Ohio Environmental Protection Agency

Mike DeWine, Governor
Jon Husted, Lt. Governor
Anne M. Vogel, Director

07/06/2023

Certified Mail

Mr. David Ferro
SOBE Thermal Energy Systems, LLC
205 North Avenue
Youngstown, OH 44502

RE: DRAFT AIR POLLUTION PERMIT-TO-INSTALL AND OPERATE

Facility ID: 0250110024
Permit Number: P0132799
Permit Type: Initial Installation
County: Mahoning

Dear Permit Holder:

A draft of the Ohio Administrative Code (OAC) Chapter 3745-31 Air Pollution Permit-to-Install and Operate (PTIO) for the referenced facility has been issued for the emissions unit(s) listed in the Authorization section of the enclosed draft permit. This draft action is not an authorization to begin construction or modification of your emissions unit(s). The purpose of this draft is to solicit public comments on the permit. A public notice will appear in the Ohio Environmental Protection Agency (EPA) Weekly Review and the local newspaper, Tribune Chronicle. A copy of the public notice and the draft permit are enclosed. This permit can be accessed electronically on the Division of Air Pollution Control (DAPC) website here: https://epa.ohio.gov/dapc/permitsonline. Comments will be accepted as a marked-up copy of the draft permit or in narrative format. Any comments must be sent to the following:

Andrew Hall
Permit Review/Development Section
Ohio EPA, DAPC
50 West Town Street Suite 700
PO Box 1049
Columbus, Ohio 43216-1049

and

Ohio EPA DAPC, Northeast District Office
2110 East Aurora Rd.
Twinsburg, OH 44087

Comments and/or a request for a public hearing will be accepted within 30 days of the date the notice is published in the newspaper. You will be notified if a public hearing is scheduled. A decision on issuing a final permit-to-install will be made after consideration of comments received and oral testimony if a public hearing is conducted. Any permit fee that will be due upon issuance of a final Permit-to-Install is indicated in the Authorization section. Please do not submit any payment now. If you have any questions, please contact Ohio EPA DAPC, Northeast District Office at (330)963-1200.

Sincerely,



Robert F. Hodanbosi, P.E.
Chief Division of Air Pollution Control

cc: U.S. EPA Region 5 *Via E-Mail Notification*
Ohio EPA-NEDO; Pennsylvania; West Virginia

Ohio Environmental Protection Agency

Permit Strategy Write-Up

1. Check all that apply:

   ☐Synthetic Minor Determination

   ☐Netting Determination

2. Source Description:

   SOBE Thermal Energy Systems, LLC proposes to install a 13.72 MMBtu/hr Thermolyzer® (a type of pyrolysis unit (P001) that will extract syngas from tire derived chips (TDC) to power existing natural gas boilers (B006 and B007). The boilers provide steam for various buildings in downtown Youngstown, and will burn the syngas along with natural gas. The pyrolysis unit is equipped with two gas cleaning units (GCU) and a 1.09 MMBtu/hr flare. Carbon black and carbon steel are byproducts of the process, and enclosed conveyors will be used for all material handling.

3. Facility Emissions and Attainment Status:

   The facility is the site of the former Youngstown Thermal Plant. There are no longer coal-fired boilers at the facility. The facility is considered a true minor source of air emissions, and includes two 55 MMBtu/hr natural gas-fired boilers (B006 and B007) equipped with low NOx burners and flue gas recirculation, a 31.8 MMBtu/hr natural-gas fired boiler (B005) (that will not be used to burn the syngas) equipped with a low NOx burner and flue gas recirculation, a fuel storage tank (T001), and roadways (F001). T001 and F001 are deminimis and do not require an air permit. Mahoning County is in attainment for all criteria pollutants.

