Notes Summary from the Ambient Air QA Session
At the
27th Annual National Conference on Managing Environmental Quality Systems
Seattle Washington Wednesday April 23

Meeting Overheads and notes will be posted at http://www.epa.gov/ttn/amtic/qamsmtg.html

Due to the issues related to conference logistics, the Ambient Air QA Workgroup session was split into two sessions on Wednesday April 23: a session from 8:00-9:40 (followed by formal presentation from 10:00-2:15) and a session from 2:45 – 6:40. Table 1 represents the subjects that were discussed. A summary of the discussions follow

Table 1-Discussion Topics at Seattle QA Meeting April 23.

Title	Facilitator/ Note taker
NPAP Reports/Progress/New Directions	Shanis/Mustafa
NPAP audits of precursor gas analyzers	Shanis/Elkins
Status of the Protocol Gas Verification Program	Elkins/Papp
AQS Audit Tracking	Miller/Elkins
QA Handbook review including validation templates	Papp/Crumpler
SRP and traceability nomenclature	Shanis/Papp
QA Issues with precursor gas sites	Mikel/
What may come up for QA for Pb NAAQS	Papp
Gaseous Audit Levels- guidance and new proposal	Papp
PAMS P&A reporting	Did not Discuss
Wish list and Priorities	Group

NPAP Reports/Progress/New Directions- Presenters Mark Shanis and Mustafa Mustafa

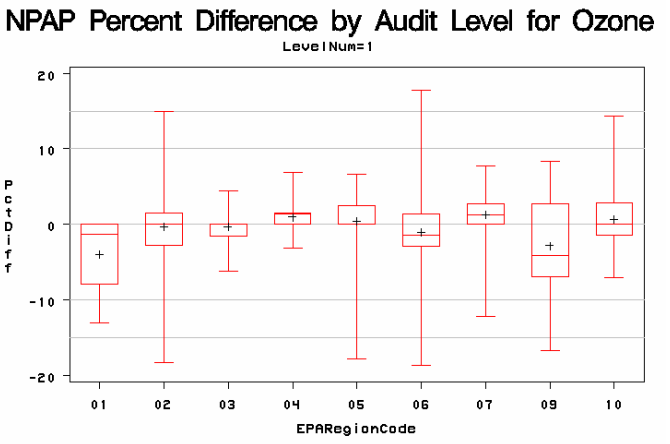


Figure 1. NPAP audit data for low level ozone audit

Mark Shanis (OAQPS) and Mustafa Mustafa (Region 2) provided two reports on progress in the National Performance Audit Program. Mark provided an update on progress to achieve our national goals of 20% of the sites each year with 100% over 5 years. Since the NPAP TTP was in full implementation mode in 2005, our expectation was that 60% (2005-2007) of the gaseous sites should be audited. At a national level, we have achieved 67%. Some Regions have accomplished higher percentages, some lower, but in general we are on track. We are starting to developed "cased-based" systems that will allow NPAP to get into areas where trucks or trailers are a hindrance. There are two cased based systems available in Region 2 and Region 9 and another may be developed in Region 5.

Mark also reviewed the data coming from the audits and it looks very good. Many were concerned as to whether or not the new acceptance limit of 10% could be met for ozone, especially for the low level concentration. Figure 1 provides and assessment of the low concentration audit level and for the most part we are well within the acceptance limits. Mark also looked at the NO_2 low level audit and found more variability in that concentration which suggest we will leave the NO_2 and SO_2 acceptance limits at 15% for now. We are also proposing a process to get the NPAP data into AQS in a more timely fashion that would include the ESAT contractor putting the data into an unofficial AQS "holding area" that would ensure that no entry errors occurred and then sending the information back to the audited monitoring organization for official upload. We'll be pursuing this with the monitoring organizations over this next year.

