

NPAP Program Adequacy/Independence Criteria: Monitoring Rule Requirements and Implementing Instructions

Revised July 23, 2008

The Underlying document is a revision to Attachment 2 of a January 8, 2007 Memorandum from Phil Lorang to Regional Air Program Managers for Ambient Monitoring Air Monitoring Quality Assurance Contacts, entitled “Guidance on Self-Implementation of the Performance Evaluation Program (PEP) for PM_{2.5} Monitoring and the National Performance Audit Program (NPAP) for NAAQS Gases.” The Phil Lorang Memo was posted on AMTIC at <<http://www.epa.gov/ttn/amtic/npepqa.html>>. A memorandum from Richard Wayland, issued on July 23, 2008, references this July 23, 2008 revision of the NPAP adequacy document. This is a living document which will be reviewed annually and revised as needed. Subsequent revisions will be posted as separate documents on AMTIC at the same location. A revision may not be necessary every year. Memoranda that announce the opportunity for State, Local and Tribal programs to assume their Performance evaluation programs will continue to be issued on an annual frequency and posted at the same AMTIC location. Each memo will reference the most current revision to the NPAP Adequacy Document. Questions and Comments on this Document may be sent to Mark Shanis, OAQPS lead for the National Performance Evaluation Program. shanis.mark@epa.gov. Please send a courtesy copy of your communication to your respective EPA Regional NPAP lead or Quality Assurance Manager.

Adequacy Criteria for Annual Regional Assessment of Monitoring Organization Ability to Implement NPAP TTP

Overall Implementation

- 1) Audits at 20% of primary quality assurance organization's (PQAOs) sites per year with a goal to audit all sites within 5-7 years. 5-7 years is mentioned because there may be some high priority sites that monitoring organizations or EPA may want audited more frequently.
- 2) 100% completeness meaning whatever it takes to get valid audits at 20% of the sites per year.
- 3) Meet definition of independence for both field and lab implementation.
- 4) PQAO's TTP SOPs and QAPP available, reviewed, and approved by the Region prior to implementation; then subsequently available upon request.
- 5) Performance of external comparability checks by (between) the EPA National NPAP TTP program and the State or local organization implementing TTP itself as the annual process to demonstrate an organization's ability to provide TTP performance audits to its own sites.
The external comparability check will include:
 - a) One or more sites chosen by EPA. The number of checks will be dependent on the size of the organization's network, but should be at least 1 per year for a small organization, and 2 per year for a large State organization (20 sites or more).
 - b) All the gaseous pollutants that the organization proposes to audit by TTP.
 - c) The TTP lab audit system and auditor(s), which the monitoring organization proposes to use for audits (if an organization has more than one system and/or auditor, EPA will choose which will be audited).
 - d) Acceptance criteria of a 5 percent difference per point for the gaseous pollutants Ozone, CO, and SO₂ and NO₂. OAQPS may pursue a different acceptance level or statistic for precursor gas auditing, especially for the low level audit point.
 - 6) Performance of National Inter-Comparability check: All Regionally-based mobile NPAP TTP laboratories in the Regional NPAP TTP network will be checked against (compared to) the NPAP verification laboratory currently operated by EPA Region 7, as frequently as resources allow. Traceability of one step away will be acceptable until resources allow for direct comparison.
- 7) Adequate number/type of TTP generation, analytical, and support equipment and materials, including back-ups.
- 8) Use of the EPA NPAP Access data base and EPA TTP spreadsheets, or data collection software that provides comparable data fields and reporting units to provide the minimum number of parameters in AQS transactions that need to be entered into AQS--Verification of the AQS transaction page or equivalent using the AQSQA mechanism.
- 9) EPA access to all of the PQAO's TTP audit data in a time frame allowing relevant and adequate audit review and analysis.
- 10) Ability of EPA to audit TTP activities with appropriate notification.

