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PUBLIC SERVICE  
COMMISSION

March 31, 2017

Dr. Talina Mathews  
Executive Director  
Kentucky Public Service Commission  
211 Sower Boulevard  
P. O. Box 615  
Frankfort, KY 40602

Dear Ms. Mathews,

Pursuant to the Commission's Order of February 26, 2001 in Case No. 2000-429, Columbia Gas of Kentucky, Inc. hereby files its annual report for the Statistical Meter Testing Plan. An original and three copies are enclosed.

If you have any questions, please contact me at (859) 288-0242 or [jmcoop@nisource.com](mailto:jmcoop@nisource.com). Thank you.

Sincerely,



Judy M. Cooper  
Director, Regulatory Policy



**Columbia Gas of Kentucky, Inc.**

**2017**

**Meter Sampling Annual Report,**  
**for program year 2016**

**Columbia Gas of Kentucky, Inc.**  
**A NiSource Company**  
**P.O. Box 14241**  
**2001 Mercer Road**  
**Lexington, KY 40512-4241**

**March 2017**

<b>1</b>	<b>2017 Meter Sample Annual Report</b>
<b>2</b>	<b>Exhibit A Identification of Control Groups</b>
<b>3</b>	<b>Exhibit B Domestic Meters Test Results</b>
<b>4</b>	<b>Exhibit C Large Volume Meters Test Results</b>
<b>5</b>	<b>Exhibit D Percentage of Domestic Meter Accuracy by Family</b>
<b>6</b>	<b>Exhibit E Percentage of Large Volume Meter Accuracy by Family</b>
<b>7</b>	<b>Exhibit F Cost Savings</b>
<b>8</b>	<b>Exhibit G Test Results of New Meters</b>

## **COLUMBIA GAS OF KENTUCKY INC.**

### **2016 METER SAMPLING ANNUAL REPORT**

**Columbia Gas of Kentucky completed the twentieth year of their Meter Sampling program in December 2016.**

**A total of 4596 meters making up 32 homogenous groups were sampled in 2016. Details are listed in the Evaluation of Data and Corrective Actions below.**

**In 2016 Columbia Gas of Kentucky service personnel made 38,700 visits to our customers' premises working orders that involved inspecting house lines and / or appliances. Columbia inspected 51,715 meter set assemblies in conjunction with the Customer Service Line Survey program.**

**No regulator failure in 2016 resulted in overpressure being delivered to the customer's piping.**

**Columbia continues to promote safety through:**

#### **News Media Outreach**

- 4/26/16 -- Call Before You Dig news release to all media in CKY service area
- 4/8/16 -- Appearance on WTVQ-TV to promote 811
- 8/11/16 -- Appearance on WTVQ-TV to promote 811

#### **Bills & Bill Inserts**

- Monthly -- "Welcome to Columbia Gas of Kentucky" insert and "Scratch-n-Sniff" insert are sent to new customers and includes information about maintenance of customer-owned buried gas lines and Kentucky 811.
- 1/16 -- Notice of Buried Gas Lines insert sent to all customers. (Also sent to new customers throughout the year.)
- 1/16 -- "For Your Safety & Comfort" insert sent to all residential and small commercial customers. Includes information about carbon monoxide poisoning prevention and heating equipment maintenance.

- 1/16 -- "Your Service" customer newsletter included article about upgrades to pipeline infrastructure and keeping meters clear of snow and ice.
- 4/16 -- "Your Service" customer newsletter included article about Call 811 Before You Dig and information about pipeline markers.
- 6/16 -- "Scratch & Sniff" insert provides odor of gas awareness to all customers.
- 7/16 -- "Your Service" customer newsletter included articles about Call Before You Dig and keeping clear access to meters.
- 10/16 -- "Your Service" customer newsletter included articles about odor recognition & response and a reminder to change furnace filter/have furnace inspected prior to heating season.
- Left column of monthly bill for residential and small commercial customers includes bill messages regarding odor recognition/response, call before you dig and employee identification.

#### Website

- Safety tips (English & Spanish)
- Kentucky 811 information and link
- Contact Us form where customers can email safety-related and other questions to CKY staff
- News releases/featured safety items on home page

#### Electronic Communications/Social Media

- 4/6/16 -- Email to customers regarding Call Before You Dig
- 12/8/16 -- Direct mail piece to plumbers regarding cross bores
- 12/15/16 -- Email to customers regarding odor recognition and response
- Extensive use of company Facebook and Twitter pages to communicate a variety of safety messages, including 811, odor recognition/response, winter safety, appliance safety, carbon monoxide poisoning prevention, etc.

#### Community Outreach

- 4/29/16 -- Sponsored Douglass Park (Lexington) beautification project to raise 811 awareness; proclaimed 811 Day in the Bluegrass.
- 11/5/16 -- VA5K event held in Lexington raised money for veterans programs while promoting 811.
- Flyers provided to employees to use when discussing 811 with friends, neighbors.
- Newly revised PowerPoint presentation for use in damage prevention meetings with excavators, etc.
- Customer letters and door hangers associated with large pipeline replacement projects include information about odor recognition/response.
- Job site media interviews usually include messaging about Call Before You Dig; odor recognition/response.
- English/Spanish pipeline safety brochure distributed at public events.

- Natural gas safety education materials provided to teachers upon request through the National Energy Foundation.
- 811 booth at numerous events including Thursday Night Live (Lexington), Touch a Truck (Lexington), KET Super Saturday (Lexington), Beer Cheese Festival (Winchester), Court Days (Mt. Sterling), Mushroom Festival (Irvine), Memorial Day Parade (Ironton), National Farm Machinery Show (Louisville), Grand Tour of Homes (Lexington), and Walk to End Alzheimer's (Ashland).
- CKY employees helped to coordinate 811 run and basketball events, both in Winchester.

#### Advertising

- TV campaign related to 811 placed on WKYT news (6am and 6pm broadcasts) through weather sponsorship in December 2015 through May 2016. Coordinating online ads appeared on WKYT weather app.
- Safety campaign focusing on odor recognition/response was placed on TV, radio and public radio in September-December 2016.
- Call 811 Before You Dig billboards located at Lexington Legends baseball park and on I-75N near the Madison-Fayette County line.

#### Excavator/Emergency Responder Training/Outreach

- Sponsored natural gas safety training sessions for excavators and emergency responders January 25-March 17 in Mt. Sterling, Hazard, Grayson, Prestonsburg, Richmond, Maysville, Ashland, and Lexington.
- 10/16 -- Conducted natural gas fire training for Lexington Fire Department.
- 12/16 -- Letter from Field Operations Leaders to public officials regarding 811 and railroad derailment procedures.

#### Evaluation of Data

- A total of 4363 domestic meters making up 28 homogenous Control Groups were sampled in 2016.
- Of the 4363 meters sampled 284 tested outside the required accuracy of +/- 2% and were classified a failed meter.
- 6.5% of the domestic meters pulled for meter sampling failed.
- 24 of the 28 homogenous Control Groups passed the requirements of American National Standards Institute / American Society for Quality Control Z 1.4.

- A total of 233 Large Volume meters making up 4 homogenous Control Groups were sampled in 2016.
- Of the 233 Large Volume meters sampled, 1 tested outside the required accuracy of +/- 2% and were classified a failed meter.
- .4% of Columbia Gas of Kentucky's Large Volume meters failed.
- All 4 Large Volume homogenous Control Groups passed the requirements of American National Standards Institute / American Society for Quality Control Z 1.4.

### Failed Family

- Columbia Gas was able to identify specific shipments of meters in the Rockwell family NRRO02, American families KYNAM07, 08, and 09 that tested extremely poor causing the Failed Families. Columbia has created sub-families consisting of the remaining 3193 meters for 2017 and will remove these poor performing meter by the end of 2017.

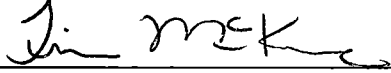
### Corrective Action

- Columbia Gas of Kentucky will continue to in-test and retire, when pulled from service, meters that have established a poor performance record even though their group has not failed. In previous filings we have listed individual meters that are retired due to poor performance. We are now in-testing and retiring all meters that are not temperature compensated. This eliminates poor performing meters from being re-installed.

### Regulator Failures

- Columbia Gas of Kentucky had 31 regulator failures in 2016. Due to full internal relief of the regulator, none resulted in an overpressure situation for the customer.
- 24 regulators had gas leakage from the vent.
- 7 regulators would not adjust or lock up correctly.

Should you have any questions, contact Timothy McKune at (859) 288-0241.

A handwritten signature in black ink, appearing to read "Tim McKune", is positioned above a horizontal line.

---

**Timothy McKune**  
**Compliance Manager**  
**Columbia Gas of Kentucky**



**EXHIBIT A**

**IDENTIFICATION OF EACH CONTROL GROUP**  
**OR METER FAMILIES**

**A five-character number identifies each Control Group or Family. 1-2-3-4-5**

**1 Identifies if Control Group or Family is new or repaired meters**

**N = New**  
**R = Repaired**

**2-3 Identifies Meter Manufacturer**

**AM = American**  
**RO = Rockwell**  
**LA = Lancaster**  
**SP = Sprague**

**4-5 Identifies the age of the Group or Family**

**Example – Identifier RAM01 indicates a Repaired American Meter. The 01 represents the oldest group of repaired American meters. A detail of the age of each group is found in Exhibit D & E.**

**Large Volume meters 500 – 1500 CFH follow the same format with a “B” in front of the identifier.**

**EXHIBIT B**

**2016 COLUMBIA GAS OF KENTUCKY DOMESTIC  
METER SAMPLING TEST RESULTS**

**Page 1 & 2 of Exhibit B gives a summary of each Domestic (0 – 500 CFH) Family.  
Listed on page 1 & 2 of exhibit are:**

- 1. Name of the Family Codes**
- 2. Total number of meters in that family on the customer's premises**
- 3. Total number of meters in that family required to be sampled**
- 4. Total number of meters sampled**
- 5. Total number of meters in-testing outside the required +/- 2%**
- 6. Total number of meters allowed to fail**
- 7. Passed/Failed Status of Meter Family**
- 8. Percentage of meters failed per Family**
- 9. Number of meters failed fast**
- 10. Number of meters failed slow**

**Page 3 of Exhibit B identifies in graph form the percentages of meters within tolerance since 1996. This is a combined listing of all domestic meter groups.**

# 2016 COLUMBIA GAS OF KENTUCKY METER SAMPLING RESULTS

Samples taken between 2016-01-01 and 2016-12-31

**"A" Class Meters 0-500 CFH**

FAMILY CODES	TOTAL MTRS. IN FAMILY	TOTAL MTRS REQ'D IN PROGRAM	TOTAL SAMPLED	TOTAL FAILED METERS	TOTAL REJECTS ALLOWABLE	2014 FAMILY STATUS	RATIO FAILED (d/c=g)	NUMBER FAILED FAST	NUMBER FAILED SLOW
	(a)	(b)	(c)	(d)	(e)	(f)		(h)	(i)
NAM01	986	80	80	3	10	PASSED	3.8%	3	0
NAM02	3010	125	125	1	14	PASSED	0.8%	1	0
NAM03	2313	125	125	0	14	PASSED	0.0%	0	0
NAM04	1640	125	125	0	14	PASSED	0.0%	0	0
NAM05	233	32	32	0	5	PASSED	0.0%	0	0
NAM06	4227	200	200	5	21	PASSED	2.5%	5	0
NAM06A	4386	200	200	6	21	PASSED	3.0%	5	1
NAM07	4219	200	208	46	21	FAILED	22.1%	46	0
NAM08	6075	200	201	36	21	FAILED	17.9%	36	0
NAM09	3956	200	205	41	21	FAILED	20.0%	41	0
NAM10	7449	200	201	7	21	PASSED	3.5%	7	0
NAM11	7290	200	200	10	21	PASSED	5.0%	10	0
NAM12	7236	200	200	1	21	PASSED	0.5%	1	0
NLA01	558	80	80	2	10	PASSED	2.5%	0	2
NLA02	3674	200	200	4	21	PASSED	2.0%	4	0

NRO01	3065	125	125	7	14	PASSED	5.6%	6	1
NRO02	5992	200	205	39	21	FAILED	19.0%	38	1
NSP01	58	13	13	0	2	PASSED	0.0%	0	0

Samples taken between 2016-01-01 and 2016-12-31  
**"A" Class Meters 0-500 CFH**

<u>FAMILY CODES</u>	<u>TOTAL MTRS. IN FAMILY</u> (a)	<u>TOTAL MTRS REQ'D IN PROGRAM</u> (b)	<u>TOTAL SAMPLED</u> (c)	<u>TOTAL FAILED METERS</u> (d)	<u>TOTAL REJECTS ALLOWABLE</u> (e)	<u>2014 FAMILY STATUS</u> (f)	<u>RATIO FAILED</u> (d/c=g)	<u>NUMBER FAILED FAST</u> (h)	<u>NUMBER FAILED SLOW</u> (i)
RAM03	803	80	81	10	10	PASSED	12.3%	7	3
RAM04	6394	200	203	10	21	PASSED	4.9%	7	3
RAM05	9984	200	200	5	21	PASSED	2.5%	3	2
RAM06	9390	200	200	3	21	PASSED	1.5%	2	1
RLA03	2353	125	126	5	14	PASSED	4.0%	2	3
RRO01	2487	125	125	7	14	PASSED	5.6%	3	4
RRO02	2608	125	126	5	14	PASSED	4.0%	1	4
RRO03	4898	200	200	15	21	PASSED	7.5%	8	7
RRO04	3241	200	200	10	21	PASSED	5.0%	8	2
RSP01	3590	200	200	6	21	PASSED	3.0%	2	4

**TOTAL**

**112115**

**4360**

**4386**

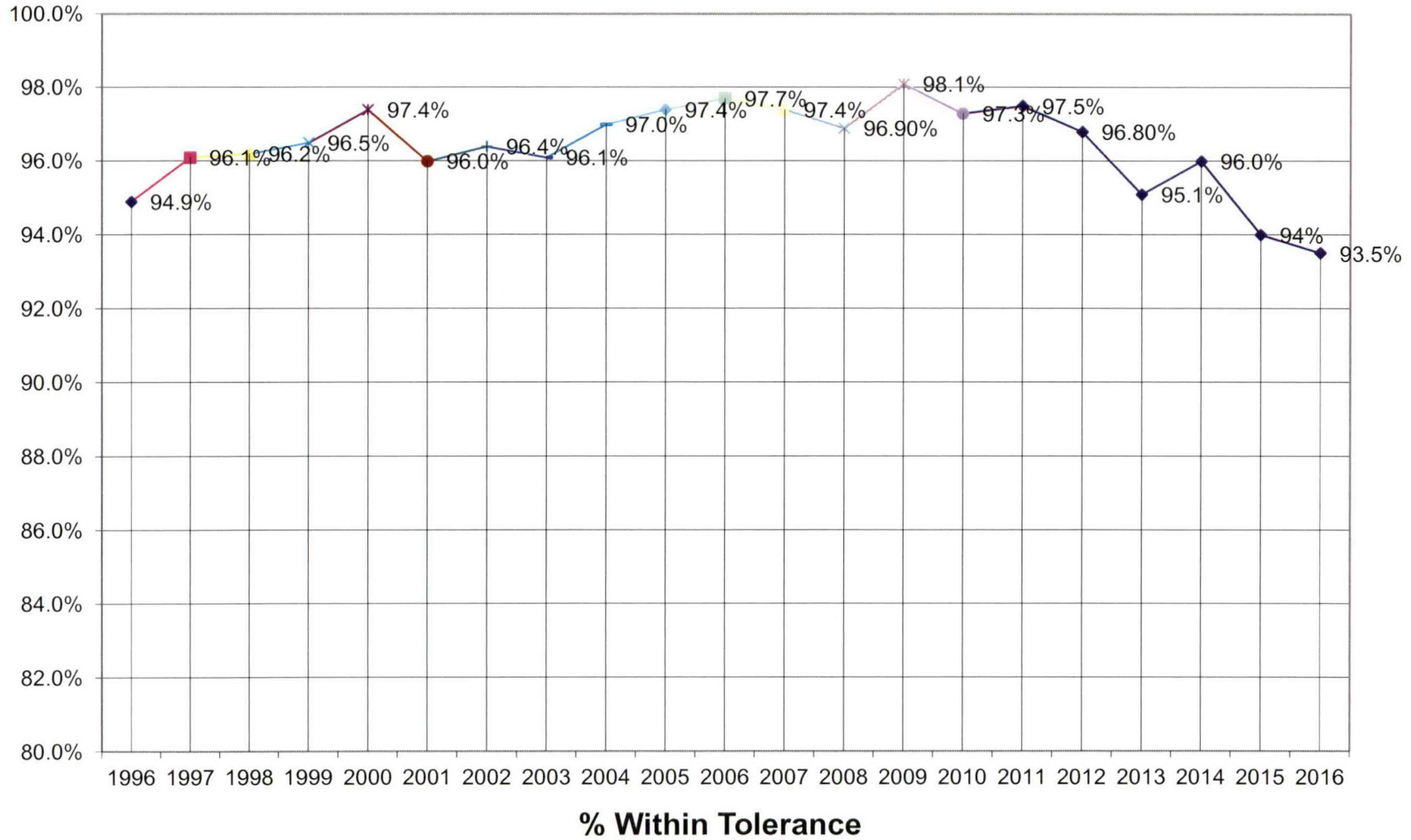
**284**

**6.5%**

**246**

**38**

# Columbia Gas of Kentucky Inc. "A" Meter Program Overall Results



**EXHIBIT C**

**2016 COLUMBIA GAS OF KENTUCKY LARGE VOLUME**  
**METER SAMPLING TEST RESULTS**

Page 1 of Exhibit C gives a summary of each Large Volume (500 - 1500 CFH) Family. Listed on page 1 of exhibit are:

1. Name of the Family Codes
2. Total number of meters in that family on the customer's premises
3. Total number of meters in that family required to be sampled
4. Total number of meters sampled
5. Total number of meters in-testing outside the required +/- 2%
6. Total number of meters allowed to fail
7. Passed/Failed Status of Meter Family
8. Percentage of meters failed per Family
9. Number of meters failed fast
10. Number of meters failed slow

Page 2 of Exhibit C identifies in graph form the percentages of meters within tolerance since Columbia Gas of Kentucky began sampling in 1996. This is a combined listing of all large volume groups.