Figure 2. Region 2 cased-based portable NPAP TTP System

Region 2 has been the organization most interested in the development of a portable NPAP system due to the issues they have with audits in New York City as well as transport to Puerto Rica and the Virgin Islands. Region 2 developed the first "case-based" system and reported their findings at the 2006 National Meeting. From their success they have developed a second generation portable system that is even more compact (see Fig. 2). Mustafa Mustafa provided a presentation of the development process from the trailer through the first and second generation systems. These portable systems use flow to ensure the correct audit concentration rather than a CO analyzer but they have a quality control routine to ensure that the appropriate quality is maintained by:

- Flow measurement on day of audit w/ flow transfer standard
- Flow transfer standard verified quarterly against primary standard
- Annual certification of system against OAQPS Reference system (TTP 2 – CO based system)

NPAP Audits of Precursor Gas Analyzers

Mark Shanis continued NPAP related discussions with a report on the progress being made to test whether or not NPAP TTP will work at NCore stations operating the precursor gas analyzers.

We have been outfitting two NPAP TTP trailers with precursor gas equipment, one in RTP and a second at the TAMS Center in Las Vegas. Our work has been focused in RTP where we tested the equipment in the laboratory with good results. We have placed the equipment back into the NPAP trailer and will proceed with a test at the OAQPS Burden's Creek monitoring site. These tests will start in May, 2008. If tests go well, our next step would be to set up a side-by-side test of the Region 4 NPAP TTP and the precursor gas TTP at the North Carolina NCore site. This is anticipated in the summer or fall of 2008.

We also plan on adding Climatronix Sonic WS/WD to the RTP trailers and ozone will be added in May to both RTP and Las Vegas Trailers. Once the testing is complete and results acceptable, OAQPS will develop the standard operating procedures for precursor gas sites into the current NPAP TTP SOPs.

Status of the Protocol Gas Verification Program – Presenter: Joe Elkins

Over the past 6 years OAQPS, ORD and Clean Air Markets Division (CAMD) has been working with the Institute of Clean Air Companies (ICAC) to develop a protocol gas verification program that would allow some checking of the quality of gas standards being supplied to monitoring organizations. OAQPS spearheaded the development of an Implementation Plan for this process which required that gas manufacturers participate in the program (or not advertise the sale of "EPA" protocol gas) and fund this program. The costs are associated with a third party to handle the logistics of the program and for NIST to verify the gas cylinders. EPA assumed we had buy in from the gas manufacturers and we were very close to getting the implementation plan accepted when we had a protest by a manufacturer which has put this process in limbo. Since we do not know the outcome of this protest, OAQPS has come up with an alternative process that we will send around for comment

Alternative process (each dash "-" considered an alternative option)

- Make the program an appropriate parallel to the SRP program for ozone traceability to NIST
- Goal
  - Try to test cylinders from as many vendors as possible each year, or
  - Use process to trouble shoot a monitoring organizations purchase of a "problem" cylinder
- EPA buys SRMs, or equivalent and runs check to ensure/establish concentration.
- Base the cylinder sets
  - in the 10 Regions, or
  - one set in some national lab
- NAACA polls monitoring organizations to identify those planning on purchasing standards in the year.
  - Info collected- monitoring org, vendor used, concentration range
- EPA uses list and solicits monitoring organizations for participation in verification
- EPA
  - State and local sends unopened cylinder to national lab for comparison or

  - EPA sends SRMs (or equivalent) to monitoring organizations. Monitoring orgs run verification, provide results to EPA and return SRM cylinder
- EPA collects and posts test results each year.
- Funding options ???? Need to think about how to fund this.

We would like to get feedback on this process and plans on providing a write-up for the next NAACA Steering Committee meeting in June.

AQS Audit Tracking – Presenter: Jonathan Miller

During the AQS re-engineering process, the QA Team asked for an area (Fig 3) where organizations could record information on the various types of audits performed by organizations. These audits might include: siting criteria audits, network reviews, technical systems audits (by monitoring organizations or EPA), NPAP audits, as well as others. In many cases it is not easy to determine what audits have been performed on who has performed them. This area was constructed to report that an audit had been performed. It was not intended to provide lengthy information about the findings of the audit. However, the audit tracking area did provide a box that could be checked if there where major findings identified in the audit.

