EPA OFFICE OF AIR QUALITY PLANNING AND STANDARDS

The QA EYE

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SPECIAL POINTS OF INTEREST:

- AA-PGVP produces 1st Annual Report. Results Acceptable
- New Concepts for Gaseous QC samples

INSIDE THIS ISSUE:

2008-2010 PM2.5 Continuous Monitors.. How do They Compare to the FRMs?

OAQPS and the monitoring community have been very interested in the pursuit of continuous $PM_{2.5}$ methods in order to alleviate the filter preparation/analysis burdens and the slower reporting that comes with filter based methodologies. In 2008, the first continuous method was approved as an FEM. Since then, five more continuous methods have received approval.

With approval and deployment there has been some concern about performance. Performance, in this case, is defined as how well the continuous 24-hour value compares to a federal reference method collocated at the same location. In some areas/sites, they perform very well; in other areas they do not. At this point we are unsure whether these differences are related to instrument malfunction, operator related issues, or environmental issues (constituents of PM, temp, humidity, etc.). It is likely that all three play some role.

Based on observations made at the 2010 NACAA Steering Committee Meeting, OAQPS started looking at sites that had collocated continuous and FRM data. Data for this evaluation was pulled from AQS for the years 2008-2010. Any sites with collocated samplers were evaluated (not just "required" collocated sites for QA). Every sampler (method designation/POC) was paired with every other $PM_{2.5}$ sampler/monitor at the site. Data from a site was included if the site had >15 sample pairs in order to have a reasonably representative number of data points. The following is some of our preliminary evaluations. Statistics used to estimate precision and bias are those specified in 40 CFR Part 58 Appendix A.

Precision Evaluation Summary

The coefficient of variation was estimated by site for each sample pair.

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Ambient Air Protocol Gas Verification Completes Year 1 Annual Report Posted

The first year of the Ambient Air Protocol Gas Verification Program (AA-PGVP) has been completed and an annual report produced which is posted on AA-PGVP AMTIC Webpage at http://www.epa.gov/ttn/amtic/aapgvp.html. EPA would like to thank the State/Local/Tribal community for their participation. These organizations are acknowledged in the report. In addition, we thank EPA Region 2 (Avi Teitz, Mustafa Mustafa) and Region 7 (Thien Bui) and their management for supporting this endeavor and making it a success. Some important facts from the Report include:

For the 2010 AA-PGVP, EPA received surveys from 88 of a possible 118 primary quality assurance organizations/reporting organizations (PQAO/ROs), which is about a 75% response rate.

Out of the 88 survey respondents, EPA received 109 responses for specialty gas producers since some surveys listed multiple specialty gas producers.

Figure 1 identifies, as a percentage of the total responses, how often the PQAO/ROs listed a particular specialty gas producer. As mentioned above, only about 75% of the PQAO/ROs responded so this cannot be considered a complete survey.

Ten specialty gas producers were identified in the survey. EPA provided verifications to all but two specialty gas producers.

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2008-2010 PM2.5 Continuous Monitors (*Continued from Page 1*)

Table 1. Precison Estimates

Method	116_116	116_117	116_118	116_170	117_117	117_118	117_170	118_118	118_145	118_170
2008	5.28	4.98		19.26	8.52	11.99		7.47	9.97	12.72
2009	9.12		3.63	16.81	8.42	7.50	17.80	7.87	5.75	16.91
2010	4.09			20.11	8.41	6.73	17.25	8.42	11.11	15.41
AVERAGE	6.17	4.98	3.63	18.73	8.45	8.74	17.52	7.92	8.94	15.02

Method	118_181	118_184	119_119	119_120	119_170	120_120	120_145	120_170	142_142	142_170
2008		21.52	7.23	9.81		7.11	6.17	14.48	4.42	
2009	14.96	18.24	5.66	12.55	22.80	7.55	9.95	14.09	5.70	17.93
2010	15.50		10.49		19.06	7.22		16.71	3.39	17.32
AVERAGE	15.23	19.88	7.79	11.18	20.93	7.30	8.06	15.10	4.50	17.63

Method	143_143	143_170	145_145	145_170	145_181	145_184	153_170	155_155	170_170	170_181
2008	6.22		8.17					7.04	6.96	
2009	4.71	15.28	7.86	16.58	13.64	16.86	21.45	9.86	15.79	
2010	6.86	19.69	7.38	16.98	17.49	16.44	16.78	18.40	17.06	11.38
AVERAGE	5.93	17.49	7.80	16.78	15.56	16.65	19.11	11.77	13.27	11.38

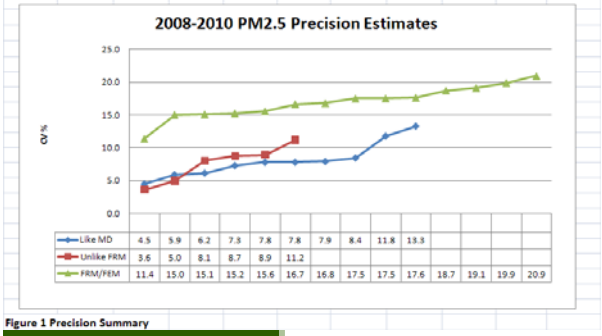

Figure 1 Precision Summary

Data from the sites were then aggregated by method designation pairs and the per-site CVs averaged. Table 1 provides annual and 3-year estimates of each method code combination. In table 1, the "method" rows indicate each pair of methods being compared by AQS method codes; the method codes, concatenated with the sampler names, are listed below. Figure 1 was generated to show 3-year precision estimates (sorted by increasing imprecision) when the routine and collocated samplers had the same method code (Like MD), manual FRMs with unlike method designations (Unlike FRM), and manual FRMs compared to continuous instruments (FRM/FEM). Thus, there is a marker in figure 1 for each pair of methods listed in table 1. As the precision data indicate, most collocations with the same method codes and the unlike FRMs meet the 10% precision data quality objective (DQO) goal. The estimate with the highest imprecision (13.3%) of like method codes is a site with two collocated Met-One BAM instruments. One site provided these data in 2008 and 2009 and two sites provide data in 2010. All FRM to FEM collocated comparisons were greater than the 10% DQO goal.

