

AMP255 – Precision and Bias Data Report

The AMP255 Precision and Bias Data Report

August 22, 2008

Presented by Jonathan Miller EPA - Office of Air Quality Planning and Standards



Agenda

- How We Got Here (10 Minutes)
 - Brief History of the AMP255
 - Intended Usage of the AMP255
- How to Generate the AMP255 (10 Minutes)
 - Walkthrough Each Report
 - Field & Value Definitions
- Known Bugs & Future Enhancements (10 Minutes)



AMP255 History

- February 2004: EPA Releases "2002-2004 Criteria Pollutant Precision and Bias Data"
 - 1st Publication by EPA Showing Results of Proposed Changes in the P&B Statistics
 - Subsequent Report Released in December 2004



AMP255 History (Cont)

- OAQPS QA Team Proposed Funding the Development of the Annual Report as a Standard Report in AQS
- Development Starts in May 2005
- Development Completes in October 2005
 - Used in Annual Assessment Report December 2005
- January 17, 2006: 40 CFR Part 58 Appendix A Revisions Go FINAL

– Last Minute Revisions NOT Accounted for in AMP255

AMP255 Intended Usages

- Save \$\$\$: Report was Based on the Annual Assessment Report Which Was Created by Contractors
- Needed a Mechanism to Produce Assessments in AQS to be Consistent with the New Appendix A Rules
 - Replacement of the AMP240 Report
 Beginning in 2008 for 2007 Data Annual
 Certification

Limitations with AMP255

- Only for Criteria Pollutants
 - Only Covers What is in Appendix A
 - Non-Criteria Report Under Development
- Known Issues
 - Some Calculations are Based on the Proposal and Not What Was Finalized
 - Formatting Issues



AMP255 – Precision and Bias Data Repor

What is Performed

Method	Pollutants	Frequency	Ν	IQO
One-Point QC	SO ₂ , NO ₂ , O ₃ , CO	Every 2 Weeks	O_3 : Precision = 7% Bias = 7%	SO_2 , NO_2 , CO : Precision = 10% Bias = 10%
Annual Performance Evaluation	SO ₂ , NO ₂ , O ₃ , CO	Once per Year @ 3 Levels	<= 15% for each	audit concentration
Flow Rate Verification	PM ₁₀ , PM _{2.5} , PM _c	Once per Month (Quarterly for TSP & PM ₁₀ High Vols)	<= 4% of Standar Value	d & 5% of Design
Semi-Annual Flow Rate Audit	PM ₁₀ , PM _{2.5} , PM _c	Every 6 Months	<= 4% of Standar Value	d & 5% of Design
Collocated Sampling	PM _{10 (Manual)} , TSP, PM _{2.5} , PM _c	15% of Network Every 12 Days	$PM_{2.5}$, TSP, PM_{10} : Precision = 10%	PM _c : Precision = 15%
PM PEP Program	PM _{2.5} , PM _c	If <= 5 Sites: 5/yr If > 5 Sites: 8/yr All monitors covered in 6 years	PM _{2.5} : Precision = 10%	PM _c : Precision = 15%



AMP255 – Precision and Bias Data Repor

How it is Entered

Method	Pollutants	Frequency	MQO
One-Point QC	SO ₂ , NO ₂ , O ₃ , CO		"Precision"
Annual Performance Evaluation	SO ₂ , NO ₂ , O ₃ , CO		"Accuracy"
Flow Rate Verification	PM ₁₀ , PM _{2.5} , PM _c		"Precision"
Semi-Annual Flow Rate Audit	PM ₁₀ , PM _{2.5} , PM _c		"Accuracy"
Collocated Sampling	PM ₁₀ , TSP, PM _{2.5} , PM _c		"Precision"
PM PEP Program	PM _{2.5} , PM _c	"Precision" – Or	nly Entered by RTI Not by all Users



