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

K324948168

FACILITY: Michigan State University		**SRN / ID:** K3249
LOCATION: 426 Auditorium Rd., EAST LANSING		**DISTRICT:** Lansing
CITY: EAST LANSING		**COUNTY:** INGHAM
CONTACT: Thomas Grover , Environmental Compliance Officer		**ACTIVITY DATE:** 03/22/2019
STAFF: Daniel McGeen	**COMPLIANCE STATUS:** Compliance	**SOURCE CLASS:** MAJOR
SUBJECT: Partial Compliance Evaluation activities, part of a Full Compliance Evaluation: Day 1 (3/22/2019) of MSU inspection: Section 1, Campus and former MBI, Day 2 (3/28/2019) of MSU inspection, TB Simon Power Plant, and Day 3 (7/24/2019) of MSU inspection: Campus and former MBI. Day 3 (7/24/2019) of MSU inspection: Campus, and former MBI.		
RESOLVED COMPLAINTS:		

On 3/22/2019, 3/28/2019, and 7/24/2019, the Michigan Department of Environment, Great Lakes, and Energy (EGLE), formerly the Department of Environmental Quality, Air Quality Division (AQD), conducted an inspection of Michigan State University (MSU), State Registration Number (SRN) K3249. This inspection, spread over 3 days, was a Partial Compliance Evaluation (PCE) activity, conducted as part of a Full Compliance Evaluation (FCE). A FCE is required every two years for a major source.

Environmental contacts:

Section 1- Campus Wide Emission Units (other than those located at TB Simon)

- Tom Grover, CHMM, Environmental Compliance Officer; 517-355-6651, grovert@ehs.msu.edu
- Mary Lindsey, Senior Environmental Coordinator; 517-432-5542, lindseym@ehs.msu.edu
- Louis Faivor, Farm Assistant Manager and Anaerobic Digester Operator; 517-648-0930 faivor@msu.edu

Section 2- TB Simon Power Plant

- Sherri Jett, IPF - Director of Utilities; 517-355-3314; jettsher@msu.edu
- Amanda Groll, Utilities and Environmental Analyst; 517-884-7120; pulidoam@msu.edu
- Rick Johnson, P.E. Electrical Engineer; 517-884-7108; rjohnson@ipf.msu.edu

MSU's former MBI building, SRN N1162:

- Tom Grover, CHMM, Environmental Compliance Officer; 517-355-6651, grovert@ehs.msu.edu
- Mary Lindsey, Senior Environmental Coordinator; 517-432-5542, lindseym@ehs.msu.edu

EGLE AQD Personnel:

Daniel McGeen; 517-284-6638, mcgeend@michigan.gov

Facility Description:

Michigan State University is a public research university. The primary emission units are three pathological waste incinerators and the T.B. Simon Power Plant which is a co-generating facility. The former MBI laboratory facility, SRN N162, has been owned by MSU since 4/1/2016, and the air permits for this site will be rolled into the MSU Renewable Operating Permit upon its next renewal.

Regulatory overview:

At the time of the last of the 3 inspection dates, the following air permits were active:

- PTI No. 139-18, approved on 5/22/2019 (after the 3/22 and 3/28/2019 inspection dates)
- MI-ROP-K3249-2016a, revised on 3/7/2017
- PTI No. 75-14C, for removal of permitted coal-fired conditions from the TB Simon Power Plant PTI. This does not appear to have been incorporated into the ROP as a minor modification, as far as I can

determine.
- PTI No. 99-17, for the new ethylene oxide sterilization unit, EU-ETO2.
- PTI No. 68-17A, for a revision to increase exhaust stack diameter for the EU-FLRINC.
- PTI No. 127-07, for the anhydrous ammonia tank at the former MBI site, SRN N1162.
- PTI No. 575-85 for two boilers at the former MBI..

The ROP is divided into 2 sections due to the size of the permit and the number of emission units. Section 1 of the permit contains units throughout campus and Section 2 of the permit contains units associated with the campus power plant.

Section 1 of the permit includes the 3 pathological waste incinerators and the many smaller emission units are associated with the MSU campus which includes 2 paint spray booths, 1 ethylene oxide sterilizer, 5 parts washers, 1 bio digester with flare and certified reciprocating engine, 3 engine test cells, 57 reciprocating engines associated with generators throughout the campus, and 63 boilers spread throughout the campus.

Note: the actual number of reciprocating engines at MSU has decreased since the ROP was issued, I was informed by Mr. Tom Grover, to approximately 55.

Section 2 of the permit includes the entire T.B. Simon Power Plant. Steam is generated for building heat, but can also be used to generate electricity which is only distributed to campus owned buildings. There are 2 boilers (EU-UNIT1 and EU-UNIT2) that have changed from firing coal, bio-fuel, and natural gas, to only firing natural gas, 1 boiler (EU-UNIT3) that has in the past and now still only fires natural gas, and 1 boiler (EU-UNIT4) that was permitted to fire a coal and natural gas which is now natural gas only. The plant also has 1 gas fired turbine generator (EU-UNIT6) and 1 heat recovery steam generator (EU-UNIT5).

Boiler EU-UNIT4 has fabric filters for particulate removal due to the use of sand on the boiler bed to assist in heat retention and a selective non-catalytic reduction system (SNCR) which is used during ozone season. EU-UNIT1, EU-UNIT2, and EU-UNIT3 have low NOx burners for nitrogen oxides control.

Additionally, there are numerous federal regulations which are already incorporated into the ROP.

MSU is subject to 40 CFR Part 70, because the Potential to Emit (PTE) both nitrogen oxides (NOx) and sulfur dioxides (SO2) exceeds 100 tons per year (TPY), making it a major source for criteria air pollutants, the PTE to emit hydrochloric acid (HCl) is equal to or more than 10 TPY, making it a major source for hazardous air pollutants (HAPS), and the potential to emit greenhouse gases (GHG) is 100,000 TPY or more calculated as CO2e and 100 TPY or more on a mass basis.

EU-UNIT1, EU-UNIT2, EU-UNIT3, and EU-UNIT4 are subject to the NOx SIP Call, during the ozone season May 1 through September 30. EU-UNIT4 is subject to the federal Acid Rain Program, promulgated in 40 CFR Pat 72.

EU-UNIT4 was once subject to the federal Compliance Assurance Monitoring (CAM) rule under 40 CFR Part 64, but after the switch from coal firing to natural gas as fuel, it was no longer subject. EU-UNIT1 EU-UNIT2, EU-UNIT3, EU-UNIT4, EU-UNIT5, and EU-UNIT6 were exempt from CAM requirements for NOx, at the time of the current ROP renewal. Further details on the applicable CAM exemptions are discussed in the 1/19/2017 amended ROP Staff Activity Report.

EU-UNIT1, EU-UNIT2, EU-UNIT3, EU-UNIT4, and FG-UNITS5/6 were subject to review under Prevention of Significant Deterioration regulations of Part 18, Prevention of Significant Deterioration of Air Quality of Act 451 of 1994, the Michigan Natural Resources and Environmental Protection Act (NREPA). This is because at the time of New Source Review (NSR) permitting, the PTE for both NOx and SO2 was greater than 250 TPY. PSD-required BACT requirements for GHG are included in the ROP.

Emission units at MSU are subject to the following federal regulations, as well:

40 CFR Part 60, New Source Performance Standards (NSPS):

- Subpart D - *Standards of Performance for Fossil-Fuel-Fired Steam Generators.*
- Subpart Db - *Standards of Performance for Industrial-Commercial-Institutional Steam Generating Units.*
- Subpart Dc - *Standards of Performance for* Small *Industrial-Commercial-Institutional Steam Generating Units.*
- Subpart GG - *Standards of Performance for Stationary Gas Turbines.*
- Subpart JJJJ - *Standards of Performance for Stationary Spark ignition Internal Combustion Engines.*

National Emission Standards for Hazardous Air Pollutants (NESHAP):

- Subpart YYYY - *National Emission Standards for Hazardous Air Pollutants for Stationary Combustion Turbines*
- *Subpart ZZZZ - National Emission Standard for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines*, also known as the RICE MACT.
- Subpart JJJJJ - *National Emission Standard for Hazardous Air Pollutants for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters.*

MSU is <u>not</u> currently subject to the following NSPS standards:

- 40 CFR Part 60, Subpart Ec, *Standards of Performance for Hospital/Medical/Infectious Waste (HMW) Incinerators.* It is not subject for EU-FLNRINC01, due to a permit restriction of less than 10% HMW allowed by the ROP. It is not subject to this for EU-1-DCPAHINC01, due to the exemptions under Section 60.50c (b) and (c). It is not subject to this for EU-1-CREMATORY, due to the exemption under Section 60.50c (b).
- 40 CFR Part 60, Subpart FFFF - *Emission Guidelines and Compliance Times for Other Solid Waste Incineration (OSWI) Units That Commenced Construction On or Before December 9, 2004.*

MSU is <u>not</u> currently subject to the following NESHAP standards:

- 40 CFR Part 63, Subpart PPPPP, *National Emission Standards for Hazardous Air Pollutants for Engine Test Cells/Stands*, because the testing is for research and teaching activities only, and not for commercial testing, per Section 63.9290(d)(3). (Also, EUTESTSTAND is not subject to 40 CFR Part 63, Subpart ZZZZ because the test stand is for mobile engines.)
- 40 CFR Part 63, Subpart UUUUU - National Emission Standards for Hazardous Air Pollutants for Coal and Oil Fired Electric Utility Steam Generating Units for EU-UNIT1 and EU-UNIT2, because the output capability of each unit is less than 25 megaWatts and the electricity is not for sale per definition of electrical generating unit (EGU) in 40 CFR 63.10042. It is not subject for EU-UINIT3 and EU-UNIT4 because the electricity is not for sale per definition of EGU in 40 CFR 63.10042.
- 40 CFR Part 63, Subpart WWWWW, *National Emission Standards for Hospital Ethylene Oxide Sterilizers*, for FG-1-STERILIZERS (EU-ETO), because MSU is not a hospital and is not an area source of HAP emissions per Section 63.10382(a).

<u>Fee status:</u>

Because MSU is a major source for criteria air pollutants, it is considered a Category I fee-subject facility. it is required to submit an annual air emissions report each year to via the Michigan Air Emission Reporting System (MAERS).

<u>Location:</u>

MSU has a vast campus, primarily in East Lansing, Ingham County. The MSU environmental offices are currently located at 4000 Collins Road, Lansing, 48910. The TB Simon Power Plant is located at 354 Service Road, East Lansing, MI 48824. The former Michigan Biotechnology Institute (MBI) facility, now owned by MSU, is located at 3900 Collins Road, Lansing, 48910.

<u>Safety apparel required:</u>

It is my understanding that requirements for safety apparel are safety glasses with side shields, hearing protection, and sturdy footwear. The hearing protection is required for the TB Simon Power Plant.

Recent stack testing:

On 9/20/2018, stack testing was done of EU-DIENGINE at South Campus Dairy Farm, for digester gas-fired generator. Testing for the SI-RICE was required by 40 CFR Part 60, Subpart JJJJ, and by MI-ROP-K3249-2016a. The testing was witnessed by AQD's Tom Gasloli of the Technical Programs Unit, and by myself. The test results were within the required limits for CO, NOx, and VOC.

Recent permitting actions:

- The most recent ROP, MI-ROP-K3249-2016 underwent minor modification, and became MI-ROP-K3249-2016a.
- MI-ROP-K3249-2016 was issued on 10/21/16.
- PTI 95-12A was issued on 8/1/16 for an increase in SO2 emissions from the bio digester flare. The PTI was not incorporated into the ROP at the time due to how far along the review process the ROP was. On 3/7/17 PTI 95-12A was added to the ROP through a minor modification application.
- PTI 75-14C: This PTI application was submitted with the intent of removing all coal references for Unit-4; it was issued on 3/16/17. A ROP Minor Modification has been submitted to incorporate PTI 75-14C into the ROP as of 4/14/17.
- PTI 127-07: This PTI was originally under separate ownership by MBI International SRN: N1162 and is located at 3900 Collins Road. On 4/1/16, MSU acquired the building and assumed control of PTI 127-07 which is a general permit for an anhydrous ammonia tank.
- A permit to install (PTI) application No. 139-18 was undergoing New Source Review (NSR) at the time of the inspection. This PTI application was for the installation and operation of 4 natural gas-fired reciprocating internal combustion engines (RICE), 2 natural gas-fired fuel heaters, a medium-pressure natural gas-fired steam boiler with diesel fuel (no. 2 fuel oil) back up capability, and a diesel fuel storage tank. The proposed permit underwent public comment, and was approved on 5/22/2019. The process equipment had not been installed, as of the 3 dates of this inspection (3/22, 3/28, and 7/24/2019).

Violations noted in prior inspection (4/17/2017 and 4/18/2017) by AQD's Nathan Hude:

1. FG-4MATVENTS :semiannual maintenance check and repairs records could not be provided per SCVI.1. A violation was sent for this, on 7/21/2017.
2. EU-ETO records of for the continuous monitoring of the oxidation temperature in the catalyst bed could not be provided for the control device per SC SCVI.1b. as a monitoring device is not installed. A VN was sent on 7/21/2017. MSU subsequently replaced EU-ETO with EU-ETO2, a new sterilizer with a catalytic oxidizer and a monitoring device, under PTI No. 99-17.

Concern expressed by AQD's N. Hude for EU-FLRINC recordkeeping in 2017:

EU-FLNRINC waste tags were being burned with the waste. The incinerator operator records the weight and category of the waste prior to incineration. N. Hude believed that contents of the waste were not easily verified by the tag itself and verification of contents could be extremely dangerous. N. Hude felt that, for a more accurate review of records and understanding of the contents, the waste tags records should be updated, to include the items listed below:

- a header specifically stating "Waste for Incineration"
- an acknowledgement that waste does not contain polyvinyl chloride (PVC) plastics or chemotherapeutic waste
- the percentages of Institutional Waste, Non-Hazardous Pharmaceutical Wastes, Pathological Waste and Medical/Infectious Wastes per container
- a signature block for the lab Principal Investigator (individual in charge of the lab or generator) for acknowledging the requirements of the special conditions are met.
- the waste tags should also be retained rather than burned with the containers for more descriptive records review.

Note: I discussed the above with the facility during the 3/22/2019 inspection, and it appeared that the facility does have appropriate labeling in place. It is my understanding that this information had not been thoroughly discussed with N. Hude during the previous inspection, and may have led to an

incomplete understanding of how different wastes are identified.

Previous Inspections:

- 4/172017 and 4/18/2017- N. Hude, documented in a single activity report. Concerns noted and discussed above
- 4/22/2014- Brian Culham, no concerns noted
- 4/14/2014- Brian Culham, no concerns noted
- 8/29/2013- Brian Culham, no concerns noted
- 4/17/2013- Brian Culham, no concerns noted
- 4/22/2014- Michael McClellan, no concerns noted

Previous Violations for MSU, SRN K3249:

9/9/2016, for NOx monitor downtime on EU-UNIT3 due to failure to conduct quarterly linearity checks

Previous violations for MSU's former MBI facility, SRN N1162:

6/7//2016, for location of signage for anhydrous ammonia tank.

Recent Complaints (within 4 years):

None.

Arrival:

Because of the large amount of time needed for this inspection, and the need to have an MSU environmental contact available all 3 days, this inspection was arranged in advance.

Day 1 of the inspection was on 3/22/2019. The focus this day was MSU's Campus, although an inspection of the boilers and generators of the former MBI facility, SRN N1162, now owned by MSU was conducted as well. Taking part in the inspection was EGLE/DEQ Student Intern Mr. Steven Lott, for educational purposes. On this day, I arrived at the MSU Environmental Offices at 4000 Collins Road, Lansing, at 8:44 AM. I was met there by Mr. Tom Grover, Environmental Compliance Officer, Ms. Mary Lindsey, Senior Environmental Coordinator, and by Student Intern S. Lott, who had traveled separately to the site.

Day 2 of the inspection was on 3/28/2019. The focus this day was on the TB Simon Power Plant, and on the MSU laundromat, EU-LINEN SRVICES. Taking part in the inspection were Student Interns S. Lott and Mr. Zhaoyu Zhang, for educational purposes. On this day, I arrived at the MSU environmental offices at 8:24 AM, and met with Student Interns S. Lott and Z. Zhang, who had travelled there separately. We then drove to the TB Simon Power Plant Office, where we met with Mr. Tom Grover, and with Ms. Sherri Jett, IPF - Director of Utilities.

Day 3 of the inspection was on 7/24/2019. The focus this day was on the anhydrous ammonia tank at the former MI building, and then the ETO sterilizer, EU-ETO2, at the MSU Veterinary Teaching Hospital, and lastly on MSU's engine test cells at an engineering building.

Because of the vast size of the MSU campus, not every single emission unit in the ROP could be observed. The individual emission units at the TB Simon Power Plant were inspected, but for the dozens of on-campus generators and boilers, which are found in Section 1 of the ROP, representative examples were checked for compliance.

NOTE: This inspection activity report combines all 3 days into a single report. It follows the order of the emission units in the ROP, rather than chronological order in which the emission units were observed. After the ROP, this inspection activity report documents compliance with PTI No. 127-07 for the former MBI building's anhydrous ammonia tank, and the boiler permit for the MBI building.

MSU ROP, SECTION 1 EMISSION UNITS AND FLEXIBLE GROUPS:

EU-FLNRINC

Emission unit description: Consumat Pathological waste incinerator (Farm Lane/Incinerator Road) that burns 10% or less medical/infectious waste low-level nuclear waste, and low volumes of non-hazardous pharmaceutical waste. Fuel type: natural gas. Burn rate: 1000 lbs/hour. PTI-28-12A.

Pollution control equipment: direct flame afterburner.

The Farm Lane Incinerator is a Consumat Pathological natural gas waste incinerator that burns 10% or less medical/infectious waste low-level nuclear waste, and low volumes of non-hazardous pharmaceutical waste. It is located on the south west side of TB Simon in between the rail road tracks on what is technically called Storage Road.

During a recent internal inspection, it was found that the data plate on the device only rated it as a maximum of 825 lbs/hr; thus a PTI amendment was sent in and PTI 68-17 was issued on 5/3/17 with a change from 1,000 lbs/hr to 825l bs/hr. PTI No. 68-17A was subsequently issued on 8/2/2017, to change the stack diameter from 40 to 46 inches maximum. This change was completed after the issuance date of the current ROP, so the ROP contains the outdated emission unit description for EU_FLRINC having a 1,000 lbs/hr burn rate. weight. It also contains the outdated maximum exhaust stack diameter of 40 inches. The changes to 825 lbs/hr and 46 inches will be incorporated into the ROP during the next ROP renewal.

We were informed that the low level radioactive waste materials incinerated here are at background levels. It is my understanding that the material is incinerated to reduce the volume that must be disposed of as low-level radioactive waste.

As we arrived, it could be seen that there were no visible emissions from the Farm Lane Road Incinerator exhaust stack. The unit was not running at this time. The unit operates 1-2 days per week, we were told.

We met with Scott, the operator, who showed us the incinerator. The unit is equipped with a circular chart recorder for both the primary and secondary chamber temperatures. The electronic temperature gauges indicated room temperature, as the unit was not running.

Compliance with the ROP was checked, as follows:

SC EU-FLNRINC I.1. Emission Limit PM 0.20 lbs/1000lbs corrected to 50% excess air

INSPECTION RESULT FROM 3/22/2019 INSPECTION: COMPLIANCE. The most recent stack test, on 1/31/2017, indicated compliance. Emissions were below the above limit, at 0.186 lbs/1000lbs corrected to 50% excess air.

SC EU-FLNRINC II.1. The permittee shall not burn polyvinyl chloride plastics in EU-FLNRINC.

INSPECTION RESULT FROM 3/22/2019 INSPECTION: COMPLIANCE. We were informed that they do not burn any PVC in the incinerator. It is my understanding that this is accomplished through training of all MSU staff who would be sending materials to the Farm Lane Road Incinerator. In his 2017 inspection report, AQD's N. Hude had expressed concern that waste pickup tags did not identify this restriction. I was informed by Mr. Grover that N. Hude had not been fully informed of their system in place to prevent prohibited materials from entering the incinerator. I was shown numerous fiber drums containing waste, each of which had from one to multiple labels/tags on them, depending on the contents of the drums.

SC EU-FLNRINC II.2. The permittee shall not burn chemotherapeutic waste in EU-FLNRINC.

INSPECTION RESULT FROM 3/22/2019 INSPECTION: COMPLIANCE. We were informed that they do not incinerate chemotherapeutic waste. It is my understanding that this is accomplished through training of all the MSU staff who would be sending materials to the Farm Lane Road Incinerator.

SC EU-FLNRINC II.3. The permittee shall burn only pharmaceutical waste that is deemed non-hazardous in EU-FLNRINC.

INSPECTION RESULT FROM 3/22/2019 INSPECTION: COMPLIANCE. We were informed that they do not incinerate any hazardous pharmaceutical waste. It is my understanding that this is accomplished through training of all the MSU staff who would be sending materials to the Farm Lane Road Incinerator. It is my understanding that only MSU pharmaceutical waste is burned here except for certain drugs that may be brought to them by FBI or drug enforcement.

SC EU-FLNRINC II.4. In any combination of waste, the permittee shall not burn less than 90% Pathological waste by weight to maintain status as a pathological waste incinerator unit. Failure to do so will require compliance with 40 CFR Part 60, Subpart FFFF.

INSPECTION RESULT FROM 3/22/2019 INSPECTION: COMPLIANCE. We were informed that they stay above the 90% threshold to be exempt from 40 CFR Part 60, Subpart FFFF- Emission Guidelines and Compliance Times for Other Solid Waste Incineration (OSWI) Units That Commenced Construction On or Before December 9, 2004.

SC EU-FLNRINC II.5. The permittee shall not burn any waste in EU-FLNRINC other than the following wastes.

a. Institutional wastes as defined in 40 CFR 60.3078. Institutional waste means solid waste that is combusted at any institutional facility that generated the waste.

b. Non-hazardous Pharmaceutical wastes as defined in the DEQ Office of Waste Management and Radiological Protection Hazardous Waste Management Rules, R 299.9228(2)(m), Non-hazardous Pharmaceutical Waste means solid waste pharmaceuticals that are not hazardous.

c. Pathological Waste as defined in 40 CFR 60.51c. Pathological waste is waste material consisting of only human or animal remains, anatomical parts and/or tissue, the bags/containers used to collect and transport the waste material and animal bedding.

d. Medical/Infectious waste - as defined in 40 CFR 60.51c, medical/infectious waste generated in the diagnosis, treatment, or immunization of human beings or animals, in research pertaining thereto, or in the production or testing of biologicals that is further listed in the above regulation. This waste shall not exceed 10 percent, by weight, in aggregate, of the total waste burned in EU-FLNRINC as measured on a calendar quarter basis. For purposes of this definition, pathological waste, chemotherapeutic waste, and low-level radioactive waste are considered "other" wastes when calculating the percentage of medical/infectious waste combusted.

INSPECTION RESULT FROM 3/22/2019 INSPECTION: COMPLIANCE. Ms. Lindsey provided daily log sheets from March 2019, please see attached, on 9/13/2019, per my 9/4/2019 request. She explained that entries for "Pegasus waste" refer infected animal waste/bedding from their facility for sick horses. Other waste included wood infested by the emerald ash borer, and animal bedding.

SC EU-FLNRINC II.6. The permittee shall not burn more than 10 percent, by weight, of medical/infectious waste as defined in SC II.4 of EU-FLNRINC.

INSPECTION RESULT: FROM 3/22/2019 INSPECTION: COMPLIANCE. It is my understanding that they are complying with this restriction. The Farm Lane Incinerator Totals provided by Ms. Lindsey per my 9/4/2019

records request showed that for 2018, the farm Lane Incinerator burned 95.45% pathological waste, 0.3% medical waste, and 4.25% solid waste. Their medical waste was well below the permitted maximum of 10%. Ms. Lindsey also provided monthly total reports for January through March of 2019, which showed that no medical waste was burned during those months.

SC-EU-FLNRINC II.7 The permittee may incinerate animal carcasses and paper wastes containing byproduct materials defined in license to the permittee by the U.S. Nuclear Regulatory Commission, in accordance with the conditions of said license and all applicable federal regulations including 10 CFR Part 20.

INSPECTION RESULT: COMPLIANCE. We were informed that the low-level radioactive waste that is burned is at background levels. .

SC EU-FLNRINC II.8. The permittee shall use only natural gas as fuel in EU-FLNRINC.

INSPECTION RESULT: COMPLIANCE. This was confirmed by AQD's N. Hude in 2017 as the only fuel source. 2018 natural gas use was 6,590.8 MCF, or 6.6 MMCF, according to the Farm Lane Incinerator - 2018 Totals sheet.

SC EU-FLNRINC III.1. The permittee shall not combust waste in EU-FLNRINC unless a minimum temperature of 1750 °F and a minimum retention time of 0.5 second in the afterburner are maintained.

INSPECTION RESULT FROM 3/22/2019 INSPECTION: COMPLIANCE: We were advised that the unit operates typically with the secondary combustion chamber or afterburner at 1,825 degrees F, above the 1,750 degrees F minimum. We were told that by design, the unit has a 1.7 second retention time, which helps ensure efficient combustion of waste. Typical crematory incinerators, in my experience, only have a 1.0 second retention time, in comparison.

Pursuant to my 9/4/2019 request for circular chart recordings, Ms. Lindsey sent scans of charts for March and April 2019 (attached). They show an inner and outer band of measurements which were recorded by an ink chart pen. Ms. Lindsey explained that the inner band of readings, around 1600 degrees F, represented the primary chamber temperature, while the outer band, around 1800 degrees F, represented the secondary combustion chamber temperature.

The circular chart recordings show that the secondary combustion chamber temperature was well above the minimum required 1,750 degrees F. There were occasional brief spikes in some charts of either the primary chamber temperature of the secondary chamber temperature going up or down. As the charts were in black and white, I could not tell if the spikes were in the primary or secondary chambers, and emailed Ms. Lindsey to ask for clarification, on 9/15/2019.

Ms. Lindsey indicated that AQD's N. Hude had a similar question. The visible spikes were from a primary chamber, she explained, when a new load was added to the incinerator. She explained that A. Hude agreed to MSU raising the set-point of the secondary chamber to 1800 degrees F, to ensure that there would never be any dips below the required 1750 degrees F limit in the secondary chamber.

SC EU-FLNRINC III.2. The after burner shall be installed, maintained, and operated in a satisfactory manner to control emissions from EU-FLNRINC. A list of operating and maintenance procedures is specified in Appendix 9-1.

