

RECEIVED

APR 02 2018

PUBLIC SERVICE
COMMISSION

April 2, 2018


Ms. Gwen Pinson
Executive Director
Kentucky Public Service Commission
211 Sower Boulevard
P. O. Box 615
Frankfort, KY 40602

Dear Ms. Pinson,

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. Thank you.

Sincerely,



Judy M. Cooper
Director, Regulatory Policy



Columbia Gas of Kentucky, Inc.

2018

Meter Sampling Annual Report,
for program year 2017

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

March 2018

COLUMBIA GAS OF KENTUCKY INC.

2017 METER SAMPLING ANNUAL REPORT

Columbia Gas of Kentucky completed the twenty-first year of their Meter Sampling program in December 2017.

A total of 4696 meters making up 33 homogenous groups were sampled in 2017. Details are listed in the Evaluation of Data and Corrective Actions below.

In 2017 Columbia Gas of Kentucky service personnel made 42,800 visits to our customers' premises working orders that involved inspecting house lines and / or appliances. Columbia inspected 39,896 meter set assemblies in conjunction with the Customer Service Line Survey program.

No regulator failure in 2017 resulted in overpressure being delivered to the customer's piping.

Columbia continues to promote safety through:

News Media Outreach

- 5/8/17 -- Call Before You Dig news release to all media in CKY service area
- 8/10/17 -- Appearance on WKYT-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.
- 1/17 -- Notice of Buried Gas Lines insert sent to all customers. (Also sent to new customers throughout the year.)
- 1/17 -- "For Your Safety & Comfort" insert sent to all residential and small commercial customers. Includes information about carbon monoxide poisoning prevention and heating equipment maintenance.

- 1/17 – "Your Service" customer newsletter included article about winter preparation and keeping meters clear of snow and ice.
- 4/17 – "Your Service" customer newsletter included article about Call 811 Before You Dig and upgrades to pipeline infrastructure.
- 7/17 -- "Scratch & Sniff" insert provides odor of gas awareness to all customers.
- 7/17 – "Your Service" customer newsletter included articles about Call Before You Dig and keeping clear access to meters.
- 10/17 – "Your Service" customer newsletter included articles about odor recognition & response, carbon monoxide, smoke alarms, and keeping flammable materials away from natural gas appliances.
- 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.
- Billing envelope (back flap) has Call 811 Before You Dig message.

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/Printed Material

- 4/20/17 and 8/11/17 – Email to customers regarding Call Before You Dig
- 10/31/17 – Email to customers regarding odor recognition and response
- 12/18/17 – Direct mail to plumbers, HVAC contractors about cross bores
- 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.
- 8/25/17 – Mailed English/Spanish pipeline safety brochure to high consequence areas and residents within 660 feet of transmission class pipelines.

Community Outreach

- 3/23/17 – Booth at Home Depot in Lexington during Contractor Appreciation Day to promote 811 among excavators
- 4/13/17 – Booth at Thursday Night Live in Lexington to promote 811
- 8/11/17 – Sponsored Leadership Kentucky day in Maysville and arranged for Tim Vaughn of Kentucky 811 to speak to the class; all employees throughout KY wore 811 t-shirts
- 8/12/17 – Booth at KET Super Saturday to promote 811
- 8/27/17 – Participated in Touch A Truck to promote 811
- 11/5/17 – 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.
- 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.

Advertising

- TV campaign related to 811 placed on WKYT and WYMT news (6am and 6pm broadcasts) through weather sponsorship in January 2017. Coordinating online ads appeared on WKYT weather app.
- TV campaign/weather sponsorship on WLEX (6am and 6pm broadcasts) from January through March 2017.
- Commercial and public radio 811 message placement throughout 2017.
- 811 and odor recognition and response messages placed in UK football and basketball post-game radio shows.
- CKY/Kentucky 811 sign in Rupp Arena.
- Call 811 Before You Dig billboards located at Lexington Legends baseball park and on I-75N near the Madison-Fayette County line.
- Search Engine Marketing (SEM) campaign regarding cross bores began 12/18/17 and will continue throughout 2018.

Excavator/Emergency Responder Training/Outreach

- Sponsored natural gas safety training sessions for excavators and emergency responders January 24-March 16 in Mt. Sterling, Hazard, Grayson, Prestonsburg, Pikeville, Berea, Ashland, and Lexington.
- Conducted presentation on Responding to Natural Gas Emergencies to the Westwood Volunteer Fire Department on 4/18/17 and to the UK Campus Community Emergency Response Team on 11/2/17.
- Conducted natural gas fire training (presentation & hands on) for Fire Commission on 6/8/17 and for KGA Fire School on 12/5/17.
- Conducted emergency exercises in Versailles on 5/25/17 and Lexington on 9/12/17.
- 12/17 – Letter from Field Operations Leaders to public officials regarding 811 and railroad derailment procedures.

Evaluation of Data

- **A total of 4496 domestic meters making up 29 homogenous Control Groups were sampled in 2017.**
- **Of the 4496 meters sampled 267 tested outside the required accuracy of +/- 2% and were classified a failed meter.**
- **5.9% 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 203 Large Volume meters making up 4 homogenous Control Groups were sampled in 2017.**
- **Of the 203 Large Volume meters sampled, 1 tested outside the required accuracy of +/- 2% and were classified a failed meter.**
- **1% 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 2977 meters for 2018 and will remove these poor performing meter by the end of 2018.**

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 25 regulator failures in 2017. Due to full internal relief of the regulator, none resulted in an overpressure situation for the customer.
- 22 regulators had gas leakage from the vent.
- 3 regulators would not adjust or lock up correctly.

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



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

**2017 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 over several years. This is a combined listing of all domestic meter groups.

2017 COLUMBIA GAS OF KENTUCKY METER SAMPLING RESULTS

Samples taken between 2017-01-01 and 2017-12-31

"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	2017 FAMILY STATUS	RATIO FAILED	NUMBER FAILED FAST	NUMBER FAILED SLOW
	(a)	(b)	(c)	(d)	(e)	(f)	(d/c=g)	(h)	(i)
NAM01	892	80	82	4	10	PASSED	4.9%	4	0
NAM02	2867	125	125	2	14	PASSED	1.6%	2	0
NAM03	2171	125	125	4	14	PASSED	3.2%	3	1
NAM04	1493	125	125	2	14	PASSED	1.6%	1	1
NAM05	200	32	32	0	5	PASSED	0.0%	0	0
NAM06	4007	200	200	1	21	PASSED	0.5%	1	0
NAM06A	4157	200	203	6	21	PASSED	3.0%	6	1
NAM07	3302	200	201	22	21	FAILED	10.9%	21	1
NAM08	5788	200	209	44	21	FAILED	21.1%	44	0
NAM09	3334	200	204	40	21	FAILED	19.6%	40	0
NAM10	7193	200	200	10	21	PASSED	5.0%	10	0
NAM11	9186	200	201	8	21	PASSED	4.0%	8	0
NAM12	6760	200	200	2	21	PASSED	1.0%	2	0
NAM13	1709	125	128	1	14	PASSED	0.8%	1	0
NLA01	469	50	50	2	10	PASSED	4.0%	0	2

NLA02	3432	200	204	4	21	PASSED	2.0%	3	1
NRO01	2911	125	125	7	14	PASSED	5.6%	5	2
NRO02	5599	200	201	34	21	FAILED	16.9%	34	0
NSP01	43	8	8	0	2	PASSED	0.0%	0	0

Samples taken between 2017-01-01 and 2017-12-31
"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>2017 FAMILY STATUS</u> (f)	<u>RATIO FAILED</u> (d/c=g)	<u>NUMBER FAILED FAST</u> (h)	<u>NUMBER FAILED SLOW</u> (i)
RAM03	695	80	80	9	10	PASSED	11.3%	4	5
RAM04	6081	200	204	8	21	PASSED	3.9%	6	2
RAM05	9696	200	205	3	21	PASSED	1.5%	2	1
RAM06	9552	200	201	2	21	PASSED	1.0%	1	1
RLA03	2197	125	125	5	14	PASSED	4.0%	1	4
RRO01	2311	125	125	12	14	PASSED	9.6%	5	7
RRO02	2430	125	125	8	14	PASSED	6.4%	1	7
RRO03	4637	200	200	9	21	PASSED	4.5%	8	1
RRO04	3616	200	201	11	21	PASSED	5.5%	11	0
RSP01	3348	200	204	7	21	PASSED	3.4%	3	4

TOTAL	110076	4450	4493	267		5.9%	227	41
--------------	---------------	-------------	-------------	------------	--	-------------	------------	-----------

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

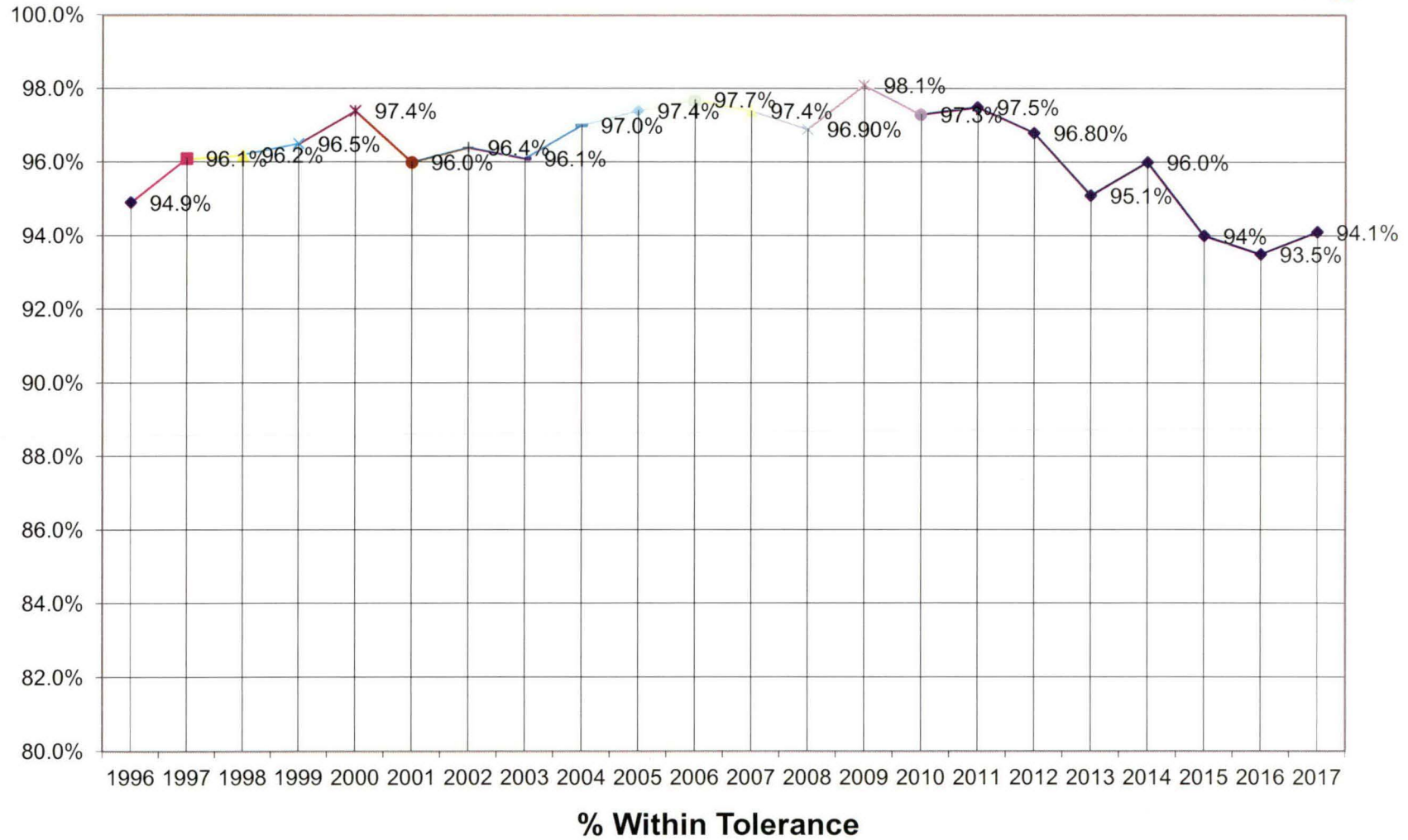


EXHIBIT C

**2017 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 over several years. This is a combined listing of all large volume groups.

2017 COLUMBIA GAS OF KENTUCKY METER SAMPLING RESULTS

Samples taken between 2017-01-01 and 2017-12-31

"B" Class Meters 500 - 1500 CFH

FAMILY CODES	TOTAL MTRS. IN FAMILY (a)	TOTAL MTRS REQ'D IN PROGRAM (b)	TOTAL SAMPLED (c)	TOTAL FAILED METERS (d)	TOTAL REJECTS ALLOWABLE (e)	2017 FAMILY STATUS (f)	RATIO FAILED (d/c=g)	NUMBER FAILED FAST (h)	NUMBER FAILED SLOW (i)
BNAM01	472	50	50	2	7	PASSED	4.0%	1	0
BRAM01	1353	125	125	0	14	PASSED	0.0%	0	0
BRRO01	92	20	20	0	3	PASSED	0.0%	0	0
BRSP01	35	8	8	0	1	PASSED	0.0%	0	0
TOTAL	1952	203	203	2			1.0%	1	0

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

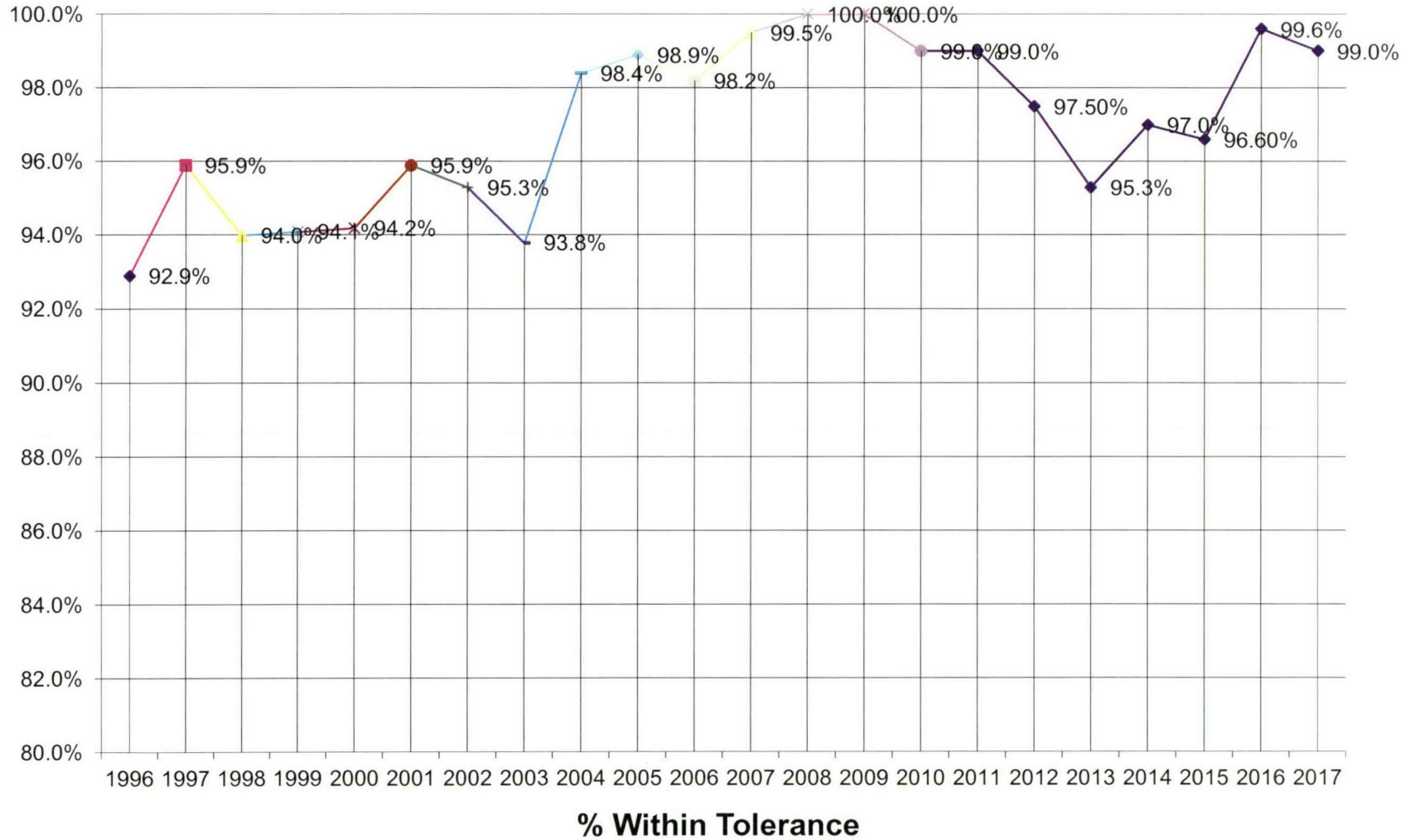


EXHIBIT D

PERCENTAGE OF DOMESTIC METER ACCURACY
BY FAMILY

Exhibit D - represents the percentage of meters sampled in 2017 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 & 2009