## 2016 COLUMBIA GAS OF KENTUCKY METER SAMPLING RESULTS

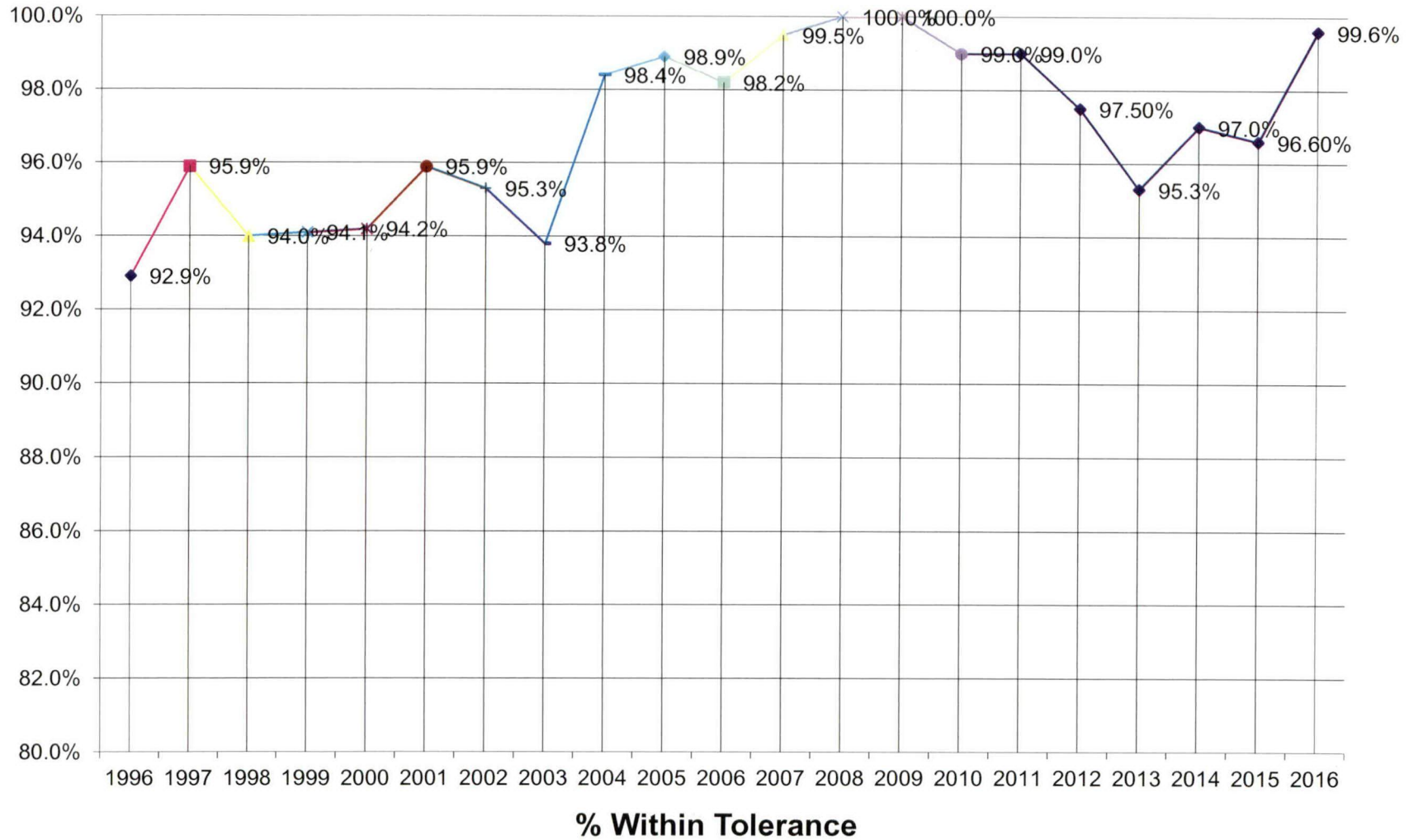
Samples taken between 2016-01-01 and 2016-12-31

**"B" Class Meters 500 - 1500 CFH**

FAMILY CODES	TOTAL MTRS. IN FAMILY	TOTAL MTRS REQ'D IN PROGRAM	TOTAL SAMPLED	TOTAL FAILED METERS	TOTAL REJECTS ALLOWABLE	2014 FAMILY STATUS	RATIO FAILED (d/c=g)	NUMBER FAILED FAST	NUMBER FAILED SLOW
	(a)	(b)	(c)	(d)	(e)	(f)		(h)	(i)
BNAM01	610	80	80	1	10	PASSED	1.3%	1	0
BRAM01	1307	125	125	0	14	PASSED	0.0%	0	0
BRRO01	109	20	20	0	3	PASSED	0.0%	0	0
BRSP01	33	8	8	0	1	PASSED	0.0%	0	0
<b>TOTAL</b>	<b>2059</b>	<b>233</b>	<b>233</b>	<b>1</b>			<b>0.4%</b>	<b>1</b>	<b>0</b>



# Columbia Gas of Kentucky Inc. "B" Meter Program Overall Results



**EXHIBIT D**

**PERCENTAGE OF DOMESTIC METER ACCURACY**  
**BY FAMILY**

**Exhibit D - represents the percentage of meters sampled in 2016 that were within the +/- 2% rate, identified by homogenous group. We also show previous results of meter families sampled in the past ten years.**

**NAM01 = New American meters purchased between 1981 & 1990**

**NAM02 = New American meters purchased between 1991 & 1993**

**NAM03 = New American meters purchased in 1994**

**NAM04 = New American meters purchased in 1995**

**NAM05 = New American meters purchased in 1996**

**NAM06 = New American meters purchased in 1997 & 2000**

**NAM06A= New American meters purchased in 2001 & 2002**

**NAM07 = New American meters purchased in 2003**

**NAM08 = New American meters purchased in 2004**

**NAM09 = New American meters purchased in 2005**

**NAM10 = New American meters purchased in 2006 & 2007**

**NAM11= New American meters purchased in 2008 & 2010**

**NAM12= New American meters purchased in 2012 & 2014**

**NLA01 = New Lancaster meters purchased in 1987**

**NLA02 = New Lancaster meters purchased between 1989, 1990, & 1992**

**NRO01 = New Rockwell meters purchased between 1983 & 1996**

**NRO02 = New Rockwell meters purchased between 1997 & 1999**

**NSP01 = New Sprague meters purchased between 1982 & 1996**

**RAM02 = Repaired American meters installed in 1987 & 1989**

**RAM03 = Repaired American meters installed in 1990 & 1991**

**RAM04 = Repaired American meters installed between 1992 & 1996**

**RAM05 = Repaired American meters installed between 1997 & 2006**

**RAM06 = Repaired American meters installed in 2008, 2010, 2012, & 2014**

**RLA03 = Repaired Lancaster meters installed between 1987 & 2006**

**RRO01 = Repaired Rockwell meters installed between 1981 & 1989**

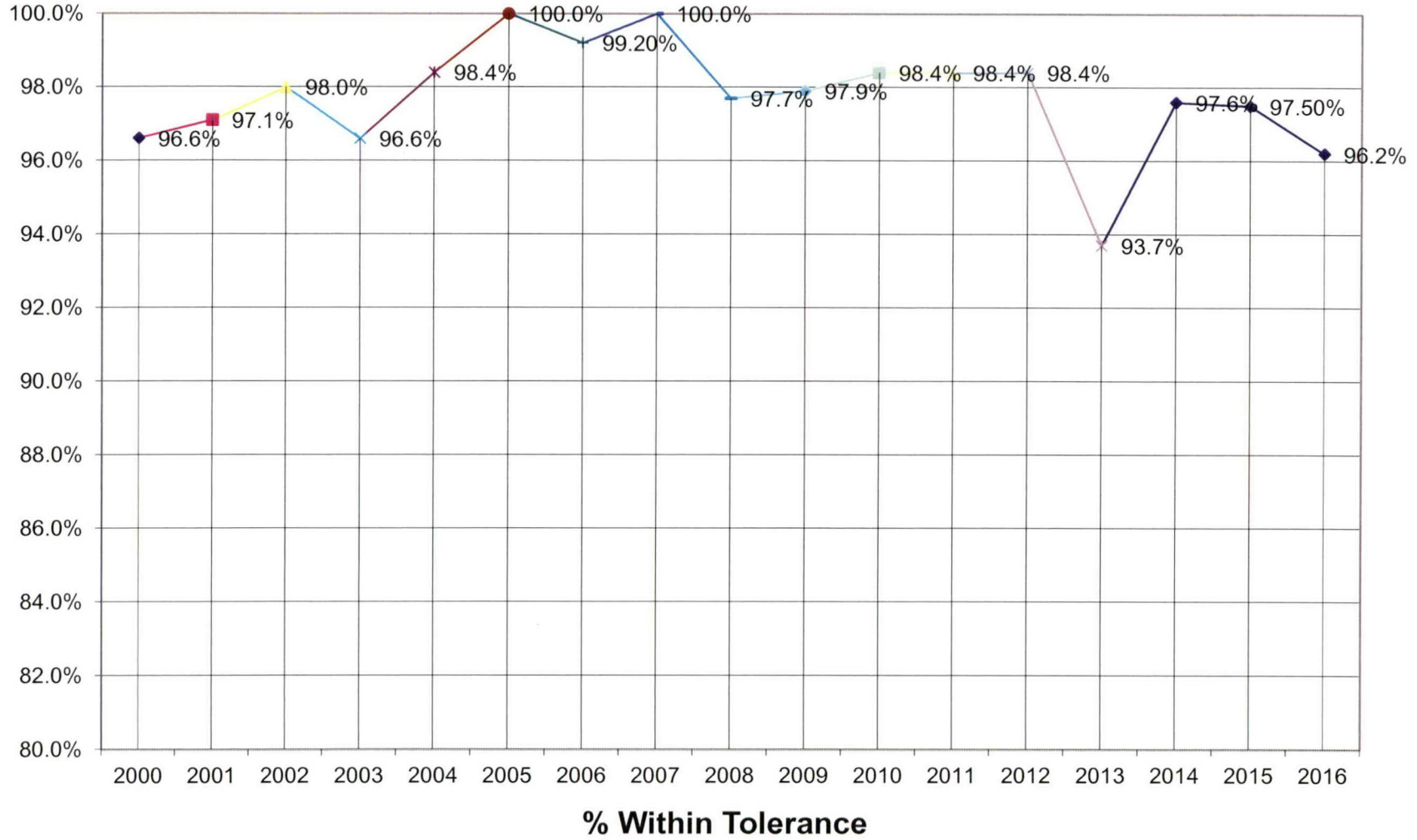
**RRO02 = Repaired Rockwell meters installed between 1990 & 1993**

**RRO03 = Repaired Rockwell meters installed between 1994 & 2003**

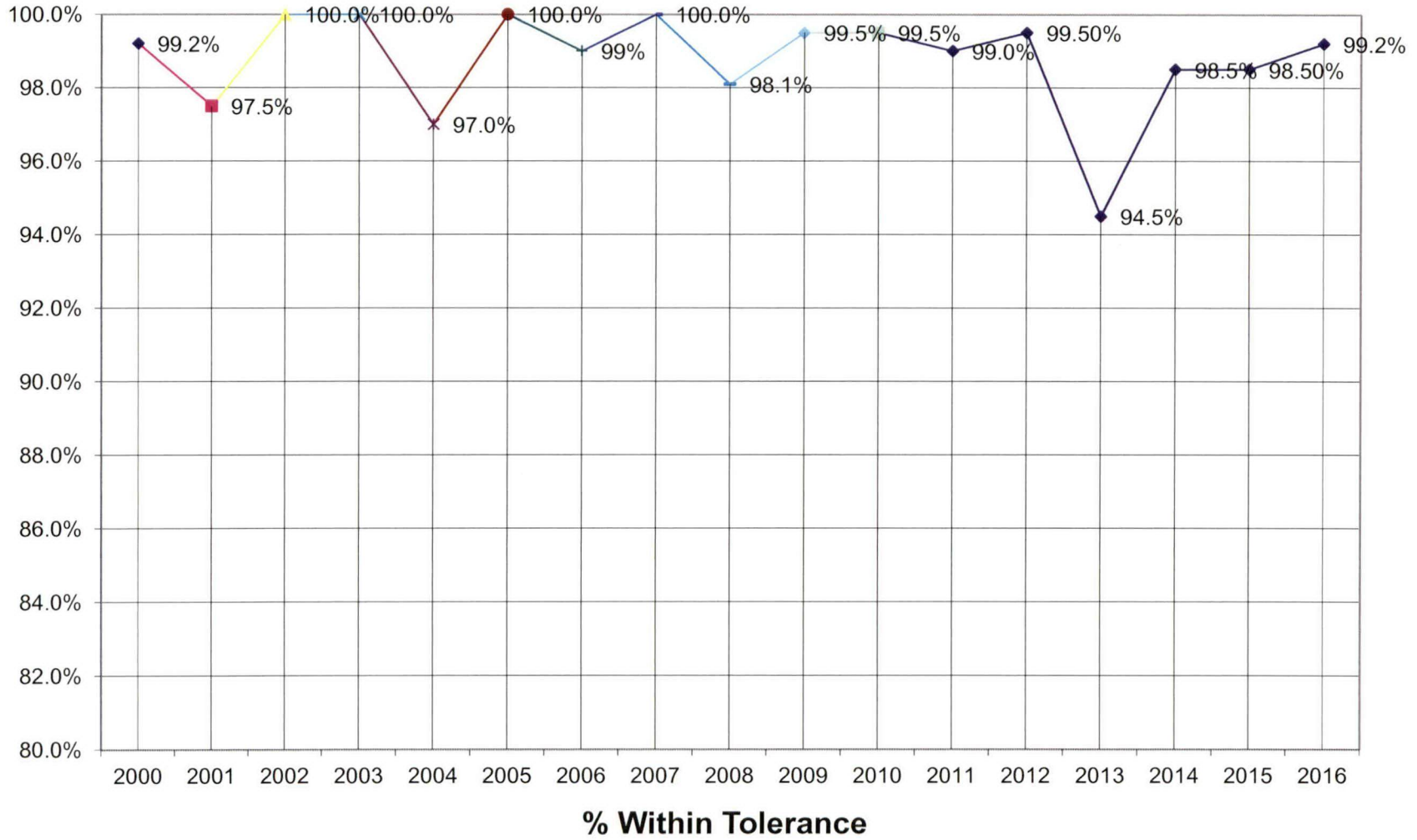
**RRO04 = Repaired Rockwell meters installed between 2004, & 2014**

