

Houston Police Officers Pension System

Actuarial Report as of July 1, 2002

October 2003

Summary of Key Results (\$000)

	July 1, 2002	July 1, 2001
City Contribution Rate		
■ Normal Cost (City Portion)	19.0%	18.7%
■ Amortization of Unfunded Actuarial Accrued Liability (Surplus)	<u>5.4</u>	<u>1.8</u>
■ City Contribution Rate (effective the following July 1)	24.4	20.5
Summary of Assets		
■ Market Value	\$ 1,948,248	\$ 2,142,779
■ Actuarial Value	2,337,157	2,226,307
Summary of Liabilities		
■ Actuarial Accrued Liability	\$ 2,593,730	\$ 2,306,427
■ Actuarial Value of Assets	<u>(2,337,157)</u>	<u>(2,226,307)</u>
■ Unfunded Actuarial Accrued Liability (Surplus)	256,573	80,120
Summary of Data		
■ Number of Participants Included in the Valuation		
— Active participants enrolled in DROP	\$ 1,431	\$ 1,295
— Other active participants	3,921	4,030
— Inactive participants	<u>1,859</u>	<u>1,801</u>
— Total	7,211	7,126
■ Annual Total Direct Pay for Active and DROP Participants Included in the Valuation		
— Active participants enrolled in DROP	\$ 90,653	\$ 73,579
— Other active participants	<u>195,497</u>	<u>190,647</u>
— Total	286,150	264,226
■ Annual Benefits for Inactive Participants	55,013	54,006

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Summary of Assets as of July 1, 2002 (\$000)

Investment Category	Market Value	
	Amount	Percent
■ Cash and Short-Term Investments	\$ 150,916	7.7%
■ Fixed Income Investments	474,429	24.4
■ Equity Securities	1,151,685	59.1
■ Alternative Investments	159,349	8.2
■ Other Investments	97	0.0
■ Other Assets (Liabilities)		
— Miscellaneous receivables	37,735	1.9
— Miscellaneous payables	(25,460)	(1.3)
— Other liabilities	<u>(503)</u>	<u>0.0</u>
— Net	11,772	0.6
■ Total	1,948,248	100.0

Change in Assets Since the Prior Valuation (\$000)

■ Market Value as of July 1, 2001	\$ 2,142,779
■ Contributions and Disbursements	
— City contributions	32,645
— Employee contributions	22,484
— Benefit payments	(59,783)
— Contributions refunds	<u>(1,194)</u>
— Net	(5,848)
■ Net Investment Return	(177,092)
■ Administrative and Investment Expenses	<u>(11,591)</u>
■ Market value as of July 1, 2002	1,948,248
■ Approximate Annual Rate of Return (Net of Expenses)	(8.8)%

Development of Actuarial Value of Assets (\$000)

Actuarial Investment Gain (Loss) for the Year

■ Market Value of Assets as of July 1, 2001	\$ 2,142,779
■ City Contributions	32,645
■ Employee Contributions	22,484
■ Benefit Payments and Contribution Refunds	(60,977)
■ Miscellaneous Contributions and Disbursements	0
■ Expected Interest at 8.5%	<u>181,893</u>
■ Expected Market Value of Assets as of June 30, 2002	2,318,824
■ Actual Market Value of Assets as of June 30, 2002	<u>1,948,248</u>
■ Actuarial Investment Gain (Loss)	(370,576)

Schedule of Actuarial Investment Gains (Losses)

<u>Plan Year Ending</u>	<u>Initial Actuarial Gain (Loss)</u>	<u>Five-Year Amortization</u>	<u>Unrecognized Gain (Loss) as of July 1, 2000*</u>
June 30, 2002	\$ (370,576)	\$ (74,115)	\$ (296,461)
June 30, 2001	(272,437)	(54,487)	(163,463)
June 30, 2000	124,966	24,993	49,987
June 30, 1999	105,144	21,029	<u>21,028</u>
			(388,909)

* Deferred for recognition in future years.

Actuarial Value of Assets

■ Market Value as of July 1, 2002	\$ 1,948,248
■ (Gain) Loss to be Recognized in Future Years	<u>388,909</u>
■ Actuarial Value as of July 1, 2002	2,337,157

Unfunded Actuarial Accrued Liability (Surplus) (\$000)

	July 1, 2002	July 1, 2001
■ Actuarial Present Value of Future Benefits		
— Active participants enrolled in DROP	\$ 1,145,615	\$ 918,586
— Other active participants	1,357,003	1,277,529
— Vested terminated participants	469	0
— Retirees and beneficiaries	<u>718,310</u>	<u>707,152</u>
— Total	3,221,397	2,903,267
■ Actuarial Present Value of Future Employee Contributions	(205,853)	(184,953)
■ Actuarial Present Value of Future Normal Costs (City Portion)	<u>(421,814)</u>	<u>(411,887)</u>
■ Actuarial Accrued Liability	2,593,730	2,306,427
■ Actuarial Value of Assets	(2,337,157)	(2,226,307)
■ Unfunded Actuarial Accrued Liability (Surplus)	256,573	80,120

Change in Unfunded Actuarial Accrued Liability (Surplus) Since the Prior Valuation (\$000)