PM2.5 Method Codes

Method	Method Des.
BGI PQ200/200A	116
BGI PQ200-VSCC or PQ200A-VSCC	116
R & P Partisol-FRM 2000 PM-2.5	117
R & P Partisol-FRM 2000 PM-2.5 [FEM]	117
Thermo Scientific Partisol 2000-FRM	117
R & P Partisol-Plus 2025 PM-2.5 Seq.	118
R & P Partisol-Plus 2025 PM-2.5 [FEM] Seq.	118
Thermo Partisol-Plus 2025 Sequential	118
Graseby Andersen RAAS2.5-100	119
Thermo Electron RAAS2.5-100 FEM	119
Graseby Andersen RAAS2.5-300	120
Thermo Electron RAAS2.5-300 FEM	120
BGI PQ200-VSCC or PQ200A-VSCC	142
R & P Partisol-FRM 2000 PM-2.5 [FEM]	143
Thermo Scientific Partisol 2000-FRM	143
R & P Partisol 2000 PM-2.5 FEM Audit	144
R & P Partisol-Plus 2025 PM-2.5 [FEM] Seq.	145
Thermo Partisol-Plus 2025 Sequential	145
Thermo Electron RAAS2.5-100 FEM	153
Thermo Electron RAAS2.5-300 FEM	155
Met One BAM-1020 PM-2.5 [FEM]	170
ThermoTEOM® 1400a with Series 8500C FDMS®	181
Thermo Scientific Model 5030 SHARP	184

Bias Evaluation Summary

Data selection and preparation was the same as the procedure used for precision. The percent difference (PD) calculation was used. Each percent difference pair measured at a site is then averaged to calculate the site PD. Then, each site's average PD is averaged for all sites/PQAOs with a particular method code combination. Table 2 provides annual and 3-year estimates of bias for each method code combination. Figure 2 was generated to show 3-year bias estimates for routine and collocated samplers with the same method code (Like MD), manual FRMs compared to unlike method designations (Unlike FRM), and manual FRMs compared to continuous instruments (FRM/FEM). All collocations of same method designations and collocations with unlike FRMs met the ± 10% DQO Goal. All FEM/FRM collocation produced a positive bias (FEM high compared to FRM) with about 35% of the comparisons meeting the ± 10% DQO goal. Figure 3 (*on page 3*) is a repetition of the FEM/FRM bias estimates (green line) in figure 2 with each FRM/FEM pair labeled for easier identification.

Additional evaluation work has been performed by Tim Hanley of the Ambient Air Monitoring Group. Tim has evaluated the continuous FEMs against collocated FRMs run by the same monitoring agency using the performance criteria for acceptance of class III FEMs. The class III performance criteria are defined in 40 CFR Part 53 and are a different set of statistics than those used in Appendix A. Tim provided an assessment that was included in the $PM_{2.5}$ docket and included the following remarks.

The lack of acceptable performance data from some FEMs as compared to collocated FRMs, on a 24-hour basis, calls into question the use of these continuous FEMs. For the $PM_{2.5}$ primary standard, monitoring agencies have the option of continuing to use FRMs, or where applicable, using a well performing continuous FEM. The annual monitoring network plan (described in §58.10),

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Table 2. Bias Estimates

Method	116_116	116_117	116_118	116_170	117_117	117_118	117_170	118_118	118_145	118_170
2008	-0.14	-1.65		12.48	-0.08	1.55		2.30	4.79	52.19
2009	3.27		-1.28	20.22	0.05	-0.39	36.10	1.39	1.56	30.46
2010	-0.51			27.82	0.70	2.73	44.49	2.66	5.41	34.02
AVERAGE	0.88	-1.65	-1.28	20.17	0.22	1.30	40.30	2.12	3.92	38.89

Method	118_181	118_184	119_119	119_120	119_170	120_120	120_145	120_170	142_142	142_170
2008		35.84	1.01	-0.96		1.18	2.62	24.62	-0.96	
2009	-4.03	31.64	0.41	-3.61	24.51	0.09	6.93	30.84	0.56	11.11
2010	25.30		-1.26		28.99	1.85		46.54	0.71	7.83
AVERAGE	10.64	33.74	0.05	-2.29	26.75	1.04	4.78	34.00	0.10	9.47

Method	143_143	143_170	145_145	145_170	145_181	145_184	153_170	155_155	170_170	170_181
2008	1.15		0.25					0.55	2.51	
2009	0.14	12.54	1.27	27.69	9.63	16.97	13.30	-2.67	13.84	
2010	-0.33	24.65	0.88	20.99	16.09	-1.40	7.14	-8.69	4.47	1.99
AVERAGE	0.32	18.59	0.80	24.34	12.86	7.79	10.22	-3.60	6.94	1.99

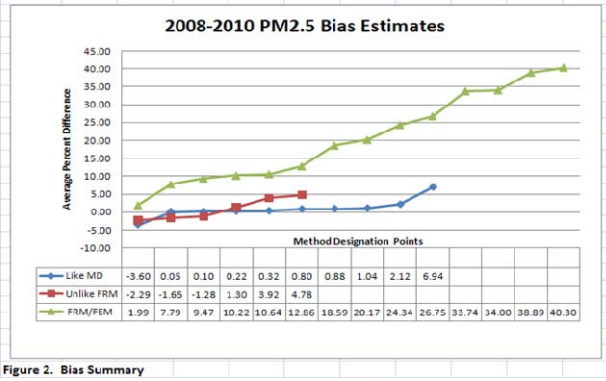


Figure 2. Bias Summary

2008-2010 PM2.5 Continuous Monitors (*Continued from Page 1*)

due to the applicable EPA Regional Office by July 1 of each year, is the appropriate place for monitoring agencies to identify the methods and sampling frequencies it will operate in its network..