INSPECTION RESULT FROM 3/22/2019 INSPECTION: COMPLIANCE. To the best of AQD's knowledge, the afterburner is being installed, maintained, and operated in a satisfactory manner, as evidence by the circular chart recordings of secondary chamber temperature. I asked by email on 9/4/2019 for an example of recent maintenance records. Ms. Lindsey advised that they do not have a maintenance checklist that they use, because maintenance work is performed by a third party contractor, Banner Day. Attached to her emailed response of 9/13/2019 is a copy of the purchase order form they use to request maintenance work from their

contractor, Banner Day.

SC EU-FLNRINC III.3. The permittee shall not operate EU-FLNRINC unless the temperature setting and indicator light for the afterburner are calibrated in a satisfactory manner. The indicator light will turn on when the afterburner reaches the minimum temperature from SC III.1.

INSPECTION RESULT: FROM 3/22/2019 INSPECTION: COMPLIANCE. As stated by AQD's N. Hude, a temperature readout is installed as part of the operational procedures with a light that does not illuminate until the minimum required temperature is achieved.

SC EU-FLNRINC III.4. The permittee shall not operate EU-FLNRINC unless the Section 1 Incinerators Malfunction Abatement Plan, or an alternate plan approved by the AQD District Supervisor, is implemented and maintained. The plan shall include procedures for maintaining and operating in a satisfactory manner, EU-FLNRINC, add-on air pollution control device, and monitoring equipment during malfunction events, and a program for corrective action for such events. If the malfunction abatement plan fails to address or inadequately addresses an event that meets the characteristics of a malfunction at the time the plan is initially developed, the owner or operator shall revise the malfunction abatement plan within 45 days after such an event occurs and submit the revised plan to the AQD District Supervisor.

INSPECTION RESULT FROM 3/22/2019 INSPECTION: COMPLIANCE. A Malfunction Abatement Plan is approved and available in the Lansing District Office.

SC EU-FLNRINC III.5. The permittee shall operate EU-FLNRINC as per the Waste Management Plan in Appendix 10-1 or via an alternate plan approved by the AQD District Supervisor. The Underlying Applicable Requirement is 40 CFR 60.50c(c), in Subpart Ec.

INSPECTION RESULT FROM 3/22/2019 INSPECTION: COMPLIANCE. Ms. Lindsey indicated that they are following the existing waste management plan.

SCEU-FLNRINC IV.1. The permittee shall not operate EU-FLNRINC unless the afterburner is installed, maintained, and operated in a satisfactory manner.

INSPECTION RESULT FROM 3/22/2019 INSPECTION: COMPLIANCE. To AQD's best available knowledge, the afterburner is installed , maintained, and operated in a proper manner.

SC EU-FLNRINC IV.2. The permittee shall equip and maintain the afterburner of EU-FLNRINC with a thermocouple control system.

INSPECTION RESULT FROM 3/22/2019 INSPECTION: COMPLIANCE.

SC EU-FLNRINC IV.3. The permittee shall install, calibrate, maintain and operate in a satisfactory manner a device to monitor and record the temperature in the afterburner of EU-FLNRINC on a continuous basis.

INSPECTION RESULT FROM 3/22/2019 INSPECTION: COMPLIANCE. The secondary chamber temperature is being monitored and recorded on a continuous basis, per the attached circular chart records.

SC EU-FLNRINC IV.4. The EU-FLNRINC afterburner temperature shall be interconnected with the primary chamber start relay so that the primary chamber burner will start only after the afterburner minimum temperature (1750 °F) is reached.

INSPECTION RESULT: FROM 3/22/2019 INSPECTION: COMPLIANCE. Per AQDs N. Hude, a system was confirmed installed, so that the load door cannot be opened until the unit reaches 1800-1825 degrees by design.

SC EU-FLNRINC V.1. Visual inspection for abnormal/excessive smoke to be performed at least once a day, every day that the incinerator is operating.

INSPECTION RESULT FROM 3/22/2019 INSPECTION: COMPLIANCE. Ms. Lindsey confirmed that this is being done on days the incinerator is operating. Please see attached Method 9 opacity readings for March 2019, which indicate opacity of 0%. On 3 days with high winds (3/5/2019 and 3/14/2019) and rainstorms (3/13/2019), actual Method 9 readings were not done. For future days when inclement weather prevents doing Method 9 readings, it may be beneficial to have operators right down a comment as to whether or not any smoke was observed.

SC EU-FLNRINC V.2. The permittee shall measure the opacity using Method 9 (Visual Determination of the Opacity of Emissions from Stationary Sources) upon request of the AQD.

INSPECTION RESULT FROM 3/22/2019 INSPECTION: COMPLIANCE/NOT REQUESTED. AQD has not requested Method 9 readings, but MSU is doing them regardless, as evidenced by the attached visible emission observation forms, from March, 2019.

SC EU-FLNRINC V.3. The permittee shall verify PM emission rates, by testing at owner's expense, in accordance with department requirements within 12 months of this permit renewal issuance, and once every five years thereafter, unless the permittee has submitted to the AQD District Supervisor an acceptable demonstration that the most recent acceptable test remains valid and representative. During performance testing, the permittee shall also determine and record the average operating temperature of the afterburner to control the emissions from the EU-FLNRINC.

INSPECTION RESULT FROM 3/22/2019 INSPECTION: COMPLIANCE. Stack test conducted on January 31, 2017. The facility was found to be in compliance.

SC EU-FLNRINC VI.1. All required calculations shall be completed in a format acceptable to the AQD District Supervisor by the 30th day of the calendar month, for the previous calendar quarter, unless otherwise specified in any monitoring/recordkeeping special condition.

INSPECTION RESULT FROM 3/22/2019 INSPECTION: COMPLIANCE. On 9/4/2019, I requested records from March, 2019, the time of the inspection of the Farm Lane Road Incinerator. They were completed in an acceptable manner.

SC EU-FLNRINC VI.2. The permittee shall monitor and record the temperature in the afterburner of EU-FLNRINC on a continuous basis in a manner and with instrumentation acceptable to the District Supervisor, Air Quality Division. Records shall be kept on file and made available to the Department upon request.

INSPECTION RESULT FROM 3/22/2019 INSPECTION: COMPLIANCE. The attached circular chart recordings show secondary chamber temperature above the minimum required 1750 degrees F.

SC EU-FLNRINC VI.3. The permittee shall keep, in a satisfactory manner, records on a calendar quarter basis of the description and weight of waste burned in EU-FLNRINC, as required by SC II.4, II.5 and II.6 specifically differentiating between pathological and other wastes. All records shall be kept on file and made available to the Department upon request.

INSPECTION RESULT FROM 3/22/2019 INSPECTION: COMPLIANCE. Farm Lane Incinerator - 2018 Totals showed the percentage and weight of pathological waste, medical waste, and solid waste. The Incinerator Monthly Report for January through March of 2019 showed weight of pathological waste, solid waste, low-level radioactive waste, medical waste, and pharmaceutical waste, and total weight.

SC EU-FLNRINC VI.4. The permittee shall calculate the weight percent of medical/infectious waste burned in EU-FLNRINC, as required by SC II.6. All records shall be kept on file and made available to the Department upon request.

INSPECTION RESULTFROM 3/22/2019 INSPECTION: COMPLIANCE. It is my understanding that they are complying with this restriction. The Farm Lane Incinerator Totals provided by Ms. Lindsey per my 9/4/2019 records request showed that for 2018, the farm Lane Incinerator burned 95.45% pathological waste, 0.3% medical waste, and 4.25% solid waste. Their medical waste by weight was well below the permitted maximum of 10%. Ms. Lindsey also provided monthly total reports for January through March of 2019, which showed that no medical waste was burned during those months.

SC EU-FLNRINC VII.1. – 4.Standard ROP reporting requirements.

INSPECTION RESULT FROM 3/22/2019 INSPECTION: COMPLIANCE. Records are being received and reviewed as required. No deviations have been reported in any recent time period for EU-FLNRINC.

SC EU-FLNRINCVIII.1. Unobstructed stack and diameter maximum 46 inches (under PTI No. 68-17A), with minimum height above ground 29 feet.

INSPECTION RESULT FROM 3/22/2019 INSPECTION: COMPLIANCE. PTI No. 68-17A, issued on 8/2/2017, incorporated a maximum allowed stack diameter of 46 inches, rather than the previous 40. This was done to reflect actual stack itself. This had no effect on the 2017 stack test outcome, as the diameter used in testing was the diameter confirmed, and the unit tested in compliance.

SC EU-FLNRINC IX.

NA

EU-DCPAHINC

Emission unit description: ASC design Pathological Waste incinerator located at DCPAH facility on Bennett Rd that burns 5% or less medical/infectious waste. Unit is gas fired with a 1,200 lb/hr capacity at 1,800 F and 1 second retention time in secondary chamber. (PTI 380-00)

Pollution control equipment: direct flame afterburner.

We went to the EU-DCPAHINC incinerator, at the Diagnostic Center for Populations and Animal Health (DCPAH). There were no visible emissions from the unit's exhaust stack. The unit was not operating at the time of today's inspection (3/22/2019), however. We were shown the unit by the operator, Scott, who runs it, in addition to the Farm Lane Road Incinerator.

The DCPAH incinerator is an extremely large unit. I was advised that it was the largest pathological waste incinerator in the nation. Scott showed me that the unit has 6 burners for the primary chamber, and 2 burners for the secondary chamber, or afterburner.

We also observed two boilers in the DCPAH building, which both had O2 sensors. No instances of noncompliance were noted.

SC EU-DCPAH I.1. The particulate matter limit is set at 1.71 lbs/hr.

INSPECTION RESULT FROM 3/22/2019 INSPECTION: COMPLIANCE. The most recent stack test was conducted on 1/31/17, and showed compliance. The measured emissions of 1.00 lbs/hr were well below the permitted limit.

SC EU-DCPAH I.2. PM limit 0.10 gr/dscf @ 7% O2

INSPECTION RESULT FROM 3/22/2019 INSPECTION: COMPLIANCE. The most recent stack test, done on 1/31/17, showed compliance. The results were 0.034 gr/dscf @ 7% O2.

SC EU-DCPAH II.1. The permittee shall not burn any waste in EU-DCPAHINC other than the following wastes.

a Pathological Waste as defined in 40 CFR 60.51c. Pathological waste is waste material consisting of only human or animal remains, anatomical parts and/or tissue, the bags/containers used to collect and transport the waste material and animal bedding.

b. Medical/Infectious Waste as defined in 40 CFR 60.51c. This waste shall not contain any sharps or exceed 5 percent, by weight, in aggregate, of the total waste burned in the EU-DCPAHINC as measured on a calendar month basis.

c. Institutional wastes as defined in 40 CFR 60.3078. Institutional waste means solid waste that is combusted at any institutional facility that generated the waste.

INSPECTION RESULT FROM 3/22/2019 INSPECTION: COMPLIANCE. I was advised that they burn such waste as deer heads and sheep heads, along with deer, coyotes, horses, and cattle that have been tested for TB. This waste appears to be in keeping with what the permit requires.

SC EU-DCPAH II.2. The permittee shall burn 90 percent or more by weight pathological waste to maintain status as a pathological waste incinerator unit. Failure to do so will require compliance with 40 CFR Part 60, Subpart FFFF.

INSPECTION RESULT FROM 3/28/2019 INSPECTION: COMPLIANCE. Records were requested by email on 9/15/2019. The attached recordkeeping was provided by Ms. Lindsey on 9/23/2019, and shows that only pathological waste is burned in the DCPAH incinerator, above the required 90% minimum.

SC EU-DCPAH III.1. The permittee shall not charge or combust waste in the EU-DCPAHINC unless a minimum 15-minute average temperature of 1800°F is maintained.

INSPECTION RESULT FROM 3/22/2019 INSPECTION: COMPLIANCE. The attached circular chart recordings, for March 2019, provided by Ms. Lindsey, show the afterburner temperature in degrees F in green ink, while the primary chamber temperature is in red ink. They show that the afterburner maintains a temperature of at least 1800 degrees F, typically ranging from 1820 to 1900 degrees F The only exception is brief dips at the start of cycles, when waste was charged. On 3/29/2019, after the unit had run for a few hours, there was a temperature dip between 1:00 and 1:30 PM. Ms. Lindsey advised that this dip in temperature occurred when a load of deer heads was charged into the incinerator, at 1:00 PM.

SC EU-DCPAH III.2. The after burner shall be installed, maintained, and operated in a satisfactory manner to control emissions from EU-DCPAHINC. A list or operation and maintenance procedures as specified in Appendix 9-1.

INSPECTION RESULT FROM 3/22/2019 INSPECTION: COMPLIANCE. The attached circular temperature chart recordings from March 2019 show the afterburner temperature, in green ink. They show that the unit is operating properly.

SC EU-DCPAHIII.3. The permittee shall not operate EU-DCPAHINC unless the Incinerators Malfunction Abatement Plan, or an alternate plan approved by the AQD District Supervisor, is implemented and maintained. The plan shall include procedures for maintaining and operating in a satisfactory manner,

EU-DCPAHINC, add-on air pollution control device, and monitoring equipment during malfunction events, and a program for corrective action for such events. If the malfunction abatement plan fails to address or inadequately addresses an event that meets the characteristics of a malfunction at the time the plan is initially developed, the owner or operator shall revise the malfunction abatement plan within 45 days after such an event occurs and submit the revised plan to the AQD District Supervisor.

INSPECTION RESULT: COMPLIANCE. The plan has previously been submitted to AQD, and has been approved. AQD's N. Hude stated, in his 2017 inspection report, that the plan appears to cover the necessary items as required.

SC EU-DCPAH III.4. The permittee shall not operate the EU-DCPAHINC unless the waste management plan specified in Appendix 10-1, or an alternate plan approved by the District Supervisor, is implemented and maintained.

INSPECTION RESULT: FROM 3/22/2019 INSPECTION: COMPLIANCE. Il was advised by Ms. Lindsey that they follow the existing waste management plan, as is also done with EU-FLRINC.

SC EU-DCPAH IV.1. The permittee shall not operate EU-DCPAHINC unless the afterburner is installed, maintained, and operated in a satisfactory manner.

INSPECTION RESULT FROM 3/22/2019 INSPECTION: COMPLIANCE. The attached circular temperature chart recordings from March 2019 show the afterburner temperature, in green ink. They show that the unit is operating properly.

SC EU-DCPAH IV.2. The permittee shall install, calibrate, maintain and operate in a satisfactory manner a device to monitor and record the temperature in the afterburner of EU-DCPAHINC on a continuous basis. The temperature monitoring device shall be installed, calibrated, operated and maintained properly.

INSPECTION RESULT FROM 3/22/2019 INSPECTION: COMPLIANCE. The attached circular temperature chart recordings from March 2019 show that this is being done. the afterburner temperature, in green ink., while the primary chamber is in red ink.

SC EU-DCPAH IV.3. The afterburner shall have a minimum retention time of 1.0 second.

INSPECTION RESULT FROM 3/22/2019 INSPECTION: COMPLIANCE. See information on the unit's mechanical specifications, which was submitted during the original permit to install application process, also known as New Source Review.

SC EU-DCPAH V.1. Visual inspection for abnormal/excessive smoke to be performed at least once a day, every day that the incinerator is operating.

INSPECTION RESULT FROM 3/22/2019 INSPECTION: COMPLIANCE. Ms. Lindsey informed me that Method 9 visible emission readings are being taken every day that the DCPAH incinerator is operating.

SC EU-DCPAH V.2. The permittee shall measure the opacity using Method 9 (Visual Determination of the Opacity of Emissions from Stationary Sources) upon request of the AQD.

INSPECTION RESULT FROM 3/22/2019 INSPECTION: COMPLIANCE. This was not requested. However, MSU is voluntarily taking Method 9 visible emission readings every day that the DCPAH incinerator is operating, Ms. Lindsey informed me.

SC EU-DCPAH V.3. The permittee shall verify PM emission rates, by testing at owner's expense, in accordance with department requirements within 12 months of permit renewal issuance, and once every five years thereafter, unless the permittee has submitted to the AQD District Supervisor an acceptable demonstration that the most recent acceptable test remains valid and representative. During performance testing, the permittee shall also determine and record the average operating temperature of the afterburner to control the emissions from EU-DCPAHINC.

INSPECTION RESULT FROM 3/22/2019 INSPECTION: COMPLIANCE. The unit underwent stack testing on 2/1/2017. Results indicated compliance.

SC EU-DCPAH VI.1. The permittee shall monitor and record the temperature in the secondary combustion chamber during operation on a continuous basis in a manner and with instrumentation acceptable to the District Supervisor, Air Quality Division. All records shall be kept on file and made available to the Department upon request.

INSPECTION RESULT FROM 3/22/2019 INSPECTION: COMPLIANCE. The attached circular temperature chart recordings from March 2019 show that this is being done. the afterburner temperature, in green ink., while the primary chamber is in red ink. As required by the ROP, the records were made available upon request.

SC EU-DCPAH VI.2. If excessive visible emissions are observed during the daily visual inspections, the permittee shall implement the following procedures.

a. Immediately cease charging EU-DCPAHINC;

b. Determine the cause of the excessive visible emissions within 4 hours of discovery;

c. Identify and implement corrective measures to reduce/eliminate the excessive visible emissions within 8 hours; or

d. Initiate shut down of the EU-DCPAHINC consistent with the provisions of the malfunction abatement plan.

e. Notify AQD of deviations as per General Condition 21.

INSPECTION RESULT: COMPLIANCE. I was advised by Ms. Lindsey that in the past 2 years, there have been no records indicating any excessive visible emissions. She indicated that if this were to ever happen, they would follow the required procedures.

SC EU-DCPAH VI.3. The permittee shall keep records on a daily basis of the type and weight of waste burned in EU-DCPAHINC specifically differentiating between pathological and medical/infectious waste. All records shall be kept on file and made available to the Department upon request.

INSPECTION RESULT FROM 3/22/2019 I NSPECTION: COMPLIANCE. The attached DCPAH Incinerator - 2018 Totals report shows that in 2018, only pathological waste was burned. No solid waste was burned.

SC EU-DCPAH VII.1. – 4. Reporting

INSPECTION RESULT: FROM 3/22/2019 INSPECTION: COMPLIANCE. ROP required annual and semi-annual certifications are submitted, and show no deviations for EU-DCPAH.

SC EU-DCPAHVIII.1. Unobstructed stack and diameter maximum 56 inches with minimum height above ground 85 feet.

INSPECTION RESULT: COMPLIANCE. The 2/1/17 stack test confirmed a stack diameter of 37 inches which is less than the maximum allowed 56 inches under the ROP. On 6/14/17 an email was received from Mr. Grover stating that the stack had been measured by survey and found to be 99.1 feet above ground level.

SC EU-DCPAH IX.

NA

EU-CREMATORY

Emission unit description: Crawford Model C500P, natural gas fired, animal crematory, with 200 pound maximum charge and a 75 pound per hour burn rate located at 4125 Beaumont Road. (PTI 226-05)

Pollution control equipment: direct flame afterburner.

EU-CREMATORY is primarily for pets. Scott is the primary operator for this as well as EU-FLRINC and EU-DCPAH.. The unit was not operating on the date of the inspection, 3/22/2019. Scott showed us the unit, and explained its operations. Compliance with ROP special conditions was checked, below:

SC EU-CREMATORY I.1. Emission Limit 0.20 pounds per 1,000 pounds of exhaust gases, corrected to 50% excess air.

INSPECTION RESULT: FROM 3/22/2019 INSPECTION: COMPLIANCE. This was determined by operating and design requirements. There is no evidence or concern sufficient to warrant requiring a stack test. .

SC EU-CREMATORY II.1. The permittee shall not burn any waste in EU-CREMATORY other than the following wastes:2 (40 CFR 60.51c)

a. Pathological wastes as defined in 40 CFR 60.51c. Pathological waste means waste materials consisting of only human or animal remains, anatomical parts, and/or tissue; the bags/containers used to collect and transport the waste material; and animal bedding.

INSPECTION RESULT: FROM 3/22/2019 INSPECTION: COMPLIANCE. I was shown records that they keep of each operating event. These indicated that deceased pets are cremated here, as well as the date and the weight of each cremation.

SC EU-CREMATORY III.1. The permittee shall not combust waste in EU-CREMATORY unless a minimum temperature of 1600 °F is maintained.

INSPECTION RESULT FROM 3/22/2019 INSPECTION: COMPLIANCE. I was shown circular chart recordings, kept in the same building as the crematory incinerator itself. They showed a consistent actual temperature for the secondary chamber of 1,700 degrees F, above the ROP-required minimum of 1,600 degrees F. The chart recordings also showed the primary chamber temperature, though this is not required by the ROP. .Primary chamber temperature tended to range from 1,550-1,600 degrees F. The primary temperature is not restricted by the ROP.

SC EU-CREMATORY III.2. The afterburner shall be installed, maintained, and operated in a satisfactory manner to control emissions from EU-CREMATORY. A list of operating and maintenance procedures is specified in Appendix 9-1.

INSPECTION RESULT FROM 3/22/2019 INSPECTION: COMPLIANCE. The circular chart recordings of the secondary combustion chamber temperature indicated compliance with this condition.

SC EU-CREMATORY IV.1. EU-CREMATORY shall have a minimum retention time of 1.0 second.

INSPECTION RESULT: FROM 3/22/2019 INSPECTION: COMPLIANCE. This is confirmed by the technical specification information submitted during the original permit to install process.

SC EU-CREMATORY IV.2. The permittee shall install, calibrate, maintain and operate in a satisfactory manner a device to monitor and record the temperature in the afterburner of EU-CREMATORY on a continuous basis.

INSPECTION RESULT: FROM 3/22/2019 INSPECTION: COMPLIANCE. I witnessed circular chart recordings onsite which recorded the temperature on a continuous basis. The chart recordings also showed the primary chamber temperature, though this is not required by the ROP.

SC EU-CREMATORY V.1. Visual inspection for abnormal/excessive smoke to be performed at least once a day, every day that the incinerator is operating.

INSPECTION RESULT FROM 3/22/2019 INSPECTION: COMPLIANCE. Ms. Lindsey advised that visible emissions readings are being performed, and records kept. It is my understanding that this is done for each day EU-CREMATORY operates. Additionally, Scott showed me the electronic "smoke eye" system which checks for visible emissions. He advised me that the unit has never gone off.

SC EU-CREMATORY V.2. Verification of PM emission rates, by testing at owner's expense, in accordance with department requirements shall be completed upon the request of the AQD. During performance testing, the permittee shall also determine and record the average operating temperature of the afterburner to control the emissions from the EU-CREMATORY.

INSPECTION RESULT: COMPLIANCE. Testing has not been requested. Based on past history and review of secondary chamber temperature recordings, there is no evidence of operational problems with this unit.

SC EU-CREMATORY VI.1. The permittee shall monitor and record the temperature in the afterburner during operation on a continuous basis in a manner and with instrumentation acceptable to the District Supervisor, Air Quality Division. All records shall be kept on file and made available to the Department upon request.

INSPECTION RESULT FROM 3/22/2019 INSPECTION: COMPLIANCE. I was shown circular chart recordings, kept in the same building as the crematory incinerator itself. They showed a consistent actual temperature for the secondary chamber of 1,700 degrees F, above the ROP-required minimum of 1,600 degrees F. The chart recordings also showed the primary chamber temperature, though this is not required by the ROP.

SC EU-CREMATORY VI.2. The permittee shall keep, in a satisfactory manner, daily records of the time, description and weight of waste combusted in EU-CREMATORY.

INSPECTION RESULT FROM 3/22/2019 INSPECTION: COMPLIANCE. I witnessed records onsite listing date, time, description of the cremation, and weight of the remains.

SC EU-CREMATORY VII.1. – 4. Reporting

INSPECTION RESULT: FROM 3/22/2019: COMPLIANCE. ROP-required annual and semi-nnual certifications are being submitted, as provided. There have been no recent deviations from ROP requirements reported for EU-CREMATORY.

SC EU-CREMATORY VIII.1. Unobstructed stack and diameter maximum 16 inches with minimum height above ground 25 feet.

INSPECTION RESULT: FROM 3/22/2019 INSPECTION: COMPLIANCE. Based upon a visual estimate, the stack appears to comply with the above requirements.

EU-DIENGINE

Emission unit description: One new uncertified non-emergency, spark ignition, stationary, 510 horsepower (380kilowatt), 4 stroke lean burn (4SLB), reciprocating internal combustion engine (RICE), used to produce electricity, fired by digester gas, manufactured on February 27, 2013 and rebuilt on April 15, 2016, subject to 40 CFR Part 60, Subpart JJJJ and 40 CFR Part 63, Subpart ZZZZ.

Pollution control equipment: catalytic reduction.

This source is an engine, EU-DIENGINE, fueled by a digester at the MSU Dairy Cattle Teaching and Research Barn. The location is at the northwest corner of College at Bennett), East Lansing, MI 48823

Background:

The Dairy Cattle Teaching and Research Barn is located on the south end of campus. The milk produced is used for research purposes, and is also used for the production of cheese and ice cream at the MSU Dairy Store.

The site has a bio digester that was installed in 2012. The digester uses manure, campus food wastes, research waste, and restaurant grease for gas production. A drive accesses the dump pit area, which

has sloped concrete towards the pit, for spill prevention, and rain retainment into the pit. The product is under frequent agitation, and is pumped into the digester thereafter.

Prior to reaching the engine, the gas passes through a cleanup apparatus which includes sulfur and water knock-out. Sulfur is removed by injecting air into the digester, removal of water and passing through a carbon filter. The sulfur content of the digester gas today, pre-knockout, was 303.0 ppm and post-knockout, going to the engine, was 3.4 ppm (limit is 600ppm).

The gas produced is then used to fuel a 510 HP (380kW) four stroke lean burn reciprocating internal combustion engine for powering the farm. The initial engine was certified when initially purchased and installed in 2013. Since this time a major overhaul and maintenance occurred, giving a rebuilt date of April 15, 2016 which voided the certification. Shortly thereafter in late 2016 or early 2017, the engine had catastrophic failure from a piston which broke apart, damaging the crank case, crank shaft and other components. The damage was irreparable. A flare at the site is used to combust the fuel, if the engine is not able to operate for some reason.

A new engine was thus installed, with a 2017 model year. It should be noted that the generator including the data plate is from the old engine and was not replaced, thus the serial numbers do not match up.

- Make: MAN
- Model: E2842LE322
- Serial # 49246928084677
- kW: 380 (509hp using a conversion of 1.34)
- Speed: 1800 RPM
- Displacement: 219.27

Due to the engine size being >500hp, the engine is required to conduct testing every 8760 hours or 3 years, whichever comes first, per MI-ROP-K3249-2016a, and 40 CFR Part 60, Subpart JJJJ. The underlying applicable requirement is found at 40 CFR 60.4243(a)(2)(iii):

If you are an owner or operator of a stationary SI internal combustion engine greater than 500 HP, you must keep a maintenance plan and records of conducted maintenance and must, to the extent practicable, maintain and operate the engine in a manner consistent with good air pollution control practice for minimizing emissions. In addition, you must conduct an initial performance test within 1 year of engine startup and conduct subsequent performance testing every 8,760 hours or 3 years, whichever comes first, thereafter to demonstrate compliance.

