

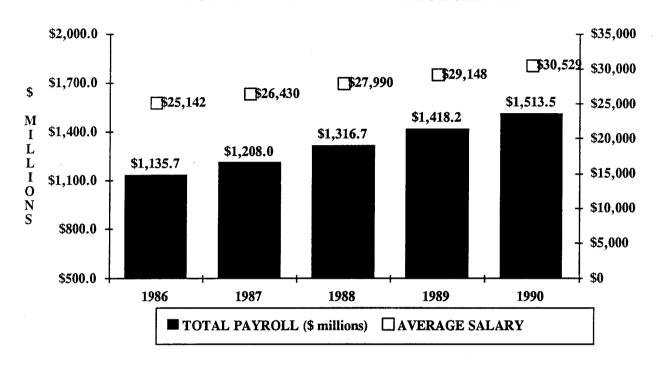
### MINNESOTA STATE RETIREMENT SYSTEM

Review of
Actuarial Valuations
as of
June 30, 1990



Deloitte & Touche

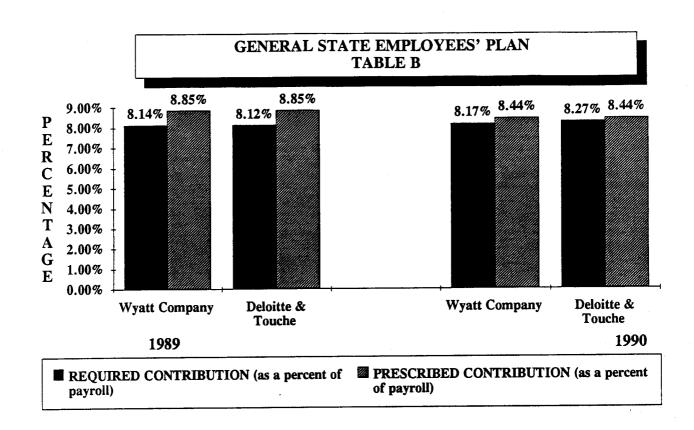
### GENERALS ACTIVE MEMBERS TOTAL PAYROLL AND AVERAGE SALARY



Members 45,171 45,707 47,040 48,653 49,576

GENERAL STATE EMPLOYEES' PLAN TABLE A \$3,000.0 \$2,708.0 \$2,456.6 \$2,500.0 \$2,115.5 \$2,108.2 \$1,871.5 \$2,000.0 \$1,644.2 I L L I O N S \$1,500.0 \$1,000.0 \$500.0 \$0.0 1990 1988 1989 ■ ACCRUED LIABILITY ■ VALUATION ASSETS

	1988	1989	1990
Accrued Liability	\$2,115.5	\$2,456.6	\$2,708.0
Valuation Assets	1,644.2	1,871.5	2,108.2
Unfunded Accrued Liability	471.3	585.1	599.8
Funded Ratio	77.7%	76.2%	77.9%



	19	1989		)
	Wyatt	Deloitte	Wyatt	Deloitte
	<u>Compan</u> y	& Touche	<u>Company</u>	<u>&amp; Touche</u>
Required Contribution	\$115,474	\$115,115	\$123.6	\$125.3
	(8.14%)	(8.12%)	(8.17%)	(8.27%)
Prescribed Contribution	\$125,507	\$125,507	\$127.7	\$127.9
	(8.85%)	(8.85%)	(8.44%)	(8.44%)
Sufficiency/(Deficiency)	.71%	.73%	.27%	.17%