In cases where a $PM_{2.5}$ continuous FEM is not meeting the part 53 performance criteria, we recommend keeping the $PM_{2.5}$ FRM as the Primary monitor while working towards improvements in FEM data quality. For those agencies with well performing $PM_{2.5}$ continuous FEMs, we support the use of these instruments in the agencies network.

Tim's memo is available at: http://www.epa.gov/ttn/naaqs/standards/pm/data/HanleyandReff040711.pdf .

Tim has also engaged the vendors in conference calls in order to determine if there are any helpful hints to improve the monitors operations, any additional checks that can help identify malfunctioning instruments, and services to help monitoring organization trouble shoot their instruments. In the meantime, please pay particular attention to your FEMs. If you have had success with your instruments and you've done something not currently in an operations manual that has improved your system, let Tim Hanley know (hanley.tim@epa,gov).

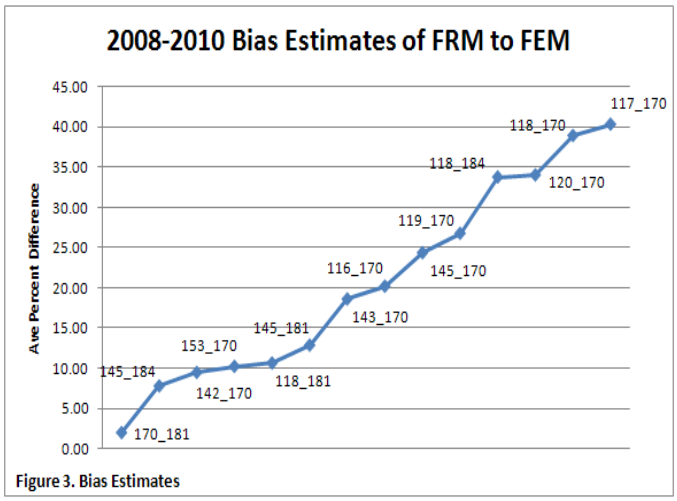


Figure 3. Bias Estimates

Special thanks goes out to Rhonda Thompson and Adam Reff from the Air Quality Analysis Group for their help in this and Tim Hanley's evaluations.

Air Toxics Meeting Has Good Turnout

EPA / OAQPS held an Air Toxics Monitoring and Data Analysis Workshop, April 4 - 7, 2011, at the US EPA Region 6 Headquarters in Dallas TX. The workshop agenda and presentations are available at http://www.epa.gov/ttn/amtic/toxmeet.html. Nearly 100 air quality professionals from US EPA Program and Regional Offices, State, Local, Tribal and nonprofit agencies, and academia participated in the workshop providing a refreshing breadth of perspectives. In addition to some very informative presentations on a variety of monitoring and data analysis topics, there were panel discussions on several topics to include EPA's response to air quality concerns associated with the BP oil spill, fugitive emissions from oil and gas field operations, and ambient Hg monitoring. However, the aspect of this workshop that enhanced the communication and productivity beyond "the norm" were the brainstorming sessions to discuss what's worked or hasn't worked in air toxics, what have we been doing that's no longer needed, what haven't we been doing that is needed, what are the program strengths and weaknesses, obstacles, suggested improvements, etc. To begin the process, a plenary brainstorming session was held as the last session on Tuesday, April 5th. Following this plenary discussion, a handful of EPA folks worked to identify up to four themes into which these specific suggestions were segregated; among the topic areas were technical concerns, working with community groups, and programmatic issues. Breakout sessions were held during the last session on Wednesday, April 6th, during which time the themes and specific topics were discussed. Recommendations were delineated by each group and presented by a spokesperson from each of the breakout groups on the morning of Thursday, April 7th. During the workshop, a presentation was made on the QA aspects of the National Air Toxics Trends Stations (NATTS). The presenter outlined the Data Quality Objectives of the program and illustrated the QA data (precision, bias, completeness and detectability) of the data from the inception of the program in 2004 through 2009. Questions can be directed to Dennis Mikel at mikel.dennisk@epa.gov. There were several "projects" that were promising in terms of both benefit and feasibility to complete within a reasonable timeframe (i.e., one year). Further detail regarding outcomes from these discussions will likewise be posted, as available, at the AMTIC website identified above.

Ambient Air Protocol Gas (Continued from Page 1)

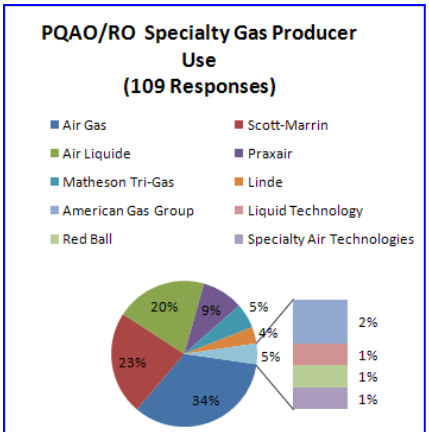


Fig. 1 Specialty gas producer use

The two gas producers, Red Ball and Linde, that were not verified were only providing standards to one PQAO/RO survey respondent each. They did submit cylinders in the first quarter of 2011.

Table 1 provides the final tally for the verifications occurring each quarter. Some cylinders were multi-pollutant which is why the pollutant total is different from the cylinder total.

As indicated in 40 CFR Part 75 Appendix A, EPA Protocol Gases must have a certified uncertainty (95 percent confidence interval) that must not be greater than plus or minus (±) 2.0 percent of the certified concentration (tag value) of the gas mixture. However, this acceptance criterion is for the Acid Rain Program. The AA-PGVP adopted the criteria as its data quality objective and developed a quality system to allow the RAVLs to determine whether or not an individual protocol gas standard concentration was within ± 2% of the certified value. The Ambient Air Program has never identified an acceptance criterion for the protocol gases. Since the AA-PGVP has not been established to provide a statistically rigorous assessment of any specialty gas producer, the RAVLs report all valid results as analyzed but it is suggested that any difference greater than 4-5% is cause for concern.