Upon arrival at the digester site, roughly around 1:45 PM on 3/22/2019, the engine was running. Power from the engine is sold to Consumers Energy for grid use. There were no visible emissions from the engine exhaust stack. The enclosed flare was not operating, at this time. It is used in case the engine is not available, or in case the digester produces more digester gas than the engine alone can combust.

We were not able to go inside the office and maintenance shop where the control room for the engine is. The environmental contact, Mr. Lou Faivor, Farm Assistant Manager and Anaerobic Digester Operator, was not at the site at this time. I had previously witnessed stack testing of the digester engine on 9/20/2018.

This is an agricultural digester, and processes agricultural waste. I have been advised that it is also a "complete mix" digester, rather than a "plug flow" digester, such as might be found on small farms.

The digester receives manure from the dairy barns, and added substrates from off-farm sources. It is my understanding that these substrates include grease and associated rinse water from restaurants, as well as some food wastes from MSU's campus cafeterias. The food waste is said to include prepared food that has not made it onto people's trays. They cannot accept post-consumer food waste, because trash or other items like plastic would be bad for the digester. It is my understanding that they take no sewage wastes from humans.

It is my understanding that cow manure is not stored in tanks, but is piped directly to the receiving

pits, while trucks unload additional substrates into the pits. The receiving pits are stirred or agitated, and the manure and substrates go into a mix tank, close by. I detected no visible emissions from the mix tank. The receiving pits gave off a distinct and definite odor of manure, when one was right next to them, but I did not find that the odors carried far. The South Dairy Farm site is a relatively remote site, although a new teaching hospital is being built, roughly 3,000 feet to the west. northwest.

The digester is also said to receive dairy waste, which provides a lot of food for bacteria, but also lowers the pH. It is my understanding that it also is a source of sulfur, and this can lead to more odorous conditions.

The digester is a large, light gray tank with an inflatable dome. I was informed that the waste goes into an anaerobic environment, and naturally occurring bacteria (acetigens and acetogens) break the wastes down into volatile fatty acids (VFAs). It is my understanding that methanogens convert the VFAs into methane gas. I have been advised that the process operates at mesophilic temperatures of about 100 degrees F, and that the engine's heat exchanger can be used to route heat to another heat exchanger to warm the liquids, in cold weather. The pH should be neutral, I have been told, with a pH of 6.8 to 7.5 being ideal for the bacteria.

It is my understanding that inside the digester, the digestate is circulated frequently, though not constantly, with internal mixers. The digested waste then goes to the digestate tank, which is a large black tank, with an inflatable dome. I have previously been informed that solids in the digestate get screened out, and then stockpiled, prior to eventual land application, while liquids go back into the digestate tank.

The digester engine last underwent stack testing for CO, NOx, and VOC on 9/20/2018. It will do so again on 10/4/2019. AQD's Lansing District office will be onsite, to witness the stack test and record operating parameters. This will help determine if the stack test is conducted at maximum routine operating conditions.

Compliance check with ROP requirements for EU-DIENGINE:

EU-DIENGINE I. <u>EMISSION LIMIT(S):</u>

SC EU-DIENGINE I.1. Emission Limit CO- 5.0 g/hp-hr or 610ppm @ 15% O2

INSPECTION RESULT FROM 9/20/2018 STACK TESTING: COMPLIANCE. CO emissions from 3 test runs averaged 156 ppm at 15% O2, below the NSPS and ROP limit.

SC EU-DIENGINE I.2. Emission Limit NOx- 2.0 g/hp-hr or 150ppm @ 15% O2

INSPECTION RESULT FROM 9/20/2018 STACK TESTING: COMPLIANCE. NOx emissions from 3 test r runs averaged 110 ppm at 15% O2, below the NSPS and ROP limit.

SC EU-DIENGINE I.3. Emission Limit VOC- 1.0 g/hp-hr or 80ppm @ 15% O2

INSPECTION RESULT FROM 9/20/2018 STACK TESTING: COMPLIANCE: VOC emissions from 3 test runs averaged 3.9 ppm at 15% O2, below the NSPS and ROP limit.

EU-DIENGINE II. <u>MATERIAL LIMIT(S):</u>

SC EU-DIENGINE II.1. The heat input provided by digester gas must be equivalent to 10 percent or more of the gross heat input on an annual basis. 63.6590(b)(ii)(2)

INSPECTION RESULT FROM 9/20/2018 STACK TEST AND 3/22/2019 INSPECTION: COMPLIANCE. The fuel burned is entirely digester produced.

EU-DIENGINE III. <u>PROCESS/OPERATIONAL RESTRICTION(S):</u>

SC EU-DIENGINE III.1. If the permittee purchased a non-certified engine or operates a certified engine in a non-certified manner, the permittee shall keep a maintenance plan and records of conducted maintenance for FGNSPSJJJJ and shall, to the extent practicable, maintain and operate each engine in a manner consistent with good air pollution control practice for minimizing emissions.

INSPECTION RESULT FROM 9/20/2018 STACK TEST AND 3/22/2019 INSPECTION: COMPLIANCE. Ms. Lindsey provided the attached documents on EU-DIENGINE, including a service interval log from the manufacturer, which provides the maintenance plan. It includes specific time frames for specific maintenance tasks, based on certain intervals in operating hours. Also attached is a field service report

EU-DIENGINE IV. DESIGN/EQUIPMENT PARAMETER(S):

SC EU-DIENGINE IV.1. The permittee shall equip and maintain EU-DIENGINE with a fuel meter to monitor and record the daily fuel usage and volumetric flow rate of the digester fuel used.

INSPECTION RESULT FROM 9/20/2018 STACK TESTING AND 3/22/2019 INSPECTION: COMPLIANCE. Ms. Lindsey provided the attached hourly log for 3/22/2019, the date of the inspection. It includes the fuel use, recorded throughout the day. The only fuel is digester gas, so that is the only fuel recorded.

EU-DIENGINE V. TESTING/SAMPLING:

SC EU-DIENGINE V.1. The permittee must conduct an initial performance test within 1 year of engine rebuild and conduct subsequent performance testing every 8,760 hours or 3 years, whichever comes first, thereafter to demonstrate compliance.

INSPECTION RESULT: COMPLIANCE. Stack testing was conducted on the current engine in 2017, less than a year after it was installed. The most recent stack testing was conducted on 9/20/2018. The next upcoming stack test will be on 10/4/2019. AQD will observe this stack testing.

SC EU-DIENGINE V.2. Performance testing shall be conducted according to 40 CFR 60.4244.

INSPECTION RESULT FROM 9/20/2018 STACK TESTING AND 3/22/2019 INSPECTION: Please see below.

40 CFR Part 60, Subpart JJJJ, Standards of Performance for Stationary Spark Ignition Internal Combustion Engines, Section 60.4244 requires owners or operators of stationary spark ignition internal combustion engines (SI RICE) to follow paragraphs (a) through (f) of this section, as follows:

a. Each performance test must be conducted within 10 percent of 100 percent peak (or the highest achievable) load and according to the requirements in Section 60.8 and under the specific conditions that are specified by Table 2 to this subpart.

INSPECTION RESULT FROM 9/20/2018 STACK TESTING AND 3/22/2019 INSPECTION: COMPLIANCE. The 9/20/2018 stack testing was conducted at 94.0% of the maximum load of 380 kilowatts (kW), based on data I collected. This is above the minimum requirement of 90%, and was acceptable to AQD as maximum routine operating conditions.

b. This subsection prohibits tests during periods of startup, shutdown, or malfunction, as specified in Section 60.8(c).

INSPECTION RESULT FROM 9/20/2018 STACK TESTING AND 3/22/2019

INSPECTION: COMPLIANCE. During the 9/20/2018 stack testing, I was able to verify that there were not periods of startup, shutdown, or malfunction, during the stack test.

c. This subsection requires 3 separate test runs for each performance test required, and each run is to be conducted within 10% of the 100% peak (or the highest achievable) load, and each run must last at least 1 hour.

INSPECTION RESULT FROM 9/20/2018 STACK TESTING AND 3/22/2019
INSPECTION: COMPLIANCE. During the 2018 stack test, I verified that there were 3 test runs, that they were conducted within 10% of the maximum load, and they lasted one hour in length.

d. This subsection requires the concentration of NOx in the engine exhaust to be converted to mass per unit output (grams per standard cubic meter (scm)), using Equation 1.

INSPECTION RESULT FROM 9/20/2018 STACK TESTING AND 3/22/2019 INSPECTION: UNKNOWN. Results were converted to grams per scm, but it is not clear to me if Equation 1 was used.

e. This subsection requires the concentration of CO in the engine exhaust to be converted to mass per unit output (grams per standard cubic meter (scm)), using Equation 2.

INSPECTION RESULT FROM 9/20/2018 STACK TESTING AND 3/22/2019 INSPECTION: UNKNOWN. Results were converted to grams per scm, but it is not clear to me if Equation 1 was used.

f. This subsection requires that formaldehyde emissions not be included as part of the VOC emissions. It states that to determine compliance with the VOC mass per unit output (grams per standard cubic meter (scm)), the VOC concentration should be converted, using Equation 3.

INSPECTION RESULT FROM 9/20/2018 STACK TESTING AND 3/22/2019 INSPECTION: UNKNOWN. It is my understanding that VOC emissions determined during the test were did not include formaldehyde. However, it is not known to me if Equation 3 was utilized.

g. This subsection addresses three different methods which might potentially be used in a stack test to measure VOC emissions; Method 25A, or Methods 18 or 320 of 40 CFR Part 63, Appendix A. It addreses

INSPECTION RESULT FROM 9/20/2018 STACK TESTING AND 3/22/2019 INSPECTION: NA. U.S. Environmental Protection Agency Method 25A/ALT-096 was used, according to the stack test report.

EU-DIENGINE VI. MONITORING/RECORDKEEPING:

SC EU-DIENGINE VI.1. The permittee shall keep the following records for EU-DIENGINE:

a. All notifications submitted to comply with Subpart JJJJ and all documentation supporting any notification.

b. Maintenance conducted on EU-DIENGINE.

c. If the engine is operating in a non-certified manner, documentation that the engine meets emission standards.

INSPECTION RESULT FROM 9/20/2018 STACK TESTING AND 3/22/2019 INSPECTION: COMPLIANCE. As documented in previous condition results. Stack test results from the 9/20/2018 stack test demonstrated that the engine is meeting emissions standards. EU-DIENGINE is scheduled to be stack tested again, on 10/4/2019, which AQD will witness.

SC EU-DIENGINE VI.2. The permittee shall record all fuel usage for EU-DIENGINE, including digester gas,

on a daily basis with separate fuel meters to measure the volumetric flow rate of each fuel.

INSPECTION RESULT FROM 9/20/2018 STACK TESTING AND 3/22/2019
INSPECTION: COMPLIANCE. Ms. Lindsey provided the attached hourly log for 3/22/2019, the date of the inspection. It includes the fuel use, recorded throughout the day. The only fuel is digester gas, so that is the only fuel recorded.

SC EU-DIENGINE VI.3. The permittee shall maintain records of the hours of operation for determining performance testing requirements.

INSPECTION RESULT FROM 9/20/2018 STACK TESTING AND 3/22/2019 INSPECTION: COMPLIANCE. Ms. Lindsey provided the attached fuel summary for EU-DIENGINE for March 2019, which includes operating hours.

EU-DIENGINE VII. REPORTING:

SC EU-DIENGINE VII.1. Prompt reporting of deviations pursuant to General Conditions 21 and 22 of Part A.

INSPECTION RESULT FROM 9/20/2018 STACK TESTING AND 3/22/2019: COMPLIANCE. MSU reports any deviations pursuant to their ROP, but there have been no deviations for EU-DIENGINE.

SC EU-DIENGINE VII.2. Semi-annual reporting of monitoring and deviations pursuant to General Condition 23 of Part A. The report shall be postmarked or received by the appropriate AQD District Office by March 15 for reporting period July 1 to December 31 and September 15 for reporting period January 1 to June 30.

INSPECTION RESULT FROM 9/20/2018 STACK TESTING 3/22/2019: COMPLIANCE. MSU reports any deviations pursuant to their ROP, but there have been no deviations for EU-DIENGINE.

SC EU-DIENGINE VII.3. Annual certification of compliance pursuant to General Conditions 19 and 20 of Part A. The report shall be postmarked or received by the appropriate AQD District Office by March 15 for the previous calendar year.

INSPECTION RESULT FROM 9/20/2018 STACK TESTING AND 3/22/2019 INSPECTION: COMPLIANCE. These are completed as required.

SC EU-DIENGINE VII.4. If testing is required, no less than 30 days prior to testing, a complete test plan shall be submitted to the AQD. The final plan must be approved by the AQD prior to testing. Verification of emission rates includes the submittal of a complete report of the test results to the AQD within 60 days following the last date of the test.

INSPECTION RESULT FROM 9/20/2018 STACK TESTING AND 03/22/2019 INSPECTION; COMPLIANCE. The 9/20/2018 stack test required by 40 CFR Part 60, Subpart JJJJ was conducted, and results indicated compliance. A stack test plan has already been received by AQD, on 8/1/2019, for the upcoming Subpart JJJJ stack test scheduled for 10/4/2019.

SC EU-DIENGINE VII.5. The permittee shall submit an annual report to the appropriate AQD District

Office by March 15 for reporting period January 1 to December 31. The following information shall be included in this annual report:

a. The permittee must demonstrate that the percentage of heat input provided by digester gas is equivalent to 10 percent or more of the total gross heat input for EU-DIENGINE on an annual basis.

b. The operating limits provided in this permit, and any deviations from these limits.

c. Any problems or errors suspected with the meters

INSPECTION RESULT FROM 9/20/2018 STACK TESTING AND 3/22/2019 INSPECTION: COMPLIANCE. I could not find a report to this effect in AQD files. I requested the facility send a report to AQD meeting the above requirements; MSU advised they thought this had been done already. On 9/24/2019, I received an annual report from MSU, stating the following:

- *"The digest engine (MANN Engine Unit) operates 100 percent of digester gas and the total gas input well exceeds the 10 percent gross heat input."*
- *The digester engine operated within the limits set forth in Section III and verified by operators review.*
- *There were no malfunctions with the meters in 2018.*

EU-DIENGINE VIII. STACK/VENT RESTRICTION(S):

SC EU-DIENGINE VIII.1. No stack restrictions included.

NA.

EU-DIENGINE IX. OTHER REQUIREMENTS:

SC EU-DIENGINE IX.1. The permittee shall comply with all applicable provisions of the federal Standards of Performance for Stationary Spark Ignition Internal Combustion Engines as specified in 40 CFR Part 60, Subpart A and Subpart JJJJ.

INSPECTION RESULT FROM 9/20/2018 STACK TESTING AND 3/22/2019 INSPECTION: COMPLIANCE. Stack testing was conducted most recently on 9/20/2018, and indicated compliance. Before that, stack testing was conducted on 9/21/2017, and indicated compliance with the limits. The next stack test is scheduled for 10/4/2019. AQD staff will attend.

SC EU-DIENGINE IX.2. A new or reconstructed stationary RICE with a site rating of more than 500 brake HP located at a major source of HAP emissions which combusts landfill or digester gas equivalent to 10 percent or more of the gross heat input on an annual basis must meet the initial notification requirements of §63.6645(f) and the requirements of §§63.6625(c), 63.6650(g), and 63.6655(c). These stationary RICE do not have to meet the emission limitations and operating limitations of this subpart.

INSPECTION RESULT FROM 9/20/2018 STACK TESTING AND 3/22/2019 INSPECTION: COMPLIANCE. Compliance is demonstrated through stack testing results. The testing of EU-DIENGINE is conducted on an annual basis. 40 CFR Part 60, Subpart JJJJ requires stack testing once every 3 years, or once every 8,760 hours of operation, whichever comes first.

EU-ENCLSD_FLARE

Emission unit description: an enclosed, digester gas-burning flare, used as back up for the anaerobic

digester. The flare is capable of burning up to 150 scfm, giving a heat input capacity of 5,400,000 Btu/hr, when using the estimated higher heating value of the digester gas of 600 Btu/scf. (PTI No. 95-12A.)

Pollution control equipment: enclosed flare and fuel SO2 scrubber.

SC EU-ENCLSD_FLAREI.1. Emission Limit SO2 0.90pph over a 30 day average.

INSPECTION RESULT FROM 3/22/2019 INSPECTION: COMPLIANCE. The enclosed flare did not run at all in March 2019, but the attached spreadsheet prepared by Mr. Lou Faivor shows April 2019 data. H2S ppm in the digester gas averaged 2 ppm, resulting in 0.00 lbs/hr H2S and 0.00 lbs/hr SO2. MSU is complying with this emission limit, as demonstrated by the recordkeeping.

SC EU-ENCLSD_FLAREII.1. The permittee shall burn only gas produced by the dairy facility anaerobic digester (digester gas) in the EU-ENCLSD-FLARE.

INSPECTION RESULT FROM 9/20/2018 STACK TESTING AND 3/22/2019 INSPECTION: COMPLIANCE. It is my understanding that the flare is not connected to any other fuel source.

SC EU-ENCLSD_FLARE II.2. The hydrogen sulfide (H2S) concentration of the gas exiting the digester shall not exceed 600 ppmv.

INSPECTION RESULT FROM 9/20/2018 STACK TESTING AND 3/22/2019 INSPECTION: COMPLIANCE. The attached spreadsheet show that during April 2019, H2S content in the digester gas ranged from 0 to 5 ppm, averaging out at 2 ppm. This is far below the 600 ppmv limit.

SC EU-ENCLSD_FLARE III.1. The permittee shall not operate EU-ENCLSD_FLARE unless a MAP as described in Rule 911(2), is implemented and maintained. If at any time the MAP fails to address or inadequately addresses an event that meets the characteristics of a malfunction, the permittee shall amend the MAP within 45 days after such an event occurs. The permittee shall also amend the MAP within 45 days, if new equipment is installed or upon request from the District Supervisor. The permittee shall submit the MAP and any amendments to the MAP to the AQD District Supervisor for review and approval. If the AQD does not notify the permittee within 90 days of submittal, the MAP or amended MAP shall be considered approved. Until an amended plan is approved, the permittee shall implement corrective procedures or operational changes to achieve compliance with all applicable emission limits.

INSPECTION RESULT: FROM 9/20/2018 STACK TESTING AND 3/22/2019 INSPECTION: COMPLIANCE. An updated MAP was received on 7/12/17.

SC EU-ENCLSD_FLARE IV.1. The permittee shall install, calibrate, maintain and operate in a satisfactory manner, a device to monitor and record the volumetric flow rate of digester gas burned in EU-ENCLSD-FLARE, on a continuous basis.

INSPECTION RESULT FROM 9/20/2018 STACK TESTING AND 3/22/2019 INSPECTION: COMPLIANCE. This is being done, as evidenced by the attached spreadsheet forwarded by Ms. Lindsey from Mr. Faivor. .

SC EU-ENCLSD_FLARE .V. 1. The permittee shall verify the hydrogen sulfide or total reduced sulfur

(TRS) content of the digester gas burned in EU-ENCLSD-FLARE on a quarterly basis by gas sampling. If, after a year, the average of the previous four (4) quarterly concentrations of the hydrogen sulfide or TRS concentration of the digester gas is below 600 ppm (TRS equivalent), the permittee may petition the District Supervisor, Air Quality Division to reduce the frequency of gas sampling and recording the hydrogen sulfide/total reduced sulfur concentration of the digester gas to once each calendar year. If at any time the average of the previous four concentration readings exceeds 600 ppm (TRS equivalent), the permittee shall resume sampling and recording on a quarterly basis and shall review all operating and maintenance activities for the digester gas collection and treatment system along with keeping records of corrective actions taken. Once the average of the previous four concentrations determined from the quarterly readings is maintained below 600 ppm of hydrogen sulfide/TRS concentration in the digester gas for one year after an exceedance, the permittee may resume annual monitoring and recordkeeping. The permittee shall keep all records on file at the facility for a period of at least five years and make them available to the Department upon request.

INSPECTION RESULT FROM 9/20/2018 STACK TESTING AND 3/22/2019 INSPECTION: COMPLIANCE. Ms. Lindsey advised that a sensor takes hourly samples of digester gas to analyze. She forwarded the attached spreadsheet from Mr. Faivor, titled, "Quarterly H2S 2019."

SC EU-ENCLSD_FLARE VI.1. The permittee shall keep, in a satisfactory manner, records of the H2S content of the digester gas routed to EU-ENCLSD-FLARE as specified in SC V.1. The permittee shall keep all records on file and make them available to the Department upon request.

INSPECTION RESULT FROM 9/20/2018 STACK TESTING AND 3/22/2019 INSPECTION: COMPLIANCE. Ms. Lindsey advised that a sensor takes hourly samples of digester gas to analyze. She forwarded the attached spreadsheet from Mr. Faivor, titled, "Quarterly H2S 2019." The quarterly H2S average content read as follows:

- *2018 Q3: 34 ppm*
- *2018 Q4: 32 ppm*
- *2019 Q1: 190 ppm*
- *2019 Q2: 11 ppm*
- *2019 Q3: 13 ppm to date, as of 9/18/2019*

The above values are below the permitted limit of 600 ppmv.

SC EU-ENCLSD_FLARE VI.2. The permittee shall continuously monitor and record, in a satisfactory manner, the volumetric flow rate of digester gas burned in the flare. The permittee shall keep all records on file at the facility and make them available to the Department upon request.

INSPECTION RESULT FROM 9/20/2018 STACK TESTING AND 3/22/2019 INSPECTION: COMPLIANCE. Ms. Lindsey forwarded the attached spreadsheet from Mr. Faivor, titled, "Quarterly H2S 2019." It documents the flow rate of digester gas to the flare, for those dates when it operated.

SC EU-ENCLSD_FLARE VI.3. SO2 emission calculations shall be completed as per Appendix 7-1. Calculations shall be made available to the department upon request.

INSPECTION RESULT FROM 9/20/2018 STACK TESTING AND 3/22/2019 INSPECTION: COMPLIANCE. Ms. Lindsey forwarded the attached spreadsheet from Mr. Faivor, titled, "Quarterly H2S 2019." It documents the SO2 emissions for April 2019, which were 0.00 lbs.

SC EU-ENCLSD_FLARE VII.1. Prompt reporting of deviations pursuant to General Conditions 21 and 22 of Part A.

INSPECTION RESULT FROM 3/22/2019: COMPLIANCE. MSU reports any deviations pursuant to their ROP, but there have been no deviations for the enclosed flare.

SC EU-ENCLSD_FLARE VII.2. Semi-annual reporting of monitoring and deviations pursuant to General Condition 23 of Part A. The report shall be postmarked or received by the appropriate AQD District Office by March 15 for reporting period July 1 to December 31 and September 15 for reporting period January 1 to June 30.

INSPECTION RESULT FROM 9/20/2018 STACK TESTING AND 3/22/2019 INSPECTION: COMPLIANCE. MSU reports any deviations pursuant to their ROP, but there have been no deviations for the enclosed flare.

SC EU-ENCLSD_FLARE VII.3. Annual certification of compliance pursuant to General Conditions 19 and 20 of Part A. The report shall be postmarked or received by the appropriate AQD District Office by March 15 for the previous calendar year.

INSPECTION RESULT FROM 9/20/2018 STACK TESTING AND 3/22/2019 INSPECTION: COMPLIANCE. These are completed as required.

SC VEU-ENCLSD_FLARE III.1. Stack- unobstructed, maximum diameter 18 inches, minimum height above ground 7 feet.

INSPECTION RESULT FROM 9/20/2018 INSPECTION AND 3/22/2019 INSPECTION: COMPLIANCE. The stack met these requirements.

SC EU-ENCLSD_FLARE IX. No conditions

NA

EU-TESTSTAND

Emission unit description: An Engine Test stand capable of testing engines up to 750 HP for unleaded gasoline/ethanol engines and 1,000 HP for diesel engines located at 1149 Engineering Research Court. (PTI 229-05A)

Pollution control equipment: catalytic converters while testing gasoline/ethanol engines.

This stand is located in the engineering building and is used for experimental engines that can be connected to dynameters. The inspection was completed with the assistance of Mr. Tom Stuecken, Research Assistant in MSU's Mechanical Department.

EU-TESTSTAND is different from EU-TESTCELL1 and EU-TESTCELL2, in that smaller engines are able to fit up on it. Larger engines are tested in the test cells. The test stand is in Room E125, while the larger test cell is in room E124 and the smaller test cell is in room E122. During the inspection, we saw all 3 emission units. A detailed review of compliance is only checked in this report for EU-TESTSTAND, due to shortness of time. No instances of noncompliance were seen for the other emission units, as catalytic converters were said to be available, and fuel use records were being kept.

Compliance with the ROP special conditions is checked below.

SC EU-TESTSTAND I.1.

NA, as no emission limits.

SC EU-TESTSTAND II.1. Material Limit 1000 gallons of unleaded gasoline.

INSPECTION RESULT:FROM 7/24/2019 INSPECTION: COMPLIANCE. The attached record emailed by Ms. Lindsey on 9/24/2019 shows that EUTESTSTAND used 61 gallons of gasoline. in 2019, all in the month of July.

SC EU-TESTSTAND II.2. Material Limit 1000 gallons of diesel fuel.

INSPECTION RESULT:FROM 7/24/2019 INSPECTION: COMPLIANCE. The attached record emailed by Ms. Lindsey on 9/24/2019 shows that EUTESTSTAND used 0 gallons of diesel fuel in July 2019.

SC EU-TESTSTAND III.1.

NA.

SC EU-TESTSTAND IV.1. The permittee shall equip and maintain EU-TESTSTAND with a catalytic converter when burning gasoline.

INSPECTION RESULT FROM 7/24/2019 INSPECTION: COMPLIANCE. I was shown that converters are available and on site for operations. A converter was in use for a single cylinder gasoline engine which was being tested.

SC EU-TESTSTAND V.1.

NA.

SC EU-TESTSTAND VI.1. The permittee shall complete all required records in a format acceptable to the AQD District Supervisor by the last day of the calendar month, for the previous calendar month, unless otherwise specified in any monitoring/recordkeeping special condition.

INSPECTION RESULT:FROM 7/24/2019 INSPECTION: COMPLIANCE. The attached record emailed by Ms. Lindsey on 9/24/2019 shows that records are kept in an acceptable manner for EUTESTSTAND. The timing of the records is unknown, as to how soon they are completed. This can be checked during the next AQD inspection of MSU.

SC EU-TESTSTAND VI.2. The permittee shall record, in a satisfactory manner, monthly and previous 12-month fuel usage for EU-TESTSTAND. All records shall be kept on file and made available to the Department upon request.

