

**INFORMATION RELATIVE TO
THE DRAFT TITLE V OPERATING PERMIT
December 6, 2024**

GENERAL FACILITY INFORMATION

Facility Name: Mississippi Power Company, David M Ratcliffe
Facility Address: 5835 Highway 493
DeKalb, MS 39328
County: Kemper
SIC Code(s): 4911 (Electric Services)
NAICS Code(s): 221112 (Fossil Fuel Electric Power Generation)

APPLICATION SUMMARY

Permit No.: 1380-00017	NSPS (Part 60): Subparts IIII and KKKK
Permit Action: Renewal	NESHAP (Part 61): N/A
Permit Folder: PER20240002	NESHAP (Part 63): Subparts ZZZZ and CCCCCC
Application Receipt Date: July 2, 2024	112(r) / RMP: Yes
Application Deemed Complete: August 16, 2024	Other: Acid Rain (40 CFR 72-78) and CSAPR (40 CFR 97, Subpart EEEEE)
CBI Submitted?: No	

FACILITY DESCRIPTION

Mississippi Power Company's (MPC) David M. Ratcliffe electric generating plant ("Plant Ratcliffe") is a combined cycle electric generating plant. Plant Ratcliffe consists of two natural gas-fired combustion turbines with heat recovery steam generators supplying steam to a single steam turbine, referred to as a 2x1 configuration. The majority of emissions from the facility result from the combustion of natural gas in the combustion turbines and the duct burners. Combustion of natural gas results in emissions of particulate matter (PM), PM less than 10 microns (PM₁₀), PM less than 2.5 microns (PM_{2.5}), nitrogen oxides (NO_x), carbon monoxide (CO), sulfur dioxide (SO₂), volatile organic compounds (VOC), and hazardous air pollutants (HAP). NO_x emissions are minimized by the use of ultra-low NO_x burners on the combustion turbines and control of the exhaust from the turbines and duct burners by selective catalytic reduction (SCR) units on each stack.

Plant Ratcliffe operates a 12-cell mechanical draft cooling tower, which emits PM/PM₁₀/PM_{2.5}. There are also two diesel-fired emergency firewater pumps that emit products of combustion, and a 3,000-gallon gasoline tank used to fill mobile equipment at the plant that emits VOC and HAP. The following table lists the significant emission points at the facility.

Emission Point	Description
AB-001	2,270 MMBTU/hr (nominal) natural gas fired Combustion Turbine with Ultra Low NO _x Burners and a Heat Recovery Steam Generator with a 737 MMBTU/hr natural gas fired Duct Burner. Emissions are controlled by a selective catalytic reduction (SCR) unit.

Emission Point	Description
AB-002	2,270 MMBTU/hr (nominal) natural gas fired Combustion Turbine with Ultra Low NO _x Burners and a Heat Recovery Steam Generator with a 737 MMBTU/hr natural gas fired Duct Burner. Emissions are controlled by a selective catalytic reduction (SCR) unit.
AC-001	12-Cell Mechanical Draft Cooling Tower
AC-003a	510 HP (460 kW/3.57 MMBtu/hr) diesel-fired Emergency Fire Pumps (John Deer/Clark Model #JX6H-UFAD60 manufactured in 2011)
AC-003b	510 HP (460 kW/3.57 MMBtu/hr) diesel-fired Emergency Fire Pumps (John Deer/Clark Model #JX6H-UFAD60 manufactured in 2011)
AC-004	3,000-gallon Unleaded Gasoline Storage Tank equipped with a Stage 1 vapor recovery system (Constructed in 2015)

TITLE V SOURCE APPLICABILITY

The facility's potential-to-emit (PTE) exceeds the Title V major source threshold of 100 tons per year (tpy) for each of the following criteria air pollutants: PM₁₀, PM_{2.5}, NO_x, CO, and VOC. The facility's potential-to-emit HAPs does not exceed the Title V major source thresholds of 25 tpy of total HAPs and 10 tpy for individual HAPs.