■ Unfunded Actuarial Accrued Liability (Surplus) as of July 1, 2001	\$ 80,120
■ Expected Change due to Normal Operation	
— Normal cost (City portion)	49,410
— City contributions	(32,645)
— Interest	7,508
— Recognition of prior asset losses (gains)	<u>(8,920)</u>
— Net change	15,353
■ Change due to Actuarial Experience	
— Actuarial (gain) loss from asset sources	74,115
— Actuarial (gain) loss from liability sources	<u>37,713</u>
— Net change	111,828
■ Unfunded Actuarial Accrued Liability (Surplus) as of July 1, 2002 Before Changes	207,301
■ Change in Actuarial Assumptions	49,272
■ Change in Actuarial Methods	0
■ Change in Plan Provisions	<u>0</u>
■ Unfunded Actuarial Accrued Liability (Surplus) as of July 1, 2002	256,573

Historical Unfunded Actuarial Accrued Liability (Surplus) (\$000)

Valuation Date	Actuarial Accrued Liability (AAL)	Actuarial Value of Assets (AVA)	AVA as a Percentage of AAL	Unfunded AAL (Surplus)	Covered Payroll	UAAL (Surplus) as a Percentage of Covered Payroll
January 1, 1980	\$ 301,585	\$ 90,226	30%	\$ 211,359	\$ 58,169	363%
January 1, 1982	412,298	139,976	34	272,322	89,529	304
July 1, 1984	507,883	230,143	45	277,740	111,489	249
July 1, 1986	454,067	420,487	93	33,580	125,963*	27
July 1, 1987	488,387	505,483	104	(17,096)	126,960	(13)
July 1, 1988	524,894	516,177	98	8,717	121,667	7
July 1, 1989	581,681	585,358	101	(3,677)	122,803	(3)
July 1, 1990	663,278	676,684	102	(13,406)	126,665**	(11)
July 1, 1992	853,975	774,785	91	79,190	143,020	55
July 1, 1993	936,674	857,535	92	79,139	159,321	50
July 1, 1994	984,495	947,456	96	37,039	162,143	23
July 1, 1995	1,000,423	1,038,256	104	(37,833)	174,761	(22)
July 1, 1996	1,199,748	1,168,056	97	31,692	182,251	17
July 1, 1997	1,258,217	1,329,570	106	(71,353)	187,134	(38)
July 1, 1998	1,549,341	1,518,081	98	31,260	196,364	16
July 1, 1999	1,773,829	1,746,312	98	27,517	246,569***	11
July 1, 2000	1,966,404	2,013,491	102	(47,087)	250,691	(19)
July 1, 2001	2,306,427	2,226,307	97	80,120	264,226	30
July 1, 2002	2,593,730	2,337,157	90	256,573	286,150	90

* Reflects the July 5, 1986 pay decrease.

** Reflects the November 1, 1990 pay increase.

*** Definition of covered payroll changed from base pay to total direct pay less overtime.

Historical Solvency Test (\$000)

Valuation Date	Actuarial Accrued Liability for:						
	Employee Contributions	Inactive Participants	Active Participants (City-Financed Portion)	Actuarial Value of Assets	Portion of Actuarial Accrued Liability Covered by Assets		
	(1)	(2)	(3)		(1)	(2)	(3)
July 1, 1987	\$ 72,603	\$ 164,367	\$ 251,417	\$ 505,483	100%	100%	100%
July 1, 1988	77,404	196,547	250,943	516,177	100	100	97
July 1, 1989	82,919	222,585	276,177	585,358	100	100	100
July 1, 1990	87,430	261,114	314,734	676,684	100	100	100
July 1, 1991	98,099	338,914	416,962	774,785	100	100	81
July 1, 1992	105,464	372,674	458,536	857,535	100	100	83
July 1, 1993	114,279	401,989	468,227	947,456	100	100	92
July 1, 1994	123,471	416,053	460,899	1,038,256	100	100	100
July 1, 1995	91,687	764,518	343,543	1,168,056	100	100	91
July 1, 1996	95,615	812,498	350,104	1,329,570	100	100	100
July 1, 1998	99,298	1,017,723	432,320	1,518,081	100	100	93
July 1, 1999	107,008	1,157,882	508,939	1,746,312	100	100	95
July 1, 2000	111,099	1,324,079	531,225	2,013,491	100	100	100
July 1, 2001	138,248	707,152	1,461,027*	2,226,307	100	100	95
July 1, 2002	145,255	718,779	1,729,696	2,337,157	100	100	85

* Prior to July 1, 2001 the Actuarial Accrued Liability for DROP Participants was included in the Inactive liability.

City Contribution Rate

	July 1, 2002 through June 30, 2003	July 1, 2001 through June 30, 2002
■ City Normal Cost Rate	19.0%	18.7%
■ Rate to Amortize Unfunded Actuarial Accrued Liability (Surplus) Over 30 Years	<u>5.4</u>	<u>1.8</u>
■ City Contribution Rate	24.4	20.5

Change in City Contribution Rate Since the Prior Valuation

■ City Contribution Rate as of July 1, 2001	20.5%
■ Change in the City Contribution Rate	
— Normal operation	0.3
— Actuarial (gain) loss from asset sources	1.6
— Actuarial (gain) loss from liability sources	0.4
— Change in actuarial assumptions	1.6
— Change in plan provisions	<u>0.0</u>
■ City Contribution Rate as of July 1, 2002	24.4