INSPECTION RESULT:FROM 7/24/2019 INSPECTION: COMPLIANCE. The attached record emailed by Ms. Lindsey on 9/24/2019 shows that monthly and yearly fuel records are being kept.

SC EU-TESTSTAND VII.1.-3. Standard ROP Reporting conditions.

INSPECTION RESULT FROM 7/24/2019 INSPECTION: COMPLIANCE: ROP annual and semi-annual certifications are being received and reviewed as required.

SC EU-TESTSTAND VIII.1

NA, as no stack conditions.

SC EU-TESTSTAND IX.1.

NA.

FG-COLDCLEANER:

FG-COLDCLEANER was not inspected as part of this FCE. However, a flexible group consisting of two cold cleaners was inspected as part of the MSU TB Simon Power Plant inspection. This is documented later, in this inspection activity report. TB Simon is regulated under Section 2 of the MSU ROP.

FG-RULE287(c)

Flexible group description: Any emission unit that emits air contaminants and is exempt from the requirements of Rule 201 pursuant to Rules 278 and 287(c).

Emission Units: EU-SPRAYBOOTH1, EU-SPRAYBOOTH2

Pollution control equipment: particulate control filter.

EU-SPRAYBOOTH1 (as a representative of FG-RULE287(c))

This spray booth is located at MSU Infrastructure Planning and Facilities (IPF) near the intersections of Stadium Road and Chestnut Road. This booth is equipped with a water wash system.

We inspected EU-SPRAYBOOTH1 on 3/28/2019. No visible emissions were noted from the roofline of the IPF building where the paint shop is located. We were introduced to Deb, the paint shop supervisor and Pam, a fellow MSU employee. The paint booth was in use as we arrived. The water wash system was in use, as required.

Deb explained that the water wash system will be retired in the future, and replaced with a dry filter system. We were told that the exhaust fan from the old system will continue to be used with the new system. Signs advised that the water wash booth has some asbestos containing material(ACM) in its construction. We were informed that the ACM will be remediated when it is time for the water wash booth to be replaced. I did not see any evidence of material crumbling or becoming friable.

She advised that they keep daily records of paint use and transfer them to a monthly summary. I observed daily and weekly records of coating use, recorded in either quarts or gallons. These records appeared acceptable for purposes of showing compliance with Rule 287(c) and the ROP. I was shown that they have Safety Data Sheets for their coatings, which include low VOC paints, VOC-free paints, and specialty paints.

The water wash filtration system was running. Deb advised that the water is treated, and captures VOCs as well as particulates. She explained that the system gets cleaned every few months. It is my

understanding that the solids are disposed of, even though from a regulatory standpoint they would be allowed to wash these down the drain. They have two drums for hazardous wastes, which, I was informed, will be sent to the Waste Storage facility, to be shipped offsite as they are (without consolidation at the WSF).

SC FG-RULE287(C) I.1. Emission Limits- none

NA, as no emission limits.

SC FG-RULE287(C) II.1. Material Limits- Coatings, 200 gallons / month

INSPECTION RESULT FROM 3/28/2019 INSPECTION: COMPLIANCE. Coatings are tracked. I observed daily records and weekly records. I t is my understanding that these are totaled for monthly records.

SC FG-RULE287(C) III.1. Process/Operational Restrictions- none

NA.

SC FG-RULE287(C) IV.1. Any exhaust system that serves only coating spray equipment shall be equipped with a properly installed and operating particulate control system.

INSPECTION RESULT: FROM 3/28/2019 INSPECTION: COMPLIANCE. This booth is equipped with a water wash system, which was operating. We were advised that it will be with a dry particulate filter system, which should be acceptable per Rule 287 and the ROP.

SC FG-RULE287(C) VI.1 The permittee shall maintain records of the following information for each emission unit for each calendar month using the methods outlined in the DEQ, AQD Rule 287(c), Permit to Install Exemption Record form (EQP 3562) or in a format acceptable to the AQD District Supervisor.

a. Volume of coating used, as applied, minus water, in gallons.

b. Documentation of any filter replacements for exhaust systems serving coating spray equipment.

a. INSPECTION RESULT: FROM 3/28/2019 INSPECTION: COMPLIANCE. *Coatings are tracked on a calendar then are transferred to an inventory log. It is my understanding that they are below 200 gallons of coatings used, per month..*
b. INSPECTION RESULT: FROM 3/28/2019 INSPECTION: UNKNOWN. I did not request records of filter replacements at this time. .

SC FG-RULE287(C) VII.1.-3. Standard ROP Reporting conditions.

INSPECTION RESULT: Compliance- Records are being received and reviewed as required.

SC FG-RULE287(C) VIII.

NA

SC FG-RULE287(C) IX.

NA

EU-ETO2, PTI No. 99-17, supplemental revision 9/28/2017:

EU-ETO2 is the only ethylene oxide (EtO) sterilizer on campus at this time. It is not currently part of MSU's ROP, having been issued on 8/22/2017, after the latest ROP issuance and minor modification. A supplemental revision was made on 9/28/2017, to correct an error. This PTI will be rolled into the ROP during the next renewal cycle.

EU-ETO, the EtO sterilizer whose requirements are part of the MSU ROP, is no longer in service. I was advised that it has been removed, and that EU-ETO2 is located where it once was.

The ROP contains FG-STERILIZERS, a flexible group for one or more EtO sterilizers. In the ROP, it contains EU-ETO, which has now been removed, as mentioned above. EU-ETO2 can be added to this flexible group, upon renewal of the ROP.

We arrived at the MSU veterinary facility, and proceeded to the sterilizer room. We met with Ms. Merrick Murray, the Vet Med Central Sterilization Operator, who has over 19 years of experience. She explained that in addition to the current EtO sterilizer, EU-ETO2, there are other sterilizer units, like Sterrad brand unit(s), which use hydrogen perioxide, and would qualify as exempt from needing a permit to install under Rule 281(2)(i), provided they process materials which are free of mercury. I was informed that there is an autoclave onsite. Since this uses steam, it appears that it would meet the same exemption, provided mercury-containing materials are not processed.

Rule 281(2)(i) exempts the following:

(i) Sterilization equipment processing mercury-free materials at medical and pharmaceutical facilities using steam, hydrogen peroxide, peracetic acid, or a combination thereof.

There is also a washer onsite, I was informed. This could potentially meet the Rule 281(2)(e) exemption, which exempts:

(e) Equipment used for washing or drying materials, where the material itself cannot become an air contaminant, if no volatile organic compounds that have a vapor pressure greater than 0.1 millimeter of mercury at standard conditions are used in the process and no oil or solid fuel is burned.

I was informed that a sonic cleaner is also onsite. I have not looked into this further, but it is not expected to require a permit to install.

I was shown EU-ETO2, which is located in an enclosed room. It was not running, at the time. I could not detect any odors, nor see any visible fugitive emissions from the sterilizer.

I was informed that it runs once per night, and the cycle takes 14 hours. I was advised that tools needing cleaning usually enter the sterilizer around 6:00 PM, and are finished being sterilized around 9:00 AM. Ms. Merrick explained the operations of the unit. She showed me an example of the print outs which are generated for each cycle. The sterilizer conducts warm cycles, I was told, because these can be completed in 14 hours, whereas a cold cycle would take 3 days.

Ms. Merrick showed me one of the ethylene oxide gas cartridges, which each contain 100 grams, or 3.52 oz. of ethylene oxide. This ensures that a consistent amount of sterilant gas is introduced into the sterilizer each time it is operated.

I was shown a number of safety features intended to protect employees from exposure to ethylene oxide, some of which were built into the sterilizer itself, and some of which were added to the room we were in. The storage cabinet for storing cartridges of ethylene oxide was itself said to have provisions for being exhausted in the event of a leaking cylinder, to protect staff inside the building. Additionally, EU-ETO2 was pointed out to have a hood for evacuating any released ethylene oxide.

After observing the EtO sterilizer itself, we observed the catalytic oxidizer control device for EU-ETO2, located on the building's second floor. The control device is also referred to as an abator. The exhaust stack for the oxidizer is double walled, I was told, so it looks large in diameter, when seen from ground level. The inside diameter is said to be no more than 8 inches.. No visible emissions could be seen from ground level. The EtO sterilizer was not operating, at this time.

Compliance with the special conditions of PTI No. 99-17 is discussed below:

PTI 99-17 SC I. EMISSIONLIMITS 1.) EtO emissions are limited to 0.088 lbs per year, based on a 12-month rolling time period, as determined at the end of each month.

INSPECTION RESULT FROM 7/24/2019 INSPECTION: COMPLIANCE. Stack testing would be needed to verify the actual emission rates. However, calculations in an attached spreadsheet, based upon amount of EtO raw material utilized, and on the 99.9% control efficiency of the thermal oxidizer, indicate that in 2018, EtO emissions were 0.00002442 tons, or 0.0488 lbs.. This is slightly over half of the permitted emission limit of 0.088 lbs/year. Annual emissions from EU-ETO2 are reported to MAERS each year.

PTI 99-17 SC II. MATERIAL LIMITS 1.) This requires that the permittee shall only use a sterilant gas consisting of 100% EtO.

INSPECTION RESULT FROM 7/24/2019 INSPECTION: COMPLIANCE. I was shown by the Vet Med Central Sterilization Operator, Ms. Merrick Murray, that the EtO content of the sterilant gas cartridges is 100% EtO, as described on the manufacturer's label.

PTI 99-17 SC II. MATERIAL LIMITS 2.) This limits the permittee to no more than 100 grams or 3.5 oz. of EtO per sterilization cycle.

Note: 100 grams is equal to 3.527 oz. The 3.5 oz. referenced in the PTI condition above is rounded down.

INSPECTION RESULT FROM 7/24/2019 INSPECTION: COMPLIANCE. I was shown the EtO cartridges they use which are filled by the manufacturer. I was informed that these dispense the same amount of EtO per cartridge, which is reported to be 3.5 oz. This ensures that the EtO usage per cycle is compliant. Upon reviewing spreadsheets for March-June 2019 (attached), which were provided by Ms. Lindsey, I noted that 3.52 oz. of EtO was the weight reported of EtO used per cycle. This is below 100 grams, which equates to 3.527 ounces. MSU is therefore in compliance with the 100 gram maximum per cycle.

PTI 99-17 SC II. MATERIAL LIMITS 3.) This limits the permittee to no more than 400 sterilization cycles in EU-ETO2 per 12-month rolling time period.

INSPECTION RESULT FROM 7/24/2019 INSPECTION: COMPLIANCE. I was told that they never perform more than one sterilization cycle per day, in EU-ETO2. Based on this information, their yearly number of sterilization cycles is not expected to exceed 400. I was informed by Ms. Lindsey that they keep records of use of EU-ETO2, and I requested a copy of recordkeeping. On 7/29/2019, I received copies of EtO usage recordkeeping, attached for reference. This includes records from March through June of 2019 showing the number of cycles per day, which did not exceed 1 per day.

PTI 99-17 SC III PROCESS /OPERATIONAL RESTRICTIONS 1.) This states that the permittee shall not operate EU-ETO2 unless a malfunction abatement plan (MAP) has been submitted within 30 days of the permit issuance date, and is implemented and maintained. (The issuance date was 8/22/2017, with a supplemental revision date of 9/28/2017).

INSPECTION RESULT FROM 7/24/2019 INSPECTION: COMPLIANCE: I was unable to find the required MAP for EU-ETO2 in AQD's files. On 7/25, I left a voice mail for Ms. Lindsey at MSU to request documentation if the MAP was ever submitted to AQD pursuant to PTI No. 99-17. On 7/26 Ms. Lindsey sent an email with a MAP for EU-ETO2, dated 10/2017, please see attached. It is possible this plan may have been submitted to previous AQD staff, and not made it into the AQD files. If it had not been previously submitted, the submittal on 7/26 would correct any past noncompliance.

The MAP is required to include the following:

PTI 99-17 SC III PROCESS /OPERATIONAL RESTRICTIONS 1.) a. A complete preventative maintenance program, including identification of the supervisory personnel responsible for overseeing the inspection, maintenance and repair of air-cleaning devices, a description of the items or conditions that shall be inspected, the frequency of the inspections or repairs, and an identification of the major replacement parts that shall be maintained in inventory for quick replacement.

INSPECTION RESULT FROM 7/24/2019 INSPECTION: COMPLIANCE. The 10/2017 MAP identifies supervisory personnel, Vet Med Central Sterilization Operator Merrick Murray and MSU Environmental Compliance Officer Thomas Grover as emergency contacts. The MAP identifies the manufacturer of the unit, 3M, as responsible examination, maintenance, and repairs. Items or conditions to be inspected are identified as computer programs, main power, hood flow sensor, user interruption sensor, cold temperature sensor, door sensor, gas sensor, chamber leak test, moisture injection, and service switches.

PTI 99-17 SC III PROCESS /OPERATIONAL RESTRICTIONS 1.) b. An identification of the source and air-cleaning device operating variables that shall be monitored to detect a malfunction or failure, the normal operating range of these variables, and a description of the method of monitoring or surveillance procedures.

INSPECTION RESULT FROM 7/24/2019 INSPECTION: COMPLIANCE. The source and air cleaning device operating variables which are identified in the plan to be monitored include a temperature monitor for the the catalytic oxidizer, and a temperatuire chart recorder. The normal operating range of the oxidizer is reported to be 290 to 500 degrees F. The MAP states that if the oxidizer is operating at less than 286 degrees F, a light for the "abator" will come on in the sterilizer room, and the sterilization cycle will not continue. The MAP states that 3M would be called in for repairs, at that point.

PTI 99-17 SC III PROCESS /OPERATIONAL RESTRICTIONS 1.) c. A description of the corrective procedures or operational changes that shall be taken in the event of a malfunction or failure to achieve compliance with the applicable emission limits.

INSPECTION RESULT FROM 7/24/2019 INSPECTION: COMPLIANCE. The MAP indicates that if sterilizer or the thermal oxidizer are not operating properly, "the machine will go into shutdown mode. It will not allow a sterilization cycle to occur if all safety and temperature parameters are not met. In this case, employees evacuate the area, and call 3M for service to the machine." A provision is also identified for loss of power, in which case it states the EtO unit will shut down and enter into a locked mode, until the power is restored. It is stated that any sterilization cycle will then continue.

PTI 99-17 SC IV DESIGN/EQUIPMENT PARAMETERS 1.) This requires the permittee to not operate EU-ETO2 unless each respective closed loop recirculating-fluid vacuum pump, air ejector system, or other method of drawing a vacuum and evacuating the sterilizer chamber and which prevents the discharge of any EtO to a wastewater stream is installed, maintained, and operated in a satisfactory manner on EU-ETO2.

INSPECTION RESULT FROM 7/24/2019 INSPECTION: COMPLIANCE. I was informed that multiple fail-safes were built into this system, including alarm systems and emergency evacuation hood, and the ability to evacuate the chamber of the sterilizer.

PTI 99-17 SC IV DESIGN/EQUIPMENT PARAMETERS 2.) This requires the permittee to not operate EU-ETO2 unless the catalytic oxidizer is installed, maintained and operated in a satisfactory manner. Satisfactory operation of the catalytic oxidizer includes a minimum EtO control efficiency of 99.9 percent

(by weight), a minimum catalyst bed outlet temperature of 290 degrees F, and a maximum space velocity of 6732 inverse hours.

INSPECTION RESULT FROM 7/24/2019 INSPECTION: COMPLIANCE. I was advised that maintenance is is performed every 6 months, and maintenance records are kept.

PTI 99-17 SC IV DESIGN/EQUIPMENT PARAMETERS 3.) This requires the permittee to install, calibrate, maintain, and operate in a satisfactory manner a temperature monitoring device to continuously monitor and record the outlet temperature of the catalytic oxidizer catalyst bed, during operation of EU-ETO2.

INSPECTION RESULT FROM 7/24/2019 INSPECTION: Based on the attached circular chart recordings from the Honeywell monitoring system, the monitoring device appeared to be installed and operating properly.

PTI 99-17 SC V. TESTING/SAMPLING

NA

PTI 99-17 SC VI. MONITORING/RECORDKEEPING 1.) This requires the permittee to complete all required calculations in a format acceptable to the AQD District Supervisor by the 15th day of the calendar month, for the previous calendar month, unless otherwise specified in any monitoring/recordkeeping special condition.

INSPECTION RESULT FROM 7/24/2019 INSPECTION: COMPLIANCE. Records of emission calculations are kept in an acceptable format. Please see attached records for March 2019, and for 12-month rolling emissions, dating back to January 2017.

PTI 99-17 SC VI. MONITORING/RECORDKEEPING 2.) This requires the permitee to monitor and record the outlet temperature of the catalytic oxidizer catalyst bed on a continuous basis during operation of EU-ETO2. The permittee is to keep all records on file and make them available to AQD upon request.

INSPECTION RESULT FROM 7/24/2019 INSPECTION: COMPLIANCE. During the inspection, I was shown that a Honeywell data recording unit tracks outlet temperature of the catalyst bed on a continuous basis. I was also shown that the circular paper records are stored near the oxidizer itself. Per my request, Ms. Lindsey photographed a recent example of the circular charts and emailed it to me. AQD subsequently requested copies of the circular chart from 2019 year to date (YTD), which Ms. Lindsey sent.

PTI 99-17 SC VI. MONITORING/RECORDKEEPING 3.) The permittee is required to keep the following information for EU-ETO2:

a. The amount of EtO used per cycle.

INSPECTION RESULT FROM 7/24/2019 INSPECTION: COMPLIANCE. The amount of EtO used per cycle is being recorded. Please see attached record for March 2019. Use was 3.52 oz. per cycle, equivalent to 100 grams, which is the limit in the ROP.

b. The number of cycles processed per calendar month and 12-month rolling time period.

INSPECTION RESULT FROM 7/24/2019 INSPECTION: COMPLIANCE. The attached records for the month of March 2019 and for 2017 through 2019 show the number of cycles processed per month and per 12-month rolling time period, going back to January 2017.

c. EtO mass emission calculations determining the monthly emission rate in pounds per calendar month.

INSPECTION RESULT FROM 7/24/2019 INSPECTION: COMPLIANCE. The attached records show monthly EtO emissions as far back as January 2017.

d. EtO mass emission calculations determining the annual emission rate in pounds per 12-month rolling time period as determined at the end of each calendar month.

INSPECTION RESULT FROM 7/24/2019 INSPECTION: COMPLIANCE. The attached records show 12-month rolling EtO emission calculations as far back as January 2017. Emissions were well under the permitted limit.

PTI 99-17 SC VII. REPORTING 1.) The permittee is required , within 30 days after completion of the installation, construction, reconstruction, relocation, or modification authorized by this PTI to notify the AQD District Supervisor in writing, of the completion of this activity. Rule 201(7) is the underlying applicable requirement.

INSPECTION RESULT FROM 7/24/2019 INSPECTION: UNKNOWN.. AQD hard copy files do not contain a record of AQD having been notified upon completion of installation. AQD will ask MSU to check their records to see if information may have been emailed to AQD's Nathan Hude, in 2017, but not made it into the hard copy file.

PTI 99-17 SC VIII VENT RESTRICTIONS 1.) The exhaust gases from the stack SV-ETO are required to be discharged unobstructed vertically upward to the ambient air, from a stack with a maximum stack diameter of 8 inches, and a minimum height above ground of 44 feet.

INSPECTION RESULT FROM 7/24/2019 INSPECTION: COMPLIANCE. The catalytic oxidizer stack was double walled, I was told, because of the heat from the oxidizer, and this was said to result in a thicker appearing stack. MSU's MAP for EU-ETO2 lists the stack height as 44 feet, and the inner diameter as 8 inches maximum. From ground level, it was hard for me to estimate the stack height, but I was assured that the stack height was measured, pursuant to N. Hude's 2017 inspection, and found to be 44 feet in height.

PTI 99-17 SC IX. OTHER REQUIREMENTS 1.) The permmittee is prohibited from operating EU-ETO2 and the previous ETO sterilizer, EU-ETO simultaneously.

INSPECTION RESULT FROM 7/24/2019 INSPECTION: COMPLIANCE. I was advised that EU-ETO was removed from the site, and EU-ETO2 was installed where it had been located.

FG-WSF

The Waste Storage Facility consolidates and stores waste from the laboratories throughout campus. During the consolidation process, waste is consolidated in laboratory hoods from small vessels into either 5 gallon carboys or 55 gallon drums dependent on the waste type. The laboratory hoods are not in constant use or constantly operating; consolidation times are tracked in minutes.

On 3/22/2019, AQD inspected the Waste Storage Facility. I detected no odors outside of the WSF building. Intern S. Lott and I were introduced to operators Bryan and Stephanie. It is my understanding that the materials handled here are aqueous-based chemicals with some VOCs. I was informed that they do not mix incompatible chemicals. I was advised that this facility is permitted under the Resource Conservation and Recovery Act (RCRA), and has operated since the 1980s.

SC FG-WSF I.1. Emission Limits- none

NA.

SC FG-WSF II.1. The permittee shall not consolidate benzyl chloride, ethylene dibromide, or hexachlorobutadiene in FG-WSF.

INSPECTION RESULT FROM 3/22/2019 INSPECTION: COMPLIANCE. It is my understanding that they do not consolidate these compounds.

SC FG-WSF III.1. The permittee shall not consolidate waste in more than one FG-WSF unit at a time.

INSPECTION RESULT FROM 3/22/2019 INSPECTION: COMPLIANCE. I was told that they only consolidate waste under one hood at a time, per the ROP. I was told there are 2 drum hoods, and a single chemical hood. I was told that in the future, they may wish to revise the ROP to allow for consolidating under more than one hood at a time. Consolidation was not taking place at the time of the inspection.

SC FG-WSF III.2. The permittee shall not consolidate waste in FG-WSF for more than 300 hours per 12-month rolling time period as determined at the end of each calendar month.

INSPECTION RESULT FROM 3/22/2019 INSPECTION: COMPLIANCE. I was advised by Ms. Lindsey that as of March 2019, the hours of consolidation over a 12-month rolling time period were 137.42, well below the limit of 300 hours.

SC FG-WSF III.3. The permittee shall post, in a conspicuous place in FG-WSF, a notice stating that benzyl chloride, ethylene dibromide, or hexachlorobutadiene are not allowed to be consolidated in FG-WSF.

INSPECTION RESULT FROM 3/22/2019 INSPECTION: COMPLIANCE. In 2017, AQD's N. Hude requested verification of this requirement, and was sent photos showing that a notice of the above prohibitions was located in 3 places throughout the Waste Storage Facility.

SC FG-WSF IV. Design/Equipment Parameters- none

NA.

SC FG-WSF V. Testing/Sampling- none

NA.

SC FG-WSF VI.1. Every 12 months the permittee shall conduct an ambient air monitoring study in a manner and with instrumentation approved by the AQD Air Monitoring Unit. Upon approval of the AQD District Supervisor, the permittee may change the frequency of the ambient air monitoring. All ambient air monitoring data shall be kept on file at the facility and made available to the Department upon request.

INSPECTION RESULT FROM 3/22/2019 INSPECTION: COMPLIANCE. On 7/30/2018, Mr. Grover had written AQD to request that the required off-site ambient air sampling under the ROP be waived, based on 5 years of ambient monitoring data which showed "no elevated levels of tested emissions." A summary of this data was provided to AQD, showing that emissions detected offsite were minimal. On 8/30/2018, AQD Lansing District Supervisor (DS) Brad Myott discussed this with Mr. Grover, and it was agreed to reduce the frequency of the testing to every other year. Mr. Grover summarized this discussion in a 9/6/2018 letter.

On 5/16/2019, Ms. Mary Mello of NTH Consultants emailed B. Myott, to request a meeting. The purpose of the meeting would be to discuss ceasing the offsite air monitoring entirely for the Waste Storage Facility. B. Myott's 5/20/2019 response indicated that the monitoring condition was part of a PTI toxic emissions review, and to remove it from the ROP, MSU would need to apply for a PTI to request such action.

SC FG-WSF VI.2. The permittee shall keep, in a satisfactory manner, a log of the waste. The log will state the classification of the waste by chemical name, intake date, storage unit ID, disposal shipping date, and number of hours that waste is consolidated in FG-SWF. The log will be tracked via 12-month rolling time period, as determined at the end of each calendar month. The permittee shall keep all records on file at the facility and make them available to the Department upon request.

INSPECTION RESULT FROM 3/22/2019 INSPECTION: COMPLIANCE. Ms. Lindsey indicated that they keep this information, which comes from the waste tags from individual containers, the manifests that are used to ship wastes out, and the consolidation hours log.

SC FG-WSF VI.3. The permittee shall keep, in a satisfactory manner, a log of each constituent evaluation occurrence. The permittee shall keep all records on file at the facility and make them available to the Department upon request.

INSPECTION RESULT FROM 3/22/2019 INSPECTION: COMPLIANCE: Ms. Lindsey advised me of the following, in her response to my 9/23/2019 inquiry by email: "Yes, a constituent evaluation occurrence would be recorded if it ever occurred. This clause was put in the permit in the event that we pick up some chemical from campus and we have no idea what it is or how it will react during consolidation. The requirement is that we log what information we look up on it and how we evaluate the chemical before it's consolidated. But in reality, if we truly have an unknown chemical or anything that we are not sure how it will react when consolidated, we just don't consolidate it. We ship it out "as is" in its original container."

SC FG-WSF VI.4. The permittee shall keep, in a satisfactory manner, the waste tags for the containers that have been consolidated in FG-WSF. The permittee shall keep all records on file at the facility and make them available to the Department upon request.

INSPECTION RESULT FROM 3/22/2019 INSPECTION: COMPLIANCE. It is my understanding that this is being done.

SC FG-WSF VII.1.-3. Standard ROP Reporting conditions.

INSPECTION RESULT FROM 3/22/2019 INSPECTION: COMPLIANCE. Records are being received and reviewed as required.

SC FG-WSF VIII.1. SV-CHEM Stack unobstructed 6 inch max diameter, 18 feet minimum above ground.

INSPECTION RESULT FROM 3/22/2019 INSPECTION: COMPLIANCE. This is based on N. Hude's 2017 observation.

SC FG-WSF VIII.2. SV-CONSOL1 Stack unobstructed 12 inch max diameter, 16 feet minimum above ground.

INSPECTION RESULT FROM 3/22/2019 INSPECTION: COMPLIANCE. This is based on N. Hude's 2017 observation.

SC FG-WSF VIII.3. SV-CONSOL2 Stack unobstructed 12 inch max diameter, 16 feet minimum above ground.

INSPECTION RESULT FROM 3/22/2019 INSPECTION: COMPLIANCE. This is based on N. Hude's 2017 observation.

SC FG-WSF IX. Other Requirements- none

NA.