**RSP01 = Repaired Sprague meters installed between 1983 & 2007**

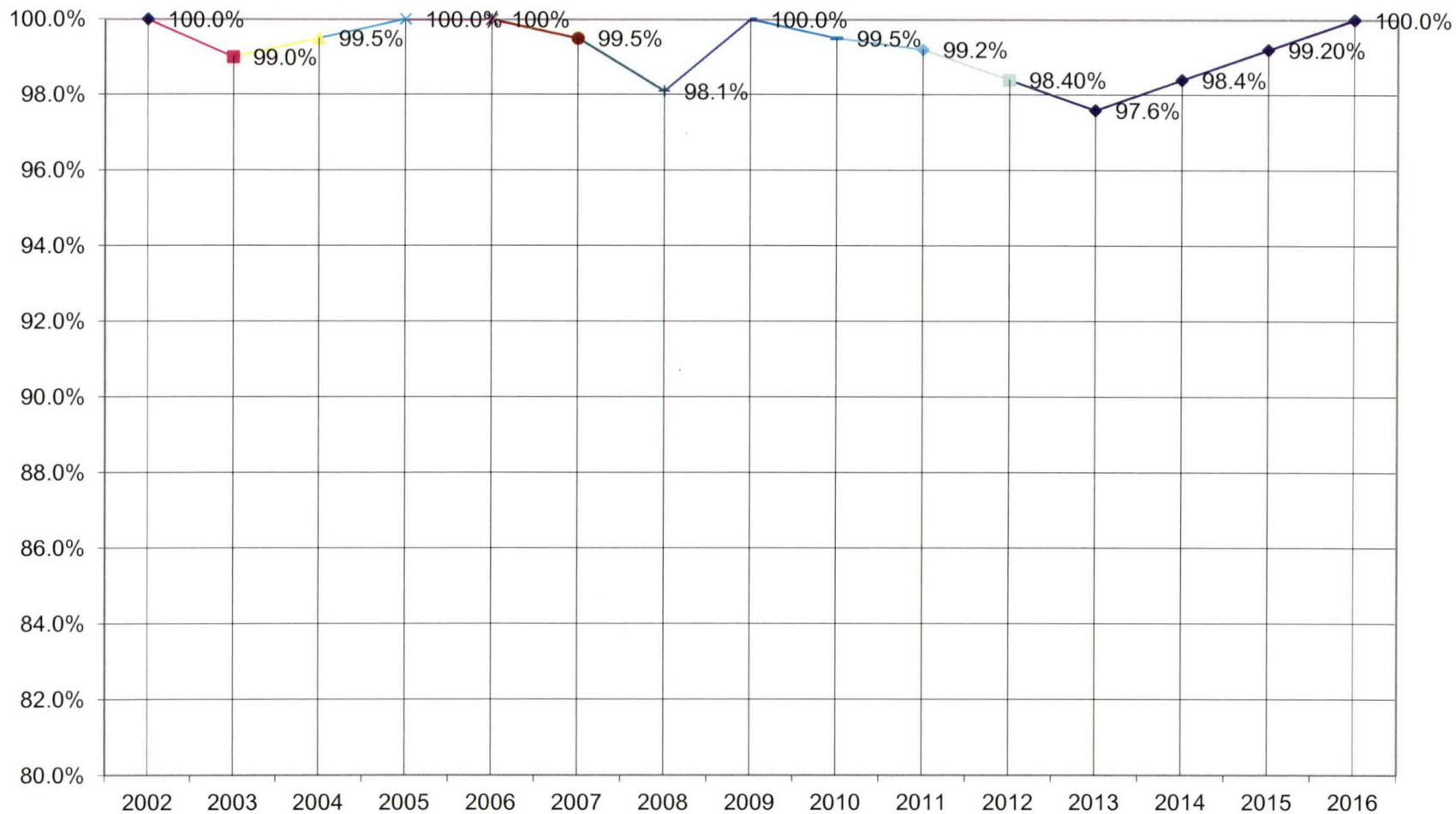
# NAM01



# NAM02



# NAM03



**% Within Tolerance**



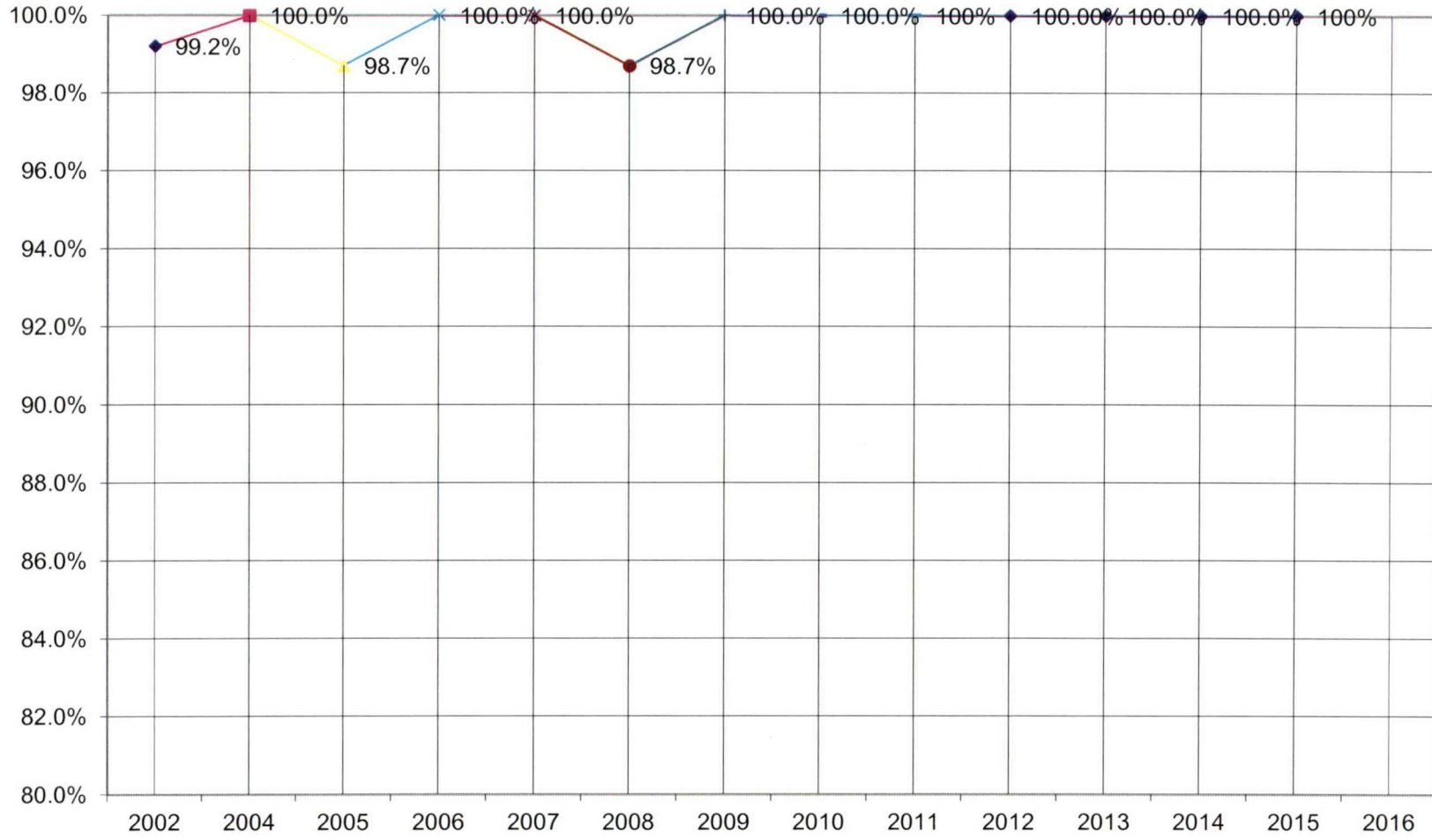
# NAM04



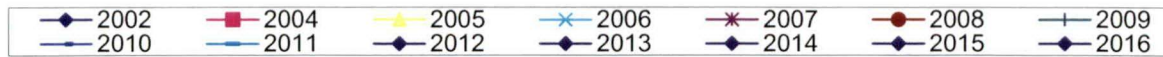
**% Within Tolerance**



# NAM05

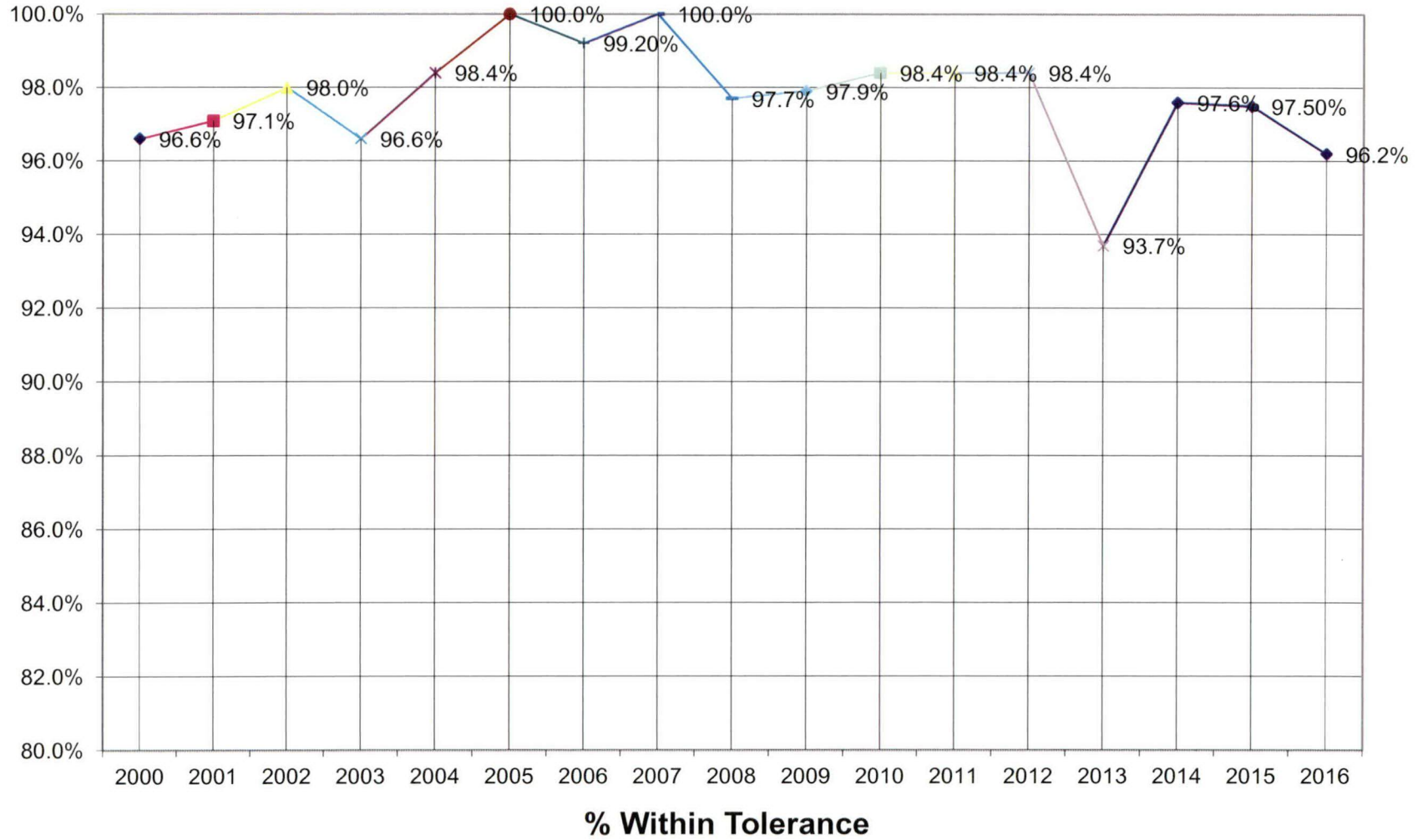


