

**Montana Highway Patrol Officers'
Retirement System
of the
State of Montana**

**GASB 67 and 68 Report
as of
June 30, 2014**

Produced by [Cheiron](#)

May 2015

Table of Contents

Board Summary	1
Certification	3
Determination of Discount Rate	4
Projection of Total Pension Liability	5
Note Disclosures	6
Required Supplementary Information.....	8
Employer Reporting Amounts	10
Appendix A – Glossary of Terms	13
Appendix B – Development of Discount Rate	15

**MONTANA HIGHWAY PATROL OFFICERS' RETIREMENT SYSTEM
GASB 67 AND 68 REPORTING FOR JUNE 30, 2014 MEASUREMENT DATE**

BOARD SUMMARY

The purpose of this report is to provide accounting and financial disclosure information under the Government Accounting Standards Board Statement 67 and 68 for the Montana Highway Patrol Officers' Retirement System and the State of Montana. This information includes:

- Determination of the discount rate,
- Projection of the Total Pension Liability from the actuarial valuation date to the measurement date,
- Changes in the Net Pension Liability from the beginning to the end of the measurement period,
- Calculation of the Net Pension Liability at the discount rate as well as discount rates 1% higher and lower than the discount rate,
- Schedule of Changes in Net Pension Liability and Related Ratios,
- Changes in the Net Pension Liability,
- Schedule of Employer Contributions,
- Schedule of Deferred Inflows and Outflows, and
- Calculation of Pension Expense.

Highlights

This report is the first report under GASB 68, and is a supplement to the GASB 67 report under the same reporting date previously provided. The reporting date for the State of Montana Highway Patrol Officers' Retirement System (HPORS) is June 30, 2014. Measurements as of the reporting date are based on the fair value of assets as of June 30, 2014 and the Total Pension Liability as of an actuarial valuation date of June 30, 2013, updated to June 30, 2014. There were no significant events between the valuation date and the measurement date so the update procedures only included the addition of service cost and interest cost offset by actual benefit payments.

Beginning of the year measurements are also based on the actuarial valuation as of June 30, 2013. Because the beginning and ending values are based on the same actuarial valuation and there were no significant events, no liability gains or losses due to experience are reported this year. In future years, liability gains and losses will be reported reflecting the liability gains and losses between actuarial valuation dates, as well as any significant events during the update period.

The table on the next page provides a summary of the key results during this reporting period.

**MONTANA HIGHWAY PATROL OFFICERS' RETIREMENT SYSTEM
GASB 67 AND 68 REPORTING FOR JUNE 30, 2014 MEASUREMENT DATE**

BOARD SUMMARY

	Table 1	
	Summary of Results	
	Measurement Date	
	6/30/2014	6/30/2013
Total Pension Liability	\$ 183,133,145	\$ 175,593,829
Plan Fiduciary Net Position	<u>126,010,392</u>	<u>109,690,706</u>
Net Pension Liability	\$ 57,122,753	\$ 65,903,123
Deferred Inflows	8,213,555	0
Deferred Outflows	<u>0</u>	<u>0</u>
Net Impact on Statement of Net Position	\$ 65,336,308	\$ 65,903,123
Pension Expense (\$ Amount)	\$ 5,168,692	N/A
Pension Expense (% of Pensionable Payroll*)	36.53%	N/A
Discount Rate	7.75%	7.75%

* Throughout this report, pensionable payroll will be used rather than Covered-Employee Payroll as defined by GASB, and described in Appendix A.

If the employer elects to use June 30, 2014 as its initial measurement date under GASB 68, a Net Pension Liability of \$65,903,123 would be recognized as of the beginning of the reporting year.

As of the end of the reporting year, the employer would report a total Net Pension Liability of \$57,122,753 and Deferred Inflows of \$8,213,555. Consequently, the net impact on the employer's Statement of Net Position would be \$65,336,308 at the end of the reporting year. In addition, any contributions between the measurement date and the reporting date by the employer would be reported as deferred outflows to match the cash outflow reported.

For the measurement year ending June 30, 2014, the Pension Expense is \$5,168,692 or 36.53% of pensionable payroll. This amount is not expected to be the same as the employer's contribution to the Plan (\$5,735,507), but instead represents the change in the net impact on the employer's Statement of Net Position plus employer contributions [\$65,336,308 + \$5,735,507 - \$65,903,123]. A breakdown of the Pension Expense is shown in this report.

MONTANA HIGHWAY PATROL OFFICERS' RETIREMENT SYSTEM
GASB 67 AND 68 REPORTING FOR JUNE 30, 2014 MEASUREMENT DATE

CERTIFICATION

The purpose of this report is to provide accounting and financial reporting information under GASB 67 and 68 for the State of Montana Highway Patrol Officers' Retirement System (HPORS). This report is for the use of HPORS, the State of Montana, and their auditors in preparing financial reports in accordance with applicable law and accounting requirements. This report is not appropriate for other purposes, including the measurement of funding requirements for HPORS.

In preparing our report, we relied on information (some oral and some written) supplied by Montana Public Employee Retirement Administration (MPERA). This information includes, but is not limited to, the plan provisions, employee data, and financial information. We performed an informal examination of the obvious characteristics of the data for reasonableness and consistency in accordance with Actuarial Standard of Practice No. 23.

The membership data, actuarial assumptions, and plan provisions are the same as were described in the June 30, 2013 Actuarial Valuation Report for HPORS, except that it has been assumed that the rate of investment return is net only of investment expenses, rather than net of both investment and administrative expenses. The administrative expense rate is assumed to be 0.23% of active member payroll.

Future reporting requirements may differ significantly from the current reporting requirements presented in this report due to such factors as the following: plan experience differing from that anticipated by assumptions; changes in assumptions; and changes in plan provisions or applicable law.

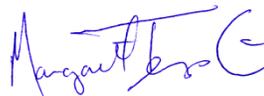
To the best of our knowledge, this report and its contents have been prepared in accordance with generally recognized and accepted actuarial principles and practices that are consistent with the Code of Professional Conduct and applicable Actuarial Standards of Practice set out by the Actuarial Standards Board. Furthermore, as credentialed actuaries, we meet the Qualification Standards of the American Academy of Actuaries to render the opinion contained in this report. This report does not address any contractual or legal issues. We are not attorneys and our firm does not provide any legal services or advice.

This report was prepared for HPORS for the purposes described herein and for the use by the Plan auditor in completing an audit related to the matters herein. Other users of this report are not intended users as defined in the Actuarial Standards of Practice, and Cheiron assumes no duty or liability to such other users.

