPANT SUMMARY

	<u>Inactive Participants</u>				<u>Total</u>
	<u>Active Participants</u>	<u>DROP</u>	<u>With Deferred Benefits</u>	<u>Receiving Benefits</u>	
Participants as of January 1, 2007	589	51	0	478	1,118
Retired	(6)	(16)	0	22	0
Terminated Non-Vested	(14)	0	0	0	(14)
Disabled	(6)	0	0	6	0
Deceased	0	0	0	(7)	(7)
Payment to Beneficiary	0	0	0	1	1
QDRO Put in Pay	0	0	0	5	5
Transfers Out	0	0	0	0	0
Transfers In	0	0	0	0	0
New Hires	60	0	0	0	60
DROP	(12)	12	0	0	0
Data Adjustment	0	0	0	6	6
Net Change	22	(4)	0	33	51
Participants as of January 1, 2008	611	47	0	511	1,169

Service - Age Distribution

Anne Arundel County, Maryland
Police Service Retirement Plan

AGE, SERVICE AND AVERAGE SALARY DISTRIBUTION

Age as of 1/1/2008	Under 1	01-04	05-09	10-14	15-19	20-24	25-29	30-34	35-39	40 +	Total
Under 25	32 40,000	26 43,031	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	58 41,359
25-29	16 46,757	47 45,479	28 51,144	0 0	0 0	0 0	0 0	0 0	0 0	0 0	91 47,447
30-34	6 47,180	16 46,706	52 54,940	25 62,163	0 0	0 0	0 0	0 0	0 0	0 0	99 54,963
35-39	3 44,630	6 50,359	37 56,339	66 67,828	35 72,966	0 0	0 0	0 0	0 0	0 0	147 64,973
40-44	2 46,981	2 44,184	14 57,656	41 67,287	65 74,498	12 83,930	1 83,335	0 0	0 0	0 0	137 70,665
45-49	0 0	1 56,254	2 58,945	7 68,573	20 76,441	13 76,908	7 77,847	0 0	0 0	0 0	50 74,554
50-54	1 53,961	0 0	2 64,090	5 68,269	6 71,726	7 79,082	3 80,412	1 70,770	0 85,985	0 0	25 72,777
55-59	0 0	0 0	0 0	1 60,869	1 77,447	0 0	0 0	1 73,601	1 90,336	0 0	4 75,563
60-64	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
65-69	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
70 & Up	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
Total	60 43,217	98 45,412	135 55,013	145 66,701	127 74,274	32 80,017	11 79,045	2 72,186	1 90,336	0 0	611 60,948

Average Age: 36.88

Average Service: 10.69

Average Salary: \$60,948

Actuarial Costs

Anne Arundel County, Maryland
Police Service Retirement Plan

ACTUARIAL COSTS

	<u>As of</u> <u>01/01/2007</u>	<u>As of</u> <u>01/01/2008</u>
Participants		
Active excluding DROP	589	611
Active DROP	51	47
Retirees and Beneficiaries	<u>478</u>	<u>511</u>
Total	1,118	1,169
Active Payroll (Rate at January 1 st)	\$ 37,805,038	\$ 41,011,366
1. Actuarial Liability		
Active Participants	\$170,185,335	\$177,286,484
Participants Receiving Benefits	<u>231,512,770</u>	<u>256,380,618</u>
Total	\$401,698,105	\$433,667,102
2. Actuarial Value of Assets	\$389,877,885	\$417,278,055
3. Unfunded Actuarial Liability (1-2)	\$ 11,820,220	\$ 16,389,047
4. County's Normal Cost	\$ 7,855,241	\$ 8,967,828
5. Amortization Payment	\$ 726,576	\$ 1,006,716
6. Estimated Expenses	\$ 471,000	\$ 459,000
7. Total Recommended Contributions as of January 1 st (4 + 5 + 6)	\$ 9,052,817	\$ 10,433,544
8. Total Recommended Contribution as of December 31 st (7 x 1.08)	\$ 9,777,042	\$ 11,268,277
9. Contribution as a % of total payroll	25.86%	27.48%