Historical City Contributions as a Percentage of Covered Payroll

Actuarially Calculated City Contribution Rate		Actual City Contribution Rate	
Valuation Date	Rate	Period	Rate
July 1, 1988	14.3%	July 1, 1989 through June 30, 1990	14.6%
July 1, 1989	14.3	July 1, 1990 through June 30, 1991	14.3
July 1, 1990	14.2	July 1, 1991 through June 30, 1993	14.3
July 1, 1992	19.0	July 1, 1993 through June 30, 1994	19.0
July 1, 1993	18.0	July 1, 1994 through June 30, 1995	18.0
July 1, 1994	18.0	July 1, 1995 through June 30, 1996	18.0
July 1, 1995	17.4	July 1, 1996 through June 30, 1997	16.2
July 1, 1996	16.2	July 1, 1997 through June 30, 1998	16.2
July 1, 1997	16.8*	July 1, 1998 through June 30, 1999	15.2
July 1, 1998	16.2	July 1, 1999 through June 30, 2000	12.4
July 1, 1999**	16.3	July 1, 2000 through June 30, 2001	12.2
July 1, 2000	11.3	July 1, 2001 through June 30, 2002	12.4
July 1, 2001	20.5	July 1, 2002 through June 30, 2003	11.4
July 1, 2002	24.4	July 1, 2003 through June 30, 2004	N/A

* Average for the year

** For the period July 1, 1999 through July 1, 2000 the City Contribution rates are shown as a percentage of total direct pay less overtime rather than base pay.

Projection of Estimated Assets and Liabilities (\$000)

Year Beginning July 1	Annual Covered Payroll	Estimated City Contributions				Estimated Employee Contributions		Benefit Payments	Net Cash Flow	Market Value of Assets at End of Year	Unfunded Actuarial Liability (Surplus) at End of Year
		Actuarial		Actual		Amount	Percent				
		Amount	Percent	Amount	Percent						
2002	286,150	58,661	20.5	34,645	12.1	25,038	8.75%	135,481	(75,798)	2,034,895	414,564
2003	297,596	72,613	24.4	36,645	12.3	26,040	8.75	139,898	(77,213)	2,127,434	600,176
2004	309,500	84,184	27.2	49,520	16.0	27,081	8.75	149,898	(73,297)	2,231,917	806,695
2005	321,880	97,851	30.4	97,851	30.4	28,164	8.75	161,720	(35,704)	2,384,440	917,459
2006	334,755	113,147	33.8	113,147	33.8	29,291	8.75	173,740	(31,302)	2,554,512	943,838
2007	348,145	122,199	35.1	122,199	35.1	30,463	8.75	190,078	(37,416)	2,732,671	965,679
2008	362,071	126,725	35.0	126,725	35.0	31,681	8.75	210,001	(51,595)	2,911,205	987,418
2009	376,554	130,664	34.7	130,664	34.7	32,948	8.75	226,915	(63,302)	3,092,720	1,009,768
2010	391,616	134,716	34.4	134,716	34.4	34,266	8.75	243,080	(74,098)	3,278,419	1,032,779
2011	407,281	139,290	34.2	139,290	34.2	35,637	8.75	258,014	(83,087)	3,470,538	1,056,081

The projection is based on the economic and demographic assumptions summarized in Section VI, including an 8.5% investment return beginning as of July 1, 2002. The total covered payroll is assumed to increase by 4.0% per year. As actual economic (such as the actual investment return from July 1, 2002 through June 30, 2003) and demographic experience vary, the results will change.

The projection assumes the Assumptions and Methods and the Plan Provisions as summarized in Section VI do not change throughout the projection period.

This projection is incomplete without the accompanying report.

Summary of Active Participants as of July 1, 2002

Age		-----Completed Years of Service-----								
Last										
Birthday		0-4	5-9	10-14	15-19	20-24	25-29	30-34	Over 34	Total
15-19	Number	0	0	0	0	0	0	0	0	0
	Tot Earnings	0	0	0	0	0	0	0	0	0
	Avg Earnings	0	0	0	0	0	0	0	0	0
20-24	Number	77	0	0	0	0	0	0	0	77
	Tot Earnings	2,755,985	0	0	0	0	0	0	0	2,755,985
	Avg Earnings	35,792	0	0	0	0	0	0	0	35,792
25-29	Number	324	96	0	0	0	0	0	0	420
	Tot Earnings	12,747,573	4,406,274	0	0	0	0	0	0	17,153,847
	Avg Earnings	39,344	45,899	0	0	0	0	0	0	40,842
30-34	Number	234	703	109	0	0	0	0	0	1,046
	Tot Earnings	9,268,952	32,383,524	5,420,981	0	0	0	0	0	47,073,457
	Avg Earnings	39,611	46,065	49,734	0	0	0	0	0	45,003
35-39	Number	74	403	246	359	5	0	0	0	1,087
	Tot Earnings	2,933,305	18,586,611	12,877,577	20,595,980	280,723	0	0	0	55,274,196
	Avg Earnings	39,639	46,121	52,348	57,370	56,145	0	0	0	50,850
40-44	Number	7	111	65	666	261	2	0	0	1,112
	Tot Earnings	264,933	5,206,794	3,302,487	38,698,642	16,156,668	110,566	0	0	63,740,090
	Avg Earnings	37,848	46,908	50,807	58,106	61,903	55,283	0	0	57,320
45-49	Number	2	12	24	229	326	212	1	0	806
	Tot Earnings	88,419	565,777	1,304,214	13,545,405	20,691,413	13,697,689	65,899	0	49,958,816
	Avg Earnings	44,210	47,148	54,342	59,150	63,471	64,612	65,899	0	61,984
50-54	Number	0	3	5	106	124	190	113	0	541
	Tot Earnings	0	147,194	275,722	6,094,235	7,639,651	12,335,981	7,145,833	0	33,638,616
	Avg Earnings	0	49,065	55,144	57,493	61,610	64,926	63,237	0	62,179
55-59	Number	0	0	1	6	26	70	90	22	215
	Tot Earnings	0	0	57,553	360,567	1,504,984	4,251,699	5,891,678	1,520,168	13,586,649
	Avg Earnings	0	0	57,553	60,094	57,884	60,739	65,463	69,099	63,194
60-64	Number	0	0	0	1	0	10	8	14	33
	Tot Earnings	0	0	0	54,078	0	580,506	454,858	925,278	2,014,720
	Avg Earnings	0	0	0	54,078	0	58,051	56,857	66,091	61,052
Over 64	Number	0	0	0	0	0	1	3	11	15
	Tot Earnings	0	0	0	0	0	51,453	186,183	716,169	953,805
	Avg Earnings	0	0	0	0	0	51,453	62,061	65,106	63,587
Total	Number	718	1,328	450	1,367	742	485	215	47	5,352
	Tot Earnings	28,059,168	61,296,174	23,238,534	79,348,908	46,273,439	31,027,895	13,744,450	3,161,614	286,150,181
	Avg Earnings	39,080	46,157	51,641	58,046	62,363	63,975	63,928	67,268	53,466