Sincerely,
Cheiron



Stephen T. McElhane, FSA, FCA, MAAA
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**MONTANA HIGHWAY PATROL OFFICERS' RETIREMENT SYSTEM
GASB 67 AND 68 REPORTING FOR JUNE 30, 2014 MEASUREMENT DATE**

DETERMINATION OF DISCOUNT RATE

The discount rate as of June 30, 2014 is 7.75% which is the assumed long-term expected rate of return on System investments. Projections of the System's fiduciary net position have indicated that it is expected to be sufficient to make projected benefit payments for current Plan members following the procedures described in paragraphs 39 - 45 of GASB Statement 67. The results of these projections are included within this report in Appendix B.

**MONTANA HIGHWAY PATROL OFFICERS' RETIREMENT SYSTEM
GASB 67 AND 68 REPORTING FOR JUNE 30, 2014 MEASUREMENT DATE**

PROJECTION OF TOTAL PENSION LIABILITY

The Total Pension Liability (TPL) at the beginning of the measurement year is measured at the actuarial valuation date of June 30, 2013. The TPL at June 30, 2013 is the same as was reported for actuarial valuation purposes as of June 30, 2013. The TPL at the end of the measurement year, June 30, 2014, is measured as of an actuarial valuation date of June 30, 2013 and projected to June 30, 2014. In future years, both the beginning and end of year TPL will be measured as of an actuarial valuation date one year prior and projected to the appropriate date. There were no significant events during the projection period of which we are aware. The table below shows the projection of the TPL at discount rates equal to the rate used for disclosure and plus and minus one percent from the rate used for disclosure. TPL and Service Cost have been determined using the Entry Age Actuarial Cost Method as described in paragraph 46 of GASB Statement 67.

Table 2			
Projection of Total Pension Liability			
Discount Rate	6.75%	7.75%	8.75%
Total Pension Liability, 6/30/2013			
Actives	\$ 66,629,072	\$ 55,580,057	\$ 46,822,193
Deferred Vested	2,522,102	2,099,679	1,771,859
Retirees	130,724,367	117,914,093	107,214,490
Total	\$ 199,875,541	\$ 175,593,829	\$ 155,808,542
Service Cost, Beginning of Year			
Service Cost Rate	32.29%	25.23%	19.97%
Expected Payroll During Year	\$ 13,731,268	\$ 13,731,268	\$ 13,731,268
Service Cost	\$ 4,433,826	\$ 3,464,399	\$ 2,742,134
Benefit Payments	\$ 9,443,007	\$ 9,443,007	\$ 9,443,007
Interest	\$ 13,477,385	\$ 13,517,924	\$ 13,468,715
Change in Benefits	\$ 0	\$ 0	\$ 0
Change in Assumptions	\$ 0	\$ 0	\$ 0
Other Significant Events	\$ 0	\$ 0	\$ 0
Total Pension Liability, 6/30/2014	\$ 208,343,745	\$ 183,133,145	\$ 162,576,384

MONTANA HIGHWAY PATROL OFFICERS' RETIREMENT SYSTEM
GASB 67 AND 68 REPORTING FOR JUNE 30, 2014 MEASUREMENT DATE

NOTE DISCLOSURES

The table below shows the changes in the Total Pension Liability, the Plan Fiduciary Net Position (i.e., fair value of System assets), and the Net Pension Liability during the measurement year.

Table 3			
Change in Net Pension Liability			
	Increase (Decrease)		
	Total Pension Liability	Plan Fiduciary Net Position	Net Pension Liability
	(a)	(b)	(a) - (b)
Balances at 6/30/2013	\$ 175,593,829	\$ 109,690,706	\$ 65,903,123
Changes for the year:			
Service cost	3,464,399		3,464,399
Interest	13,517,924		13,517,924
Changes of benefits	0		0
Changes of assumptions	0		0
Differences between expected and actual experience	0		0
Contributions - employer		5,735,507	(5,735,507)
Contributions - non-employer		0	0
Contributions - member		1,458,042	(1,458,042)
Net investment income		18,678,284	(18,678,284)
Benefit payments	(9,443,007)	(9,443,007)	0
Administrative expense		(109,140)	109,140
Net changes	7,539,316	16,319,686	(8,780,370)
Balances at 6/30/2014	\$ 183,133,145	\$ 126,010,392	\$ 57,122,753

NOTE: Based on technical guidance from GASB, the HPORS general fund transfers should be considered an employer-type entity, since all contributions come from the State.

There were no changes in benefits or changes in assumptions during the year. Because the beginning and end of year TPL are both based on the same actuarial valuation, there are no differences between expected and actual experience reported this year.

Total contributions and investment income exceeded the service cost, interest cost, and administrative expenses, resulting in a decrease in the Net Pension Liability (NPL) of \$8,780,370. The NPL remaining as of June 30, 2014, is \$57,122,753.

**MONTANA HIGHWAY PATROL OFFICERS' RETIREMENT SYSTEM
GASB 67 AND 68 REPORTING FOR JUNE 30, 2014 MEASUREMENT DATE**

NOTE DISCLOSURES

Changes in the discount rate affect the measurement of the TPL. Lower discount rates produce a higher TPL and higher discount rates produce a lower TPL. Because the discount rate does not affect the measurement of assets, the percentage change in the NPL can be very significant for a relatively small change in the discount rate. The table below shows the sensitivity of the NPL to the discount rate.

Table 4			
Sensitivity of Net Pension Liability to Changes in Discount Rate			
As of June 30, 2014			
	1% Decrease 6.75%	Discount Rate 7.75%	1% Increase 8.75%
Total Pension Liability	\$ 208,343,745	\$ 183,133,145	\$ 162,576,384
Plan Fiduciary Net Position	<u>126,010,392</u>	<u>126,010,392</u>	<u>126,010,392</u>
Net Pension Liability	<u>\$ 82,333,353</u>	<u>\$ 57,122,753</u>	<u>\$ 36,565,992</u>
Plan Fiduciary Net Position as a Percentage of the Total Pension Liability	60.5%	68.8%	77.5%

A one percent decrease in the discount rate increases the TPL by approximately 13.8% and increases the NPL by approximately 44.1%. A one percent increase in the discount rate decreases the TPL by approximately 11.2% and decreases the NPL by approximately 36.0%.

MONTANA HIGHWAY PATROL OFFICERS' RETIREMENT SYSTEM
GASB 67 AND 68 REPORTING FOR JUNE 30, 2014 MEASUREMENT DATE

REQUIRED SUPPLEMENTARY INFORMATION

The schedules of Required Supplementary Information generally start with one year of information as of the implementation of GASB 67, but eventually will need to build up to 10 years of information. The schedule below shows the changes in NPL and related ratios required by GASB.