Table 1. Cylinders and Pollutants Analysed by RAVL by Quarter.

Region	Quarter 2		Quarter 3		Quarter 4		Total CY2010	
	Cylinders	Pollutants	Cylinders	Pollutants	Cylinders	Pollutants	Cylinders	Pollutants
2	4	6	6	12	0	0	10	18
7	6	10	4	5	4	9	14	24

Results show that of the 42 standards that were verified, 41 were within the ± 4-5% AA-PGVP criteria, and 39 (92%) were within the ± 2% Acid Rain Program criteria. One result did not meet our criteria.

Survey Improvement

We did not get 100% completeness on surveys. In order to correct this, EPA developed a web-based survey. This survey has a point of contact email address for all 118 PQAO/ROs. The survey lists the ten 2010 specialty gas producers along with their multiple production facilities. The point of contact must select one of those facilities (or mutiples) from the pick list or add a new production facility. If a new facilty is added, EPA will ensure it is a legitimate production facility (not a distributor) and will add it to the pick list for other points of contact to use. Every two weeks, EPA will determine which points of contact have not completed the survey and send a reminder email to them indicating that the survey has not been complete. EPA hopes this will inspire all PQAO/RO to complete the survey. We need the monitoring organizations help in completing this survey.

Participation Improvement

Since the program is voluntary, EPA cannot require particiption. We hope that the PQAO/ROs will see the benefit of an independent verification of their cylinder and we will get at least 10 cylinders per RAVL per quarter. PQAO/ROs did have difficulties with some shippers (in particular UPS) in the transport of these cylinders to the RAVL. In some cases they were never shipped due to these difficulties. EPA has worked with UPS to develop a set of shipping instructions that may help the PQAO/ROs in the future.

Verification of Each Production Facility

Since the intent of the AA-PGVP is to be a blind verification, meaning the gas standard used for the verification is unknown to the producer, we rely on the PQAO/ROs for particpation. However, with some specialty gas producers being used by only a few PQAO/ROs, EPA will inform those specialty gas producers earlier in the year that they may want to provide the RAVL with a gas standard. At a minimum, EPA will make sure there is capacity in the last verification quarter for those production facilities to send the RAVL a gas standard when a standard representing that producer has not been sent by a PQAO/RO.

Performance Evaluation Training Completed for Another Year

Training personnel involved in NPAP through the probe

With all the uncertainty surrounding government shutdowns, OAQPS managed to get in the National Performance Audit (NPAP) and $PM_{2.5}$ and Pb Performance Evaluation Program (PEP) training and certifications accomplished the week on April 18.

Dennis Crumpler started out the week with $PM_{2.5}$ and Pb PEP training. Dennis had provided three webinars for $PM_{2.5}$ and two for Pb prior to the actual hands-on training. These webinars have been very cost-effective in providing training on the areas that do not require sampler set-up, verifications, and sample retrieval. The webinars save close to a day and a half of travel from each pollutant training course and allowed us to complete all three program training/certification/recertifications in one week. Dennis had about 40 personnel at the $PM_{2.5}$ and Pb sessions. Most were being recertified but we did have about 5 new auditors that included State, Local and Tribal monitoring personnel.

Mark Shanis conducted NPAP through-the-probe training/certification/recertifications on Thursday and Friday of the week. Mark had two regular range cased-based systems (one seen in the picture), two regular range truck-based NPAP TTP systems, one trailer-based system and one trace –level case-based system on hand. Similar to the PEP, Mark had three webinar sessions, prior to the training session, to go over the program details that did not require hands-on implementation.

Chris St. Germaine (EPA Region 1) checking out cased-based NPAP system.

Training would not have been successful without the help of those in the EPA Regions who assisted with the implementation. Thanks goes out to Greg Noah from Region 4, Thien Bui, James Regehr and Lorenzo Sena from Region 7, and Chris St Germain from Region 1. Thanks also to Solomon Ricks from OAQPS who helped out during the week and to RTI's Jeff Nichols and Jenney Lloyd for assisting in the training activities.

Over the past year we have been getting inquiries from contractors needing to be trained in these performance evaluations to implement them at PSD sites. OAQPS will be providing more detailed information in the future in order to inform contractors early enough to attend both seminars and hands-on certification.

Corrections to $PM_{2.5}$ Method 2.12

A set of very sharp eyes caught a discrepancy in Method 2.12. The error is in Section 13.2, the flow rate audit. The current version of the method lists the equation for "A_D (%)" as:

$$A_D(\%) = 100\,x\,(Q_{sampler} - 16.67)/16.67$$

The formula should be :

$$A_D(\%) = 100\,x\,(Q_{audit} - 16.67)/16.67$$

This change means that the flow rate of the sampler measured by the audit device must be within 5% of the 16.67 L/min design flow rate. The text within the section was correct but the incorrect equation used the samplers indicated flow rate versus what would be considered the true flow rate from the audit device.

Operating Ranges, Calibration Ranges, Zero, Span Precision Checks and Flexibility… One Man's Opinion

Recent QA EYE articles (see Newsletter #10) and technical memos have provided for the expansion of the gaseous criteria pollutant performance evaluation audit levels from 5 to 10 and the allowance of a new statistic to evaluate the lower two levels. Our recent guidance has been based on the objective of having the estimates of precision and bias reflect the precision and bias of the routine concentrations. Much of the data we see for both the performance evaluations and the one point precision checks are at much higher concentrations than the routine data. This could provide a false sense of the precision and bias of the routine data in AQS. Why has this occurred and what can we do to change it?

