

State Registration Number
M4734

**RENEWABLE OPERATING PERMIT
STAFF REPORT**

ROP Number
MI-ROP-M4734-2024

**Ford Motor Company
Automatic Transmission New Product Center**

State Registration Number (SRN): M4734

Located at

35500 Plymouth Road, Livonia, Wayne County, Michigan 48150

Permit Number: MI-ROP-M4734-2024

Staff Report Date: April 22, 2024

This Staff Report is published in accordance with Sections 5506 and 5511 of Part 55, Air Pollution Control, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (Act 451). Specifically, Rule 214(1) of the administrative rules promulgated under Act 451, requires that the Michigan Department of Environment, Great Lakes, and Energy (EGLE), Air Quality Division (AQD), prepare a report that sets forth the factual basis for the terms and conditions of the Renewable Operating Permit (ROP).

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APRIL 22, 2024 - STAFF REPORT

ROP Number

MI-ROP-M4734-2024

Purpose

Major stationary sources of air pollutants, and some non-major sources, are required to obtain and operate in compliance with an ROP pursuant to Title V of the federal Clean Air Act; and Michigan's Administrative Rules for Air Pollution Control promulgated under Section 5506(1) of Act 451. Sources subject to the ROP program are defined by criteria in Rule 211(1). The ROP is intended to simplify and clarify a stationary source's applicable requirements and compliance with them by consolidating all state and federal air quality requirements into one document.

This Staff Report, as required by Rule 214(1), sets forth the applicable requirements and factual basis for the draft ROP terms and conditions including citations of the underlying applicable requirements, an explanation of any equivalent requirements included in the draft ROP pursuant to Rule 212(5), and any determination made pursuant to Rule 213(6)(a)(ii) regarding requirements that are not applicable to the stationary source.

General Information

Stationary Source Mailing Address:	Ford Motor Company Automatic Transmission New Product Center 35500 Plymouth Road Livonia, Michigan 48150
Source Registration Number (SRN):	M4734
North American Industry Classification System (NAICS) Code:	541712
Number of Stationary Source Sections:	1
Is Application for a Renewal or Initial Issuance?	Renewal
Application Number:	201600058
Responsible Official:	Kristina M. Karschnia, Chief New Model Programs Prototype 313 805 5031
AQD Contact – District Inspector:	Samuel Liveson, Senior Environmental Engineer 313-405-1357
AQD Contact – ROP Writer:	Sebastian Kallumkal, Environmental Quality Specialist 586-201- 0175
Date Application Received:	March 9, 2016
Date Application Was Administratively Complete:	March 9, 2016
Is Application Shield in Effect?	Yes
Date Public Comment Begins:	April 22, 2024
Deadline for Public Comment:	May 22, 2024

Source Description

The Ford Motor Company Transmission New Product Center (Ford ATNPC) is located in the City of Livonia and is bordered by Levan Road on the west, Plymouth Road to the south, the CSX railroad to the north, and a commercial/light industrial zoned complex to the east. The nearest residential area is approximately 640 feet to the east.

Ford ATNPC currently has 41 fuel-burning dynamometer test cells. Ford ATNPC utilizes various fuels in internal automobile and light duty truck engines to test engine and transmission performance as well as individual engine and transmission components. Ford ATNPC also manufactures, assembles, and tests prototype transmissions and transmission components.

Ford ATNPC is composed of four main areas: Phase1, Phase 2, Phase 3, Phase 3A.

Phase 1 includes Ford ATNPC's prototype operations (machining, assembly, testing). Emissions from Phase 1 are released to the general in-plant environment, or if released to outside ambient air, are controlled by an appropriately designed fabric filter.

Phase 2 is comprised of 16 fuel burning dynamometer test cells. The emissions from these test cells are uncontrolled; depending on the specific test being performed, the cells may be equipped with a catalytic converter to test catalyst aging. Phase 2 also includes several chassis rolls where fully assembled vehicles are tested for the purposes of vehicle certification required under Title II of the Clean Air Act (the chassis equipment is currently regulated as a mobile source of emissions, therefore, conditions for these test cells have been removed from the ROP).

Phase 3 consists of 20 engine-driven and engine-only fuel burning dynamometer test cells that are divided into Banks A, B, and C (sometimes referred to as 5, 6, and 7). Each bank exhausts emissions to a common header and then to one of three, 3 stage regenerative thermal oxidizers (RTOs). The RTOs are used as control for CO and VOC emissions and were installed in July 2006 to replace the aging catalytic oxidizers. The catalytic oxidizers were permanently shut down in 2011.