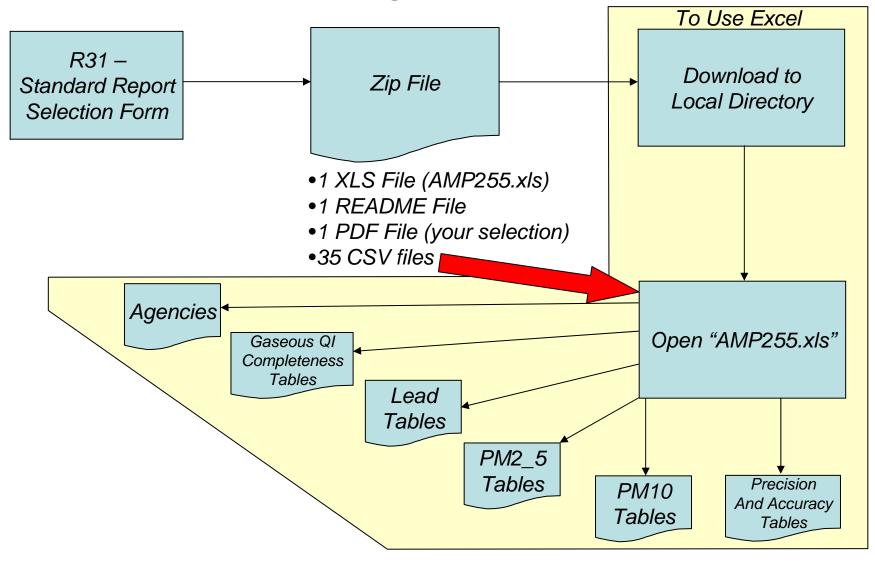
AMP255 – Precision and Bias Data Repor

The AMP255

Making Sense of the Madness... Or adding to it...



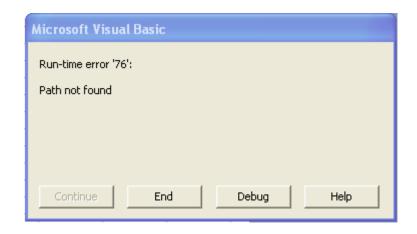
Generating an AMP255





Common Errors on Opening

- You Tried to Open the AMP255.xls From the Zip File
- At Least 1 of the 35 csv files are missing from the Directory.





Common Terminology

- PQAO
 - Primary Quality Assurance Organization
 - Organization Responsible for the QA Activities for a Monitor
- NSP vs Other
 - NSP = "NAMS / SLAMS / PAMS" Monitor Type
 - Anything other than "NAMS / SLAMS / PAMS" Monitor Type
 - Applies only to the "Highest Ranking" Monitor Type Defined for the Monitor
- The "M" After a PQAO Organization
 - The Agency Operates in Multiple States (National Park Service for Example)



Gaseous QI Completeness

- Single Point Quality
 Check Completeness
 - Based on One-Point QC Checks
 - AQS: PRECISION
- Performance Evaluation Check Completeness
 - Based on Annual Performance Evaluations
 - 3 Consecutive Levels
 - AQS: ACCURACY
- Reports Repeated for O₃, CO, SO₂, NO₂

