



REGION 5

CHICAGO, IL 60604

ELECTRONIC MAIL
DELIVERY RECEIPT REQUESTED

Sherri Jett
Director of Utilities
Michigan State University
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RE: Request for Operating Limits / Monitoring Petition under 40 C.F.R. Part 63, Subpart YYYY,
NESHAP for Stationary Combustion Turbines
Michigan State University, East Lansing, Michigan

Dear Sherri Jett:

The U.S. Environmental Protection Agency has received a petition from Michigan State University (MSU), for operating limitations, dated June 3, 2025 (Revised Petition). MSU proposes that % Load and Combustor Temperature (T5) be continuously measured and limited to demonstrate compliance with the formaldehyde limits under 40 C.F.R. § 63.6125(b) for a lean premix gas-fired combustion turbine identified as "EU-UNIT6" at the T.B. Simon Power Plant in East Lansing, Michigan. In summary, the EPA partially approves and partially denies the Revised Petition to use % Load and T5 as operating limits under the regulations at 40 C.F.R. Part 63, Subpart YYYY. These determinations supersede all limits on other temperature parameters previously approved by the EPA in its determination letters issued to MSU on December 8, 2023, and March 25, 2024.

Regulatory Background

40 C.F.R. Part 63, Subpart YYYY of the National Emission Standards for Hazardous Air Pollutants (NESHAP) for Stationary Combustion Turbines (Subpart YYYY) establishes national emission limitations and operating limitations for hazardous air pollutants (HAP) emissions from stationary combustion turbines located at major stationary sources of HAP emissions, and requirements to demonstrate initial and continuous compliance with the emission and operating limitations.

40 C.F.R. § 63.6095(a)(3) requires the owner or operator of a new or reconstructed lean premix gas-fired stationary combustion turbine or a diffusion Combustor gas-fired stationary combustion turbine that started up on or before March 9, 2022, to comply with the emissions limitations and operating limitations of Subpart YYYY no later than March 9, 2022.

40 C.F.R. § 63.6100 requires that each new or reconstructed 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. Table 1 provides that each new or reconstructed lean premix gas-fired stationary combustion turbine must comply with an emission limitation of 91 ppbvd formaldehyde or less at 15% O₂, except during turbine startup. The period for turbine startup is subject to the limitations specified at 40 C.F.R. § 63.6175. Table 2 provides that each stationary combustion turbine that is required to comply with the formaldehyde emissions limitation and is not using an oxidation catalyst must maintain any operating limitations approved by the Administrator.

40 C.F.R. § 63.6120(e) states that if the owner or operator's stationary combustion turbine is not equipped with an oxidation catalyst, the owner or operator must petition the Administrator for operating limitations that it will monitor to demonstrate compliance with the formaldehyde emission limitation in Table 1. The owner or operator must measure these operating parameters during the initial performance test and continuously monitor thereafter. 40 C.F.R. § 63.6120(f) lists the specific information that must be included in a petition to the Administrator for approval of additional operating limitations to demonstrate compliance with the formaldehyde emission limitation in Table 1.

40 C.F.R. § 63.6125(b) requires that the owner or operator of a stationary combustion turbine that is required to comply with the formaldehyde emission limitation and is not using an oxidation catalyst must continuously monitor any parameters specified in the approved petition to comply with operating limitations specified in Table 2 and Table 5 of Subpart YYYY.

All terms used in this letter have their ordinary meaning unless such terms are defined in the Clean Air Act, 42 U.S.C. §§ 7401 *et seq.*, or Subpart YYYY, in which case they have the meaning ascribed to them in those authorities.

MSU's Petition

MSU owns and operates a gas-fired lean premix stationary combustion turbine identified as "EU-UNIT6" at the T.B. Simon Power Plant in East Lansing, Michigan. The turbine was constructed after January 14, 2003, is not equipped with oxidation catalysts, and is an "affected source" under Subpart YYYY; therefore, the deadline to comply with emissions and operating limitations under Subpart YYYY was March 9, 2022.

On January 23, 2023, MSU submitted a monitoring petition for operating limitations that would be monitored to demonstrate compliance with Subpart YYYY. On December 8, 2023, the EPA partially approved and partially denied the petition. In that decision, the EPA approved T1 (°F) limits from 54.3-74.6, and %Load limits from 82.0-98.0% based on testing data MSU submitted in support of its petition.

On March 6, 2024, MSU submitted a revised petition for operating limits that would be monitored to demonstrate compliance with Subpart YYYY. On March 25, 2025, the EPA partially approved and partially denied the petition. In that decision, the EPA approved T1 (°F) limits from 39.3-74.6, and %Load limits from 80.0-98.8% based on testing data MSU submitted in support of its petition.