NAM12= New American meters purchased in 2011 & 2013

NAM13=New American meters purchased in 2015

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

RAM03 = Repaired American meters installed in 1987 & 1991

RAM04 = Repaired American meters installed between 1992 & 1998

RAM05 = Repaired American meters installed between 1999 & 2007

RAM06 = Repaired American meters installed in 2008, 2009, 2011, 2013, & 2015

RLA03 = Repaired Lancaster meters installed between 1987 & 2006

RRO01 = Repaired Rockwell meters installed between 1981 & 1989

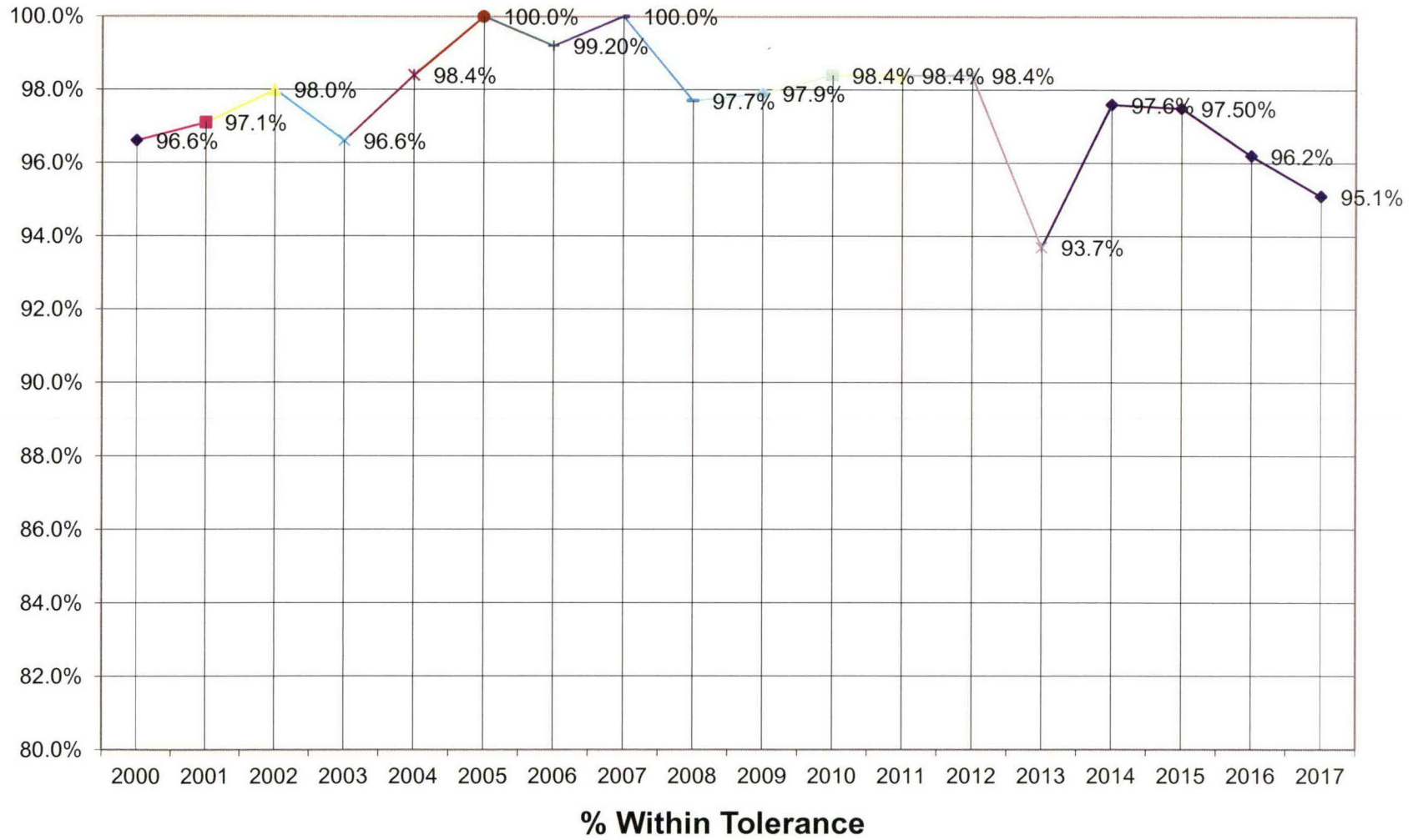
RRO02 = Repaired Rockwell meters installed between 1990 & 1993

RRO03 = Repaired Rockwell meters installed between 1994 & 2003

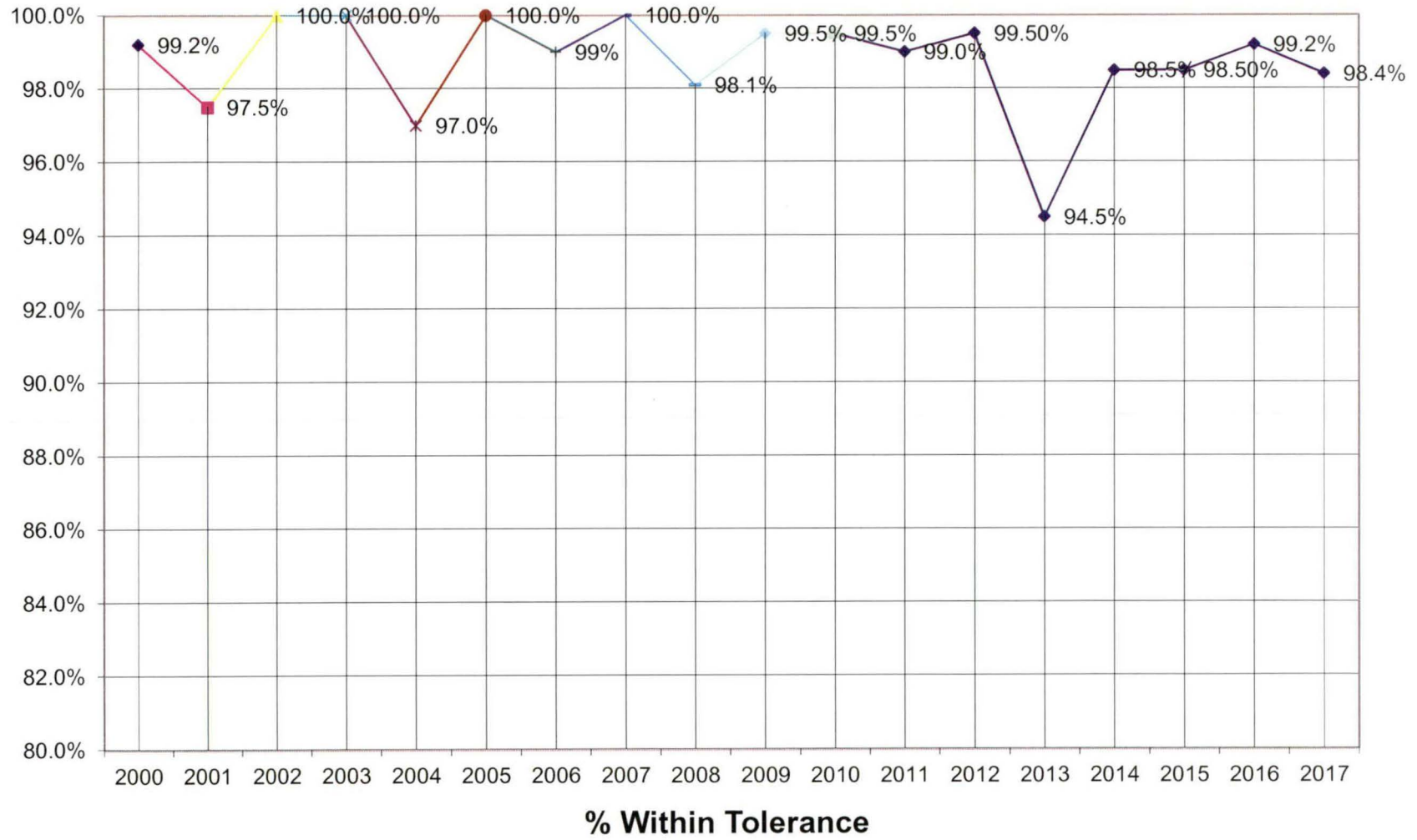
RRO04 = Repaired Rockwell meters installed between 2004, & 2015