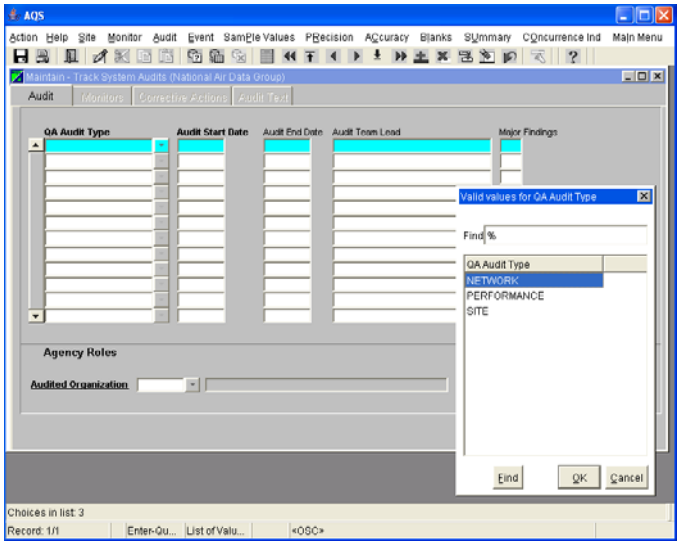


Figure 3 Audit Tracking Form

Presently, we have not made use of this area. It is probably 80% operational so it would only take a minimum effort to review and determine how this area should be used. It is proposed that the workgroup could develop the correct codes for the various types of audits to be tracked by the program as well as review the fields currently associated with the audits. Adding fields will require programming work and resources so the thinking currently is to keep it simply a tracking mechanism. Some initial thoughts from the meeting participants were.

- If you keep the major findings field we may want to include/expand the tracking to include dates when findings were corrected so that the audit could be tracked all the way through to the completion of all corrective actions
- Keeping the major finding box and corrective action audit text may inhibit people from recording the audits.
- Remove the major finding and audit text or allow the text to be more free form that may provide additional information about the audit without getting into details.

The Workgroup will meet this year to determine how to best utilize this area.

QA Handbook Review- Presenter: Mike Papp

The first draft of the QA Handbook Vol II was completed and distributed to the QA Strategy Workgroup for review about 3 weeks before the national meeting. The first review will close May 30. A few items that were highlighted in the new version include

- Heavy use of web links in footnotes in order to provide the reader a source of more detailed information.
- Removed high volume PVC laminar inlets. We have made the Handbook consistent with CFR on the use of Teflon and borosilicate glass only for all inlets and discouraging the use of high flow inlets which are difficult to audit.
- Removed zero/span calibration 1 and 2 from section 12 and included the discussion of zero, span and precision checks in the QC section. The calibration section still needs some revision.
- New Attachments
  - Monitoring Program Fact Sheets
  - QA Info attachment (copies available)
  - Color validation templates

Most changes suggested by the QA Strategy Workgroup have been made but Mike Papp will go through the comments one more time to ensure suggestions that were agreed upon are reflected in the new document. Since the revision of this document has taken longer than expected it was proposed that the new version of this document be posted on AMTIC in such a manner that section can be continuously revised without having to revise the whole document. Therefore, if a rule is changed that effects one or two sections of the Handbook, these sections will be revised and a quality bulletin explaining the change, and what sections are effected by the change can be posted on AMTIC. Monitoring organizations can ensure their Handbook is current by reviewing the quality bulletin postings and downloading the appropriate sections.

After a summary briefing of the changes, the floor was opened up to comments on the Handbook. Some comments were made at the meeting about changes to the validation templates. There was a question about why the acceptance limit for the ozone span limit is 15% while the one point precision check is 7%. It seems like they should both be the same value. There was also a discussion about adding warning and control limits to the validation templates but the QA Strategy Workgroup had discussed this in the past and agreed to include only the control limits: leaving warning limits to be described in the monitoring organizations QAPP.

There was some concern that the acceptance limits for flow rate verifications was wider than the acceptance criteria for the semi-annual flow rate audits. For example the flow verification for PM10 dichot is $\pm$ 7% of the transfer standard and $\pm$ 10 % of the design value while the audit acceptance criteria is $\pm$ 4% and $\pm$ 5% respectively. So, the operator could allow the flow rate to be > 4% of the transfer during verification but fail the semi-annual audit. It seems reasonable, at a minimum, to make the acceptance criteria for verification and audits the same to avoid this incidence. Similarly, we need to review the monthly temperature checks which are allowed to be $\pm$ 4^{O}C and the audits which are required to be $\pm$ 2^{O} C.