FG-EMERGEN≤500ZZZZ

For this flexible group, a single emission unitEU-160GEN01 was selected as representative. It is a 435 horsepower (HP) Cummins diesel generator Model: NT-855-G6 located at Biomedical Physical Sciences, at Farrel Hall. It was not operating at the time of the inspection. The unit appeared to be in good physical condition. I was informed that the genset itself was manufactured by Onan, while the engine was manufactured by Cummins.

Note: an adjacent generator, EU-160GEN02 was larger, and belonged to a different flexible group, FG-EMERGEN>500ZZZZ.EU-160GEN02 is a 1350 HP Cummins diesel generator Model: DFHC-3386842. It was not evaluated at this time. MSU has well over 50 emergency generators on campus.

SC FG-EMERGEN≤500ZZZZ I. Emission limits- none

NA.

SC FG-EMERGEN≤500ZZZZ II.1. For compression ignition RICE in FG-EMERGEN≤500ZZZZ with a site rating of more than 100 HP and a displacement of less than 30 liters per cylinder that uses diesel fuel, the permittee shall burn only diesel fuel with the maximum sulfur content of 15 ppm (0.0015 percent) by weight; and a minimum cetane index of 40, or a maximum aromatic content of 35 volume percent. Any existing diesel fuel purchased (or otherwise obtained) prior to January 1, 2015, may be used until depleted.

INSPECTION RESULT FROM 3/22/2019 INSPECTION: COMPLIANCE. Based on diesel standards today, fuel above these restrictions cannot be purchased.

SC FG-EMERGEN≤500ZZZZ III.1. The permittee shall comply with the following requirements for each RICE in FG-EMERGEN≤500ZZZZ:

a. Change oil and filter every 500 hours of operation or annually, whichever comes first;

b. Inspect all hoses and belts every 500 hours of operation or annually, whichever comes first, and replace as necessary;

c. For compression ignition, inspect air cleaner every 1,000 hours of operation or annually, whichever comes first, and replace as necessary;

d. For spark ignition, inspect spark plugs every 1,000 hours of operation or annually, whichever comes

first, and replace as necessary.

a. INSPECTION RESULT FROM 3/22/2019 INSPECTION: COMPLIANCE. I was advised that this is done. Ms. Lindsey indicated that it is usually on an annual basis, because they usually don't reach 500 hours of operation in the course of a year, for these units.
b. INSPECTION RESULT FROM 3/22/2019 INSPECTION: COMPLIANCE. I was advised that this is done. Ms. Lindsey indicated that it is usually on an annual basis, because they usually don't reach 500 hours of operation in the course of a year, for these units.
c. INSPECTION RESULT FROM 3/22/2019 INSPECTION: COMPLIANCE. The engine is a natural gas, spark ignition, thus this condition does not apply.
d. INSPECTION RESULT FROM 3/22/2019 INSPECTION: COMPLIANCE. I was advised that this is done. Ms. Lindsey indicated that it is usually on an annual basis, because they usually don't reach 500 hours of operation in the course of a year, for these units.

SC FG-EMERGEN≤500ZZZZ III.2. If a RICE in FG-EMERGEN≤500ZZZZ is operating during an emergency and it is not possible to shut down the engine in order to perform the work practice requirements in S.C. III.1, or if performing the management practice on the required schedule would otherwise pose an unacceptable risk under federal, state, or local law, the work practice can be delayed until the emergency is over or the unacceptable risk under federal, state, or local law has abated. The management practice should be performed as soon as practicable after the emergency has ended or the unacceptable risk under federal, state, or local law has abated. The permittee shall report any failure to perform the management practice required and the federal, state or local law under which the risk was deemed unacceptable.

INSPECTION RESULT FROM 3/22/2019 INSPECTION: : COMPLIANCE. No reports of failure to perform maintenance have been received. There are no known emergencies which delayed required maintenance practices.

SC FG-EMERGEN≤500ZZZZ III.3. The permittee shall demonstrate continuous compliance with the operating limitations for each RICE in FG-EMERGEN≤500ZZZZ by the following:

Any operation other than emergency operation, maintenance and testing, emergency demand response, and operation in non-emergency situations for 50 hours per year for each RICE, is prohibited;

There is no time limit on the use of emergency stationary RICE in emergency situations;

The permittee may operate each RICE up to 100 hours per calendar year for the purpose of:

Maintenance checks and readiness testing, provided that the tests are recommended by Federal, State or local government, the manufacturer, the vendor, the regional transmission organization or equivalent balancing authority and transmission operator, or the insurance company associated with the engine. The owner or operator may petition the Administrator for approval of additional hours to be used for maintenance checks and readiness testing, but a petition is not required if the owner or operator maintains records indicating that federal, state, or local standards require maintenance and testing of emergency RICE beyond 100 hours per calendar year.

Each RICE may operate up to 50 hours per calendar year in non-emergency situations. The 50 hours of operation in non-emergency situations are counted as part of the 100 hours per calendar year for maintenance and testing and emergency demand response provided in paragraph (f)(2) of this section. The 50 hours per year for non-emergency situations cannot be used for peak shaving or non-emergency demand response, or to generate income for a facility to supply power to an electric grid or otherwise supply power as part of a financial arrangement with another entity.

INSPECTION RESULT: FROM 3/22/2019 INSPECTION: COMPLIANCE. I was advised by Ms. Lindsey that all

operating limitations are being followed.

SC FG-EMERGEN≤500ZZZZ III.4. Each RICE in FG-EMERGEN≤500ZZZZ shall be maintained and operated per the manufacturer's emission related written instructions or develop a maintenance plan which must provide for the maintenance and operation of the engine in a manner consistent with good air pollution control practices for minimizing emissions.

INSPECTION RESULT FROM 3/22/2019 INSPECTION: COMPLIANCE. I was advised by Ms. Lindsey that they are following manufacturer's instructions.

SC FG-EMERGEN≤500ZZZZ III.5. The permittee shall minimize the startup time of each RICE in FG-EMERGEN≤500ZZZZ to a period needed for appropriate and safe loading of the engine, not to exceed 30 minutes. The permittee shall also minimize the time spent at idle during startup.

INSPECTION RESULT FROM 3/22/2019 INSPECTION: COMPLIANCE. I was advised by Ms. Lindsey that they minimize start-up and idle time.

SC FG-EMERGEN≤500ZZZZ III.6. Each engine under FG-EMERGEN≤500ZZZZ must be in compliance at all times with the operating and other requirements that apply.

INSPECTION RESULT FROM 3/22/2019 INSPECTION: COMPLIANCE. Ms. Lindsey advised that the engine is in compliance with all applicable requirements.

SC FG-EMERGEN≤500ZZZZ III.7. At all times, the permittee must operate and maintain any affected source, including associated air pollution control equipment and monitoring equipment, in a manner consistent with safety and good air pollution control practices for minimizing emissions. The general duty to minimize emissions does not require you to make any further efforts to reduce emissions if levels required by this standard have been achieved. Determination of whether such operation and maintenance procedures are being used will be based on information available to the Administrator which may include, but is not limited to, monitoring results, review of operation and maintenance procedures, review of operation and maintenance records, and inspection of the source.

INSPECTION RESULT FROM 3/22/2019 INSPECTION: COMPLIANCE. Ms. Lindsey advised that the engine is operated to minimize emissions.

SC FG-EMERGEN≤500ZZZZ IV.1. The permittee shall equip and maintain each RICE in FG-EMERGEN≤500ZZZZ with a non-resettable hour meter to track the number of hours of operation.

INSPECTION RESULT FROM 3/22/2019 INSPECTION: COMPLIANCE. A non-resettable meter is Installed as required, I was advised.

SC FG-EMERGEN≤500ZZZZ V.1. The permittee has the option of utilizing an oil analysis program in order to extend the specified oil change requirement as specified in SC III.1(a). The oil analysis must be performed at the same frequency specified for changing the oil in SC III.1(a). The analyzing program must analyze the Total Acid Number (spark ignition), Total Base Number (compression ignition), viscosity, and percent water content. The condemning limits for these parameters are as follows:

a. For spark ignition, Total Acid Number (spark ignition) increases by more than 3.0 milligrams of potassium hydroxide (KOH) per gram from Total Acid Number of the oil when new;

b. For compression ignition, Total Base Number (compression ignition) is less than 30 percent of the Total Base Number of the oil when new;

c. Viscosity of the oil has changed by more than 20 percent from the viscosity of the oil when new; or

d. Percent water content (by volume) is greater than 0.5.

If none of the condemning limits are exceeded, the permittee is not required to change the oil. If any of the limits are exceeded, the permittee must change the oil within 2 business days of receiving the results of the analysis; if the engine is not in operation when the results of the analysis are received, the permittee must change the oil within 2 business days of receiving results or before commencing operation, whichever is later.

INSPECTION RESULT FROM 3/22/2019 INSPECTION : COMPLIANCE. This condition does not apply, as MSU continues to change the oil annually.

SC FG-EMERGEN≤500ZZZZ VI.1. The permittee shall keep the following records in a satisfactory manner for each engine in FG-EMERGEN≤500ZZZZ:

a. Records to demonstrate continuous compliance with operating limitations in SC III.1.

b. Records of all required maintenance performed on the air pollution control and monitoring equipment (if any).

c. Records of the occurrence and duration of each malfunction of operation (i.e., process equipment) or of the air pollution control and monitoring equipment if any.

d. Records of actions taken during periods of malfunction to minimize emissions, including corrective actions to restore malfunctioning process and air pollution control and monitoring equipment if any to its normal or usual manner of operation.

e. Records of the maintenance conducted in order to demonstrate that the stationary RICE and after-treatment control device (if any) were operated and maintained according to the manufacturer's emission-related operation and maintenance instructions, or operated and maintained according to the developed maintenance plan.

f. Records of hours of operation recorded through the non-resettable hour meter. The permittee shall document how many hours were spent during emergency operation; including what classified the operation as emergency and how many hours were spent during non-emergency operation. If the engines are used for demand response operation, or where there is a deviation of voltage or frequency of 5 percent or greater below standard voltage or frequency, or to supply power as part of a financial arrangement with another entity, the permittee must keep records of the notification of the emergency situation, and the date, start time, and end time of engine operation for these purposes.

g. If using the oil analysis program identified in SC V. 1., the permittee must keep records of the parameters that are analyzed, , the results of the analysis, and the oil changes for each engine. The analysis program must be part of the maintenance plan for each engine.

INSPECTION RESULT: FROM 3/22/2019 INSPECTION: COMPLIANCE. Ms. Lindsey advised that these records are maintained in their IPF Department. My time did not allow for review of these records, during and after this inspection.

SC VFG-EMERGEN≤500ZZZZ II.1.-3. Standard ROP Reporting conditions.

INSPECTION RESULT FROM 3/22/2019 INSPECTION: COMPLIANCE. Records are being received and reviewed as required, in the form of annual and semi-annual ROP certifications.

SC FG-EMERGEN≤500ZZZZ VIII. Stack/Vent Restrictions- none

NA.

SC FG-EMERGEN≤500ZZZZ IX.1. The permittee shall comply with all applicable provisions of the National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines, as specified in 40 CFR Part 63, Subpart A and Subpart ZZZZ.

INSPECTION RESULT FROM 3/22/2019 INSPECTION: COMPLIANCE. It is my understanding that MSU is complying with the NESHAP Subparts A and ZZZZ.

MSU ROP, SECTION 2 EMISSION UNITS AND FLEXIBLE GROUPS:

On 3/28/2019, I met DEQ (now EGLE) Student Interns Mr. Steven Lott and Mr. Zhaoyou "Scott" Zhang at the MSU Environmental Offices on Collins Road at 8:21 AM. We then drove to MSU's TB Simon Power Plant. Upon arrival at 8:57 AM, I noted that there were no visible emissions from the exhaust stacks, and no odors onsite. Weather conditions were partly sunny and 49 degrees F, with winds out of the west southwest at 10-15 miles per hour.

The power plant is currently burning natural gas, with the option to burn diesel fuel as backup. Coal-firing of the plant ceased years ago.

We signed in, and met with Mr. Tom Grover, and also with the following MSU staff from TB Simon: Ms. Sherri Jett,,Director of Utilities; Ms. Amanda Groll, Utilities and Environmental Analyst from MSU's Power and Water Department; and Mr. Rick Johnson, P.E., Electrical Engineer from MSU's Power and Water Department.

We were advised the plant provides power for MSU, although at night MSU may turn down the plant to purchase cheaper electrical power. We were informed that the plant provides all of the steam on campus for heating, cooling, and research.

PTI application No. 139-18 was undergoing New Source Review as of the inspection date (3/28/2019). It would allow for a new package steam boiler, and a RICE plant. We were told that the future RICE plant would have a 3-minute response time for the need for electricity, and would supplement MSU's solar power collecting arrays, during cloudy weather, when the amount of megawatts (M) generated by solar power could suddenly drop.

I inquired about physical changes to TB Simon, since coal was phased out around 1/31/2017. I was told that for EU-UNIT1 and EU-UNIT2, baghouses were removed from the flue gas stream. I was told that EU-UNIT3 still has an electrostatic precipitator, or ESP, which is turned off. Without the use of coal as fuel, I was advised they no longer have SO2 limits at TB Simon.

As part of a discussion on how the TB Simon Power Plant is regulated under the ROP, we discussed MSU moving from continuous emission monitoring systems (CEMS) to predictive emissions monitoring systems (PEMS). Right now, MSU has both CEMS and PEMS, and is awaiting EPA approval for use of PEMS, as I understand it. Relative Accuracy test Audits (RATAs) are required for CEMS and PEMS. I was advised that MSU's RATAs are done in February, with the latest one being in February 2019.

Below are the inspection results with each ROP special condition:

EU-UNIT3 (using PTI 75-14C)

Emission unit description: Dry bottom wall-fired natural gas fired boiler capable of generating 350,000 lb/hr of steam. The boiler can be used to generate heating steam for the university and for the firing of a steam turbine to produce electricity for the university. This boiler is equipped with overfire air.

Pollution Control equipment: Low-NOx burners.

Unit 3 was not operating today, so there was no current data from the CEMS or PEMS systems. I have been advised that, like Unit 4, it has both systems, but will go to PEMS only, upon EPA approval of PEMS.

SC EU-UNIT3 I.1. NOx limit 0.20 lbs/MMBtu

INSPECTION RESULT FROM 3/28/2019 INSPECTION: COMPLIANCE Unit 3 was offline (not operating), at the time of today's inspection. No excess emissions were reported during the 1st Quarter 2019 Excess Emissions Report for EU-UNIT3, as documented in MACES.

SC EU-UNIT3 II.1. The permittee shall only combust pipeline quality natural gas fuel in EU-UNIT3.

INSPECTION RESULT FROM 3/28/2019 INSPECTION: COMPLIANCE.. Natural gas is the only option for this device as no coal or biomass is on site.

SC EU-UNIT3 IV.1. The permittee shall calibrate, maintain, and operate, in a satisfactory manner, devices to monitor and record the NOx and CO2 or O2 emissions from EU-UNIT3, on a continuous basis and according to the procedures outlined in Appendix 3.

INSPECTION RESULT FROM 3/28/2019 INSPECTION: COMPLIANCE. We were told that the CEMS/PEMS are calibrated daily. EU-UNIT3 was offline today, and the CO2 analyzer was being worked on. We observed this, with a physical check of the CEMS room. Downtime, if any, of monitors is required to be reported. No monitor downtime for EU-UNIT3 was reported during the 1st Quarter 2019 Excess Emissions Report, as documented in MACES.

SC EU-UNIT3 IV.2. The maximum design heat input capacity for EU-UNIT3, shall not exceed 460 mmBtu per hour, based on the higher heating value (HHV) of the fuel.

INSPECTION RESULT: FROM 3/28/2019 INSPECTION: COMPLIANCE. Permit file information identifies the burner size as "a maximum of 460 MMBtu". On 6/22/17 Bob Ellerhorst had provided AQD's N. Hude a document stating that the unit had 4 burners rated at 115 MMBtu each for a total of 460 MMBtu using a heating value of 1050 btu/scf.

SC EU-UNIT3 VI.1. The permittee shall continuously monitor and record, in a satisfactory manner, the NOx and CO2 or O2 emissions and flow from EU-UNIT3. The permittee shall operate the Continuous Emission Monitoring System (CEMS) (or Predictive Emissions Monitoring Systems (PEMS)) to meet the timelines, requirements and reporting detailed in Appendix 3 and shall use the CEMS (or PEMS) data for

determining compliance with SC I.1

INSPECTION RESULT FROM 3/28/2019 INSPECTION: COMPLIANCE. EU-UNIT3 was offline today, and the CO2 analyzer was being worked on. We observed this, with a physical check of the CEMS room. Because Unit 3 was offline, no NOx, CO2, or O2 data was available. MSU does monitor and record emissions from EU-UNIT3. Monitor downtime, if any, is submitted quarterly, in Excess Emissions Reports. No monitor downtime was reported for EU-UNIT3 during the 1st Quarter of 2019, as documented in MACES, under Reports Received , and under Excess Emissions Reports, then under Quality Assurance.

SC EU-UNIT3 VI.2. Records of all measurements including continuous monitoring system, monitoring device, and performance testing measurements; all continuous monitoring systems' performance evaluations; all continuous monitoring system or monitoring device calibration checks; and records of adjustments and maintenance performed on these systems or devices.

INSPECTION RESULT FROM 3/28/2019 INSPECTION. COMPLIANCE. It is my understanding that these records are being kept.

SC EU-UNIT3 VI.3. The permittee shall monitor and maintain the following: a. Amount of natural gas fired in EU-2-EUNIT3 on a monthly basis. b. Calendar month.

INSPECTION RESULT FROM 3/28/2019 INSPECTION. COMPLIANCE. It is my understanding that these records are being kept. It is also my understanding that fuel use is documented per hour, and can be sorted into calendar month.

SC EU-UNIT3 VII.1. The permittee shall submit two copies of an excess emission report (EER) and summary report for each CEMS in an acceptable format to the AQD, quarterly and in accordance with 40 CFR 60.7(c) & (d). All reports shall be postmarked by the 30th day following each calendar quarter.

INSPECTION RESULT FROM 3/28/2019 INSPECTION: COMPLIANCE. MSU is carrying this out as required, submitting a copy to both AQD's Technical Programs Unit, and to the District Office. On 4/29/2019, the EER for the 1st Quarter of 2019 was received, covering the time period in which the TB Simon Power Plant inspection of 3/28 was conducted. The Unit 3 NOx monitor had 0 downtime and 0 excess emissions. All units had operating hours reported.

SC EU-UNIT3 VIII.1. The stack is shared with Unit 3 and Unit 4 with a required stack height of 275 feet and a maximum diameter of 156 inches.

INSPECTION RESULT: COMPLIANCE. The shared stack appeared from a visual standpoint to be of the required dimensions. Per AQD's N. Hude, in his 2017 inspection report: "This could not be confirmed onsite due to the complexity of the task, yet aviation maps identify the stack heights of 1165msl and a base elevation in the area of approx. 860msl giving a stack height of at least 275 ft. The stack for Unit3 and Unit4 are shared as the stack for Unit1 and Unit2 are shared; both are the same height."

SC EU-UNIT3 IX.1. The permittee shall meet the monitoring, recordkeeping, and reporting requirements of the NOx SIP Call during the ozone season (May 1 through September 30)

INSPECTION RESULT FROM 3/28/2019 INSPECTION: COMPLIANCE. It appears MSU is compliant with this

condition which requires the installation of a device to measure NOx mass(96.70(a)(1)), installation of a device to monitor heat input (96.70(a)(2)), complete certification tests of the said devices(96.70(a)(3)), and record and report data (96.70(a)(4). Documented proof of compliance for these requirements has otherwise been covered in previous special conditions.

SC EU-UNIT3 IX.2. The permittee shall comply with all applicable provisions of the National Emission Standards for Hazardous Air Pollutants, as specified in 40 CFR Part 63, Subpart A and Subpart DDDDD, for National Emission Standards for Hazardous Air Pollutants for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters by the initial compliance date.

INSPECTION RESULT FROM 3/28/2019 INSPECTION: COMPLIANCE. Notification of compliance originally received on 2/25/2016.

SC EU-UNIT3 IX.3. The permittee shall comply with all applicable requirements of 40 CFR Part 60, Subpart D.

INSPECTION RESULT FROM 3/28/2019 INSPECTION: COMPLIANCE. The requirements are to use pipeline quality natural gas and the MMBtu emission limit.

SC EU-UNIT3 IX.4. The permittee shall comply with all applicable requirements of 40 CFR Part 75.

INSPECTION RESULT FROM 3/28/2019 INSPECTION: COMPLIANCE. The most recent RATA was conducted in February, 2019.

SC EU-UNIT3 IX.5. The permittee shall provide written notification to the Air Quality Division not more than 30 days after the completion of the project and commencement of trial operation.

INSPECTION RESULT: NON-APPLICABLE. This is carryover from a burner change out that had occurred as issued in PTI 75-14B and should not have been left in PTI 75-14C as notification was received.

EU-UNIT4

Emission unit description: Circulating fluidized bed boiler capable of firing natural gas and bituminous coal and is capable of generating 350,000 lb/hr of steam. The boiler is used to generate steam for the university and for the firing of a steam turbine to produce electricity for the university. Coal was ceased by January 31, 2017. (PTI 75-14B)

Pollution control equipment:

- Baghouse collector for particulate control (was only used when firing solid fuel)
- Selective non-catalytic reduction (SNCR) system for nitrogen oxide control
- Limestone injection for sulfur dioxide control (was only used when firing solid fuel)

EU-UNIT4 was operating, at the time of the inspection. There were no visible emissions from the shared exhaust stack with EU-UNIT3. It was explained that Unit 4 burns with a lower temperature than other boilers, with more staged combustion. It therefore produces less thermal NOx than other boilers.

We were shown the two cyclones which allow sand to circulate within Unit 4, to circulate heat. There were no fugitive emissions from the cyclones.

From the control room, instantaneous data on Unit 4 was as follows:

- NOx #MM: 0.044 lbs/MMBtu
- CO_2%: 5.7
- Steam flow: 133.7

The CEMS for Unit 4 read:

- NO: 0.200 ppm
- NO2: 0.000 ppm
- NOx: 0.201 ppm
- CO_2: 565 ppm

Compliance with the ROP special conditions:

SC EU-UNIT4 I.1. NOx Limit 0.076 lbs/MMBtu

INSPECTION RESULT FROM 3/28/2019 INSPECTION: COMPLIANCE. Operating data observed in the boiler control room during the inspection indicated an instantaneous reading of 0.044 lbs/MMBtu, below the permitted limit.

SC EU-UNIT4 I.2. NOx Limit 32.2 pph

INSPECTION RESULT: COMPLIANCE. Records for 3/28/2019 (attached) show that the highest NOx emission recorded by the CEMS for 3/28/2019 was 9.134 lbs/hr, over a 24-hour rolling average, below the permitted limit.

SC EU-UNIT4 II.2. The permittee shall only combust pipeline quality natural gas

INSPECTION RESULT: Compliance- natural gas is the only option for this device as no coal or biomass is on site.

SC EU-UNIT4 III.1. The permittee shall not operate EU-UNIT4 unless a Malfunction Abatement Plan for EU-UNIT4 and its associated control equipment has been implemented and maintained. If at any time the MAP fails to address or inadequately addresses an event that meets the characteristics of a malfunction, the permittee shall amend the MAP within 45 days after such an event occurs. The permittee shall also amend the MAP within 45 days, if new equipment is installed or upon request from the District Supervisor. The permittee shall submit the MAP and any amendments to the MAP to the AQD District Supervisor for review and approval. If the AQD does not notify the permittee within 90 days of submittal, the MAP or amended MAP shall be considered approved. Until an amended plan is approved, the permittee shall implement corrective procedures or operational changes to achieve compliance with all applicable emission limits.

INSPECTION RESULT: COMPLIANCE. An updated MAP was received by AQD, on 5/12/2017.

SC EU-UNIT4 III.2. The permittee shall calibrate, maintain, and operate continuous emission monitoring

systems (CEMS) (or Predictive Emissions Monitoring Systems (PEMS)) to monitor and record the NOx, CO2 or O2 emissions for EU-UNIT4, on a continuous basis and according to the procedures outlined:

a. The CEMS (or PEMS) shall complete a minimum of 1 cycle of operation for each successive 15-minute period.

b. The permittee shall check the zero and span calibration drifts for all CEM (or PEM) systems, at least once daily, and make the appropriate adjustments in accordance with the manufacturer's written procedure.

a. INSPECTION RESULT FROM 3/28/2019 INSPECTION: COMPLIANCE: Per AQD's N. Hude in 2017, he observed that the CEMS data submitted is in an hourly format but the Data Acquisition System (DAS) ECS 8832 is capable and does record in 1 minute intervals.
b. INSPECTION RESULT FROM 3/28/2019 INSPECTION: COMPLIANCE. It is my understanding that this is being done.

SC EU-UNIT4 VI.1. The permittee shall continuously monitor and record, in a satisfactory manner, the NOx, CO2 or O2 emissions and flow from EU-UNIT4... Where the following data is required:

a. The 24-hour rolling average NOx emission rates in terms of pounds per million BTU heat input and pounds per hour.

INSPECTION RESULT: COMPLIANCE. This is being done. Please see the attached records, which were emailed to me by Ms. Amanda Groll on 9/27/2019, pursuant to a request I made on 9/24/2019.

SC EU-UNIT4 VI.2. The permittee shall keep the following information on a monthly basis for EU-UNIT4:

a. hours of operation

INSPECTION RESULT FROM 3/28/2019 INSPECTION: COMPLIANCE. Hours of operation are documented, as confirmed by Excess Emission Reports.

SC EU-UNIT4 VI.3. The permittee shall calibrate, maintain, and operate a continuous emission monitoring system (CEMS) or Predictive Emissions Monitoring Systems (PEMS) to monitor and record the NOx, CO2 or O2 emissions:

a. 1 cycle of operation for each successive 15-minute period.

b. The permittee shall check the zero and span calibration drifts for all CEM (or PEM) systems, at least once daily

a. INSPECTION RESULT FROM 3/28/2019 INSPECTION: COMPLIANCE. We were told that the CEMS are being calibrated daily. Per AQD;s N. Hude in 2017, he observed that the CEMS data submitted is in an hourly format but the Data Acquisition System (DAS) ECS 8832 is capable and does record in 1 minute intervals.
b. INSPECTION RESULT FROM 3/28/2019 INSPECTION: COMPLIANCE. It is my understanding that this is being done.

SC EU-UNIT4 VI.4. The permittee shall keep records of all measurements including continuous monitoring system, monitoring device, and performance testing measurements; all continuous monitoring systems performance evaluations; all continuous monitoring system or monitoring device

calibration checks; and records of adjustments and maintenance performed on these systems or devices.