4. Source Emissions:

   The potential to emit (PTE) Particulate Matter, SO_2, and VOC for P001, B006 and B007 combined is less than 10 tons per year. Therefore Best Available Technology (BAT) does not apply to these pollutants. The source PTE of Hazardous Air Pollutants (HAPs) is less than one ton per year; therefore air toxics modeling was not necessary for this project. The PTE NO_x is 43.79 tons per year, and the PTE CO is 19.79 tons per year, therefore BAT applies to these pollutants. The NESHAP for Industrial, Commercial, and Institutional Boilers Area Sources (40 CFR Part 63, Subpart JJJJJJ) is an applicable requirement. Ohio EPA is not accepting delegation authority to implement and enforce 40 CFR Part 63, Subpart JJJJJJ, therefore U.S. EPA is retaining the authority to implement and enforce 40 CFR Part 63, Subpart JJJJJJ.

5. P001:

   P001 will not be processing material that is classified as solid waste per USEPA's Code of Federal Regulations (CFR) 40 CFR Part 241. The TDC to be used to produce syngas will be from scrap tires processed at another facility. The company has provided Ohio EPA written confirmation that the facility will not accept solid waste per 40 CFR Part 241. Therefore the pyrolysis unit (P001) is not considered a

solid waste incineration unit and is not subject to Section 129 regulations, and the recent updates to Section 129 regarding pyrolysis units do not apply. Ohio EPA has also placed a term and condition in the permit prohibiting any solid waste from being fed to the pyrolysis unit. SOBE Thermal Energy System LLC will follow 40 CFR Part 241 requirements to ensure that TDC suppliers meet the established legitimacy criteria in 40 CFR Part 241 to ensure the TDC is not a solid waste.

Based on analysis of the syngas, P001 is not expected to have a potential to emit (PTE) Hazardous Air Pollutants (HAPs) and air toxics in quantities greater than one ton per year.

6. EJ:

Ohio EPA has taken steps to address Environmental Justice (EJ) Concerns in the area where the proposed project is located. Ohio EPA performed an EJ analysis using the EJ screening tool to determine the main demographic and environmental indicators that classify this as an EJ area. Ohio EPA will be conducting a public hearing as part of the EJ plan, and Ohio EPA's Public Interest Center (PIC) has developed a plan of steps to address EJ concerns during the permitting process and after the permitting process.

7. Conclusion:

The permit terms include adequate monitoring, recordkeeping, reporting, and sampling and testing requirements to demonstrate this emerging technology's compliance with the Clean Air Act, and is protective of human health and the environment.

8. Total Permit Allowable Emissions Summary (for informational purposes only):

Pollutant	Tons Per Year
$PM_{10}/PM_{2.5}$	10.94
NOx	46.89
CO	19.27
SO2	19.27
VOC	0.18

PUBLIC NOTICE

The following matters are the subject of this public notice by the Ohio Environmental Protection Agency. The complete public notice, including any additional instructions for submitting comments, requesting information, a public hearing, or filing an appeal may be obtained at: https://epa.ohio.gov/actions or Hearing Clerk, Ohio EPA, 50 W. Town St., Columbus, Ohio 43215. Ph: 614-644-2129 email: HClerk@epa.ohio.gov

Draft Air Pollution Permit-to-Install and Operate Initial Installation
SOBE Thermal Energy Systems, LLC
205 North Ave
Youngstown, OH 44502-1172

PUBLIC NOTICE PUBLIC HEARING
Issuance of Draft Air Pollution PTIO Permit
SOBE Thermal Energy Systems, LLC

Issue Date: 07/06/2023
Permit Number: P0132799
Permit Type: PTIO
Facility ID: 0250110024
Facility Location: 205 North Avenue
Youngstown, OH 44502-1172

Permit/Facility Description: Permit-to-install-and-Operate (PTIO) for the installation of a 13.72 MMBtu/hr pyrolysis unit (P001) that will extract syngas from tire derived chips (TDC) to power existing natural gas boilers (B006 and B007). The boilers provide steam for various buildings in downtown Youngstown, and will burn syngas and natural gas. The pyrolysis unit is equipped with two gas cleaning units (GCU) and a 1.09 MMBtu/hr flare. Carbon black and carbon steel are potential byproducts of the process, and enclosed conveyors will be used for all material handling.

The Director of the Ohio Environmental Protection Agency, 50 West Town Street, Columbus Ohio has issued a draft air pollution control PTIO for the listed facility. The draft permit is being issued to solicit comments from any interested party for the director to consider prior to making a final decision.