**% Within Tolerance**





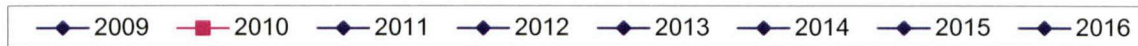
# NAM01



# NAM06A



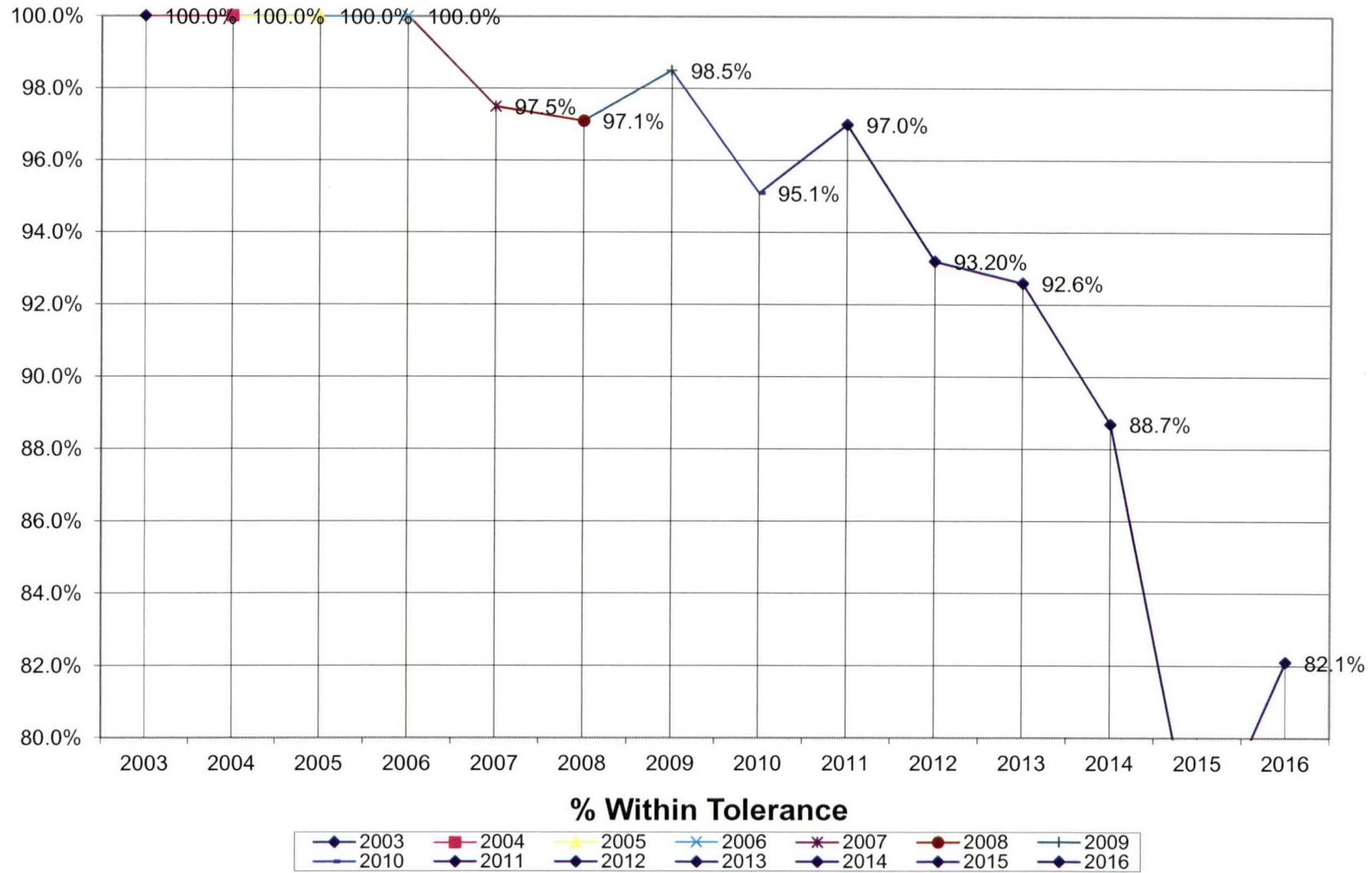
**% Within Tolerance**



# NAM07



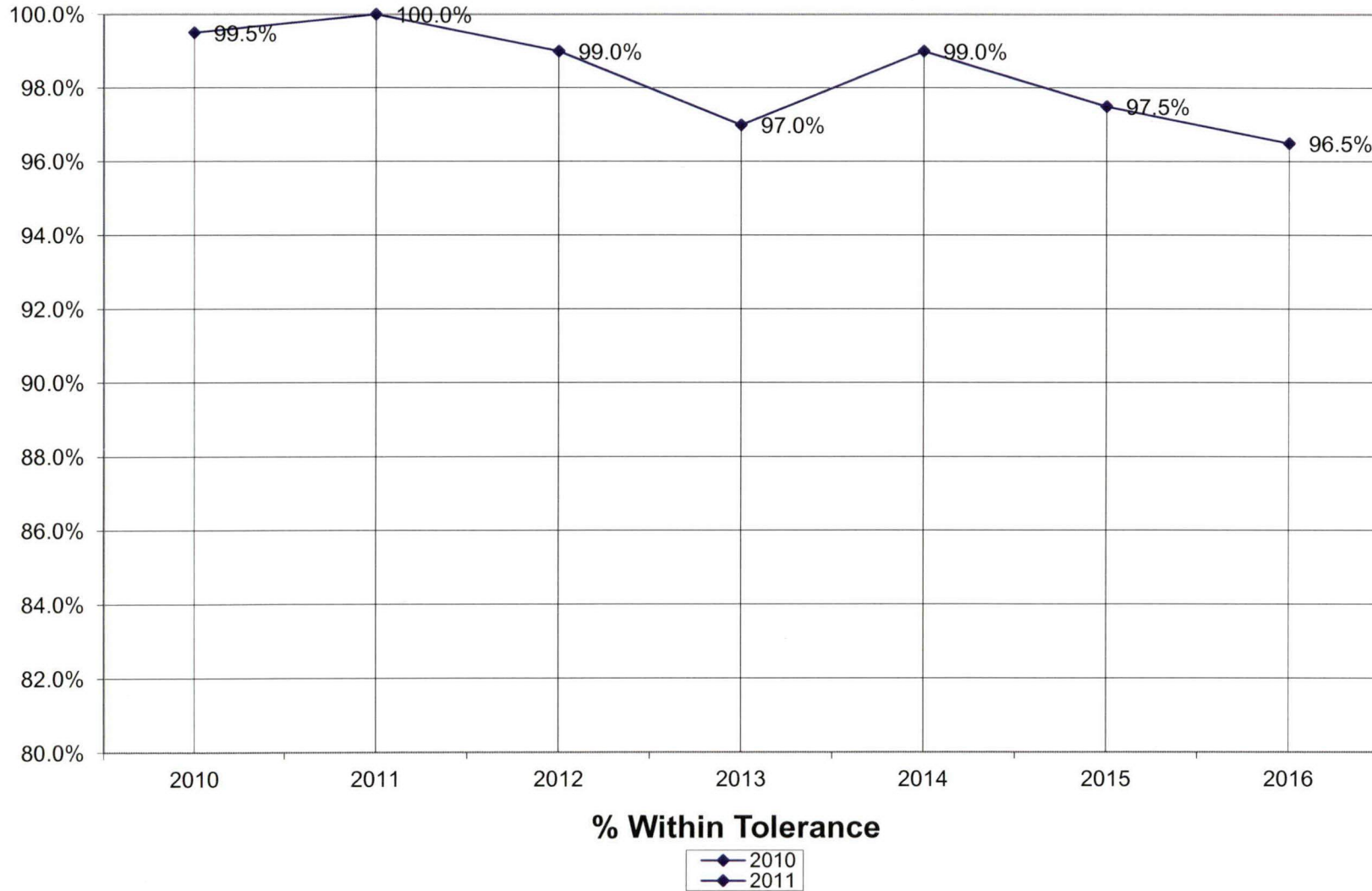
# NAM08



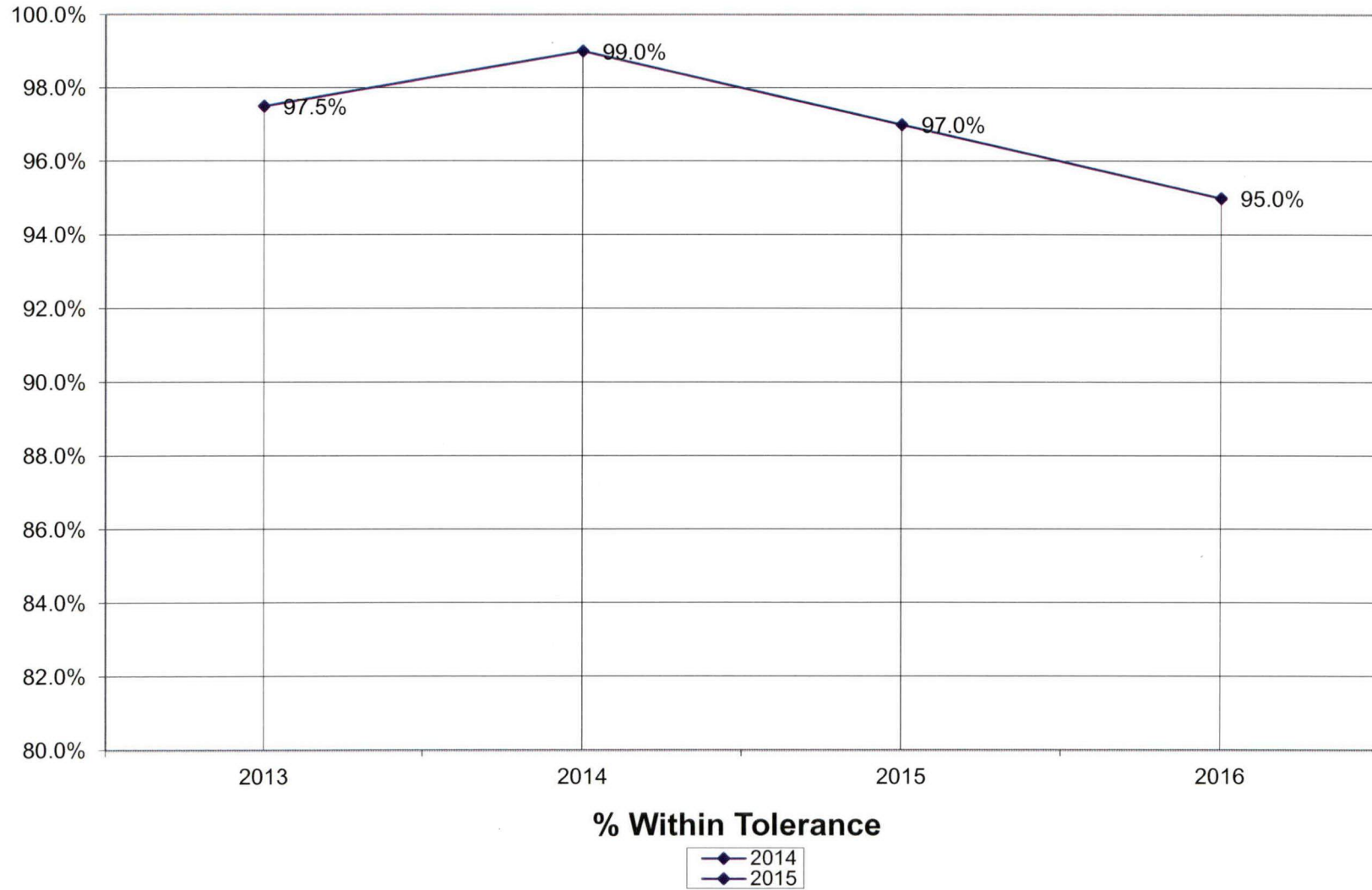
# NAM09



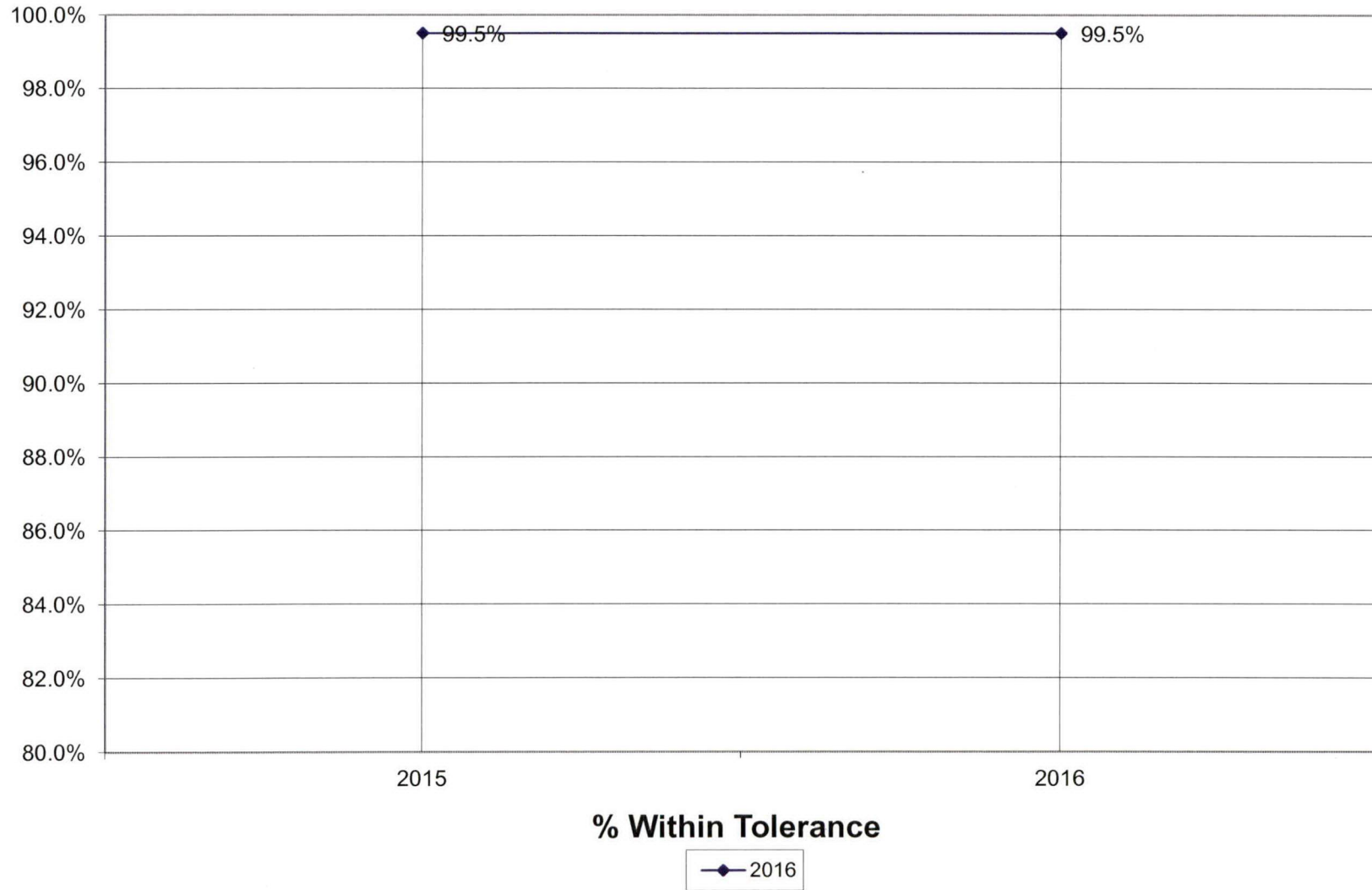