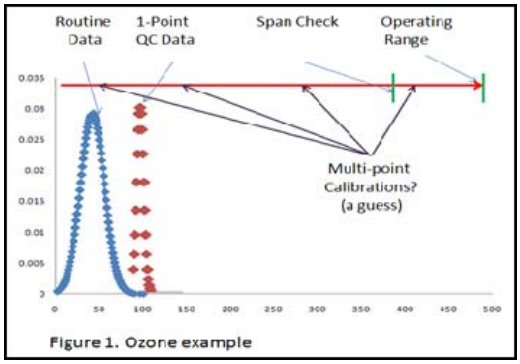


Figure 1. Ozone example

When the ambient air QA regulations and guidance were initially promulgated we had higher routine concentrations, different methods, different and less sensitive monitoring and calibration technologies and a different quality of gas standards. All of the technological change has been for the better and should allow us to be precise and unbiased at lower concentration ranges. In addition, older guidance may have suggested that monitors had to be operated and calibrated at one of the ranges for which they were approved. Our current thinking here in OAQPS is that this is not the case. Figure 1 represents how many monitoring organizations conceive of the QC requirements for gaseous monitoring. The data shown is 3 years of ozone data for a PQAO. The monitoring organization has selected the 0-500 ppb operating range. They calibrate using 4 upscale points with the highest point at 450 ppb. The span check, based on guidance of 80-90% of the operating range, is at 400 ppb. The one point QC check, based on the requirement of 10 - 100 ppb, is at 90 ppb and the routine data 3-year average is about 40 ppb.

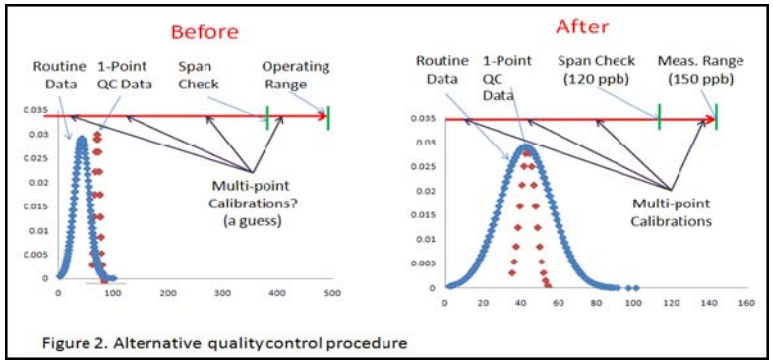


Figure 2. Alternative quality control procedure

During the 2008 revision of the QA Handbook we had comments from monitoring organizations to change guidance related to the span check. Based on those recommendations, we included the following language in Section 7.

The span check concentration should be selected that is more beneficial to the quality control of the routine data at the site and EPA suggests: 1) the selection of an appropriate measurement range and 2) selecting a span that, at a minimum, is above 120% of the highest NAAQS (for sites used for designation purposes) and above the 99% of the routine data over a 3-year period. The multi-point verification/calibrations that are performed at a minimum annually can be used to challenge the instrument and confirm linearity and calibration slope of the selected operating range.

This guidance provides the concept of selecting both an appropriate measurement range (other than the operating range) for calibrating the instrument and developing the appropriate quality control procedures. Figure 2 might be considered a new approach where a measurement range of 150 ppb is established and calibration points selected within that measurement range. Then both the span and the 1-point QC check concentration can be lowered.

Some monitoring organizations have been hesitant to lower the 1-point QC, suggesting the higher concentration can be used to reflect the quality of the data around the NAAQS. This is a legitimate rationale but the span check in the alternate procedure can be used to that effect and the 1-point QC check can then be used to represent the precision and bias of the routine concentration. So in summary, we think that monitoring organizations have flexibility to choose the appropriate instrument measurement range calibration points, span check and 1-point QC relative to the concentrations they measure at their sites. Should the high end of the calibration range be above the NAAQS levels? Yes, in order to be protective of the NAAQS and any natural or man-made pollution events that might occur. However, there is no reason to base the QC concentrations on the FRM/FEM designated operating ranges of the instrument.

Continued on page 7

Operating Ranges …. One Man's Opinion (Continued from page 6)

As an example, the monitoring organization in Figure 1 might use the procedure in Figure 3 to select the appropriate QC ranges. The 1-point QC concentration could be selected at the same concentration as their average routine value. From the 2/17/2011 assessment report that was posted on AMTIC, the 1-point QC concentrations at the low end are currently being achieved by monitoring organizations. The QA Handbook that's currently undergoing revision can be expanded to reflect this guidance. Just one man's opinion.

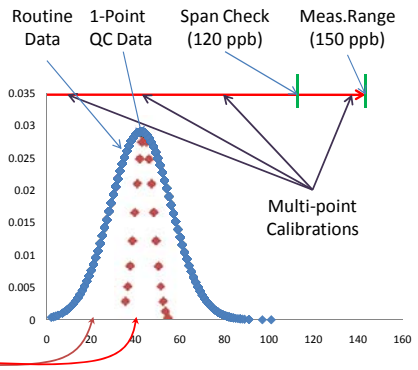
New procedure for selecting Operating Ranges and QC checks

1. Take 5-year 8-hour or 1-hour max value
2. Multiply value by 1.5, that's the measurement range.
3. If calculation in step 2 is below NAAQS, use 1.5x of NAAQS (if sites used for regulatory purposes.
4. Take 80% of new operating range, that's your span check value. Span check can now serve as a check around the NAAQS
5. Use current CFR and routine data to select 1-point QC check concenration

PE Audit Level	Audit Level Conc (ppb)	Number of Pairs	Ave ABS PD	Ave ABS Diff (ppb)
1	4.0-5.9	0	NA	NA
2	6.0-19	3	4.50	0.57
3	20.0-39	1401	4.19	1.32
4	40.0-69	3100	3.20	1.58
5	70.0-89	4020	2.34	1.82
6	90.0-119	1233	2.01	1.90
7	120.0-139	504	2.16	2.68
8	140.0-169	2090	2.11	3.27
9	170.0-189	2972	2.02	3.68
10	190.0-259	2783	1.98	4.50

Figure 1 Case

Assume 101 ppb is 5-year, 8-Hour max



From assessment report- Audits at 20-39 ppb are achieving DQOs

Figure 3 Possibly new QA Handbook guidance

NOTE (A Regional Perspective)

While the above article may represent "one man's opinion," at least one of the EPA Regional Offices has been separately thinking about the importance of the 1 point QC check, and setting proper instrument ranges on the various pieces of monitoring equipment. One would think that there would be little value in calibrating a police speed radar gun up over 500 mph when they'd never "see speeds" that high. And if you are routinely seeing low concentrations of a pollutant, a QC check should be used to ensure the data you are collecting has meaning and represents the true value of what you are seeing in the environment. As monitoring measurement equipment improves, and ambient concentrations are reduced- we should continue to challenge the equipment appropriately.