Table 5	
Schedule of Changes in Net Pension Liability and Related Ratios	
	FYE 2014
<u>Total Pension Liability</u>	
Service cost (BOY)	\$ 3,464,399
Interest (includes interest on service cost)	13,517,924
Changes of benefit terms	0
Differences between expected and actual experience	0
Changes of assumptions	0
Benefit payments, including refunds of member contributions	(9,443,007)
Net change in total pension liability	\$ 7,539,316
Total pension liability - beginning	175,593,829
Total pension liability - ending	\$ 183,133,145
<u>Plan fiduciary net position</u>	
Contributions - employer	\$ 5,735,507
Contributions - non-employer	0
Contributions - member	1,458,042
Net investment income	18,678,284
Benefit payments, including refunds of member contributions	(9,443,007)
Administrative expense	(109,140)
Net change in plan fiduciary net position	\$ 16,319,686
Plan fiduciary net position - beginning	109,690,706
Plan fiduciary net position - ending	\$ 126,010,392
Net pension liability - ending	\$ 57,122,753
Plan fiduciary net position as a percentage of the total pension liability	68.81%
Pensionable payroll	\$ 14,149,269
Net pension liability as a percentage of pensionable payroll	403.72%

NOTE: Based on technical guidance from GASB, the HPORS general fund transfers should be considered an employer-type entity, since all contributions come from the State.

MONTANA HIGHWAY PATROL OFFICERS' RETIREMENT SYSTEM
 GASB 67 AND 68 REPORTING FOR JUNE 30, 2014 MEASUREMENT DATE

REQUIRED SUPPLEMENTARY INFORMATION

If an Actuarially Determined Contribution is calculated, the following schedule is required. An Actuarially Determined Contribution is a contribution amount determined in accordance with Actuarial Standards of Practice.

Table 6	
Schedule of Employer Contributions	
Last Fiscal Year	
Dollar Amounts in Thousands	
	2014
Actuarially Determined Contribution	\$ 6,121
Contributions in Relation to the Actuarially Determined Contribution	
Employer Contributions	\$ 5,736
Non-Employer Contributions	<u>0</u>
Total Contributions	<u>\$ 5,736</u>
Contribution Deficiency/(Excess)	<u>\$ 385</u>
Pensionable Payroll	\$ 14,149
Contributions as a Percentage of Pensionable Payroll	40.54%

NOTE: Based on technical guidance from GASB, the HPORS general fund transfers should be considered an employer-type entity, since all contributions come from the State.

**MONTANA HIGHWAY PATROL OFFICERS' RETIREMENT SYSTEM
GASB 67 AND 68 REPORTING FOR JUNE 30, 2014 MEASUREMENT DATE**

EMPLOYER REPORTING AMOUNTS

The employer is not required to implement GASB 68 until its reporting date of June 30, 2015. However, the amounts reported as of June 30, 2015 can be based on either a June 30, 2014 or June 30, 2015 measurement date. The schedules in this section are provided should the employer elect to use the 2014 measurement date for its 2015 reporting.

The impact of experience gains or losses and assumption changes on the TPL are recognized in the Pension Expense over the average expected remaining service life of all active and inactive members of the Plan, determined as of the beginning of the measurement period. As of June 30, 2013, this average was 3.94 years¹, which was rounded to 4.00 years for recognition purposes. However, there were no experience gains or losses, and there were no assumption changes during the measurement year.

The impact of investment gains or losses is recognized over a period of five years. During the measurement year, there was an investment gain of approximately \$10.3 million. Approximately, \$2.1 million of that was recognized in the current year and identical amounts will be recognized in each of the next four years, resulting in a Deferred Inflow of Resources of approximately \$8.2 million. The table below summarizes the current balances of Deferred Outflows and Deferred Inflows of Resources along with the net recognition over the next several years.

Table 7		
Schedule of Deferred Inflows and Outflows		
As of June 30, 2014		
	Deferred Outflows of Resources	Deferred Inflows of Resources
Differences between expected and actual experience	\$ 0	\$ 0
Changes in assumptions	0	0
Net difference between projected and actual earnings on pension plan investments	0	8,213,555
Total	\$ 0	\$ 8,213,555
Amounts reported as deferred outflows and deferred inflows of resources will be recognized in pension expense as follows:		
Year ended June 30:		
2015	\$ (2,053,389)	
2016	\$ (2,053,389)	
2017	\$ (2,053,389)	
2018	\$ (2,053,388)	
2019	\$ 0	
Thereafter	\$ 0	

¹ The average expected future working lifetime for 219 active members was 9.97 years.

MONTANA HIGHWAY PATROL OFFICERS' RETIREMENT SYSTEM
GASB 67 AND 68 REPORTING FOR JUNE 30, 2014 MEASUREMENT DATE

EMPLOYER REPORTING AMOUNTS

The Pension Expense of the Plan can be calculated two different ways. First, it is the change in the amounts reported on the employer's Statement of Net Position that relate to the Plan and are not attributable to the employer contributions. That is, it is the change in NPL plus the changes in deferred outflows and inflows plus employer contributions.

Alternatively, the Pension Expense can be calculated by its individual components. While GASB does not require or suggest the organization of the individual components shown in the table below, we believe it helps to understand the level and volatility of Pension Expense.

Table 8	
Calculation of Pension Expense	
For the Fiscal Year Ending June 30, 2014	
Change in Net Pension Liability	\$ (8,780,370)
Change in Deferred Outflows	0
Change in Deferred Inflows	8,213,555
Non-Employer Contributions	0
Employer Contributions	<u>5,735,507</u>
Pension Expense	\$ 5,168,692
Pension Expense as % of Pensionable Payroll	36.53%
Operating Expenses	
Service cost	\$ 3,464,399
Employee contributions	(1,458,042)
Administrative expenses	<u>109,140</u>
Total	\$ 2,115,497
Financing Expenses	
Interest cost	\$ 13,517,924
Expected return on assets	<u>(8,411,340)</u>
Total	\$ 5,106,584
Changes	
Benefit changes	\$ 0
Recognition of assumption changes	0
Recognition of liability (gains)/losses	0
Recognition of investment (gains)/losses	<u>(2,053,389)</u>
Total	\$ (2,053,389)
Pension Expense	\$ 5,168,692

NOTE: Based on technical guidance from GASB, the HPORS general fund transfers should be considered an employer-type entity, since all contributions come from the State.

**MONTANA HIGHWAY PATROL OFFICERS' RETIREMENT SYSTEM
GASB 67 AND 68 REPORTING FOR JUNE 30, 2014 MEASUREMENT DATE**

EMPLOYER REPORTING AMOUNTS

First, there are components that we refer to as operating expenses. These items are directly attributable to the operation of the Plan during the measurement year. Service cost less employee contributions represents the increase in the employer-provided benefits attributable to the year, and administrative expenses are the cost of operating the Plan for the year.