Anne Arundel County, Maryland
Police Service Retirement Plan

UNFUNDED LIABILITY AMORTIZATION SCHEDULE

<u>Charge</u>	<u>Amortization Period</u>			<u>Balances</u>		<u>2008 Payment</u>
	<u>Date Created</u>	<u>Initial Years</u>	<u>Years Left</u>	<u>Initial</u>	<u>Outstanding</u>	
Unfunded Accrued Liability	01/01/2004	30	26	\$14,184,341	\$15,108,325	\$ 940,552
Actuarial Loss	01/01/2006	30	28	\$ 7,107,916	\$ 7,352,489	\$ 439,982
Actuarial Loss	01/01/2008	30	30	\$ 3,994,073	\$ 3,994,073	\$ 230,796
Assumption Change	01/01/2008	30	30	\$ 413,838	\$ 413,838	\$ 23,914
 <u>Credits</u>						
Actuarial Gain	01/01/2005	30	27	\$ 5,392,880	\$ 5,664,186	\$ 345,506
Actuarial Gain	01/01/2007	30	29	\$ 4,732,240	\$ 4,815,492	\$ 283,022
Net Total					\$ 16,389,047	\$1,006,716

Note: Bases are amortized as an equal percent of payroll each year. Total payroll is assumed to increase 3.5% annually.

Assumptions and Methods

ASSUMPTIONS AND METHODS

Funding Method: Projected Unit Credit Actuarial Cost Method. The contribution equals the sum of the normal cost and the amount necessary to amortize the frozen unfunded actuarial liabilities and any actuarial gains or losses over a period of years. Amortization payments increase 3.5% (costs are shown using the Projected Unit Credit Method).

Asset Method: Asset smoothing method. Spreading the investment gains or losses in excess of the assumed return over a 5-year period. Actuarial Value of Assets recognizes adjustments resulting from an audit.

Interest: 8% compounded annually.

COLA Increases: Benefits accrued before Bill 88-96 are assumed to increase by 3.5% of the current benefit each year from retirement.

Benefits accrued after Bill 88-96 are assumed to increase by 2.1% of the current benefit each year from retirement.

Mortality: *Healthy:* RP-2000 Blue Collar Mortality table projected to 2008 (by Male Scale AA).

Disabled: RP-2000 Blue Collar Mortality table projected to 2008 (by Male Scale AA), set forward five years.

Salary Increases: The following graded schedule is used:

<u>Attained Age</u>	<u>% Increase at Attained Age</u>
20	6.5%
25	6.5%
30	6.0%
35	5.5%
40	5.0%
45	4.5%
50	4.5%

ASSUMPTIONS AND METHODS

(continued)

Disability:

Sample rates are:

<u>Age</u>	<u>Rate</u>
30	0.2448%
35	0.3621%
40	0.7472%
45	1.2495%
50	1.8386%
55	0.0000%

75% of disablement is assumed to be duty-related.

Turnover:

Sample rates are:

<u>Age</u>	<u>Rate</u>
20	5.31%
25	4.25%
30	3.19%
35	2.13%
40	1.28%
45	0.64%
50	0.00%

Retirement:

Sample Rates

<u>Age</u>	<u>Service</u>				
	<u>20</u>	<u>22</u>	<u>24</u>	<u>27</u>	<u>30</u>
40	26.40%	10.00%	18.33%	10%	10%
45	18.34%	10.00%	18.33%	10%	10%
50	36.66%	50.00%	58.33%	50%	100%
55	100.00%	100.00%	100.00%	100%	100%

DROP load:

To reflect the cost of the more valuable benefits provided from the deferred retirement option program the following loads were applied:

Sample Load Rates

<u>Age</u>	<u>Service</u>			
	<u>23</u>	<u>27</u>	<u>30</u>	<u>35</u>
44	0.4%	1.4%	2.3%	12.0%
50	2.0%	3.7%	4.5%	14.6%
55	2.7%	4.6%	5.4%	15.6%
60	3.2%	5.3%	6.1%	16.4%

ASSUMPTIONS AND METHODS

(continued)

