

DEPARTMENT OF ENVIRONMENTAL QUALITY  
AIR QUALITY DIVISION  
ACTIVITY REPORT: Scheduled Inspection

N735044771

FACILITY: MICHIGAN TECHNOLOGICAL UNIVERSITY		SRN / ID: N7350
LOCATION: 1400 TOWNSEND DR., HOUGHTON		DISTRICT: Upper Peninsula
CITY: HOUGHTON		COUNTY: HOUGHTON
CONTACT: Larry Hermanson , Energy Management Engineer		ACTIVITY DATE: 04/27/2018
STAFF: Shamim Ahammod	COMPLIANCE STATUS: Compliance	SOURCE CLASS: MINOR
SUBJECT: Conducted a scheduled inspection to determine Michigan Technological University's central energy plant compliance with the Air Pollution Control Rules; and the conditions of Permit to Install (PTI) number No. 91-04A.		
RESOLVED COMPLAINTS:		

**Facility:** Michigan Technology University  
**Inspection Date:** April 27, 2018  
**MDEQ-AQD Staff:** Shamim Ahammod, Environmental Engineer  
**Facility Representatives:** Larry Hermanson, PE, Energy Management Engineer  
Chris Roy, Manager, SDC Facilities & Special Events

**LOCATION:**

The central energy plant and associated facilities and accessory structures for Michigan Technological University are located on the north side of campus, along the Portage Canal, in the City of Houghton. Facilities Management offices are located in the Facilities Building adjacent to the central energy plant.

**SOURCE DESCRIPTION:**

Michigan Technological University's central energy plant, steam distribution system and campus building energy management system functions to provide heat and steam for buildings on campus. The central energy plant houses four large boilers which operate on natural gas with #2 fuel oil as a standby fuel. There are also four (4) 2250-kilowatt Caterpillar diesel generator sets which supply power in the event of a power outage and to supply the local area with additional power during times of peak electricity demand.

**INSPECTION:**

On April 27, 2018, I (Shamim Ahammod) conducted a scheduled inspection of Michigan Technology University. I met with Mr. Larry Hermanson, in his office adjacent to the boiler operators control room. I told him the purpose of the inspection was to determine Michigan Technology University compliance with the requirements of the federal Clean Air Act; Part 55, Air Pollution Control, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (Act 451); the Air Pollution Control Rules; and the conditions of Permit to Install (PTI) number No. 91-04A.

At the beginning of our meeting, we discussed issued permit. After the brief discussion, I went on a brief walk through the plant to get an idea of the overall operations at the plant. At the end of inspection, I requested Larry provide natural gas usage in the boilers, No. 2 fuel oil usage in the boilers and generators, calculations of annual emissions based on the assumed limits, and fuel oil certification which I received on May 22, 2018, via email.

**REGULATORY ANALYSIS:**

**Emissions Unit details:**

Emission Unit ID	Description of Emission Unit	PTI	Installation/Modification Date	Compliance Status
EUBOILER1R	156 MMBTU per hour boilers fired with No. 2 fuel oil and natural gas.	PTI#91-04A	1971	C
EUBOILER2	39.4 MMBTU per hour boilers fired with No. 2 fuel oil and natural gas.	PTI#91-04A	1950	C
EUBOILER3	39.4 MMBTU per hour boilers fired with No. 2 fuel oil and natural gas.	PTI#91-04A	1957	C
EUBOILER4	96 MMBTU per hour boilers fired with No. 2 fuel oil and natural gas.	PTI#91-04A	1964	C
EUGENERATOR1	Caterpillar model 3516B diesel generator set, rated at 2250 kilowatts diesel generator set.	PTI#91-04A	10/01/2016	C
EUGENERATOR2	Caterpillar model 3516B diesel generator set, rated at 2250 kilowatts diesel generator set.	PTI#91-04A	10/01/2016	C
EUGENERATOR3	Caterpillar model 3516B diesel generator set, rated at 2250 kilowatts diesel generator set.	PTI#91-04A	10/01/2016	C
EUGENERATOR4	Caterpillar model 3516B diesel generator set, rated at 2250 kilowatts diesel generator set.	PTI#91-04A	10/01/2016	C

**FGBOILERS:**

The following conditions apply to FGBOILERS:

**Emission Limits:**

	Pollutant	Equipment	Limit (PTE)	Emissions (Ib) 12 months rolling Jan. -Dec. 2017
1.1a	CO	FGBOILERS <sup>1</sup>	0.084 Ib/MMBTU	28,301
1.1b	CO	FGBOILERS <sup>2</sup>	0.036 Ib/MMBTU	
1.1c	NO <sub>x</sub>	FGBOILERS <sup>1</sup>	0.28 Ib/MMBTU	94,338
1.1d	NO <sub>x</sub>	FGBOILERS <sup>2</sup>	0.174 Ib/MMBTU	
1.1e	SO <sub>2</sub>	FGBOILERS <sup>2</sup>	0.57 Ib/MMBTU	150

<sup>1</sup> This limit is applicable when burning natural gas.

<sup>2</sup> This limit is applicable when burning distillate oil.



**Material Usage Limits:**

1.2 The natural gas usage for FGBOILERS shall not exceed 390 MMSCF per rolling 12 months rolling period.

- Natural gas usage from January through December 2017 was 324 MMSCF.

1.3 The no. 2 fuel oil usage for FGBOILERS shall not exceed 390,000 gallons per 12 months rolling time period.

- No. 2 fuel oil usage for the boilers from January through December 2017 was 1884 gallons.