Second, there are the financing expenses: the interest on the Total Pension Liability less the expected return on assets. Since the discount rate is equal to the long-term expected return on assets, the financing expense is just the interest on the Net Pension Liability, service cost, contributions, and administrative expenses. The calculation of the expected return on assets is detailed below.

Table 9 Calculation of Expected Return on Assets For the Fiscal Year Ending June 30, 2014		
Market Value of Assets - beginning of year	\$	109,690,706
Expected Return on Market Value	\$	8,501,030
Employee Contributions	\$	1,458,042
Non-Employer Contributions		0
Employer Contributions		5,735,507
Benefit Payments		(9,443,007)
Administrative Expenses		(109,140)
Net Cash Flow - during year	\$	(2,358,598)
Expected Return on Cash Flow Items	\$	(89,690)
Expected Return on Assets	\$	8,411,340

NOTE: Based on technical guidance from GASB, the HPORS general fund transfers should be considered an employer-type entity, since all contributions come from the State.

The final category is changes. This category will drive most of the volatility in Pension Expense from year to year. It includes any changes in benefits made during the year and the recognized amounts due to assumption changes, gains, or losses on the TPL, and investment gains or losses. For the first year, there is an investment gain recognized that offsets a large portion of the financing expense.

**APPENDIX A
GLOSSARY OF TERMS**

1. Actuarially Determined Contribution

A target or recommended contribution for the reporting period, determined in conformity with Actuarial Standards of Practice based on the most recent measurement available when the contribution for the reporting period was adopted.

2. Actuarial Valuation Date

The date as of which an actuarial valuation is performed. This date may be up to 24 months prior to the measurement date and up to 30 months prior to the employer's reporting date.

3. Covered-Employee Payroll

The payroll of employees that are provided with pensions through the pension plan.²

4. Deferred Inflow of Resources

An acquisition of net assets by a government employer that is applicable to a future reporting period. In the context of GASB 68, these are experience gains on the Total Pension Liability, assumption changes reducing the Total Pension Liability, or investment gains that are recognized in future reporting periods.

5. Deferred Outflow of Resources

A consumption of net assets by a government employer that is applicable to a future reporting period. In the context of GASB 68, these are experience losses on the Total Pension Liability, assumption changes increasing the Total Pension Liability or investment losses that are recognized in future reporting periods.

6. Entry Age Actuarial Cost Method

The actuarial cost method required for GASB 67 and 68 calculations. Under this method, the actuarial present value of the projected benefits of each individual, included in an actuarial valuation, is allocated on a level basis over the earnings of the individual between entry age and assumed exit ages. The portion of this actuarial present value allocated to a valuation year is called the Service Cost. The portion of this actuarial present value not provided for at a valuation date by the actuarial present value of future service costs is called the Total Pension Liability.

² This payroll includes all pay to employees, whether or not included in pensionable pay. MPERA has advised that Covered-Employee Payroll is not available. Therefore, pensionable payroll has been used throughout this report.

**APPENDIX A
GLOSSARY OF TERMS**

7. Measurement Date

The date as of which the Total Pension Liability and Plan Fiduciary Net Position are measured. The Total Pension Liability may be projected from the Actuarial Valuation Date to the Measurement Date. The Measurement Date must be the same as the Reporting Date for the Plan.

8. Net Pension Liability

The liability of employers and non-employer contributing entities to employees for benefits provided through a defined benefit pension plan. It is calculated as the Total Pension Liability less the Plan Fiduciary Net Position.

9. Pension Expense

The economic cost of pensions that an entity recognizes during a reporting period.

10. Plan Fiduciary Net Position

The fair or market value of assets.

11. Reporting Date

The last day of the Plan or employer's fiscal year.

12. Service Cost

The portion of the actuarial present value of projected benefit payments that is attributed to the current period of employee service in conformity with the requirements of GASB 67 and 68. The Service Cost is the normal cost calculated under the entry age actuarial cost method.

13. Total Pension Liability

The portion of the actuarial present value of projected benefit payments that is attributed to past periods of employee service in conformity with the requirements of GASB 67 and 68. The Total Pension Liability is the actuarial liability calculated under the Entry Age Actuarial Cost Method.

**MONTANA HIGHWAY PATROL OFFICERS' RETIREMENT SYSTEM
GASB 67 AND 68 REPORTING FOR JUNE 30, 2014 MEASUREMENT DATE**

**APPENDIX B
DEVELOPMENT OF DISCOUNT RATE**

Table 1 - Projection of Contributions

Amounts in Thousands, Projections Commence June 30, 2013, Actual Amounts Shown for Year 1 (except Payroll)