A public hearing on the draft air permit is scheduled for Thursday, August 10, 2023, at the Eugenia Atkinson Recreation Center at 9030 Otis Street, Youngstown, OH 44510. An information session will commence at 6:00 pm followed by a public hearing to accept comments on the draft permit. A presiding officer will be present and may limit oral testimony to ensure that all parties are heard.

All interested persons are entitled to attend or be represented and give written or oral comments on the draft permit at the hearing. Written comments on the draft permit must be received by the close of the business day on August 24, 2023. Comments received after this date may not be considered a part of the official record. Written comments may be submitted at the hearing or sent to: Erik Bewley by email at DAPCNE.comments@epa.ohio.gov, or by mail at Ohio EPA DAPC, Northeast District Office, 2110 East Aurora Rd., Twinsburg, OH 44087. Ph: (330)963-1200.

The draft permit may be obtained at: https://epa.ohio.gov/help-center/edocument-search/edocument-search by entering the permit number P0132799. Physical copies of the permit or copies of supporting records may be inspected and copied at the Ohio EPA DAPC, Northeast District Office, located at the above address, telephone number 330-963-1252.

Persons interested in joining Ohio EPA's mailing list concerning this or similar actions may contact Paul Braun at paul.braun@epa.ohio.gov, or 614-644-3734.

B. Facility-Wide Terms and Conditions

1.

1. All the following facility-wide T & C are federally enforceable with the exception of those listed below which are enforceable under state law only:

   a) None.

2. The following EUs contained in this permit are subject to 40 CFR Part 60, Subparts Dc - (Standards of Performance for Steam Generating Commercial Boilers): B006 and B007. The complete NSPS requirements, including the NSPS General Provisions may be accessed via the internet from the electronic CFR (e-CFR) website www.ecfr.gov or by contacting the OEPA NEDO.

~~3. The OEPA has determined that this facility operates affected sources that are subject to the requirements of 40 CFR Part 63, Subpart JJJJJJ, the NESHAP for Industrial, Commercial, and Institutional Boilers Area Sources. OEPA is not accepting the delegation authority to implement and enforce the area source NESHAP standard. The area source NESHAP standard is implemented and enforced by U.S. EPA, Region 5. The promulgated version of this NESHAP standard and the 40 CFR Part 63, General Provisions may be accessed via the Internet from the Electronic CFR (e-CFR) website http://www.ecfr.gov/ or by contacting the OEPA, Northeast DO.~~

2.

C. Emissions Unit Terms and Conditions

1. P001, Thermolyzer 1

Operations, Property and/or Equipment Description:

Thermolyzer1 - Consists of 3 Reactors (which are heated by burners totaling 13.72 MMBtu/hr), 2-Gas Cleaning Units (GCU), and a 1.09 MMBtu/hr enclosed flare. Syngas is generated by processing (pyrolysis) TDC (88 tons per day) in the reactors. Syngas is used in boilers (B006 and B007) and Thermolyzer1 burners.

a) The following EU T & C are federally enforceable with the exception of those listed below which are enforceable under state law only.

(1) None.

b) Applicable Emissions Limitations and/or Control Requirements

(1) The specific operation(s), property, and/or equipment that constitute each EU along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures are identified below. Emissions from each unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
a.	ORC 3704.03(T)	**Emissions from thermolyzer burners (totaling 13.72 MMBtu/hr) and enclosed flare (1.09 MMBtu/hr):** NO_X emissions shall not exceed 0.21 lb/MMBtu. See b)(2)c.
b.	OAC rule 3745-31-05(A)(3)(a)(ii)	See b)(2)a.
c.	OAC rule 3745-17-07(A)(1)	PE from the burner stack and the enclosed flare serving this EU shall not exceed 20 percent opacity as a six-minute average, except as provided by rule.
d.	OAC rule 3745-17-10(B)(1)	PM emissions from each burner shall not exceed 0.020 lb/MMBtu of actual heat input.
e.	OAC rule 3745-17-11(B)(1)	Less stringent due to the requirement to vent all emissions to the Gas Cleaning Units (GCU) or the enclosed flare. See b)(2)c.
f.	OAC rule 3745-18-06(E)(2)	Less stringent due to the requirement to vent all emissions to the Gas Cleaning Units (GCU) or the enclosed flare.