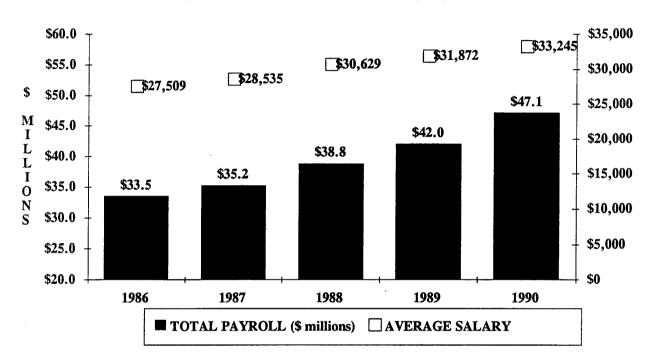
GENERAL STATE EMPLOYEES' PLAN **TABLE C** \$2,500.0 \$2,328.2 \$2,109.3 \$2,108.2 \$2,000.0 \$1,871.5 \$1,775.5 \$1,644.2 MILLIONS \$1,500.0 \$1,000.0 \$500.0 \$0.0 1988 1989 1990 ■ VALUE OF ACCRUED BENEFITS ■ VALUATION ASSETS

	1988	1989	1990
Value of Accrued Benefits	\$1,775.5	\$2,109.3	\$2,328.2
Valuation Assets	1,644.2	1,871.5	2,108.2
Depth of Funding	92.6%	88.7%	90.6%
Depth of Funding, Excluding MPRI Member	s 88.3%	83.0%	85.9%

# GENERAL STATE EMPLOYEES' PLAN TABLE D (\$ IN MILLIONS) SENSITIVITY TO ASSUMPTIONS

		Value After Change			
	Current	7.5% Interest	6% Salary Increase	Level \$ Amortization	
A. Required Contribution					
(Amount)	\$ 125.3	\$ 144.2	\$ 119.8	\$ 152.4	
(Percent)	8.27%	9.52%	7.90%	10.06%	
(Sufficiency)	0.17%	(1.08%	6) 0.54%	(1.62%)	
B. Value of Accrued Benefits	\$ 2,321.5	\$ 2,484.8	\$ 2,278.1	\$ 2,321.5	
C. Depth of Funding	90.8%	84.9%	92.5%	90.8%	

### CORRECTIONAL ACTIVE MEMBERS TOTAL PAYROLL AND AVERAGE SALARY



Members 1,219 1,232 1,267 1,317 1,416

CORRECTIONAL EMPLOYEES' PLAN TABLE A \$120.0 \$102.2 \$96.9 \$100.0 \$92.7 \$ \$85.4 \$81.5 \$80.0 \$74.1 MILLIONS \$60.0 \$40.0 \$20.0 \$0.0 1988 1989 1990 ■ ACCRUED LIABILITY ■ VALUATION ASSETS

	1988	1989	1990
Accrued Liability	\$81.5	\$92.6	\$102.2
Valuation Assets	74.1	85.4	96.9
Unfunded Accrued Liability	7.4	7.2	5.3
Funded Ratio	90.9%	92.2%	94.8%

**CORRECTIONAL EMPLOYEES' PLAN** TABLE B 13.60% 13.60% 14.00% 10.73% 11.17% 12.00%  $10.77\%^{11.17\%}$ PERCENTAGE 11.00% 10.87% 10.00% 8.00% 6.00% 4.00% 2.00% 0.00% **Wyatt Company Wyatt Company** Deloitte & Deloitte & Touche Touche 1989 1990 ■ REQUIRED CONTRIBUTION (as a percent of payroll) 

PRESCRIBED CONTRIBUTION (as a percent of payroll)

	1989		1990	)
	Wyatt	Deloitte	Wyatt	Deloitte
	Company	& Touche	<u>Company</u>	<u>&amp; Touche</u>
Required Contribution	\$ 4.5	\$ 4.6	\$ 5.1	\$ 5.1
	(10.87%)	(11.00%)	(10.73%)	(10.77%)
Prescribed Contribution	\$ 5.7	\$ 5.7	\$ 5.3	\$ 5.3
	(13.60%)	(13.60%)	(11.17%)	(11.17%)
Sufficiency/(Deficiency)	2.73%	2.60%	0.44%	0.40%