INSPECTION RESULT FROM 3/28/2019 INSPECTION: COMPLIANCE. It is my understanding that this is being done. :

SC EU-UNIT4 VI.5. The Permittee shall monitor and maintain daily records on the following:

a. Amount of natural gas fired in EU-UNIT4.

b. Calendar date

a. INSPECTION RESULT FROM 3/28/2019 INSPECTION: COMPLIANCE. It is my understanding that this is being done.
b. INSPECTION RESULT FROM 3/28/2019 INSPECTION: It is my understanding that this is being done.

SC EU-UNIT4 VI.6. The permittee shall keep records of the occurrence and duration of any startup, shutdown, or malfunction in the operation; any malfunction of the air pollution control equipment, or any periods during which a continuous monitoring system or monitoring device is inoperative

INSPECTION RESULT FROM 3/28/2019 INSPECTION: COMPLIANCE. It is my understanding that this is being : Compliance- This is being logged as required in hourly detail for CEMs operation and calibration.

SC EU-UNIT4 VII.1. Quarterly reporting of the "Excess Emission and Monitoring Systems Performance Report" and the "Summary Report" as specified in 40 CFR 60.7 (c) and (d) for NOx, (excess emissions shall be based on the limits identified in Section I). Due April 30 for reporting period January 1 to March 31, July 30 for reporting period April 1 to June 30, October 30 for reporting period July 1 to September 30, and January 30 for reporting period October 1 to December 31.2

INSPECTION RESULT FROM 3/28/2019 INSPECTION: COMPLIANCE. MSU is carrying this out as required. On 4/29/2019, the EER for the 1st Quarter of 2019 was received, covering the time period in which the TB Simon Power Plant inspection was conducted. It was received timely and complete. Unit 4 NOx monitor had 0 downtime and 0 excess emissions. All units had operating hours reported. TPU's David Patterson reviewed this (see MACES under Emission Measurement, then Excess Emission Reports, and I reviewed it from the district in MACES, under Reports Received.

SC EU-UNIT4 VII.2. Quarterly reporting of the "Data Assessment Report" (ie. Linearity or CGA) as set forth in Appendix F of 40 CFR 60 for the CEMS (or PEMS). Due April 30 for reporting period January 1 to March 31, July 30 for reporting period April 1 to June 30, October 30 for reporting period July 1 to September 30, and January 30 for reporting period October 1 to December 31.2

INSPECTION RESULT FROM 3/28/2019 INSPECTION: COMPLIANCE. :These reports are submitted with the required reports in SCVII.1.and appear to be in compliance after reviewing data entered by the Technical Programs Unit in MACES under "Excess Emissions Reports" then "Quality Assurance".

SC EU-UNIT4 VII.3. The permittee shall notify the AQD of any physical or operational change which may

increase the emission rate of any pollutant to which a standard applies, unless that change is specifically exempted. This notice shall be postmarked 60 days, or as soon as practical, before the change is commenced and shall include information on describing the precise nature of the change, present and proposed emission control systems, productive capacity before and after the change, and the expected completion date of the change.

INSPECTION RESULT FROM 3/28/2019 INSPECTION: COMPLIANCE. Any changes would be handled through permit changes.

SC EU-UNIT4 VII.4. No less than 30 days prior to testing, the permittee shall submit a complete test plan to the AQD. The AQD must approve the final plan prior to testing. The permittee shall notify the District Supervisor or the Technical Programs Unit no less than 7 days prior to the anticipated test date. Verification of emission rates includes the submittal of a complete report of the test results to the AQD within 60 days following the last date of the test.

INSPECTION RESULT FROM 3/28/2019 INSPECTION: COMPLIANCE. :No testing has been required since the 2017 AQD inspection.

SC EU-UNIT4 VII.5. Each calendar quarter, the permittee shall perform the Quality Assurance Procedures of the CEMS/PEMS set forth in 40 CFR Part 75, Subpart C. Within 30 days following the end of each calendar quarter, the permittee shall submit the results to the AQD.

INSPECTION RESULT FROM 3/28/2019 INSPECTION: COMPLIANCE. These reports are submitted to AQD with the required reports in SCVII.1. AQD's Technical Programs Unit reviewed the data and entered "Compliance" in MACES. This can be seen under "Excess Emissions Reports" then "Quality Assurance".

SC EU-UNIT4 VIII.1. The stack is shared with Unit 3 and Unit 4 with a required stack height of 275 feet and a maximum diameter of 156 inches.

INSPECTION RESULT FROM 3/28/2019 INSPECTION: COMPLIANCE. Per N. Hude's 2017 inspection, aviation maps identify the stack heights of 1165msl and a base elevation in the area of approx. 860msl giving a stack height of at least 275 ft. The stack for Unit3 and Unit4 are shared as the stack for Unit1 and Unit2 are shared; both are the same height.

SC EU-UNIT4 IX.1. The permittee shall meet the monitoring, recordkeeping, and reporting requirements of the NOx SIP Call during the ozone season (May 1 through September 30).

INSPECTION RESULT FROM 3/28/2019 INSPECTION: COMPLIANCE. It appears MSU is compliant with this condition which requires the installation of a device to measure NOx mass (96.70(a)(1)), installation of a device to monitor heat input (96.70(a)(2)), complete certification tests of the said devices(96.70(a)(3)), and record and report data (96.70(a)(4). Documented proof of compliance for these requirements has otherwise been covered in previous special conditions.

SC EU-UNIT4 IX.2. The permittee shall comply with all applicable provisions of the National Emission Standards for Hazardous Air Pollutants, as specified in 40 CFR Part 63, Subpart A and Subpart DDDDD, for National Emission Standards for Hazardous Air Pollutants for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters by the extend compliance date of January 31, 2017.

INSPECTION RESULT FROM 3/28/2019 INSPECTION: COMPLIANCE. MSU is believed to be in compliance .

SC EU-UNIT4 IX.3. The permittee shall comply with all applicable requirements of 40 CFR, Part 60 Subpart Db.

INSPECTION RESULT FROM 3/28/2019 INSPECTION: COMPLIANCE. MSU is meeting the requirements of this regulation as a natural gas fired steam generating unit greater than 100MMBtu. The requirements are NOx emissions which are less restrictive than the permit limit.

SC EU-UNIT4 IX.4. The permittee shall comply with all applicable requirements of 40 CFR, Part 75.

INSPECTION RESULT FROM 3/28/2019 INSPECTION: COMPLIANCE. these reports are submitted with the required reports in SCVII.1.and appear to be in compliance after reviewing data entered by the Technical Programs Unit in MACES under "Excess Emissions Reports" then "Quality Assurance". The most recent RATA for this unit allowed for annual relative accuracy testing as allowed by Part 75.

EU-UNIT5

Emission unit description: Heat recovery steam generator (HRSG) with natural gas fired duct burner capable of 80 MMBTU/hr heat input for EU-UNIT6. (PTI 13-04)

Pollution control equipment: NA.

SC EU-UNIT5 VI. The permittee shall record and maintain records of the amount of fuel combusted in EU-UNIT5 during each calendar month. All records shall be kept on file for a period of at least five years and made available to the Department upon request

INSPECTION RESULT FROM 3/28/2019 INSPECTION: COMPLIANCE. It is my understanding that this is being done.

SC EU-UNIT5 IX.1. The permittee shall comply with all applicable requirements of the New Source Performance Standards for Small Industrial –Commercial-Institutional Steam Generating Units as specified in 40 CFR Part 60, Subpart Dc.

INSPECTION RESULT FROM 3/28/2019 INSPECTION: COMPLIANCE. This unit is subject due to an install date of 2004 (after 1989) and having a heat input of 80MMBtu (>10MMBtu <100MMBtu) as a heat recovery steam generating unit. Sulfur dioxide requirements of this part are being met by fuel monitoring as allowed in 60.48c(e)(11) and 60.48c(f)(4).

EU-UNIT6

TEmission unit description: 139 MMBtu/hr natural gas-fired turbine with dry-low NOx burner (considered a lean pre-mix turbine) and HRSG (EU-UNIT5), capable of generating 115,000 lbs of steam/hour and 12.0 mW. The heat rate based on lower heating value of the fuel for EU-UNIT6 is 10.6 kJ/Wh.

Pollution control equipment: Low-NOx burner.

SC EU-UNIT6 I.1. NOx limit, 204ppm@15% O2

INSPECTION RESULT: FROM 3/28/2019 INSPECTION: COMPLIANCE. Records for 3/28/2019 (attached) indicate that the highest ppm value on 3/28/2019 was 21.214 ppm, far below the permitted limit.

SC EU-UNIT6 II.1. The permittee shall only fire natural gas containing 20.0 grains or less of total sulfur per 100 standard cubic feet.

INSPECTION RESULT FROM 3/28/2019 INSPECTION: COMPLIANCE. The turbine is only able to fire natural gas. The natural gas in use is provide by Consumers Energy and meets the requirement.

SC EU-UNIT6 IV.1. The permittee shall equip and maintain EU-UNIT6 with a dry low-NOx combustor.

INSPECTION RESULT: FROM 3/28/2019 INSPECTION: COMPLIANCE. Information in permit files shows information regarding the low NOx combustor.

SC EU-UNIT6 IV.2. The permittee shall install, calibrate, maintain and operate in a satisfactory manner a device to monitor and record the NOx emissions for EU-UNIT6 on a continuous basis.

INSPECTION RESULT FROM 3/28/2019 INSPECTION: COMPLIANCE. This is being done. Please see attached records. Additionally, the facility submits excess emissions reports on a quarterly basis.

SC EU-UNIT6 IV.3. The permittee shall install, calibrate, maintain and operate in a satisfactory manner a device to monitor and record the CO emissions for EU-UNIT6 on a continuous basis.

INSPECTION RESULT FROM 3/28/2019 INSPECTION: COMPLIANCE. This is being done. Please see attached records. The facility submits excess emissions reports on a quarterly basis.

SC EU-UNIT6 VI.1 The permittee shall monitor the fuel sulfur content via a current, valid purchase contract, tariff sheet or transportation contract for the gaseous fuel, specifying that the maximum total sulfur content of the fuel is 20.0 grains/100 scf or less.

INSPECTION RESULT FOR 3/28/2019 INSPECTION: COMPLIANCE. The turbine is only able to fire natural gas. The natural gas in use is provide by Consumers Energy and meets the requirement.

SC EU-UNIT6 VI.2.The permittee shall keep, in a satisfactory manner, monthly NOx records for EU-UNIT6. All records shall be kept on file for a period of at least five years and made available to the Department upon request.

INSPECTION RESULT FROM 3/28/2019: COMPLIANCE. Please see the attached records, which show monthly NOx emissions in tons.

SC EU-UNIT6 VI.3.The permittee shall keep, in a satisfactory manner, monthly CO records for EU-UNIT6. All records shall be kept on file for a period of at least five years and made available to the Department upon request.

INSPECTION RESULT FROM 3/28/2019: COMPLIANCE. Please see the attached records, which show monthly CO records in tons.

SC EU-UNIT6 VII.1. Each calendar quarter, the permittee shall perform the Quality Assurance Procedures of the CEMS set forth in Appendix F of 40 CFR Part 60. Within 30 days following the end of each calendar quarter, the permittee shall submit the results to the AQD. This documentation can be submitted as a combined package for FG-UNITS-5/6.

INSPECTION RESULT FROM 3/28/2019 INSPECTION: COMPLIANCE. MSU is carrying this out as required. On 4/29/2019, the EER for the 1st Quarter of 2019 was submitted, covering the time period in which the TB Simon Power Plant inspection was conducted. It was received timely and complete. Unit 6 NOx monitor had 0 downtime and 0 excess emissions. Unit 6 CO monitor had 0 excess emissions. All units had operating hours reported.

SC EU-UNIT6 VII.2. In accordance with 40 CFR 60.7(c) and (d), the permittee shall submit two copies of an excess emission report (EER) and summary report in an acceptable format to the AQD, within 30 days following the end of each calendar quarter. The Summary Report shall follow the format of Figure 1 in 40 CFR 60.7(d). The EER shall include the following information:

a. A report of each exceedance above the limits specified in the conditions of FG-UNIT5/6. This includes the date, time, magnitude, cause and corrective actions of all occurrences during the reporting period.

b. A report of all periods of CEMS (or PEMS)/CERMS downtime and corrective action.

c. A report of the total operating time of FG-UNIT5/6 during the reporting period.

d. A report of any periods that the CEMS (or PEMS)/CERMS exceeds the instrument range.

e. If no exceedances or CEMS (or PEMS)/CERMS downtime occurred during the reporting period, the permittee shall report that fact.

This documentation can be submitted as a combined package for FG-UNITS-5/6

INSPECTION RESULT FROM 3/28/2019 INSPECTION: COMPLIANCE. MSU is carrying this out as required. On 4/29/2019, the EER for the 1st Quarter of 2019 was submitted, covering the time period in which the TB Simon Power Plant inspection was conducted. It was received timely and complete. Unit 6 NOx monitor had 0 downtime and 0 excess emissions. Unit 6 CO monitor had 0 excess emissions. All units had operating hours reported. This was reviewed by the Technical Program Unit's David Patterson in MACES, under "Emissions Measurement." then "Excess Emission Reports," followed by "Quality Assurance," and by me in AMCES, under "Reports Received."

SC EU-UNIT6 IX.1. The permittee shall comply with all applicable provisions of the National Emission Standards for Hazardous Air Pollutants from Stationary Combustion Turbines as specified in 40 CFR Part 63, Subparts A and YYYY, as they apply to EU-UNIT6.

INSPECTION RESULT FROM 3/28/2019 INSPECTION: COMPLIANCE. As stated by N. Hude in 2017, "Compliance-per 63.6095(d), As a new or reconstructed stationary combustion turbine that is a lean premix gas-fired stationary combustion turbine or diffusion flame gas-fired stationary combustion turbine as defined by this subpart, you must comply with the Initial Notification requirements set forth in §63.6145 but need not comply with any other requirement of this subpart until EPA takes final action to require compliance and publishes a document in the Federal Register."

SC EU-UNIT6 IX.2. The permittee shall comply with all applicable provisions of the New Source Performance Standards for Stationary Gas Turbines as specified in 40 CFR Part 60, Subpart GG, as applicable to EU-UNIT6.

INSPECTION RESULT: Compliance- this regulation requires compliance with the NOx emission limit set in SCI.1. and sulfur dioxide emissions by use of fuel that is less than 0.015% by weight at 15% O2 per 60.333(a) or by not burning fuel which contains sulfur in excess of 0.8% by weight (8000 ppmw) per 60.333(b). Monitoring is done by fuel tariff as allowed by 60.334(h)(3)(i).

EU-EMGENGINE

Emission unit description: Kohler compression ignition1528 horsepower, 1020kW, black start existing reciprocating internal combustion engine, for EU-UNIT6.

Pollution control equipment: NA.

This engine is located on the north side of the plant behind a brick wall. The data plate provides a manufacture date of 07/05, Model Number 1000REOZDB, and Serial Number 2052665. I did not examine this unit today, but the next AQD inspection of MSU can focus more on this internal combustion engine.

SC EU-EMGENGINE

III.1. The permittee may operate EU-EMGENGINE unlimited hours for emergency use. The permittee may also operate EU-EMGENGINE for no more than 100 hours per calendar year for the purpose of necessary maintenance checks and readiness testing, provided that the tests are recommended by Federal, State, or local government, the manufacturer, the vendor, or the insurance company associated with the engine. The permittee may petition the Department for approval of additional hours to be used for maintenance checks and readiness testing. A petition is not required if the owner or operator maintains records indicating that Federal, State, or local standards require maintenance and testing of emergency internal combustion engines beyond 100 hours per calendar year. EU-EMGENGINE may operate up to 50 hours per calendar year in non-emergency situations, but those 50 hours are counted towards the 100 hours per calendar year provided for maintenance and testing. The 50 hours per calendar year for non-emergency situations cannot be used for peak shaving or to generate income for a facility to supply non-emergency power as part of a financial arrangement with another entity.

INSPECTION RESULT FROM 3/28/2019 INSPECTION: COMPLIANCE. I was advised that this unit was still meeting all the requirements of the RICE MACT, also known as 40 CFR Part 63, Subpart ZZZZ. The requirement to keep the above records comes from ZZZZ. I did not examine records for this unit today, but the next AQD inspection of MSU can focus more on this internal combustion engine.

SC V EU-EMGENGINE I.1. The permittee shall keep, in a satisfactory manner, a written log of the monthly hours of operation and type of operation for EU-EMGENGINE. All records shall be kept on file for a period of at least five years and made available to the Department upon request.

INSPECTION RESULT FROM 3/28/2019 INSPECTION: COMPLIANCE. It is my understanding that this is being done. I did not examine these records today, but the next AQD inspection here can focus more on this emission unit.

SC EU-EMGENGINE IX.1. The permittee shall comply with the applicable requirements of 40 CFR Part 63

("National Emission Standard for Hazardous Air Pollutants for Source Categories"), Subparts A ("General Provisions') and ZZZZ ("National Emission Standard for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines").

INSPECTION RESULT FROM 3/28/2019 INSPECTION: COMPLIANCE. I was advised that this unit was still meeting all the requirements of the RICE MACT, also known as 40 CFR Part 63, Subpart ZZZZ. I did not examine this unit today, but the next AQD inspection of MSU can focus more on this internal combustion engine.

As an emergency, black start, compression ignition engine, the requirements for compliance are found in Table 2c 1,

a. change oil every 500hrs or annual whichever is first

b. inspect air cleaner every 1000hrs or annual whichever is first

c. inspect hoses and belts every 500hrs or annual whichever is first

INSPECTION RESULT FROM 3/28/2019 INSPECTION: COMPLIANCE. I was advised that this unit was still meeting all the requirements of the RICE MACT, also known as 40 CFR Part 63, Subpart ZZZZ. I did not examine this unit today, but the next AQD inspection of MSU can focus more on this internal combustion engine.

FG-UNIT1/2

Emission unit description: Two dry bottom wall-fired natural gas fired boilers each capable of generating 250,000 lb/hr of steam. The boilers are used to generate steam for the university and for the firing of a steam turbine to produce electricity (CHP). The boilers are equipped with overfire air. (PTI 75-14A

Pollution control equipment: Low-NOx burners.

From the control room, data on Unit 1 was viewed instantaneously, as follows:

- NOx #MM: 0.164 lbs/MMBtu
- CO_2: 7.4%
- Steam flow: 134.3 thousand lbs/hr

From the CEMS/PEMS shelter, instantaneous readings on Unit 1 were:

- NO: 0.991 ppm
- NO2: 0.009 ppm
- 1NOx: 1.012 ppm
- CO2: 726 ppm

From the control room, data on Unit 2 was viewed instantaneously, as follows:

- NOx #MM: 0.125 lbs/MMBtu
- CO_2: 7.1%
- Steam flow: 132.2 thousand lbs/hr

From the CEMS/PEMS shelter, instantaneous readings on Unit 2 were:

- NO: 0.654 ppm
- NOx: 0.03 ppm
- 1NOx: 0.657 ppm
- CO2: 709 ppm

For CEMS/PEMS, I was told that there is 1 calibration each da, and it is marked as QA, calibration, in quarterly linearity reports.

Compliance with ROP special conditions was as follows:

SC FG-UNIT1/2 II.1. The permittee shall only combust pipeline quality natural gas fuel in EU-UNIT1 and EU-UNIT2.

INSPECTION RESULT FROM 3/28/2019 INSPECTION: COMPLIANCE. natural gas is the only fuel available for this device, as no coal or biomass is on site.

SC FG-UNIT1/2 III.1. The permittee shall not operate either EU-UNIT1 or EU-UNIT2 unless a Malfunction Abatement Plan for EU-UNIT1 and EU-UNIT2, and their associated control equipment, has been implemented and is maintained for both units. If at any time the MAP fails to address or inadequately addresses an event that meets the characteristics of a malfunction, the permittee shall amend the MAP within 45 days after such an event occurs. The permittee shall also amend the MAP within 45 days, if new equipment is installed or upon request from the District Supervisor. The permittee shall submit the MAP and any amendments to the MAP to the AQD District Supervisor for review and approval. If the AQD does not notify the permittee within 90 days of submittal, the MAP or amended MAP shall be considered approved. Until an amended plan is approved, the permittee shall implement corrective procedures or operational changes to achieve compliance with all applicable emission limits.

INSPECTION RESULT FROM 3/28/2019 INSPECTION: COMPLIANCE An updated version of the MAP for Units 1, 2, and 4 was received on 7/18/17 covering the requirements.

SC FG-UNIT1/2 VI.1. The permittee shall monitor and maintain monthly records on the following:

a. Amount of natural gas fired in EU-UNIT1 and EU-UNIT2.

b. Calendar month.

The permittee shall keep the above records on file at the facility, in a satisfactory manner, and available to the Department upon request.

INSPECTION RESULT FROM 3/28/2019 INSPECTION: COMPLIANCE. It is my understanding that this is being done. Throughput of natural gas is reported in the annual MAERS report.

SC FG-UNIT1/2 VIII.1. Stack dimensions 132 inch diameter and 275 feet in height.

INSPECTION RESULT FROM 3/28/2019 INSPECTION: COMPLIANCE. The shared stack appeared to be of the required dimensions. As stated by N. Hude in his 2017 inspection report, "Compliance- This could not be confirmed onsite due to the complexity of the task, yet aviation maps identify the stack heights of 1165msl and a base elevation in the area of approx. 860msl giving a stack height of at least 275 ft. (1165 – 860 = 305). The

stack for Unit3 and Unit4 are shared as the stack for Unit1 and Unit2 are shared; both are the same height."

SC FG-UNIT1/2 IX.1. The permittee shall meet the monitoring, recordkeeping, and reporting requirements of the NOx SIP Call during the ozone season (May 1 through September 30).

INSPECTION RESULT FROM 3/28/2019 INSPECTION: COMPLIANCE. As noted by N. Hude in his 2017 inspection report, "Compliance- It appears MSU is compliant with this condition which requires the installation of a device to measure NOx mass(96.70(a)(1)), installation of a device to monitor heat input (96.70(a)(2)), complete certification tests of the said devices(96.70(a)(3)), and record and report data (96.70(a)(4). Documented proof of compliance for these requirements has otherwise been covered in previous special conditions."

SC FG-UNIT1/2 IX.2. The permittee shall comply with all applicable provisions of the National Emission Standards for Hazardous Air Pollutants, as specified in 40 CFR Part 63, Subpart A and Subpart DDDDD, for National Emission Standards for Hazardous Air Pollutants for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters by the initial compliance date.

INSPECTION RESULT FROM 3/28/2019 INSPECTION: COMPLIANCE. Initial notice of compliance was provided on 2/25/16 after conversion from solid fuel to natural gas only.

The remaining requirement is identified in paragraph 63.7540(a)(10): If your boiler or process heater has a heat input capacity of 10 million Btu per hour or greater, you must conduct an annual tune-up of the boiler or process heater to demonstrate continuous compliance as specified in paragraphs (a)(10)(i) through (vi) of this section. You must conduct the tune-up while burning the type of fuel (or fuels in case of units that routinely burn a mixture) that provided the majority of the heat input to the boiler or process heater over the 12 months prior to the tune-up. 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.

(i) As applicable, inspect the burner, and clean or replace any components of the burner as necessary (you may perform the burner inspection any time prior to the tune-up or delay the burner inspection until the next scheduled unit shutdown). Units that produce electricity for sale may delay the burner inspection until the first outage, not to exceed 36 months from the previous inspection. At units where entry into a piece of process equipment or into a storage vessel is required to complete the tune-up inspections, inspections are required only during planned entries into the storage vessel or process equipment;

(ii) Inspect the flame pattern, as applicable, and adjust the burner as necessary to optimize the flame pattern. The adjustment should be consistent with the manufacturer's specifications, if available;

(iii) Inspect the system controlling the air-to-fuel ratio, as applicable, and ensure that it is correctly calibrated and functioning properly (you may delay the inspection until the next scheduled unit shutdown). Units that produce electricity for sale may delay the inspection until the first outage, not to exceed 36 months from the previous inspection;

(iv) Optimize total emissions of CO. This optimization should be consistent with the manufacturer's specifications, if available, and with any NOX requirement to which the unit is subject;

(v) Measure the concentrations in the effluent stream of CO in parts per million, by volume, and oxygen in volume percent, before and after the adjustments are made (measurements may be either on a dry or wet basis, as long as it is the same basis before and after the adjustments are made). Measurements may be taken using a portable CO analyzer; and

(vi) Maintain on-site and submit, if requested by the Administrator, a report containing the information in

paragraphs (a)(10)(vi)(A) through (C) of this section,

(A) The concentrations of CO in the effluent stream in parts per million by volume, and oxygen in volume percent, measured at high fire or typical operating load, before and after the tune-up of the boiler or process heater;

(B) A description of any corrective actions taken as a part of the tune-up; and

(C) The type and amount of fuel used over the 12 months prior to the tune-up, but only if the unit was physically and legally capable of using more than one type of fuel during that period. Units sharing a fuel meter may estimate the fuel used by each unit.

A request for documentation of compliance with paragraph 63.7540(a)(10) was requested by N. Hude on 5/16/2017, in follow up to his 2017 inspection. Records were received on 5/17/2017, yet appeared to be for smaller boilers located at the Ag Pavilion. A clarifying email was sent on 6/9/2017.
On 6/23/2017, N. Hude received an email stating that boilers 1-4 had "Continuous oxygen trim systems" and thus the annual tune-up is actually a 5 year tune-up. He sent a follow-up email stating that this information should be added to each boilers unit description.

FG-UNIT5/6

Emission unit description: 139 MMBtu/Hr heat input natural gas fired turbine with dry low-NOx burner, heat recovery steam generator (HRSG) and a natural gas fired duct burner rated at 80 MMBTU/hr. heat input. (PTI 13-04)

Pollution control equipment: NA.

Unit 6, the natural gas-fired combustion turbine, and Unit 5, the heat recovery boiler, were operating during the inspection. The turbine was producing 10.0 MW, at 10:48 AM.

SC FG-UNIT5/6 I.1. NOx limit of 34.9 tpy on 12 month rolling average.

INSPECTION RESULT FROM 3/28/2019 INSPECTION: COMPLIANCE. The MAERS report for the 2018 operating year showed 12,753 lbs, or 6.38 tons of NOx, for the combined pair of Unit 5 and Unit 6. This is well below the permitted limit.

SC FG-UNIT5/6 I.2. CO limit of 89.9 tpy on 12 month rolling average.

INSPECTION RESULT: COMPLIANCE. The MAERS report for the 2018 operating year showed 27,182 lbs, or 13.59 tons of CO, for the combined pair of Unit 5 and Unit 6. This is well below the permitted limit.

SC FG-UNIT5/6 II.1. The permittee shall only fire natural gas containing 20.0 grains or less of total sulfur per 100 standard cubic feet.

INSPECTION RESULT FROM 3/28/2019 INSPECTION: COMPLIANCE. The turbine and recovery unit are only able to fire natural gas. The natural gas in use is provided by Consumers Energy and meets the requirement.