RSP01 = Repaired Sprague meters installed between 1983 & 2007

NAM01

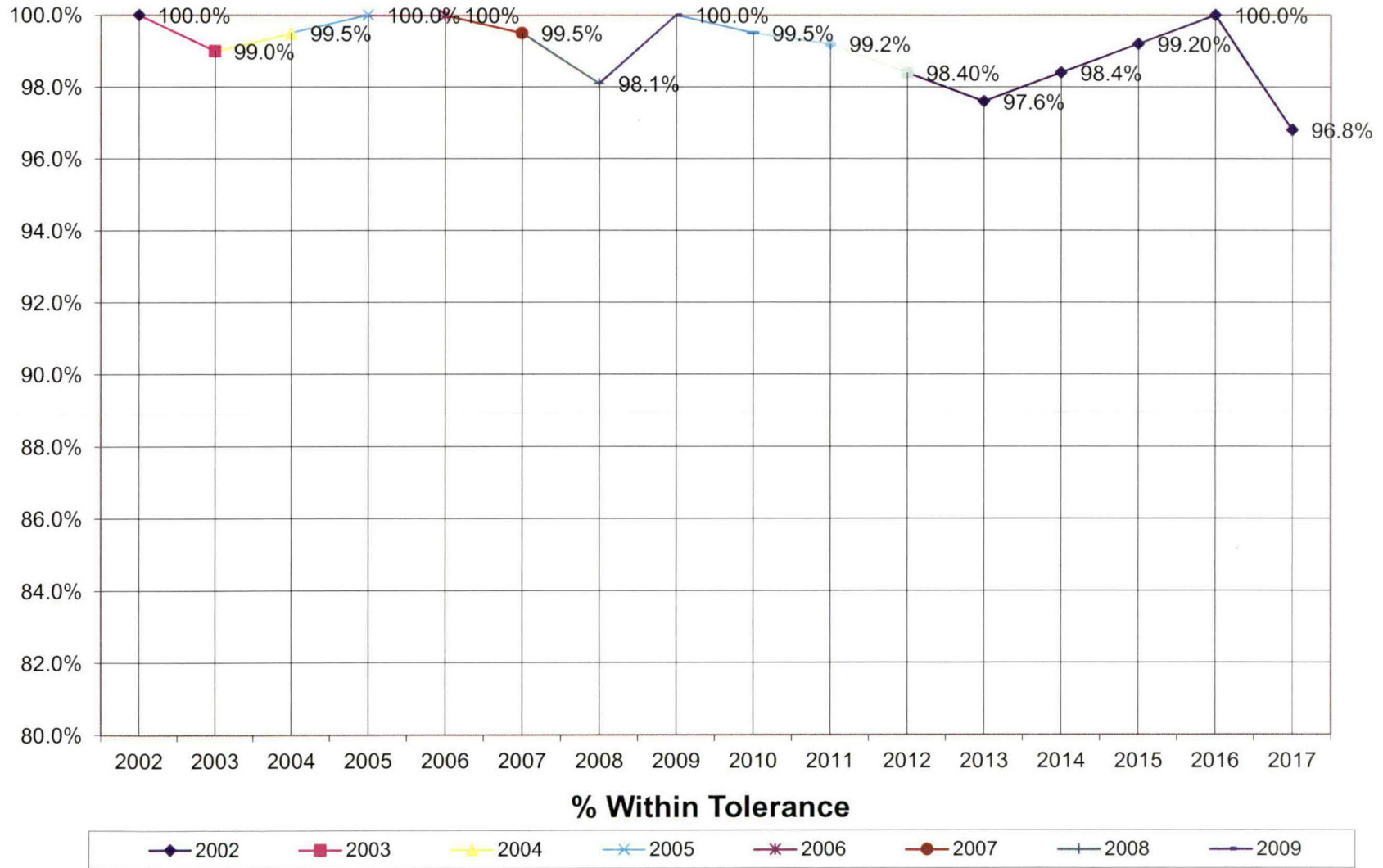


NAM02

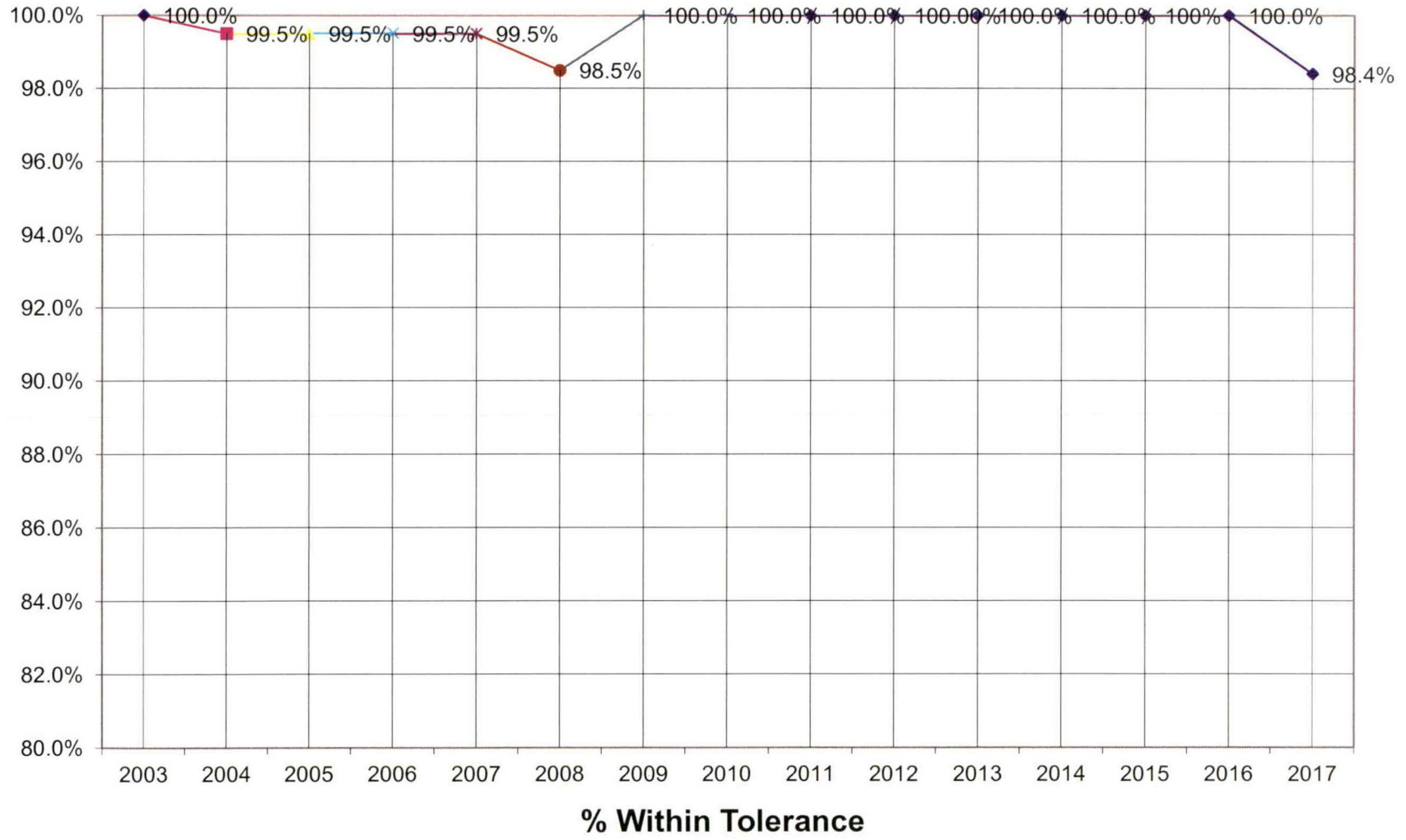


NAM03

Columbia Gas
of Kentucky



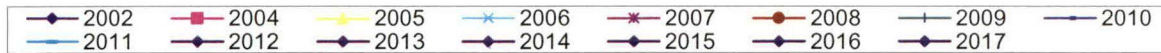
NAM04



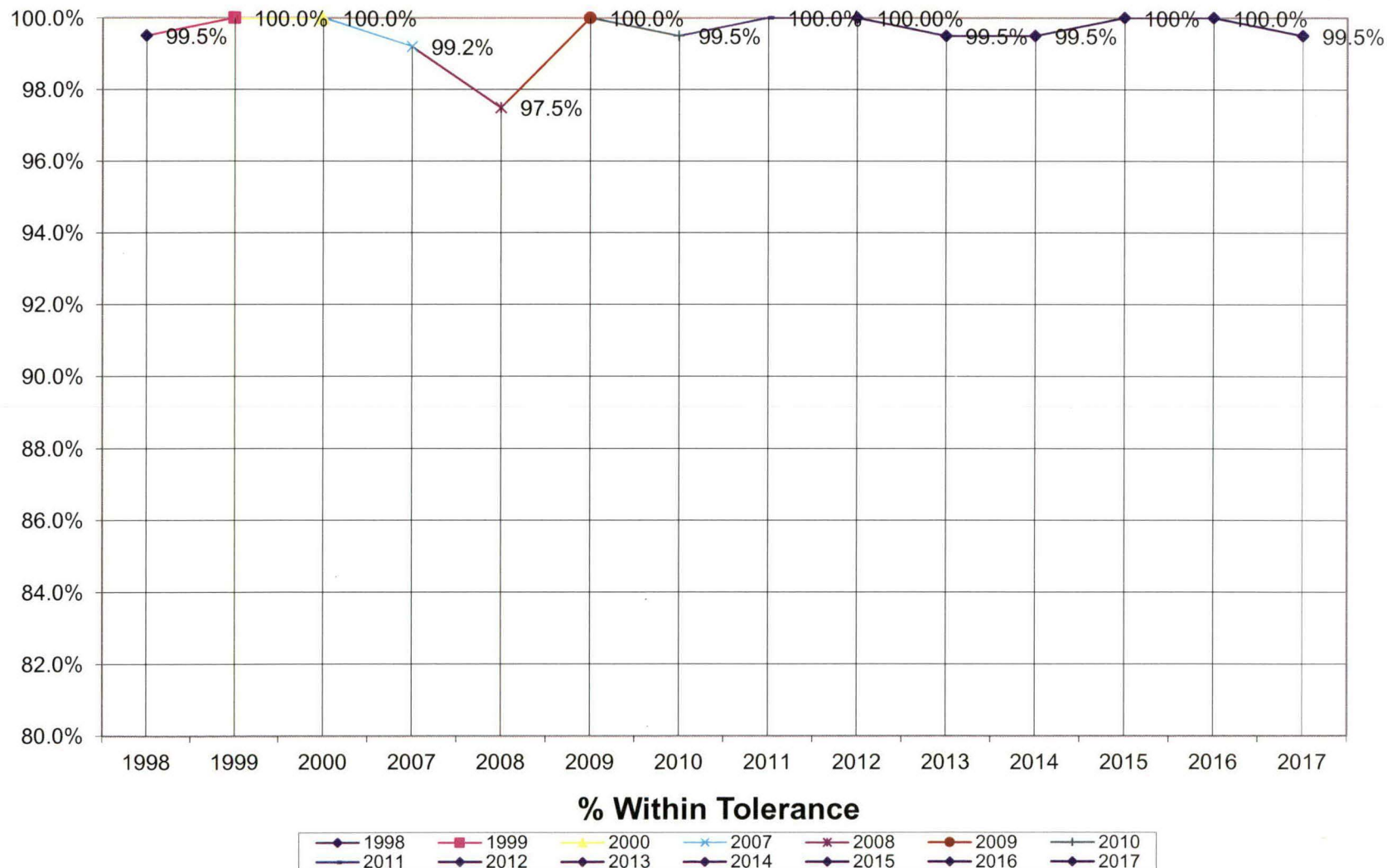
NAM05



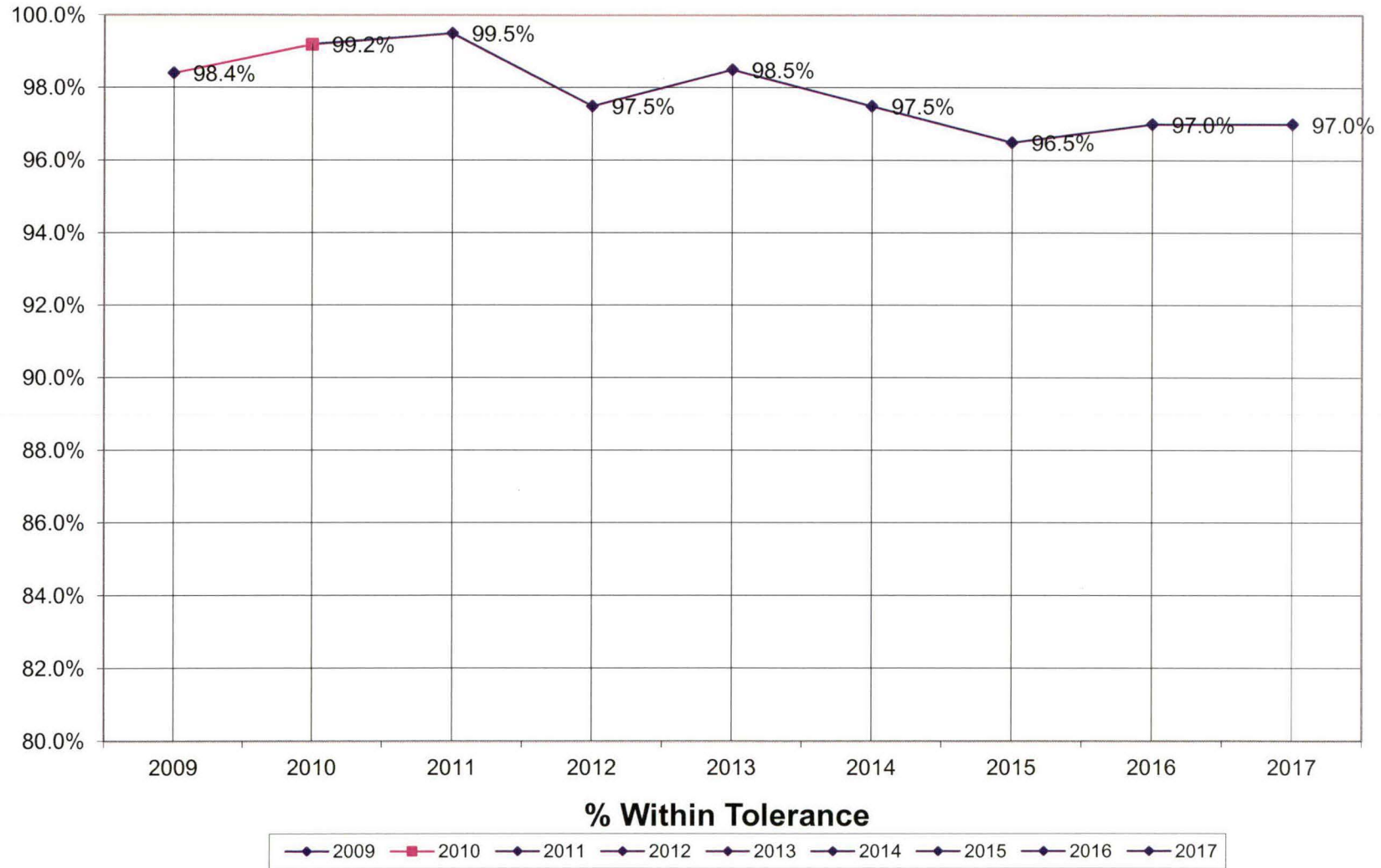
% Within Tolerance