	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
g.	OAC rule 3745-110-03(K)(16)	Exempt. Emissions do not meet or exceed 25 TPY.
h.	**OAC rule 3745-21-09(DD)**	**b)(2)e. and b)(2)f.**

(2) Additional Terms and Conditions

a. The BAT requirements under OAC rule 3745-31-05(A)(3) do not apply to the emissions of CO, VOC, SO_2, and PM_{10} from this air contaminant source since the calculated uncontrolled annual emission rates for each pollutant are less than 10 TPY.

b. The permittee shall properly install, operate, and maintain a device to continuously monitor the enclosed flare when the EU is in operation. The monitoring device and any recorder shall be installed, calibrated, operated, and maintained in accordance with the manufacturer's recommendations, instructions, and operating manuals.

c. All emissions from the reactors shall be vented to either the GCU or the enclosed flare. The GCU does not have an egress point to the atmosphere. The GCU only has egress points to the boilers (B006 and B007), the enclosed flare, and the burners for the reactors.

d. Each shipment of TDC processed in this EU shall meet the Non-Hazardous Secondary Materials (NHSM) regulations contained in 40 CFR Part 241. The permittee shall determine that the TDC meets these specifications by performing analyses or obtaining copies of analyses or other information from the supplier documenting that the TDC meets these specifications:

i. The TDC is managed as a valuable commodity;

ii. The TDC must have a meaningful heating value and be used as a fuel in a unit that recovers energy; and

iii. The TDC must contain contaminants or groups of contaminants at levels comparable to or lower than traditional fuels that the combustion unit is designed to burn.

LDAR Program

e. The permittee of the process unit, producing one or more of the organic chemicals identified in Appendix A to OAC 3745-21-09 as an intermediate or final product, shall comply with the requirements identified in OAC 3745-21-09 paragraphs (DD)(2) to (DD)(6).

f. The permittee shall develop and implement a LDAR program for the process unit in accordance with the requirements specified in OAC 3745-21-09 paragraphs (DD)(2)(b) to (DD)(2)(m).

c) Operational Restrictions

(1) Only Tire Derived Chips (TDC)* shall be loaded to the reactors.

*TDC shall meet the requirements of 40 CFR Section 241.3(d)(1) to not be classified as a solid waste.

(2) Non-passenger TDC shall make up no more than 10% of the feed stock that is loaded to the reactors.

(3) The enclosed flare shall be designed and operated as follows:

a. The flare shall be designed for and operated with no VE, as determined by Method 22 of Appendix A of 40 CFR Part 60, except for periods not to exceed a total of 5 minutes during any 2 consecutive hours.

b. The flare shall be operated with a flame present at all times when gases are vented to it. The presence of a flare pilot flame shall be monitored using a thermocouple or any other equivalent device to detect the presence of a flame. The net heating value of the gas being combusted and the actual exit velocity shall be calculated as required in the Testing Section of this permit.

c. The net heating value (H_T) of the gas being combusted and actual exit velocity of the flare shall be calculated as required in the Testing Section of this permit.

(4) Flares shall be steam-assisted, air-assisted, or non-assisted, and shall comply with the following requirements for the heat content in paragraph “a” and the maximum tip velocity in paragraph “b”, or shall comply with the alternative requirements in paragraph “c” for nonassisted flares:

a. Steam-assisted or air-assisted flares shall have a net heating value of 300 Btu/scf (11.2 MJ/scm) or greater, for the gas being combusted.

