



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 4
ATLANTA FEDERAL CENTER
61 FORSYTH STREET
ATLANTA, GEORGIA 30303-8960

3/9/2023

Ms. Shrishti Chhabra
Environmental Advisor
TC Energy
700 Louisiana Street, Suite 700
Houston, Texas 77002

Dear Ms. Chhabra:

This is in response to your letter dated June 21, 2022, requesting approval of a continuous monitoring system (CMS) plan petition for Title 40, Code of Federal Regulation (C.F.R.), Part 63, Subpart YYYYY - National Emission Standards for Hazardous Air Pollutants (NESHAP) for Stationary Combustion Turbines, as it applies to the combustion turbine operated by ANR Pipeline Company (ANR).

Based on our review of all available information, your CMS plan is acceptable, subject to specific conditions. Details regarding the CMS plan and the basis for our determination are provided in the remainder of this letter.

Description of Combustion Turbine Unit #509 at the Brownsville Compressor Station

The facility location is the Brownsville Compressor Station, in Haywood County, at 70 Pumping Station Road, Brownsville, Tennessee. The affected unit is #509, a lean premix Solar Mars 100 natural gas-fired stationary combustion turbine rated at 15,437 horsepower and rated heat input of 123.5 million British thermal units per hour.

For Solar turbines, the lean premix mode is indicated by "SoLoNOx mode". The set point for "SoLoNOx mode" primarily depends on two parameters: percent gas producer turbine speed (% NGP) and inlet ambient air temperature (T_1), which are monitored continuously through the manufacturer's programmable logic controller (PLC). Site-specific conditions, such as elevation, may minimally alter the set point. The NGP is a primary performance indicator for the system, which indicates turbine load. Information supplied by Solar Turbines suggests that the "SoLoNOx mode" is enabled when the NGP is 87 percent (%) or higher, depending on the model type and T_1 . There is no upper boundary since the units will operate in SoLoNOx mode at any value of 93% or greater. Set points for "SoLoNOx mode" are established with a 0.5% safety factor above the minimum NGPs calculated by the PLC. If an event occurs that would cause "SoLoNOx mode" to be disabled, alarms will sound and notify operations of corrective actions. Since the turbine was constructed after January 14, 2003, it is a new affected source under Subpart YYYYY. The unit is not equipped with an oxidation catalyst to control emissions of formaldehyde.

Description of ANR's CMS Petition

ANR proposes to continuously monitor the lean premix mode indicator ("SoLoNOx mode" for Solar turbines) and related parameters (NGP and T₁) to ensure compliance with the formaldehyde emission standard during normal operations. The lean premix mode of operation ensures good combustion practices are being achieved during operation of the turbine and is only indicated during normal operations.

ANR proposes to continuously monitor and record NGP and T₁ to confirm that "SoLoNOx mode" is enabled. NGP is measured using a magnetic pickup located at the front of the combustion turbine shaft. T₁ is measured with a resistance temperature device (RTD) located in the turbine air inlet ducting. The parameters are displayed on the Human Machine Interface (HMI) and are automatically inventoried in the HMI log files. The combustion turbine "SoLoNOx mode" performance parameters are monitored by the PLC and the data are sent to the control room HMI at approximately one second intervals. ANR utilizes PI Historian as the data gathering tool. The monitoring devices are installed, maintained, calibrated, and operated in accordance with approved procedures that include, at a minimum, the manufacturer's written requirements and recommendations. ANR proposes to conduct the initial formaldehyde emission standard compliance testing within 10% of high load while the combustion turbine is operating within the lean premix mode.