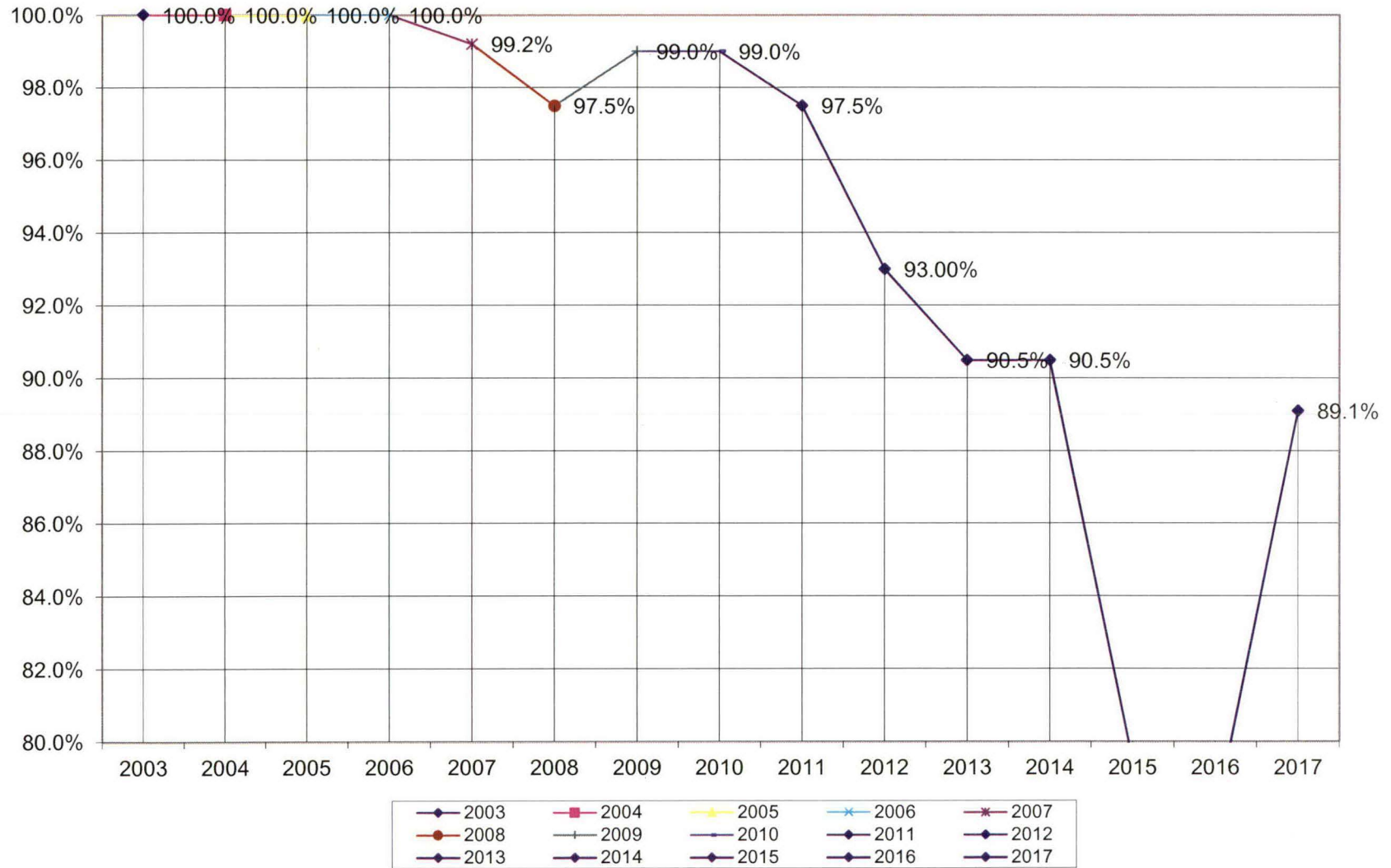
NAM06



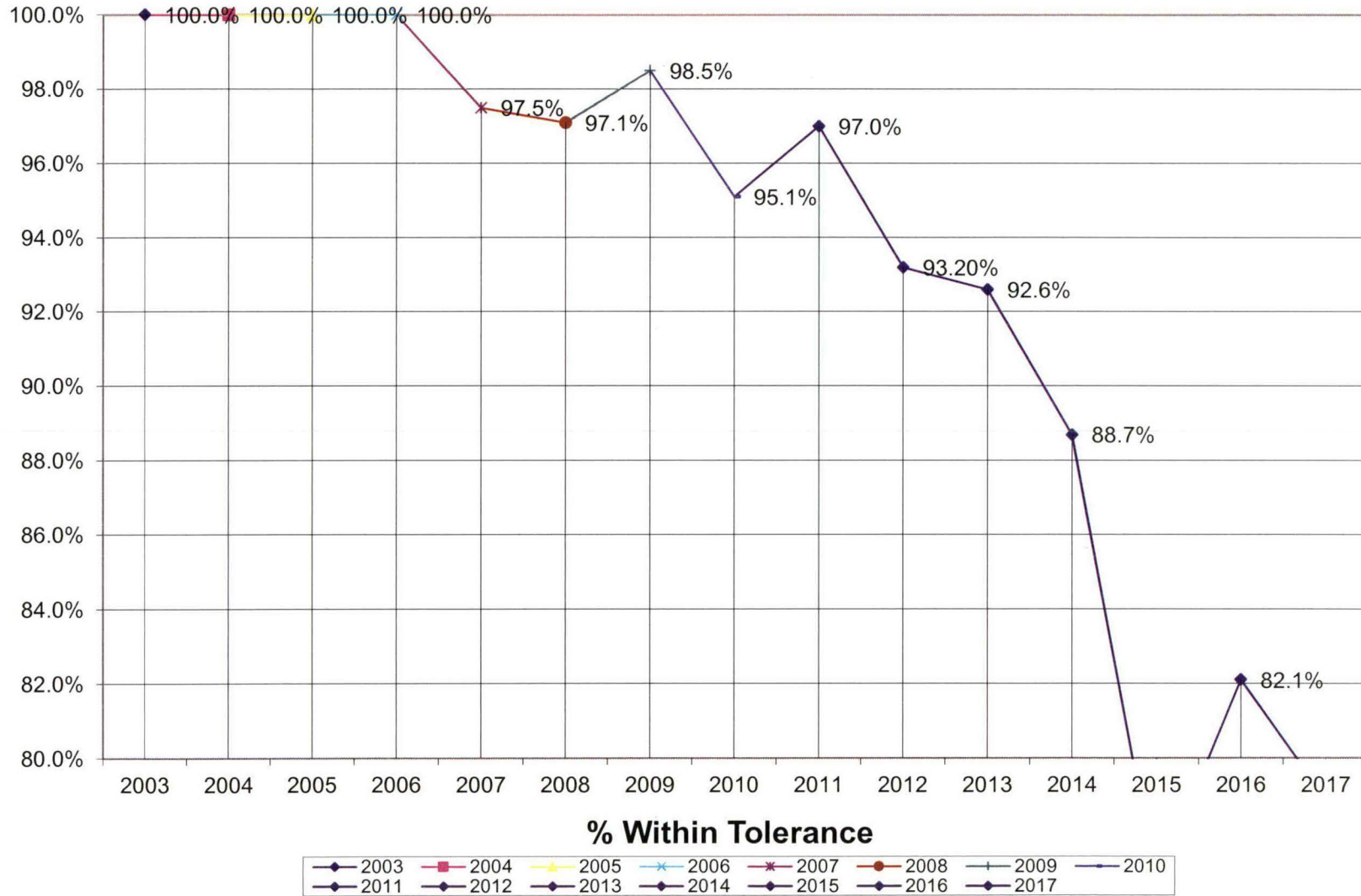
NAM06A



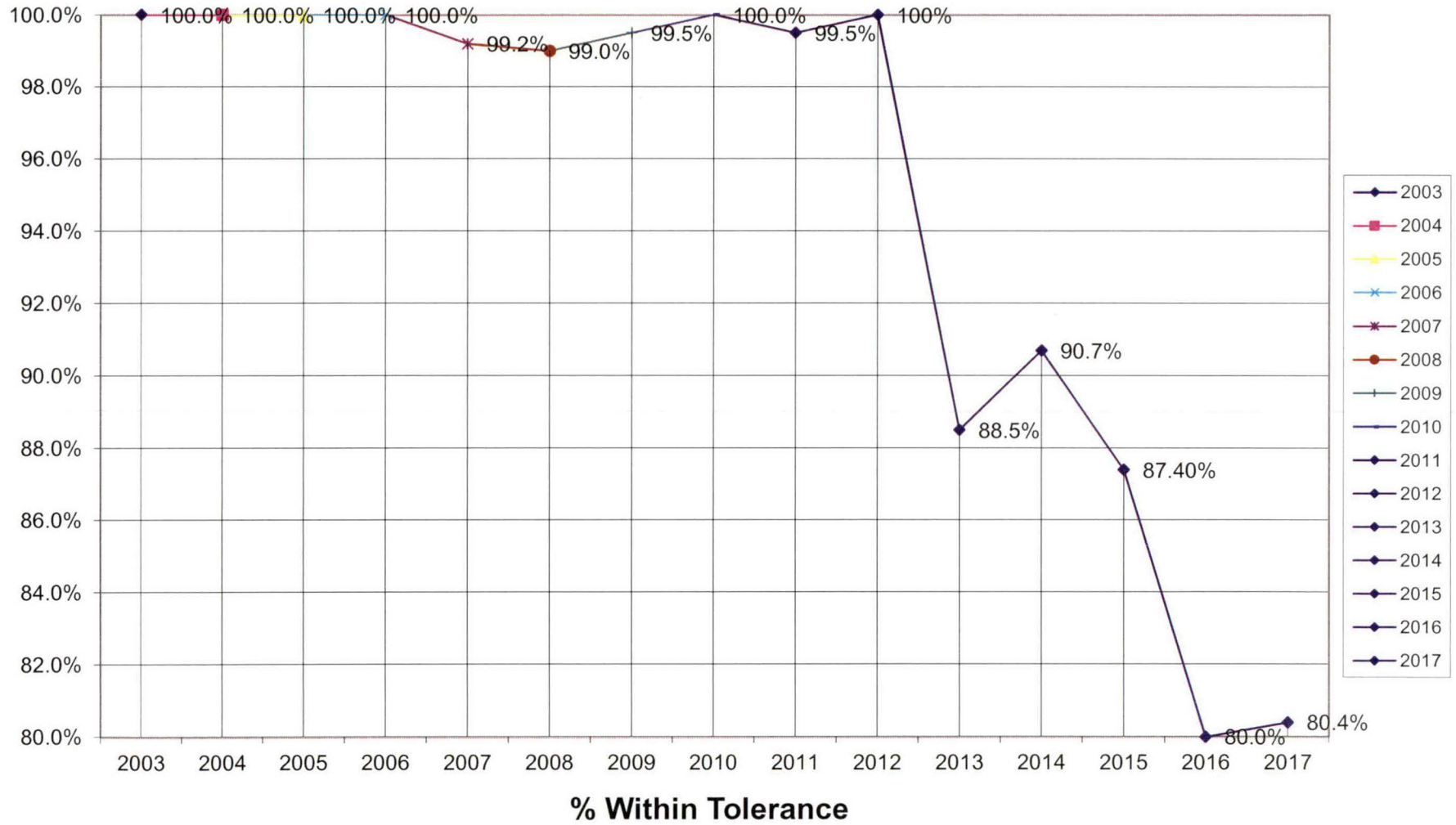
NAM07



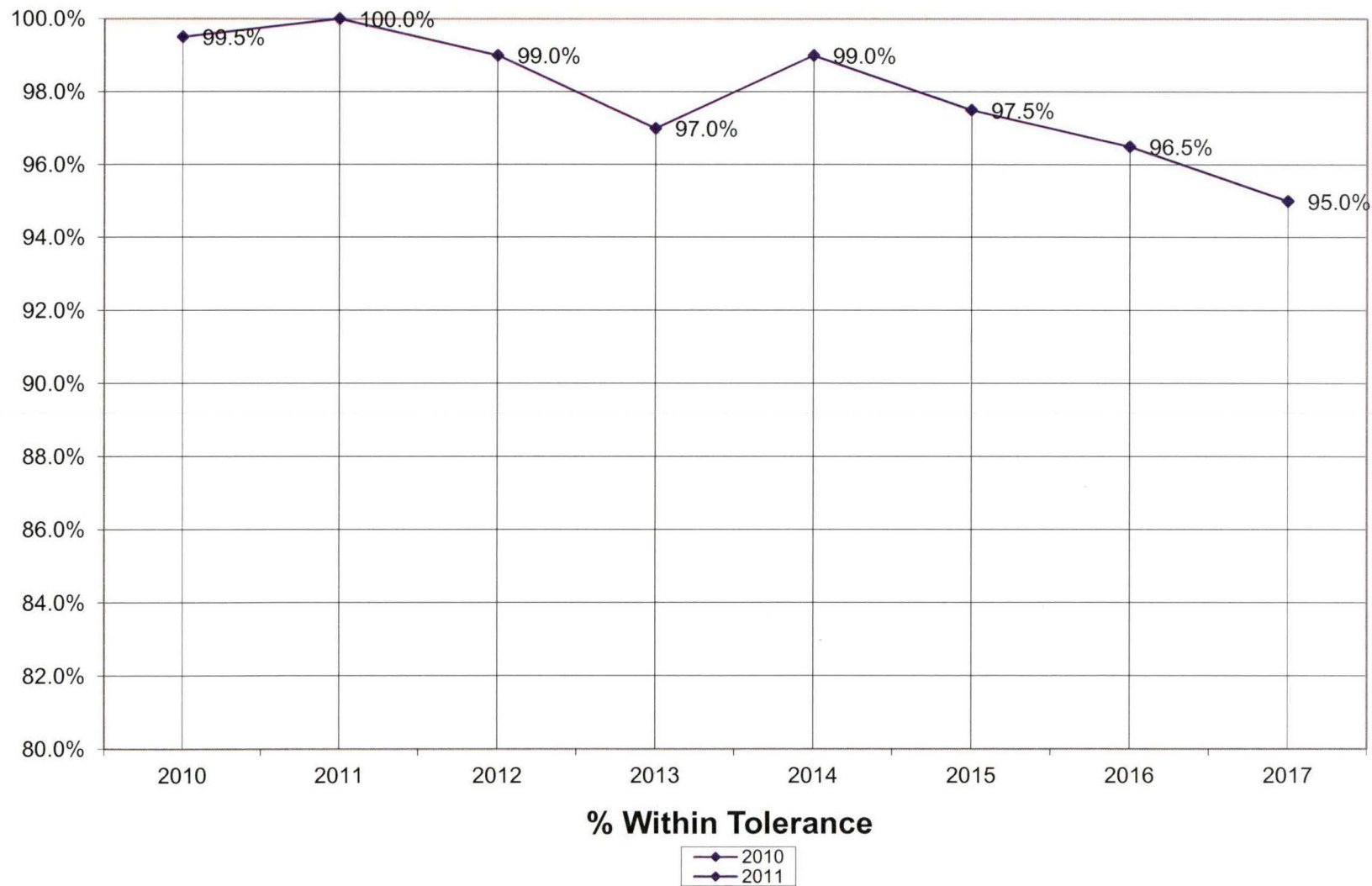
NAM08



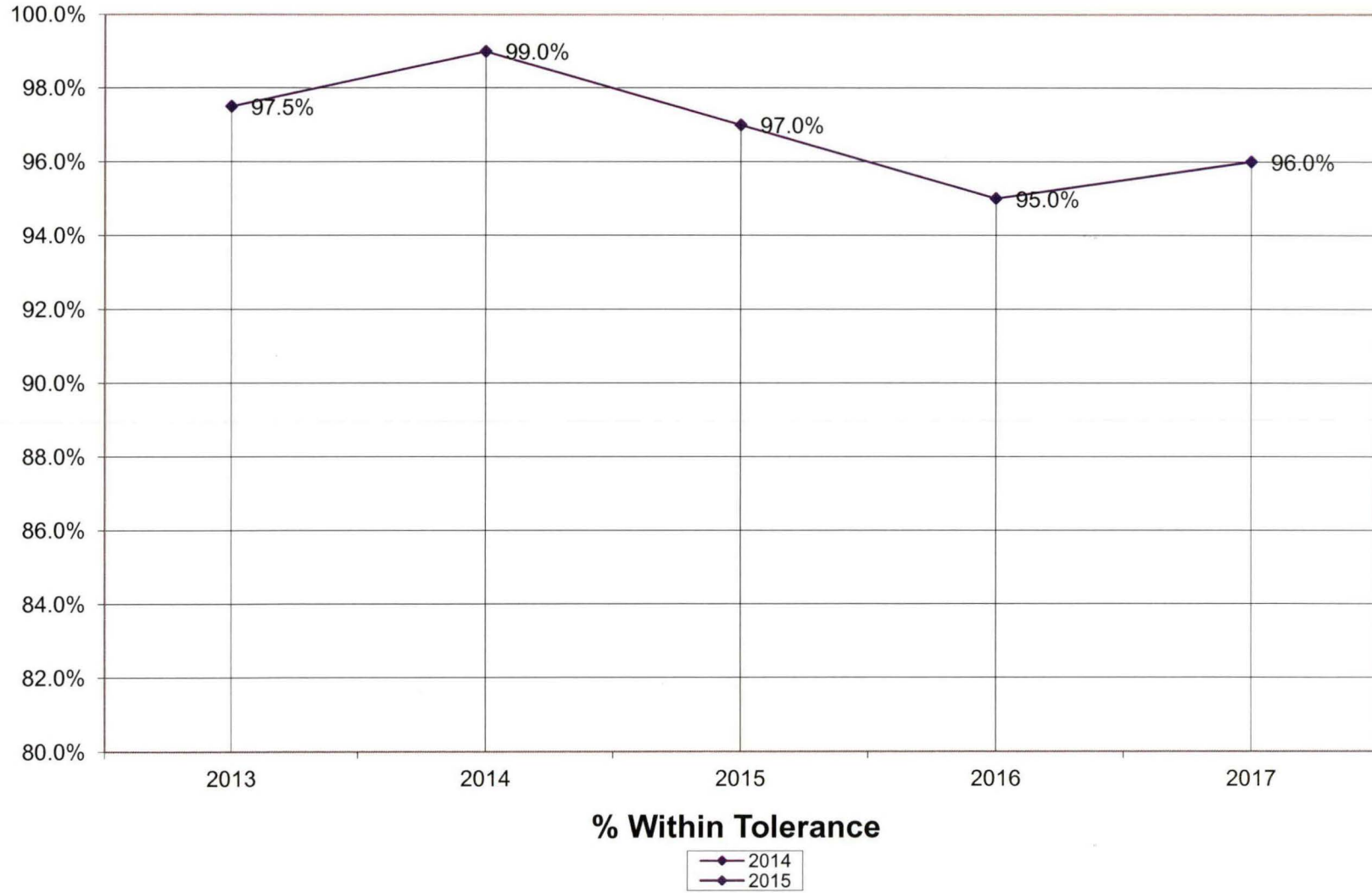
NAM09



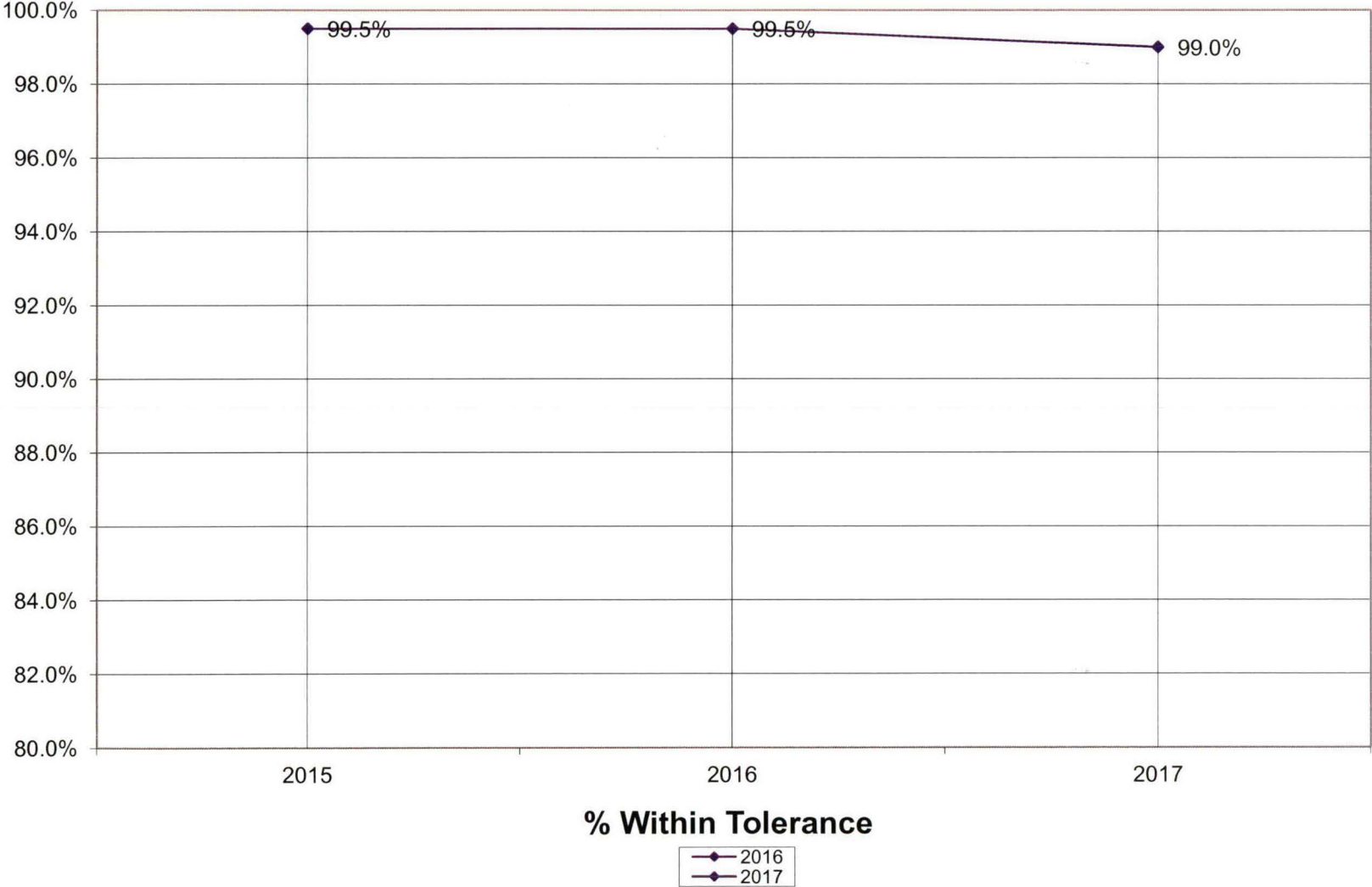
NAM10



NAM11



NAM12

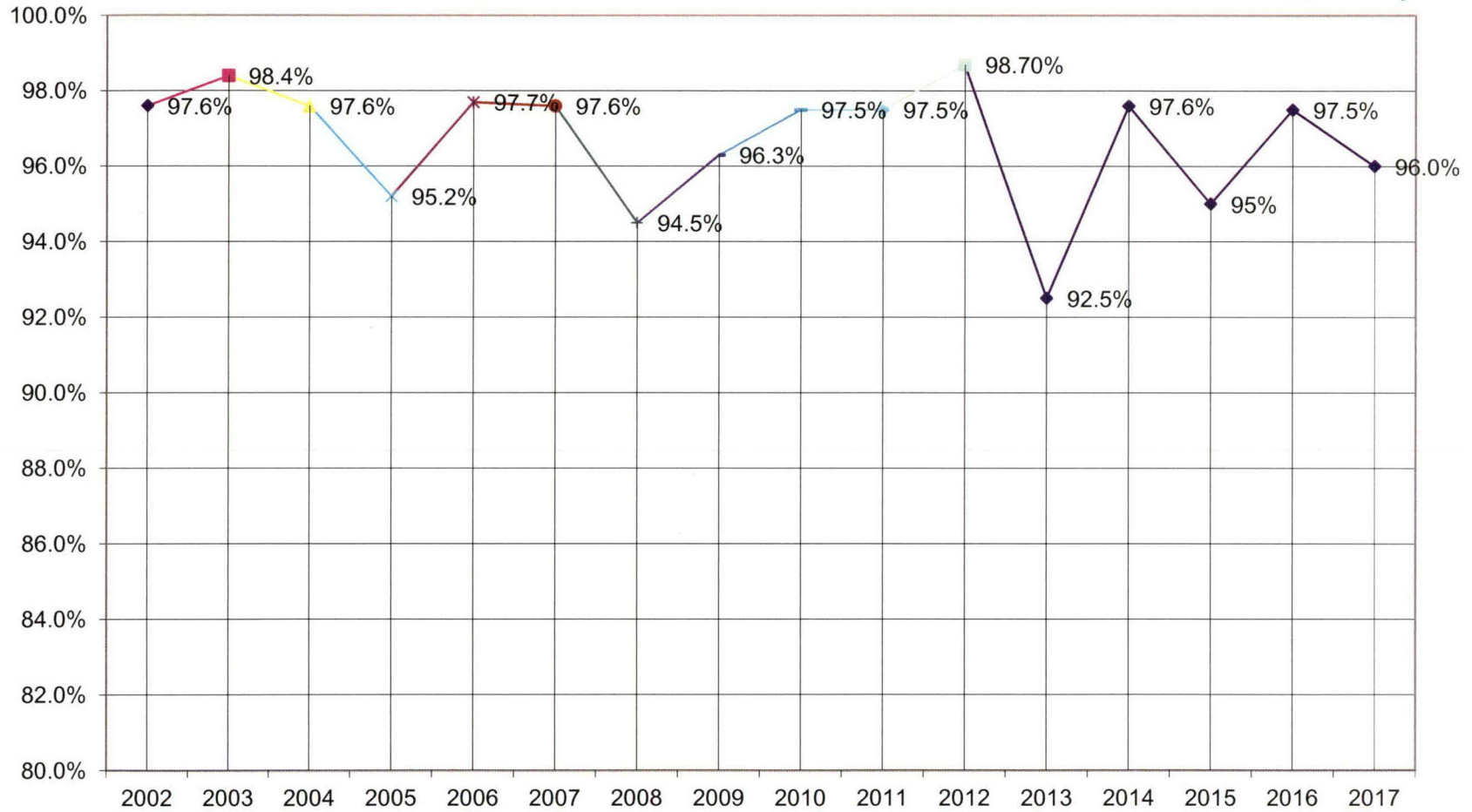