# NAM10



# NAM11

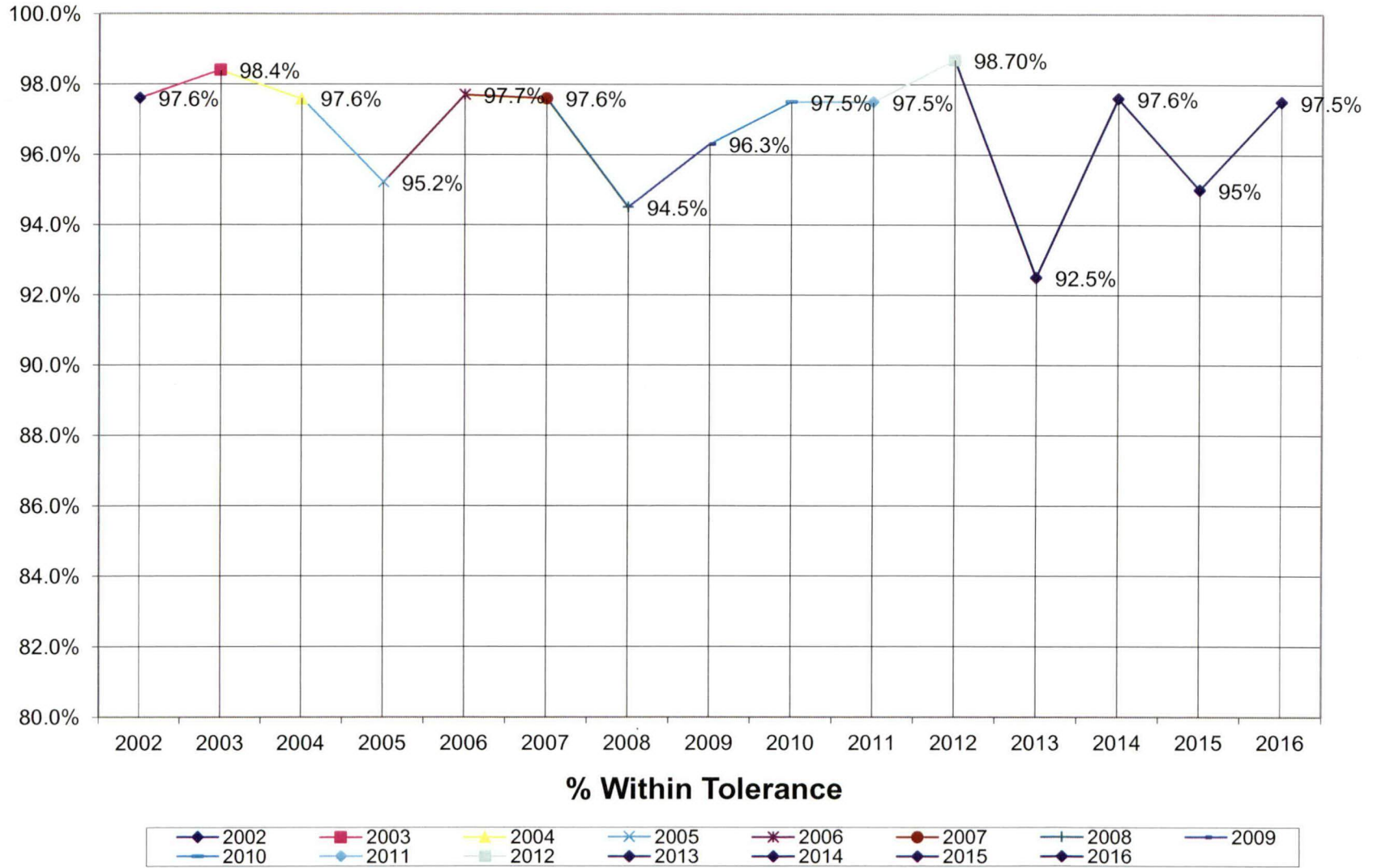


# NAM12

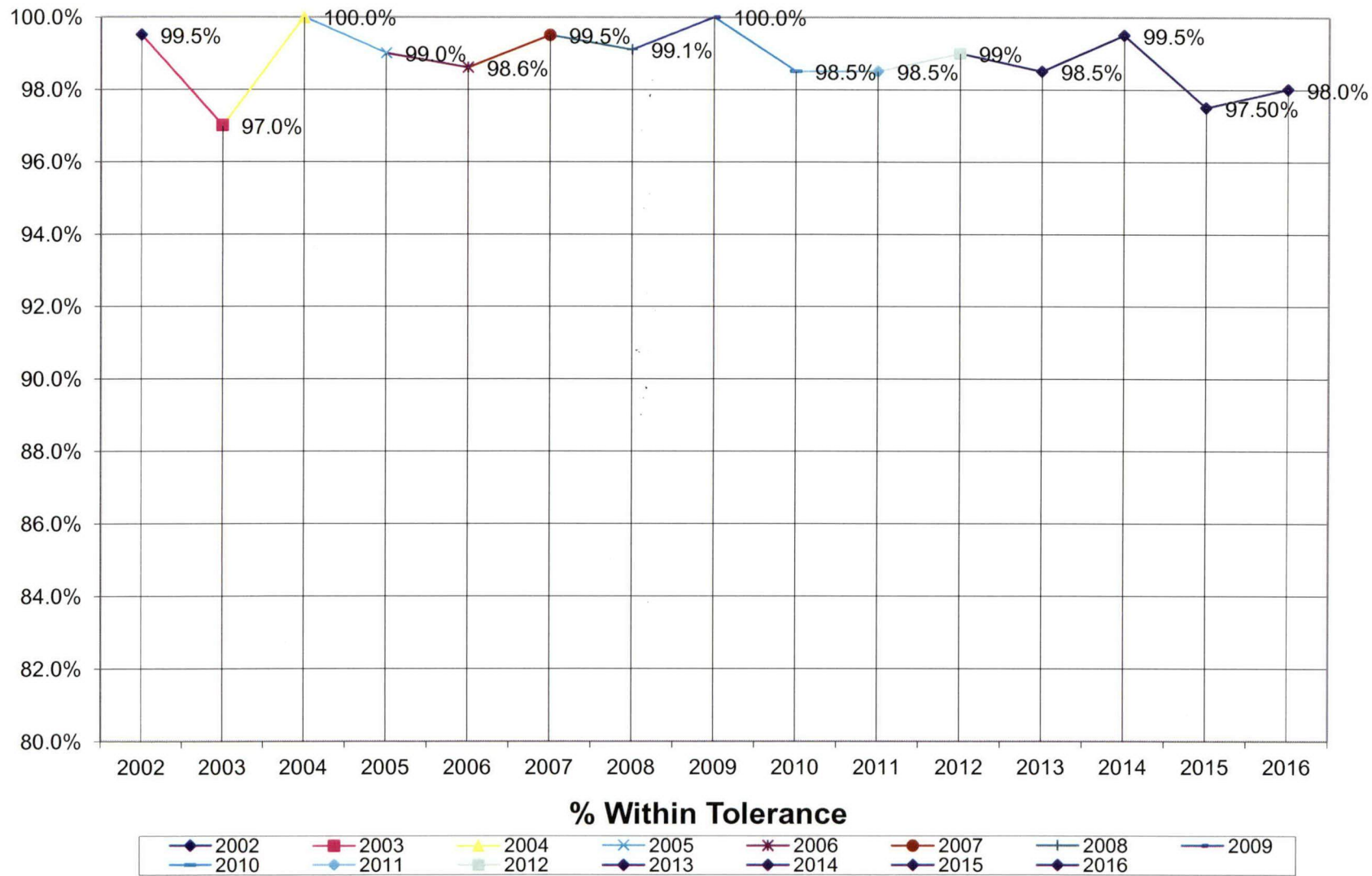




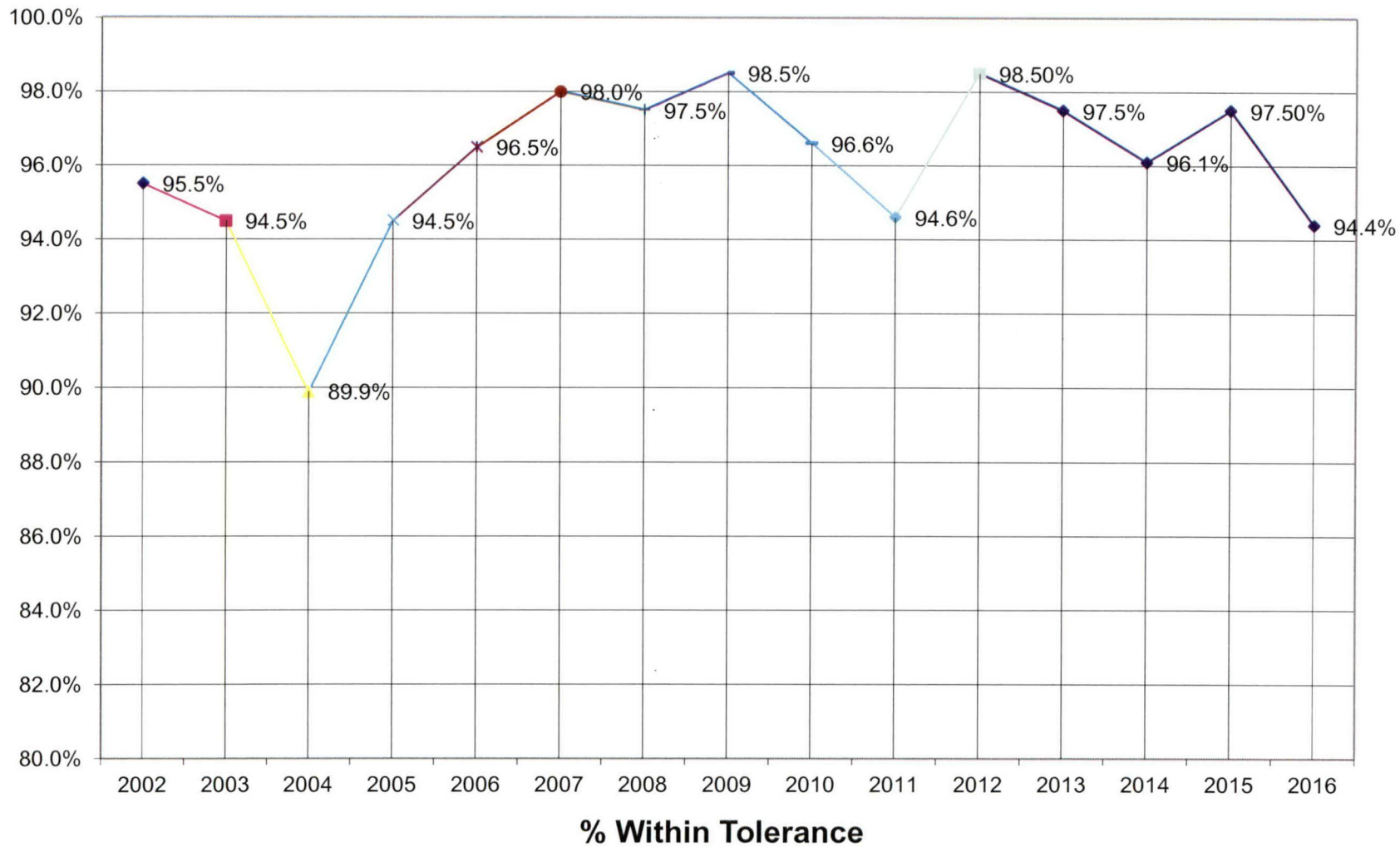
# NLA01



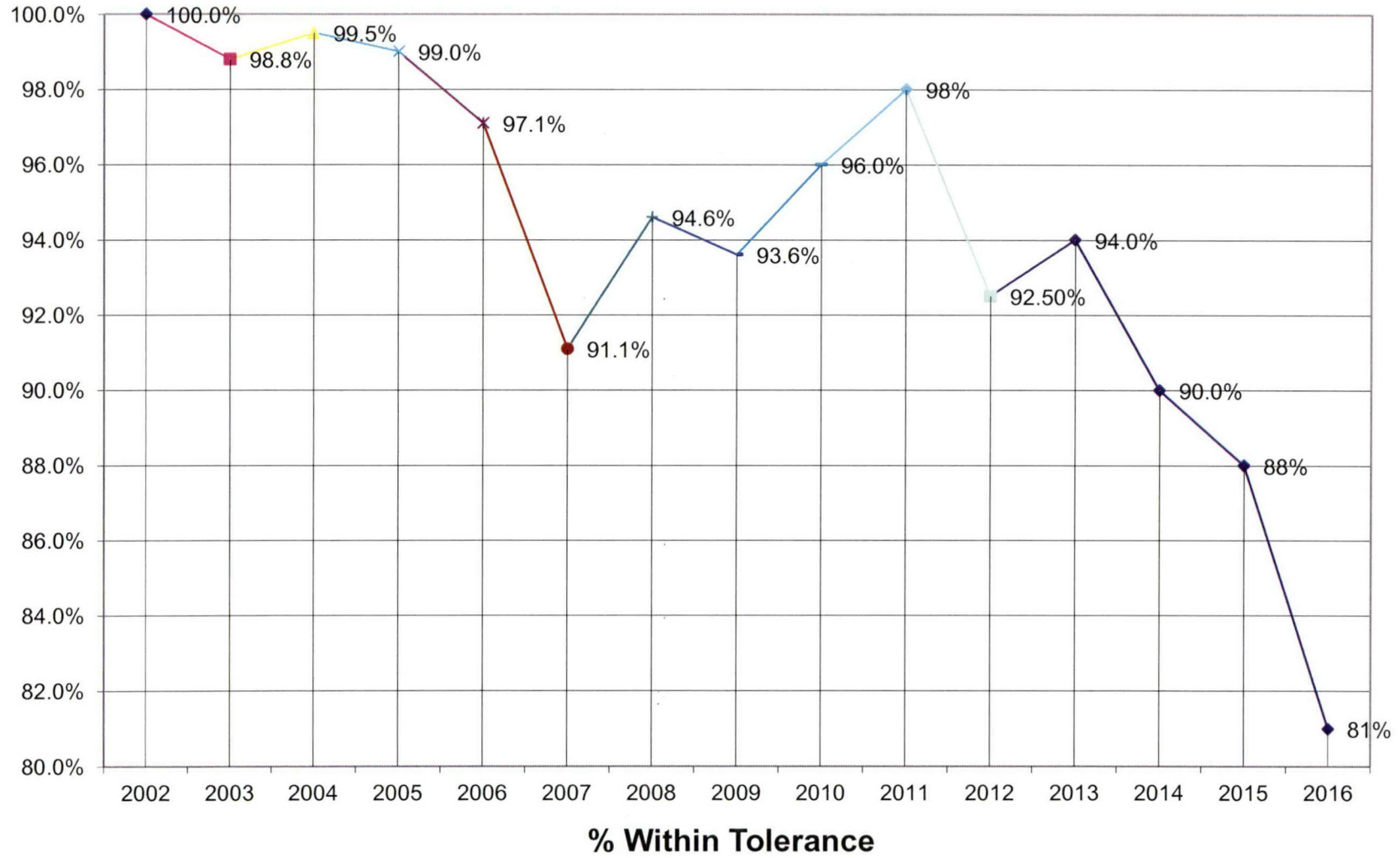
# NLA02



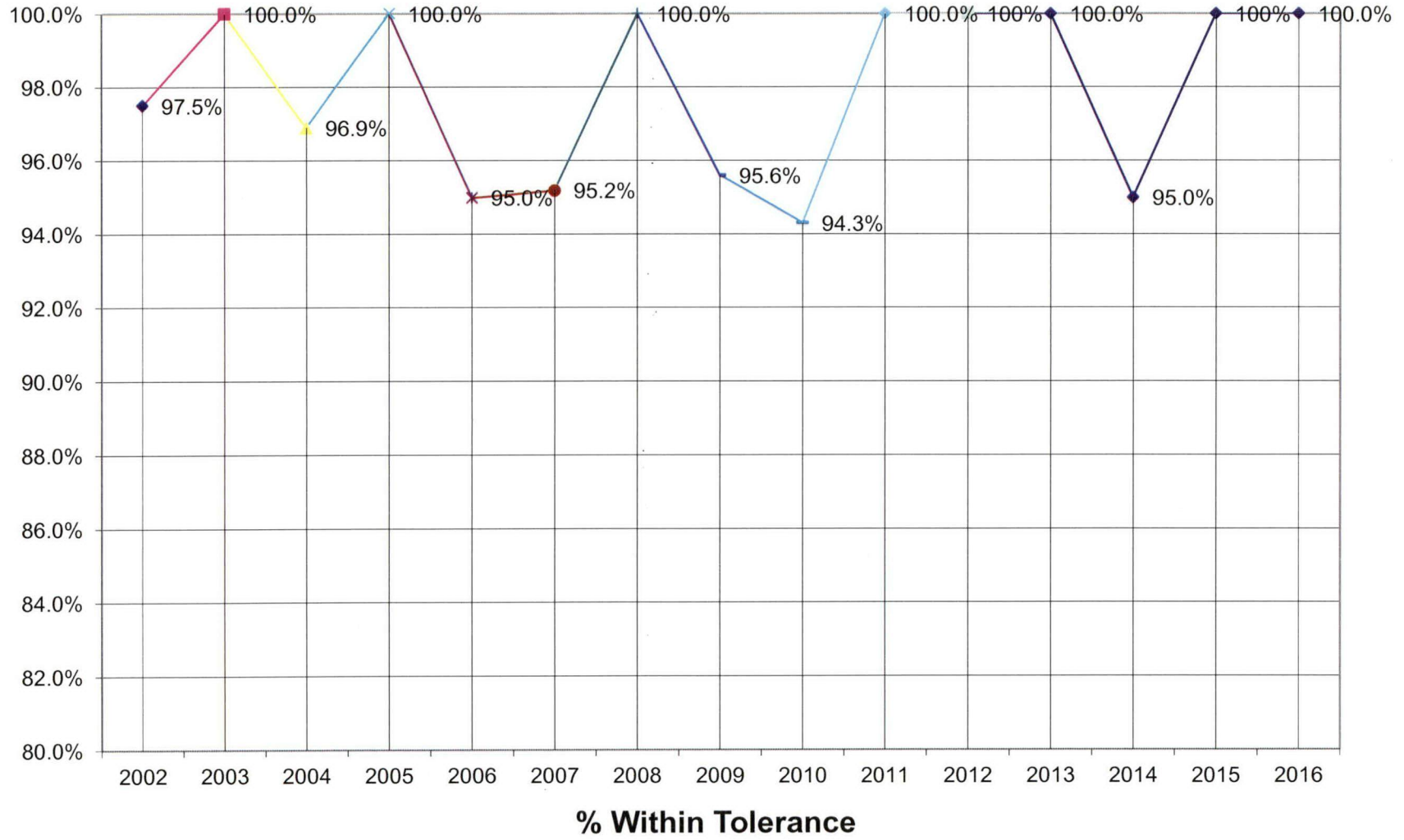
# NRO01



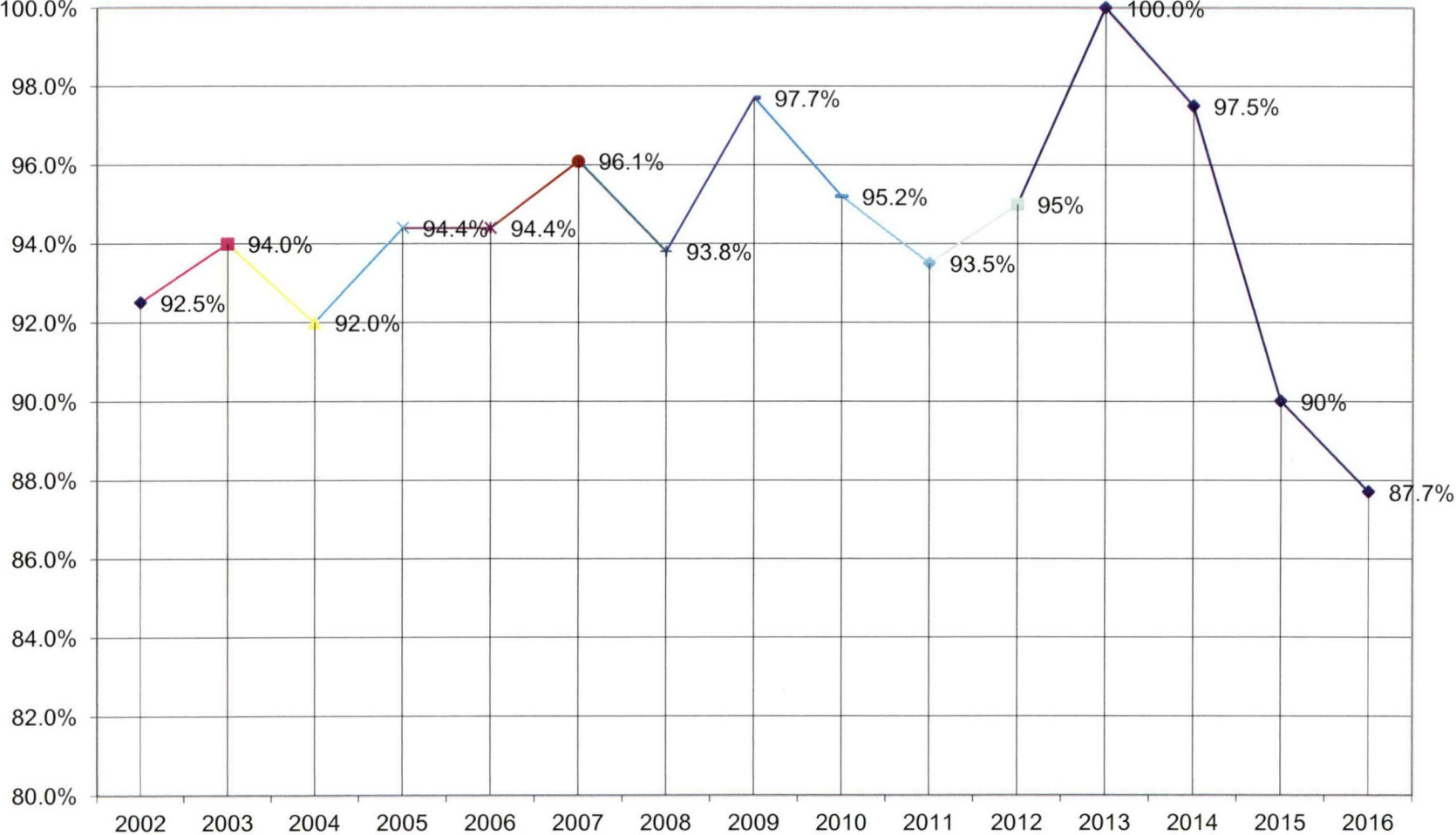