Average Age = 40.7 Average Service = 14.9

Historical Active Participant Data

Valuation Date	Number of Participants	Average Age	Annual Covered Payroll (\$000)	Average Annual Covered Payroll	Percentage Increase in Average Covered Payroll
January 1, 1976	2,622	N/A	\$ 39,500	\$ 15,066	39.9%
January 1, 1978	2,877	N/A	50,040	17,393	15.4
January 1, 1980	3,029	N/A	58,169	19,204	10.4
January 1, 1982	3,243	N/A	89,529	27,607	43.8
July 1, 1984	3,997	N/A	111,489	27,893	1.0
July 1, 1986	4,526	33.5	125,963 ⁽¹⁾	27,831	(0.2)
July 1, 1987	4,494	34.4	126,960	28,251	1.5
July 1, 1988	4,239	35.0	121,667	28,702	1.6
July 1, 1989	4,105	35.7	122,803	29,915	4.2
July 1, 1990	4,073	36.2	126,665 ⁽²⁾	31,099	4.0
July 1, 1992	4,120	36.8	143,020	34,714	11.6
July 1, 1993	4,498	36.7	159,321	35,420	2.0
July 1, 1994	4,705	36.8	162,143	34,462	(2.7)
July 1, 1995	4,921	36.9	174,761	35,513	3.0
July 1, 1996 ⁽³⁾	4,395	35.1	150,903	34,335	(3.3)
July 1, 1997	4,282	35.5	149,631	34,944	1.8
July 1, 1998	4,247	35.9	153,479	36,138	3.4
July 1, 1999	4,253	36.3	187,967 ⁽⁴⁾	44,196 ⁽⁴⁾	22.3 ⁽⁴⁾
July 1, 2000	4,137	36.7	179,415	43,368	(1.9)
July 1, 2001 ⁽⁵⁾	5,325	40.2	264,226 ⁽⁶⁾	49,620 ⁽⁶⁾	14.4 ⁽⁶⁾
July 1, 2002	5,352	40.7	286,150	53,466	7.8

(1) Reflects the July 5, 1986 pay decrease.

(2) Reflects the November 1, 1990 pay increase.

(3) Includes those participants currently accruing benefits from the July 1, 1996 to July 1, 2000 valuation dates (excludes current DROP participants).

(4) Definition of covered payroll changed from base pay to total direct pay less overtime.

(5) Includes active participants eligible for DROP beginning July 1, 2001.

(6) Beginning July 1, 2001 the definition of total direct pay changed from the average of the last 26 pay periods to the highest bi-weekly pay period.

Summary of Inactive Participants as of July 1, 2002

	Number	Annual Benefits (\$000)	Average Annual Benefit
■ Retirees	1,353	\$ 40,446	\$ 29,894
■ Beneficiaries	438	12,602	28,772
■ Disabled Participants	64	1,871	29,234
■ Deferred Vesteds	<u>4</u>	<u>94</u>	<u>23,500</u>
■ Total	1,859	55,013	29,593

