



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

David Beattie
Staff Environmental Technologist
Superior Refining Company LLC
David.Beattie@huskyenergy.com

Re: Alternative Monitoring Request
Superior Refinery

Dear Mr. Beattie:

I am writing in response to a March 16, 2021 alternative monitoring request by Superior Refining Company, LLC (Superior Refining) for the company's refinery located in Superior, Wisconsin (Superior Refinery). The Superior Refinery is subject to the New Source Performance Standards for Petroleum Refineries for which Construction, Reconstruction, or Modification Commenced After May 17, 2007, at 40 C.F.R. Part 60, Subpart Ja (NSPS Subpart Ja).

Specifically, Superior Refining has requested that EPA approve alternative daily calibration checks and quarterly quality assurance checks for the total reduced sulfur (TRS) monitor on its flare system which is subject to NSPS Subpart Ja. Superior Refining requests these alternatives to minimize the safety risks to its employees from the handling, transportation, and storage of calibration gas cylinders containing extremely high levels of hydrogen sulfide (H₂S). Superior Refining provided additional information in support of its request via email on February 25, 2022.

Relevant NSPS Subpart Ja Requirements

NSPS Subpart Ja requires, at 40 C.F.R. § 60.107a(e)(1)(ii):

The owner or operator shall conduct performance evaluations of each total reduced sulfur monitor according to the requirements in §60.13(c) and Performance Specification 5 of appendix B to this part. The owner or operator of each total reduced sulfur monitor shall use EPA Method 15A of appendix A-5 to this part for conducting the relative accuracy evaluations. The method ANSI/ASME PTC 19.10-1981 (incorporated by reference-see §60.17) is an acceptable alternative to EPA Method 15A of appendix A-5 to this part. The alternative relative accuracy procedures described in section 16.0 of Performance Specification 2 of appendix B to this part (cylinder gas audits) may be used for conducting the relative accuracy evaluations, except that it is not necessary to include as much of the sampling probe or sampling line as practical.

According to 40 C.F.R. § 60.13(d)(1), CEMS calibration drift checks must be conducted daily for the zero level (or a low value of 0-20 percent of span value) and span range (50-100 percent of span value). Additionally, the alternative relative accuracy procedures in Section 16.0 of Performance Specification 2 require that quarterly CEMS cylinder gas audits (CGA) or relative accuracy test audits (RATA) must be conducted that require the analyzer to be challenged at low (20-30 percent of span value) and high (50-60 percent of span value) level concentrations.

Superior Refining's Request

The Superior Refinery utilizes a ThermoFisher Scientific SOLA II Flare Sulfur Online Analyzer (SOLA II) to monitor the TRS concentration of gas going to its flare. The SOLA II Flare Analyzer is a dual span analyzer with a low range span value of 10,000 ppmv sulfur and a high range span value of 1,000,000 ppmv sulfur, based on Superior Refining's determination that the current maximum anticipated sulfur concentration is 900,000 ppmv. Superior Refining provided data demonstrating the linearity of the SOLA II Flare Analyzer over this span to within 5% using H₂S calibration gases, which are acceptable in this case because the SOLA II monitor oxidizes the sulfur compounds in the sample stream to sulfur dioxide.

Superior Refining has requested to conduct daily calibration checks required by 40 C.F.R. § 60.13(d)(1) and Appendix F as follows:

1. Perform a zero span check at 0-20% of SOLA II Flare Analyzer's low span value (0-2,000 ppmv); and
2. Perform a span check at 50-100% of SOLA II Flare Analyzer's low span value (5,000-10,000 ppmv).

Additionally, for quarterly quality assurance checks required by Appendix F, Superior Refining has requested to:

1. Challenge the SOLA II Flare Analyzer's low span value at 20-30% (2,000 – 3,000 ppmv); and,
2. Challenge the SOLA II Flare Analyzer's low span value at 50-60% (5,000 - 6,000 ppmv).

As mentioned above, Superior Refining has requested these alternatives to minimize the safety risks to its employees from the handling, transportation, and storage of calibration gas cylinders containing extremely high levels of H₂S.

EPA's Response

Based on the information that Superior Refining has provided, EPA approves the requested alternatives for the daily calibration checks required by 40 C.F.R. § 60.13(d)(1) and the daily and quarterly quality assurance checks required by Appendix F, as described above. Additionally, Superior Refining shall check the photo multiplier tube power supply voltage by toggling the output to Range B (high range) in accordance with manufacturer diagnostics procedures. Superior Refining shall conduct this check weekly, and after a three-month period without failing a check on the power supply, it can switch to quarterly checks. Superior Refining shall comply with all other monitoring procedures of NSPS Subpart Ja for H₂S and TRS.

Additionally, Superior Refining shall conduct linearity analysis on the SOLA II once every three years to demonstrate the detector's linearity across the entire range of expected sulfur concentrations. The analysis must include four test gases in the following nominal ranges: zero, 5-20 percent, 40-60 percent, and 80-100 percent of maximum anticipated sulfur concentration. Target acceptance criteria would be results within 5 percent of span that is based on maximum anticipated sulfur concentration. Superior Refining shall submit a report of each such linearity analysis to EPA Region 5 via email at R5AirEnforcement@epa.gov.

This approval is site-specific for the Superior Refinery flare system covering the Main and Secondary flares (STF S-20 and STF S-20) when using the SOLA II Flare Analyzer, and for any temporary or portable flare used in lieu of the Main or Secondary Flare if all gases going to the temporary or portable flare are monitored by the SOLA II monitor. If refinery operations change such that the sulfur content or H₂S concentration range of the fuel gas vent stream to the flares change from representations made in your request, then Superior Refining must document the change(s) and submit a new AMP request.

If you have any questions or concerns about this determination, please contact Virginia Galinsky at (312) 353-2089 or Galinsky.virginia@epa.gov.

Sincerely,

**MICHAEL
HARRIS**

Digitally signed by
MICHAEL HARRIS
Date: 2022.04.11
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Michael D. Harris, Division Director
Enforcement and Compliance Assurance Division

cc: Maria Hill, WDNR, Maria.Hill@wisconsin.gov