



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
RESEARCH TRIANGLE PARK, NC 27711

JUN 6 2014

OFFICE OF
AIR QUALITY PLANNING
AND STANDARDS

Mr. Jordan Laster, Sr. Project Manager
Alliance Source Testing
24 Hagerty Blvd, Unit 13
West Chester, PA 19382

Dear Mr. Laster:

Thank you for your email of April 22, 2014, requesting approval of an alternative to Method 25A and Method 18 to measure volatile organic compounds (VOC) for spark ignition internal combustion engines (SI ICE) as required in 40 CFR part 60, Subpart JJJJ. Subpart JJJJ refers to 40 CFR Section 51.100(s) to define VOC. The definition in Part 51 allows for the exclusion of methane and ethane when reporting VOC by using a combination of Method 18 and Method 25A testing (methane and ethane are measured by Method 18, and then this result is subtracted from the total gaseous organic measurement of Method 25A). You are requesting to use an alternative method that measures VOC directly rather than by difference. The measurement instrument you are proposing for this purpose is based on gas chromatography with flame ionization detection (GC/FID), and is manufactured by VIG Industries, Inc.

We understand you are requesting approval to use this technology as an alternative to avoid the error involved in subtracting large amounts of methane and ethane from a total Method 25A organic measurement that contains relatively small amounts of non-methane, non-ethane organic compounds (NMEOC). The alternative testing approach you requested involves separation of the methane and ethane components of the emission gas from the remaining VOC. Methane and ethane are separated and measured by the flame ionization detector (FID), followed by a back-flush of the chromatographic column to measure NMEOC. You cited the EPA's previous approval of alternative testing approaches (ALT-066, ALT-078, ALT-096 and ALT-097a) related to NMOC and methane measurement requirements under 40 CFR part 60, Subpart JJJJ, as having the same technological approach as your proposal. You are requesting that the specific vendor and model reference in ALT-096 be broadened to any GC/FID that operates in a similar capacity and meets the required quality control checks of Method 25A.

We have reviewed your request and the associated rule language, and we agree that an alternative testing approach using GC to separate and measure methane and ethane, followed by GC back-flush procedures to measure NMEOC in post-combustion emissions is acceptable. This approval is applicable to the measurement of NMEOC from SI ICE exhaust emissions under 40 CFR part 60, Subpart JJJJ, with the following caveats for each test:

- You must use a direct interface and heated sampling line from the sampling point to the gas chromatographic injection valve. All sampling components leading to the analyzer must be heated to greater than 110°C (220°F) throughout the sampling period (unless safety reasons are present as described in Section 5.2 of Method 25A).
- You must calibrate the instrument with a mixture of ethane, propane and the required NMEOC hydrocarbon in Method 25A or the applicable rule if it is different from propane. This requirement assumes methane is separated from ethane and passes through the separator column prior to ethane. The ethane and propane are necessary in the mixture to confirm the separation of ethane from other NMEOC while not retaining additional NMEOC, which would bias the NMEOC results low. The ethane may be calibrated at a single high point on the calibration curve to demonstrate proper ethane to NMEOC separation. Linearity, calibration error, and calibration drift must be demonstrated using the NMEOC hydrocarbon specified in the applicable rule or propane according to Method 25A.
- If you are required to measure and report methane, ethane, and NMEOC, you must calibrate the instrument with a mixture of methane, ethane, and propane (or the required NMEOC hydrocarbon in Method 25A or the applicable rule if it is different from propane). The methane and ethane in this calibration gas are necessary to generate quantitative concentrations for these components, as well as to confirm the separation of methane and ethane from other NMEOC while not retaining additional NMEOC, which would bias the NMEOC results low. If you are required to report all three components independently, you must check linearity, calibration error, and calibration drift using methane, ethane, and the required NMOC hydrocarbon.
- You must collect the measurement data required in the bullets above for each test run at a minimum of one measurement every 15 minutes.
- You must also follow the appropriate procedures in Sections 8, 9, and 10 of Method 25A to ensure that linearity, calibration drift error, and drift are within the Method 25A limits.
- You must report calibration results for each organic compound required to demonstrate compliance. You must also report results demonstrating proper separation of methane or ethane from the required NMOC or NMEOC hydrocarbons.

This approval does not include using the GC to separate and measure methane, ethane, and NMEOC at inlet locations for the purpose of determining destruction efficiency. We will announce on the EPA's website (at <http://www.epa.gov/ttn/emc/approalt.html>) that our approval of this alternative is broadly applicable to testing of internal combustion engine emissions under 40 CFR part 60, Subpart JJJJ.

If you have questions or need any further assistance regarding this matter, please contact Ray Merrill of my staff at (919) 541-5225, or merrill.raymond@epa.gov.

Sincerely,

A handwritten signature in blue ink that reads "Rob R. Legall for JH". The signature is written in a cursive style.

Jodi Howard, Acting Group Leader
Measurement Technology Group

cc: David Clark, Pennsylvania Department of Environmental Protection
Zelma Maldonado, Region 3