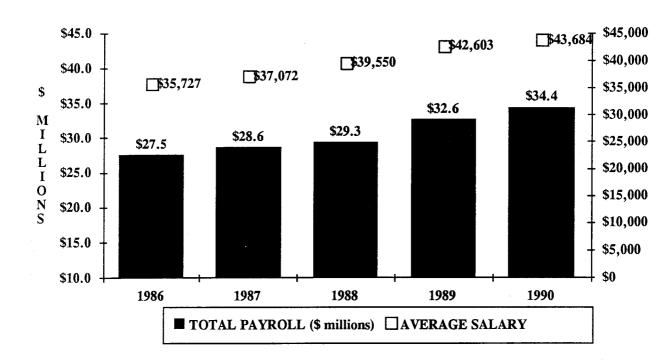
CORRECTIONAL EMPLOYEES' PLAN TABLE C \$96.9 \$100.0 \$87.6 \$85.4 \$90.0 \$79.1 \$80.0 \$74.1 \$ \$69.1 \$70.0 MILLIONS \$60.0 \$50.0 \$40.0 \$30.0 \$20.0 \$10.0 \$0.0 1989 1990 1988 ■ VALUE OF ACCRUED BENEFITS ■ VALUATION ASSETS

	1988	1989	1990
Value of Accrued Benefits	\$69.1	\$79.1	\$87.6
Valuation Assets	74.1	85.4	96.9
Depth of Funding	107.1%	108.0%	110.7%
Depth of Funding, Excluding MPRI Members	111.3%	112.4%	116.7%

# CORRECTIONAL EMPLOYEES' PLAN TABLE D (\$ IN MILLIONS) SENSITIVITY TO ASSUMPTIONS

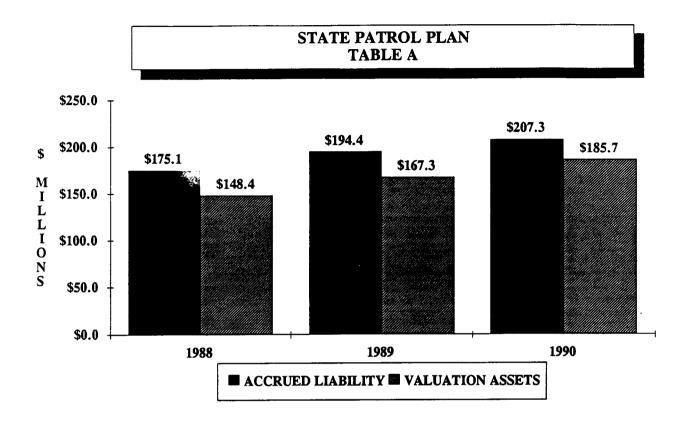
		Value After Change			
	Current	7.5% Interest	6% Salary Increase	Level \$ Amortization	
A. Required Contribution					
(Amount)	\$ 5.1	\$ 6.0	\$ 4.7	\$ 5.3	
(Percent)	10.77%	12.77%	10.07%	11.30%	
(Sufficiency)	0.40%	(1.60%)	1.10%	(0.13%)	
B. Value of Accrued Benefits	\$ 87.1	\$ 93.5	\$ 85.4	\$ 87.1	
C. Depth of Funding	111.3%	103.6%	113.5%	111.3%	

### STATE PATROL ACTIVE MEMBERS TOTAL PAYROLL AND AVERAGE SALARY



Members 769 771 740 765 788

)



	1988	1989	1990
Accrued Liability	\$175.1	\$194.4	\$207.3
Valuation Assets	148.4	167.3	185.7
Unfunded Accrued Liability	26.7	27.1	21.6
Funded Ratio	84.7%	86.0%	89.6%

STATE PATROL PLAN TABLE B 30.00% 27.40% 27.40% 22.15%\_23.38% 23.92% PERCENTAGE 25.00% 23.06%23.38% 21.84% 20.00% 15.00% 10.00% 5.00% 0.00% **Wyatt Company Wyatt Company** Deloitte & Deloitte & Touche Touche 1989 1990 ■ REQUIRED CONTRIBUTION (as a percent of payroll) 

PRESCRIBED CONTRIBUTION (as a percent of payroll)