# NRO02



# NSP01

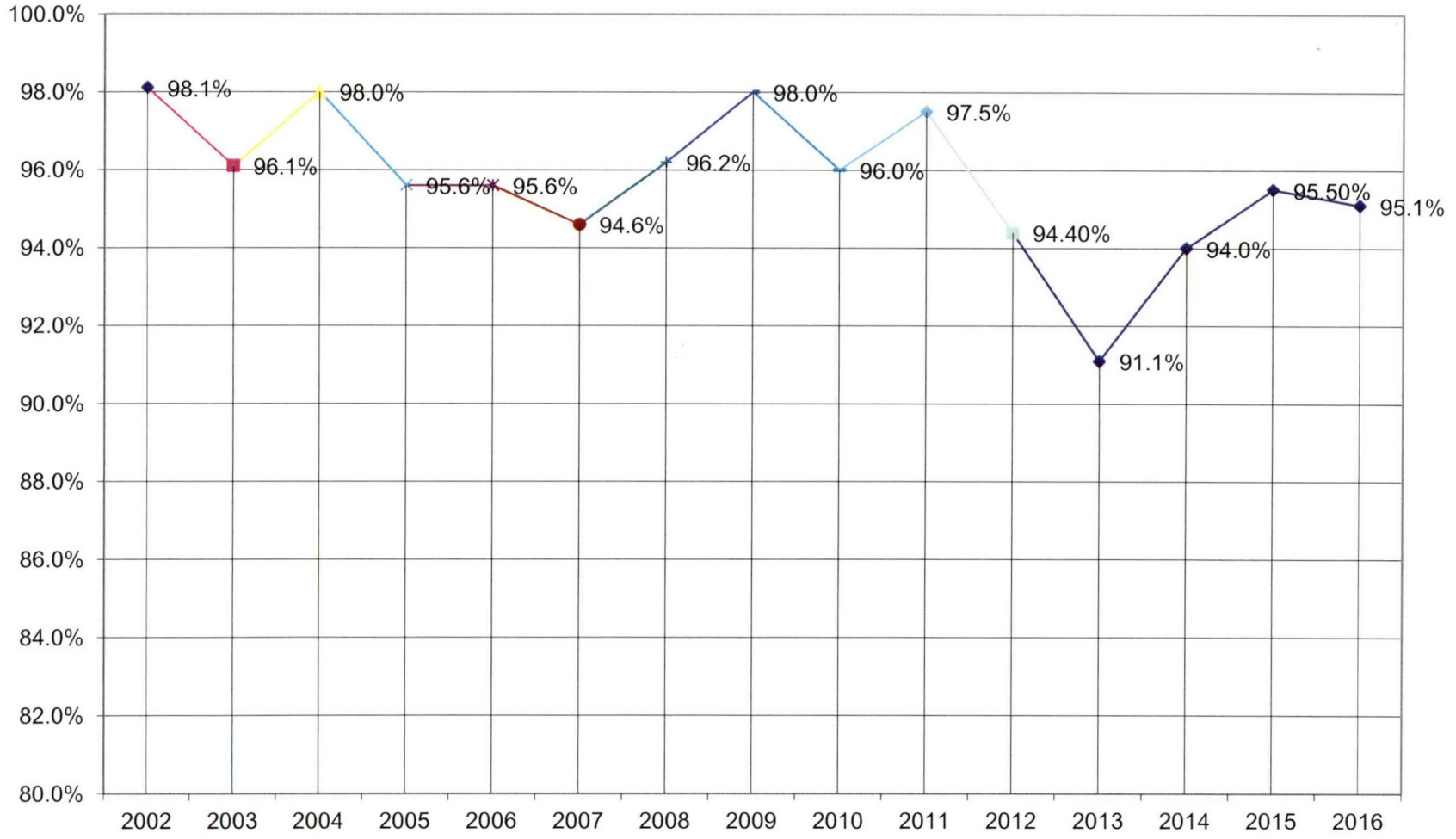


# RAM03



**% Within Tolerance**

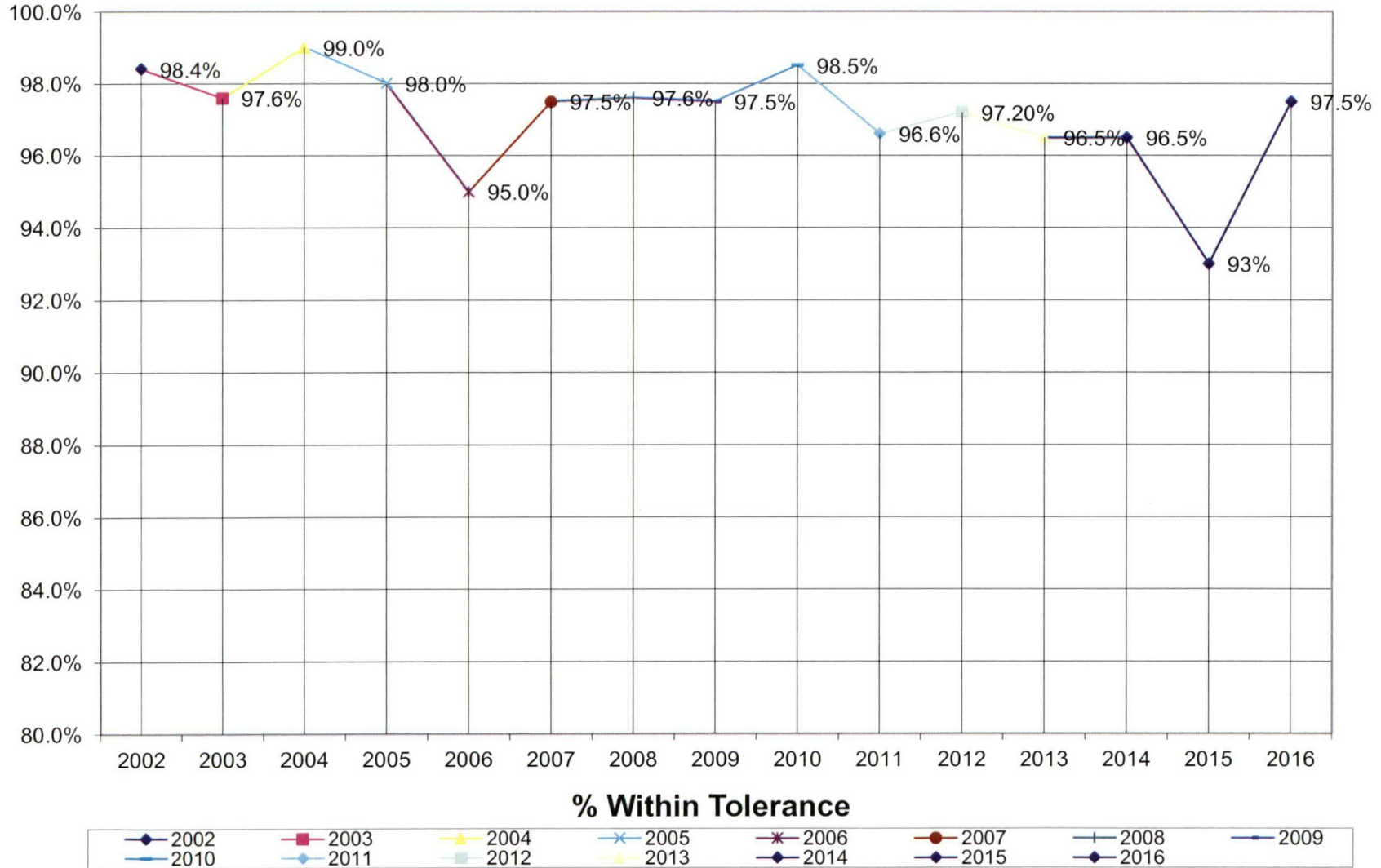
# RAM04



**% Within Tolerance**

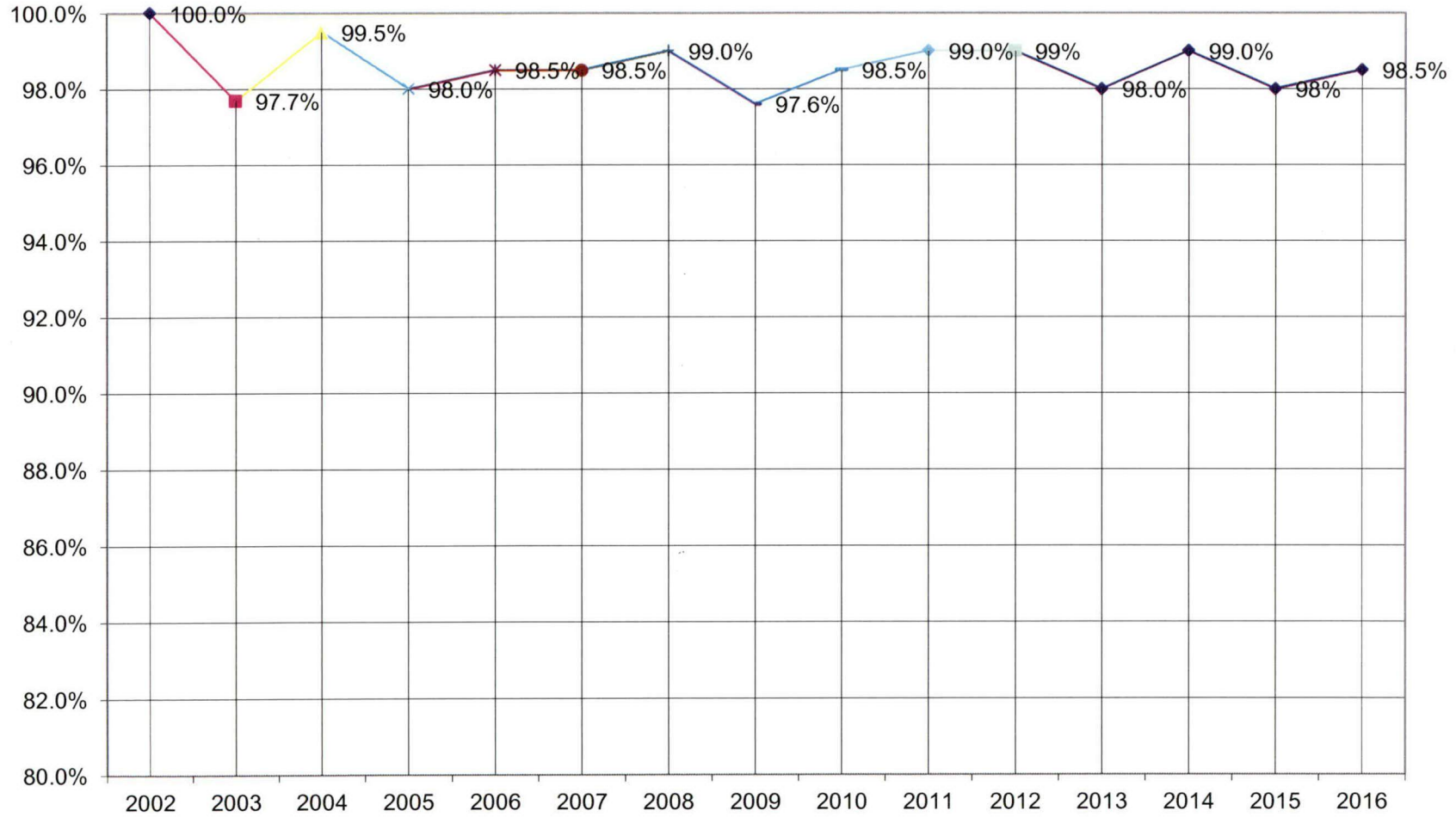
2002	2003	2004	2005	2006	2007	2008	2009
2010	2011	2012	2013	2014	2015	2016	