* Total pensionable payroll increases 4.00% per year

Year	Projected Pensionable Payroll			Projected Rates			Projected Contributions			
	Payroll for Current Employees (a)	Payroll for Future Employees (b)	Total Employee Payroll * (c) = (a) + (b)	Employee Rate (d)	Employer Rate (e)	Rate Available for Amortization (f)	Member Contributions for Current Employees (g) = (a) x (d)	Employer Contributions for Current Employees (h) = (a) x (e)	Contributions Related to Payroll of Future Employees (i) = (b) x (f)	Total Contributions (j) = (g) + (h) + (i)
1	\$ 13,731	\$ 0	\$ 13,731				\$ 1,458	\$ 5,736	\$ 0	\$ 7,194
2	13,419	861	14,281	11.1%	38.3%	28.7%	1,483	5,144	247	6,873
3	13,207	1,645	14,852	12.1%	38.3%	29.7%	1,591	5,062	488	7,142
4	12,846	2,600	15,446	13.1%	38.3%	30.7%	1,676	4,924	798	7,398
5	12,527	3,537	16,064	13.1%	38.3%	30.7%	1,635	4,802	1,085	7,521
6	12,079	4,627	16,706	13.1%	38.3%	30.7%	1,576	4,630	1,420	7,626
7	11,594	5,780	17,374	13.1%	38.3%	30.7%	1,513	4,444	1,773	7,730
8	11,081	6,988	18,069	13.1%	38.3%	30.7%	1,446	4,248	2,144	7,838
9	10,689	8,103	18,792	13.1%	38.3%	30.7%	1,395	4,097	2,486	7,978
10	10,207	9,337	19,544	13.1%	38.3%	30.7%	1,332	3,912	2,865	8,109
11	9,443	10,882	20,326	13.1%	38.3%	30.7%	1,232	3,620	3,339	8,191
12	8,814	12,324	21,139	13.1%	38.3%	30.7%	1,150	3,379	3,781	8,310
13	8,188	13,796	21,984	13.1%	38.3%	30.7%	1,069	3,139	4,233	8,440
14	7,745	15,119	22,864	13.1%	38.3%	30.7%	1,011	2,969	4,639	8,618
15	7,272	16,506	23,778	13.1%	38.3%	30.7%	949	2,787	5,064	8,801
16	6,382	18,347	24,729	13.1%	38.3%	30.7%	833	2,446	5,629	8,908
17	5,725	19,994	25,718	13.1%	38.3%	30.7%	747	2,194	6,134	9,076
18	5,052	21,696	26,747	13.1%	38.3%	30.7%	659	1,936	6,656	9,252
19	4,519	23,298	27,817	13.1%	38.3%	30.7%	590	1,732	7,148	9,470
20	3,986	24,943	28,930	13.1%	38.3%	30.7%	520	1,528	7,653	9,701
21	3,381	26,706	30,087	13.1%	38.3%	30.7%	441	1,296	8,194	9,931
22	2,793	28,497	31,290	13.1%	38.3%	30.7%	364	1,071	8,743	10,178
23	2,273	30,269	32,542	13.1%	38.3%	30.7%	297	871	9,287	10,455
24	1,841	32,003	33,844	13.1%	38.3%	30.7%	240	706	9,819	10,765
25	1,472	33,725	35,197	13.1%	38.3%	30.7%	192	564	10,347	11,104
26	1,161	35,445	36,605	13.1%	38.3%	30.7%	151	445	10,875	11,471
27	916	37,153	38,070	13.1%	38.3%	30.7%	120	351	11,399	11,870
28	699	38,893	39,592	13.1%	38.3%	30.7%	91	268	11,933	12,292
29	521	40,655	41,176	13.1%	38.3%	30.7%	68	200	12,473	12,741
30	364	42,459	42,823	13.1%	38.3%	30.7%	47	139	13,027	13,214
31	236	44,300	44,536	13.1%	38.3%	30.7%	31	90	13,592	13,713
32	150	46,167	46,317	13.1%	38.3%	30.7%	20	58	14,165	14,242
33	86	48,084	48,170	13.1%	38.3%	30.7%	11	33	14,753	14,797
34	63	50,034	50,097	13.1%	38.3%	30.7%	8	24	15,351	15,383
35	32	52,069	52,101	13.1%	38.3%	30.7%	4	12	15,975	15,992
36	8	54,176	54,185	13.1%	38.3%	30.7%	1	3	16,622	16,626
37	7	56,345	56,352	13.1%	38.3%	30.7%	1	3	17,287	17,291
38	0	58,606	58,606			30.7%	0	0	17,981	17,981
39	0	60,951	60,951			30.7%	0	0	18,700	18,700
40	0	63,389	63,389			30.7%	0	0	19,448	19,448
41	0	65,924	65,924			30.7%	0	0	20,226	20,226
42	0	68,561	68,561			30.7%	0	0	21,035	21,035
43	0	71,304	71,304			30.7%	0	0	21,877	21,877
44	0	74,156	74,156			30.7%	0	0	22,752	22,752
45	0	77,122	77,122			30.7%	0	0	23,662	23,662
46	0	80,207	80,207			30.7%	0	0	24,608	24,608
47	0	83,415	83,415			30.7%	0	0	25,593	25,593
48	0	86,752	86,752			30.7%	0	0	26,616	26,616
49	0	90,222	90,222			30.7%	0	0	27,681	27,681
50	0	93,831	93,831			30.7%	0	0	28,788	28,788
51	0	97,584	97,584			30.7%	0	0	29,940	29,940
52	0	101,487	101,487			30.7%	0	0	31,137	31,137
53	0	105,547	105,547			30.7%	0	0	32,383	32,383
54	0	109,768	109,768			30.7%	0	0	33,678	33,678
55	0	114,159	114,159			30.7%	0	0	35,025	35,025
56	0	118,726	118,726			30.7%	0	0	36,426	36,426
57	0	123,475	123,475			30.7%	0	0	37,883	37,883
58	0	128,414	128,414			30.7%	0	0	39,399	39,399
59	0	133,550	133,550			30.7%	0	0	40,974	40,974

**MONTANA HIGHWAY PATROL OFFICERS' RETIREMENT SYSTEM
GASB 67 AND 68 REPORTING FOR JUNE 30, 2014 MEASUREMENT DATE**

**APPENDIX B
DEVELOPMENT OF DISCOUNT RATE**

Table 1 - Projection of Contributions Continued

Amounts in Thousands, Projections Commence June 30, 2013, Actual Amounts Shown for Year 1 (except Payroll)

* Total pensionable payroll increases 4.00% per year

Year	Projected Pensionable Payroll			Projected Rates			Projected Contributions			
	Payroll for Current Employees (a)	Payroll for Future Employees (b)	Total Employee Payroll * (c) = (a) + (b)	Employee Rate (d)	Employer Rate (e)	Rate Available for Amortization (f)	Member Contributions for Current Employees (g) = (a) x (d)	Employer Contributions for Current Employees (h) = (a) x (e)	Contributions Related to Payroll of Future Employees (i) = (b) x (f)	Total Contributions (j) = (g) + (h) + (i)
60	0	138,892	138,892			30.7%	0	0	42,613	42,613
61	0	144,448	144,448			30.7%	0	0	44,318	44,318
62	0	150,226	150,226			30.7%	0	0	46,091	46,091
63	0	156,235	156,235			30.7%	0	0	47,934	47,934
64	0	162,484	162,484			30.7%	0	0	49,852	49,852
65	0	168,984	168,984			30.7%	0	0	51,846	51,846
66	0	175,743	175,743			30.7%	0	0	53,920	53,920
67	0	182,773	182,773			30.7%	0	0	56,076	56,076
68	0	190,083	190,083			30.7%	0	0	58,319	58,319
69	0	197,687	197,687			30.7%	0	0	60,652	60,652
70	0	205,594	205,594			30.7%	0	0	63,078	63,078
71	0	213,818	213,818			30.7%	0	0	65,601	65,601
72	0	222,371	222,371			30.7%	0	0	68,225	68,225
73	0	231,266	231,266			30.7%	0	0	70,954	70,954
74	0	240,516	240,516			30.7%	0	0	73,793	73,793
75	0	250,137	250,137			30.7%	0	0	76,744	76,744
76	0	260,142	260,142			30.7%	0	0	79,814	79,814
77	0	270,548	270,548			30.7%	0	0	83,007	83,007
78	0	281,370	281,370			30.7%	0	0	86,327	86,327
79	0	292,625	292,625			30.7%	0	0	89,780	89,780
80	0	304,330	304,330			30.7%	0	0	93,371	93,371
81	0	316,503	316,503			30.7%	0	0	97,106	97,106
82	0	329,163	329,163			30.7%	0	0	100,990	100,990
83	0	342,330	342,330			30.7%	0	0	105,030	105,030
84	0	356,023	356,023			30.7%	0	0	109,231	109,231
85	0	370,264	370,264			30.7%	0	0	113,600	113,600
86	0	385,074	385,074			30.7%	0	0	118,144	118,144
87	0	400,477	400,477			30.7%	0	0	122,870	122,870
88	0	416,496	416,496			30.7%	0	0	127,785	127,785
89	0	433,156	433,156			30.7%	0	0	132,896	132,896
90	0	450,482	450,482			30.7%	0	0	138,212	138,212
91	0	468,502	468,502			30.7%	0	0	143,741	143,741
92	0	487,242	487,242			30.7%	0	0	149,490	149,490
93	0	506,731	506,731			30.7%	0	0	155,470	155,470
94	0	527,001	527,001			30.7%	0	0	161,689	161,689
95	0	548,081	548,081			30.7%	0	0	168,156	168,156
96	0	570,004	570,004			30.7%	0	0	174,883	174,883
97	0	592,804	592,804			30.7%	0	0	181,878	181,878
98	0	616,516	616,516			30.7%	0	0	189,153	189,153
99	0	641,177	641,177			30.7%	0	0	196,719	196,719
100	0	666,824	666,824			30.7%	0	0	204,588	204,588
101	0	693,497	693,497			30.7%	0	0	212,771	212,771
102	0	721,237	721,237			30.7%	0	0	221,282	221,282
103	0	750,086	750,086			30.7%	0	0	230,134	230,134
104	0	780,090	780,090			30.7%	0	0	239,339	239,339
105	0	811,293	811,293			30.7%	0	0	248,912	248,912
106	0	843,745	843,745			30.7%	0	0	258,869	258,869
107	0	877,495	877,495			30.7%	0	0	269,224	269,224
108	0	912,595	912,595			30.7%	0	0	279,993	279,993
109	0	949,098	949,098			30.7%	0	0	291,192	291,192