The NPAP TTP Field Critical Activities and Acceptance Criteria for Mobile Lab Equipment, Standards and Personnel

1. Initial personnel training through NPAP TTP sanctioned course prior to any TTP implementation
2. Annual personnel recertification, either by:
 - a. Attending an annual NPAP TTP certification course,
 - b. Attending a regionally-implemented certification course implemented by an EPA regional or OAQPS certified trainer,
 - c. Oversight during a Regional Office technical systems audit.
3. Equipment and Standards Certification: Performing and recording annual, quarterly, and audit day QC and QA acceptance checks, and system performance assessment procedures and evaluations. These include:
 - a. Acceptable quarterly checks: TTP ozone analyzer (and calibrator, in Region 2) certification against Regional SRP, ozone line loss test, visual system cleanliness, leak, and manifold excess flow range check;
 - b. On-site, pre-audit checks: zero air (ultrapure cylinder vs. continuous generator) check, all system component and flow path pressure and flow setting checks, ozone warm-up and acceptable performance parameter check, successful end-of-hose connection to station inlet of approved 50 or 150ft FEP Teflon hose, including check for evidence of kinks, pinholes, etc.;
 - c. On-site audit checks: pre-audit two-point upscale CO calibration check and post-audit one-point upscale point for all blended gas audits. Documented analysis of complete stabilization of TTP ozone and CO generation output at every ozone and blended gas audit.
4. Independence of Audit Equipment and Standards: Use of performance audit generation, analysis, and support reference standard equipment and materials that are not used to set-up/calibrate, or check monthly performance parameters of the FRM sampler being audited. NPAP TTP analytical equipment “calibration” must also be performed with a second set of reference standards that are independent from the standards used in routine monitoring and NPAP TTP audits. This means the SLT must have at least two sets of Primary Standards.
5. NIST Traceability: Annual certification of all standards as NIST traceable using the EPA Protocol Gas certification procedures and spreadsheets - G1 or G2 - as appropriate. Documentation sent to OAQPS.
6. Maintenance Contamination Control: Quarterly monitor inspection and cleaning. NPAP TTP equipment must be clean. Flow path system disconnection should be avoided, but whenever necessary, very clean caps of the correct size and EPA acceptable material must be available and used on all potential openings carefully, ensuring that the seal is complete and air tight.
7. Annual multi-point audit instrument verification and/or calibration at the independent certification laboratory.
9. Archive paper and/or electronic media copies of TTP lab certification comparisons, audit results and supporting documentation for as long as it takes all sites in the monitoring network to be audited, during which time they may be audited, and then disposed of as EPA decides.
10. Adopts AQS format for reporting NPAP-like QA data to appropriate fields.
11. Monitoring Organization or National Program (OAQPS) loads data into AQS within AQS’s schedule.
12. Monitoring Organization or National Program submits annual report of results to EPA in EPA specified format .

Critical Acceptance Criteria and Activities for Independent Certification Laboratories

A certification laboratory is required to ensure that the TTP mobile laboratory delivery system and standards produce audits of adequate quality. The laboratory's function is to test or check the TTP delivery systems and standards at a minimum annually.

1. Initial and subsequent training of certification lab personnel through Federal NPAP-TTP sanctioned course prior to certification lab implementation.
2. Certification lab, certification lab personnel, and standards independent of laboratory performing routine monitoring support.
3. Certification lab meets CFR-required temperature conditions for ambient air monitoring operation comparison activities.
4. Certification lab flow path interior surfaces and components in general, must comply with 40 CFR requirements for materials used that come in contact with reactive gases, including ozone, NO, NO₂, and SO₂.
5. Certification Lab must meet NPAP TTP Lab QC and QA acceptance activities and criteria as described in NPAP TTP SOPs and, for each comparison, include:
 - a. Successful visual inspection of the entire flow path of the TTP generation and verification system, including the manifold delivery system;
 - b. The certification labs analyzers and standards must meet the acceptance criteria in the TTP SOPs;
 - c. The pre-certification zero air response of the certification laboratory's CO analyzer should be no greater than ± 0.1 ppm;
 - d. Excess manifold flow of 0.3-0.4 LPM (on rotameter or equivalent);
 - e. Output of delivery hose above but near ambient pressure; attach to outside/external inlet; upon connection to certification lab inlet, vent line end pressure should not be negative, but at least slightly positive;
 - f. If using a TECO 49C-PS, determine, for initial analyzer performance check, the absolute value of both channels, not just the ratio. The difference of the absolute photon count of the 2 channels should not be much greater than 200;
 - g. For blended gas certification comparisons configuration control must include the use of 316 stainless steel, preferably 1/8"OD, and not FEP Teflon;
 - h. TTP blended gas certification comparisons for NO₂ must provide for a converter efficiency check. This enables determination of compliance with the CFR's requirement for minimum acceptable CE (>95%).
6. Quarterly quality control/assurance activities and acceptance criteria for ozone standard analyzers.
 - a. Primary ozone standard analyzer should be certified against the/a Regional NIST Standard Reference Photometer in any quarter of the year in which TTP ozone (and/or NO₂) audits are planned. Acceptable results are a difference in slope of < 3%, and in the intercept of < 3 ppb.
 - b. Standard certification data, are added by the TTP certification comparison operator into the EPA TTP Gaseous Audit EXCEL workbook (or equivalent certification comparison documentation system).
7. Annual Quality Control /Assurance TTP System Standard Certification Laboratory Requirement

