

**DEPARTMENT OF ENVIRONMENTAL QUALITY
AIR QUALITY DIVISION
ACTIVITY REPORT: On-site Inspection**

M476460648

FACILITY: FORD MOTOR CO ELM STREET BOILERHOUSE		SRN / ID: M4764
LOCATION: 1200 ELM ST, DEARBORN		DISTRICT: Detroit
CITY: DEARBORN		COUNTY: WAYNE
CONTACT: Robert Frew , PTME Senior Environmental Engineer		ACTIVITY DATE: 10/29/2021
STAFF: Jorge Acevedo	COMPLIANCE STATUS: Compliance	SOURCE CLASS: MAJOR
SUBJECT: ELM STREET BOILERHOUSE		
RESOLVED COMPLAINTS:		

COMPANY NAME : Ford Motor Company Elm Street Boilerhouse

FACILITY ADDRESS : 1200 Elm Street, Dearborn 48124

STATE REGISTRAT. NUMBER : M4764

NAICS CODE : 541712

LEVEL OF INSPECTION : PCE

DATE OF INSPECTION : 10/29/21

TIME OF INSPECTION : 10:00 AM

DATE OF REPORT : 11/30/21

REASON FOR INSPECTION : Annual Compliance Inspection

INSPECTED BY : Jorge Acevedo

PERSONNEL PRESENT : Robert Frew, Tim Pokoyoway

FACILITY BACKGROUND:

Ford Motor Company, Elm Street Boiler-house is located on 1200 Elm Street, Dearborn, Wayne County. Elm Street Boilerhouse is a major source for Title V. The facility has the potential to emit over a 100 tons per year for Carbon Monoxide and Nitrogen Oxides. The facility is subject to PSD regulations for major modifications. The boiler-house comprises 5 boilers labeled 1 through 5. Boilers 1, 2, and 3 are older natural gas/No. 2 oil fired equipment. These boilers are rated at 70,000 pounds of steam per hour for 1 and 2. Boiler three is rated at 100,000 pounds of steam per hour. The two newer boilers were installed in 1996 and burn natural gas. The Powerhouse maintains a 90000 pounds of steam per hour output during the summer and around 270,000 pounds of steam per hour during the winter. The Powerhouse provides steam and hot water for Greenfield Village and some ancillary Ford owned buildings. Currently, the back-up option of using No. 2 oil fuel has been disengaged. Fuel Oil is brought in through tanker truck if needed. Boilers 4 and 5 were commissioned in 1997. Boilers 4 and 5 have the capacity to deliver 95,000 pounds of steam per hour. However, the commissioned boilers were limited to the capacity of 81,700 pounds of steam per hour in conformation to the NFPA. 8501 (1992 Edition), paragraph 4-5 of the standard code. Boiler #5

discharges exhaust gases vertically through a bypass over 20 feet above the structure. Gases exit at temperature 300 F, and at the volumetric rate of 26,000 cfm.

INSPECTION NARRATIVE:

On October 29, 2021, I conducted an annual compliance inspection of the Ford Motor Company Elm St. Boiler house. I arrived at the facility at 10:00 AM and met with Robert Frew and Tim Pokoyoway, environmental staff for Ford Motor Company. I also met with several staff of Ford, including Brian Brennan, Royal Moning, and Mynal Laudez. I begin the inspection by discussing the purpose of the inspection. We briefly talked about the completed DTE project which involved constructing turbines and heat recovery steam generators. This project would replace the need for steam production from the Elm Street Boilers. The DTE project is currently operating but as discussed by Staff, they were anticipating the close of the Elm Street Boilerhouse by the end of 2021. They explained that there were some issues with getting materials. They described that there were supply disruptions occurring and getting materials was delayed by this. Boiler # 3 was decommissioned and not operating or in standby mode. In 2020, Boiler 3 was under repair during the inspection.

After a discussion of the current operations, we proceeded to the area where the boilers were housed. Boiler #1 was operating at the time and two other boilers were in stand by mode and another was being prepped for inspection. The boilers are frequently inspected by the State of Michigan Boiler Division.