Phase 3A consists of five engine-driven and engine-only fuel burning dynamometer test cells; these test cells are housed in the same building as Phase 3. Two were installed in August 2016 and the remaining three on February 7, 2019. The emissions from these test cells are also exhausted to the three RTOs.

In addition, Ford ATNPC has various gasoline and fuel storage tanks and one cold cleaner located in the paint area.

Emissions from the facility consist of carbon monoxide (CO), nitrogen oxides (NO_x), volatile organic compounds (VOCs), and particulate matter (PM). The emissions mostly result from the combustion of gasoline and diesel fuel in the engines. Ford ATNPC is part of the complex that contains the Ford Livonia Transmission Plant (A8645) which is considered a separate source for Title V purposes. These facilities are adjacent to each other and operate under common control, however they have different major group SIC codes (Ford ATNPC: 8731 - Engineering research and development laboratories or services, Ford Livonia Transmission Plant: 3714 - Motor Vehicle Transmission and Power Train Parts Manufacturing). Although separate stationary sources, Hazardous Air Pollutant (HAP) emissions from both facilities are aggregated per the major source definition in the National Emission Standards for Hazardous Air Pollutants (NESHAP) regulations.

The following table lists stationary source emission information as reported to the Michigan Air Emissions Reporting System (MAERS) for the year **2022**.

TOTAL STATIONARY SOURCE EMISSIONS

Pollutant	Tons per Year
Carbon Monoxide (CO)	252.13
Nitrogen Oxides (NO _x)	34.91
PM10*	2.29
Sulfur Dioxide (SO ₂)	0.14
Volatile Organic Compounds (VOCs)	13.53

* Particulate matter (PM) that has an aerodynamic diameter less than or equal to a nominal 10 micrometers.

The following table lists HAP emissions as calculated for the year 2022 by Ford Motor Company. As noted earlier, the HAP emissions from Ford ATNPC (M4734) and the Ford Livonia Transmission Plant (A8645) are aggregated per the major source definition in the National Emissions Standards for Hazardous Air Pollutants regulations.

Individual Hazardous Air Pollutants (HAPs) **	Tons per Year
Acetaldehyde (75-07-0)	6.72
Acrolein (107-02-8)	0.01
Benzene (71-43-2)	1.80
1,3 Butadiene (106-99-0)	0.62
Ethylbenzene (100-41-4)	0.62
Ethyl Carbamate (51-79-6)	0.01
Ethylene Glycol	0.02
Formaldehyde	1.03
Glycol Ethers (110-80-5T)	0.24
Methanol (67-56-1)	0.11
Methyl Isobutyl Ketone (108-10-1)	0.84
N-Hexane (110-54-3)	0.45
Toluene (108-88-3)	0.15
Xylenes (isomers & mixture) (1330-20-7)	2.47
Cobalt compounds (7440-48-4)	0.02
Total Hazardous Air Pollutants (HAPs)	15.18

**As listed pursuant to Section 112(b) of the federal Clean Air Act.

See Parts C and D in the ROP for summary tables of all processes at the stationary source that are subject to process-specific emission limits or standards.

Regulatory Analysis

The following is a general description and history of the source. Any determinations of regulatory non-applicability for this source are explained below in the Non-Applicable Requirement part of the Staff Report and identified in Part E of the ROP.

The stationary source is located in Wayne County which is currently designated by the USEPA as attainment/unclassified for all criteria pollutants except as follows: Wayne County is currently designated by the U.S. Environmental Protection Agency (USEPA) as attainment/maintenance with respect to the 8-hour ozone standard. A portion of Wayne County is also currently designated by the USEPA as a non-attainment area with respect to the sulfur dioxide standard (SO₂); this stationary source is not located in this portion of Wayne County.

The stationary source is subject to Title 40 of the Code of Federal Regulations (CFR) Part 70, because the potential to emit of carbon monoxide and nitrogen oxides each exceed 100 tons per year.