**Process/Operational Limits:**

1.4 The sulfur content of the oil combusted in FGBOILERS shall not exceed 0.5 percent by weight.

- MTU's fuel supplier provides documentation listing the Sulfur content as 0.0015% by weight.

1.5 Permittee shall only combust natural gas and/or No. 2 fuel oil in FGBOILERS.

- Permittee burns natural gas and/or No. 2 fuel oil in FGBOILERS.

**Recordkeeping/Reporting/Notification:**

1.6 The permittee shall maintain records of fuel supplier certification for the No. 2 fuel oil used in FGBOILERS.

- Ultra-low-sulfur No. 2 fuel oil purchased from U.S. Oil, Green Bay, WI.

**Stack/Vent Restrictions**

	Stack & Vent ID	Maximum diameter (Feet)	Minimum Height Above Ground Level (feet)	Applicable Requirements
1.7a	SVBOILER1	5.0	55.5	40 CFR 52.21
1.7b	SVBOILER2	3.6	55.6	40 CFR 52.21
1.7c	SVBOILER3	3.6	55.6	40 CFR 52.21
1.7d	SVBOILER4	4.5	58	40 CFR 52.21

**The following conditions apply to FGGENERATORS:**

**Emission Limits:**

	Pollutant	Equipment	Emissions 12-month rolling, Jan.-Dec.2017	Limit lb/MMBTU	Applicable Requirement
2.1a	CO	FGGENERATORS <sup>1</sup>	383 lb	0.26	R 336.205(3)
2.1b	CO	FGGENERATORS <sup>2</sup>		0.13	R 336.205(3)
2.1c	NO <sub>x</sub>	FGGENERATORS <sup>1</sup>	3,980 lb	2.7	R 336.205(3)
2.1d	NO <sub>x</sub>	FGGENERATORS <sup>2</sup>		3.1	R 336.205(3)

<sup>1</sup> This limit is applicable when burning distillate oil

<sup>2</sup> This limit is applicable when burning biodiesel fuel

**Material Usage Limits:**

2.2 The No. 2 fuel oil usage for FGGENERATORS shall not exceed 329,918 gallons per 12-month rolling time period. The biodiesel fuel usage for FGGENERATORS shall not exceed 319,400 gallons per 12-month rolling time period.

- No. 2 fuel oil usage for the generators from January through December 2017 was 10,528 gallons; far below the permit limits.
- Facility did not use biodiesel from January through December 2017.

**Process/Operational Limits**

2.3 Sulfur content of the oil combusted in FGGENERATORS shall not exceed 0.05 percent by weight.

- MTU's fuel supplier provides documentation listing the Sulfur content as 0.0015% by weight.
- Ultra-low-sulfur No. 2 fuel oil purchased from U.S. Oil, Green Bay, WI.

2.4 Permittee shall only combust No. 2 fuel and/or biodiesel fuel in FGGENERATORS.

- Permittee burns No. 2 Fuel oil only in FGGENERATORS.

**Recordkeeping/Reporting/Notification**

2.5 The permittee shall maintain records of fuel supplier certification for the No. 2 fuel oil and/or biodiesel fuel used in FGGENERATORS.

- Ultra-low-sulfur No. 2 fuel oil purchased from U.S. Oil, Green Bay, WI.

**Stack/Vent Restrictions**

	Stack & Vent ID	Maximum diameter (Feet)	Minimum Height Above Ground Level(feet)	Applicable requirements
2.6a	SVGGENERATOR1	12	40	40 CFR 52.21
2.6b	SVGGENERATOR2	12	40	40 CFR 52.21
2.6c	SVGGENERATOR3	12	40	40 CFR 52.21
2.6d	SVGGENERATOR4	12	40	40 CFR 52.21

The exhaust gases shall be discharged unobstructed vertically upwards to the ambient air.

The following conditions apply to FGPLANT:

**Emission Limits**

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	Pollutant	Equip-ment	Time period	Total Emissions tpy	Limit (tons per year)	Compl-iance	Applicable requirements
3.1a	CO	FGPLANT	Jan. - Dec., 2017	14.347	24.8	C	R 336.205(3)
3.2b	NO <sub>x</sub>	FGPLANT	Jan. - Dec., 2017	49.182	89.1	C	R 336.205(3)
3.3c	SO <sub>2</sub>	FGPLANT	Jan. - Dec., 2017	0.075	17.9	C	R 336.205(3)

**Permit No. 217-15:**

**Source Description:** Shooting range for firearms is located at near Student Development Complex building. It is equipped with a bullet trap and ventilation system.

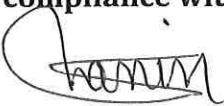
**Inspection:**

My contact was Chris Roy, Facilities and Special Events Manager. The facility was not in operation during my inspection.

**Pollution Control Equipment: Bullet trap**

- I. Emissions Limits: NA
- II. Materials Limits: NA
- III. Process/operational Restrictions
  - 1. The permittee shall not operate EUSHOOTING RANGE unless both the bullet trap and ventilation system are installed and operating.
  - Chris Roy told me that they are putting in a new air ventilation/filter system as well as making changes to the bullet trap and there will be a complete cleaning of the range and surrounding areas. They are anticipating reopening the range in January 2019 as long as all work is completed.
- IV. Design/Equipment Parameters: NA
- V. Testing/Sampling: NA
- VI. Monitoring/Recordkeeping: NA
- VII. Reporting: NA
- VIII. Stack/Vent Restrictions: NA
- IX. Other Requirements: NA

Via onsite inspection, review of records, and discussion with staff, the facility appeared to be in compliance with the conditions of issued permit no. 91-04A and 217-15.

NAME 

DATE 6/18/2018

SUPERVISOR 