After observing the boilers, we went back to the office space. I stated I would send a request for records and I submitted a request by email on November 1, 2021. I left the facility at 10:30 AM. Mr. Frew submitted records on November 8, 2021.

COMPLAINT/COMPLIANCE HISTORY:

There have not been any citizen complaints registered against Ford.

OUTSTANDING CONSENT ORDERS:

None

OUTSTANDING LOVs

None

OPERATING SCHEDULE/PRODUCTION RATE:

Elm street boiler-house normally operates 24 hours per day, and 7 days a week.

PROCESS DESCRIPTION:

The Elm Street Boiler house is designed to supply steam to Greenfield Village and Ford R&E Campus buildings. The facility has five boilers with natural gas and no. 2 fuel oil as back-up. Currently, the no. 2 fuel oil option is disengaged from boilers 1, 2, & 3. Boilers # 1, 2, &3 are grandfathered, however the facility is required to keep records of operations. The two newer boilers, numbered 4 and 5, are equipped with low NOx burners and the flue gas recirculation for NOx control. The source also has CFC equipment located throughout the facility.

EQUIPMENT AND PROCESS CONTROLS

Table 1. lists the equipment and process conditions:

Emission Unit Description (Including Process Equipment & Control Device(s))	Installation Date/ Modification Date
Boiler #1 was manufactured by WT-Wickes, and is rated at 108 MMBTU/hr. Boiler #1 is natural gas fired. No added Control Device.	1/1/57
Boiler #2 was manufactured by WT-Wickes, and is rated at 108 MMBTU/hr. Boiler #2 is natural gas fired. No added Control Device.	1/1/57
Boiler #3 is manufactured by WT-Wickes, and is rated at 158 MMBTU/hr. The boiler is natural gas fired. No added Control Device	1/1/63
Boiler #4 is rated at 99.8 MMBTU/hr.	11/15/96
Boiler #4 is natural gas fired with low NOx burners and flue gas recirculation.	
Boiler #4 burns No. 2 fuel oil as backup	
Boiler #5 is rated at 99.8 MMBTU/hr.	11/15/96 / 4/1/10
Boiler #5 is natural gas fired with low NOx burners and flue gas recirculation.	

Emission Unit Description (Including Process Equipment & Control Device(s))	Installation Date/ Modification Date
Boiler #5 burns No. 2 fuel oil as backup. Exhaust is discharged through a bypass stack during maintenance.	

APPLICABLE RULES/PERMIT CONDITIONS:

ROP MI-ROP-M4764-2016 was finalized on November 17, 2014.

FGFGBOILER 1, 2 & 3

FLEXIBLE GROUP CONDITIONS

DESCRIPTION :

Boilers 1 & 2 are rated at 108 MMBTU/hr, each; and Boiler 3 is rated at 158 MMBTU/hr, fired using natural gas.

Emission Units: EUBOIL1, EUBOIL2, & EUBOIL3

POLLUTION CONTROL EQUIPMENT:

NA

Compliance for Boilers 1-3 is evaluated below:

SC III.1- COMPLIANCE- Facility shall only fire natural gas. The fuel line for fuel oil was disengaged in the past and removed thus limiting the boilers to only having the ability to combust natural gas.

SC VI. COMPLIANCE-Facility shall maintain a complete record of fuel oil specifications for each delivery of fuel oil. Fuel Oil combustion cannot be done because the fuel oil line was disengaged and removed.

FGBOILER 4 & 5- FLEXIBLE GROUP CONDITIONS

DESCRIPTION:

Boilers #4 and #5 are rated at 99.8 MMBTU/hr each. Both boilers are natural gas fired and use No. 2 fuel oil as backup.

Emission Units: EUBOIL4 and EUBOIL5.

POLLUTION CONTROL EQUIPMENT:

Low NOx burner system and flue gas recirculation system for NOx control

Compliance for Boilers 4 and 5 is evaluated below:

SC I.1- Compliance-- Shall not emit Nitrogen Oxides in excess of 57.2 tons per year based upon a 12 calendar month rolling time period. Records are kept on fuel usage and emissions have been below 57.2 Tons Per Year for the last couple of years. Over the year, emissions have been less than 4 TPY.

