

May 16, 2018

The Pension Board
Redford Township Police and Fire
Retirement System
Redford Township, Michigan

Dear Board Members:

The purpose of the annual actuarial valuation of the Redford Township Police and Fire Retirement System, as of March 31, 2017 is to:

- Compute the liabilities associated with benefits likely to be paid on behalf of current retired and active members of the Retirement System,
- Compare accrued assets with accrued liabilities to assess the funded condition of the Retirement System, and
- Compute the Township's recommended contribution rate for the Fiscal Year beginning April 1, 2018.

This valuation has been conducted in accordance with generally accepted actuarial principles and practices. Data concerning active members, retirees, beneficiaries and assets was provided by the Retirement System Administrator/Accountant. This data has been reviewed for reasonableness, but no attempt has been made to audit such information. The valuation was based on the provisions of the Retirement System as amended through March 31, 2017. The actuarial assumptions used in this valuation are reasonably related to the past experience of the System and represent reasonable expectations of long-term future experience under the System. This report was prepared under the direction of a member of the American Academy of Actuaries who meets the qualification standards of the American Academy of Actuaries to render the actuarial opinion contained herein.

Respectfully submitted,



Denise M. Jones
Senior Consultant



Sandra W. Rodwan
Member, American Academy of Actuaries

***Redford Township
Police and Fire
Retirement System***

Actuarial Valuation as of March 31, 2017

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Section One:
Valuation Summary



Purpose of Valuation

The purpose of the annual actuarial valuation of the Redford Township Police and Fire Retirement System as of March 31, 2017 is to:

- ❖ Compute the liabilities associated with benefits likely to be paid on behalf of current retired and active members of the Retirement System,
- ❖ Compare accrued assets with accrued liabilities to assess the funded condition of the Retirement System, and
- ❖ Compute the Township's recommended contribution rate for the Fiscal Year beginning April 1, 2018.

Liabilities and Funded Condition of Retirement System

Accrued liabilities of the Retirement System as of March 31, 2017 were computed to be \$117,840,643. The funding value of accrued assets was \$64,180,727. The ratio of the funding value of accrued assets to accrued liabilities was 54.5%.

Funding Value of Assets

A smoothed market value of assets was used for the March 31, 2017 valuation. This method, which spreads the difference between actual and expected investment return over four years, is the same as the method used for last year's valuation.

Computed Township's Contribution Rate

The Township's normal cost contribution rate was computed to be 24.52% of active and DROP member payroll (25.65% total normal cost less 1.13% member contributions). The unfunded actuarial accrued liabilities were amortized as a level percent of the future payroll. The amortization of unfunded actuarial accrued liabilities was 60.24% of member payroll based on 20 year amortization. The Township's total contribution for FY beginning April 1, 2018 was computed to be 84.76% of member payroll.

Retirement System Experience

Overall experience of the Retirement System was less favorable than expected based on the long-term assumptions. The primary source of the unfavorable experience was the decrease in assets available for funding net of the DROP account reserve (see page 3).

Benefit Provision Changes

None

Assumption and Method Changes

None

Participant Data

	<u>3/31/2017</u>	<u>3/31/2016</u>
Active Members*	91	84
Active Member Payroll	\$5,833,207	\$5,584,762
Retirees and Beneficiaries	181	172
Annual Pensions	\$7,871,542	\$7,644,391
Vested Inactive Members	1	1
Annual Pensions	\$18,899	\$18,899

There are also 7 alternate payees included in the valuation with annual benefits of \$87,397 in 2017 and 6 alternate payees included in the valuation with annual benefits of \$66,067 in 2016.

*Includes DROP participants.

Financial Data

	<u>3/31/2017</u>	<u>3/31/2016</u>
Assets Available for Funding	\$58,475,398	\$60,211,281
DROP Reserve	<u>\$5,705,329</u>	<u>\$ 3,885,632</u>
Total Valuation Assets	\$64,180,727	\$64,096,913
Market Value of Assets	\$63,281,796	\$61,462,702

Conclusion: The Township is funding benefits as they accrue on a level percent of payroll basis. Maintenance of a sound funded condition is dependent upon continued receipt of computed contributions.



Section Two:

***Actuarial Calculations –
Funding***



Computed Contribution Rates for The Year Beginning April 1, 2018

The contribution rates shown below are expressed as level percents of active member payroll.

Accrued liabilities exceeded accrued assets as of March 31, 2017. Unfunded actuarial accrued liability was amortized as a level percent of payroll over 20 years.