There was also a suggestion we add some material on data rounding and significant digits when reporting to AQS.

There was a question as to whether we could lower the span concentration from 80% of full scale down to something more reasonable, say 50%, if an organization never has a value that is that high.

Mike Papp received some comments before the meeting on the validation template that will also be addressed. It is expected that one or two meetings specific to suggested changes will occur before another version of the Handbook is released.

SRP and Traceability Nomenclature- Presenter: Mark Shanis

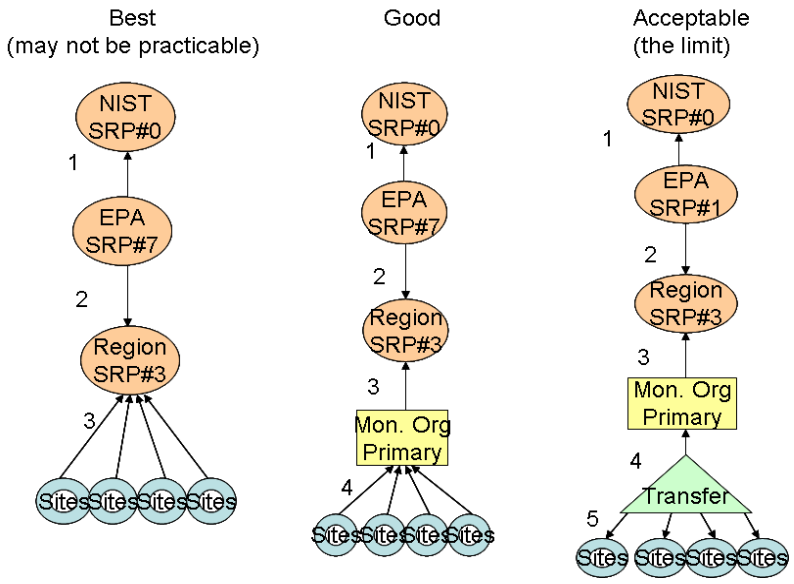


Figure 4. Example of three practices in use to establish ozone traceability at monitoring sites.

Over time EPA, monitoring organizations and standard manufacturers have not been consistent with there use of the terms primary, secondary, transfer and working standards. Mark Shanis walked through some of the issues related to the terms. Based upon a concern about vendors that may incorrectly advertising the sale of primary standards, we will attempt to revise our ozone standards certification document and come to agreement in the monitoring community on how we should be using these terms. Mark plans on expanding the use of the terms to cover our other standards like flow, temperature and pressure. Mark illustrated the various mechanisms currently employed to establish ozone traceability (see Fig. 4) in an effort to determine what will be considered acceptable in the future. Recent discussions about when to make physical or mathematical adjustments to primary standards and/or the development of reasonable acceptance windows where no adjustments are necessary were discussed. Mark had gone to a recent NIST seminar on flow certification/calibrations and brought back some ideas on a better procedure to test flow rates that include changing the order that the flow rates are performed (high, medium, low; low, high medium etc.) as well as powering the instrument on and off during testing. OAQPS plans on further Workgroup discussions to help revise our aging guidance and to incorporate some of these new ideas.

QA Issues with Precursor Gas Sites- Presenter: Dennis Mikel

Dennis Mikel provided a discussion on what we a starting to see in the way of QA results from the precursor gas sites that are in operation. The results presented are only from a few sites and it was recognized that there are more sites in operation than are shown in the slides. The data presented came from the 1 point QC checks that are submitted to AQS and can be used to determine precision and bias. Table 2 provides a summary of these results.