# RAM05





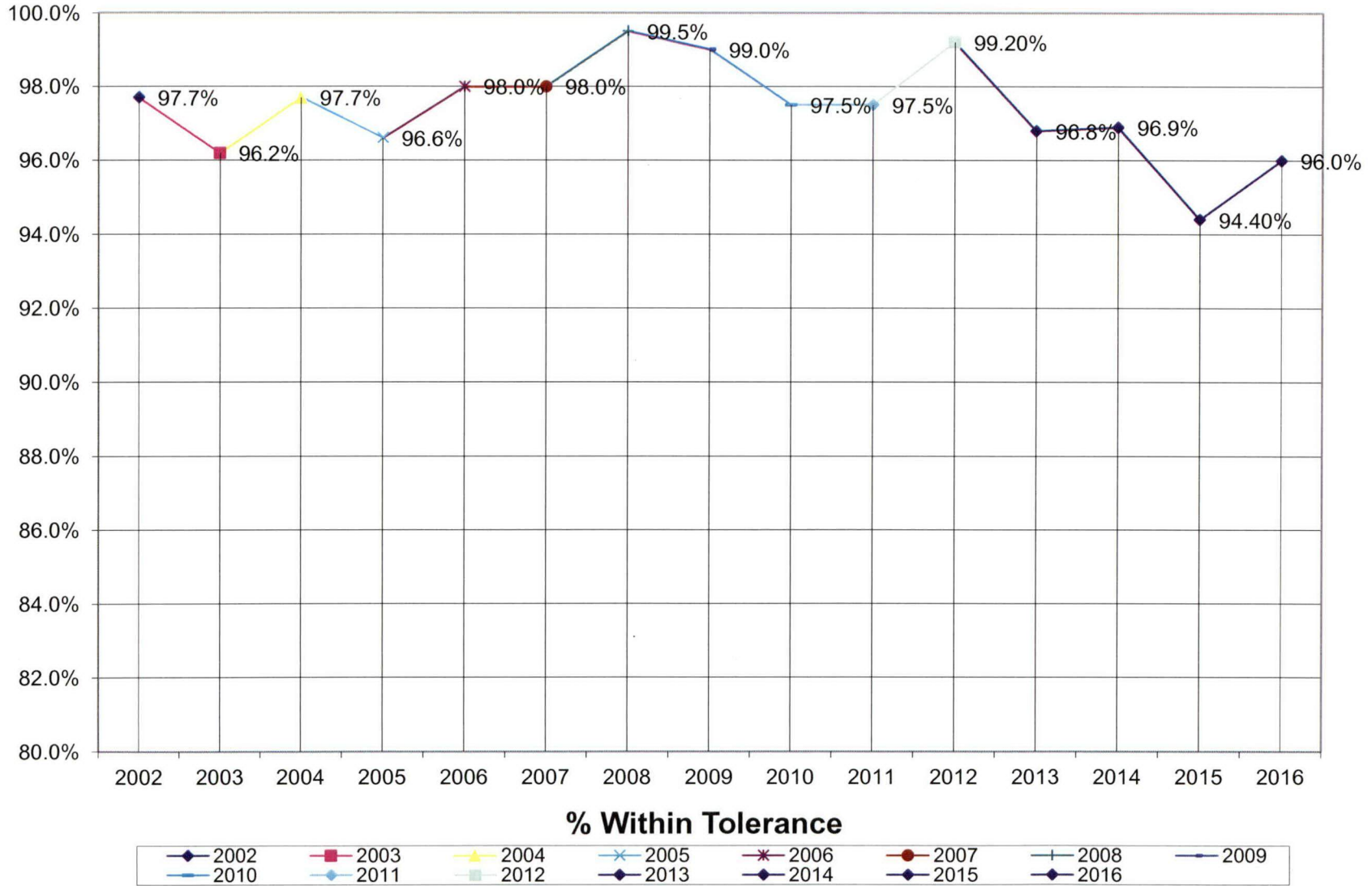
# RAM06



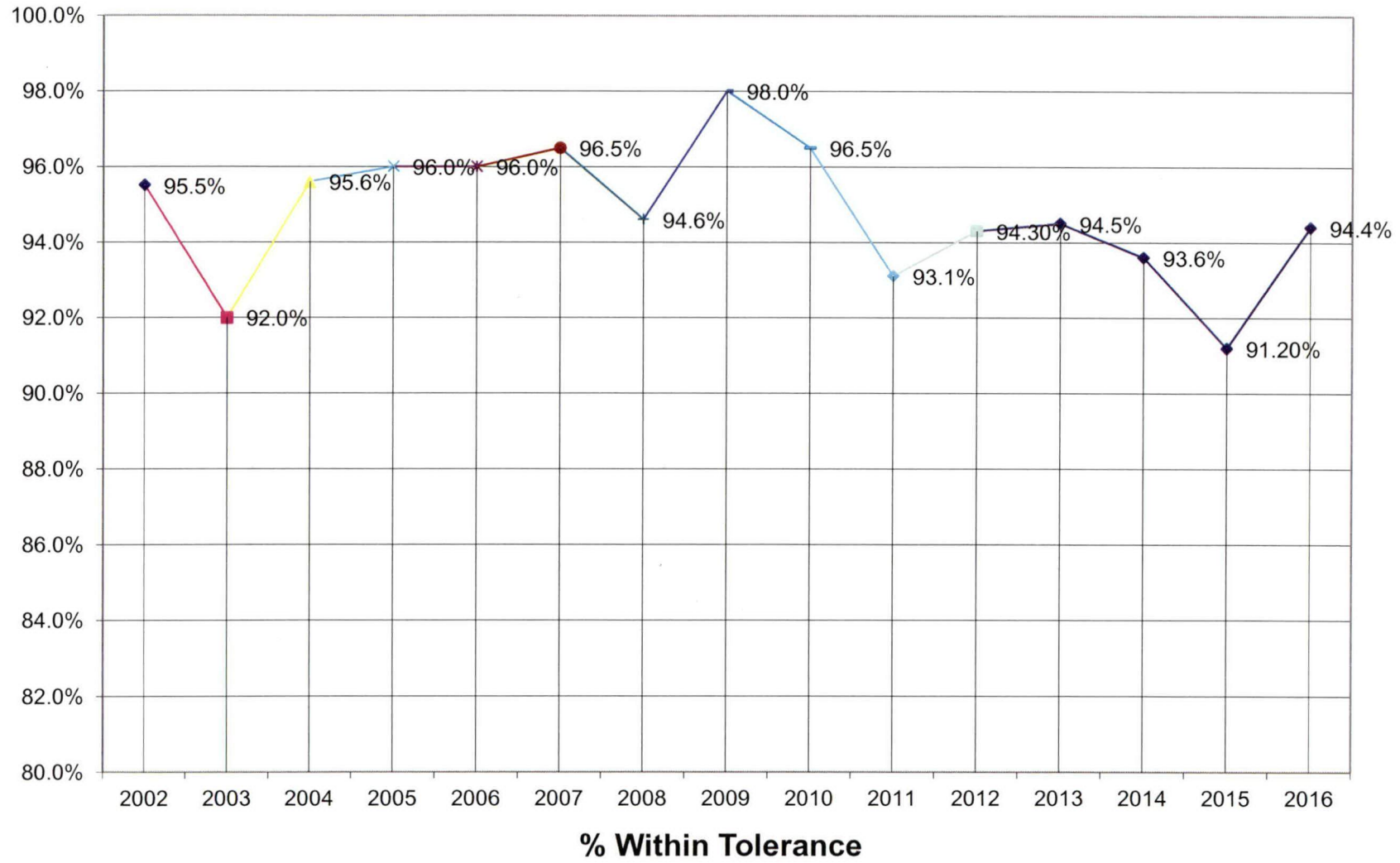
**% Within Tolerance**



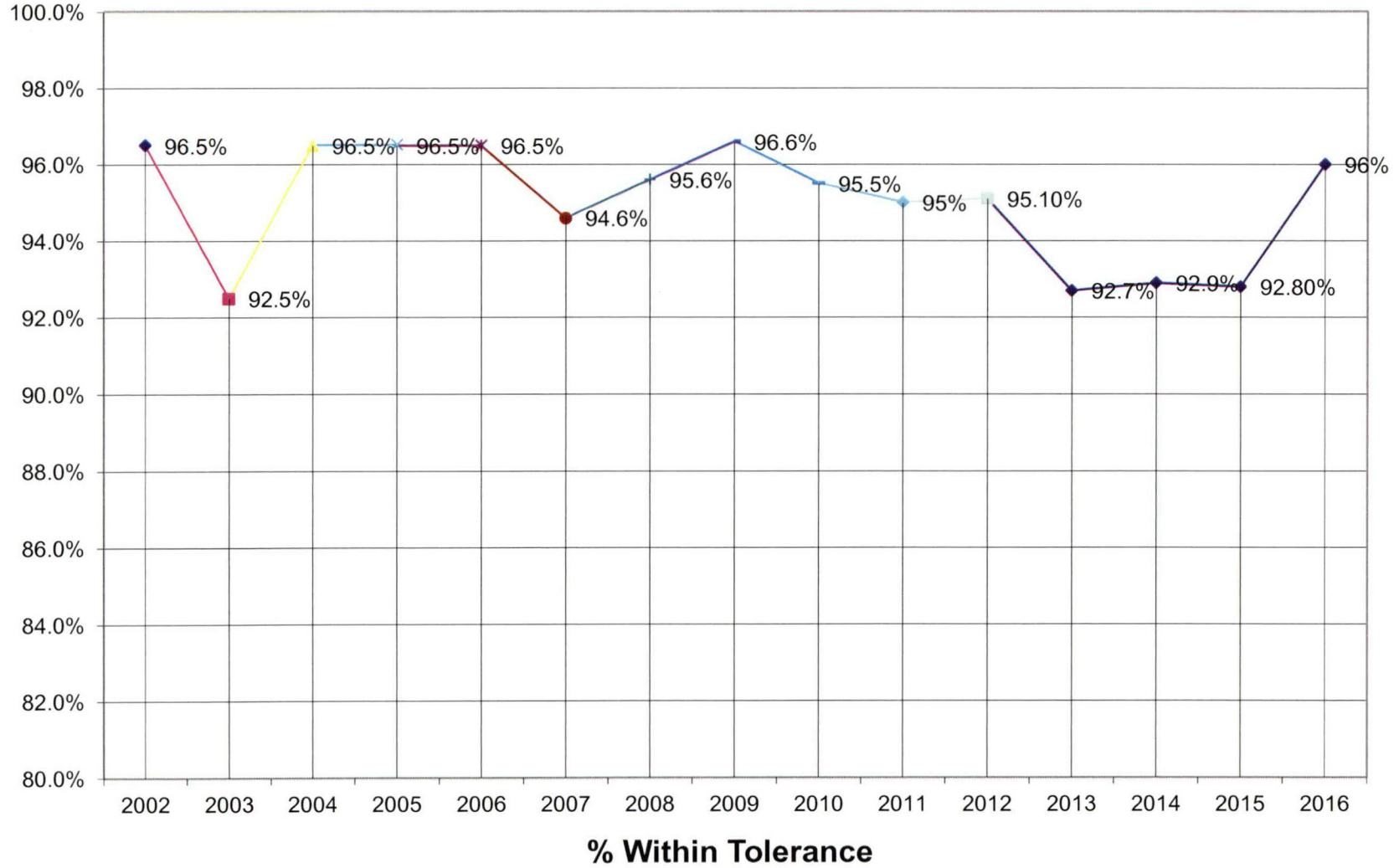
# RLA03



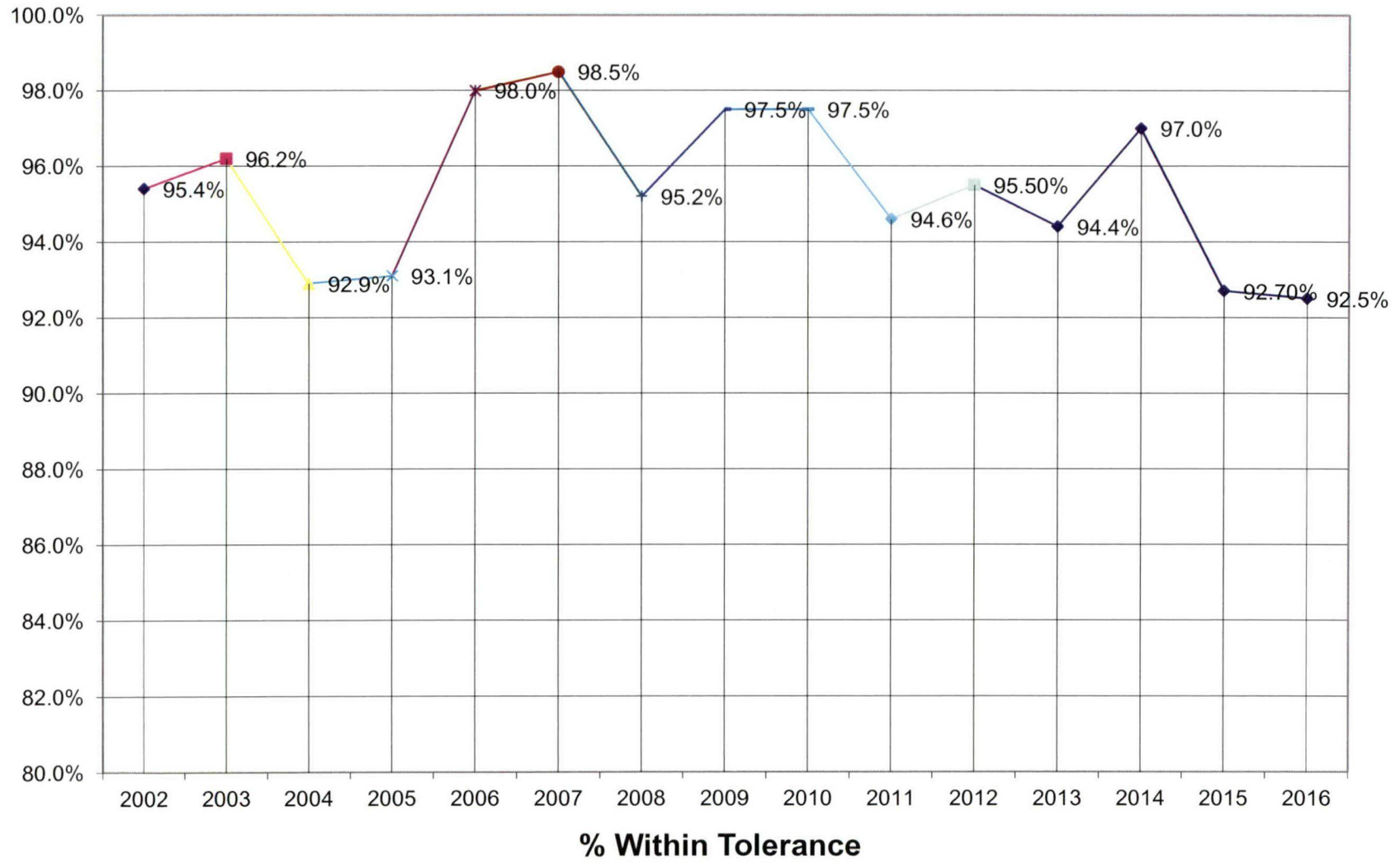
# RRO01



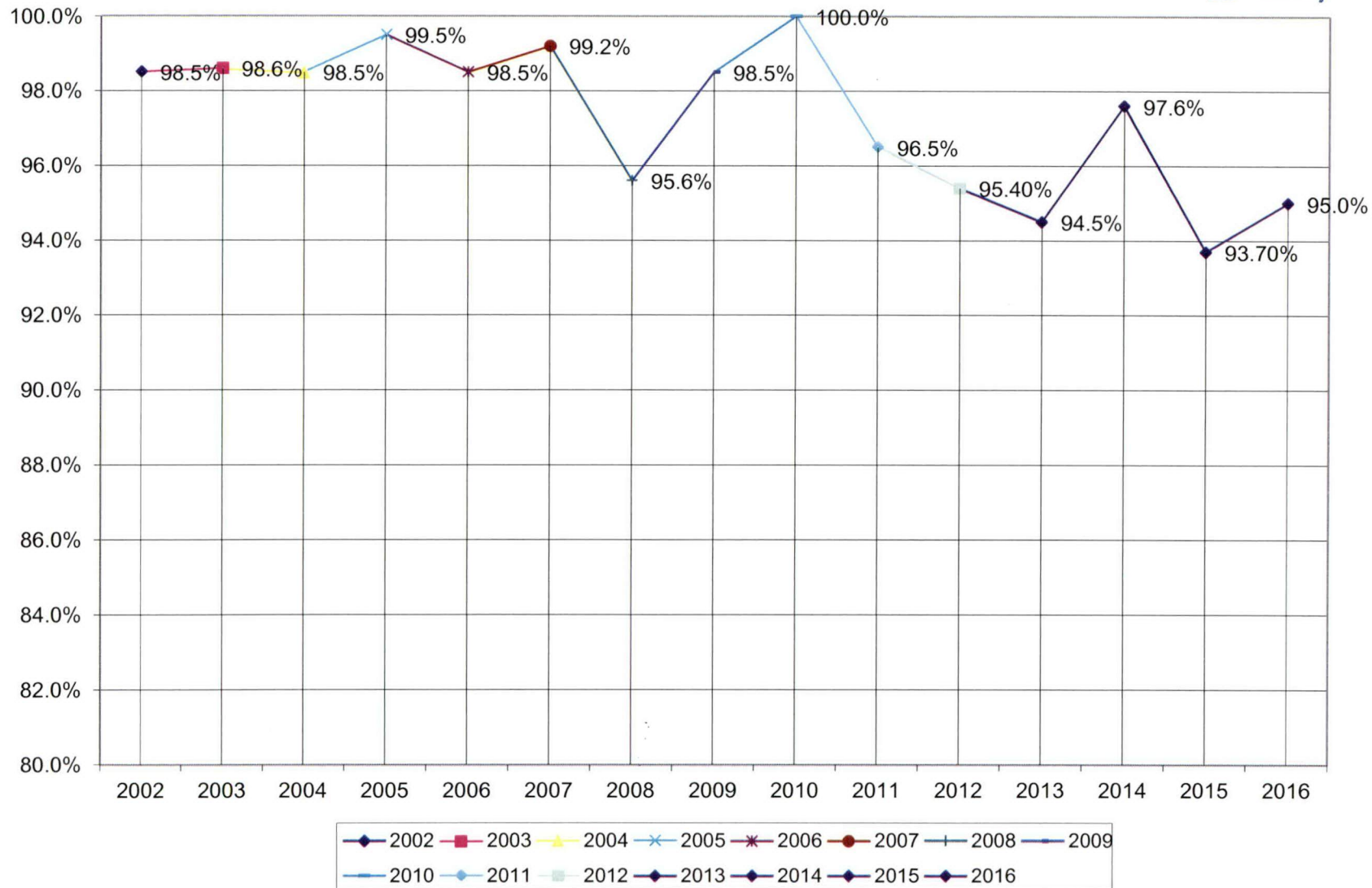
# RRO02



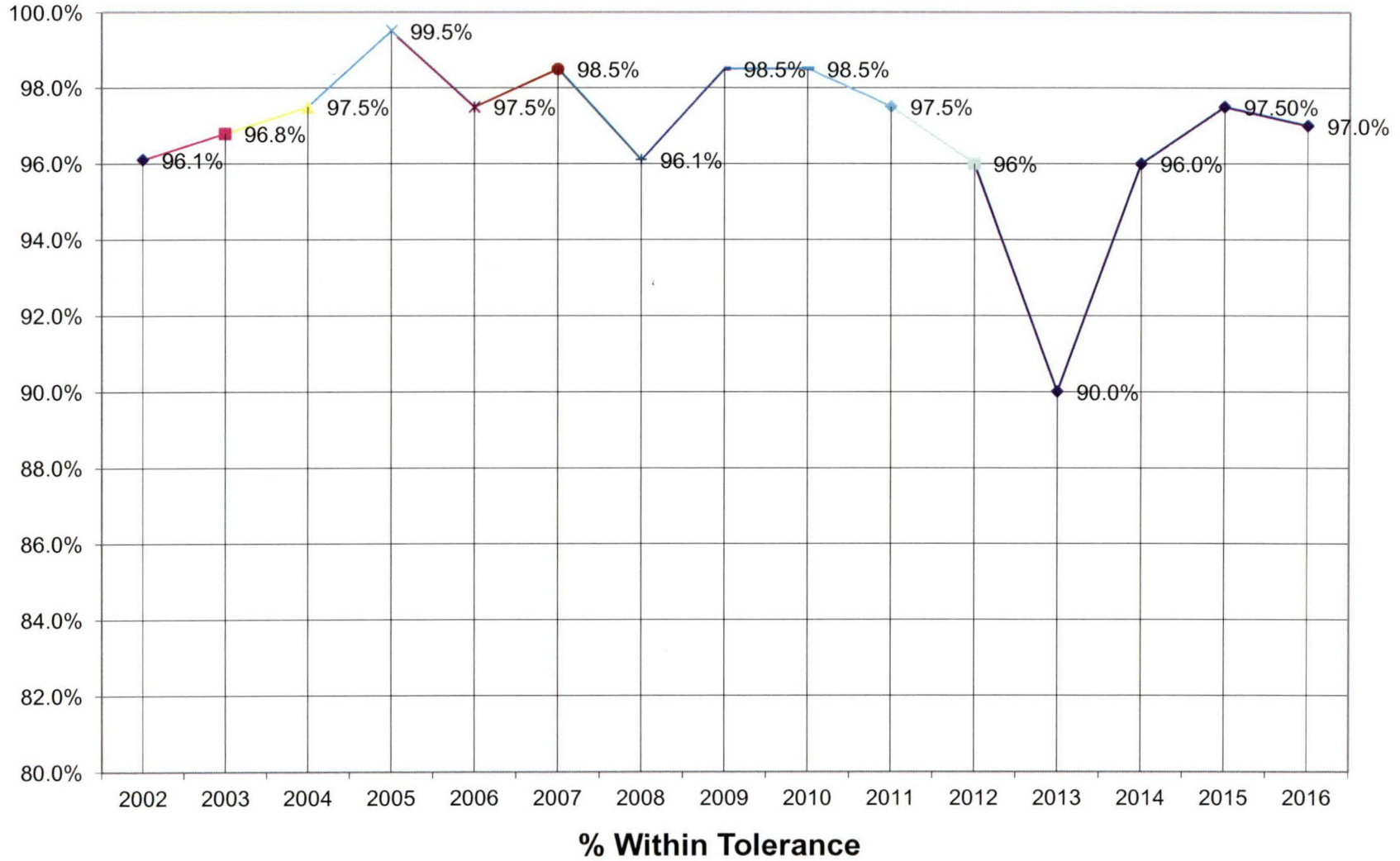
# RRO03



# RRO04



# RSP01



**EXHIBIT E**

**PERCENTAGE OF LARGE VOLUME METER  
ACCURACY BY FAMILY**

**Exhibit E - represents the percentage of Large Volume meters sampled in 2016 that were within the +/- 2% rate, identified by homogenous group. We also show previous results of meter families sampled in prior years.**