**MONTANA HIGHWAY PATROL OFFICERS' RETIREMENT SYSTEM
GASB 67 AND 68 REPORTING FOR JUNE 30, 2014 MEASUREMENT DATE**

**APPENDIX B
DEVELOPMENT OF DISCOUNT RATE**

Table 2 - Projection of the Pension Plan's Fiduciary Net Position

Amounts in Thousands, Projections Commence June 30, 2013, Actual Amounts Shown for Year 1

* From Table 1 - Projection of Contributions, column (j)

Year	Projected Beginning Fiduciary Net Position (a)	Projected Total Contributions* (b)	Projected Benefit Payments (c)	Projected Administrative Expense (d)	Projected Investment Earnings (e)	Projected Ending Fiduciary Net Position (f) = (a) + (b) - (c) - (d) + (e)
1	\$ 109,691	\$ 7,194	\$ 9,443	\$ 109	\$ 18,678	\$ 126,010
2	126,010	6,873	9,545	33	9,663	132,969
3	132,969	7,142	10,025	34	10,194	140,246
4	140,246	7,398	10,530	36	10,749	147,827
5	147,827	7,521	11,051	37	11,321	155,581
6	155,581	7,626	11,657	38	11,903	163,415
7	163,415	7,730	12,276	40	12,490	171,320
8	171,320	7,838	12,844	42	13,085	179,358
9	179,358	7,978	13,465	43	13,690	187,517
10	187,517	8,109	14,238	45	14,298	195,641
11	195,641	8,191	14,972	47	14,903	203,716
12	203,716	8,310	15,715	49	15,505	211,767
13	211,767	8,440	16,316	50	16,110	219,951
14	219,951	8,618	16,903	52	16,729	228,342
15	228,342	8,801	17,716	54	17,355	236,728
16	236,728	8,908	18,410	57	17,983	245,152
17	245,152	9,076	19,132	59	18,615	253,651
18	253,651	9,252	19,753	61	19,256	262,346
19	262,346	9,470	20,362	63	19,915	271,307
20	271,307	9,701	20,941	64	20,596	280,600
21	280,600	9,931	21,543	66	21,302	290,224
22	290,224	10,178	22,083	68	22,037	300,289
23	300,289	10,455	22,567	69	22,809	310,916
24	310,916	10,765	22,992	71	23,628	322,246
25	322,246	11,104	23,366	72	24,505	334,418
26	334,418	11,471	23,674	73	25,451	347,593
27	347,593	11,870	23,951	74	26,476	361,915
28	361,915	12,292	24,179	74	27,594	377,547
29	377,547	12,741	24,390	75	28,814	394,637
30	394,637	13,214	24,555	75	30,150	413,370
31	413,370	13,713	24,667	76	31,617	433,957
32	433,957	14,242	24,746	76	33,229	456,606
33	456,606	14,797	24,750	76	35,006	481,582
34	481,582	15,383	24,738	76	36,964	509,115
35	509,115	15,992	24,692	76	39,123	539,462
36	539,462	16,626	24,579	75	41,503	572,936
37	572,936	17,291	24,438	75	44,128	609,843
38	609,843	17,981	24,241	74	47,022	650,530
39	650,530	18,700	23,995	74	50,212	695,374
40	695,374	19,448	23,695	73	53,727	744,781
41	744,781	20,226	23,339	72	57,599	799,197
42	799,197	21,035	22,924	70	61,863	859,101
43	859,101	21,877	22,449	69	66,556	925,015
44	925,015	22,752	21,913	67	71,718	997,505
45	997,505	23,662	21,318	65	77,393	1,077,177
46	1,077,177	24,608	20,664	63	83,629	1,164,686
47	1,164,686	25,593	19,954	61	90,475	1,260,738
48	1,260,738	26,616	19,193	59	97,987	1,366,090
49	1,366,090	27,681	18,384	56	106,223	1,481,555
50	1,481,555	28,788	17,532	54	115,246	1,608,003
51	1,608,003	29,940	16,645	51	125,124	1,746,371
52	1,746,371	31,137	15,728	48	135,928	1,897,660
53	1,897,660	32,383	14,789	45	147,736	2,062,944
54	2,062,944	33,678	13,835	42	160,631	2,243,376
55	2,243,376	35,025	12,873	40	174,703	2,440,192
56	2,440,192	36,426	11,908	37	190,046	2,654,719
57	2,654,719	37,883	10,949	34	206,764	2,888,383
58	2,888,383	39,399	10,001	31	224,966	3,142,716
59	3,142,716	40,974	9,072	28	244,773	3,419,364