NAM13



% Within Tolerance

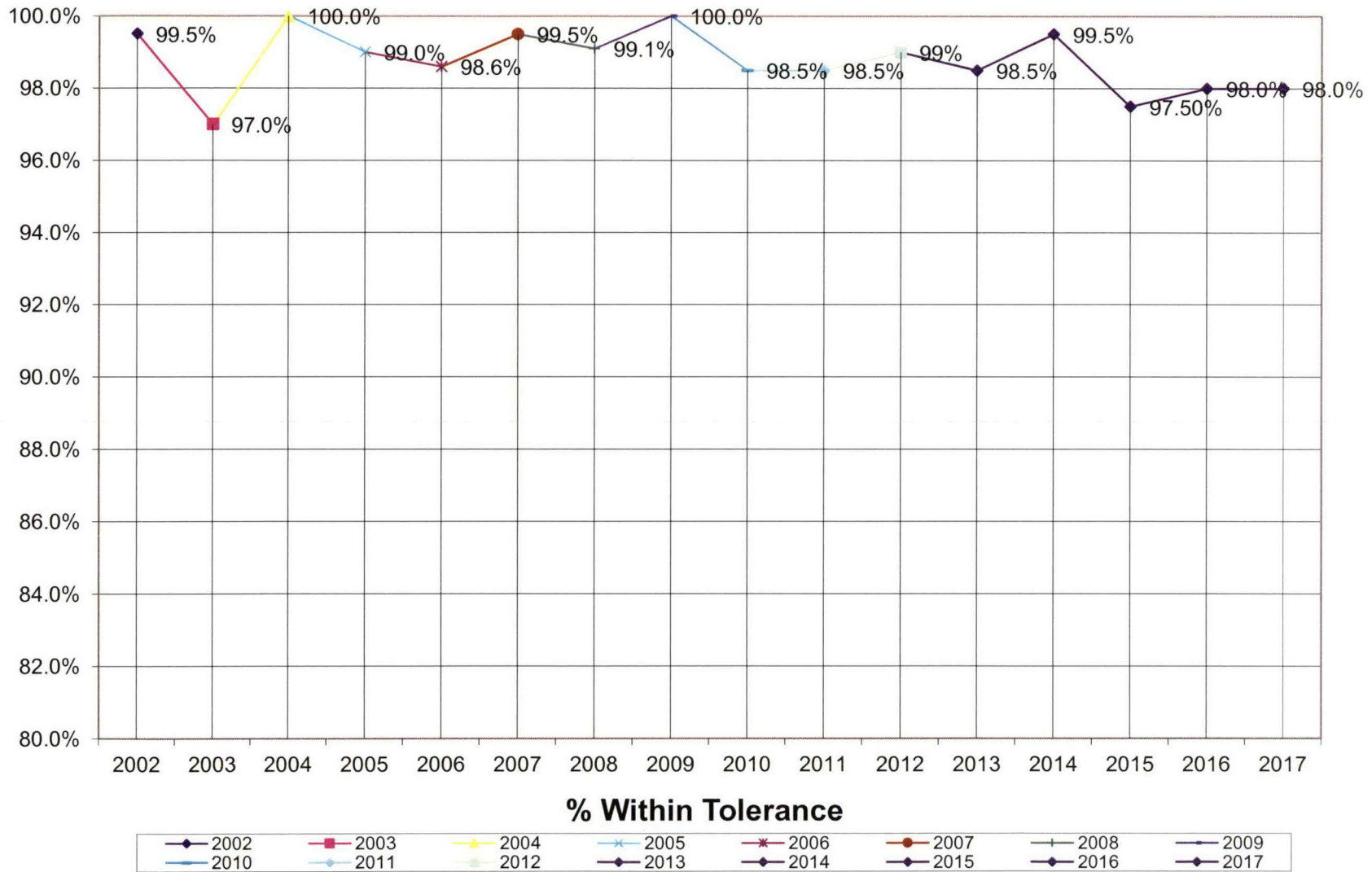
NLA01



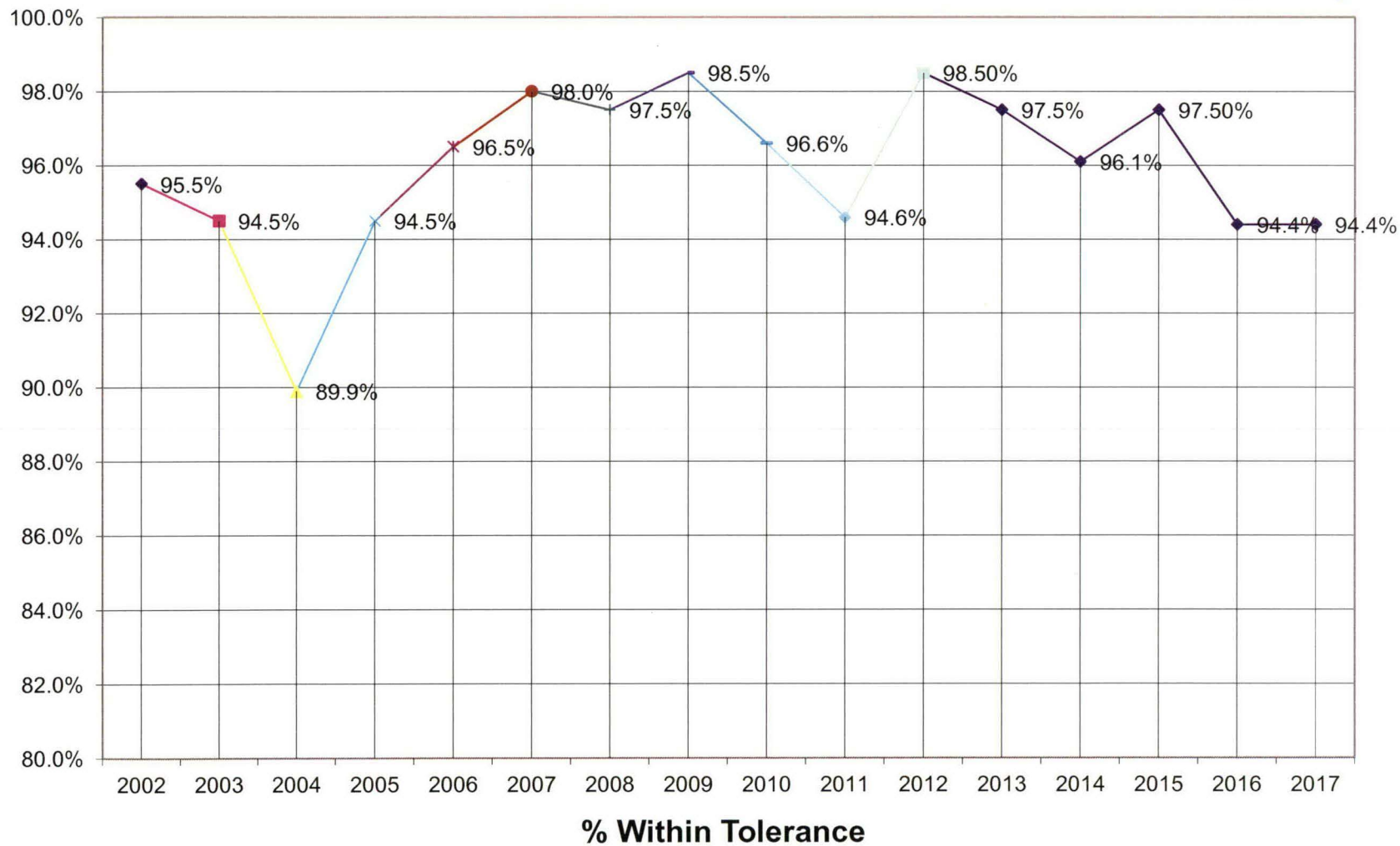
% Within Tolerance



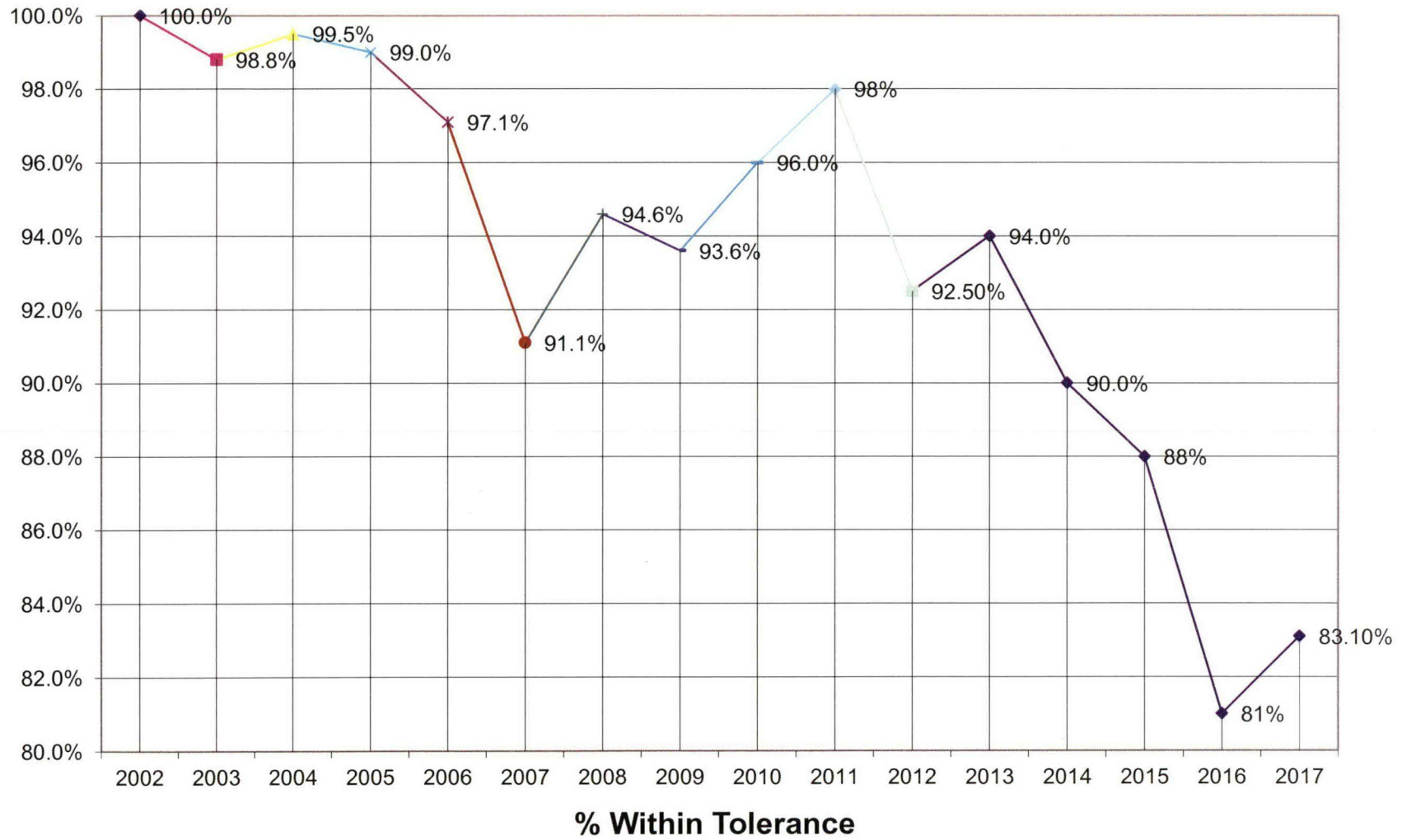
NLA02



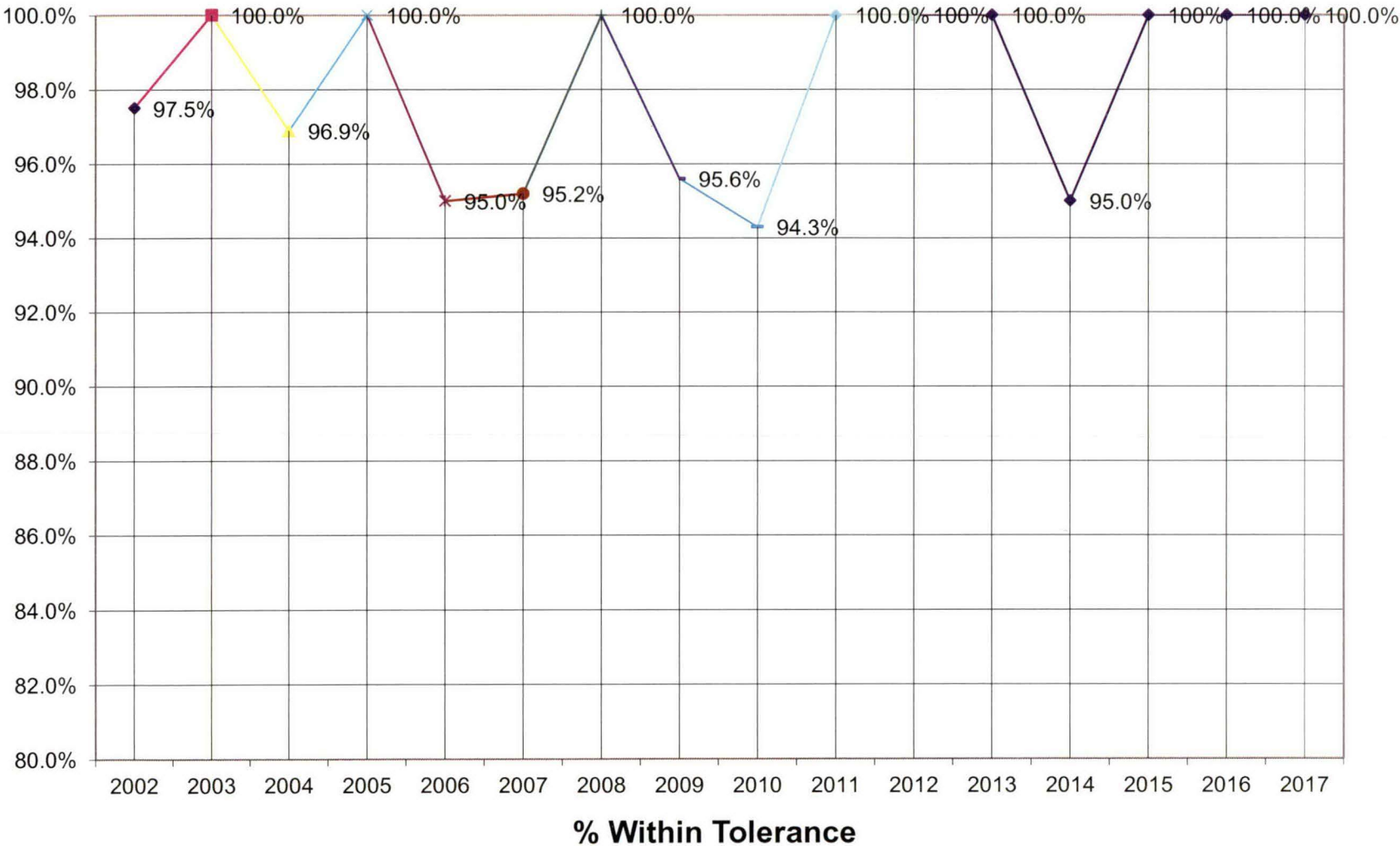
NRO01



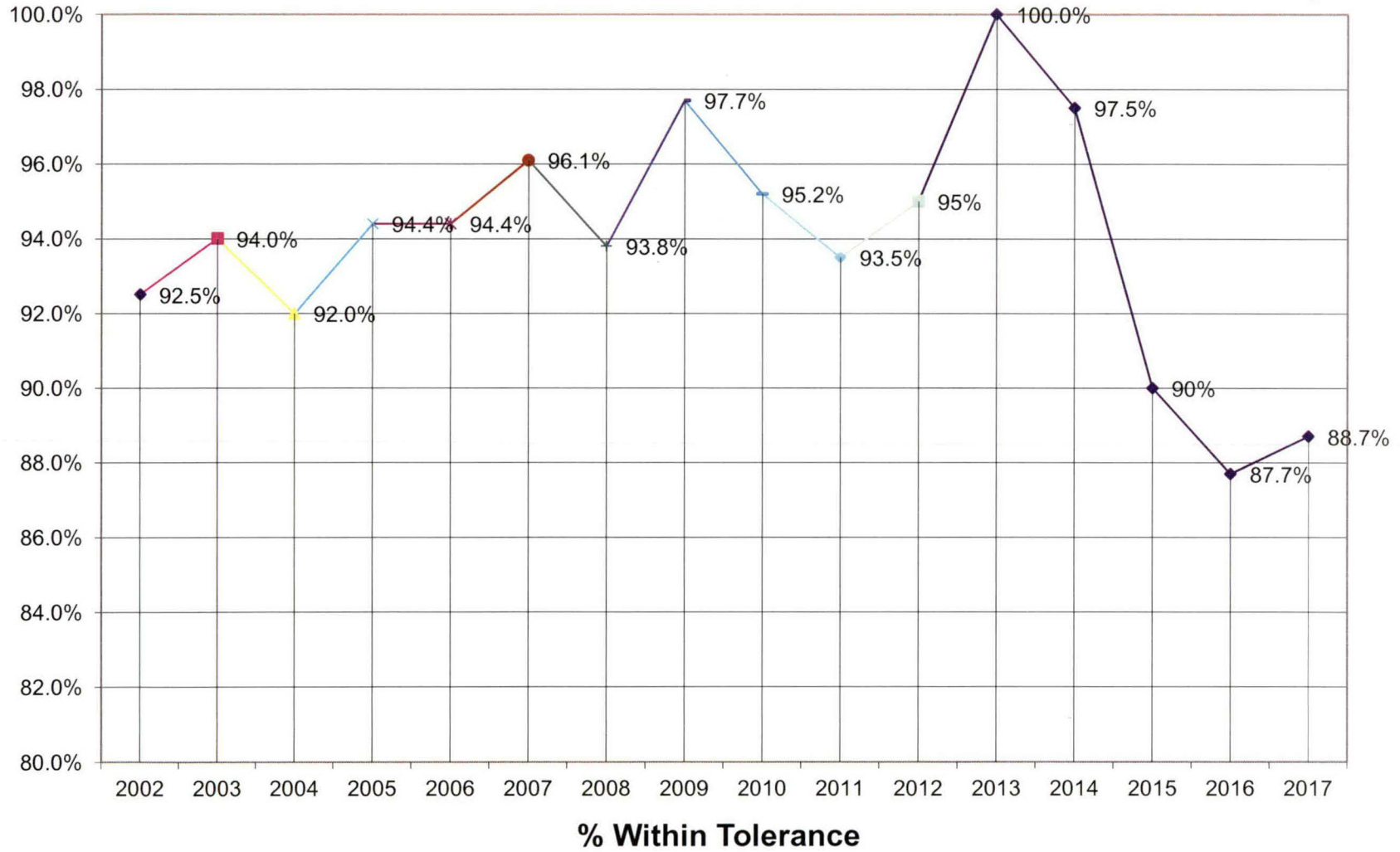
NRO02



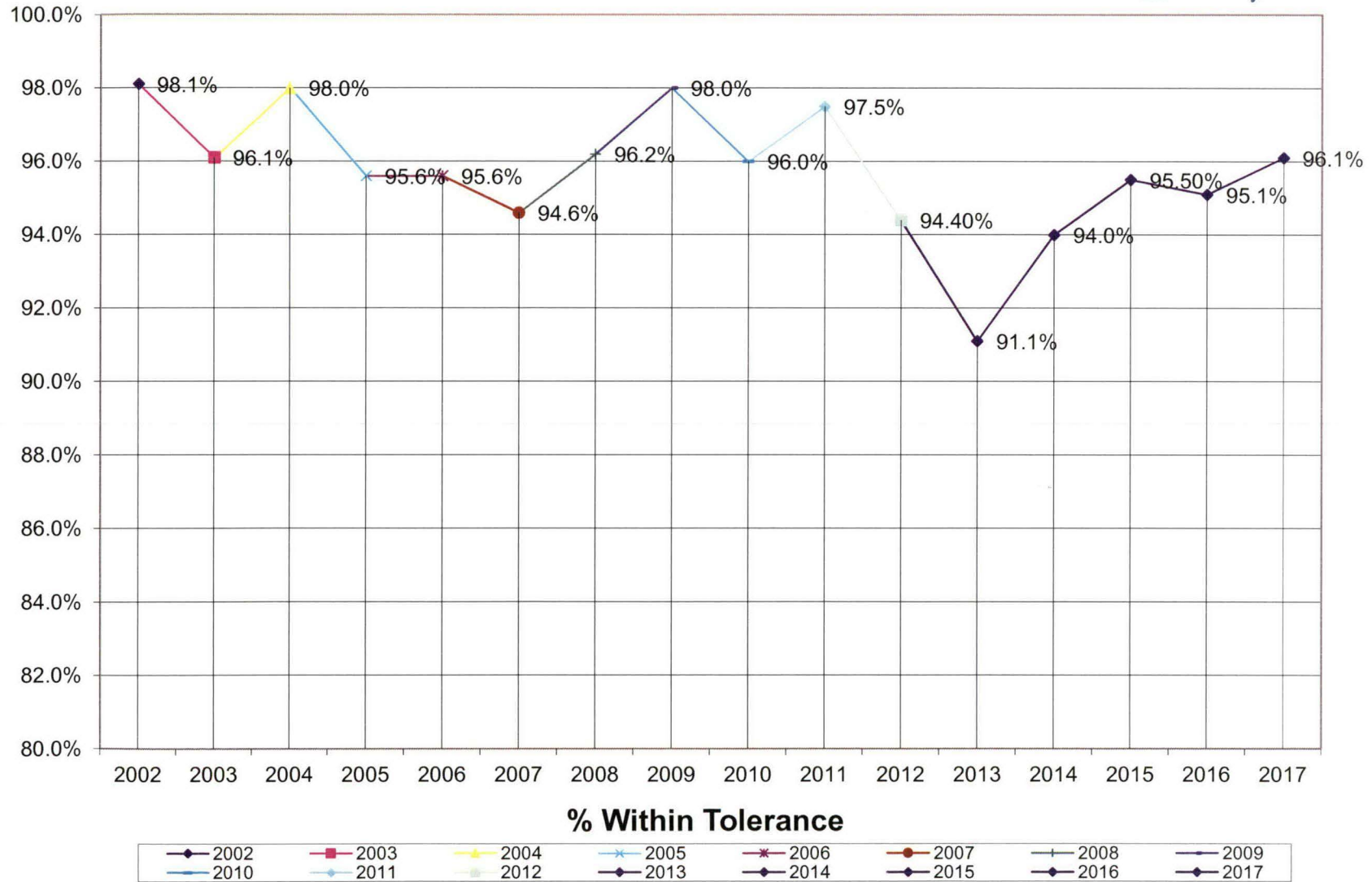
