

10/29/2014

Ms. Doris F. Boyd
Director of Health, Safety and Environmental
Valero Refining Company
2385 Riverport Road
Memphis, Tennessee 38109

Re: Petition for Acceptance of an Alternative Method of Quantifying Ozone Season NO_x Mass Emissions for Unit P049 at the Valero Memphis Refinery (Facility ID - ORISPL 55703)

Dear Ms. Boyd:

The United States Environmental Protection Agency (EPA) has reviewed the October 4, 2012 petition submitted under 40 CFR 75.66 and 96.375 by the Valero Refining Company - Tennessee (Valero) requesting acceptance of an alternative method of quantifying the NO_x mass emissions from Unit P049 at the Valero Memphis Refinery¹ for the 2010, 2011, and 2012 ozone seasons. EPA approves the petition in part, with conditions, as discussed below.

Background

Valero owns and operates the Valero Memphis Refinery (Memphis), which is located in Shelby County, Tennessee. Memphis Unit P049 is a refinery gas- and natural gas-fired boiler with a maximum heat input capacity of 312.5 mmBtu/hr. The unit was constructed in early 2009 and commenced normal operation in March 2010. It is equipped with a NO_x emission rate continuous emission monitoring system (CEMS) and a fuel flowmeter. The unit's NO_x emissions are limited by permit to 0.044 lb/mmBtu, on a 365-day rolling average basis.²

According to Valero, Unit P049 is subject to the Clean Air Interstate Rule (CAIR) NO_x Ozone Season Trading Program (as adopted by Tennessee in its state implementation plan) as well as the requirements of 40 CFR Part 60, Subpart Db (Standards of Performance for Industrial-Commercial-Institutional Steam Generating Units). Under the CAIR program, Valero is required to continuously monitor and report ozone season NO_x mass emissions and heat input for this unit in accordance with 40 CFR Part 75. However, Valero initially did not realize that Unit P049 is subject to the CAIR NO_x Ozone Season Trading Program and Part 75 requirements. Consequently, Valero conducted monitoring and reporting for the 2010, 2011, and 2012 ozone seasons using Part 60 procedures instead of Part 75 procedures.

¹ In the October 4, 2012 petition, Unit P049 is referred to as "Boiler No. 11". However, the boiler is registered in the CAMD Business System as Unit P049.

² Shelby County (Tennessee) Health Department Permit No. 0101-14PC, Condition 3.

When EPA observed that Valero had not submitted the required electronic emissions reports for the 2010 ozone season, the Agency communicated this to the designated representative for the facility, after which Valero began taking steps to come into compliance with Part 75 requirements. Full compliance with Part 75 was not achieved until the 2013 ozone season.

Valero believes that the data obtained for Unit P049 using the Part 60 procedures are accurate even though those procedures do not fully comply with Part 75 requirements. Accordingly, in the October 4, 2012 petition, Valero has requested that EPA accept for Part 75 purposes the 2010, 2011, and 2012 ozone season NO_x mass emissions and heat input rate data obtained using the Part 60 procedures.

Discussion

Through attachments to the petition, a series of e-mails, and a conference call on July 20, 2012, Valero has provided EPA with information on the monitoring and quality assurance (QA) procedures followed at Unit P049 for 2010, 2011, and 2012. According to Valero, the NO_x emission rate CEMS installed on Unit P049 was initially certified according to 40 CFR Part 60, Performance Specification 2, and the fuel flowmeter's orifice plate met the requirements of ASME MFC-3M-1989. For on-going quality-assurance (QA) after initial certification:

- The provisions of Procedure 1 in Appendix F to Part 60 were implemented, including:
 - ✓ Daily calibration drift assessments of the CEMS;
 - ✓ Relative accuracy test audits (RATAs) of the CEMS in 2010, 2011 and 2012; and
 - ✓ Quarterly cylinder gas audits (CGAs) of the NO_x and O₂ monitors (except for quarters in which the RATAs were conducted).
- The orifice plate bore measurement was verified in 2010; and
- The fuel flowmeter's pressure transmitter was tested for accuracy on February 2, 2010 and March 7, 2011.

EPA has reviewed the results of the CEMS and fuel flowmeter QA tests provided by Valero. The 2010, 2011, and 2012 RATAs of the NO_x emission rate CEMS met the 10.0% relative accuracy standard of Part 75. All of the cylinder gas audits of the NO_x monitor met the principal performance specification for Part 75 linearity checks.³ However, for three of the CGAs of the O₂ monitor, the Part 75 linearity error specification was not met for the mid-level audit gas. Also, while the orifice meter used to measure the fuel flow rate conforms to ASME

³ Note that for daily calibrations of NO_x and O₂ monitors, the daily calibrations are basically the same in Part 60 and Part 75. However, for RATAs, Part 60 allows up to 20.0% relative accuracy, whereas Part 75 requires 10.0% relative accuracy. Part 60 requires only two audit gases for a CGA and the main accuracy specification is 15%, whereas Part 75 linearity checks require three audit gases and the principal accuracy specification is 5%.