Inactive Participants Added to and Removed from Rolls

Period Ended	Added to Rolls		Removed from Rolls		Rolls at the End of the Year		Percentage Increase in Annual Benefits	Average Annual Benefit
	Number	Annual Benefits (\$000)	Number	Annual Benefits (\$000)	Number	Annual Benefits (\$000)		
December 31, 1977	62	\$ 520	18	\$ 55	439	\$ 2,979	15.1%	\$ 6,785
December 31, 1978	66	779	13	80	492	3,653	22.6	7,425
December 31, 1979	68	845	12	126	548	4,370	19.6	7,974
December 31, 1980	73	1,120	19	123	602	5,389	23.3	8,951
December 31, 1981	81	1,191	17	184	666	6,499	20.6	9,759
December 31, 1982	104	1,106	24	240	746	7,842	20.7	10,513
December 31, 1983	82	967	35	362	793	8,931	13.9	11,262
June 30, 1984	53	779	18	150	855	4,760	6.6	11,095
June 30, 1985	83	1,141	42	259	896	10,166	6.8	11,346
June 30, 1986	44	530	37	431	903	10,939	7.6	12,114
June 30, 1987	42	585	36	421	909	11,321	3.5	12,455
June 30, 1988	138	2,668	25	243	1,022	14,069	24.3	13,766
June 30, 1989	89	1,349	46	502	1,065	16,127	14.6	15,142
June 30, 1990	105	1,811	29	457	1,141	18,029	11.8	15,801
June 30, 1992	222	4,662	75	1,127	1,288	22,999	27.6	17,857
June 30, 1993	105	2,012	16	205	1,377	25,474	10.8	18,500
June 30, 1994	106	2,172	64	953	1,419	27,286	7.1	19,229
June 30, 1995	107	2,425	48	847	1,478	29,464	8.0	19,935
June 30, 1996*	893	19,109	36	602	2,335	48,624	65.0	20,824
June 30, 1997	182	3,481	29	618	2,488	52,772	8.5	21,211
June 30, 1998	159	3,483	28	589	2,619	63,957	21.2	24,420
June 30, 1999	150	3,770	46	1,001	2,723	70,432	10.1	25,866
June 30, 2000	233	6,421	36	857	2,920	76,401	8.5	26,165
June 30, 2001**	131	3,755	1,250	33,892	1,801	54,006	(29.3)	29,987
June 30, 2002	104	2,809	46	1,113	1,859	55,013	1.9	29,593

* Includes DROP participants from June 30, 1996 through June 30, 2000

** Beginning July 1, 2001 excludes active participants eligible for DROP.

Summary of Actuarial Methods and Assumptions

Actuarial Methods

Actuarial Value of Assets Gains and losses in the market value of assets, based on the difference between the actual and the assumed rate of return, are recognized over five years.

Actuarial Cost Method Entry Age Method with liabilities allocated from date of entry to assumed retirement age. The Unfunded Actuarial Accrued Liability (Surplus), including effects of actuarial gains and losses, is amortized as a level percentage of pay over 30 years. The contribution is increased for interest for one-half of a year to reflect timing of payments.

Economic Assumptions

Investment Return 8.5% per year, net of expenses

Payroll Growth Rate/Inflation 4.0% per year

Individual Merit Increase Rate

<u>Age</u>	<u>Increase</u>
20	5.00%
25	4.30
30	1.80
35	0.55
40	0.25
45	0.25
Over 50	0.00

Individual Pay Increase Rate Inflation plus merit

Demographic Assumptions

Entry Age Date sworn.

DROP Participation Rates 100% of active participants are assumed to elect the back DROP. Participants are assumed to elect the maximum duration for the back DROP, up to 20 years.

DROP Antiselection DROP benefits are loaded by 1% to reflect possible antiselection of back DROP provisions

Retirement Rates

<u>Number of Years of Service</u>	<u>Probability of Retiring Within One Year</u>
20	15%
21 – 22	5
23	10
24 – 25	15
26 – 28	30
29 – 40	20
Over 40	100

Summary of Actuarial Methods and Assumptions (cont.)

Mortality Rates

- < Active participants and nondisabled retirees 1994 Group Annuity Mortality Table (see table below for sample rates).
- < Disabled retirees 1987 Commissioners Group Disabled Mortality Table (see table below for sample rates).

Disability Rates

Graduated rates (see table below for sample rates).

Percentage of Deaths and Disabilities in the Line of Duty

100%.

Termination Rates and Terminated Vested Pension Benefit Election

Graduated rates (see table below for sample rates). 50% of members eligible to receive a terminated vested pension are assumed to elect the pension at age 60 instead of a refund of contributions.

Marital Status at Benefit Eligibility

- < Percentage married 90%. (No beneficiaries other than the spouse assumed).
- < Age difference Husbands assumed to be three years older than wives.

Valuation Earnings

Pensionable earnings over the 12 months (26 pay periods) preceding the valuation date, increased for one-half year of assumed pay increases.

Sample Rates

Sample Rates per 100 Participants

Age	Nondisabled Mortality		Disabled Mortality (Ultimate)	Termination	Disability	
	Male	Female	All	All	Male	Female
20	0.05	0.03	0.00	4.44	0.00	0.00
25	0.07	0.03	0.00	3.99	0.00	0.00
30	0.08	0.04	2.82	3.02	0.08	0.12
35	0.09	0.05	2.82	1.92	0.10	0.16
40	0.11	0.07	2.82	0.92	0.14	0.22
45	0.16	0.10	2.82	0.21	0.21	0.30
50	0.26	0.14	2.82	0.00	0.37	0.54
55	0.44	0.23	2.82	0.00	0.79	1.08
60	0.80	0.44	3.14	0.00	2.15	2.86

Summary of Actuarial Methods and Assumptions (cont.)

Changes in Methods and Assumptions from July 1, 2000 to July 1, 2001

Investment return was assumed to be 9% per year (rather than 8.5%), net of expenses, to reflect minimum DROP crediting rates.

The Unfunded Actuarial Accrued Liability (Surplus) is amortized over 30 years, rather than to December 31, 2022.

The Entry Age Method allocating liabilities from date of entry to assumed DROP date was changed to allocate to date of actual retirement to reflect back DROP provisions.