SC FG-UNIT5/6 IV.1. The permittee shall equip and maintain FG-UNITS5/6 with a dry low-NOx combustor.

INSPECTION RESULT FROM 3/28/2019 INSPECTION: COMPLIANCE. Permit files contain information on the low NOx combustor.

SC FG-UNIT5/6 IV.2. The permittee shall install, calibrate, maintain and operate in a satisfactory manner a device to monitor and record the NOx emissions for FG-UNITS5/6 on a continuous basis.

INSPECTION RESULT FROM 3/28/2019: COMPLIANCE. This is being done.

SC FG-UNIT5/6 IV.3. The permittee shall install, calibrate, maintain and operate in a satisfactory manner a device to monitor and record the CO emissions for FG-UNITS5/6 on a continuous basis

INSPECTION RESULT FROM 3/28/2019: COMPLIANCE. This is being done.

SC FG-UNIT5/6 IV. 1. The permittee shall keep, in a satisfactory manner, monthly and previous 12 month NOx records for FG-UNITS5/6. All records shall be kept on file for a period of at least five years and made available to the Department upon request.

INSPECTION RESULT FROM 3/28/2019 INSPECTION: COMPLIANCE. It is my understanding that this is being done.

SC FG-UNIT5/6 IV.2. The permittee shall keep, in a satisfactory manner, monthly and previous 12 month CO records for FG-UNITS5/6. All records shall be kept on file for a period of at least five years and made available to the Department upon request.

INSPECTION RESULT FROM 3/28/2019 INSPECTION: COMPLIANCE. It is my understanding that this is being done.

SC FG-UNIT5/6 VII.1. Each calendar quarter, the permittee shall perform the Quality Assurance Procedures of the CEMS set forth in Appendix F of 40 CFR Part 60. Within 30 days following the end of each calendar quarter, the permittee shall submit the results to the AQD.

INSPECTION RESULT FROM 3/28/2019 INSPECTION: COMPLIANCE. MSU is carrying this out as required. On 4/29/2019, the EER for the 1st Quarter of 2019 was submitted, covering the time period in which the TB Simon Power Plant inspection was conducted. It was received timely and complete. Unit 6 NOx monitor had 0 downtime and 0 excess emissions. Unit 6 CO monitor had 0 excess emissions. All units had operating hours reported.

SC FG-UNIT5/6 VII.2. In accordance with 40 CFR 60.7(c) and (d), the permittee shall submit two copies of an excess emission report (EER) and summary report in an acceptable format to the AQD, within 30 days following the end of each calendar quarter. The Summary Report shall follow the format of Figure 1 in 40 CFR 60.7(d). The EER shall include the following information:

a. A report of each exceedance above the limits specified in the conditions of FG-UNIT5/6. This includes the date, time, magnitude, cause and corrective actions of all occurrences during the reporting period.

b. A report of all periods of CEMS (or PEMS)/CERMS downtime and corrective action.

c. A report of the total operating time of FG-UNIT5/6 during the reporting period.

d. A report of any periods that the CEMS (or PEMS)/CERMS exceeds the instrument range.

e. If no exceedances or CEMS (or PEMS)/CERMS downtime occurred during the reporting period, the permittee shall report that fact.

INSPECTION RESULT FROM 3/28/2019 INSPECTION: COMPLIANCE. MSU is carrying this out as required. On 4/29/2019, the EER for the 1st Quarter of 2019 was submitted, covering the time period in which the TB Simon Power Plant inspection was conducted. It was received timely and complete. Unit 6 NOx monitor had 0 downtime and 0 excess emissions. Unit 6 CO monitor had 0 excess emissions. All units had operating hours reported.

SC FG-UNIT5/6 VIII.1. Stack dimensions maximum 72 inch diameter and 157.5 feet in height.

INSPECTION RESULT: COMPLIANCE. In 2017, the stack dimensions were measured. The height tis said o be 158.5 feet and the diameter to be 72" which comply with the ROP.

FG-2COLDCLEANER

Emission unit description: Any cold cleaner that is grandfathered or exempt from Rule 201 pursuant to Rule 281(h) or Rule 285(r)(iv). Existing cold cleaners were placed into operation prior to July 1, 1979. New cold cleaners were placed into operation on or after July 1, 1979.

Pollution control equipment: NA.

This flexible group includes EU-DEGTSIMONP1 and EU-DEGTSIMONP2. The solvent being used in both units was still Zep Dyna 143, which was in use during the 2017 inspection by AQD's N. Hude.

SC FG-2COLDCLEANER I.

NA, as no emission limit.

SC II.1. The permittee shall not use cleaning solvents containing more than 5 percent by weight of the following halogenated compounds: methylene chloride, perchloroethylene, trichloroethylene, 1,1,1-trichloroethane, carbon tetrachloride, chloroform, or any combination thereof.

INSPECTION RESULT FROM 3/28/2019 INSPECTION: COMPLIANCE. The solvent in use is still Zep Dyna 143 which was in use at the time of the 2017 inspection. It contains light aliphatic naphtha at 60-100% with a CAS of 64742-88-7

SC FG-2COLDCLEANER III.1. Cleaned parts shall be drained for no less than 15 seconds or until dripping ceases.

INSPECTION RESULT FROM 3/28/2019 INSPECTION: Compliance- no parts were in the process of being washed.

SC FG-2COLDCLEANER III.2. The permittee shall perform routine maintenance on each cold cleaner as recommended by the manufacturer.

INSPECTION RESULT FROM 3/28/2019: COMPLIANCE. The cold cleaners appeared to be in good condition, though I did not ask specifically to see records. During AQD's next inspection of MSU, this can be pursued.

SC FG-2COLDCLEANER IV.1. The cold cleaner must meet one of the following design requirements:

a. The air/vapor interface of the cold cleaner is no more than 10 square feet.

b. The cold cleaner is used for cleaning metal parts and the emissions are released to the general in-plant environment.

a. INSPECTION RESULT FROM 3/28/2019 INSPECTION: COMPLIANCE. In 2017, N. Hude estimated the size of both devices to be about 2 ft by 3ft giving them a surface area of 6 ft. The dimensions of the cold cleaners I saw today appeared consistent with this.

b. INSPECTION RESULT FROM 3/28/2019 INSPECTION: COMPLIANCE. The cold cleaners which I observed today were not exhausted to the outside air.

SC FG-2COLDCLEANER IV.2. The cold cleaner shall be equipped with a device for draining cleaned parts.

INSPECTION RESULT FROM 3/28/2019 INSPECTION. COMPLIANCE. I did not think to lift the lid of the units, but in 2017, AQD's N. Hude observed that it and the other cold cleaner both had devices for draining cleaned parts, above the level of liquid solvent in the units.

SC FG-2COLDCLEANER IV.3. All new and existing cold cleaners shall be equipped with a cover and the cover shall be closed whenever parts are not being handled in the cold cleaner.

INSPECTION RESULT FROM 3/28/2019 INSPECTION: COMPLIANCE. The lhe cleaner on the turbine deck was closed, and the same for the maintenance shop.

SC FG-2COLDCLEANER IV.4. The cover of a new cold cleaner shall be mechanically assisted if the Reid vapor pressure of the solvent is more than 0.3 psia or if the solvent is agitated or heated. (R 336.1707(3)(a))

INSPECTION RESULT: Compliance- both devices are incapable of heat. Based on N. Hude's 2017 review of the solvent SDS, the vapor pressure was 0.067kPa @ 20°C which equates to 0.001 psi.

SC FG-2COLDCLEANER IV.5. If the Reid vapor pressure of any solvent used in a new cold cleaner is greater than 0.6 psia; or, if any solvent used in a new cold cleaner is heated above 120 degrees Fahrenheit, then the cold cleaner must comply with at least one of the following provisions:

a. The cold cleaner must be designed such that the ratio of the freeboard height to the width of the cleaner is equal to or greater than 0.7.

b. The solvent bath must be covered with water if the solvent is insoluble and has a specific gravity of more than 1.0.

c. The cold cleaner must be controlled by a carbon adsorption system, condensation system, or other method of equivalent control approved by the AQD.

INSPECTION RESULT: Compliance- Based on N. Hude's 2017 review of the solvent SDS, the vapor pressure was 0.067kPa @ 20°C which equates to 0.001 psi; the specific gravity of the solvent is 0.79; carbon absorption system not needed.

SC FG-2COLDCLEANER V.

NA.

SC FG-2COLDCLEANER VI.1. For each new cold cleaner in which the solvent is heated, the solvent temperature shall be monitored and recorded at least once each calendar week during routine operating conditions.

INSPECTION RESULT FROM 3/28/2019 INSPECTION: COMPLIANCE. Neither cleaner is heated.

SC FG-2COLDCLEANER VI.2. The permittee shall maintain the following information on file for each cold cleaner:

a. A serial number, model number, or other unique identifier for each cold cleaner.

b. The date the unit was installed, manufactured or that it commenced operation.

c. The air/vapor interface area for any unit claimed to be exempt under Rule 281(h).

d. The applicable Rule 201 exemption.

e. The Reid vapor pressure of each solvent used.

f. If applicable, the option chosen to comply with Rule 707(2).

a. INSPECTION RESULT FROM 3/28/2019 INSPECTION: COMPLIANCE Maintenance shop model FB36, Serial Number 10010394; Turbine Deck model Super Brute 90660, Serial Number 1079343
b. INSPECTION RESULT FROM 3/28/2019 INSPECTION: COMPLIANCE. Install dates identified in ROP as 09/01/1990.
c. INSPECTION RESULT FROM 3/28/2019 INSPECTION: COMPLIANCE. Device identified in ROP.
d. INSPECTION RESULT FROM 3/28/2019 INSPECTION: COMPLIANCE.Device identified in ROP.
e. INSPECTION RESULT FROM 3/28/2019 INSPECTION: COMPLIANCE. For Zep Dyna 143, the *vapor pressure is 0.067kPa @ 20°C which equates to 0.001 psi*
f. INSPECTION RESULT FROM 3/28/2019 INSPECTION: COMPLIANCE. MSU complies by solvent type and management practices.

SC FG-2COLDCLEANER VI.3. The permittee shall maintain written operating procedures for each cold cleaner. These written procedures shall be posted in an accessible, conspicuous location near each cold cleaner.

INSPECTION RESULT: FROM 3/28/2019 INSPECTION: COMPLIANCE. I did not lift the lid of the cold cleaner I saw on the turbine deck. However, in N. Hude's 2017 inspection report, he noted that instructions were posted on the inside cover of both devices, and he also provided 2 copies of the DEQ cold cleaner stickers.

SC FG-2COLDCLEANER VI.4. As noted in Rule 611(2)(c) and Rule 707(3)(c), if applicable, an initial demonstration that the waste solvent is a safety hazard shall be made prior to storage in non-closed containers. If the waste solvent is a safety hazard and is stored in non-closed containers, verification that the waste solvent is disposed of so that not more than 20%, by weight, is allowed to evaporate into the atmosphere shall be made on a monthly basis.

INSPECTION RESULT: FROM 3/28/2019 INSPECTION: COMPLIANCE. It is my understanding that waste solvent is disposed of by a contractor.

SC FG-2COLDCLEANER VII.

NA.

SC VFG-2COLDCLEANER III.

NA.

SC FG-2COLDCLEANER IX.

NA.

FG-4MATVENTS

Emission unit description: Material handling equipment associated with Unit 4 boiler. EU-CONVEYOR4 and EU-LIMESILO4 were no longer in use, as of January 31, 2017.

Emission Units: EU-CONVEYOR4, EU-ASHEXH4, EU-LIMESILO4, EU-ASHSILO4, EU-SANDSILO4

Pollution control equipment:

- Bag filter on EU-CONVEYOR4
- Cyclone on EU-ASHEXH4
- Bag filter on EU-LIMESILO4
- Bag filter on EU-ASHSILO4
- Bag filter on EU-SANDSILO4

SC FG-4MATVENTS I.1. Emission Limits, Opacity 5%

INSPECTION RESULT: FROM 3/28/2019 INSPECTION COMPLIANCE. This process is no longer used, following the ceasing of coal firing at TB Simon.

SC FG-4MATVENTS I.2. Emission Limits, PM 0.02 gr/dscf

INSPECTION RESULT FROM 3/28/2019 INSPECTION: COMPLIANCE. This process is no longer used, following the ceasing of coal firing at TB Simon.

SC FG-4MATVENTS V.1. The permittee shall measure the opacity using Method 9 (Visual Determination of the Opacity of Emissions from Stationary Sources) upon request of the AQD.

INSPECTION RESULT FROM 3/28/2019 INSPECTION: COMPLIANCE. This process is no longer used, following the ceasing of coal firing at TB Simon.

SC VFG-4MATVENTS I.1. The permittee shall perform, at a minimum, a semiannual maintenance check and repairs on each baghouse filter. A record of repairs and maintenance performed on the baghouse filters shall be maintained.

INSPECTION RESULT FROM 3/28/2019 INSPECTION: COMPLIANCE. This process is no longer used, following the ceasing of coal firing at TB Simon.

SC FG-4MATVENTS VI.2. Visual inspection for abnormal/excessive dust to be performed at least once a week on all exhausts points. A record shall be made of all checks. Abnormal conditions shall trigger initiation of abatement/repair actions.

INSPECTION RESULT FROM 3/28/2019 INSPECTION: COMPLIANCE. This process is no longer used, following the ceasing of coal firing at TB Simon.

FG-BLRMACT-EXISTINGGAS1

This flexible group applies to EU-UNIT1, EU-UNIT2, EU-UNIT3, and EU-UNIT4. On 6/22/2017, MSU stated that each boiler has continuous oxygen trim systems that maintain an optimum air to fuel ratio thus requiring a tune-up every 5 years per 63.7540(a)(12). Notes to add this fact to the next ROP have been added to the folder.

---------- ROP Section2 inspection complete ----------

Exempt emission unit not required to be in the ROP:

EU-LINENSERVICES; Rule 281(2)(f):

Upon the completion of the TB Simon inspection on 3/28/2019, Mr. Grover, the interns, and I walked across the street to inspect the MSU institutional laundromat, known as Spartan Linen Services. This was pursuant to an initiative by the U.S. Environmental Protection Agency to inspect industrial or institutional laundromats. The main concern was not with the cleaning materials used, such as detergents, but with oils, grease, or solvents which could potentially be on cloth rags or towels sent to be cleaned. EU-LINEN SERVICES is not required to be in MSU's ROP.

We were introduced to the managers, Donna and Dan, who accompanied us through the laundry facility. We were informed that they do not launder rags with oil or solvents on them; those are disposed of. I was further informed that the only grease on rags that they will wash is grease from food. It is my understanding that their most soiled rags are ones from dining halls, and they clean these with water, soap, and possibly bleach. We were advised that all the detergents are the same as when AQD's Nathan Hude inspected them in 2017, please see description below.

As described in the 2017 inspection report by AQD's N. Hude, "The facility cleans rags, uniforms, and

other reusable cloth products for the Vet Clinic, Radiology, the Kellogg Center, and more. On site they have one 1100lbs machine, two 50lbs machines, two 60lbs machines, one 100lbs machine, and one 450lbs machine. None of these machines are dry cleaning machines. Chemicals used for cleaning include bleach, Eco Lab Sour Injection, Eco Lab Laminate Detergent, Eco Lab Water Conditioner, and Eco Lab EMax Alkali. All chemicals are in 55 gallon drums with auto dispensing devices when the cycle requires. There are also natural gas operated dryers on site. This consists of four 200lbs machines, two 100lbs machines, three 60lbs machines, and four 20lbs machines. All of this facilities equipment is exempt under R336.1281(2)(f) and according to the MAERS handbook Table 8-1, natural gas use or emissions need not be reported".

INSPECTION RESULT FROM 3/28/2019 INSPECTION: COMPLIANCE. There were no indications that an air permit was needed. This The facility, as described during the inspection, appears as if it should meet the exemption criteria of Rule 281(2)(f). We were advised that any rags which are contaminated with oils or solvents are not washed; rather, they are placed into a flammable container, which is sent to waste storage and shipped out as waste.

MSU's former MBI building, SRN N1162:

Not included in the current ROP are the processes in the former MBI International building, SRN N1162. The building was acquired by MSU on 4/1/2016. It is at 3900 Collins Road, Lansing. It is associated with General PTI No. 127-07 which is a general permit for an anhydrous ammonia tank and PTI 575-85 for one 250HP and two 400HP oil and gas fired boilers.

During the inspection, the former MBI building was visited on two separate dates, 3/22/2019, and 7/24/2019. On 3/22, the three boilers were inspected, as well as two generators which are considered exempt from needing a permit to install under the Rule 285(2)(g) exemption. On 7/24, the facility was visited to inspect the anhydrous ammonia storage tank.

Facility description

This facility is utilized for biotechnology development.

Emission units:

Emission unit	Emission unit description	PTI No., or exemption rule	Federal regulations	Compliance status
EU-AMMONIA; anhydrous ammonia Supply System	Leased 1,000 gallon storage tank, with bypass to the Ammonia Capture System	127-07	NA	Compliance
Ammonia Capture System (scrubber)	Countercurrent packed column ammonia absorber for liquid and/or gaseous ammonia	Rule 283(1)(a)(viii)	NA	Did not observe
Boilers	Two 400 horsepower (hp) and one 250 hp natural gas and no. 2 fuel oil-fired boilers	575-85	40 CFR Part 63, Subpart DDDDD	Compliance
EU-EMERGENG1	Cummins Model DFEK-7511871, Compression Ignition (diesel fuel-fired), 507 kW, 680 hp, SN: H110237490; build date 8/8/2011	Rule 285(g) rather than 285(2)(g), because of installation pre-12/20/2016	40 CFR Part 63, Subpart ZZZZ	Compliance
EU-EMERGENG2	Cummins Model DFEK-7511871, Compression Ignition (diesel fuel-fired), 507 kW, 680 hp, SN: H110237489; build date 8/8/2011	Rule 285(g) rather than 285(2)(g), because of installation pre-12/20/2016	40 CFR Part 63, Subpart ZZZZ	Compliance

***An *emission unit* is any part of a stationary source that emits or has the potential to emit an air contaminant.**

Regulatory overview:

This facility, by itself, would be considered to be a true *minor source,* rather than a *major source*. A major source has the potential to emit (PTE) of 100 tons per year (TPY) or more, of one of the criteria pollutants. *Criteria pollutants* are those for which a National Ambient Air Quality Standard exists, and include carbon monoxide, nitrogen oxides, sulfur dioxide, volatile organic compounds (VOCs), lead, particulate matter smaller than 10 microns, and particulate matter smaller than 2.5 microns. However, subsequent acquisition of this facility by MSU, itself a major HAPs source, makes this facility a major source.

As of the 3/9/2016 date of this inspection, MBI was considered a minor or *area source* for Hazardous Air Pollutants (HAPs), because it was not considered to have a PTE of 10 TPY or more for a single HAP, nor to have a PTE of 25 TPY or more for combined HAPs.

MBI received general Permit to Install (PTI) No. 127-07 on 4/5/2007, for an anhydrous ammonia storage and handling process. A scrubber, the Ammonia Capture System, was identified in the PTI application. The permit does not appear to cover a scrubber, but the scrubber may be considered exempt under the Rule 283(1)(a)(viii) exemption, as discussed in the 11/13/2008 inspection activity report. This exemption covers pilot processes or process equipment using best available control technology for toxics (T-BACT).

In 1985, Michigan Biotechnology Institute, as MBI was known at that time, received Permit to Install No. 575-85, for oil and natural gas-fired boilers. This PTI was not located in the Lansing District Office files, and I was therefore unaware of it, until some time after the inspection. A copy was found in the AQD Central Office permit files. The boilers are not subject to 40 CFR Part 60, Subpart Dc, Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units, unless they were reconstructed or modified after 6/9/1989. To the best of my knowledge, they have not been reconstructed or modified.

MBI used to own the MBI building, but subsequently leased it from the MSU Trust. However, as of 4/1/2016, MSU became the owner of the building. The PTI for the ammonia tank, No. 127-07, and the PTI for the boilers, No. 575-85, will therefore be rolled into the next renewal cycle for MSU's ROP, five years from now. As MSU is a major source, the boilers are therefore subject to the major source boiler National Emissions Standards for Hazardous Air Pollutants (NESHAP), 40 CFR Part 63, Subpart DDDDD.

Note: MBI has had its own State registration Number (SRN), N1162, at least since the boiler PTI was issued in 1985. MSU, who has acquired this facility as of 4/1/2016, has its own SRN, K3249.

Fee status:

As of 3/9/2016, this facility was not considered fee-subject, because it was not a major source for criteria pollutants, nor a major source for Hazardous Air Pollutants (HAPs). Additionally, it was not a fee source because it was not subject to federal New Source Performance Standards nor federal Maximum Achievable Control Technology standards. The facility was not required to submit an annual air emissions report via the Michigan Air Emissions Reporting System (MAERS). However, it is now owned by MSU, which is classified as Category I-fee subject, for being a major source.

Location:

The former MBI facility is located just west of farm fields belonging to MSU. Based on satellite images, there is a MSU horse teaching facility about 600 feet to the northeast of the anhydrous ammonia tank's location, and a Spring Arbor University building about 400 feet to the south. There is a hotel about 600 feet to the south of the tank, and US-127 is about 300 feet to the west of the tank.

Recent history:

The facility was most recently inspected by AQD on the following dates:

- 4/18/2017, as part of an overall MSU inspection by AQD's Nathan Hude. See activity report under MSU's SRN, K3249. The former MBI facility was found to be in compliance with air requirements at this time.

- 3/9/2016, by myself. A Violation Notice was subsequently sent by AQD, as emergency signage, while at the site, was not conspicuously placed, and there were no records available to document annual review of emergency plan with fire department or emergency response agency.

Safety apparel required:

My understanding is that the safety apparel required would be safety glasses.

Arrival:

This was not an unannounced inspection. Because of the large amount of time needed for the overall inspection of MSU (SRN K3249) and this facility (parts of 3 days this year), and the need to have MSU environmental staff available at those times, this inspection was arranged in advance.

I arrived at the MSU environmental offices at 8:30 AM. I met with Mr Tom Grover, CHMM, Environmental Compliance Officer, and Ms. Mary Lindsey, Senior Environmental Coordinator. We drove to the former MBI Building, and arrived at 8:56 AM. We were met there by Mr. Phil Hegge, who for many years was the Facilities Manager of MSU's former MBI Building. He explained that he is now a part-time employee, working on call for MSU.

Note: The two boilers at the former MBI site permitted under PTI No. 575-85, and 2 emergency generators, were inspected earlier this year, on 3/22/2019, Day 1 of the 3 day MSU inspection this year. This field activity is summarized later in this inspection activity report, although it actually took place prior to today's date.

Inspection:

Anhydrous ammonia tank, general PTI No. 127-07:

As we examined the anhydrous ammonia tank, I could not detect any odors, nor could I see any visible emissions. Weather conditions were 68 degrees F, sunny, and clear, with winds 0-5 miles per hour, out of the north.

The permit application indicates that the capacity is 1,000 gallons. It is my understanding that the ammonia tank is seldom used, and that it has been roughly 1 and 1/2 years since anhydrous ammonia was delivered to the tank. It is also my understanding that MSU is considering whether to remove this tank or to let it stay.

The overall physical condition of the tank and equipment appeared to be very good. The tank is protected by metal poles or "truck guards," to prevent damage. It is located close to an exterior wall of the building. It is my understanding, from my 3/9/2016 inspection here, that the stainless steel lines coming from the tank have air actuated valves, and that the valves would automatically be "fail closed," if anything happened to the air supply.

Compliance with the updated anhydrous ammonia Tank General PTI's special conditions is described below. The general permit conditions are updated as needed on the AQD general permits webpage. The updated conditions apply to all previously issued general permits.

NOTE: The numbering and formatting of the special conditions in the updated general permit are different than in the original General PTI No. 127-07, as it was issued on 4/5/2007.

Gen. PTI 127-07 I. EMISSION LIMITS:

Not Applicable (NA).

Gen. PTI 127-07 II. MATERIAL LIMITS:

NA.

Gen. PTI 127-07 III. PROCESS/OPERATIONAL RESTRICTIONS:

Gen. PTI 127-07 Special Condition (SC) No. III. 1 requires the permittee to maintain onsite a copy of *Part 78, Storage and Handling of Anhydrous Ammonia* (MIOSHA 1910.111).

INSPECTION RESULT FROM 7/24/2019: COMPLIANCE. I was informed that they have a copy of this document. I provided a copy to MBI [previously, during the 3/9/2016 inspection, as they had a copy but it was not immediately available.

Gen. PTI 127-07 SC No. III. 2 states: The permittee shall not operate EU-AMMONIA unless the inspection and maintenance program specified in Appendix A of the general PTI is implemented and maintained.

INSPECTION RESULT FROM 7/24/2019: COMPLIANCE. I was informed that MSU does a periodic physical examination of the tank, although they do not use the exact inspection form in Appendix A of the General PTI No. 127-07 to do so.
Note: From the 3/9/2016 inspection, it is my understanding that Tanner, the company who owns the ammonia tank, and makes deliveries of anhydrous ammonia, handles the inspection and maintenance/upkeep of the tank, and all attached valves. Please refer to Appendix A, later in this report, for my check of all the items in the inspection and maintenance program.

Gen. PTI 127-07 SC No. III. 3 states: The permittee shall not operate EU-AMMONIA unless an emergency response plan, to be followed in the event of an emergency, has been approved by the local fire department or county emergency response agency, and is implemented and maintained. Prior to each spring season, the permittee shall review this plan with the local fire department or emergency response agency and make any necessary updates.

INSPECTION RESULT FROM 7/24/2019: COMPLIANCE. I was informed that they have a Pollution Incident Prevention (PIP) plan, and that they have their fire department come out annually to review. In addition, I was informed that they have Ingham County's Emergency Coordinator, Mr. Herb Corey, come out annually. I was advised that they develop emergency response plans for each building at MSU which is subject to Tittle III SARA regulations. I was advised that records are kept. As described, this complies with the permit requirement.

Gen. PTI No. 127-07 SC No. III. 4 states: EU-AMMONIA shall be located a minimum of 50 feet from the property line, 300 feet from any existing places of residence or private or public assembly, 500 feet from a school, apartment building, or institutional occupancy, and not less than 1,000 feet from a hospital or nursing home.

INSPECTION RESULT FROM 7/24/2019: COMPLIANCE. Based on satellite images, the tank appears to be about 600 feet from a university horse teaching facility, which is located northeast of MBI. This complies with the 500 foot setback requirement for schools. There is a hotel, about 600 feet south of the anhydrous ammonia tank. This complies with the 300 foot setback requirement. If the hotel is considered equivalent to an apartment building or place of institutional occupancy, the tank complies with the 500 foot setback requirement., in regard to this structure. There is no existing hospital or nursing home nearby. However, there is a teaching hospital under construction. In an 8/8/2019 email with attached satellite image, Ms. Lindsey indicated the teaching hospital will be about 3,100 feet from the anhydrous ammonia tank, well over the 1,000 foot minimum setback distance. This complies with the permit requirement.