**MONTANA HIGHWAY PATROL OFFICERS' RETIREMENT SYSTEM
GASB 67 AND 68 REPORTING FOR JUNE 30, 2014 MEASUREMENT DATE**

**APPENDIX B
DEVELOPMENT OF DISCOUNT RATE**

Table 2 - Projection of the Pension Plan's Fiduciary Net Position Continued
Amounts in Thousands, Projections Commence June 30, 2013, Actual Amounts Shown for Year 1
* From Table 1 - Projection of Contributions, column (j)

Year	Projected Beginning Fiduciary Net Position (a)	Projected Total Contributions* (b)	Projected Benefit Payments (c)	Projected Administrative Expense (d)	Projected Investment Earnings (e)	Projected Ending Fiduciary Net Position (f) = (a) + (b) - (c) - (d) + (e)
60	3,419,364	42,613	8,168	25	266,310	3,720,094
61	3,720,094	44,318	7,297	22	289,714	4,046,806
62	4,046,806	46,091	6,466	20	315,134	4,401,545
63	4,401,545	47,934	5,681	17	342,726	4,786,507
64	4,786,507	49,852	4,948	15	372,661	5,204,058
65	5,204,058	51,846	4,270	13	405,123	5,656,743
66	5,656,743	53,920	3,653	11	440,309	6,147,307
67	6,147,307	56,076	3,097	10	478,431	6,678,707
68	6,678,707	58,319	2,603	8	519,718	7,254,134
69	7,254,134	60,652	2,169	7	564,419	7,877,029
70	7,877,029	63,078	1,794	6	612,800	8,551,109
71	8,551,109	65,601	1,471	5	665,149	9,280,384
72	9,280,384	68,225	1,199	4	721,778	10,069,185
73	10,069,185	70,954	969	3	783,023	10,922,191
74	10,922,191	73,793	778	2	849,246	11,844,449
75	11,844,449	76,744	620	2	920,839	12,841,411
76	12,841,411	79,814	490	2	998,226	13,918,959
77	13,918,959	83,007	385	1	1,081,861	15,083,440
78	15,083,440	86,327	299	1	1,172,238	16,341,705
79	16,341,705	89,780	230	1	1,269,887	17,701,142
80	17,701,142	93,371	175	1	1,375,382	19,169,721
81	19,169,721	97,106	131	0	1,489,341	20,756,036
82	20,756,036	100,990	98	0	1,612,429	22,469,358
83	22,469,358	105,030	71	0	1,745,367	24,319,683
84	24,319,683	109,231	51	0	1,888,927	26,317,790
85	26,317,790	113,600	37	0	2,043,947	28,475,301
86	28,475,301	118,144	26	0	2,211,328	30,804,747
87	30,804,747	122,870	18	0	2,392,040	33,319,638
88	33,319,638	127,785	12	0	2,587,131	36,034,542
89	36,034,542	132,896	9	0	2,797,730	38,965,160
90	38,965,160	138,212	6	0	3,025,055	42,128,422
91	42,128,422	143,741	4	0	3,270,419	45,542,577
92	45,542,577	149,490	3	0	3,535,234	49,227,299
93	49,227,299	155,470	2	0	3,821,028	53,203,795
94	53,203,795	161,689	1	0	4,129,443	57,494,926
95	57,494,926	168,156	1	0	4,462,251	62,125,333
96	62,125,333	174,883	0	0	4,821,364	67,121,578
97	67,121,578	181,878	0	0	5,208,839	72,512,294
98	72,512,294	189,153	0	0	5,626,896	78,328,343
99	78,328,343	196,719	0	0	6,077,927	84,602,989
100	84,602,989	204,588	0	0	6,564,512	91,372,089
101	91,372,089	212,771	0	0	7,089,428	98,674,288
102	98,674,288	221,282	0	0	7,655,672	106,551,242
103	106,551,242	230,134	0	0	8,266,473	115,047,848
104	115,047,848	239,339	0	0	8,925,310	124,212,497
105	124,212,497	248,912	0	0	9,635,934	134,097,343
106	134,097,343	258,869	0	0	10,402,388	144,758,600
107	144,758,600	269,224	0	0	11,229,029	156,256,854
108	156,256,854	279,993	0	0	12,120,553	168,657,400
109	168,657,400	291,192	0	0	13,082,022	182,030,614

**MONTANA HIGHWAY PATROL OFFICERS' RETIREMENT SYSTEM
GASB 67 AND 68 REPORTING FOR JUNE 30, 2014 MEASUREMENT DATE**

**APPENDIX B
DEVELOPMENT OF DISCOUNT RATE**

Table 3 - Actuarial Present Values of Projected Benefit Payments

Amounts in Thousands, Projections Commence June 30, 2013, Actual Amounts Shown for Year 1

* From Table 2 - Projection of the Pension Plan's Fiduciary Net Position, column (a)