On June 3, 2025, MSU submitted the Revised Petition under 40 C.F.R. § 63.6120(e) for operating limitations it proposed to monitor to demonstrate compliance with the formaldehyde emission limitation at both facilities. MSU requests that the EPA accept monitoring of % Load and T5 as

parameters to meet the Subpart YYYYY monitoring requirements for lean premix combustion equipped gas-fired turbines, instead of utilizing oxidation catalysts.

On page 2 of the Revised Petition, MSU states: “At 50% load and turbine speed above 88%, the fuel system transfers into the low-emission (SoLoNOx) mode. The SoLoNOx combustion system controls emission levels by maintaining uniform combustion temperatures that ... minimize products of ... hazardous air pollutants (HAPs), including formaldehyde. Maintaining a lean fuel-air ratio, enables the turbine to achieve low-emissions at full load. During load transitions, the fuel flow is adjusted along with the inlet variable vanes and compressor bleed valve position to maintain T5 temperature and turbine speed. The bleed valve control system functions to ... maintain T5 average $\pm 5^{\circ}\text{F}$ at part loads in the low-emissions mode.”

The EPA’s Analysis

The Revised Petitions include the required information described in 40 C.F.R. § 63.6120(f)(1) through (5), as summarized below. The EPA makes the following determinations regarding MSU’s premixed gas-fired combustion turbine under Subpart YYYYY, which is operating without an oxidation catalyst and is subject to emission and operating limitations.

Based on the information provided by MSU, the EPA makes the following findings:

(1) MSU’s Revised Petition proposes that two parameters be continuously monitored to measure compliance with formaldehyde limits in Subpart YYYYY: 1) the Combustor Temperature (T5), and 2) % Load of the turbine.

(2) MSU’s discussion in its Revised Petition of the relationship between % Load and T5, and formaldehyde emissions, and how limitations on these parameters will serve to limit formaldehyde emissions, is insufficient to support the requested parameters. The fact that a gas turbine is lean premix does not demonstrate that it will meet the 91 ppbvd formaldehyde standard. The EPA therefore is making its determination based on the emissions testing and the % Load and T5 parameters.

The emissions testing conducted on October 4, 2022, January 30, 2024, July 9, 2024, and January 21, 2025, showed formaldehyde emissions below 91 ppbvd within parts of the proposed ranges of % Load and T5.

(3) MSU proposed values for its % Load and T5 parameters (see table below). However, MSU proposed upper and lower values for the % Load and T5 parameters that were out of the range of test conditions. The EPA calculated the T5 and % Load limits to determine acceptable ranges that will demonstrate compliance with the 91 ppbvd limit. MSU has not demonstrated that limiting operations to within the full ranges of its proposed values would ensure compliance.

Parameter	T5 (°F)
MSU Proposed Limits	1350 – 1405
Test Conditions	1381 – 1400
Approved Limits	1364 – 1405

The EPA calculated the approved lower Combustor Temp limit by: [Lowest temp tested at] – (2*(91 ppb limit – 5 ppb buffer – [Highest ppb tested at lower temperatures])) / [Testing Factor])

The EPA calculated the approved upper Combustor Temp limit by: [Highest temp tested at] + (2*(91 ppb limit – 5 ppb buffer – [Highest ppb tested at higher temperatures])) / [Testing Factor])

Testing factor = 3 instead of 2, because MSU has tested only within a narrow range of T5.

The approved % Load limits remain unchanged from the previous petitions, because MSU did not request a change, and the range of test conditions did not change.

(4) In its Revised Petition, MSU described the methods it would use to measure and the instruments it would use to monitor the proposed parameters, as well as the relative accuracy and precision of these methods and instruments. MSU provided the manufacturer documentation requested by the EPA.

(5) In its Revised Petition, MSU described the frequency and methods of instrument recalibration it would use. MSU provided the manufacturer documentation requested by the EPA.

MSU has not demonstrated that limiting operations to within the full ranges of proposed values of the parameters % Load and T1 would ensure compliance with the 91 ppbv formaldehyde emissions standard.

The EPA therefore approves the Revised Petition for EU-UNIT6 to operate between a T5 of 1364-1405 °F when operating between 80.0-98.0 % Load.

The EPA would consider approving a broader range of % Load and T5 parameters if MSU submits a new or revised petition including information showing that the formaldehyde standard is met at wider ranges of operating conditions.

We have coordinated this determination with the Office of Enforcement and Compliance Assurance (OECA) and the Office of Air Quality Planning and Standards (OAQPS). If there are any further questions, please contact Jacob Herbers of my staff at Herbers.Jacob@epa.gov.

Sincerely,

CAROLYN
PERSOON

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Carolyn Persoon
Acting Division Director
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