HAP emissions from Ford ATNPC (M4734) and the Ford Livonia Transmission Plant (A8645) are aggregated per the major source definition in the National Emissions Standards for Hazardous Air Pollutants regulations. Together, the stationary sources are considered to be a “synthetic minor” source in regard to HAP emissions because both accepted legally enforceable permit conditions limiting the potential to emit of any single HAP regulated by the federal Clean Air Act, Section 112, to less than 10 tons per year and the potential to emit of all HAPs combined to less than 25 tons per year. These conditions were initially established in 2012 and 2007 in the following ROPs: MI-ROP-M4734-2012 and MI-ROP-A8645-2007. On May 1 and 2, 2018, Ford ATNPC and the Ford Livonia Transmission Plant, obtained the following permits to install (PTI) No. 32-18 and No. 34-18. These permits contain HAP emission limits to restrict the potential to emit of any single HAP regulated by the federal Clean Air Act, Section 112, to less than 10 tons per year and the potential to emit of all HAPs combined to less than 25 tons per year. PTI No. 32-18 has been incorporated into this ROP under the Source-Wide Conditions.

EU-PHASE3 at the stationary source was subject to review under the Prevention of Significant Deterioration (PSD) regulations of 40 CFR 52.21, because at the time of New Source Review permitting the potential to emit of nitrogen oxides and carbon monoxides was each greater than 250 tons per year and the installation of EU-PHASE3 represented a PSD major modification for nitrogen oxides. PTI No. 68-12 (2012) permitted 22 dynamometer test cells (FG-PHASE3) and underwent public comment.

PTI No. 68-12A (2015) only 20 of the 22 were installed from 68-12. The two new dynamometer test cells proposed in this application were put into a new Flexible Group: FG-PHASE3A. PTI No. 68-12A was approved to allow Ford to install the two new dynamometer test cells as their own separate flexible group (FG-PHASE3A). The two dynos were put into a new Flexible Group to simplify the review and reduce the project's significance to below the significant emissions rate.

PTI No. 68-12B (2017) added three new dynamometer test cells to FG-PHASE3A (now five dynamometer test cells in FG-PHASE3A). Still 20 dynamometer test cells in FG-PHASE3.

PTI No. 68-12C (2022) upgraded two of the existing dynamometer test cells in FG-PHASE3 (not 3A). This upgrade involved changing test cells I-12 and I-13 (which currently perform rear wheel drive transmission testing) from medium torque to high torque cells to accommodate testing of electric driven transmission systems while maintaining ability to continue testing existing internal combustion engines in those cells. Each of the two dynos are 845 hp. Because the source-wide NO_x, PTE is greater than 100 tons per year and located in an area that was nonattainment for ozone at the time of the permit review, the facility was considered an existing, nonattainment, major source of ozone. The annual NO_x emissions were decreasing, but the daily and hourly NO_x rates were increasing. The net NO_x emissions difference for this project was 32.88 tons per year. Since the analysis showed the next NO_x emissions was less than significant, no further review related to PSD was performed.

Although EU-PHASE2 was installed after August 15, 1967, this equipment was exempt from New Source Review (NSR) permitting requirements at the time it was installed.

The facility considered them to be exempt per Rule 285(2)(g) when they were originally installed in 1991. Rule 278 prohibits the concurrent installation of exempt equipment without a permit if the installation will result in emissions greater than the significant levels. Emissions of CO from the Phase II dynamometers are greater than the significant level of 100 tpy; however, they were installed before Rule 278 existed.

The facility submitted an application for PTI No. 44-22 to accept limitations on the Phase 2 dynamometer test cell operations. The facility did not propose any physical changes that would result in emission increases but submitted a PSD applicability analysis comparing past actual emissions to the proposed allowable emissions (Actual to Potential test). This PTI review covered minor New Source Review (NSR) and verified that based on the PSD Actual to Potential analysis, the current permitting is not subject to PSD.

The facility provided information that the engines used at this facility for testing transmissions are not subject to the National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines in 40 CFR Part 63, Subpart ZZZZ, the Standards of Performance for Stationary Compression Ignition Internal Combustion Engines in 40 CFR Part 60, Subpart IIII, and the Standards of Performance for Stationary Spark Ignition Internal Combustion Engines in 40 CFR Part 60, Subpart JJJJ because these engines are not considered "stationary engines" and are "non-road" engines. The explanation included that due to the variety of different tests that are performed along with the different model and model years of engine and transmission systems that are manufactured, the engine and transmission assembly must be moved in and out of the test cells to accommodate the testing; outside the test cells, the engines and transmissions are mounted on portable dollies or skids to allow for movement in and out of the test cell; at the completion of the tests, the engine and transmission are removed from the test cell for evaluation and disassembly. Therefore, given the nature of the testing, with only model year engines associated with the model year transmission being tested and the duration of the testing performed, no engine or engine type is used in the test cells for one year or more.