NSP01



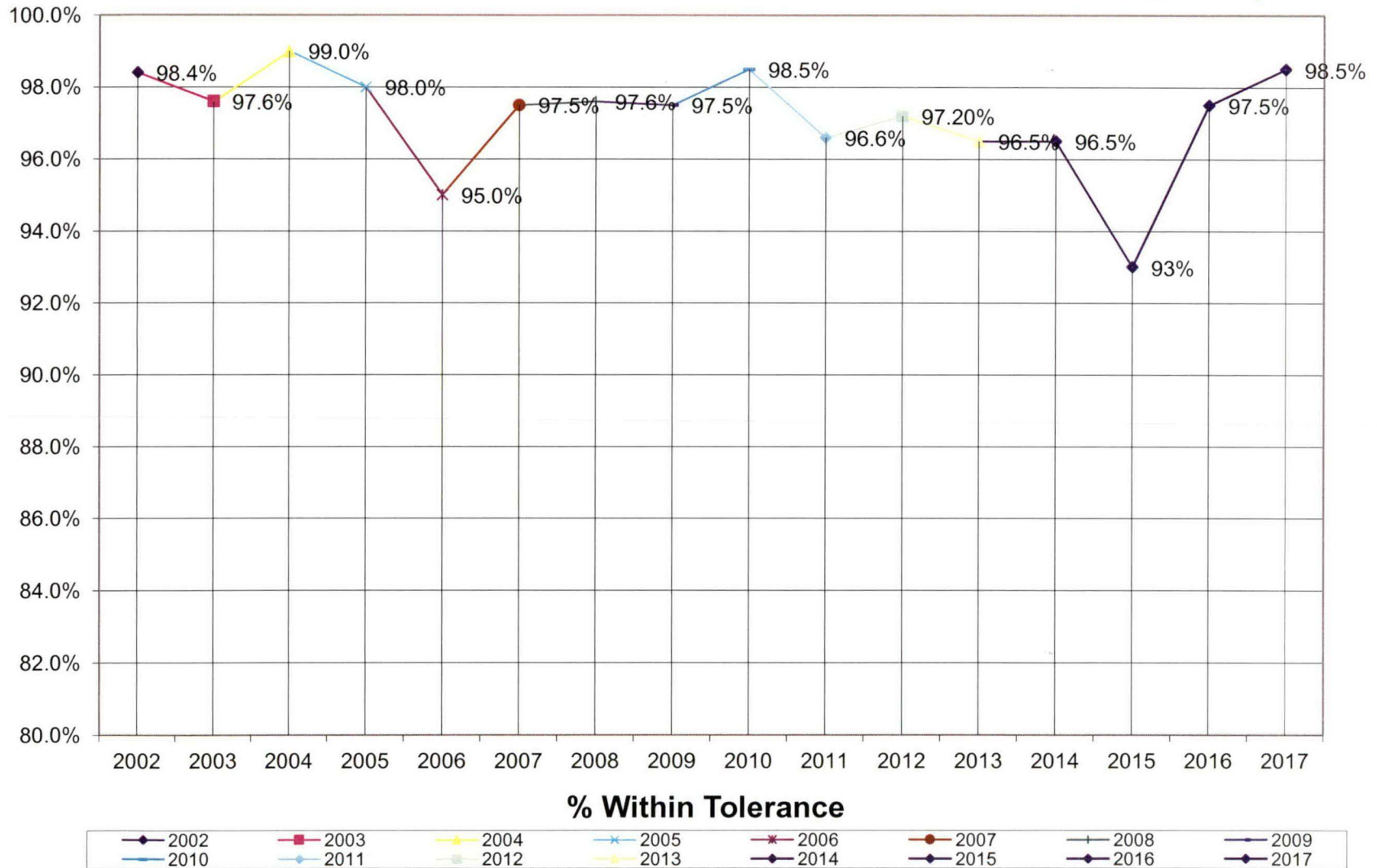
RAM03



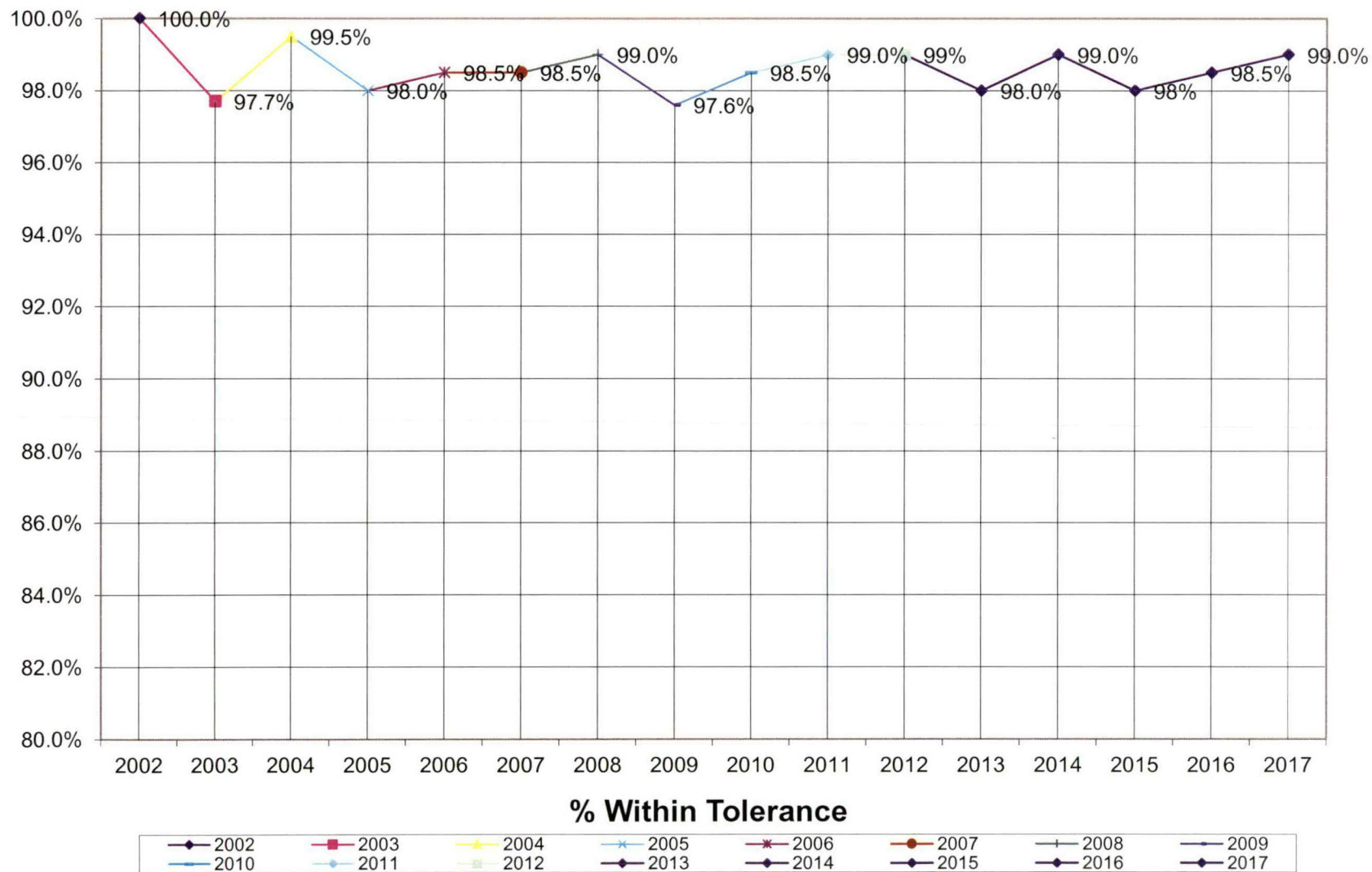
RAM04



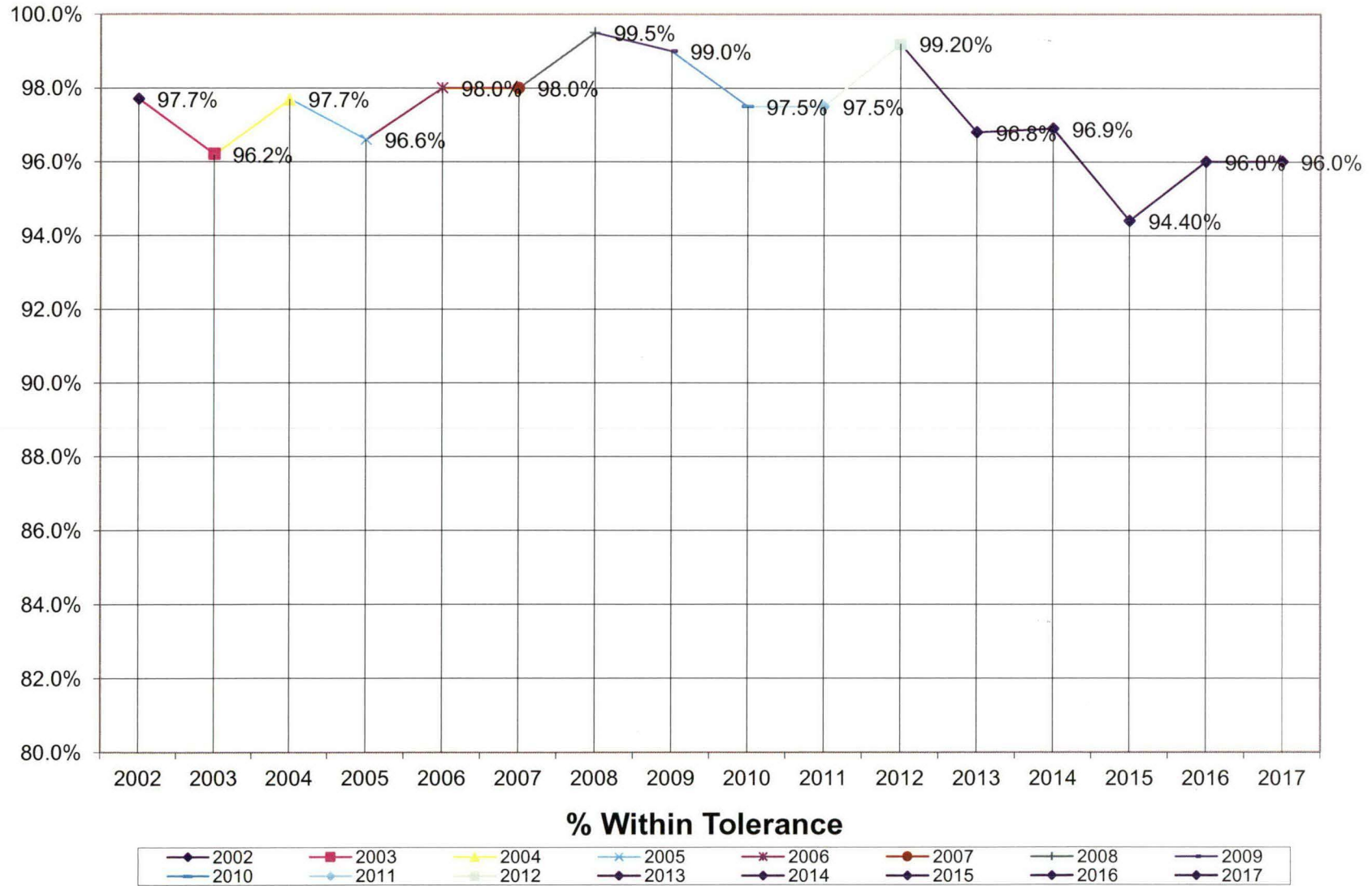
RAM05



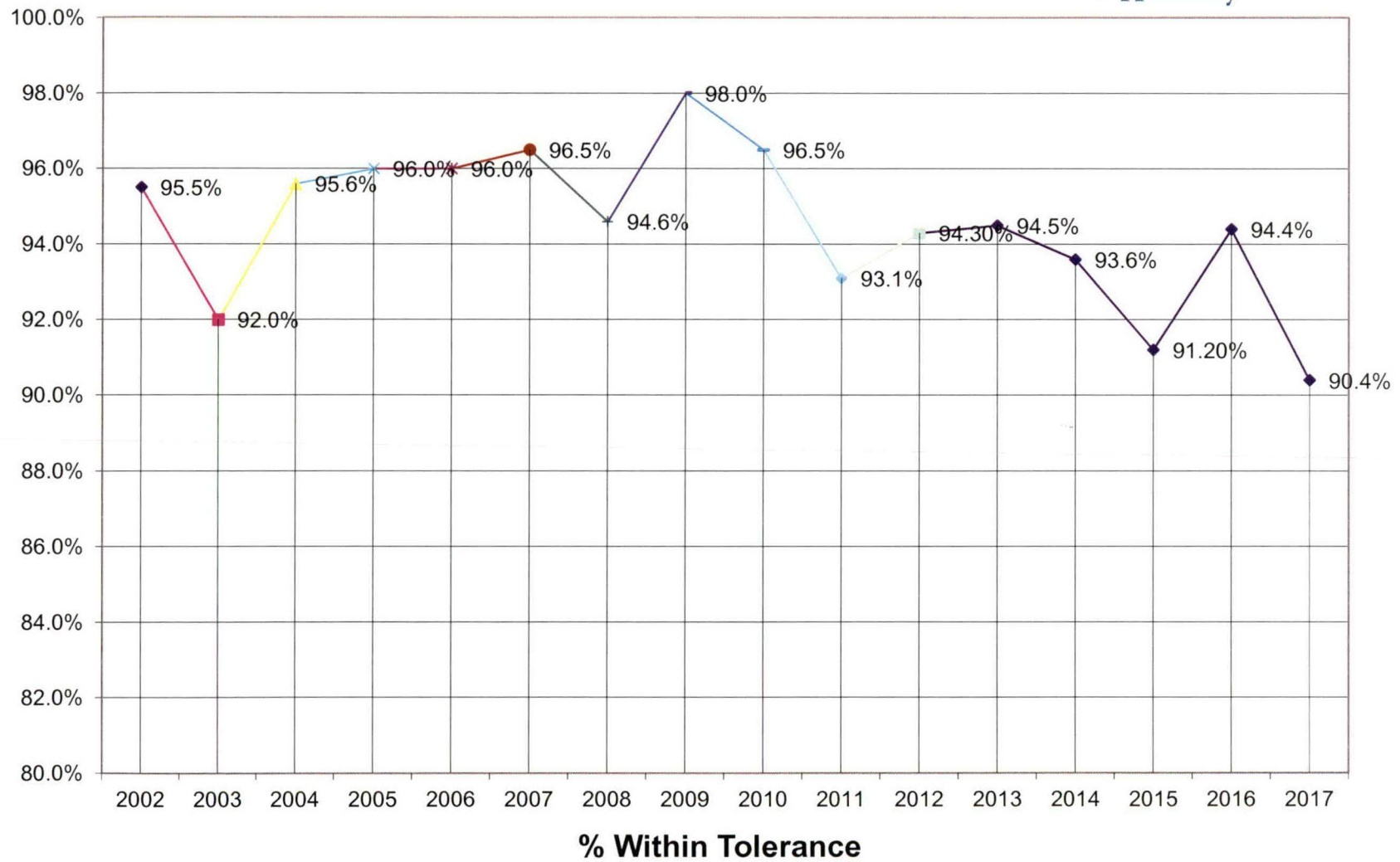
RAM06



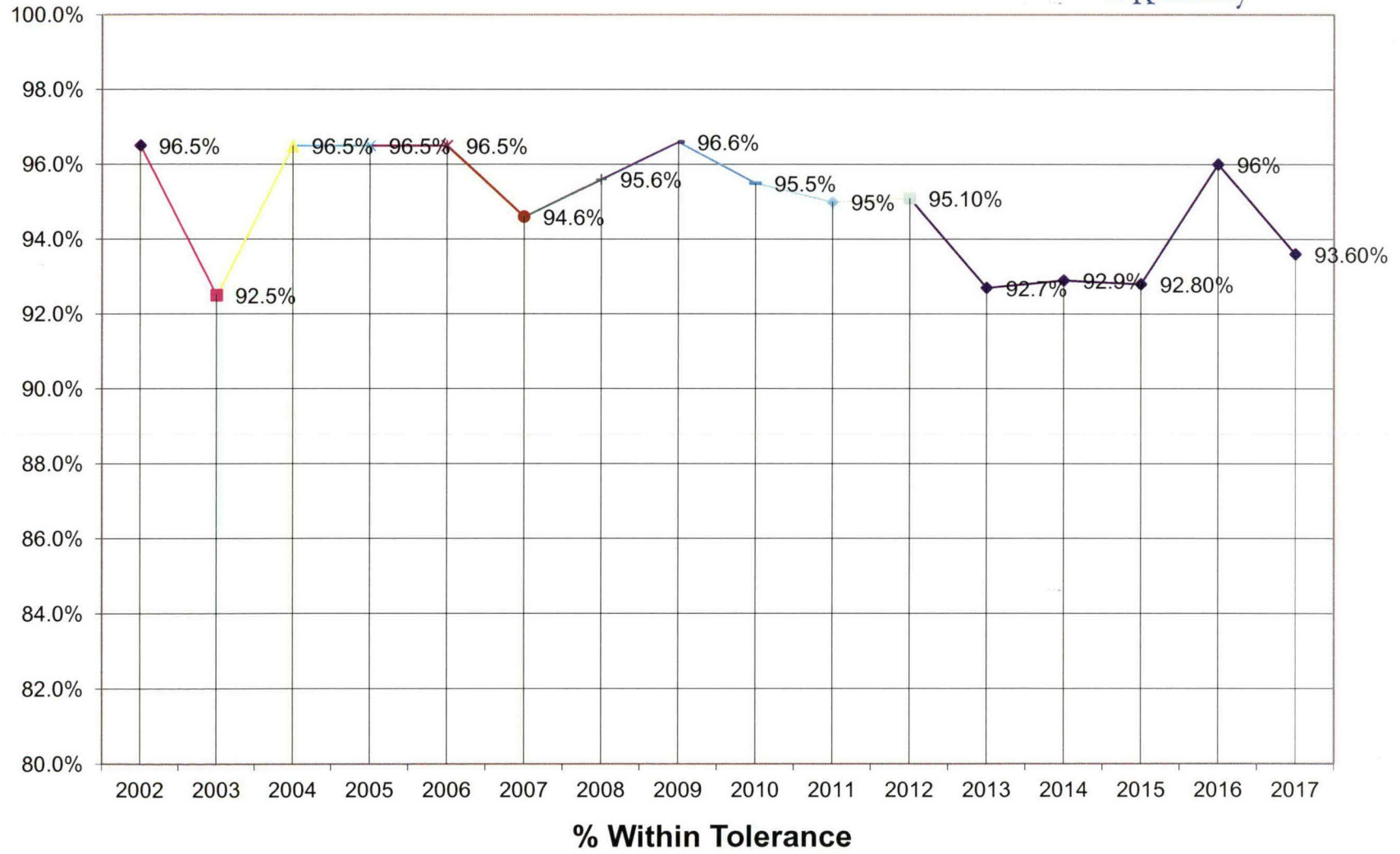
RLA03



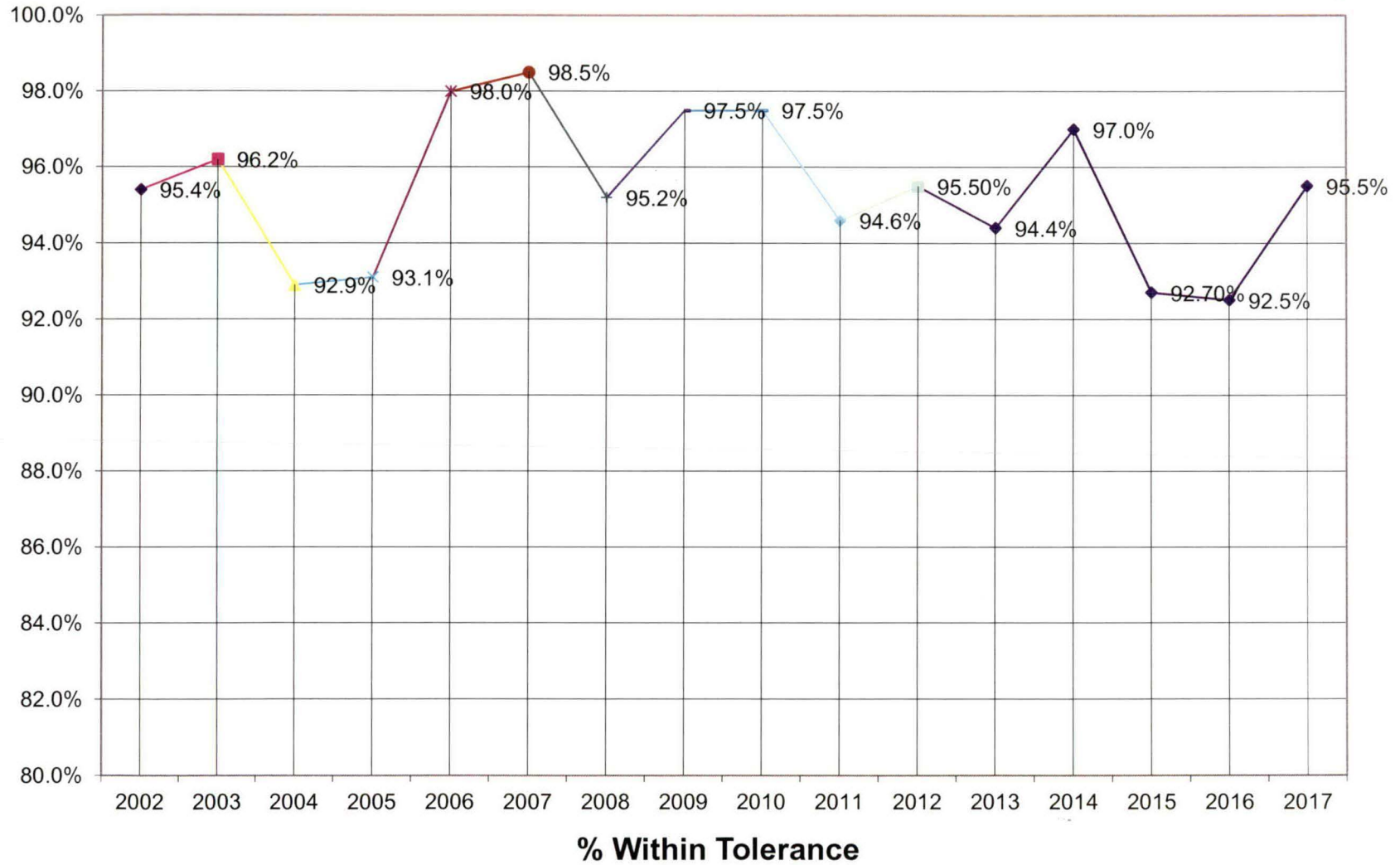
RRO01



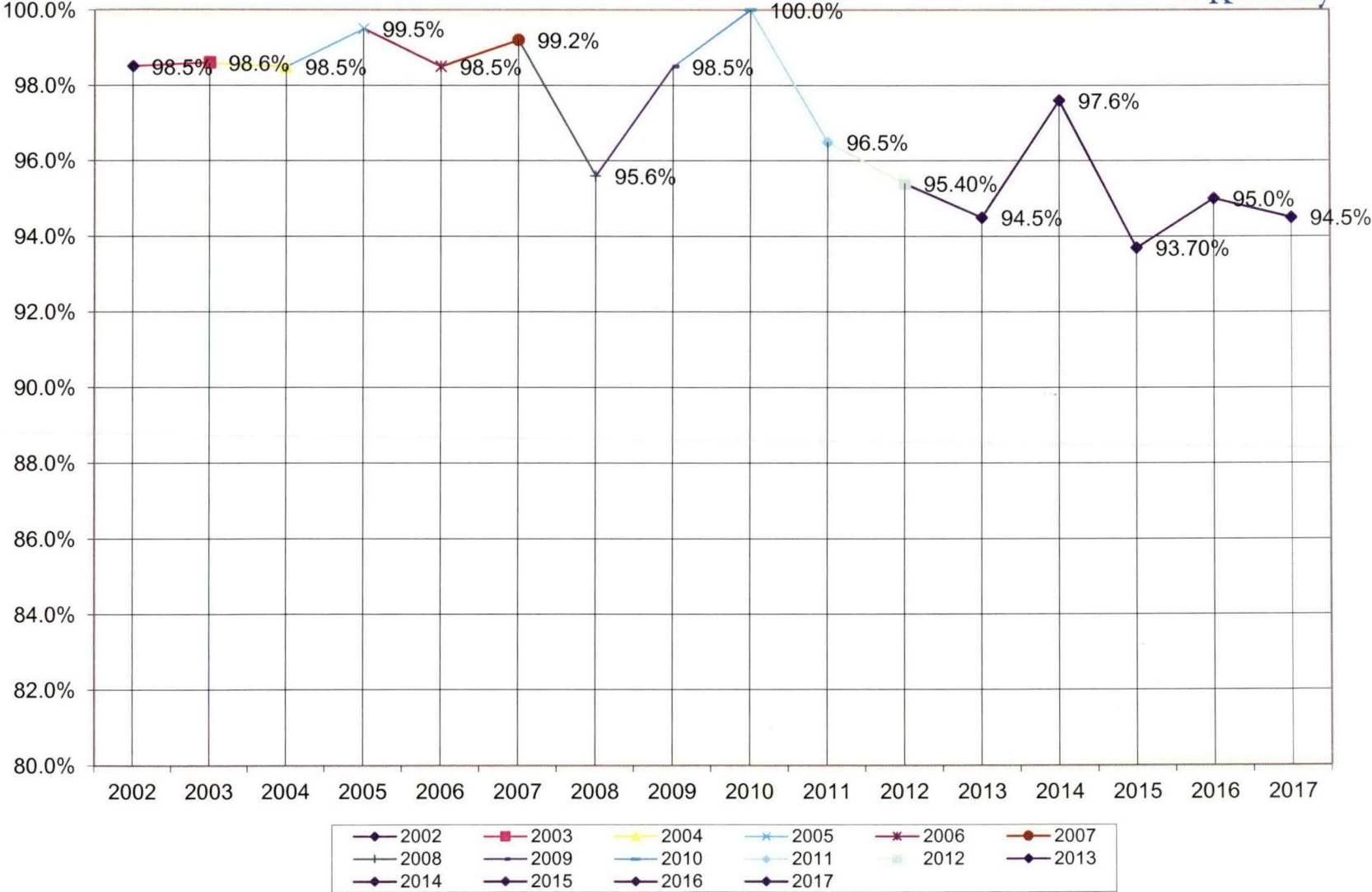
RRO02