	1989		1990	)
	Wyatt	Deloitte	Wyatt	Deloitte
	Company	<u>&amp; Touche</u>	<u>Company</u>	<u>&amp; Touche</u>
Required Contribution	\$ 7.1	\$ 7.8	\$ 7.6	\$ 7.9
	(21.84%)	(23.92%)	(22.15%)	(23.06%)
Prescribed Contribution	\$ 8.9	\$ 8.9	\$ 8.0	\$ 8.0
	(27.40%)	(27.40%)	(23.38%)	(23.38%)
Sufficiency/(Deficiency)	5.56%	3.48%	1.23%	0.32%

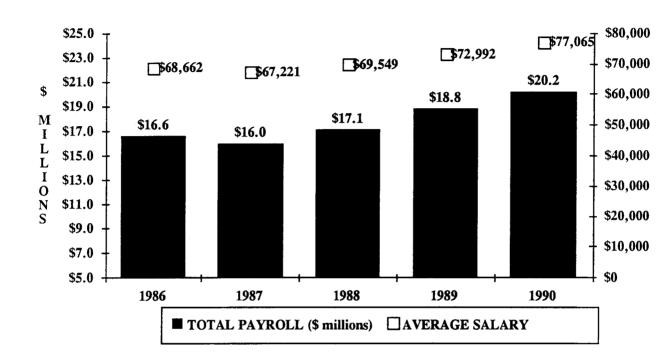
STATE PATROL PLAN TABLE C \$198.4 \$200.0 \$185.7 \$184.3 \$180.0 \$167.3 \$167.3 \$160.0 \$148.4 \$140.0 M I L I O N S \$120.0 \$100.0 \$80.0 \$60.0 \$40.0 \$20.0 \$0.0 1988 1989 1990 ■ VALUE OF ACCRUED BENEFITS ■ VALUATION ASSETS

	1988	1989	1990
Value of Accrued Benefits	\$167.3	\$184.3	\$198.4
Valuation Assets	148.4	167.3	185.7
Depth of Funding	88.7%	90.8%	93.6%
Depth of Funding, Excluding MPRI Members	79.9%	83.8%	88.8%

# STATE PATROL PLAN TABLE D (\$ IN MILLIONS) SENSITIVITY TO ASSUMPTIONS

		Change		
	Current	7.5% Interest	6% Salary Increase	Level \$ Amortization
A. Required Contribution				
(Amount)	\$ 7.9	\$ 9.2	\$ 7.5	\$ 9.0
(Percent)	23.06%	26.64%	21.84%	26.16%
(Sufficiency)	0.32%	(3.26%	1.54%	(2.78%)
B. Value of Accrued Benefits	\$ 198.8	\$ 209.8	\$ 195.4	\$ 198.8
C. Depth of Funding	93.4%	88.5%	95.1%	93.4%

### JUDGES ACTIVE MEMBERS TOTAL PAYROLL AND AVERAGE SALARY



Members 242 238 246 257 262

### JUDGES' PLAN COMPARISON OF VALUATION RESULTS

(\$ IN MILLIONS)

	1989		1990	
	Wyatt <u>Compan</u> y	Deloitte & Touche	Wyatt Company	Deloitte <u>&amp; Touche</u>
A. Accrued Liability	\$ 64.9	\$ 65.9	\$ 69.4	\$ 69.3
B. Valuation Assets	\$ 23.4	\$ 23.4	\$ 28.1	\$ 28.1
C. Unfunded Accrued Liability	\$ 41.5	\$ 42.5	\$ 41.3	\$ 41.2
D. Funded Ratio	36.0%	35.4%	40.5%	40.6%
E. Required Contribution	\$ 4.6 (24.30%)	\$ 4.8 (25.36%)	\$ 4.9 (23.59%)	\$ 4.9 (24.10%)
F. Prescribed Contribution	\$ .8 (4.30%)	\$ .8 (4.30%)	\$ .9 (4.31%)	\$ .9 (4.31%)
G. Contribution Sufficiency/ (Deficiency)	(25.49%)	(21.06%)	(22.56%)	(19.79%)