Gen. PTI 127-07 SC No. III. 5 states: The permittee shall not operate EU-AMMONIA unless all transfer operations including transport deliveries are performed by a reliable person properly trained and made responsible for proper compliance with all applicable procedures.

INSPECTION RESULT FROM 7/24/2019: COMPLIANCE. I was informed that they do not have transfer operations here, since unlike a farm, they are not transferring ammonia to portable tanks. For deliveries, I was informed that the tank's owner, Tanner Industries, handles delivery of anhydrous ammonia, and has properly trained personnel. As described, this complies with the permit requirement.

Gen. PTI 127-07 SC No. III. 6 states: Nurse and applicator tank storage shall be located no less than 50 feet from the property line; 150 feet from any existing places of residence or pivate or public assembly; 250 feet from a school, apartment building, institutional occupancy; and notless than 1000 feet from a hospital or nursing home.

INSPECTION RESULT FROM 7/24/2019: NA. MBI does not have applicator or nurse tanks or storage thereof, so this condition is non-applicable. However, I was advised that they do meet the setback criteria, if it was applicable to their anhydrous ammonia storage tank. My review of satellite images in 2016 and N. Hude's measurements using ArcGIS in 2017 during his inspection of MSU, SRN K3249, concurred with this.

Gen. PTI 127-07 SC No. III. 7 states: Nurse tank filling shall only be done from a permanent stationary storage tank.

INSPECTION RESULT FROM 7/24/2019: NA. MBI does not have nurse tanks, nor do they fill them, so this condition is non-applicable.

Gen. PTI 127-07 SC No. III. 8 states: Nurse and applicator tanks shall be filled to no more than 85% of liquid capacity by volume. Storage tanks may be filled according to temperature density correction tables in Rule 7801(b)(11) where tanks have a thermometer well and suitable level gauge.

INSPECTION RESULT FROM 7/24/2019: NA. This does not appear to be applicable, as MBI does not fill either nurse or applicator tanks.

Gen. PTI 127-07 SC No. III. 9 states: Vapor return lines shall be employed whenever necessary to ensure an accidental release from pressure relief valves will not occur during ammonia transfer operations.

INSPECTION RESULT FROM 7/24/2019: COMPLIANCE. I was advised by MSU staff that Tanner Industries has a vapor return line, which they bring with them and use for delivery operations. As described, this complies with the permit requirement .

Gen. PTI 127-07 SC No. III. 10 states: Nitrogen stabilizer shall not be added to any permanent stationary storage tank or to rail or truck transport tanks.

INSPECTION RESULT FROM 7/24/2019: COMPLIANCE. MSU does not add any nitrogen stabilizer, I was told.

Gen. PTI 127-07 IV. <u>DESIGN/EQUIPMENT PARAMETERS</u>:

PTI 127-07 SC No. IV.1 states: All containers shall be fitted with safety relief valves in accordance with Rule 7801(b)(9). Such valves shall be stamped with the date manufactured, and to be replaced, or re-tested and re-certified, at least every five years or more often, if there is evidence of danger or deterioration.

INSPECTION RESULT FROM 7/24/2019: COMPLIANCE. I was advised by MSU staff that the valves were replaced most recently in 2017, following the 2017 inspection by AQD's N. Hude. I did not see a date stamped in the valves, nor does it show up in photos I took. I subsequently emailed Ms. Lindsey, on 8/13/2019, to ask for the date stamped on the valves. On 8/15/2019, she sent an email and photo of the safety relief valves (please see attached). The view showed that the closest valve was stamped with 09E16, which appears to represent the date September 2016. Also, she pointed out that below the date stamp, someone had written 9/21. This appears to satisfy the requirement for being stamped with the date manufactured.

Gen. PTI 127-07 SC No. IV. 2 states: The permittee shall not operate EU-AMMONIA unless a remotely operated internal or external positive shut-off valve is installed to allow access for emergency shut-off of all flow from stationary storage containers.

INSPECTION RESULT FROM 7/24/2019: COMPLIANCE. I was shown that there is a shut-off valve, which is located underneath the anhydrous ammonia tank. During the 3/9/2016 inspection, I was shown that there is a switch inside the building, for this remotely operated shut-off valve. The switch is not required by the general

permit to be labeled, but it was labeled "ammonia pump," following the 11/13/2008 AQD inspection.

Gen. PTI 127-07 SC No. IV. 3 states: The permittee shall not operate EU-AMMONIA unless a bulkhead, anchorage, or equivalent system is used at each transfer area so that any break resulting from a pull will occur at a predictable location while retaining intact the valves and piping on the plant side of the transfer area.

INSPECTION RESULT FROM 7/24/2019: NA. It is my understanding that this does not apply because they do not fill nurse tanks, and so there is no transfer area.
Note: The 11/13/2008 inspection report by AQD's Brian Culham states:
Because the MBI tank is small, only [1,000] gallons, it is not fitted with the large port used on agricultural supply mother tanks. There is no bulkhead installation either because the connection to the tank is similar to those on agricultural applicators or nurse tanks.

Gen. PTI 127-07 SC No. IV. 4 states: The permittee shall not operate EU-AMMONIA unless any liquid lines in rail and transport transfer areas are equipped with back pressure check valves and all liquid lines not requiring a back check valve and all vapor lines, are equipped with properly sized excess flow valves. These valves shall be installed on the main container side of the predictable break point at the bulkhead.

INSPECTION RESULT FROM 7/24/2019: NA. I was advised that the anhydrous ammonia tank does not have any transport transfer areas, as they do not transfer anhydrous ammonia to any other tanks. I was advised that there is a shut-off valve between the tank and the building, and two more valves after ammonia is piped into the building by a stainless steel pipe.

Gen. PTI 127-07 SC No. IV. 5 states: All hoses shall be replaced five years after the date of manufacture, or more often, if there is evidence of damage or deterioration.

INSPECTION RESULT FROM 7/24/2019: NA. It is my understanding that this does not apply, as the hoses referenced in the general PTI are for nurse tanks. They have no rubber hoses at the former MBI facility, because:

- *they have a stainless steel supply line, which appeared in good condition, leading from the tank, into the MSU building.*
- *they have a single stainless steel hose, 1 foot in length, to protect plumbing downstream of the hose from pump vibrations. It appeared in good condition.*

Gen. PTI 127-07 SC No. IV. 6 states: Any that any vapor or liquid line, exclusive of couplings, requiring venting after ammonia transfer shall be vented through a water trap of 55 gallons minimum size. Safety water shall not be used for this purpose.

INSPECTION RESULT FROM 7/24/2019: COMPLIANCE. In the 11/13/2008 inspection report by AQD's Brian Culham, he indicated that he did not believe these smaller lines required venting. B. Culham has since retired, but he was the AQD field contact for the agricultural source category (including anhydrous ammonia tanks).
My understanding, from the 3/9/2016 inspection, is that Tanner Industries brings their own vapor line, with a portable water trap, when they make deliveries. I was informed that this portable trap may not be 55 gallons in size, but this does not appear to be a violation, because SC No. 1.15 does not appear to apply to this facility. I was later informed by AQD Permit Engineer Andrew Drury that a supplier bringing a small portable water trap is consistent with how deliveries are made to industrial users of ammonia (with appropriate anhydrous ammonia tank air permits tailored to the industrial nature of those sites).

Gen. PTI 127-07 SC No. IV. 7 states: A sign shall be present and conspicuously placed at the facility entrance, stating the emergency phone numbers for the owner, primary operator, local and state police, local fire department, and ambulance service.

INSPECTION RESULT FROM 7/24/2019: COMPLIANCE. There is a small sign at each of two driveway

entrances to the site, advising that 911 should be called in the event of an emergency. A person witnessing an anhydrous ammonia leak could theoretically read the sign at a safe distance from the tank. These were installed following a VN which was sent following my 3/9/2016 inspection of the tank. From the 2016 inspection, there is also a sign inside the building with emergency contact information.

Gen. PTI 127-07 V. TESTING/SAMPLING:

NA

Gen. 127-07 VI. MONITORING/RECORDKEEPING:

Gen. PTI 127-07 SC No. VI.1 states: The permittee shall keep, in a satisfactory manner, records of the date, duration, and description of any malfunction or spill occurring from EU-AMMONIA, including the estimated amount of ammonia released into the atmosphere. Do not include trace amounts from normal hose coupling bleed downs. All records shall be kept on file for a period of at least 5 years and made available to the Department upon request.

INSPECTION RESULT FROM 7/24/2019: COMPLIANCE. It is my understanding that there have been no malfunctions or spills. I was informed that their requirements include making an internal incident report, if there was a malfunction or spill.

Gen. PTI 127-07 SC No. VI. 2 requires the permittee to keep, in a satisfactory manner, records of the annual review and approval of the emergency response plan with the local fire department.

INSPECTION RESULT FROM 7/24/2019: COMPLIANCE. It is my understanding that records are kept by their fire department and by Ingham County.

Gen. PTI 127-07 VII. REPORTING:

Gen. PTI 127-07 SC VII. 1 requires the permittee to contact the Pollution Emergency Alert System (PEAS) telephone number (1-800-292-4706), or the AQD District Supervisor immediately, if there is an abnormal release.

INSPECTION RESULT FROM 7/24/2019: COMPLIANCE. MSU staff informed me that the above requirement has been written into their procedures. It is my understanding that there have been no abnormal releases.

Gen. PTI 127-07 VIII. STACK/VENT RESTRICTIONS:

NA.

Gen. PTI 127-07 IX. OTHER REQUIREMENTS:

Gen. PTI 127-07 SC No. IX. 1 prohibits the permittee from replacing or modifying any portion of EU_AMMONIA, or installing new equipment, unless conditions (a), (b), and (c) are all met. The three conditions require that the general permit be updated, that the permittee continue to meet all applicability criteria, and that the permittee keep records of the date and description of any replacement, modification or installation of new equipment.

INSPECTION REULT FROM 7/24/2019: COMPLIANCE. It is my understanding that the tank and portions of the tank have not been replaced. It is my understanding that the required replacement of valves under the PTI would not trigger this requirement. I was advised that MSU has not decided if the tank will be kept or will be removed from the site, as it is seldom used. As an illustration of this, I was told that their usage of ammonia is so low, they have not needed to have a delivery of ammonia in well over a year.

Gen. PTI 127-07 Appendix A:

I & M Program checklist for nurse and applicator tanks, from page 1 of 2 of Appendix A of general PTI:

1. Tank(s) free of leaks: *NA, because there were no nurse or applicator tanks.*
2. Paint in good condition: *NA, because there were no nurse or applicator tanks.*
3. Valves and fittings free from leaks and in good condition: *NA, because there were no nurse or applicator tanks.*
4. Protective guards in place and in good condition: *NA, because there were no nurse or applicator tanks.*
5. Outlet openings on valves and lines free of dirt and rust with protective caps in place: *NA, because there were no nurse or applicator tanks.*
6. Safety relief valves free of debris with rain caps installed? *NA, because there were no nurse or applicator tanks.*
7. Gages, pressure and liquid, are operable: *NA, because there were no nurse or applicator tanks.*
8. Excess flow valves installed and in good condition: *NA, because there were no nurse or applicator tanks.*
9. Valves properly labeled "liquid" and "vapor": *NA, because there were no nurse or applicator tanks.*
10. Vapor and liquid hoses are proper ammonia type and free of damage or deterioration: *NA, because there were no nurse or applicator tanks.*
11. Hoses, including those on nurse tanks, securely clamped to the nipples: *NA, because there were no nurse or applicator tanks.*
12. Hoses suitably racked to prevent kinking and hose on delivery tanks securely fastened to prevent dragging: *NA, because there were no nurse or applicator tanks.*
13. Tanks securely attached: *NA, because there were no nurse or applicator tanks.*
14. Trailer tongues, hitches, and safety chains in sound condition: *NA, because there were no nurse or applicator tanks.*
15. Nurse tank valves locked or capped if site is unattended or not fenced in: *NA, because there were no nurse or applicator tanks.*
16. Nurse tanks properly labeled: *NA, because there were no nurse or applicator tanks.*
17. Five gallon or larger can filled with clean water for transport vehicles: *NA, because there were no nurse or applicator tanks.*
18. Quick disconnects annually reconditioned: *NA, because there were no nurse or applicator tanks.*

I & M program checklist for permanent anhydrous ammonia storage tank, from page 2 of 2 of Appendix A of general PTI:

1. Tank free of leaks: *The tank was free of leaks.*
2. Tank supports in good condition (no cracked or crumbled concrete, etc.): *The steel I-beams which supported the tank were in good condition, with only minor surface rust.*
3. Paint in good condition: *The paint was in good condition, with no peeling or rust.*
4. Equipment locked when not in use: *The valves on the tank were seen to be locked.*

5. Tank properly labeled: *The tank had large labels stating "AMMONIA, ANHYDROUS" and "INHALATION HAZARD."*

6. Valves and fittings free from leaks and in good condition: *Valves and fittings appeared to be free from leaks, and in good condition.*

7. Piping properly supported and guards in place: *The piping appeared to be supported properly, and the tank was surrounded by steel poles which appeared to have been filled with concrete, for protection.*

8. Pipes free of physical damage and rust and properly painted: *The stainless steel piping appeared to be in good condition.*

9. Employees trained in proper filling procedures: *It is my understanding that the tank's owner, Tanner, who makes deliveries of ammonia, has trained employees.*

10. Provisions for bleeding of transfer hose from transport truck: *It is my understanding, from the 3/9/2016 inspection of what was then MBI, that Tanner brings their own portable water trap to the site when they deliver ammonia.*

11. Wheels properly chocked on the transport truck or rail tank car while unloading: *It is my understanding that Tanner does this.*

12. Information and warning signs displayed and in good condition: *Emergency contact signs are at both driveway entrances to the site.*

13. Area free of weeds, trash, and other unsafe conditions: *A large board or side of a wooden crate was leaning against the guard posts around the tank. Mr. Hegge indicated that he had previously requested it be moved elsewhere. He assured me it would soon be removed.*

14. Unused equipment stored out of the way: *As described above, a large board or wooden crate was propped against the guard posts around the tank. It is my understanding that this will soon be removed.*

15. Chemical safety goggles available, and in good condition: *I was advised that they have all kinds of personal protective equipment (PPE) inside the nearby building.*

16. Protective gloves, boots, suits or slickers available and in good condition: *I was advised that they have a wide assortment of PPE inside the nearby building.*

17. Gas masks with ammonia type canisters and refill canisters within date limits available: *I was advised that MSU has its own Haz Mat team. It is my understanding that they have the appropriate equipment.*

18. Emergency clean water, shower or 75 gallon tank available nearby: *I was advised that they have several safety showers available inside the nearby MSU building.*

19. Hoses in good condition: T*here was a stainless steel hose, and stainless steel piping, both in good condition.*

20. Hoses no older than 5 years from date of manufacture and marked: *NA, as there were no rubber hoses, rather a stainless steel hose and piping.*

21. Vapor and liquid hoses are proper ammonia-type and free of damage or deterioration: *NA, as there were no rubber hoses; rather a stainless steel hose and piping.*

22. Hoses suitably racked to prevent kinking: *NA, as there were no rubber hoses; rather, a stainless steel hose and piping.*

23. Hoses, including those on nurse tanks, securely clamped to the nipples: *NA, as there were no rubber hoses; rather, a stainless steel hose and piping.*

24. Gages, pressure and liquid level, operable: *There was a pressure gauge atop the tank, in operating condition, which read 100 psi. They also had a liquid flow gauge. There was no liquid level gauge, however. I was assured that the tank was nearly empty, based on the sound it made when Mr. Hegge rapped a hand on it. A liquid level gauge is not specifically required by the special conditions of this*

general PTI. However, AQD would recommend having a liquid level gauge installed.

25. Valves properly labeled "liquid" and "vapor": *I was informed that this is NA, as they do not have nurse tanks to transfer ammonia to.*

26. Safety relief valves within 5 years of manufacture or recertification and marked: *I was advised that the safety relief valves were replaced in 2017, following N. Hude's inspection of this site as part of his overall MSU inspection. I could not see the date they were manufactured or recertified, but this may have been because rain caps were on.*

27. Outlet openings on valves and lines free of dirt and rust with protective caps in place: *Rain caps were in place on all outlet openings that I could see, including the safety relief valves.*

28. Safety relief valves free of debris with rain caps installed: I *did not see the openings on the safety relief valves because they were covered by rain caps.*

29. Safety relief valve manifold operable: *The safety relief valve manifold was pointed out to me as being made of stainless steel, and being covered with a cap to protect it from the elements.*

30. Remote shut-off valve in working order: *I was told that this is capped and protected.*

(End of permit.)

It is my understanding that there is an ammonia sensor on the exterior wall over the storage tank. On 3/9/2016, I had been informed that it will alarm at 30 parts per million of ammonia in the air, the SEL for exposure to ammonia. I was also told in 2016 that it is calibrated twice per year. Additionally, I was advised that there is also a sensor in the line leading into the building, and several sensors inside the building itself. Some of the indoor sensors are at points of use, I was told, and an ammonia monitoring system was said to pull in air from 8 points within the building. Lastly, I had been told in 2016 that a sensor being set off sends a signal throughout the building, as well as the fire department, police department, and MSU Environmental, Health & Safety.

Ammonia Capture System (scrubber), Rule 283(1)(a)(viii):

I did not see the ammonia capture system today, as we did not enter the MSU building next to EU-AMMONIA. The PTI application identifies the Ammonia Capture System as a countercurrent packed column ammonia absorber for liquid and/or gaseous ammonia. It may also be described as a scrubber. It was described in the PTI application, but as the general PTI does not address such a device, it could be consider exempt under Rule 283(1)(a)(viii), per B. Culham's 11/13/2008 inspection activity report. The scrubber was used to control emissions from the AFEX process.

On 8/26/2019, I inquired as to the disposition of the AFEX process and the ammonia capture system or scrubber associated with it. Ms. Lindsey informed me on 8/26 by email (attached) that although the AFEX project has stopped, the equipment for it remains onsite, as does the scrubber. She indicated that although there was no research associated with the ammonia tank for a couple years, the ammonia tank and scrubber may be used again, per a proposal they have just received.

FG-MBIEMERGENG MBI Building; Rule 285(g), 40 CFR Part 63, Subpart ZZZZ:

There are two emergency engines on site and are located near the boiler room on the south side of the building. It would be fitting to include these engines under the flexible group "FG-EMERGEN>500ZZZZ" of the ROP, when it is next renewed.

Per N. Hude's 2017 inspection of this site as part of his overall inspection of MSU, SRN K3249, both engines are classified as:

- "New" being installation after 2002 and 2006 per 63..6590.

- "CI" compression ignition burning diesel fuel
- ">500hp" as both are rated at 680hp
- "located at a major source of HAPS", with MSU, SRN K3249 being the major source of HAPs

EU-EMERGENG1 (west generator); Rule 285(g); 40 CFR Part 63, Subpart ZZZZ:

Cummins Model DFEK-7511871, Compression Ignition, 507kW, 680hp, SN: H110237490, Build Date 08/08/201. This is a diesel fuel-fired engine.

This generator was inspected, during the 3/22/2019 MSU inspection. It was not running, at that time. I was informed it operates monthly, as part of its readiness testing. I did not note the hour meter, at the time of the inspection on 7/24/2019. The digital hour meter read 145.7 hours, as of 8/13/2019, I subsequently saw, while reviewing ran email (attached) from Ms. Lindsey. As of the June 2019 monthly inspection of the generator, the attached form shows hours were 144.6 .

EU-EMERGENG2 (east generator); Rule 285(g); 40 CFR Part 63, Subpart ZZZZ:

Cummins Model DFEK-7511871, Compression Ignition, 507kW, 680hp, SN: H110237489, Build Date 08/08/2011, This is a diesel fuel-fired engine.

This generator was inspected, during the 3/22/2019 MSU inspection. It was not running, at that time. I was informed it operates monthly, as part of its readiness testing. I did not note the hour meter, at the time of the inspection on 7/24/2019. The digital hour meter read 144.7 hours, as of 8/13/2019, I subsequently saw, while reviewing ran email (attached) from Ms. Lindsey. As of the June 2019 monthly inspection of the generator, the attached form shows hours were 143.6.

INSPECTION RESULT FROM 3/22/2019 AND 7/24/2019: COMPLIANCE.. Per determination made by AQD's Nathan Hude, it appears the regulation applicability is 40CFR63 ZZZZ Table 2c.1.

Annual requirements under Subpart ZZZZZ, aka the RICE MACT, are as follows, for these generators:

a. Change oil and filter every 500 hours of operation or annually, whichever comes first.
b. Inspect air cleaner every 1,000 hours of operation or annually, whichever comes first, and replace as necessary;
c. Inspect all hoses and belts every 500 hours of operation or annually, whichever comes first, and replace as necessary.

INSPECTION RESULT FROM 3/22/2019 AND 7/24/2019: COMPLIANCE. Based on the records reviewed, it appears they are meeting the regulatory requirements for these engines, as follows:.
a. Oil was reported to have been changed in 2019 on the tank fuel ticket record, and Ms. Lindsey confirmed the oil change was for the generators.
b. Air louvers were inspected. I asked if the air louvers are associated with the air cleaners. Ms. Lindsey advised that the air cleaners are also inspected whenever the oil is changed, and are replaced as necessary. She advised me that in the future, they may be able to identify the air cleaners, on the check list. The louvers therefore appear to be unconnected to the air cleaners
c.. Hoses and belts were inspected in 2019, according to generator monthly inspection sheets provided by Ms. Lindsey (please see attached).

FG-MBIBOILERS PTI 575-85, MBI Building

The permit is for two 400HP (16.7MMBtu) boilers and one 250HP (10.46MMBtu) boiler capable of firing natural gas and no.2 fuel as back-up. They are used for heating the former MBI building, and for providing steam. It is my understanding that for No. 2 fuel oil, they burn only Ultra Low Sulfur Diesel fuel.

As noted by AQD's N. Hude in 2017, The data plates on these boilers indicated the following:

- EU-MBIBOILER1: Cleaver Brooks; SN L80961; 16,738,000 Btu
- EU-MBIBOILER2: Cleaver Brooks; SN L80962; 10,461,000 Btu

Due to the date of installation being on or prior to 1/28/1987, 40CFR60 Dc- Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units does not apply as per paragraph 60.40c(a) which states construction commencement after 6/9/1989.

EU-MBIBOILER1 and EUMBIBOILER2 were not operating at the time of the inspection on 3/22/2019. The smaller boiler, #3, was running. however. No visible emissions were noted from the boiler exhaust stack.

Compliance check with requirements of PTI 575-85:

PTI 575-85 SC 1-13: General Conditions. These are generally applicable to facilities with a permit to install.

PTI 575-85 SC 14 states: The sulfur dioxide emission rates from the boilers shall not exceed 1.11 lbs/MMBtu heat input, based on a 24-hour period. This is equivalent to using oil with a 1.0% sulfur content and a heat value of 18,000 BTU's per pound.

INSPECTION RESULT FROM 3/22/2019 AND 7/24/2019: COMPLIANCE. On 8/13/2019, an email from Ms. Lindsey indicated that the diesel fuel sulfur content is still less than 15 parts per million, as was the case in 2017.

PTI 575-85 SC 15. visible emissions from the boilers shall not exceed a 6 minute average of 20% opacity, except as specified in Rule 301(1)(a).

INSPECTION RESULT FROM 3/22/2019 AND 7/24/2019: COMPLIANCE. No visible emissions were observed from the stack on either of the two days I was at this site in 2019. Boiler #3, was running on 3/22/2019, and no visible emissions from the boiler exhaust stack could be observed.

PTI 575-85 SC 16. Rules 1001, 1003, and 1004 – Verification of sulfur dioxide emission rates from the boilers by testing at owners expense...

INSPECTION RESULT: FROM 3/22/2019 AND 7/24/2019 COMPLIANCE. Per AQD's N. Hude, in his 2017 overall inspection report for MSU, SRN K3249:
- This can be calculated using the sulfur in = sulfur out manual calculation. The boilers NG use is pipeline quality with 20.0 grains per 100 cubic feet of gas. The diesel fuel SDS to include sulfur content was requested on 6/6/17. An updated request was sent 7/3/17. On 7/7/17 a document was emailed providing the SDS for the fuel indicating the sulfur content to be a maximum of 15ppm.

PTI 575-85 SC 17. The exhaust gases from the boilers shall be discharged unobstructed vertically upwards to the ambient air form a stack with a maximum diameter of 54 inches at an exit point not less than 70 feet above the ground.

INSPECTION RESULT FROM 3/22/2019 AND 7/24/2019: NONCOMPLIANCE. Per AQD's N. Hude, in his 2017 overall inspection report for MSU, SRN K3249, the stack is 69 feet and 4 inches in height; this 8 inches too short. Due to the minimal nature of this violation, a Violation Notice was not sent in 2017, and will not be sent in 2019, either. However, AQD intends to reflect the actual stack height in the next ROP renewal cycle.

PTI 575-85 SC 18 states: Applicant shall not substitute any fuels for those described in this permit application which should result in an appreciable change in the quantity or quality of emission of an air contaminant without prior notification.

INSPECTION RESULT: FROM 3/22/2019 AND 7/24/2019 COMPLIANCE- diesel and natural gas are the only

fuels in use.

PTI 575-85 SC 19. The fuel usage records shall be kept on file for a period of at least two years and made available to the AQD upon request.

INSPECTION RESULT FROM 3/22/2019 AND 7/24/2019: COMPLIANCE. On 8/13/2019, Ms. Lindsey sent me fuel tank tickets which documented the level of diesel fuel in the boiler fuel tank for the past 12 months. Please see attached.

PTI 575-85 SC 20. Applicant shall not use any reclaimed, recycled and/or contaminated fuel(s) without prior notification to and approval by the AQD.

INSPECTION RESULT: FROM 3/22/2019 AND 7/24/2019: COMPLIANCE. It is my understanding that recycled or reclaimed fuels are not used in these boilers, only natural gas and diesel fuel.

Conclusion:

Overall, MSU's former MBI facility was in compliance. The only instance of noncompliance was previously noted in 2017 by AQD's N. Hude, where the exhaust stack for the three boilers at MSU's former MBI building is 8 inches short of the minimum 70 foot stack height required by PTI No. 575-85. Due to the extremely minimal nature of this issue, a Violation Notice will not be sent. However, during the next renewal of MSU's ROP, this issue will be addressed. .

FINAL OVERALL COMPLIANCE STATEMENT:

Overall, MSU appears to be in compliance with the conditions of their ROP.

NAME _____ DATE 9/30/2019 SUPERVISOR _____