The DROP participation was changed to assume all participants would elect back DROP for up to ten years to better reflect anticipated experience.

Changes in Methods and Assumptions from July 1, 2001 to July 1, 2002

Nondisabled mortality was changed from the 1983 GAM Mortality Table to the 1994 GAM Mortality Table to better reflect anticipated future experience.

DROP retirement benefits were loaded by 1% to reflect possible antiselection under back DROP provisions.

The assumed DROP duration was increased from 10 to 20 years to better reflect anticipated experience.

Summary of Plan Provisions

Covered Members

All police officers sworn before September 1, 1975 are covered under Plan 1, except those who elected by December 31, 1981 to participate in Plan 3.

All police officers sworn on or after September 1, 1975, but before September 1, 1981 are covered under Plan 2, except those who elected by December 31, 1981 to participate in Plan 3 and those from Police Cadet Classes 70 and 71 who elected to transfer to Plan 1.

All other police officers are covered by Plan 3, except those from Police Cadet Classes 70 and 71 who elected to pay additional contributions and transfer to Plan 1.

Final Compensation

Prior to November 28, 1998

Monthly base salary paid to the participant in his/her last month of service. For any participant from a position held for less than 3 years, final compensation is the average monthly base salary for the 3 years prior to retirement.

After November 28, 1998 but prior to July 1, 2001

Monthly total direct pay less overtime paid to the participant in his/her last month of service. For any participant from a position held for less than 3 years, final compensation is the average monthly base pay for the 3 years prior to retirement plus the other current components of total direct pay.

After July 1, 2001

Highest biweekly pay period (excluding overtime) during the last 26 pay periods annualized. Amounts not paid on a biweekly basis are deducted from period paid. Annual amounts are divided by 26 and added to the highest pay period, including motorcycle allowances.

Service Retirement

Eligibility

20 years of service.

Benefit:

< Prior to November 1, 1955

\$75 per month plus \$2 per month for each year of service in excess of 25 years.

< After November 1, 1955 but prior to January 13, 1968

30% of final compensation plus 1% of final compensation for each year of service in excess of 20 years.

Summary of Plan Provisions (cont.)

< After January 13, 1968 but prior to July 1, 1986	Plans 1 and 2: 30% of final compensation plus 2% of final compensation for each year of service in excess of 20 years. Plan 3: 2% of final compensation for each year of service up to 40 years, reduced 0.42% for each month benefit commencement precedes age 55.
< After July 1, 1986 but prior to July 1, 1988	2% of final compensation for each year of service up to 40 years.
< After July 1, 1988 but prior to September 1, 1997	45% of final compensation plus 2% of final compensation for each year of service in excess of 20 years; maximum 80% of final compensation. Benefit based on prior formula is payable until July 1, 1991 and recomputed benefit is payable thereafter.
< After September 1, 1997 but prior to July 1, 2001	50% of final compensation plus 2% of final compensation for each year of service in excess of 20 years; maximum 80% of final compensation.
< After July 1, 2001	55% of final compensation plus 2% of final compensation for service in excess of 20 years. The Pension System recomputed the benefit of each person who retired before July 1, 2001. The retiree's benefit was increased by the result of multiplying the difference between 55% and the percentage used at the time of retirement in computing the retiree's benefit for the first 20 years of service by the base salary of the retiree at the time of retirement. Retroactive cost-of-living increases were not applied to the increased benefit. This recomputed benefit is effective for all payments on or after July 1, 2001.
Additional Benefits	An extra monthly benefit of \$150.00 is payable for life. Effective November 28, 1998, a \$5,000 lump sum is payable upon retirement.
Terminated Vested Pension Benefit	
Eligibility	More than 10 but less than 20 years of service. Termination on or after November 28, 1998.
Benefit	2.75% of final compensation times years of service. This benefit commences at age 60 or at termination of service if later.

Summary of Plan Provisions (cont.)

Deferred Retirement Option Plan (DROP)

Eligibility 20 years of service

Benefit:

< After September 1, 1995
but prior to September 1,
1997

Eligible participants may elect to participate in the DROP until they leave active service. The member's retirement pension will be calculated based on service and earnings at the time the DROP is elected.

A notional account will be maintained for each DROP participant. This account will be credited with the following amounts while the member is participant of the DROP:

- < The member's monthly retirement pension, including applicable cost-of-living adjustments,
- < The member's contribution to the Pension System, and
- < Investment earnings/losses at the rate of the Pension System's earnings/losses averaged over a five-year period. Effective July 1, 2001, this rate is subject to a minimum of 0%.

A benefit equal to the DROP account balance is paid at the time the member leaves active service. The payment is made as a single lump sum.

If a DROP participant suffers an on-duty disability resulting in the inability to perform his/her usual and customary duties as a police officer or dies in the line of duty, he (or his survivors) are allowed to revoke the DROP election and to receive the more generous on-duty disability or death benefits.

< After September 1, 1997
but prior to December 1,
1998

The Pension System recomputed the benefit of each person who entered the DROP before September 1, 1997. The benefit was increased in the same manner as the retiree's benefit.

< After December 1, 1998
but prior to July 1, 2001

The Pension System recomputed the benefit of each person who entered the DROP before December 1, 1998. The benefit was recalculated based on Total Direct Pay less overtime upon entry to the DROP. This recomputed benefit is effective for all payments on or after December 1, 1998.