EPA's Review of Subpart YYYY Standards and CMS Petition Requirements

Under 40 C.F.R. § 63.6085, owners and operators are subject to Subpart YYYY if they own or operate a stationary combustion turbine located at a major source of hazardous air pollutant (HAP) emissions. Under 40 C.F.R. § 63.6090(a)(2), a stationary combustion turbine is a new source if construction commenced after January 14, 2003. Under 40 C.F.R. § 63.6095(a)(3), new lean premix gas-fired stationary combustion turbines which started operation on or before March 9, 2022, must comply with the emissions limitations and operating limitations in this subpart no later than March 9, 2022. Under 40 C.F.R. § 63.6100, each new lean premix gas-fired stationary combustion turbine must comply with the emission limitations and operating limitations in Table 1 and Table 2 of Subpart YYYY, respectively. Table 1 of Subpart YYYY limits the concentration of formaldehyde to 91 parts-per-billion by volume, dry basis (ppbvd), or less, at 15% O₂ for new lean premix gas-fired stationary combustion turbines, except during turbine startup. Table 2 of Subpart YYYY requires owners/operators to maintain operating limitations approved by the EPA Administrator to continuously demonstrate compliance with the emission limit during non-testing periods.

Under 40 C.F.R. § 63.6105(a) and (c), after September 8, 2020, owners/operators must comply with the applicable emission limitations, operating limitations, and other requirements of Subpart YYYY, and must always operate and maintain any affected source in a manner consistent with safety and good air pollution control practices for minimizing emissions.

Under 40 C.F.R. § 63.6110(a), owners/operators must conduct the initial performance tests or other initial compliance demonstrations in Table 4 to Subpart YYYY that apply within 180 calendar days after the compliance date specified (e.g., by September 9, 2022) for affected source stationary combustion turbines according to the provisions in 40 C.F.R. § 63.7(a)(2) unless a historical test may be accepted according to the provisions of 40 C.F.R. § 63.6110(b). Under 40 C.F.R. § 63.6115, subsequent performance tests must be performed on an annual basis as specified in Table 3 to Subpart YYYY.

Under 40 C.F.R. § 63.6125(b), for a stationary combustion turbine not using an oxidation catalyst to comply with the formaldehyde emission limit, owners/operators must continuously monitor any parameters specified in your approved petition to the Administrator, to comply with the operating limitations in Table 2 to Subpart YYYY, and as specified in Table 5 to Subpart YYYY.

Under 40 C.F.R. § 63.6120(f), for a stationary combustion turbine not equipped with an oxidation catalyst, owners/operators may petition the Administrator for approval of operating limitations to demonstrate compliance with the formaldehyde emission limitation during non-testing periods. In these cases, the petition must include:

- (1) Identification of the specific parameters you propose to use as additional operating limitations;
- (2) A discussion of the relationship between these parameters and HAP emissions identifying how HAP emissions change with changes in these parameters and how limitations on these parameters will serve to limit HAP emissions;
- (3) A discussion of how you will establish the upper and/or lower values for these parameters which will establish the limits on these parameters in the operating limitations;
- (4) A discussion identifying the methods you will use to measure, and the instruments you will use to monitor, these parameters, as well as the relative accuracy and precision of these methods and instruments; and
- (5) A discussion identifying the frequency and methods for recalibrating the instruments you will use for monitoring these parameters.

Under 40 C.F.R. § 63.6125(e), after September 8, 2020, for owners/operators using a CMS to indicate compliance with the formaldehyde emissions standard during non-testing periods, a CMS quality control program must be developed and implemented which includes written procedures for the CMS according to 40 C.F.R. § 63.8(d)(1-2). Additionally, a program of corrective action should be included in the plan required under 40 C.F.R. § 63.8(d)(2).

Under 40 C.F.R. § 63.6135(a), except for monitor malfunctions, associated repairs, and required applicable quality assurance or quality control activities, owners/operators must always conduct all parametric monitoring when the stationary combustion turbine is operating.

Under 40 C.F.R. § 63.6120(e), when a CMS petition is required to be submitted to the Administrator, owners/operators must not conduct the initial performance test until after the petition has been approved or disapproved by the Administrator.