** From Table 2 - Projection of the Pension Plan's Fiduciary Net Position, column (c)

Year	Projected Beginning Fiduciary Net Position *	Projected Benefit Payments for current plan participants **	"Funded" Portion of Benefit Payments (d) = (c) if (b) >= (c)	"Unfunded" Portion of Benefit Payments (e) = (c) - (d)	Present Value of "Funded" Benefit Payments (f) = (d) / (1+ 7.75%)^(a)	Present Value of "Unfunded" Benefit Payments (g) = (e) / (1+4.29%)^(a)	Present Value of Benefit Payments Using the Single Discount Rate (h) = (c) / (1+ 7.75%)^(a)
(a)	(b)	(c)	(d) = (c) if (b) >= (c)	(e) = (c) - (d)	(f) = (d) / (1+ 7.75%)^(a)	(g) = (e) / (1+4.29%)^(a)	(h) = (c) / (1+ 7.75%)^(a)
1	\$ 109,691	\$ 9,443	\$ 9,443	\$ 0	\$ 8,764	\$ 0	\$ 8,764
2	126,010	9,545	9,545	0	8,221	0	8,221
3	132,969	10,025	10,025	0	8,014	0	8,014
4	140,246	10,530	10,530	0	7,812	0	7,812
5	147,827	11,051	11,051	0	7,609	0	7,609
6	155,581	11,657	11,657	0	7,448	0	7,448
7	163,415	12,276	12,276	0	7,280	0	7,280
8	171,320	12,844	12,844	0	7,069	0	7,069
9	179,358	13,465	13,465	0	6,878	0	6,878
10	187,517	14,238	14,238	0	6,750	0	6,750
11	195,641	14,972	14,972	0	6,587	0	6,587
12	203,716	15,715	15,715	0	6,417	0	6,417
13	211,767	16,316	16,316	0	6,183	0	6,183
14	219,951	16,903	16,903	0	5,945	0	5,945
15	228,342	17,716	17,716	0	5,783	0	5,783
16	236,728	18,410	18,410	0	5,577	0	5,577
17	245,152	19,132	19,132	0	5,379	0	5,379
18	253,651	19,753	19,753	0	5,154	0	5,154
19	262,346	20,362	20,362	0	4,931	0	4,931
20	271,307	20,941	20,941	0	4,706	0	4,706
21	280,600	21,543	21,543	0	4,493	0	4,493
22	290,224	22,083	22,083	0	4,274	0	4,274
23	300,289	22,567	22,567	0	4,054	0	4,054
24	310,916	22,992	22,992	0	3,833	0	3,833
25	322,246	23,366	23,366	0	3,615	0	3,615
26	334,418	23,674	23,674	0	3,400	0	3,400
27	347,593	23,951	23,951	0	3,192	0	3,192
28	361,915	24,179	24,179	0	2,991	0	2,991
29	377,547	24,390	24,390	0	2,800	0	2,800
30	394,637	24,555	24,555	0	2,616	0	2,616
31	413,370	24,667	24,667	0	2,439	0	2,439
32	433,957	24,746	24,746	0	2,271	0	2,271
33	456,606	24,750	24,750	0	2,108	0	2,108
34	481,582	24,738	24,738	0	1,955	0	1,955
35	509,115	24,692	24,692	0	1,811	0	1,811
36	539,462	24,579	24,579	0	1,673	0	1,673
37	572,936	24,438	24,438	0	1,544	0	1,544
38	609,843	24,241	24,241	0	1,421	0	1,421
39	650,530	23,995	23,995	0	1,306	0	1,306
40	695,374	23,695	23,695	0	1,197	0	1,197
41	744,781	23,339	23,339	0	1,094	0	1,094
42	799,197	22,924	22,924	0	997	0	997
43	859,101	22,449	22,449	0	906	0	906
44	925,015	21,913	21,913	0	821	0	821
45	997,505	21,318	21,318	0	741	0	741
46	1,077,177	20,664	20,664	0	667	0	667
47	1,164,686	19,954	19,954	0	598	0	598
48	1,260,738	19,193	19,193	0	533	0	533
49	1,366,090	18,384	18,384	0	474	0	474
50	1,481,555	17,532	17,532	0	420	0	420
51	1,608,003	16,645	16,645	0	370	0	370
52	1,746,371	15,728	15,728	0	324	0	324
53	1,897,660	14,789	14,789	0	283	0	283
54	2,062,944	13,835	13,835	0	246	0	246
55	2,243,376	12,873	12,873	0	212	0	212
56	2,440,192	11,908	11,908	0	182	0	182
57	2,654,719	10,949	10,949	0	155	0	155
58	2,888,383	10,001	10,001	0	132	0	132
59	3,142,716	9,072	9,072	0	111	0	111

**MONTANA HIGHWAY PATROL OFFICERS' RETIREMENT SYSTEM
GASB 67 AND 68 REPORTING FOR JUNE 30, 2014 MEASUREMENT DATE**

**APPENDIX B
DEVELOPMENT OF DISCOUNT RATE**

Table 3 - Actuarial Present Values of Projected Benefit Payments Continued

Amounts in Thousands, Projections Commence June 30, 2013, Actual Amounts Shown for Year 1

* From Table 2 - Projection of the Pension Plan's Fiduciary Net Position, column (a)

** From Table 2 - Projection of the Pension Plan's Fiduciary Net Position, column (c)

Year	Projected Beginning Fiduciary Net Position *	Projected Benefit Payments for current plan participants **	"Funded" Portion of Benefit Payments (d) = (c) if (b) >= (c)	"Unfunded" Portion of Benefit Payments (e) = (c) - (d)	Present Value of "Funded" Benefit Payments (f) = (d) / (1+ 7.75%)^(a)	Present Value of "Unfunded" Benefit Payments (g) = (e) / (1+4.29%)^(a)	Present Value of Benefit Payments Using the Single Discount Rate (h) = (c) / (1+ 7.75%)^(a)
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)
60	3,419,364	8,168	8,168	0	93	0	93
61	3,720,094	7,297	7,297	0	77	0	77
62	4,046,806	6,466	6,466	0	63	0	63
63	4,401,545	5,681	5,681	0	52	0	52
64	4,786,507	4,948	4,948	0	42	0	42
65	5,204,058	4,270	4,270	0	33	0	33
66	5,656,743	3,653	3,653	0	26	0	26
67	6,147,307	3,097	3,097	0	21	0	21
68	6,678,707	2,603	2,603	0	16	0	16
69	7,254,134	2,169	2,169	0	13	0	13
70	7,877,029	1,794	1,794	0	10	0	10
71	8,551,109	1,471	1,471	0	7	0	7
72	9,280,384	1,199	1,199	0	6	0	6
73	10,069,185	969	969	0	4	0	4
74	10,922,191	778	778	0	3	0	3
75	11,844,449	620	620	0	2	0	2
76	12,841,411	490	490	0	2	0	2
77	13,918,959	385	385	0	1	0	1
78	15,083,440	299	299	0	1	0	1
79	16,341,705	230	230	0	1	0	1
80	17,701,142	175	175	0	0	0	0
81	19,169,721	131	131	0	0	0	0
82	20,756,036	98	98	0	0	0	0
83	22,469,358	71	71	0	0	0	0
84	24,319,683	51	51	0	0	0	0
85	26,317,790	37	37	0	0	0	0
86	28,475,301	26	26	0	0	0	0
87	30,804,747	18	18	0	0	0	0
88	33,319,638	12	12	0	0	0	0
89	36,034,542	9	9	0	0	0	0
90	38,965,160	6	6	0	0	0	0
91	42,128,422	4	4	0	0	0	0
92	45,542,577	3	3	0	0	0	0
93	49,227,299	2	2	0	0	0	0
94	53,203,795	1	1	0	0	0	0
95	57,494,926	1	1	0	0	0	0
96	62,125,333	0	0	0	0	0	0
97	67,121,578	0	0	0	0	0	0
98	72,512,294	0	0	0	0	0	0
99	78,328,343	0	0	0	0	0	0
100	84,602,989	0	0	0	0	0	0
101	91,372,089	0	0	0	0	0	0
102	98,674,288	0	0	0	0	0	0
103	106,551,242	0	0	0	0	0	0
104	115,047,848	0	0	0	0	0	0
105	124,212,497	0	0	0	0	0	0
106	134,097,343	0	0	0	0	0	0
107	144,758,600	0	0	0	0	0	0
108	156,256,854	0	0	0	0	0	0
109	168,657,400	0	0	0	0	0	0
					\$ 195,235	\$ 0	\$ 195,235