Contribution Recommendation:

	<u>Percents of Payroll*</u>
Normal Cost	
Regular Retirement	23.78%
Pre-retirement Death	0.24
Disability	0.72
Withdrawal	<u>0.91</u>
Total Normal Cost	25.65%
Member Portion	1.13%
Township’s Computed Normal Cost	24.52%
Unfunded Actuarial Accrued Liability (UAAL)	60.24
Township’s Total Contribution Rate	84.76%
Dollar Amount Based on Total Payroll	\$4,944,226

*The contribution rates shown are based on total active member payroll (including that of current DROP participants).

Unfunded Actuarial Accrued Liability

	<u>March 31, 2017</u>	<u>March 31, 2016</u>
Actuarial Accrued Liabilities	\$117,840,643	\$114,258,227
Assets Allocated to Funding	<u>64,180,727</u>	<u>64,096,913</u>
Unfunded Actuarial Accrued Liabilities	\$53,659,916	\$50,161,314

Recommended Township Contribution

Valuation Date March 31	Fiscal Year Beginning April 1	Recommended Dollar Contributions
2000	2001	N/A
2001*	2002	N/A
2002*	2003	N/A
2003*	2004	\$3,261,813
2004	2005	3,799,719
2005	2006	4,220,496
2006	2007	4,732,216
2007	2008	2,862,102
2008	2009	2,953,180
2009	2010	3,902,126
2010**	2011	4,407,240
2011**	2012	4,070,562
2012**	2013	4,257,948
2013**	2014	4,560,754
2014	2015	3,963,149
2015**	2016	4,320,943
2016	2017	4,428,716
2017	2018	4,944,226

*Revised actuarial assumptions or methods.

**Retirement System amended.

Note: Results shown throughout this report for years prior to 2014 were prepared by the previous actuarial firm.

History of Assets and Accrued Liabilities

Valuation Date	Valuation Assets	Actuarial Accrued Liabilities	Funded Ratio	Unfunded Actuarial Accrued Liabilities
3/31/00	\$64,031,949	\$59,438,682	107.7%	\$(4,593,267)
3/31/01*	65,322,504	63,958,142	102.1	(1,364,362)
3/31/02*	64,475,763	65,964,980	97.7	1,489,217
3/31/03*	62,955,370	69,563,622	90.5	6,608,252
3/31/04	62,094,043	73,746,763	84.2	11,652,720
3/31/05	62,665,620	77,249,373	81.1	14,583,753
3/31/06	64,358,035	80,878,263	79.6	16,520,228
3/31/07	68,631,856	83,810,895	81.9	15,179,039
3/31/08	71,243,732	87,432,949	81.5	16,189,217
3/31/09	61,147,561	91,850,858	66.6	30,703,297
3/31/10**	61,367,673	99,566,588	61.6	38,198,915
3/31/11**	62,124,900	102,772,135	60.4	40,647,235
3/31/12**	62,841,470	104,493,338	60.1	41,651,868
3/31/13**	65,759,951	109,705,590	59.9	43,945,639
3/31/14	67,143,889	108,128,849	62.1	40,984,960
3/31/15**	65,883,424	114,918,208	57.3	49,034,784
3/31/16	64,096,913	114,258,227	56.1	50,161,314
3/31/17	64,180,727	117,840,643	54.5	53,659,916

*After assumption/amortization changes.

**After benefit changes.

Comments and Conclusion

Comment: Overall experience of the Retirement System was less favorable than expected based on the long-term assumptions. The primary source of the unfavorable experience was the decrease in assets available for funding net of the DROP account reserve (see page 3).

Conclusion: The Township is funding benefits as they accrue on a level percent of payroll basis. Maintenance of a sound funded condition is dependent upon continued receipt of computed contributions.

Section Three:

***Retirement System
Benefit Provisions***



Benefit Provision Summary

Service Retirement

Eligibility:

Any age with 25 or more years of service or age 60 with 10 years of service.

Annual Benefit:

Fire hired before June 1, 2010, Police Patrol hired before 9/1/2011 and Police Command: Straight life pension equals 2.8% of 3 year final average compensation (FAC) times first 25 years of service plus 1% of FAC times years of service in excess of 25 years. The maximum pension is 75% of FAC.

Fire hired after June 1, 2010 and after: Straight life pension equals 2.25% of 3 year final average compensation (FAC) times first 25 years of service plus 1% of FAC times years of service in excess of 25 years. The maximum pension is 61.25% of FAC.