The EPA's Determination for ANR's CMS Plan Petition

Based on supporting and available information, the following CMS plan is acceptable to the EPA:

- (1) Under 40 C.F.R. § 63.6120, ANR must conduct performance testing at the high load, defined as 100 percent plus or minus 10 percent. Testing must not include data from startup, shutdown, or malfunction events.
- (2) The lean premix mode indication, NGP, and T₁ shall be monitored and recorded at a minimum frequency of at least once every 15 minutes during testing conducted to successfully demonstrate compliance with the formaldehyde emission standard promulgated in 40 C.F.R. § 63.6100 and Table 1 to Subpart YYYY.

- (3) One-hour averages of NGP and T₁ shall be determined by computing hourly averages using all readings, with intervals at least once every 15 minutes taken during the formaldehyde emission standard compliance demonstration testing event. The three-hour rolling averages of NGP and T₁ shall be determined by computing the three-hour rolling averages using all hourly averaged readings taken during the formaldehyde emission standard compliance testing event.
- (4) Indication of lean premix mode operation must be continuously monitored and recorded at a minimum frequency of at least once every 15 minutes during formaldehyde emission standard compliance testing, and continuously thereafter.
- (5) Except for startup, the turbine must be operated in the lean premix mode of operation to ensure compliance with this approval.
- (6) Following formaldehyde emission compliance demonstration testing, the three-hour rolling averages of the related parameters must be continuously monitored and recorded to indicate compliance with the formaldehyde emission standard.
- (7) ANR must verify the monitoring devices' accuracy once annually according to the manufacturer's recommended procedures and maintain records of the annual verifications for inspection purposes.

The EPA's approval of ANR's CMS plan is based on information provided in ANR's submission and research conducted by the EPA. The EPA's approval is contingent on a successful demonstration of formaldehyde emission standard compliance resulting from a testing event. Should ANR change the operating conditions of the turbine to an operation which is different than the operating conditions represented in this approval such that formaldehyde emissions increase because of the change, ANR must submit a revised CMS plan petition to address the change(s).

Nothing in this CMS plan approval excludes the EPA from reopening this CMS plan approval to adjust its conditions, if needed, for enhancement of emission standard compliance assurance. If ANR discovers an additional parameter, or additional parameters, which indicate additional parametric monitoring operating limits are necessary to assure compliance with the formaldehyde emission standard, ANR must submit a revised CMS plan petition to the EPA to revise the CMS plan and incorporate the additional operating limit(s) based on the discovery. Finally, if ANR recognizes an opportunity to revise the CMS plan based on other CMS plan approvals issued by the EPA, or new information is obtained by ANR which may reduce the burden of tasks necessary for compliance assurance but still effectively assure compliance with the formaldehyde emission standard, ANR may file a petition to the EPA referencing that information to revise this CMS plan.

Please note that our approval does not alter ANR's obligations to meet all other applicable NESHAPs, including, but not limited to, the following NESHAP general provisions:

- The requirement to maintain and operate affected facilities and associated air pollution control equipment in a manner consistent with good air pollution control practice for minimizing emissions, per 40 C.F.R. § 63.6 and
- The prohibition against concealing emissions which would otherwise constitute a violation of an applicable standard, including the use of gaseous diluents to achieve compliance with a standard which is based on the concentration of a pollutant in the gases discharged to the atmosphere, per 40 C.F.R. § 63.4.

This CMS petition approval was coordinated with the EPA's Office of Enforcement and Compliance Assurance and Office of Air Quality Planning and Standards. If you have any questions about this CMS petition conditional approval, please contact Mark Bloeth at (404) 562-9013, or by email at bloeth.mark@epa.gov.

Sincerely,

**ANTHONY
TONEY**

Digitally signed by
ANTHONY TONEY
Date: 2023.03.09
14:04:31 -05'00'

Caroline Y. Freeman
Director
Air and Radiation Division

cc: Melanie King, OAQPS
Sara Ayres, OECA
James Johnston, TDEC