RRO03



RRO04



RSP01

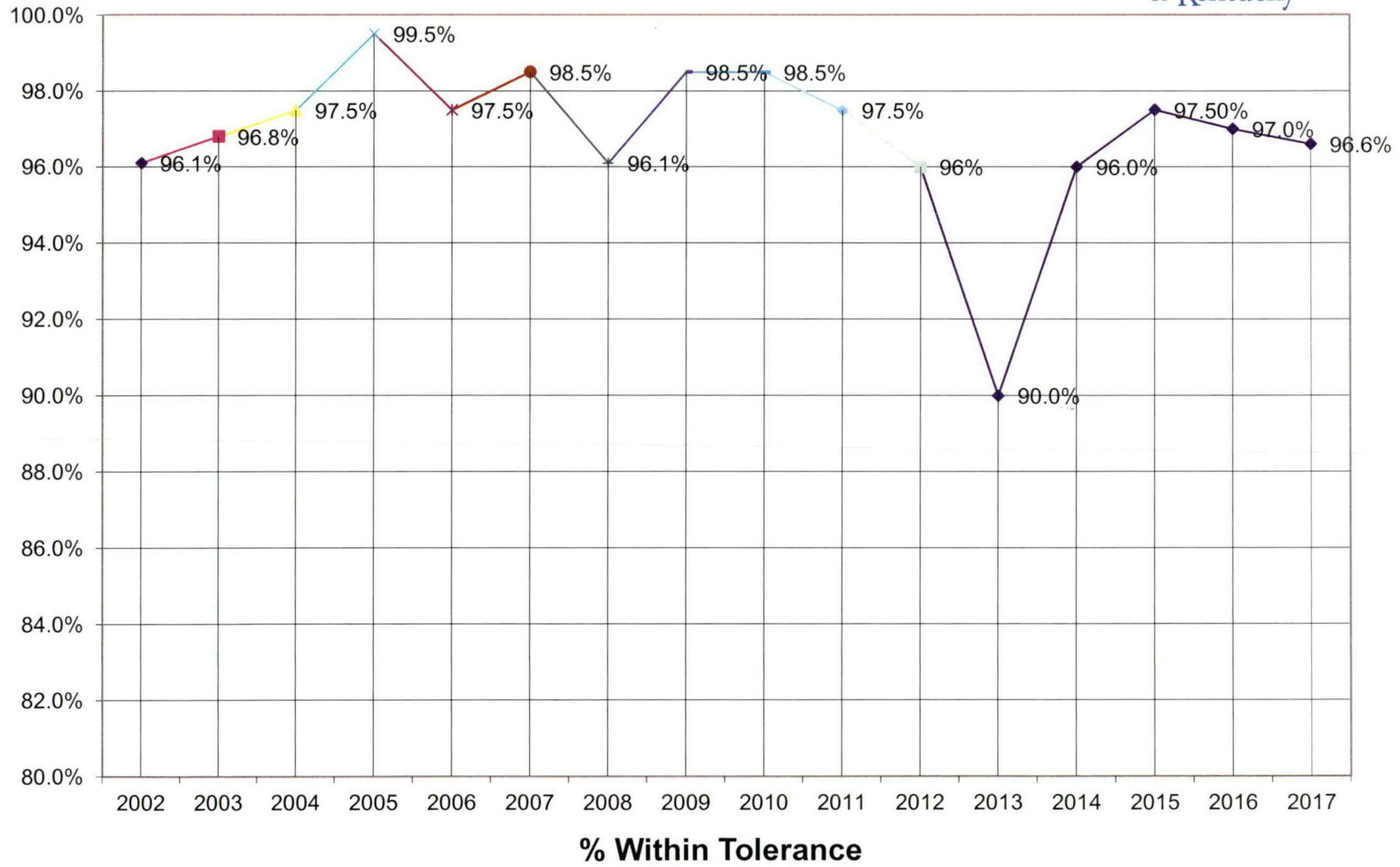


EXHIBIT E

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

Exhibit E - represents the percentage of Large Volume meters sampled in 2017 that were within the +/- 2% rate, identified by homogenous group. We also show previous results of meter families sampled in prior years.