Table 2. Precursor Gas Precision and bias estimates based on 1 point QC checks in AQS

Site	Instrument	Coefficient of Variance	Bias*
CO			
Burden's Creek	API 300 EU	6.9	+9.4
Burdens Creek	TEI 48C-TLE	5.8	+/-5.4
Garinger HS	API 300 EU	5.3	+5.8
Cheeka Peak	API 300 EU	17.5	+/-11.3
Hamilton Co.	Ecotech 9830 T	14.1	+/-10.1
Cumulative (n=1223)		16.0	+/-8.6
NOy			
Burdens Creek	API 200 AU/501Y	3.3	-5.7
Cheeka Peak	TEI 42 CY	10.1	+/-7.7
Hamilton Co.	Ecotech 9841 NOy	10.0	+/-5.4
Cumulative (n=828)		8.5	-6.2
SO2			
Burdens Creek	TEI 43C TLE	3.6	+-/3.0
Garinger HS	TEI 43C TLE	3.4	+/-2.3
Cheeka Peak	TEI 43C TLE	3.6	+/-2.8
Hamilton Co.	Ecotech 9850 T	12.3	+/-6.7
Cumulative (n=1023)		6.5	+/-3.6

*bias estimates with either a positive or negative sign means that 75% of the data evaluated for that instrument was positive or negative. Bias data with a +/- sign indicates that the 25th and 75th percentiles of the data (once rank ordered) were different signs.

With a few exceptions, it appears we may be able to achieve or precision and bias goals of 10%. We'll be doing a more thorough evaluation of precision and bias data from the NCore sites this year. We are starting to run AMP255 reports on NCore sites and will be able to perform this function more effectively if monitoring organizations identify the NCore sites using the monitoring type "Proposed NCore". Dennis talked about the precursor gas DQO process. Evaluations from that process identified data completeness as having an influence as to whether we could meet our DQO of detecting an annual 5% change (trend). EPA proposed a goal of 90% data completeness but received criticism that this was too difficult to meet. Some argued that the way stations are set up and the frequency required to perform zero/span/one point QC checks could effect the achievement of the 90% goal. There was some discussion at the meeting of trying to determine ways to achieve the QC checks without eliminating an hours worth of data. Some ideas included:

- Starting checks that span two hours and span two days (11:45 PM – 12:15 AM)

- Running zero/span one day, running one point QC on another day
- Running the QC checks on different instruments at different times (may require different manifold/inlet systems)

The discussion led to the thought that it would be good to provide the rationale as to why the 90% goal is important to achieve, provide some creative guidance on how this goal might be met and let monitoring organizations develop some creative ways on their own for trying to meet this goal.

What May Come up for QA for Pb NAAQS – Presenter: Mike Papp

Since the Pb NAAQS was on the verge of being proposed (proposed May 1), Mike Papp provided a summary of some of the monitoring and QA aspects of the Pb NAAQS which included:

- Sampling Method
  - PM10- Lo- Vol
  - TSP – Hi-Vol
  - PM10-Lo-Vol "TSP-Like" (TSP-Factor)
- Sampling Frequency
  - If monthly NAAQS: 1-in-3 day sampling
  - If quarterly NAAQS: 1-in-6 day sampling
- Analytical Method (if Pb in PM10 only)
  - XRF
  - GFAA, ICP-MS that meet performance

As we looked at the QA requirements, we found we did not need to make many changes regardless of the sampling method chosen. The following is a summary of what was proposed for QA. The term "no-change" signifies that QC requirements are unchanged from what is currently in CFR.

- Flowrate (no change)
  - Verifications
    - TSP- Quarterly
    - PM10- Monthly
  - Audits both semiannual
- Pb Strips (no change in frequency)
  - Range 1 30-100% of Pb NAAQS
  - Range 2 200-300 of Pb NAAQS
- Collocation (no change)
  - Same 15% of each method designation 1-in-12 day
- PEP (new)
  - 1 PEP/ PQAO and
  - 1 collocated sample/quarter sent to independent lab
  - Total of 5 values per PQAO per year

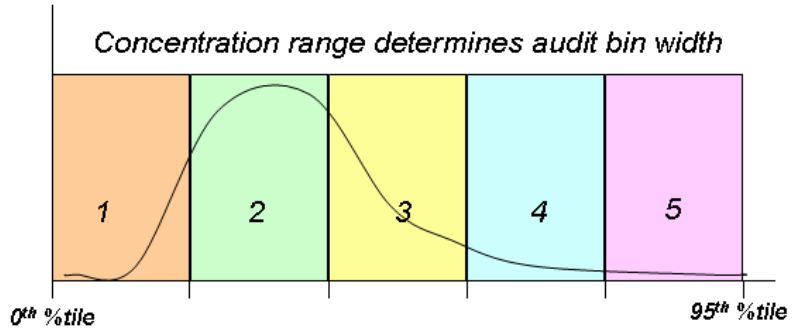
The only additional QA is the performance of one PEP audit at one site within a PQAO and to supplement this with 4 collocated samples. These would be sent to a national laboratory in order to provide an assessment of bias.