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2	Region	State	POAO	Monitor Type	Site ID	Start Date	End Date	Number Require	Number Submitte	Comp. %	<50% Complet
3				SLAMS	-	1/1/2007	12/31/2007	26	31	100	NA.
1				SLAMS		1/1/2007	12/31/2007	26	27	100	NA.
	1.0			SLAMS		1/1/2007	12/31/2007	26	28	100	NA.
	1.8.1			SLAMS		1/1/2007	12/31/2007	26	78	100	NA.
	1.6.1		2.00	SLAMS		1/1/2007	12/31/2007	26	107	100	NA.
		301		SLAMS		1/1/2007	12/31/2007	26	105	100	NA
				SLAMS	-	1/1/2007	12/31/2007	26	27	100	NA.
3	1.1		10.00	SLAMS	and the second second	1/1/2007	12/31/2007	26	43	100	NA.
Ľ	1.0	100		SLAMS	and a second second	1/1/2007	12/31/2007	26	45	100	NA.
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i,				SLAMS	-	1/1/2007	12/31/2007	26	46	100	NA.
5		- 201		SLAMS	-	1/1/2007	12/31/2007	26	49	100	NA.
ì		- 201		SLAMS		1/1/2007	12/31/2007	26	34	100	NA.
7		-301		SLAMS		1/1/2007	12/31/2007	26	39	100	NA.
3		- 10-	10.00	SLAMS	and the second s	1/1/2007	12/31/2007	26	38	100	NA.
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)	1.0			SLAMS	1.1	1/1/2007	12/31/2007	26	27	100	NA.
ſ				All - NSP	NA	NA	NA	468	871	100	0
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3				All - Other	NA	NA	NA	26	51	100	0
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2	Region		PQAO	Monitor	Site ID	Start Date		Number Require	Number Submitted	Comp. %	Tot. # of Sites	Audits in Quarter 1/2/3/4
3		-	1000	SLAMS	1000	1/1/2007	12/31/2007	1(3)	1(3)	100(100)	NA	NA
3 4 5				SLAMS		1/1/2007	12/31/2007	1(3)	2(6)	100(100)	NA	NA
5				SLAMS	1000	1/1/2007	12/31/2007	1(3)	1(3)	100(100)	NA.	NA
67	1.1			SLAMS	and the second second	1/1/2007	12/31/2007	1(3)	1(3)	100(100)	NA.	NA
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8				SLAMS	100	1/1/2007	12/31/2007	1(3)	2(6)	100(100)	NA.	NA
9	1.1			SLAMS		1/1/2007	12/31/2007	1(3)	4(11)	100(100)	NA.	NA
10				SLAMS	and the second s	1/1/2007	12/31/2007	1(3)	1(3)	100(100)	N/A.	NA
11	1.1.1			SLAMS	Contraction of the	1/1/2007	12/31/2007	1(3)	1(3)	100(100)	NA,	NA
12				SLAMS	1000	1/1/2007	12/31/2007	1(3)	1(3)	100(100)	NA.	NA
13				SLAMS	Constant.	1/1/2007	12/31/2007	1(3)	1(3)	100(100)	NA	NA
14				SLAMS	1.000	1/1/2007	12/31/2007	1(3)	2(6)	100(100)	NA.	NA
15		10.1	100	SLAMS	and the second second	1/1/2007	12/31/2007	1(3)	2(6)	100(100)	N/A.	NA
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17				SLAMS	A CONTRACTOR OF	1/1/2007	12/31/2007	1(3)	2(6)	100(100)	NA.	NA
18				SLAMS	COLUMN A	1/1/2007	12/31/2007	1(3)	2(6)	100(100)	NA.	NA
19		10.1		SLAMS	10000	1/1/2007	12/31/2007	1(3)	2(6)	100(100)	NA I	NA
20				SLAMS		1/1/2007	12/31/2007	1(3)	4(12)	100(100)	N/A.	NA
21				AIL- NSP	NA ·	NA	NA	18(54)	34(101)	100(100)	18	9/8/6/9
22 23 24 25 26			100	OTHER	100.000	1/1/2007	1/1/2007	1(3)	0(0)	0(0)	NA	NA
23				OTHER	1000	1/1/2007	12/31/2007	1(3)	2(6)	100(100)	NA	NA
24		5.1		All - Other	NA	NA.	NA	4(12)	2(6)	50(50)	2	0/1/1/0
35				SLAMS	-	1/1/2007	12/31/2007	1(3)	0(0)	0(0)	N/A.	NA
26		1.1	10000	AIL NSP	NA	NA	NA	4(12)	0,00	- 0(0)	1	0/0/0/0



Precision and Accuracy Tables

- Single Point P&B Estimates
 - One Sheet per Pollutant / MT Group
 - Summarized by PQAO
- PQAO Accuracy Summary
 - One Sheet per Pollutant / MT Group
 - One Line per PQAO
- Reports Repeated for
 - O₃, CO, SO₂, NO₂
 - NSP / Non-NSP Monitor Types

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6					NA	NA	-1.94	2.24
7			2.00		NA	NA	-2.82	3.07
8					NA	NA	-2.96	3.41
9					NA	NA	4.37	5.01
10			10.00		NA	NA	3.77	4.27
11			2.0	second by	NA	NA	5.7	3.83
12			10.00		NA	NA	5.73	7.44
13			1.11	- Johnson (NA	NA	3.84	4.69
14			1.00	M	NA	NA	1.99	1.84
15					NA.	NA	-1.57	1.67
16			100	and the second second	NA.	NA	3.15	3.43
17				C. See K.	NA	NA	1.07	1.18
18				b.	NA.	NA	-1.07	1.31
19	1.1		11		NA	NA	-2.01	1.65
20					NA	NA	6.46	5.98
21			1.1	All - NSP	-7.04	6.92	2.6	3.67
22				1000	NA	NA		200
23				All - NSP	1			

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AMP255 – Precision and Bias Data Repor



- PM_{2.5} Collocation
 Summaries
 - Only Shows for "Primary Monitors"
- PM_{2.5} Flow Rate Completeness

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PM₁₀ Tables

- Automated PM₁₀
 Precision Completeness
 - Based on Flow Audits
- Manual PM₁₀ Precision Completeness
 - Based on Collocation
- Automated / Manual PM₁₀ Accuracy

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Lead Tables

- Lead Collocation
 Completeness
 - Based on Collocated
 Precision Data
- Lead Flow Rate Completeness
 - Based on Accuracy
 Flow Data
- Lead Filter Strip
 Completeness