Police Patrol hired 9/1/2011 and after: Straight life pension equals 2.25% of 3 year final average compensation (FAC) times first 25 years of service plus 1% of FAC times years of service in excess of 25 years. Maximum of 240 hours of unused leave. The maximum pension is 75% of FAC.

Deferred Retirement Option Plan (DROP)

Eligibility:

Fire hired before June 1, 2010: 20 years of service.

Fire hired after June 1, 2010: 25 years of service.

Police Patrol: 22 years of service.

Police Command: 20 years of service as of September 30, 2016.

Annual Benefit:

Fire who participate in the DROP prior to May 31, 2011 (transition group): 3.0% of 2 year final average compensation (FAC) (best 2 years out of last 10 years) times service credited by May 31, 2011. Maximum pension is 60% of FAC and the maximum time in DROP is 60 months. DROP account vesting is 100% at termination.

Fire electing to participate in the DROP prior to October 1, 2015: 3.0% of 2 year final average compensation (FAC) (best 2 years out of last 10 years) times service up to 20 years. Maximum time in DROP is 60 months. DROP account vesting is 100% at termination.

Fire hired after June 1, 2010: May elect to DROP after 20 years of credited service. Three year final average compensation (FAC) (best 2 years out of last 10 years) times service up to 20 years. Maximum pension is 60% of FAC and the maximum time in DROP is 60 months. DROP account vesting is 100% at termination.

Effective October 1, 2015 Fire hired prior to June 1, 2010 electing to DROP: 2.8% of 3 year final average compensation (FAC) of the last 10 years, times service up to 25 years. DROP account vesting is as follows:

- 0-12 months 20%
- 12-24 months 40%
- 24-36 months 60%
- 36-48 months 80%
- 48-60 months 100%

Fire hired after June 1, 2010: May elect to DROP after 25 years of credited service. Three year final average compensation (FAC) (best 3 years of the last 10 years) times service up to 25 years. Maximum pension 2.25% at 25 years plus 1% to a maximum of 61.25% of FAC and the maximum times in DROP is 60 months. DROP account vesting is as follows:

- 0-12 months 20%
- 12-24 months 40%
- 24-36 months 60%
- 36-48 months 80%
- 48-60 months 100%

Police Patrol: 3.0% of 3 year final average compensation (FAC) times service. Maximum pension is 66% of FAC and the maximum time in DROP is 84 months. DROP account vesting: termination prior to 12 months will receive 20% of the accumulated DROP balance, termination between 12 months and 24 months will receive 75% of the accumulated DROP balance, and after 24 months the participant will receive 100% of the accumulated DROP balance.

Command: 3.0% of three year final average compensation (FAC) (best 3 years of the last 10 years) times service. Maximum time in DROP is 84 months. Maximum pension is 60% of FAC,

DROP account vesting is as follows:

- 0-11 months 25%
- 12-23 months 50%
- 24-35 months 75%
- At 36 months 100%

Deferred Retirement

Eligibility:

10 or more years of service.

Annual Benefit:

Computed as service retirement but based upon service, FAC and benefit provisions in effect at termination. Benefit begins at date retirement would have occurred had member remained in employment.

Duty Disability Retirement

Eligibility:

Payable upon the total and permanent disability of a member in the line of duty.

Annual Benefit:

To age 55: 50% of FAC. Fire members: If the disabled retiree had 10 or more years of active service and dies before age 55 the surviving spouse's pension equals 60% of the disability pension at the time of death. If there is no surviving spouse, the survivor disability pension shall be paid to the disability retirees surviving minor children, if any, and continue to each surviving child until he/she becomes 18 years of age or until his/her marriage or death before becoming 18 years old.

At age 55: Same as Service Retirement Pension with service credit from date of disability to age 55.

Non-Duty Disability

Eligibility:

Payable upon the total and permanent disability of a member with 5 or more years of service

Annual Benefit:

To Age 55: 1.5% of AFC times years of service, 2% when reaches age 55.

At Age 55: Same as Service Retirement Pension.

Duty Death in Service Survivor's Pension prior to 20 years of service

Eligibility:

Payable upon the expiration of a worker's compensation to the survivors of a member who died in the line of duty.

Annual Benefit:

Same amount that was paid by worker's compensation.

Duty Death in Service Survivor's Pension after 20 years of service

Eligibility:

Payable upon the expiration of a worker's compensation to the survivors of a member who died in the line of duty.