Gaseous Audit Levels- Guidance and New Proposal- Presenter: Mike Papp

Since the promulgation of the October, 2006 monitoring rule, monitoring organizations have provided some criticism on the new audit levels established for the annual performance evaluations gaseous pollutants in 40 CFR Part 58 Appendix A. The rule established one additional low level (audit level 1) but also changed the concentration in some of the other levels. These changes where made to provide audit ranges for routine SLAMS sites as well as the NCore precursor gas sites. The rule also suggested that the levels chosen should bracket 80% of the routine data. Monitoring organizations felt this was somewhat of a hardship, were concerned that the current statistics would inflate precision and bias estimates at the low concentration, and that the levels as identified in CFR did not reflect or represent their data very well. In order to address these concerns, the OAQPS QA Team has proposed a new approach for consideration.

Proposal

- Each year (or appropriate period of time) assess concentrations for either
  - each site within a PQAO (Primary Quality Assurance Organization)
  - all sites within a PQAO (urban/rural split ??)
- Find 0-95% concentration range (95^{th} %tile – 0^{th} %tile)
  - Removes potential outliers
- Divide the range by 5 to create 5 evenly spaced concentration bins within this range
- At minimum, select the 3 bins which contain the highest amount of data (generally will be bins 1-3 or 2-4).
- AMP 255 report could be modified to determine whether these audit concentrations were selected correctly.
- CFR would not have to post ranges.



Initial comments at the QA session seemed positive. The group felt that it would be better to run this evaluation on a PQAO and not on a individual site basis (individual sites might have very skinny bins). The one issue of concern was the issue of a PQAO with fairly low concentrations at all sites that would tend to force low audit levels that might effect the precision and bias statistics. Someone suggested that the low concentration start at the MDL rather than zero.

OAQPS plans on running this approach against routine data to see what effect it would have and what the "down-sides" might be with this approach.

PAMS P&A reporting – Presenter: Mike Papp

Due to the lateness of the day, we were not able to address this issue but Mike Papp did provide a summary of this issue. Last year OAQPS distributed a new memo related to the annual data certification that required monitoring organizations to report routine as well and P&A (in the form of AMP 240 Report). There was some concern about how to report PAMS P&A data since there is no requirement to report any QC data to AQS. Region 1 has been in conversation with their monitoring organizations and has come up with a proposal to submit some QC information they collect in the course of normal sample analysis (i.e., a subset of the GC autocals to assess precision of the PAMS data and manual calibrations, known as "high calibrations," on each GC typically on a bi-weekly schedule or 2 or 3 days of each month during the monitoring season). We may need to get the PAMS community together to determine the need for reporting some level of precision and bias data, the type of data to report, and the frequency of reporting.

Wish list and Priorities-

The meeting ended with a question to the group on what they would like to see OAQPS focus on this year. A few things we know we need to finish are:

- QA Handbook Vol II
- SRP and traceability guidance.

Some other things that the group suggested included

- Auditor Certification- This would provide some level of consistency on how audits are conducted.
- Verification/Validation Guidelines- Similar to above would provide for a level of consistency

Since the National meeting was set up in a manner that required 3 days for attendance even though ambient air sessions were only 2 days in length, Mike Papp posed a question as to whether it might be better to have our own annual Ambient Air QA Meeting separate from the National QA meeting. This meeting could be held at a better time of year (monitoring organizations are getting ready for ozone season in April) like Oct-Nov or Feb-Mar, and keep it to two days to cut travel costs. One thing critical in pursuing this approach is to ensure QA people come to the meeting. When put to a vote, the overwhelming majority (only one or two dissenting) voted to have our own QA meeting. One dissenter came up afterwards and mentioned he was interested in some of the other non-air EPA training being offered at the meeting and feared he'd loose the opportunity to get it if we had our own meeting. We'll be talking about this further in our QA Strategy Workgroup meetings this year.

Meeting Adjourned 6:40 PM April 23.