The facility has four aboveground gasoline storage tanks: one 16,000-gallon aboveground storage tank (AST) and three sectioned storage tanks (10,000-gallons and 6,000-gallon sections). These tanks are identified as Tank 1 (EU-AST1, 16,000 gallon) and Tank 2 through Tank 4 (EU-AST2-10000 gal and 6,000-gal, EU-AST3 (10000 gal and 6000-gal); EU-AST4 (10000 gal and 6000-gal). These ASTs are subject to Gasoline Dispensing Area Source MACT (40 CFR Part 63, Subpart CCCCC).

The ROP contains special conditions pertaining to this Area Source MACT under flexible group FG-GASDISPENSING. Although the fuel limits found throughout the ROP, allow for potential use above 100,000 gallons per month, Ford ATNPC requested the language for fuel usage >10,000 and <100,000 gallons per month per stationary gasoline dispensing facility (GDF). The AQD is not delegated the regulatory authority for this area source MACT.

The monitoring conditions contained in the ROP are necessary to demonstrate compliance with all applicable requirements and are consistent with the "Procedure for Evaluating Periodic Monitoring Submittals."

The following Emission Units/Flexible Groups are subject to CAM:

Emission Unit/Flexible group ID	Pollutant/Emission Limit	UAR(s)	Control Equipment	Monitoring (Include Monitoring Range)	Emission Unit/Flexible Group for CAM	PAM?
FG-PHASE3	CO = 111.8 tpy	R 336.1205(1)(a) & (b), R 336.2802(4)(d), 40 CFR 52.21(a)(2)(iv)(d) 40 CFR 52.21(d)	Three regenerative thermal oxidizers	Combustion chamber temperature: Minimum temperature of 1400°F based on a 3-hour rolling average	FG-CAM	No
	CO = 189.12 pph	R 336.1205(1)(a) & (b), R 336.2802(4)(d), 40 CFR 52.21(a)(2)(iv)(d) 40 CFR 52.21(d)				

Emission Unit/Flexible group ID	Pollutant/Emission Limit	UAR(s)	Control Equipment	Monitoring (Include Monitoring Range)	Emission Unit/Flexible Group for CAM	PAM?
FG-PHASE3A	CO = 58.1 tpy	R 336.1205(1)(a) & (3)	Three regenerative thermal oxidizers	Combustion chamber temperature: Minimum temperature of 1400°F based on a 3-hour rolling average	FG-CAM	No

*Presumptively Acceptable Monitoring (PAM)

The emission limitations or standards for CO from FG-PHASE3 and CO for FG-PHASE3A at the stationary source are subject to the federal Compliance Assurance Monitoring rule under 40 CFR Part 64. Both FG-PHASE3 and FG-PHASE3A have control devices (three regenerative thermal oxidizers). The emission units in FG-PHASE3 have potential pre-control emissions of CO greater than the major source threshold levels; and the post-control emissions of CO exceed 100 tpy, thus the monitoring frequency is set by 40 CFR 64.3(b)(4)(ii). The emission units in FG-PHASE3A have potential pre-control emissions of CO greater than the major source threshold level.

According to the submitted CAM Plan, regenerative thermal oxidizers will provide control for CO emissions from each test cell. Plan states that under all existing test cell operating scenarios, one RTO has the capacity to control emissions from all of the engine driven test cells simultaneously, if required. The two adjacent RTOs are operated in standby mode in the event of a primary regenerative thermal oxidizer malfunction. To ensure proper operation of the RTOs, these will be operated with a combustion chamber temperature of minimum 1400°F. The facility would also conduct performance checks of the combustion chamber thermocouples, conduct inspections of the heat exchange/heat transfer media, and conduct inspections of inlet/outlet valve seals to ensure proper retention time. The temperature is monitored on a continuous basis and recorded at a minimum of once every 15 minutes.

Thermal oxidizers are commonly used to control VOC and CO emissions from dynamometer cells and other similar units. This is a well-established technology and referenced in existing federal regulations, such as the Engine Test Maximum Achievable Control Technology (MACT) Standard as an appropriate control technology for engine emissions.

The thermal oxidizer combustion chamber temperature of 1,400 degrees is also a well-established temperature necessary to destroy VOC and CO emissions. This temperature is also the manufacturer's recommended operating temperature for this type of thermal oxidizer.

Please refer to Parts B, C and D in the draft ROP for detailed regulatory citations for the stationary source. Part A contains regulatory citations for general conditions.