Facility-Wide Potential-to-Emit Summary¹

Pollutant	PTE Emissions (tons/yr)
Particulate Matter (TSP)	215.47
PM ₁₀	425.71
PM _{2.5}	425.71
Sulfur Dioxide (SO ₂)	16.99
Nitrogen Oxides (NO _x)	343.10
Carbon Monoxide (CO)	1,112.80
Volatile Organic Compounds (VOC)	184.02
Total Reduced Sulfur (TRS)	--
Lead	--
CFC/HCFC	--
Total HAP	8.91

¹ The PTE emissions reflect any emission limits or enforceable restrictions included in the proposed permit.

PREVENTION OF SIGNIFICANT DETERIORATION (PSD) APPLICABILITY

Plant Ratcliffe is one of the 28 source categories (i.e., fossil fuel fired steam electric plants > 250 MMBTU/hr heat input) listed in 40 CFR 52.21(b)(1)(i)(a) of the PSD regulations, which are adopted by reference in 11 Miss. Admin. Code Pt. 2, Ch. 5. Therefore, the PSD major source threshold is 100 tpy for each regulated NSR pollutant, and fugitive emissions are considered when determining the PSD applicability. Potential emissions of PM/PM₁₀/PM_{2.5}, NO_x, CO, and VOC exceed 100 tpy; therefore, the facility is considered a major stationary source. However, no modifications are proposed with the renewal of the Title V Operating Permit (TVOP) that would trigger the PSD requirements.

FACILITY MODIFICATIONS AND/OR PERMIT CHANGES

The only modification at the facility is the removal of the Auxiliary Boiler (Emission Point AA-006), which results in a decrease of the facility's potential emissions. The permit has been revised since the previous renewal for the following reasons:

- Remove Emission Point AA-006 and related emission limits, monitoring, recordkeeping, and reporting.
- Provide distinct emission points for the two firewater pump engines (i.e., Emission Points AC-003a and AC-003b), since these engines are separate emission sources with different stacks. The engines were previously permitted as Emission Point AC-003.

COMPLIANCE ASSURANCE MONITORING (CAM) APPLICABILITY

40 CFR Part 64 specifies the requirements for CAM. The general applicability of this rule can be found in 40 CFR 64.2 and requires a Title V source to comply with the CAM requirements if all three of the following criteria are met for a pollutant-specific emission unit (PSEU):

1. The unit is subject to an emission limitation or standard for a regulated air pollutant other than exemptions under 40 CFR 64.2(b)(1);
2. The unit uses a control device to comply with the standard; and
3. The unit has pre-control emissions exceeding Title V major source threshold.

The combined cycle combustion turbines are the only emission sources equipped with a control device and are potentially subject to the provisions of CAM. However, the provisions of the CAM rule **do not apply** to the combustion turbines since the NO_x emissions controlled by the SCR units are determined by use of a continuous emissions monitoring system (CEMS), thereby meeting the exemption in 40 CFR 64.2(b)(1)(vi). The TVOP requires the facility to continuously monitor emissions from the combustion turbines in accordance with the applicable requirements of the Acid Rain Program to demonstrate compliance with the emission limits established in the PSD Construction Permit. The combustion turbines are also potentially subject to the provisions of CAM for PM₁₀/PM_{2.5}, VOC, and CO; however, there are no controls for these pollutants. As such, the provisions of CAM are not applicable to these pollutants.

NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS (NESHAP) APPLICABILITY

- **40 CFR 63, Subpart YYYY, NESHAP for Stationary Combustion Turbines** – The provisions of Subpart YYYY are applicable to stationary combustion turbines located at major sources of HAP emissions. The facility is not a major source of HAPs; therefore, the provisions of Subpart YYYY are not applicable to the combustion turbines.
- **40 CFR 63, Subpart ZZZZ, NESHAP for Stationary Reciprocating Internal Combustion Engines** – The provisions of Subpart ZZZZ are applicable to stationary reciprocating internal combustion engines located at area and major sources of HAP emissions. The facility is an area source of HAPs and has two 510 HP fire water pump engines (Emission Points AC-003a and AC-003b) that are considered new emergency engines under Subpart ZZZZ. Per 40 CFR 63.6590(c)(1), the engines **are subject** to Subpart ZZZZ but will comply with the provisions of Subpart ZZZZ by complying with the applicable provisions of 40 CFR 60, Subpart IIII, Standards of Performance for Stationary Compression Ignition (CI) Internal Combustion Engines.
- **40 CFR 63, Subpart CCCCCC, NESHAP for Source Category: Gasoline Dispensing Facilities** – The provisions of Subpart CCCCCC are applicable to the loading of gasoline storage tanks at gasoline dispensing facilities (GDF). Plant Ratcliffe is considered a GDF since gasoline is dispensed from the 3,000-gallon storage tank (Emission Point AC-004) to mobile and nonroad engines used at the facility; therefore, the facility **is subject** to Subpart CCCCCC. The facility has a monthly throughput of less than 10,000 gallons; therefore, the facility is only subject to the work practice standards in 40 CFR 63.11116 and to recordkeeping requirements that require the facility to document the monthly gasoline throughput.
- **40 CFR 63, Subpart JJJJJJ, NESHAP for Industrial, Commercial, and Institutional Boilers at Area Sources** – The provisions of Subpart JJJJJJ are applicable to boilers that are located at area sources of HAPs. Each combustion turbine is equipped with a heat recovery steam generator (HRSG) that provides steam to the steam turbine and generator. The HRSGs meet the definition of *waste heat boilers* and are excluded from the definition of *boilers* in 40 CFR 63.11237; therefore, the HRSGs **are not subject** to the provisions of Subpart JJJJJJ.

NEW SOURCE PERFORMANCE STANDARDS (NSPS) APPLICABILITY

- **40 CFR 60, Subpart Da, Standards of Performance for Electric Utility Steam Generating Units** – The provisions of Subpart Da are applicable to electric utility steam generating units that are capable of combusting more than 250 MMBTU/hr heat input, including any fossil fuel and electric utility combined cycle gas turbines with a HRSG equipped with a duct burner capable of combusting more than 250 MMBtu/hr heat input. While the HRSG duct burners associated with the combined cycle combustion turbines (Emission Points AB-001 and AB-002) have a rated heat input of 737 MMBtu/hr, they **are**

not subject to the requirements of Subpart Da since they are subject to the requirements of 40 CFR 60, Subpart KKKK per 40 CFR 60.40a(e)(1).

- **40 CFR 60, Subpart Db, Standards of Performance for Industrial-Commercial-Institutional Steam Generating Units** – The provisions of Subpart Db are applicable to steam generating units that are constructed after June 19, 1984, and have a heat input capacity from fuels combusted in the unit greater than 100 MMBTU/hr. While the HRSG duct burners associated with the combined cycle combustion turbines (Emission Points AB-001 and AB-002) have a rated heat input of 737 MMBtu/hr and produce steam, they **are not subject** to the requirements of Subpart Db since they are subject to the requirements of 40 CFR 60, Subpart KKKK per 40 CFR 60.40b(i).
- **40 CFR 60, Subpart IIII, Standards of Performance for Stationary Compression Ignition (CI) Internal Combustion Engines** – The provisions of Subpart IIII are applicable to stationary CI engines that commenced construction after July 11, 2005, and the engine was manufactured after April 1, 2006. The two diesel-fired 510 HP engines (Emission Points AC-003a and AC-003b) were constructed and manufactured after the applicability dates, so they are considered new units and **are subject** to the requirements of Subpart IIII.
- **40 CFR 60, Subpart KKKK – Standards of Performance for Stationary Combustion Turbines** – The provisions of Subpart KKKK are applicable to stationary combustion turbines with a heat input at peak load equal to or greater than 10 MMBTU/hr and that commenced construction after February 18, 2005. The combustion turbines associated with Emission Points AB-001 and AB-002 were constructed after this date and have a rated heat input of 2,270 MMBTU/hr; therefore, the combustion turbines **are subject** to the requirements of Subpart KKKK. Emissions from the associated HRSG and duct burners are included in demonstrating compliance with the Subpart KKKK limits.

ACID RAIN PROGRAM

Emission Points AB-001 and AB-002 are subject to the applicable provisions of the Acid Rain Program found in 40 CFR 72-78. The permittee shall comply by installing and operating a CEMS on each unit to monitor/record emissions of NO_x. The facility's Acid Rain Permit will be issued concurrently with the TVOP and is included as Appendix C of the TVOP.