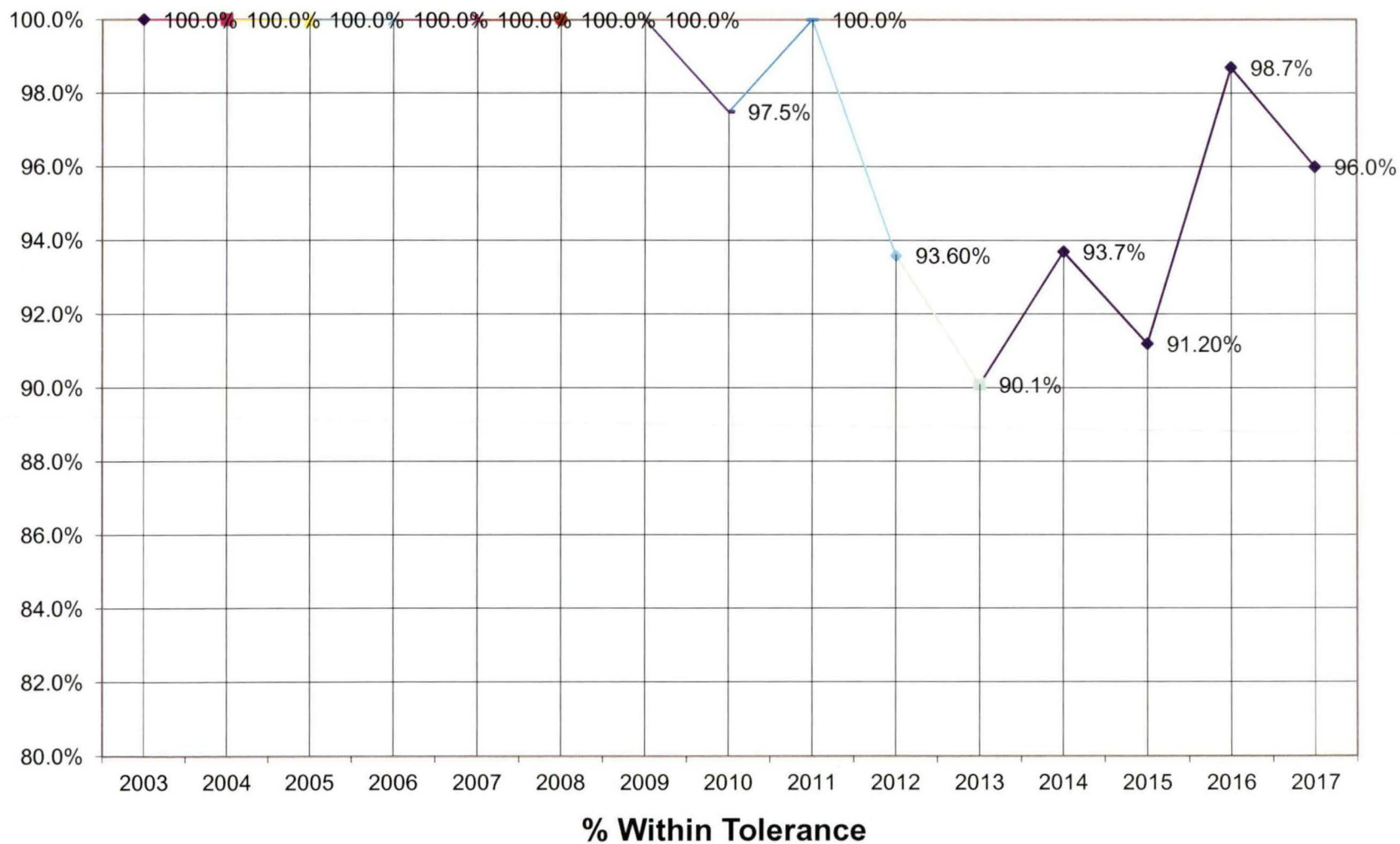
BRAM01 = Repaired American meters installed between 2007 & 2015

BRRO01 = Repaired Rockwell meters installed between 2007 & 2015

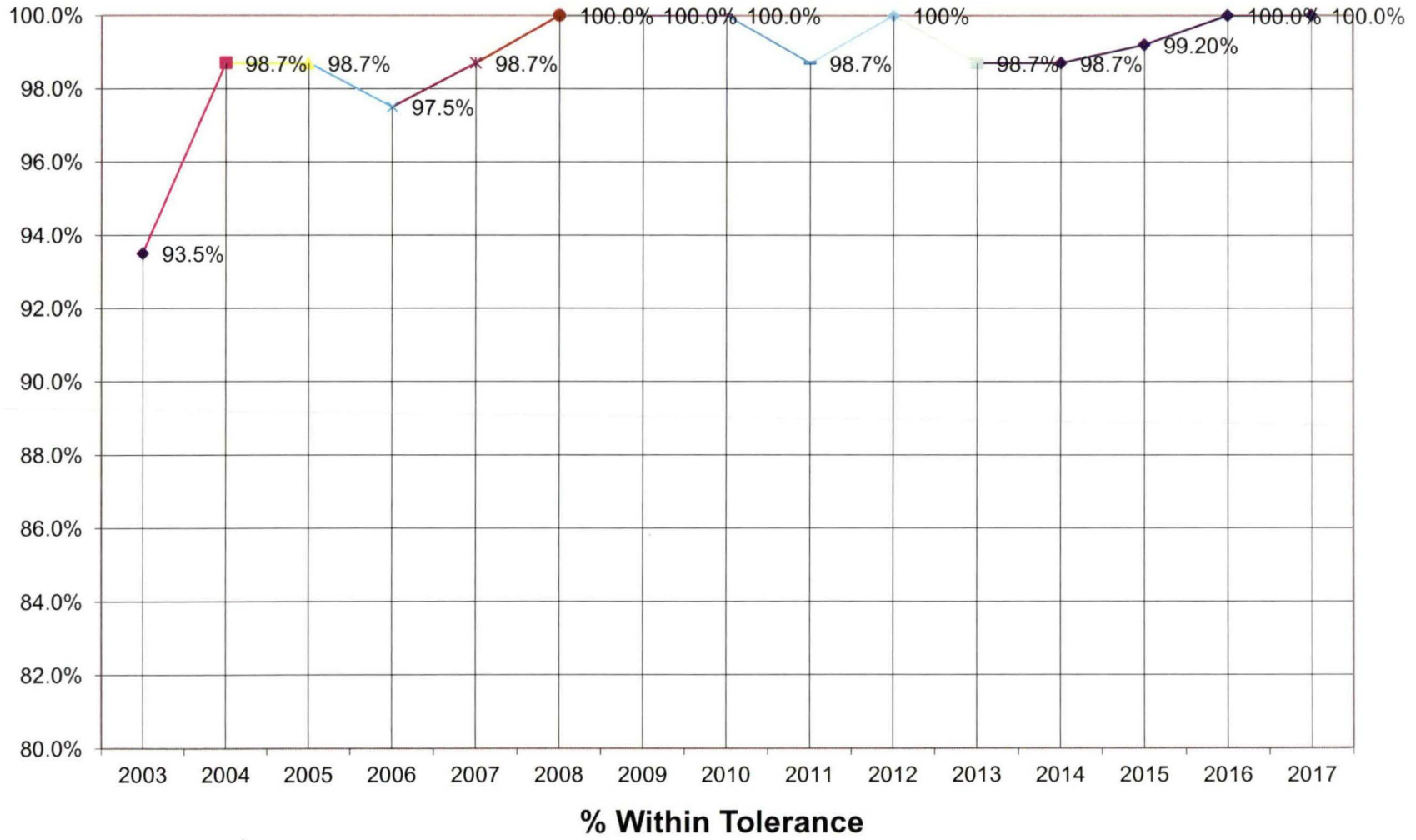
BRSP01 = Repaired Sprague meters installed between 2007 & 2015

BNAM01 = New American meters purchased between 2007 & 2015

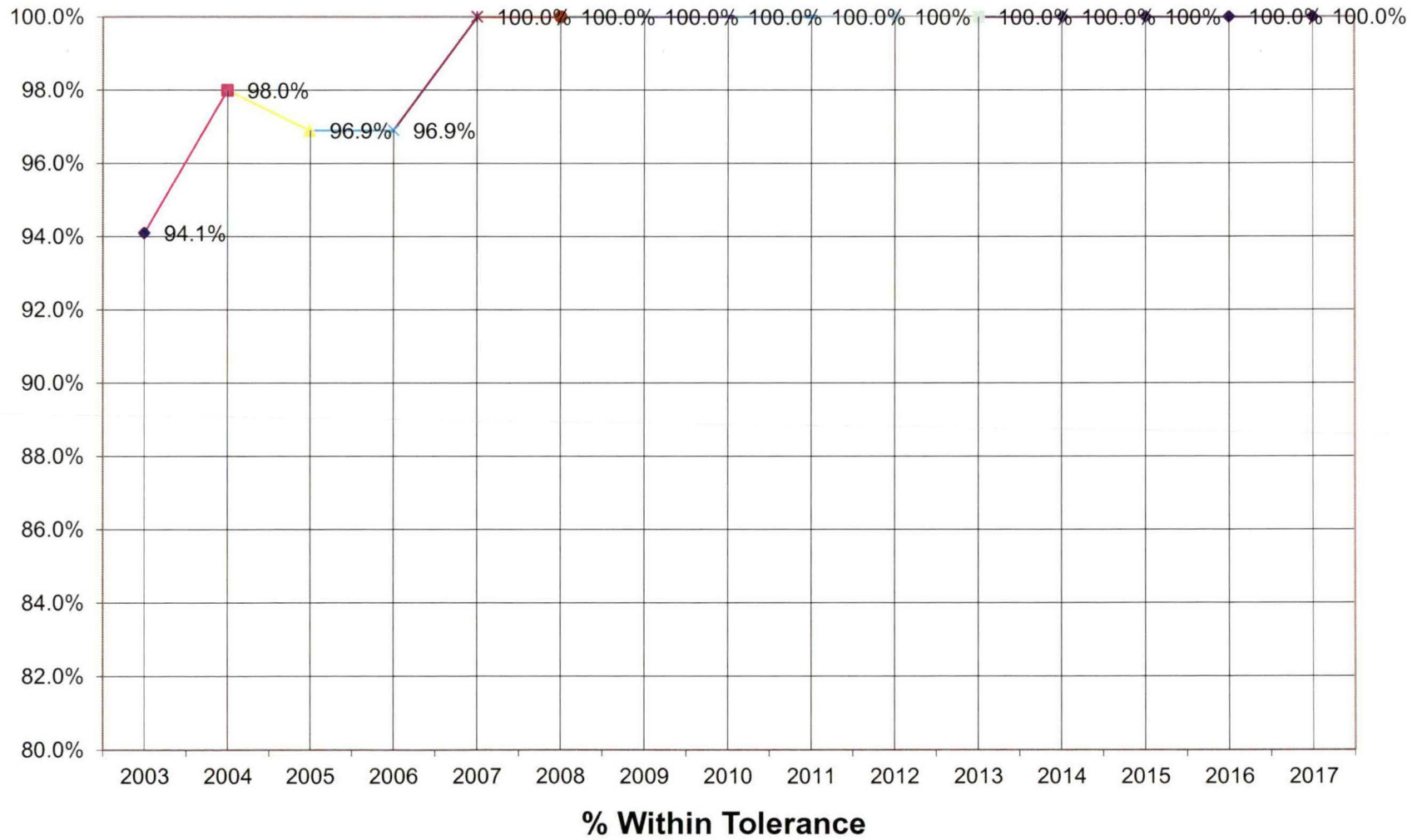
BNAM01



BRAM01



BRRO01



BRSP01

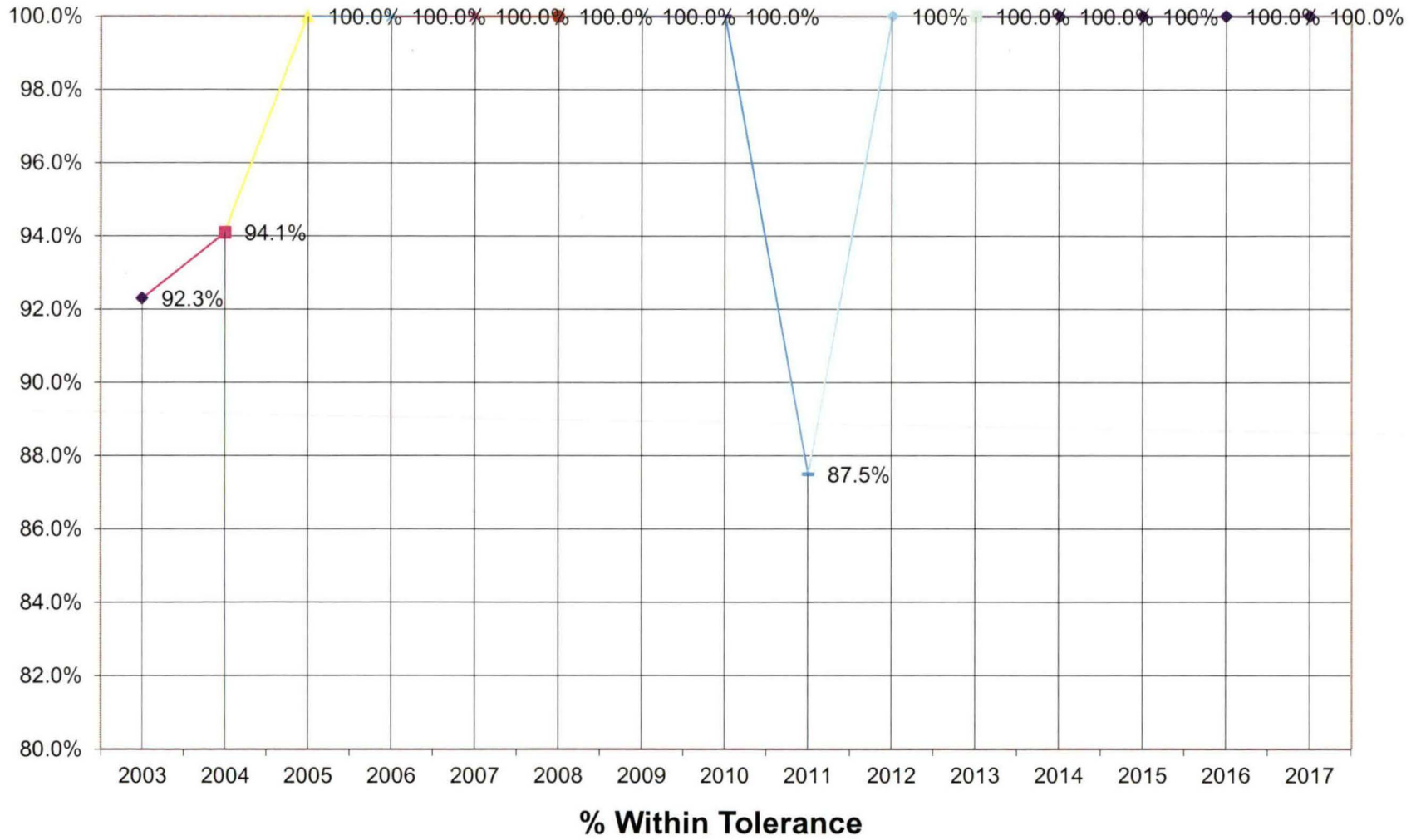


EXHIBIT F

COST SAVINGS

The 2017 sampling program resulted in changing 5398 fewer meters than would have been changed under the 14-year plan Columbia Gas of Kentucky was following prior to meter sampling and changing 9522 fewer meters than would have been required under a 10-year change-out program.

This represents yearly savings of \$1,961,532 compared to a 10-year plan

This represents yearly savings of \$1,111,988 compared to a 14-year plan

EXHIBIT G

TEST RESULTS OF NEW METERS

Columbia Gas of Kentucky purchased 4944 new meters in 2017. The factory test sheets for the new meters purchased in 2017 are on file in the Lexington office.

No problems were found in the new 2017 purchases.