- a. NIST Traceability: Annual certification of all standards as NIST traceable, using the EPA Protocol Gas certification procedures and spreadsheets - G1 or G2 - as appropriate. Documentation sent to OAQPS.

**Note: Related attachment from NPAP TTP Implementation Plan,
Monitoring Organization Use of National NPAP Equipment (Excerpt from NPAP
Implementation Plan)**

6.1.2.4 Monitoring Organization Use of Equipment -

There are many individual circumstances associated with the TTP in each Region. These circumstances are based on many different factors and variables that are specific to the particular Region, State, or local agency. As a result, specifics of a loan arrangement will have to be worked out between each Region and State or local monitoring agency. EPA in RTP will not be able to identify one loan requirement procedure that will accommodate each agency's needs and priorities for doing NPAP TTP audits. However, because the logistics and timing are critical for the federally-implemented program, as well as any other potential users, it is important that formal agreements on the use of the equipment are in place that will cover the majority of issues that may arise with the loaning of equipment.

The main considerations for lending one of the current 6 Regional mobile NPAP TTP laboratories to a State or local ambient air monitoring organization are:

- 1) The arrangement must allow the federally-implemented NPAP schedule to take priority.
- 2) The equipment must be returned in the same condition in which it was received.
- 3) To minimize damage during transport, avoid taking equipment out of the mobile labs. If equipment must be taken out of a mobile lab, which EPA should pre-approve, do not use ground or air commercial freight shipping; arrange safe and equipment protective transport between Regional and State or local transport vehicles and personnel; for case-based versions, use the cases.
- 4) If a borrowing organization damages a part or all of the mobile lab, they must replace the lab or damaged item, and notify the Region and the next State or local agency in line to use the mobile lab immediately.
- 5) If a borrowing organization uses a critical material, such as zero air scrubbing ingredients or one of the required compressed gas standard cylinders, to a point at or below the level EPA considers necessary for use by the next organization, the borrowing organization must contribute to the replacement of the item. The borrowing organization must notify the Region and the next State or local agency in line to use the mobile lab. EPA will be responsible for the review and acceptance of audit gas standards prior to transfer to the next user organization. Negotiations for the sharing of the costs for consumables can take place at the beginning of the grant season so that equitable cost contributions among lenders can occur. Note: There should be no use in the field below 400 psig to allow for post-audit checking of the remainder, for all of the criteria pollutant gases contained. To use in the field, the cylinder needs to contain 400 psig plus an excess over 400 of the amount estimated by EPA to be needed by the next using organization.
- 6) Sufficient resources must be available to the monitoring organization to provide any

replacements that become necessary; a documented statement must be provided to that effect from the agency before a loan is allowed.

- 7) The personnel provided by the organization to operate the lab must be trained and certified through the EPA training course described in Section 9 of the TTP Implementation Plan.
- 8) To use an EPA trailer, before being provided with the trailer. The proposing organization must demonstrate that they have the proper tow vehicle, hitch, anti-sway apparatus, and personnel with the necessary tow vehicle-trailer training and experience. These details are addressed in a document already on AMTIC at the NPAP website.
- 9) Procedures for identifying responsibility should be developed and implemented. For example, before receiving and before returning of a TTP mobile lab trailer, the borrower and receiver, respectively, should arrange to pull the trailer, and operate the TTP equipment inside, before turning over to the next organization. As soon as one pulls the trailer, obvious problems can be perceived. So the test that will show problems should be completed before turnover of responsibility, for the benefit of giver and receiver. A form should be developed and provided, similar to the form used for car rentals, documenting the acceptance of the transferred inventory and responsibility of the receiving organization personnel, and specifically addressing the issue of self insurance, and acceptance of responsibility for the costs of damage or destruction.