CROSS-STATE AIR POLLUTION RULE (CSAPR)

Emission Points AB-001 and AB-002 are subject to the applicable requirements of 40 CFR 97, Subpart EEEEE, Cross-State Air Pollution Rule NO_x Ozone Season Group 2 Trading Program, which establishes a NO_x trading budget for fossil-fuel-fired boilers and combustion turbines serving generators with nameplate capacity of more than 25 MWe producing electricity for sale in

Mississippi. NO_x emissions must be monitored using a NO_x CEMS compliant with the Acid Rain requirements of Part 75.

On March 15, 2023, EPA published a final action promulgating a Federal Implementation Plan (FIP), which is referred to as the “Good Neighbor Plan.” The Good Neighbor Plan addressed revisions to the CSAPR NO_x Ozone Season Group 3 Trading Program in 40 CFR 97, Subpart GGGGG, to include Mississippi’s fossil fuel-fired boilers and combustion turbines serving generators with a nameplate capacity of 25 MWe or greater producing electricity for sale. However, on July 31, 2023, EPA published an interim final rule to stay the effectiveness of the Good Neighbor Plan requirements for emissions sources in Arkansas, Kentucky, Louisiana, Mississippi, Missouri, and Texas. Therefore, the permit will continue to reflect the Group 2 Trading Program until such time that EPA lifts the stay or takes other action on the Good Neighbor Plan as it relates to Mississippi.

SPECIFIC APPLICABLE REQUIREMENTS

Emission Point No.	Pollutant	Draft Permit Emission Limits	Monitoring Requirements
AB-001 AB-002	NO _x	0.015 lb/MMBTU, not to exceed 39 lb/hr and 170.82 tons/year	Use a NO _x CEMS to demonstrate compliance continuously.
	CO	0.063 lb/MMBTU, not to exceed 127 lb/hr	Stack test biennially.
	PM/PM ₁₀ (filterable)	0.01 lb/MMBTU, not to exceed 24 lb/hr and 105.12 tons/year	Use only pipeline quality natural gas.
	VOC	0.008 lb/MMBTU, not to exceed 21 lb/hr and 91 tons/year	Stack test biennially.
	SO ₂	1.9 lb/hr and 8.32 tons/year	Use only pipeline quality natural gas.
	Opacity	20% (six-minute average), except for one six-minute period per hour of not more than 27%	Use of only pipeline quality natural gas should ensure there is no opacity visible during normal operations.
	NO _x	15 ppm at 15% O ₂	Use a NO _x CEMS to demonstrate compliance continuously.
	SO ₂	0.060 lb/MMBTU	Only combust natural gas with a total sulfur content of 20 grains or less per 100 standard cubic feet, as demonstrated by tariff sheets, contracts, etc.
	PM (filterable)	$E = 0.8808 \cdot I^{-0.1667}$	Since the turbines only combust natural gas, potential emissions are well below the State standard and no additional monitoring is required.

Emission Point No.	Pollutant	Draft Permit Emission Limits	Monitoring Requirements
AC-001	PM (filterable)	0.0005% drift rate	Install and maintain the cooling tower per the manufacturer's instructions since the drift rate is determined by the cooling tower design.
AC-003a AC-003b	PM (filterable)	0.6 lb/MMBTU	The engines are required to meet PM standards which are lower than the allowable State standard.
	NMHC+NOx CO PM (filterable only)	4.0 g/kW-hr (3.0 g/HP-hr) 3.5 g/kW-hr (2.6 g/HP-hr) 0.2 g/kW-hr (0.15 g/HP-hr)	Purchase engines certified to meet the standards and maintain them according to the manufacturer's written instructions.
	Diesel Fuel Specifications	Max sulfur content ≤15 ppm Min. cetane index of 40 or max aromatic content of 35 volume percent	Use compliant ultra-low sulfur diesel and maintain records demonstrating the diesel meets the fuel specifications.
AC-004	Gasoline throughput	10,000 gallons/month	Although not a limit, the permittee must document monthly gasoline throughput to ensure they are meeting the requirements applicable to gasoline dispensing of less than 10,000 gallons/month.