Source-Wide Permit to Install (PTI)

Rule 214a requires the issuance of a Source-Wide PTI within the ROP for conditions established pursuant to Rule 201. All terms and conditions that were initially established in a PTI are identified with a footnote designation in the integrated ROP/PTI document.

The following table lists all individual PTIs that were incorporated into previous ROPs. PTIs issued after the effective date of ROP No. MI-ROP-M4734-2011 are identified in Appendix 6 of the ROP.

PTI Number			
C-11388 through C-11393	292-05	401-94A	

Streamlined/Subsumed Requirements

This ROP does not include any streamlined/subsumed requirements pursuant to Rules 213(2) and 213(6).

Non-applicable Requirements

Part E of the ROP lists requirements that are not applicable to this source as determined by the AQD, if any were proposed in the ROP Application. These determinations are incorporated into the permit shield provision set forth in Part A (General Conditions 26 through 29) of the ROP pursuant to Rule 213(6)(a)(ii).

Processes Not in the Draft ROP

The following table lists PTI exempt processes that were not included in the Draft ROP pursuant to Rule 212(4). These processes are not subject to any process-specific emission limits or standards.

Emission Unit ID	Description of Emission Unit	Rule 212(4) Citation	PTI Exemption Rule Citation
EU-RTACU1	Rooftop heating units. Total design capacity of all-natural gas fired heating units ~53.15 MMBTU/hr; with individual heat inputs of 4.2 MMBTU/hr or less.	R 336.1212(4)(b)	R 336.1282(2)(b)(i)
EU-RTACU2			
EU-RTACU3			
EU-RTACU4			
EU-RTACU5			
EU-RTACU6			
EU-RTACU7			
EU-RTACU8			
EU-RTACU9			
EU-RTACU10			
EU-RTACU11			
EU-RTACU12			
EU-RTACU13			
EU-EXEMPTBOILER1	Natural gas fired NDE Glycol boiler, 285,000 BTU/hr	R 336.1212(4)(b)	R 336.1282(2)(b)(i)
EU-EXEMPTBOILER2	Natural gas fired GFE00010 Glycol Boiler 625,000 BTU/hr		
EU-EXEMPTBOILER3	Natural gas fired West Car wash water heater, 380,000 BTU/hr		
EU-EXEMPTBOILER4	Natural gas fired East Car wash water heater, 380,000 BTU/hr		

Draft ROP Terms/Conditions Not Agreed to by Applicant

This draft ROP does not contain any terms and/or conditions that the AQD and the applicant did not agree upon pursuant to Rule 214(2).

Compliance Status

The AQD finds that the stationary source is expected to be in compliance with all applicable requirements as of the effective date of this ROP.

Action taken by EGLE, AQD

The AQD proposes to approve this ROP. A final decision on the ROP will not be made until the public and affected states have had an opportunity to comment on the AQD's proposed action and draft permit. In addition, the USEPA is allowed up to 45 days to review the draft ROP and related material. The AQD is not required to accept recommendations that are not based on applicable requirements. The delegated decision maker for the AQD is Julie Brunner, ROP Central Unit Supervisor. The final determination for ROP approval/disapproval will be based on the contents of the ROP Application, a judgment that the stationary source will be able to comply with applicable emission limits and other terms and conditions, and resolution of any objections by the USEPA.

State Registration Number
M4734

RENEWABLE OPERATING PERMIT
May 23, 2024 - STAFF REPORT ADDENDUM

ROP Number
MI-ROP-M4734-2024

Purpose

A Staff Report dated April 22, 2024, was developed to set forth the applicable requirements and factual basis for the draft Renewable Operating Permit (ROP) terms and conditions as required by Rule 214(1) of the administrative rules promulgated under Act 451. The purpose of this Staff Report Addendum is to summarize any significant comments received on the draft ROP during the 30-day public comment period as described in Rule 214(3). In addition, this addendum describes any changes to the draft ROP resulting from these pertinent comments.

General Information

Responsible Official:	Kristina M. Karschnia, Chief New Model Programs Prototype 313 805 5031
AQD Contact – District Inspector:	Samuel Liveson, Senior Environmental Engineer 313-405-1357
AQD Contact – ROP Writer:	Sebastian Kallumkal, Environmental Quality Specialist 586-201- 0175

Summary of Pertinent Comments

No pertinent comments were received during the 30-day public comment period.

Changes to the April 22, 2024 Draft ROP

No changes were made to the draft ROP.