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1	Table M	M. Ph	Collocation	Completen	ess, 2007.							-		
	Table M Region	State	POA0	Completent Monitor Type	Site ID	Start Date	End Date	Number	Number Submitter	Comp. %	% Sites <50% Complet •	Total # of Sites	No. of Sites	Site Cor
2	Region	State	POAO	Monitor	Site ID	Start Date		Number		Comp. %	% Sites <50%	Shar	No. of	Site Cor

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	A	В	С	D	E	F	G	Н	I	J	К	L
1	Table N	N. PbF	low Rate C	ompleteness,	2007.				_			
2	Region	State	PQAO	Monitor Type	Site ID	Start Date	End Date	Number Require	Number Submitte	Comp. %	Total # of Sites	Q1/Q2/ Q3/Q4
3		155	10.00	SLAMS	11,22022-14 8802	1/1/2007	12/31/2007	1	2	100	NA	NA
	- 22	100	1910	SLAMS	CONTRACTOR ST	1/1/2007	12/31/2007	1	3	100	NA	NA
i	- 11	195.	10.00	SLAMS	ASSESSMENTS.	1/1/2007	12/31/2007	1	4	100	NA	NA
ì	- 65	75	15.00	SLAMS	CONTRACTORION ST	1/1/2007	12/31/2007	1	7	100	NA	NA
		19.	10.00	All - NS	NA	NA	NA	4	16	100	4	3/5/4/4
	- 65	78.0	10.00	OTHER	CONTRACTOR OF STREET, ST.	1/1/2007	12/31/2007	1	4	100	NA	NA
	10	14.	15.00	OTHER	110000170070	1/1/2007	12/31/2007	1	0	0	NA	NA
		100	1000	All - Other	NA	NA	NA	4	4	50	2	0/2/0/2

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	A3	-	fx 4										
	A	В	С	D	E	F	G	Н	1	J	K	L	M
1	Table 0	0. Pb F	ilter Strip (Completeness	, 2007.								
2	Region •	State	PQA0	Monitor Type 🔽	Site ID	Start Date	End Date	Audits Required (Level 1▼	Audits Submitted (Level 1	Comp. % (Level 1	Audits Required (Level 2 -	Audits Submitted (Level 2	Comp. 4 (Level 2
3	- 11	35.1	16.00	SLAMS	100002710488	1/1/2007	12/31/2007	12	12	100	12	12	100
4		755	1410	SLAMS	THE PARTY OF	1/1/2007	12/31/2007	12	0	0	12	0	0
5		35.	100	SLAMS	In The sealing	1/1/2007	12/31/2007	12	12	100	12	12	100
3	- 10	15	100	SLAMS	S.Z. S.	1/1/2007	12/31/2007	12	0	0	12	0	0
7	· · · · · · · · · · · · · · · · · · ·	75.	10.00	All - NS	NA	NA	NA	48	24	50	48	24	50
3	- 65	18- C	124	OTHER	Internet Property	1/1/2007	12/31/2007	12	0	0	12	0	0
		1000	1000	OTHER	CONTRACTOR OF STREET,	1/1/2007	12/31/2007	12	Ω	0	12	Ω	<u> </u>
9	10	100	10.00	UTHER	Contract of the second	17172007	12/01/2001		0	0	12	0	0



Known Issues

ltem	Indicator	Issue	What AMP255 Does	What App A Does
Automated PM ₁₀	Completeness	Required # Flow Rate Verifications	Every 2 Weeks	One / Month
Manual PM ₁₀ & PM _{2.5}	Precision Value	Minimum value to be used in Calculations	$PM_{10} = 20$ $PM_{2.5} = 6$	PM ₁₀ = 15 PM _{2.5} = 3
Manual PM ₁₀ & PM _{2.5}	Completeness	Flow Rate Audits	Once / Quarter	Every 6 Months
Manual PM ₁₀ , PM _{2.5,} Lead	Collocation Completeness	Frequency and Number of Sites	1 in 6 days; based on # sites in PQAO	1 in 12 Days; 15% of the PQAO Network. For PM, this is based on method designation



Known Issues

ltem	Indicator	Issue	What AMP255 Does	What App A Does
Lead	Completeness	# Required Flow Rates	1 per Year	1 every 6 months
O ₃ , SO ₂ , NO ₂ , CO		New Tables Need to be Used	Pre-2007 tables with only 4 levels	5 Levels using new level ranges
All	Display	Formatting Issues with Upper/Lower Probability Limits	Program assumes the "," between the values means it is two values.	