UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
NATIONAL RISK MANAGEMENT RESEARCH LABORATORY
Air Pollution Prevention and Control Division
Research Triangle Park, NC 27711

May 5, 2010

MEMORANDUM

SUBJECT: Findings from the Technical Systems Audit of Ambient Air Protocol Gas Verification Program, Regional Analytical Verification Laboratory (RAVL), EPA Region 2 Laboratory (Edison, NJ)

FROM: Robert S. Wright, Office of Research and Development (ORD)
Joe Elkins, Office of Air Quality Planning and Standards (OAQPS)

TO: Deborah Szaro, Environmental Science and Assessment Division

CC: John Kushwara, Monitoring and Assessment Branch
Avraham Teitz and Mustafa Mustafa, Ambient Air Monitoring Laboratory
Kevin Kubick, Region 2 QA Manager
Mike Papp, OAQPS

We want to thank you, John Kushwara, Avi Teitz and Mustafa Mustafa for allowing us to spend a day performing a technical systems audit (TSA) of the Ambient Air Monitoring Laboratory's activities related to the Ambient Air Protocol Gas Verification Program (AA-PGVP). This program is a very important step in assuring that monitoring organizations across the nation, as well as within Region 2, are receiving compressed gas calibration standards of the quality that they expect. We appreciate your willingness to provide the facilities, equipment and expertise to this important endeavor.

The TSA was conducted on April 13, 2010 in accordance with the procedures described in EPA's *Guidance on Technical Audits and Related Assessments for Environmental Data Operations (EPA QA/G-7)*. The program's quality assurance project plan (QAPP) and standard operating procedures (SOPs) were the technical bases for the TSA. The audit checklist was sent to the Region 2 laboratory personnel in advance of the TSA.

At the start of the assessment, an opening meeting was held between the auditors and the laboratory personnel. The purpose of the opening meeting was to discuss the scope, schedule, and technical bases of the TSA and to address any questions or issues concerning the checklist or the assessment. At the end of the TSA, a closing meeting was held between the auditors and laboratory personnel. The auditors presented their preliminary findings orally.

We have some neutral observations and non-binding recommendations, which we feel will improve the program, for your consideration. We also want to recognize several

noteworthy practices, which demonstrate the laboratory personnel's experience and skill in performing this work. These findings are presented below.

Observations

- The auditors' findings are all positive in nature and indicate that the AA-PGVP is being implemented as described in the QAPP and SOPs. There are no findings that indicate a quality problem requiring corrective action. We found all phases of the implementation that we reviewed during the TSA to be acceptable and to be performed in a manner consistent with the programs data quality goals.

- The auditors find that the laboratory personnel are well-qualified to implement the program and that they conduct themselves in a professional manner. They cooperated with the auditors during the TSA and took time out from their busy duties to explain the program operations to the auditors. They assembled needed project files for the auditors' review, which helped to ensure that the TSA was completed under tight time constraints. They helped to ensure the successful completion of the TSA.

Recommendations:

- The laboratory needs a SOP for the receipt, shipping, custody, and inventory of the compressed gas calibration standards being assayed as part of the AA-PGVP;

- The program's QAPP or the laboratory's SOPs needs to indicate that the Region's health and safety plan is being followed in the laboratory;

- The laboratory should keep a copy of the QAPP, the SOPs, and instrumental calibration certificates in one location in the laboratory;

- The SOPs need to include some information about purging the regulators and delivering gaseous samples from the regulators to the analyzers;

- The laboratory needs some capability for recording room temperatures (e.g., min/max thermometers). These measurements may be useful in the analysis of assay data;

- The laboratory needs some capability for recording the line voltage during assays. These measurements may be useful in the analysis of assay data. If the line voltage fluctuations exceed the instruments' specifications, voltage control is recommended;

- The laboratory needs more pressure regulators for multiple-cylinder assays in a single day. Have enough regulators to assay multiple samples each day without switching them between cylinders. Keep dedicated regulators on SRMs at all the times, don't switch them. The laboratory needs CGA 590s, CGA 660s, and maybe CGA 350s;

- Sampling manifolds and sample delivery tubing need to be labeled to reduce errors while switching between cylinders during multiple-cylinder assays; and

- The assay sequence calls for 15-minute periods of zero gas flow between 15- or 20-minute periods of assay sample flow. No measurements from these zero-gas-flow periods are used in the assay concentration calculations. The auditors suggest that these periods can be shortened or eliminated with little effect on data quality and with substantial time savings, which will shorten the workday for the laboratory personnel.

Noteworthy Practices

- The laboratory records data from both the primary analyzer and the back-up analyzer. Although the primary data are used for the assay calculations, the back-up data can provide diagnostic information in the event that the primary data are suspect;

- Annual intercomparison of the laboratory's flow standard with NY State Molbloc flow standard;

- The gas dilution system's mass flow controllers are calibrated on same day as multipoint calibration and dilution check;

- Given that the calibration flow rates for the gas dilution system are identical to the flow rates that are used during the assays, any bias in the flow rate calibration is not a factor in the uncertainty of the assay concentrations;

- The assay calculation spreadsheet is well-constructed and automatically incorporates many of the necessary data manipulations that are needed to determine the assay concentrations. It is an improvement of the traceability protocol spreadsheet; and

- Annual cylinder intercomparison to be done by the two regional laboratories.

Please review the above findings and the attached TSA checklist and send any comments that you might have to us. Additionally, please ask the laboratory personnel for their comments. Please contact us if you or the laboratory personnel have any questions about the TSA or about this report. Please notify us by April 21 if you plan on commenting or if the report is acceptable as it stands. Upon receipt of any comments that you may send to us, we will issue a final version of this report, which will be posted on the AA-PGVP web site.

Thank you for your time and attention to this issue.