<u>Disability Leave:</u>	Active liabilities (which depend on credit service) are loaded by 1.75% to account for future crediting of disability service.
<u>Military Service:</u>	Active liabilities (which depend on credit service) are loaded by 3.25% to account for future crediting of military service.
<u>Other Methods and Assumptions:</u>	<p>Administrative Expenses are \$459,000 for FY2008 and \$471,000 for FY2008 (average of actual expenses for the two years preceding the valuation date).</p> <p>Males are assumed to be four years older than their spouses.</p>
<u>Valuation Procedures:</u>	<p>Since cost of living adjustments are effective as of July 1, the retired liabilities of the plan determined as of January 1 for benefits accrued before Bill 88-96 were increased by 1.75% to account for mid-year increase. Liabilities for benefits accrued after Bill 88-96 were increased by 1.05% to account for the mid-year increase.</p> <p>Generally, the plan provides a 100% survivor benefit to the spouse at the time of the retiree's death. This allows for post retirement marriages. We have valued the forms of payment originally coded in the data or based this on marital status at time of retirement (generally a 100% survivor benefit but not always). Starting with the 2008 valuation, all new retirements are valued with a 100% Joint and Survivor form of payment. We suggest monitoring this form of payment to see if this reasonably models the combination of single retirees and future remarriages.</p>
<u>CIGNA Benefit:</u>	Our calculations reflect that some benefits have already been purchased.

Plan Provisions

PLAN PROVISIONS

Normal Retirement:

For those hired prior to February 25, 2002: 20 years of service or age 50. For those hired on or after February 25, 2002: 20 years of service, or age 50 with 5 years of service.

Normal Form of Benefit:

For single participants, monthly life annuities with payments guaranteed for 5 years.

For married participants, unreduced 100% Joint & Survivor Annuity with payments guaranteed for 5 years.

Cost of Living Increase

(for benefits accrued as of 1/31/97):

Retiree benefits are adjusted each year. The revised benefit amount is the lesser of:

- a. Base benefit multiplied by ratio of current 12 month average CPI to 12 month average CPI at retirement.
- b. Prior year benefit increased by 4%.

Cost of Living Increase

(for benefits accrued after 1/31/97):

Retiree benefits are adjusted each year. The revised benefit amount is the lesser of:

- a. Prior year benefit multiplied by 60% of the increase in the current March CPI from March CPI for prior year, or
- b. Prior year benefit increased by 2.5%.

Employee Contributions:

5% of compensation for all participants.

Compensation:

Regular annual rate of pay, exclusive of extra compensation of any kind such as overtime pay, bonuses, and commissions.

Final Earnings:

The average of the highest 3 years of the last 5 years of compensation.

Benefit Formula:

2 ½% of final earnings for each year of service up to 20 years plus 2% of final earnings for each year of service after 20 years (maximum 70% plus 2% times unused disability credit and pre-employment military service credit).

PLAN PROVISIONS

(continued)

<u>Termination Prior to Retirement:</u>	At less than 20 years of service, return of employee contributions with 3% interest.
<u>Disability:</u>	Must be totally and permanently disabled (except as the result of activities specified in the County code) regardless of length of service.
<i>Line of Duty Disability:</i>	The greater of the accrued benefit or 66 2/3% of final earnings, payable immediately, unreduced.
<i>Non-Line of Duty Disability:</i>	The greater of the accrued benefit or 20% of final earnings, payable immediately, unreduced.
<u>Pre-Retirement Spouse's Benefit:</u>	
<i>Line of Duty Death Benefit:</i>	Greater of accrued benefit or 66 2/3% of final earnings.
<i>Non-Line of Duty Death Benefit:</i>	Accrued benefit.
<u>Other Pre-Retirement Death Benefits:</u>	Return of employee contributions with 3% interest.
<u>Deferred Retirement Option Program (DROP):</u>	Allows accumulation of pension after 20 years of County service. DROP period must be between 3 and 5 years.

Summary of Legislative Changes

SUMMARY OF MAJOR LEGISLATIVE CHANGES

County Council Bill No. 48-89:

Effective 9/13/89.

The previously combined Police and Fire plan was separated into distinct plans for each group.

The reduction for retirement prior to age 50 was changed to 0.2% per month from 0.3% per month.

County Council Bill No. 34-92:

Effective 6/1/92 through 8/31/92.

Participants age 50 or with at least 20 years of service could elect to retire with an additional pension equal to 1/12 of 2.5% of final earnings for the first 20 years of service, plus 1/12 of 2% of final earnings for each additional year of service. The additional amount could be taken as a pension increase, a lump sum, or as a temporary supplement to age 62. Appropriate actuarial adjustments apply.

County Council Bill No. 66-92:

Effective 7/2/92.

The plan was amended to allow normal, unreduced retirement after 20 years of service.

Employee contributions were increased to 6% from 5%.