MFC-3M, which is a consensus standard listed in Appendix D of Part 75, the accuracy tests of the fuel flowmeter did not fully satisfy the requirements of Part 75.⁴

According to Valero, based on the Part 60 monitoring data, Memphis Unit P049’s ozone season NO_x emissions for 2010, 2011, and 2012 were 4.4, 6.9, and 8.5 tons, respectively. Valero has provided to EPA the hourly data that would have been reported for the unit for those years if Valero had been reporting under Part 75 using the Emissions Collection and Monitoring Plan System (ECMPS). Using those data, EPA has recalculated Unit P049’s NO_x mass emissions for the 2010, 2011, and 2012 ozone seasons. The results of the Agency’s data analysis, which are presented in Table 1 below, agree to within a fraction of a ton with the emissions totals reported by Valero.

**Table 1: Ozone Season NO_x Mass Emissions for
Memphis Unit P049
(2010-2012)**

Ozone Season	NO_x Mass Emissions Calculated by Valero (Tons)	NO_x Mass Emissions Recalculated by EPA (Tons)
2010	4.4	4.1
2011	6.9	7.5
2012	8.5	8.3

EPA’s Determination

Based on the review summarized above, EPA concludes that the NO_x emission rate and heat input data obtained under Part 60 procedures and used by Valero to calculate the 2010, 2011, and 2012 ozone season NO_x mass emissions for Unit P049 provide a reasonable basis for estimation of those emissions for Part 75 purposes. However, EPA also believes that the monitored data should be subject to an adjustment to account for the lesser stringency of QA performance specifications under Part 60 compared to Part 75. EPA specifically notes the differences between Part 60 and Part 75 in linearity / cylinder gas audit specifications (15% versus 5%) and NO_x emission rate monitoring system accuracy specifications (20% versus 10%), as well as the absence of flowmeter accuracy and transmitter calibration requirements under Part 60. In light of these differences, EPA determines that an upward adjustment of 25% to the emissions estimates developed from Valero’s hourly monitoring data would be appropriate. Applying this adjustment factor to the NO_x emissions computed by EPA from Valero’s hourly data and rounding upward to the nearest whole ton yields ozone season NO_x mass emissions of 6.0, 10.0, and 11.0 tons for 2010, 2011, and 2012, respectively.

⁴ For an orifice meter that conforms to ASME MFC-3M, Appendix D to Part 75 requires annual calibration of the differential pressure, temperature, and static pressure transmitters, at an accuracy of 1%. EPA notes that there is no comparable requirement under Part 60.

The Agency therefore approves in part Valero's October 4, 2012 petition, subject to the "Conditions of Approval" below.

Conditions of Approval

- (1) The approved NO_x mass emissions totals for Memphis Unit P049 for the 2010, 2011, and 2012 ozone seasons, reflecting a 25% adjustment to account for differences from standard Part 75 QA requirements, are as follows:
 - For the 2010 ozone season, 6.0 tons
 - For the 2011 ozone season, 10.0 tons
 - For the 2012 ozone season, 11.0 tons
- (2) Valero is not required to use the ECMPS Client Tool to submit the underlying hourly data in XML format because Valero has provided the hourly emissions data that were recorded during the 2010, 2011, and 2012 ozone seasons in an Excel spreadsheet and the Agency has found those data to be satisfactory.
- (3) Valero must provide EPA with a copy of the Tennessee Department of Environment and Conservation, Division of Air Pollution Control's written concurrence with the provisions of this approval. (This copy should be directed to the attention of Carlos Martínez, whose contact information is provided below.)
- (4) To address NO_x allowance accounting issues for the 2010, 2011, and 2012 ozone seasons, Valero must contact Mr. Kenon Smith, who may be reached at (202) 343-9164, or by e-mail at smith.kenon@epa.gov.

EPA's determination relies on the accuracy and completeness of the information provided by Valero in its October 4, 2012 petition and subsequent communications as noted above and is appealable under 40 CFR Part 78. If you have any questions regarding this determination, please contact Carlos R. Martinez at (202) 343-9747 or by e-mail at martinez.carlos@epa.gov. Thank you for your continued cooperation.

Sincerely,

/s/

Reid P. Harvey, Director
Clean Air Markets Division

cc: David McNeal, USEPA Region IV
Barry Stephens, Tennessee DAPC
Carlos R. Martínez, CAMD
Kenon Smith, CAMD