SC I.2- Compliance- Nitrogen oxides emissions shall not exceed 0.06 lb/mmBTU when firing natural gas. Testing was conducted December 10, 2014. Results were 0.04 lbs NOx/MMBTU which is in compliance with permit limits.

SC I.3- Undetermined- Nitrogen oxides emissions shall not exceed 0.10 lb/mmBTU when firing fuel oil. As fuel oil is not the main fuel for combustion, a test was not done firing fuel oil. The last shipment of fuel oil was done in 2016.

SC I.4- Compliance- Sulfur dioxide emissions shall not exceed 0.31 lb/mmBTU. Compliance with the limit is based on firing the boiler using fuel oil with less than 0.3% Sulfur Content. Fuel oil is a back up fuel for the boiler. The last shipment and use of fuel oil was in 2016.

SC I.5- Compliance- Sulfur dioxide emissions shall not exceed 120 ppm, corrected to 50% excess air. Compliance with the limit is based on firing the boiler using fuel oil with less than 0.3% Sulfur Content. Fuel oil is a back up fuel for the boiler. The last shipment and use of fuel oil was in 2016.

SC I.6- Compliance- Sulfur dioxide emissions shall not exceed 35.8 tons per year based upon a 12 calendar month rolling time period. Emissions of Sulfur Dioxide are calculated kept and emissions are below 1 TPY.

SC I.7- Compliance- Emissions of Carbon Monoxide shall not exceed 10.0 lbs/hr. Testing was conducted December 10, 2014. Results showed compliance with permit limits.

SC I.8- Compliance- Carbon Monoxide emissions shall not exceed 87.6 tons per year combined for both boilers based upon a 12 calendar month rolling time period. Emissions of Carbon Monoxide have been less than 1 TPY over the past year.

SC II.1- Compliance- Fuel oil sulfur content shall be less than 0.3% by weight. Fuel usage is reported quarterly. Fuel analysis is provided when fuel oil is combusted. Fuel oil is below 0.3% by weigh Sulfur. The last shipment of fuel oil was in 2016 when the facility conducted it to verify its use in emergency situations.

SC II.2- Compliance- Fuel oil combustion shall not exceed 708 gallons per hour in each boiler. Fuel oil usage is reported quarterly. Based on reviews of the last two years, fuel oil usage is below 708 gallons per hour. The last shipment of fuel oil was in 2016 when the facility conducted it to verify its use in emergency situations.

SC II.3- Compliance- Fuel oil combustion shall not exceed 1,642,210 gallons per year in each boiler based upon a 12 calendar month rolling time period. Fuel oil usage is reported quarterly. Based on reviews of the last two years, fuel oil usage is well below material limit. The last shipment of fuel oil was in 2016 when the facility conducted it to verify its use in emergency situations. 4000 gallons total, 2000 for each boiler, were combusted during emergency verification testing in 2016.

SC II.4 - Compliance- Natural gas combustion shall be less than 100,000 cubic feet per hour in each boiler. Records received from January 2018- January 2020 natural gas was consumed at a rate less 100,000 cf per hour per boiler.

SC III.1- Compliance—Facility shall only fire natural gas and/or No. 2 fuel oil in the boilers. Facility burns natural gas mainly but has ability to fire fuel oil.

SC III.2- Compliance- Facility shall not discharge emissions through the bypass stack for Boiler 5 for more than 2160 hours per 12month rolling time period. The bypass is used very rarely. Hours of operation of the bypass are tracked and kept for inspection.

SC III.3- Compliance- Facility shall only fire natural gas in Boiler 5 while discharging emissions through Boiler 5 bypass stack. At the time of the inspection, the boilers were not using the bypass and natural gas was being fired.

SC IV.4- Compliance- Facility shall not operate either boiler unless low Nox burner syststem and flue gas recirculation system is installed and operating properly. Nox burner system and flue gas recirculation system is installed and appeared to be operating properly.