Nonassisted flares shall have a net heating value of 200 Btu/scf (7.45 MJ/scm) for the gas being combusted.

b. Steam-assisted and/or nonassisted flares shall be designed for and operated with an exit velocity of less than 18.3 m/sec (60 ft/sec), with the following exceptions:

i. steam-assisted and nonassisted flares, having a net heating value of 1,000 Btu/scf (37.3 MJ/scm) for the gas being combusted, can be designed for and operated with an exit velocity equal to or greater than 18.3 m/sec (60 ft/sec), but less than 122 m/sec (400 ft/sec); and

steam-assisted and nonassisted flares can be designed for and operated with an exit velocity of less than the velocity calculated below for V_{max}, and less than 122 m/sec (400 ft/sec):

$$\text{Log10}\ (V_{max}) = (H_T + 28.8)/31.7$$

where:

V_{max} = maximum permitted velocity, m/sec;

28.8 = constant;

31.7 = constant; and

H_T = the net heating value as determined in the Testing Section of this permit.

ii. Air-assisted flares shall be designed and operated with an exit velocity less than the velocity V_{max}, calculated as follows:

$V_{max} = 8.706 + 0.7084 (H_T)$
where:
V_{max} = maximum permitted velocity, m/sec;
8.706 = constant;
0.7084 = constant; and
H_T = the net heating value as determined in the Testing Section of this permit.

c. Nonassisted flares that have a diameter of 3 inches or greater and a hydrogen content of 8.0 percent (by volume), or greater, shall be designed for and operated with an exit velocity of less than 37.2 m/sec (122 ft/sec) and less than the velocity, V_{max}, as determined by the following equation:

$V_{max} = (X_{H2} - K_1) K_2$

where:

V_{max} = maximum permitted velocity, m/sec;

K_1 = constant, 6.0 volume-percent hydrogen;

K_2 = constant, 3.9 (m/sec)/volume-percent hydrogen; and

X_{H2} = the volume-percent of hydrogen, on a wet basis, as calculated by using the ASTM Method D1946-90.

(5) A pilot flame shall be maintained at all times in the flare's pilot burner. The presence of the pilot shall be monitored using a thermocouple or other equivalent device to detect the presence of a flame.

(6) Spent TDC (char) shall be conveyed through a sealed discharge chute into an airtight metal receiving tank and allowed to cool before being exposed to the ambient air, to ensure that no visible emissions are present from the Thermolyzer operations.

(7) Lime added to the GCUs shall be in a slurry form.

LDAR Program

(8) The permittee shall develop and implement a LDAR program designed to monitor and repair leaks from ancillary and associated equipment covered by this permit:

a. a weatherproof identification tag with the equipment identification number and the date shall be immediately attached to the leaking equipment;

b. a record of the leak, the date it was first detected, and any attempt to repair the leak and date is entered into the leak repair log;

c. an identification tag that was attached to a leaking valve "in gas/vapor service" or "in light liquid service" may be removed only after the valve is repaired and found to have no leaks for two consecutive months; and

d. an identification tag attached to leaking equipment that is exempted from the monitoring requirements of OAC 3745-21-09(DD)(2)(b) may be removed immediately following the repair of the leak.

(9) Repair of a leak shall be attempted no later than 5 calendar days after it is detected, where practicable, and shall include, but not limited to, the following best maintenance practices:

a. tightening of bonnet bolts;

b. replacement of bonnet bolts;

c. tightening of packing gland nuts; and

d. injection of lubricant into lubricated packing.

(10) Except where meeting one of the conditions defined in OAC 3745-21-09(DD)(11), where a delay in repair is allowed, a leak shall be repaired as soon as practicable, but no later than 15 calendar days after it is detected. Leaking equipment shall be deemed repaired if the maximum VOC concentration is measured to be less than 10,000 ppmv.

(11) Each compressor shall be equipped with a seal that has a barrier fluid system and sensor which comply with the requirements specified in OAC 3745-21-09(DD)(8), with the following exceptions:

a. any compressor designated for "no detectable emissions", and meeting the requirements of OAC 3745-21-09 (DD)(7).

b. any compressors equipped with a closed vent system capable of capturing and transporting any leakage from the compressor seal to control equipment, where the closed vent system and the control equipment comply with the requirements specified in OAC 3745-21-09(DD)(9) and (DD)(10).

c. any reciprocating compressor that meets the following conditions:

i. the compressor was installed prior to May 9, 1986; and

ii. the permittee demonstrates, to the satisfaction of the Director, that recasting the compressor distance piece or replacing the compressor are the only options available to bring it into compliance with the requirements to equip it with a seal with a barrier fluid system and sensor.