Summary of Plan Provisions (cont.)

< After July 1, 2001	The Pension System recomputed the benefit of each person who entered the DROP before July 1, 2001. The member's benefit was increased by the result of multiplying the difference between 55% and the percentage used at the time of DROP entry in computing the member's benefit for the first 20 years of service by the base salary of the member at the time of DROP entry. Retroactive cost-of-living increases were applied to the increased benefit. The account balance for each participant was recomputed as if this new benefit had been effective since DROP entry.
Benefit Recalculation	Effective July 1, 2001, monthly benefit at retirement will be recalculated to be the greater of (i) current monthly benefit, or (ii) monthly benefit based on service at DROP entry and Final Compensation at retirement date.
Back DROP Option	Effective on July 1, 2001, a back DROP option is available for all eligible participants. The DROP account is recalculated under the option based on what the account balance would have been had the participant elected the DROP earlier than he/she actually did. The initial DROP entry date cannot be backdated prior to September 1, 1995 or prior to 20 years of credited service, and must be on the first of the month selected.
Postretirement Option Plan (PROP)	
Eligibility	Retired from DROP
Benefit:	
< After November 28, 1998 but prior to July 1, 2001	A retired member is allowed to leave all or a portion of their DROP account in the System. These accounts are credited every calendar year with the 30-year Treasury bond rate as of June of the preceding year.
< After July 1, 2001	The interest rate earned on PROP accounts will be the same as the interest rate credited to DROP accounts, including a minimum credited rate of 0%.

Summary of Plan Provisions (cont.)

Disability Retirement

Eligibility Effective July 1, 2001, participant partially or totally disabled is eligible for Disability Retirement as defined below:

- < Total: Disability is defined as “unable to perform his/her usual and customary duties as a police officer”.
- < Partial: Disability is an impairment which renders the participant unable to work as a police officer and which is expected to last 12 months.

Benefit:

- < Duty-connected Total: The service retirement benefit accrued to date of disability (or 20 years, if greater).
Partial: 35% of final compensation is payable for life or as long as he remains incapacitated.
- < Not duty-connected Total or partial: The disability benefit is 2.75% of final compensation times years of service up to 20, minimum 27.5% of final compensation.

Additional benefits

An education allowance equal to 100% of final compensation less disability benefit is payable for up to four years for off-duty or duty-related disability.

Proportionate members injured while on-duty as a municipal worker will receive immediate off-duty benefit upon Board approval.

Survivor Benefits

Eligibility Surviving spouses and dependent children and parents of participants, including surviving spouses of retired or disabled participants who were not married at the time of retirement or disability, provided the spouse was married to the participant for at least 5 years at the time of death:

Benefit

- < Prior to September 1, 1997 Spouse’s benefit upon death before retirement:
If duty-connected: Monthly lifetime benefit equal to 100% of final compensation at date of death.
If not duty-connected: Monthly lifetime benefit equal to 100% of the service retirement benefit the participant had accrued at the time of death.
Spouse’s benefit upon death after retirement monthly lifetime benefit equal to actual benefit payable at time of death.

Summary of Plan Provisions (cont.)

	<p>Dependent children's benefit if no surviving spouse, the benefit that would have been payable to the spouse is divided equally among the dependent children.</p> <p>If there is a surviving spouse, the dependent children of Plan 1 and Plan 2 participants receive \$25 per month. Dependent children include unmarried children who are under age 18, and for Plan 3, full-time students under age 22, or permanently disabled children.</p> <p>Dependent parent's income if no surviving spouse or children, but there is a dependent parent, the benefit that would have been payable to the spouse will be paid to the dependent parent.</p>
< After September 1, 1997 but prior to July 1, 2001	<p>The Pension System recomputed the benefit of each survivor whose original benefit was computed prior to September 1, 1997. The benefit was increased in the same manner as the retiree's benefit.</p>
< After July 1, 2001	<p>The Pension System recomputed the benefit of each survivor whose original benefit was computed prior to July 1, 2001. The benefit was increased in the same manner as the retiree's benefit.</p>
Additional benefits	<p>Effective December 1, 1998, a \$5,000 lump sum is paid upon the death of an active member.</p> <p>Effective July 1, 2001, an extra monthly benefit of \$150.00 is payable for life. Children receiving equivalent of the spouse's benefit do not receive this additional benefit.</p>

Benefit Adjustments

Cost-of-living	<p>Monthly benefits for participants receiving payments are increased each April 1 by 2/3 of the increase in the Consumer Price Index for All Urban Consumers (CPI-U) for the preceding calendar year. Effective September 1, 1997 this increase is subject to a minimum of 3.0% per year compounded and a maximum increase of 8.0% per year compounded.</p>
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Summary of Plan Provisions (cont.)