Participants under age 50 were not allowed to retire and receive retirement incentives (under Bill No. 34-92) in addition to unreduced retirement. They could either retire early with the incentives, or normally without the incentives.

State House Bill No. 687:

Effective 7/1/90.

County employees were given the opportunity to apply for credit under the County's plan for previous service with the State of Maryland (or a political subdivision of the State).

SUMMARY OF MAJOR LEGISLATIVE CHANGES

(continued)

County Council Bill 88-96:

Effective 12/4/96.

The previous method of calculating cost of living increases will only apply to benefits accrued as of 1/31/97. The cost of living increase for future benefits is a compound increase equal to 60% of the annual change in the CPI, not to exceed 2.5%. Employees hired, or rehired, on or after 12/4/96 will be Tier Two employees and will have different benefits than current employees.

County Council Bill No. 80-00/
Recodification:

Effective 2/25/2002.

Allows a benefit based on disability leave service and pre-plan military service to be paid over the 70% cap. Normal Retirement was changed to the earlier of 20 years of service or age 50 with 5 years of service. Elimination of Tier 2 benefits. Implemented a Deferred Retirement Option Program (DROP), a voluntary program that provides an alternative way to earn and receive retirement benefits.

County Council Bill 66-05:

Effective 10/10/2005.

Reduced the contribution percentage for Category II participants from 6% to 5%.

County Council Bill 58-07:

Effective 10/11/2007.

Reduced the contribution percentage for Category I participants from 6% to 5%.

Statement No. 25 of the GASB

**STATEMENT NO. 25 OF THE
GOVERNMENTAL ACCOUNTING STANDARDS BOARD**

Schedules of Funding Progress

Actuarial Valuation Date	Actuarial Value of Assets (a)	Unfunded AAL (UAAL) (b - a)	Actuarial Accrued Liability (AAL) (b)	Funded Ratio (a/b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll ((b - a)/c)
01/01/1998	\$192,151,789	\$31,510,057	\$223,661,846	85.9%	\$23,327,935	135.1%
01/01/1999	\$212,252,477	\$31,995,957	\$244,248,434	86.9%	\$25,658,546	124.7%
01/01/2000	\$235,557,469	\$32,449,508	\$268,006,977	87.9%	\$26,840,786	120.9%
01/01/2001	\$252,149,932	\$35,868,050	\$288,017,982	87.5%	\$28,535,848	125.7%
01/01/2002	\$268,703,856	\$36,293,986	\$304,997,842	88.1%	\$31,105,473	116.7%
01/01/2003	\$281,967,318	\$36,668,475	\$318,635,793	88.5%	\$33,459,024	109.6%
01/01/2004	\$311,371,499	\$14,184,341	\$325,555,840	95.6%	\$31,915,536	44.4%
01/01/2005	\$337,113,153	\$ 9,041,000	\$346,154,153	97.4%	\$33,530,370	27.0%
01/01/2006	\$360,268,341	\$16,292,562	\$376,560,903	95.7%	\$36,694,307	44.4%
01/01/2007	\$389,877,885	\$11,820,220	\$401,698,105	97.1%	\$37,805,038	31.3%
01/01/2008 ¹	\$417,278,055	\$15,975,209	\$433,253,264	96.3%	\$41,011,366	39.0%
01/01/2008 ²	\$417,278,055	\$16,389,047	\$433,667,102	96.2%	\$41,011,366	40.0%

Schedules of County's Contributions

Year Ended December 31	Annual Required Contribution	Actual Contribution	Percentage Contributed
2007	\$9,997,313	\$9,997,308 ³	100.0%

¹ Prior to Assumption Changes

² After Assumption Changes

³ On an accrual basis. Subject to verification.

STATEMENT NO. 25 OF THE
GOVERNMENTAL ACCOUNTING STANDARDS BOARD
(continued)

The information presented in the required supplementary schedules was determined as part of the actuarial valuations at the dates indicated. Additional information as of the latest actuarial valuation follows.

Actuarial cost method	Projected Unit Credit
Amortization method	Level percent of pay
Remaining amortization period	Remaining Amortization periods range from 26 to 30 years with an average of 28 years
Asset valuation method	5-year smoothed market
Actuarial assumptions:	
Investment rate of return	8.0%
Projected salary increases	Varies by age
Post Retirement Cost-of-living adjustments	3.5% for pre 2/97 accruals 2.1% for post 2/97 accruals