Annual Benefit:

Option I

Non-Duty Death in Service Survivor's Pension

Eligibility:

Payable to a surviving spouse, if any, upon the death of a member with 10 or more years of service.

Annual Benefit:

Accrued straight life pension actuarially reduced in accordance with an Option I election.

Death After Retirement Survivor's Pension

Eligibility:

Payable to a surviving spouse, if any, upon the death of a retired member who was receiving a straight life pension which was effective July 1, 1975 or later.

Annual Benefit:

Spouse's pension equals 60% of the straight life pension the deceased retiree was receiving, or Option I or Option II as elected.

Member Contributions

Fire hired prior to 6/1/2010, Police Patrol and Police Command: None (5% of pay is paid by the Township to individual member accounts).

Fire hired after 5/31/2010: 5% of pay.

Member contributions cease upon entry into the DROP.

Covered Compensation

For Retirement System purposes, compensation includes base pay plus longevity pay, unused sick leave, pay in lieu of holiday or vacation time, and incentive pay. For Police Patrol hired after September 1, 2011, the maximum of 240 hours of paid leave can be rolled into FAC.



Section Four:

***Actuarial Assumptions
And Methods***



Actuarial Assumptions

Economic Assumptions

(i) Interest Rate 7.5% (net of expenses)

(ii) Salary Increases

Across-the-Board 4.5%
 Merit and Longevity Age-related rates

Sample Annual Rates of Salary Increase

Age	Inflation	Merit and Longevity	Total
20	4.50%	4.40%	8.90%
25	4.50%	3.18	7.68
30	4.50%	2.59	7.09
35	4.50%	2.09	6.59
40	4.50%	1.44	5.94
45	4.50%	0.68	5.18
50	4.50%	0.12	4.62
55	4.50%	0.00	4.50
60	4.50%	0.00	4.50

Demographic Assumptions

(i) Mortality

RP 2000 Combined Healthy
Mortality Table Projected to 2014

Sample Ages	Future Life Expectancy (Years)	
	Men	Women
55	27.5	29.6
60	23.0	25.1
65	18.8	20.8
70	14.9	16.9
75	11.3	13.3
80	8.3	10.1

(ii) Disability

Sample Ages	Percent Becoming Disabled Within Next Year	
	Male	Female
20	0.07%	0.03%
25	0.09	0.05
30	0.10	0.07
35	0.14	0.13
40	0.21	0.19
45	0.32	0.28
50	0.52	0.45
55	0.92	0.76
60	1.53	1.10
65	1.65	0.98
70	1.65	0.98

(iii) Termination of Employment

Service related rates for first 5 years of employment. Age related rates after first 5 years of employment

Sample Ages	Years of Service	Percent Terminating
All	0	7.0%
	1	5.5
	2	4.0
	3	4.0
	4	3.5
25	5 & Over	3.5
30		2.9
35		1.5
40		0.6
45		0.5
50		0.5
55		0.5
60		0.5

(iv) Retirement Rates

Age-related rates

**Active Members Retiring within Year
Non-Drop Members**

Years of Service	Percent Retiring
25	40%
26	25
27	20
28	15
29	15
30	60
31	15
32	30
33	15
34	15
35	100

DROP Eligible:

100%

Actuarial Method Used for the Valuation

Normal Cost. Normal cost and the allocation of actuarial present values between service rendered before and after the valuation date were determined using an individual entry-age actuarial cost method having the following characteristics:

- ❖ The annual normal costs for each individual active member, payable from date of hire to date of retirement, are sufficient to accumulate the value of the member's benefit at the time of retirement;
- ❖ Each annual normal cost is a constant percentage of the member's year-by-year projected covered pay.

Financing of Unfunded Actuarial Accrued Liability. Remaining unfunded actuarial accrued liability as of March 31, 2017 was amortized as a level percent of payroll over a closed period of 20 years.

Active member payroll was assumed to increase 4.5% a year for the purpose of determining the level percent of payroll amortization payment.



Section Five:
Valuation Data



Asset Summary

As of March 31, 2017 the market value of assets was reported to be \$63,281,796. The funding value of assets (smoothed market value) was computed to be \$64,180,727.