13 th benefit check	<p>Effective November 28, 1998, a 13th benefit check is paid to current retirees and DROP members when:</p> <ul style="list-style-type: none">< The assets on the fund equal or exceed the liabilities after the 13th benefit check is paid.< The return on investments for the preceding fiscal year exceeds 9.25%.< The payment of the benefit will not cause the City of Houston's contribution to the System to increase.
Service Adjustments	<p>Effective November 28, 1998, participants with previous service with the City in non-classified positions may use that service to satisfy the service requirement of 20 years for retirement purposes only.</p> <p>Effective July 1, 2001, participants who have service credit in more than one City of Houston Pension Plan may use their combined service to qualify for DROP participation.</p> <p>Effective July 1, 2001, participants involuntarily transferred to the System from the Houston Municipal Employees System will receive service under this plan for years worked while serving as a City Marshall, Airport Police or Park Police.</p>
Contributions	
Employee Contributions	<p>Prior to December 1, 1998, each participant contributes 8.75% of base salary. After December 1, 1998, each participant contributes 8.75% of average total direct pay less overtime.</p>
Refunds	<p>Refunds of contributions are made if</p> <ul style="list-style-type: none">(i) The participant dies before 10 years of service and the death is not duty-connected,(ii) The participant dies with no eligible survivor,(iii) A Plan 1 or 2 participant leaves service before eligibility for retirement after completing 5 years of service, or(iv) A Plan 3 participant leaves service with less than 20 years of service. <p>Contributions are refunded without interest.</p>

Summary of Plan Provisions (cont.)

Employer Contribution

The city will follow the following contribution schedule:

Fiscal Year Ending (June 30)	City Contribution Amount
2001	\$ 30,645,000
2002	32,645,000
2003	34,645,000
2004	36,645,000
2005	16% of pay

For fiscal years ending after June 30, 2005 the City will contribute the greater of:

- (i) 16% of pay
- (ii) The actuarially determined rate.

Changes in Plan Provisions from July 1, 2000 to July 1, 2001 Valuation Dates

Eliminated service eligibility requirement for off-duty and survivor benefits.

Increased off-duty disability and survivor benefit to 2.75% of final compensation times service up to 20 years (minimum 27.5%).

Proportionate members injured while on duty as a municipal worker will receive immediate off-duty benefit upon Board approval.

Added an education allowance for up to four years for off-duty and duty-related disability retirement equal to 100% of final compensation less the disability benefit payable.

Added a "back DROP" option for current active and DROP members.

Increased monthly retiree insurance stipend from \$88.05 to \$150.00 per month.

Increased benefit accruals for service less than or equal to 20 years from 50% of final compensation to 55% of final compensation. Benefit increases to retirees exclude COLA adjustment.

Reset city contribution schedule.

The monthly benefit for DROP members will be recalculated at retirement to be the greater of

- (i) The current monthly benefit or
- (ii) Recalculated benefit based on service at DROP entry and Total Direct Pay at retirement.

Changed the interest rate earned on PROP accounts from the 30-year treasury rate to the 5-year average return earned by the Pension System. The credit rate for both DROP and PROP will be greater than or equal 0.0%.

Members who have service credit in more than one City of Houston Pension Plan may use their combined service to qualify for DROP participation.

Summary of Plan Provisions (cont.)

Members involuntarily transferred to the System from the Houston Municipal Employees System will receive service under this plan for years worked while serving as a City Marshall, Airport Police or Park Police.

Changed the definition of Total Direct Pay from the average of the last 26 pay periods to the highest bi-weekly pay period during the last 26 pay periods, annualized. Also, include motorcycle allowance in definition of Total Direct Pay.

Changes in Plan Provisions from July 1, 2001 to July 1, 2002

The plan provisions were not changed.

Actuarial Certification

This report describes the results of an actuarial valuation of the Houston Police Officers Pension System. The Houston Police Officers Pension System retained Towers Perrin to perform this actuarial valuation for the purposes of determining the funding status for the plan year July 1, 2002 through June 30, 2003.

The consulting actuary is a member of the Society of Actuaries and other professional actuarial organizations and meets their "General Qualification Standard for Prescribed Statements of Actuarial Opinions" relating to pension plans.

In preparing the actuarial results, we have relied upon information provided by the Board of Trustees regarding plan provisions, plan participants, plan assets, and other matters. While the scope of our engagement did not call for us to perform an audit or independent verification of this information, we have reviewed this information for reasonableness but have not audited it. The accuracy of the results presented in this report is dependent upon the accuracy and completeness of the underlying information. Historical information for years prior to 1986 was prepared by the prior actuaries and was not subjected to our actuarial review.

The actuarial methods and assumptions used in this valuation were selected by the Board of Trustees. The Board has sole authority to determine the actuarial assumptions. In our opinion, the actuarial assumptions used are appropriate for purposes of the valuation and, in the aggregate, are reasonably related to the experience of the Fund and to reasonable expectations.

The funding determination portion of this actuarial valuation has been conducted in accordance with principles of practice prescribed by the Actuarial Standards Board and the requirements of the Texas Government Code. Section 802.101 of the Texas Government Code requires the use of actuarial "assumptions and methods that are reasonable in the aggregate, considering the experience of the program and reasonable expectations, and that, in combination, offer the actuary's best estimate of anticipated experience under the program."

The results shown in this report are reasonable actuarial results. However, a different set of results could also be considered reasonable actuarial results, since the Actuarial Standards of Practice describe a "best-estimate range" for each assumption, rather than a single best-estimate value. Thus, reasonable results differing from those presented in this report could have been developed by selecting different points within the best-estimate ranges for various assumptions.

The information contained in this report was prepared for the internal use of the Houston Police Officers Pension System and its auditors in connection with our actuarial valuation of the pension plan. It is neither intended nor necessarily suitable for other purposes.

Towers Perrin

Adam S. Berk
ASA, CFA, EA, MAAA

October, 2003

Houston Police Officers Pension System
Actuarial report as of July 1, 2002