Pb Audit Strips Developed for 17 Pb Labs in 2011- Call Will Go Out in July for 2012 Strips

In October 2010, EPA contacted the monitoring organizations sampling for Pb and asked whether the organizations wanted EPA to develop Pb analysis audits (Pb audit strips) for the upcoming year. Pb analysis audit strips are required in 40 CFR Part 58 Appendix A Section 3.3.4.2. We received orders from 17 monitoring organizations (about 45% of those polled) for the audits needed for 2011. RTI, EPA's QA contractor, completed development of the audit strips in December and sent out three sets to the referee labs: Region 9 Pb PEP Lab, the Region 7 Air Monitoring Lab, and the Office of Radiation and Indoor Air. The labs tested 7 strips at each concentration level and had to be with +/- 5 percent relative standard deviation from the average of each labs determined value and the average concentration for each range had to be within within 7% of the contractors (RTI) established concentration. All three referee laboratories results met the acceptance criteria. Since some monitoring organization's laboratory managment are witholding concentrations of the audits from lab staff, OAQPS will publish the results of the referee anlaysis after the 2011 sampling/ analysis season.

We have had interest from laboratories for development of these strips next year. We plan on developing a memo or including this information in the next NPAP/ PEP self implementation decision memo that is usually distrubuted in July each year. STAG funds would be required fo the development of these strips. Based on last year's cost , we estimate the cost to be about $300 for a year's set of 24 strips (12 per concentration).

When it Comes to 8x10 Filters, Do Sides Matter?

We received a question about whether there was a correct side for the 8x10 high-volume PM10 filters. In reviewing Method 2.11(1997), Section 3.3.1 did distinguish an "up" side as a side with slightly rougher texture. However more recent discussions with Whatman (now part of GE Healthcare) described the filters as "bi-directional" and the unique ID numbers could be stamped on either side during manufacture. We suggest placing the filter ID side down during sampling so when the filter is folded for transport the ID number can be seen.

Sunset Carbon Instrument Under Evaluation

Beth performing calibrations on the Sunset.

Elizabeth (Beth) Oswald is the Ambient Air Monitoring Group's most recent hire. She comes to OAQPS by way of EPA Region 4 where she was in a rotational intern program that had her eventually gravitate towards ambient air monitoring. In November, she came to OAQPS and we've since loaded her down with a number of important projects. Welcome Beth!

One such project Beth is leading (with the help of Joann Rice and Dave Shelow) is being conducted out at our Ambient Air Innovation and Research Site (AIRS) in Research Triangle Park (RTP), North Carolina. One of the major areas of interest in air monitoring continuous monitoring technologies that could potentially lead to a reduction in filter based technologies. In the CSN alone, over 180 sites are collecting 24-hr filter based samples that are analyzed for mass, trace elements, major ions, and organic carbon/elemental carbon (OC/EC). OC/EC samples are collected on quartz filters every third or sixth day and shipped to Research Triangle Institute (RTI) for analysis. The cost of sample preparation, shipping and analysis for the carbon network is approximately $2M per year. In an effort to move towards continuous, higher time resolution sampling and reduce the need for expensive, time consuming, filter based sampling, AAMG purchased eight Sunset Semi-Continuous OC/EC instruments for future deployment to monitoring agencies and is evaluating two of them at our research site.

The key or critical parameters to be collected are thermal OC/EC, optical EC, and optical BC. The following equipment will be installed and operated at the AIRS Monitoring Site:

- Two (2) Semi-Continuous OC/EC Instruments (Sunset Model 4) – thermal OC/EC and optical EC;
- One (1) Sequential Particulate Speciation Sampler (URG 3000N) – thermal OC/EC; and
- One (1) Aethalometer (Magee Scientific AE-21) – optical BC

The primary study objectives are to gain an understanding of how the Sunset instrument works (routine operation and maintenance); determine how to optimize operation through various experiments; develop a SOP for the instrument; establish precision and detection limits; and determine how well the Sunset compares with the URG 3000N and the Aethalometer.

As a secondary objective, the information from the study will be used, to the extent possible, to inform and gain insight regarding the questions below.

- What are the space considerations for operating the Sunset analyzer in a shelter?
- Do any special considerations need to be made for control of shelter temperature and relative humidity?
- What interferences exist that may be problematic for implementation?
- What important parameters should be tracked or documented for QC purposes (e.g. laser correction value, oven temperature, pressures, etc.)?
- How should the data be validated?
- What is the Sunset instrument data capture rate?
- What is the ideal sample collection period for a rural sampling location similar to AIRS?
- How often should sucrose standard injections be performed?
- What is the typical value of nightly blanks?
- What type of denuder (parallel plate or carbon monolith) removes organic vapors more efficiently and is more practical to use?
- What are the capital costs, including additional equipment, for operating each analyzer?
- What level of effort and training are necessary for routine operation?

Work continues on NOy NPAP Audits.. Success at Low Levels Being Achieved

Mark Shanis, OAQPS NPAP Lead, has been working for the past year or two on the low level NPAP audits needed for the NCore network. He has been working with the contractor Keith Kronmiller at our Ambient Air Innovation and Research Site (AIRS) to develop the TTP systems that can provide reliable low level concentrations for these audits. Region 4 and now Region 3 NPAP TTP auditors have used the RTP CO and SO2 Trace Level audit system and procedures. Region 4 will take the NOy equipment and procedures in the field in Region 4 starting this summer.