Funding Value of Assets

A. Funding Value Beginning of Year	\$64,096,913
B. Market Value End of Year	63,281,796
C. Market Value Beginning of Year	61,462,702
D. Non-Investment Net Cash Flow	(4,597,566)
E. Investment Income	
E1. Market Total B-C-D	6,416,660
E2. Amount for Immediate Recognition	4,634,860
E3. Amount for Phased-In Recognition E1-E2	1,781,800
F. Phased-In Recognition of Investment Income	
F1. Current Year 0.25 x E3	445,450
F2. First Prior Year	(1,151,448)
F3. Second Prior Year	67,616
F4. Third Prior Year	684,902
F5. Total Phased-In Amount	46,520
G. Funding Value End of Year A+D+E2+F5	64,180,727
G1. 120% of Market Value End of Year	75,938,155
G2. 80% of Market Value End of Year	50,625,437
G3. Funding Value End of Year: G, but not greater Than G1, nor less than G2	64,180,727
H. Difference Between Market and Funding Value	(\$898,931)
I. Nominal Rate of Return	7.58%

Participant Summary

Retirees and Beneficiaries Included in the Valuation

There were 174 retirees and beneficiaries included in the valuation, with annual pensions totaling \$7,784,145. Also included in the valuation are 7 alternate payees receiving benefits totaling \$87,397.

There were 4 new retirements from DROP, and one new DROP participant added. There were 5 retirees removed and 3 beneficiaries added.

Pensions Being Paid Historical Schedule

Valuation Date March 31	No.	Annual Pensions	Average Pension	Discounted Value of Pensions	
				Total	Average
2000	111	\$3,254,903	\$29,323	\$37,307,532	\$336,104
2001	109	3,279,310	30,085	37,166,574	340,978
2002	111	3,327,646	29,979	36,225,413	326,355
2003	121	3,834,356	31,689	42,072,331	347,705
2004	122	3,910,722	32,055	42,373,898	347,327
2005	124	4,028,259	32,486	43,219,439	348,544
2006	131	4,305,867	32,869	45,856,926	350,053
2007	134	4,592,205	34,270	49,011,805	365,760
2008	139	4,844,754	34,854	51,495,188	370,469
2009	141	5,078,265	36,016	53,629,584	380,352
2010	150	5,715,024	38,100	60,818,182	405,455
2011	156	6,116,410	39,208	65,014,652	416,761
2012	156	6,252,975	40,083	66,041,774	423,345
2013	155	6,383,960	41,187	67,215,583	433,649
2014	161	6,796,631	42,215	69,088,594	429,122
2015	165	7,133,186	43,231	77,313,703	468,568
2016	172	7,644,391	44,444	83,067,297	503,438
2017	174	7,784,145	44,736	84,110,793	483,395

Retirees and Beneficiaries - March 31, 2017

Attained Ages	No.	Annual Pensions
30-34	1	\$ 21,833
40-44	1	51,430
45-49	15	914,740
50-54	22	1,367,184
55-59	21	1,254,902
60-64	22	1,119,702
65-69	25	1,094,319
70	5	197,991
71	5	227,650
72	4	151,394
73	2	120,802
74	7	217,975
75	4	116,959
76	6	145,792
77	7	197,922
78	2	66,292
79	8	227,079
80	3	41,765
81	4	70,498
82	1	31,866
83	1	23,812
84	1	25,065
85	1	8,105
86	2	22,920
87	1	21,095
90	2	33,492
96	<u>1</u>	<u>11,561</u>
Totals	174	\$ 7,784,145

In addition, there are 7 alternate payees receiving benefits totaling \$87,397 pursuant to an Eligible Domestic Relations Order.

**Active Members as of March 31, 2017
Age and Service Distribution**

Attained Age	Service						Totals No.	Payroll
	0-4	5-9	10-14	15-19	20-24	25-29		
20-24	3						3	\$130,818
25-29	16						16	755,496
30-34	9	7					16	930,251
35-39	2	9	2	1			14	910,342
40-44	2		2	7	3		14	991,799
45-49	3		1	7	7	1	19	1,396,892
50-54				3	4	1	8	643,721
55-59						<u>1</u>	<u>1</u>	<u>73,888</u>
Totals	35	16	5	18	14	3	91	\$5,833,207

Group Averages:

Age: 38.7 years
Service: 10.8 years
Annual Pay: \$64,101

Active Members – Three-Year Summary

	2017	2016	2015
Active Members	91	84	90
Valuation Payroll	\$5,833,207	\$5,584,792	\$5,781,299
Average Compensation	\$64,101	\$66,485	\$64,237
Average Age (yrs.)	38.7	40.2	40.8
Average Service (yrs.)	10.8	12.0	12.5