**BRAM01 = Repaired American meters installed between 2006 & 2014**

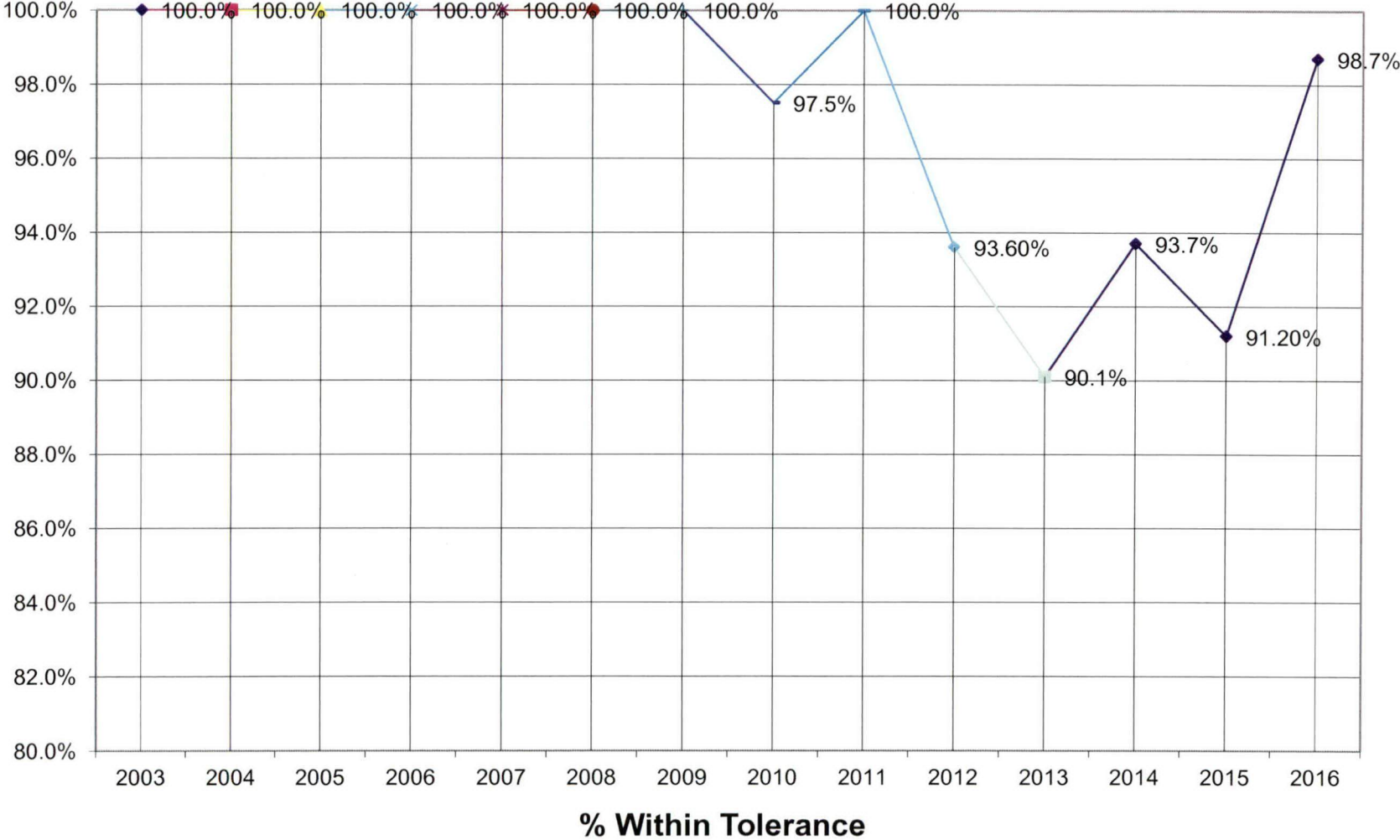
**BRRO01 = Repaired Rockwell meters installed between 2006 & 2014**

**BRSP01 = Repaired Sprague meters installed between 2008 & 2014**

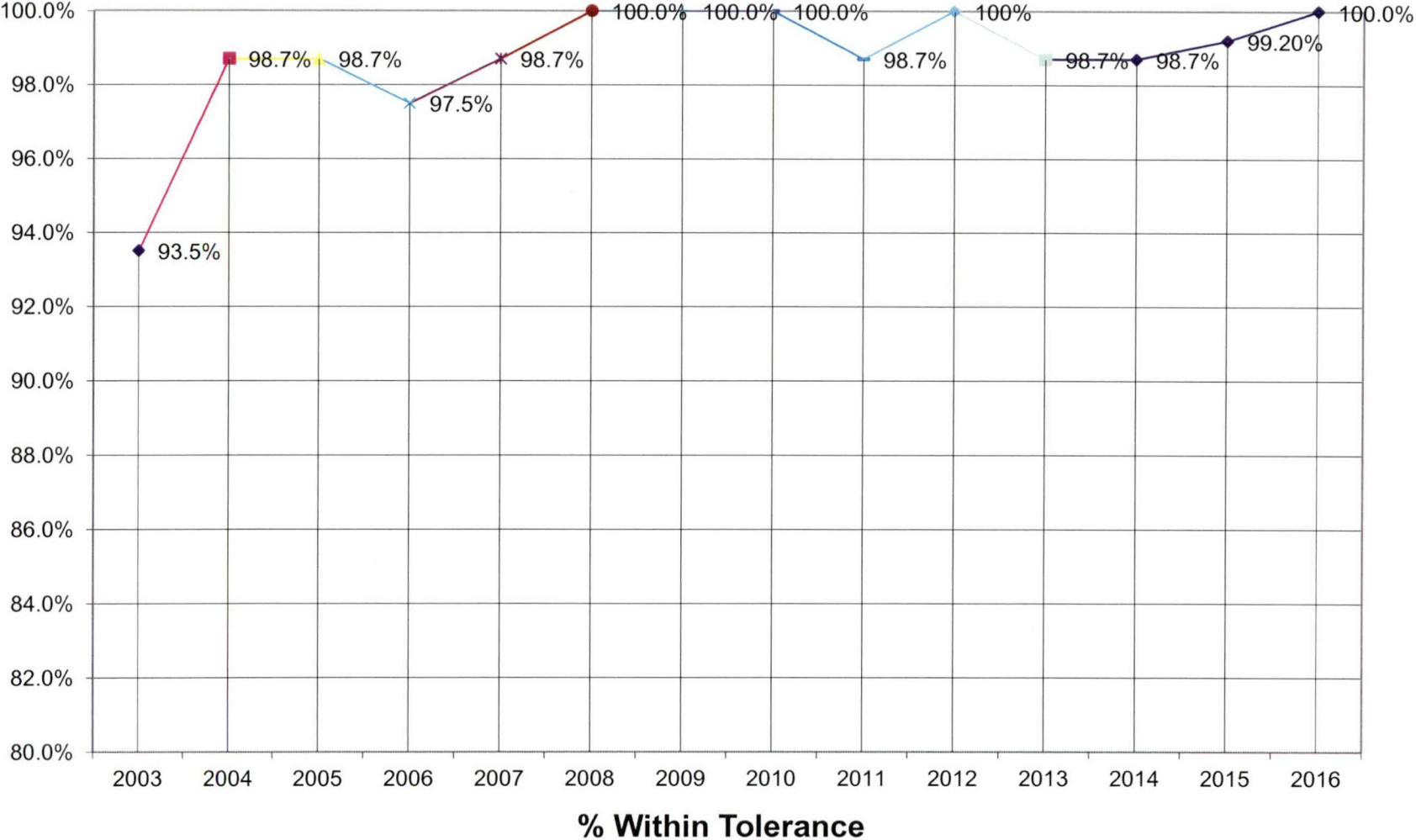
**BNAM01 = New American meters purchased between 2006 & 2014**



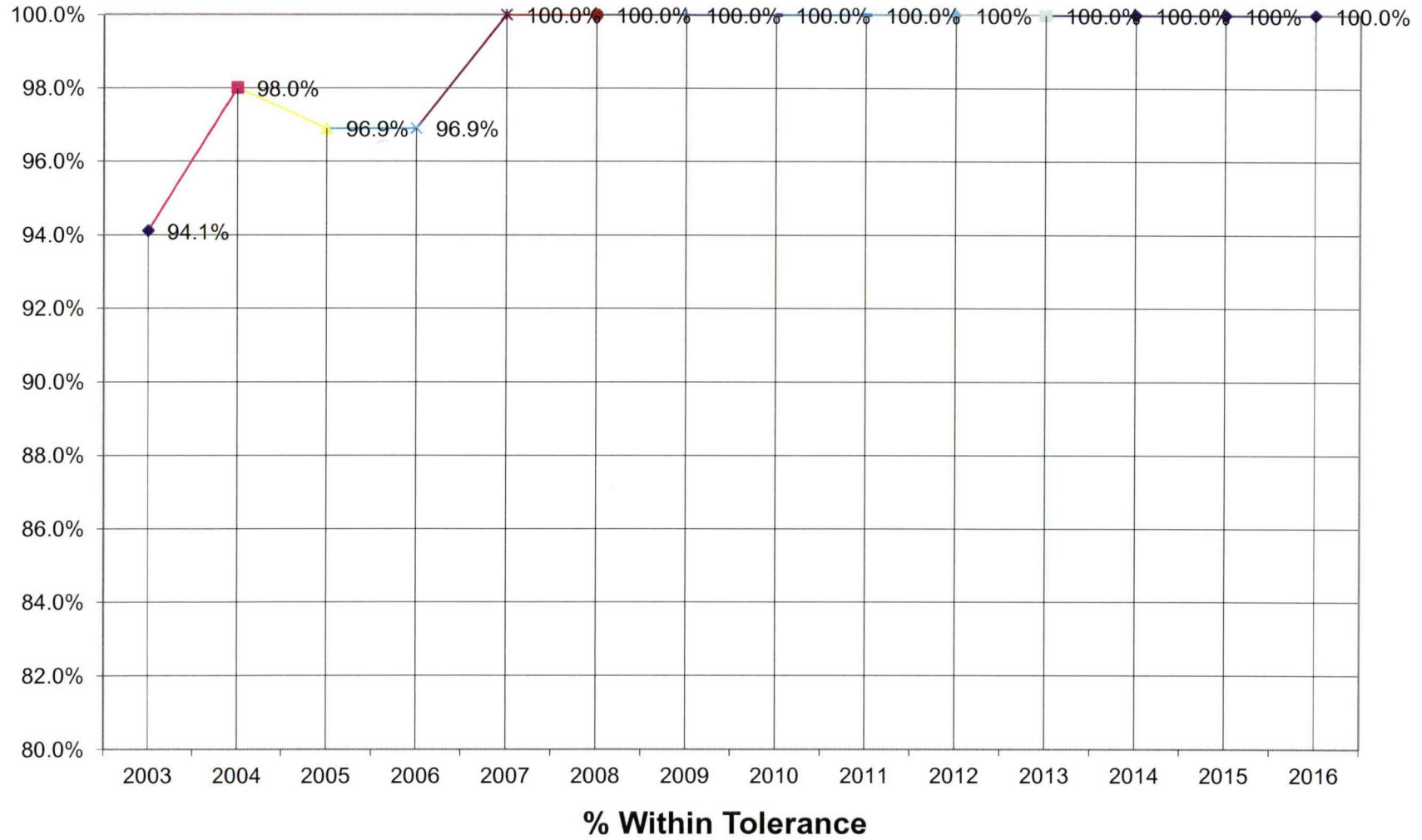
# BNAM01



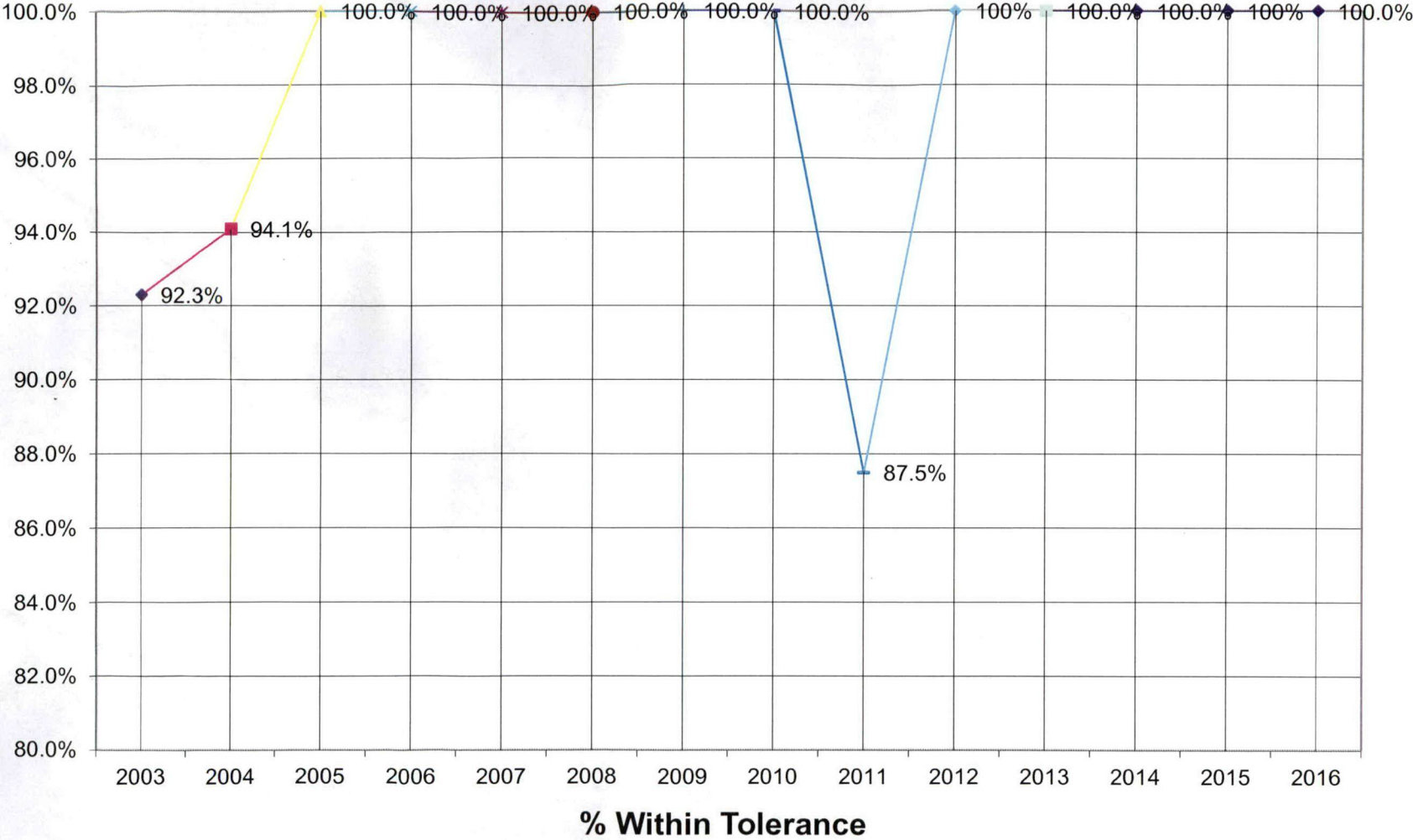
# BRAM01



# BRRO01



# BRSP01



**EXHIBIT F**

**COST SAVINGS**

**The 2016 sampling program resulted in changing 5475 fewer meters than would have been changed under the 14-year plan Columbia Gas of Kentucky was following prior to meter sampling and changing 9589 fewer meters than would have been required under a 10-year change-out program.**

**This represents yearly savings of \$1,975,334 compared to a 10-year plan**

**This represents yearly savings of \$1,127,850 compared to a 14-year plan**

**EXHIBIT G**

**TEST RESULTS OF NEW METERS**

**Columbia Gas of Kentucky purchased 6288 new meters in 2016. The factory test sheets for the new meters purchased in 2016 are on file in the Lexington office.**

**No problems were found in the new 2016 purchases.**