Continued on Page 9

Work continues on NOy NPAP Audits.. (Continued from Page 8)

Recent work with NOy has successfully achieved audit levels 1 and 2 with the new 1.5 ppb difference statistic. Our tests have used an Environics 9100 calibrator with a 3rd, lower mass flow controller (20cc/min), a higher dilution mass flow controller (30 lpm); and an improved ozone generation system that accommodates the low ozone levels needed for GPT at the lowest NOy or NO2 audit levels. We have obtained an improved API Calibrator with a lower MFC and an ozone generator that now accommodates the lower ozone concentrations needed for low level GPT. OAQPS also got an improved zero air generator that has been recently redesigned to have a 30 lpm maximum flow capacity, improved water vapor removal capacity, water vapor measurement capacity, and adsorbent regeneration cycles.

To accomplish the lower 5 levels of the 10 level audit ranges and the ability to generate all 3 trace level NCORE Gases that are generated from compressed gas cylinders, we have found it necessary to use 2 blended gas (BG) cylinders. Agency operators may not need to do all the levels in the table, may not need to be able do all 3 of the trace level, non-ozone gases at the same time, and may not have the MFC and zero air capacity that we have here in RTP. We have them so we can demonstrate what can be done. It is up to the agencies and their Regions to decide what they need to do.

At this point, we are going to go in the field with one or both of the following BG cylinders: 680 ppm CO, 60 ppm NO, and 16 ppm SO2 (high BG cylinder); and/or 24 ppm CO, 1 ppm NO, and 1 ppm SO2 (Low BG). As the TTP audit program (see our SOP on AMTIC) relies on calibrated analyzers in the field, and because we use CO as the most stable gas to do calibrations with- especially at the normal SLAMS ranges- we also bring a high and a low span CO cylinder for our audits. We are using a little under 5 ppm as our high span, for typical 0-5 ppm full scale range analyzers, and 0.50 ppm CO for our low span.

In order to address concerns that could arise about the accuracy and reliability of GPT for generating NO2 or NOy at low concentrations, we have some additional cylinders for independent checks on our GPT values at the low levels. For this we use a 5 ppm NO2 cylinder and a special blend of 200 ppm CO and 1 ppm NPN. As NPN is used for checking the NOy converter efficiency, as it is more stable than NO or NO2 and more stable and less hard to deal with than nitric acid (an NOy of concern), it is also used to do both our lowest audit concentrations and to check MDLs. The CO addition allows us to independently insure that our calibrator is still working as expected by indicating that certain CO points have not changed.

Mark provided some information on the earlier work at RTP on NOy in the QA EYE Newsletter *#10* He presented a summary of the latest RTP NOy work and answered many questions about that work at the recent NPAP training/certification/recertification on April 21st. We are currently writing up a standard operating procedure for the NOy TTP Performance audit method for the NPAP operators. After an internal review and testing, we expect to have it completed and distributed on AMTIC by July.

TAMS Center Providing 7-Session QA 101 Training

The Tribal Air Monitoring Support Center (TAMS) was created in 2001 with a mission to provide technical and data management support to the tribal air community. Over the 10 years of the TAMS existence they have done a superb job developing QA training activities and QA Tools for the tribes. In addition to training, they provide technical assistance, equipment loans (including the school air toxics equipment), filter weighing services for $PM_{2.5}$ filters and onsite support. They have developed tools like the Tribal Data Toolbox and Turbo-QAPP (see QA EYE Article #1). For those not familiar with TAMS you can find out much more about thier mission and programs on their website at: http://www4.nau.edu/tams/

Just recently, Melinda Ronca-Battista had the idea for a 7-week, 7-session webinar, starting April 7 through May 19th to cover the quality assurance activities of the criteria pollutants. The course starts off explaining the reasons behind a quality assurance program, why they are needed, and the EPA requirements for them. It then proceeds into general explanations of the 40 CFR Appendix A requirements and ends up discussing more specific details of the QA/QC of the criteria pollutants. Melinda has kept the sessions lively with her own presentations but has invited experts from the tribal ambient air monitoring community as guest speakers to provide their wisdom and experience on these topics. Although specifically geared for the tribal monitoring community, attendance has included State and Local participants and EPA Regions. Completion certificates are available for those who complete short homework assignments for each session. So far the webinars have attracted about 50 participants per session and number seems to climb as more become aware of the webinars. Melinda is attempting to record these sessions so they can be made available to anyone missing the course or a particular session. Powerpoint files of the session are also posted on their website. Great Job Melinda!

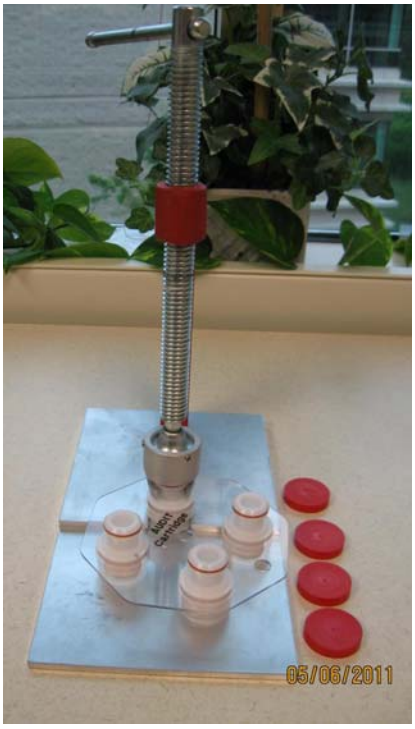
Melinda Ronca-Battista on a recent family vacation to Trieste, Italy. Instead of touring Italian architecture, she became intrigued with CO Monitoring Stations

New Jigs for Agencies to Regenerate Their URG Audit and Verification Cartridges

We are pleased to announce the arrival and availability of a "jig" that agencies and auditors may use to load URG 3000N performance verification and audit cartridges with new filters. Through the efforts of Jeff Lantz at EPA ORIA-Las Vegas, EPA had these manufactured at no cost to the monitoring agencies. The first distribution will be made to every agency that operates a URG 3000N sampler, unless they already have a jig that they are satisfied with. Since these instruments will see infrequent use we could not justify the purchase of one for every site, and in fact hope that each "jig" will serve all operators and auditors of the agency to which it is deployed. Please contact Solomon Ricks (ricks.solomon@epa.gov; 919-541-5242) if your agency has a special need for two "jigs." The supply of extra "jigs" is limited.