SC V.1- Compliance- Facility shall analyze sulfur content and heating value of fuel oil if fuel oil usage exceeds 5000 gallons during the calendar year. Facility has not used 5000 gallons of fuel in a calendar year based on a review of records and the facility's correspondence. In 2016, the Facility used 4000 gallons- 2000 gallons of fuel oil for each boiler to verify that it can still be combusted in the boilers during emergency situations. The facility is likely to not to exceed the 5000 gallon threshold in the near future.

SC V.2- Compliance- Facility shall verify Carbon Monoxide and Nitrogen Oxide emission rates within 12 months of ROP issuance. Emission testing was conducted in December 2014.

SC VI.1- Compliance- Facility shall maintain monthly records of each fuel oil shipment. Fuel oil shipments are recorded when fuel oil is combusted. The facility has not used fuel oil since 2016.

SC VI.2 Compliance- Natural gas hourly rate(prorated from monthly usage rate) shall be recorded. Natural gas usage is recorded and submitted quarterly to AQD. Also, AQD requested and received monthly natural gas usage for the facility.

SC IX.1 Compliance- Boilers 4 and 5 are subject to the Federal New Source Performance Standard for Small Industrial-Commercial-Institutional Steam Generating Units, 40 CFR 60 Subpart Dc. 60.42c (d) states that a facility shall comply with the 0.5 lb SO₂/MMBTU limit, or as an alternative, they can restrict themselves to combusting fuel oil with a sulfur content of less than 0.5% weight Sulfur. Boilers at the facility, when combusting fuel oil, are only using fuel oil that is ultra low sulfur diesel. This is well below the 0.5%weight Sulfur in fuel stated in the NSPS.

FGBOILERMACT

FLEXIBLE GROUP CONDITIONS

DESCRIPTION

Boilers 1, 2, 3, 4, and 5, using natural gas and fuel oil as a backup fuel within the Gas 1 Fuels Subcategory, with heat input capacities ranging from 99.8 MMBTU/hr to 158 MMBTU/hr, subject to 40 CFR 63, Subpart DDDDD.

Emission Unit: EUBOIL1, EUBOIL2, EUBOIL3, EUBOIL4, and EUBOIL5

SC III.1- Compliance- Facility shall only burn Gas 1 fuel category fuels in the boilers. Natural gas is combusted in all boilers and fuel oil is used as backup in Boilers 4 and 5.

SC III.2- Compliance- Facility shall conduct a tune-up of each affected boiler annually(within 13 months) as specified in 63.7540. Records were received indicating dates of the last boiler tune up for each boiler. Records were received indicating that tune-ups were done on Boilers 1-5 on the following dates:

Boiler 1- July 19, 2019

Boiler 2-August 29, 2018

Boiler 3-Decommisioned in 2020

Boiler 4-November 29 through December 6, 2018

Boiler 5-December 6, 2018

This frequency does not apply to limited-use boilers and process heaters, as defined in §63.7575, or units with continuous oxygen trim systems that maintain an optimum air to fuel ratio. Ford verified that each boiler has continuous oxygen trim systems that maintain an optimum air to fuel ratio. 40 CFR 63.7540(a)(12) specifies that units with continuous oxygen trim systems shall conduct a tune-up every five years.

SC III.3- Compliance- Facility shall have a one-time energy assessment performed by a qualified energy assessor. Facility reported that energy assessment was performed and responsible official certified statement.

SC III.4- Compliance- Facility shall operate and maintain boilers in a manner consistent with safety and good air pollution control practices for minimizing emissions. Boilers appeared to be operating the boilers normally. No poor operating practices were observed during the inspection.

APPLICABLE FUGITIVE DUST CONTROL PLAN CONDITIONS:

N/A

MAERS REPORT REVIEW

Pollutant	2020 Emissions(TPY)
CO	4.7
NOx	17.7
PM	1.1
Sox	.09
VOC	.8

FINAL COMPLIANCE DETERMINATION:

It appears that the facility is operating in compliance with MI-ROP-M4764-2014.

NAME JORGE ACEVEDO

DATE 11/30/2021

SUPERVISOR APRIL WENDLING 1/3/2022