We have also purchased Paulflex quartz filters from RTI International (out of the current production batch) to distribute with the "jigs." Typically, cassette position 1 will be the only one used for a verification or audit. The first distribution should allow for changing the filter every quarter for both verifications and audits. The operator or auditor should inspect the filter prior to every use; if it is dirty, torn or dislodged from the cassette, it should be replaced. Send an e-mail to Solomon Ricks if additional filters are ever needed. Otherwise we will annually ship-out a set for each verification and audit cartridge in use by each agency.

If you would like a "jig" please send an e-mail to Solomon Ricks and courtesy copy crumpler.dennis@epa.gov. Put "Send Cassette Jig" in the subject line. We need a shipping address for your agency, a contact person, an e-mail address and a telephone number.



Electronic Entry of State, Local or Tribal Collocated Pb Sampling COC/FDS Forms

State, Local and Tribal agencies that monitor for ambient lead (PB) are required to collect either 4 or 6 collocated filter samples, depending whether their network consists of ≤ 5 or >5 Pb monitoring sites, respectively. The filters from the collocated samplers are to be submitted to EPA's Region 9 Analytical Support laboratory in Richmond, California, for Pb analysis. The migration of data from the Region 9 lab to AQS has been slower than we would like.

A hard-copy, combined, chain of custody and field data sheet are initiated for each collocated filter by its sponsoring agency. The COC/FDS accompanies the filter at all activity steps along its lifespan. A scan of the COC/FDS along with the mass per filter data is transferred to RTI International, who provides support to EPA's Performance Evaluation Program for the national Pb monitoring network, for validation and reporting to AQS. The data on the FDS is critical to an accurate determination of the ambient concentration measured by the collocated sampler during the appointed sampling event. Unfortunately, the data from scanned forms must be entered by hand at RTI, which is costly and is subject to produce errors in translation, or increase the need to follow-up with the agency personnel.

To expedite the data transfer, reduce errors, and thereby reduce the cost of the data management process, RTI was commissioned to create a website with an online COC/FDS that can be filled out by the agency operator. We are requesting that anyone who collects the collocated Pb filter samples and completes the hard-copy COC/FDS register on the Website and subsequently complete the COC/FDS on-line. To "Register" go to https://airqa.rti.org/. It may take 24 hours to have your account activated. Send an e-mail to Ed Rickman at RTI, eer@rti.org, and identify yourself as a Pb collocated sample provider. To electronically report your COC/FDS:

1. Go to the Website
2. Log-on
3. Click on the "Pb-Performance Evaluation Program"
4. Click on "5) State Collocated Chain-of-Custody Form and Field Data Sheet"
5. Fill out all the sections that are highlighted in Red.
6. If you have any problems or questions Click on "Contact Us" or e-mail Jennifer Lloyd: jml@rti.org

EPA Office of Air Quality Planning and Standards

EPA-OAQPS
C304-02
RTP, NC 27711

E-mail: papp.michael@epa.gov

The Office of Air Quality Planning and Standards is dedicated to developing a quality system to ensure that the Nation's ambient air data is of appropriate quality for informed decision making. We realize that it is only through the efforts of our EPA partners and the monitoring organizations that this data quality goal will be met. This newsletter is intended to provide up-to-date communications on changes or improvements to our quality system. Please pass a copy of this along to your peers and e–mail us with any issues you'd like discussed.

Mike Papp

Important People and Websites

Since 1998, the OAQPS QA Team has been working with the Office of Radiation and Indoor Air in Montgomery and Las Vegas and ORD in order to accomplish it's QA mission. The following personnel are listed by the major programs they implement. Since all are EPA employees, their e-mail address is: last name.first name@ epa.gov.

The **EPA Regions** are the primary contacts for the monitoring organizations and should always be informed of QA issues.

Program	Person		Affiliation
STN/IMPROVE Lab Performance Evaluations	Eric	Bozwell	ORIA- Montgomery
Tribal Air Monitoring	Emilio	Braganza	ORIA-LV
Statistics, DQOs, DQA, precision and bias	Rhonda	Thompson	OAQPS
Speciation Trends Network QA Lead	Dennis	Crumpler	OAQPS
OAQPS QA Manager	Joe	Elkins	OAQPS
PAMS & NATTS Cylinder Recertifications	Suzanne	Beimer	ORIA LV
Standard Reference Photometer Lead	Scott	Moore	ORD-APPCD
Speciation Trends Network/IMPROVE Field Audits	Jeff	Lantz	ORIA -LV
National Air Toxics Trend Sites QA Lead	Dennis	Mikel	OAQPS
Criteria Pollutant QA Lead	Mike	Papp	OAQPS
NPAP Lead	Mark	Shanis	OAQPS
PM2.5 PEP Lead	Dennis	Crumpler	OAQPS
STN/IMPROVE Lab PE/TSA/Special Studies	Jewell	Smiley	ORIA-Montgomery
STN/IMPROVE Lab PE/TSA/Special Studies	Steve	Taylor	ORIA-Montgomery

Websites

Website	URL	Description
EPA Quality Staff	http://www.epa.gov/quality1/	Overall EPA QA policy and guidance
AMTIC	http://www.epa.gov/ttn/amtic/	Ambient air monitoring and QA
AMTIC QA Page	http://www.epa.gov/ttn/amtic/quality.html	Direct access to QA programs
Contacts	http://www.epa.gov/ttn/amtic/amtic_contacts.html	Headquarters and Regional contacts