(12) Except as otherwise provided below, any pressure relief device "in gas/vapor service" in the process unit shall comply with the following requirements:

a. Except during pressure releases, the pressure relief device shall be operated with "no detectable emissions", as indicated by an instrument reading of less than 500 ppmv above background, as measured by the method specified in OAC 3745-21-10(F).

b. No later than 5 calendar days after a pressure release, a pressure relief device shall be tested to confirm the condition of "no detectable emissions" in accordance with the method specified in OAC 3745-21-10(F).

c. Except for a delay of repair as provided in OAC 3745-21-09(DD)(11), a pressure relief device shall be returned to a condition of "no detectable emissions" as soon as practicable, but no later than 5 calendar days after a pressure release.

Any pressure relief device that is equipped with a closed vent system capable of capturing and transporting leakage through the pressure relief device to control equipment meeting the requirements specified in OAC 3745-21-09(DD)(9) and (DD)(10) is excluded from these requirements.

(13) With the exception of an "in-situ sampling system" (a non-extractive sampler or an in-line sampler), each sampling connection system in the process unit shall be equipped with a closed purge system or a closed vent system that meets one of the following requirements:

a. the purged process fluid is returned directly to the process line with zero VOC emissions to the ambient air;

b. the purged process fluid is collected and recycled with zero VOC emissions to the ambient air; or

c. the closed purge system or closed vent system is designed and operated to capture and transport all the purged process fluid to control equipment that meet the control equipment requirements specified in OAC 3745-21-09(DD)(10).

(14) Each open-ended valve or line in the process unit shall be equipped with a cap, blind flange, plug, or second valve which shall comply with the following requirements:

a. Except during operations requiring the flow of process fluid through the open-ended valve or line, the cap, blind flange, plug, or second valve shall seal the open end of the open-ended valve or line.

b. If equipped with a second valve, the open-ended valve or line shall be operated in a manner such that the valve on the process fluid end is closed before the second valve is closed.

c. A bleed valve or line from a double block and bleed system may remain open during operations that require venting the line between the block valves, but the line/valve shall be sealed (as in "a" above) at all other times.

(15) A pump or compressor equipped with a seal that has a barrier fluid system and sensor, which are employed to meet the requirements of OAC 3745-21-09(DD)(2)(d)(ii) for a pump or 3745-21-09(DD)(3)(a) and (b) for a compressor, shall be operated and maintained to comply with the following requirements.

a. The barrier fluid system shall meet one of the three following conditions:

i. The barrier fluid system is operated with a barrier fluid at a pressure that is greater, at all times, than the stuffing box pressure of the pump or compressor.

ii. The barrier fluid system is equipped with a barrier fluid degassing reservoir that is connected by a closed vent system to control equipment and the closed vent system and control equipment comply with the requirements specified in OAC 3745-21-09(DD)(9) and (DD)(10).

iii. The barrier fluid system is equipped with a system that purges the barrier fluid into a process stream with zero VOC emissions to the ambient air.

b. The barrier fluid system shall be "in heavy liquid service" or shall <u>not</u> be "in VOC service".

c. The barrier fluid system shall be equipped with a sensor that will detect failure of the seal system, the barrier fluid system, or both, based on design criteria and operating experience of the permittee.

(16) A delay of the repair of a detected leak or a delay in returning a pressure relief valve/device to a condition of "no detectable emissions" shall be allowed only if complying with the following requirements:

a. A delay of repair shall be allowed if the repair is technically infeasible without shutdown of the process unit. However, the repair shall occur before the end of the next process unit shutdown.

b. A delay of repair shall be allowed for a piece of equipment that is isolated from the process and that does not remain "in VOC service" (for example, isolated from the process and properly purged).

c. A delay of repair for a valve shall be allowed if:

i. it can be demonstrated that the emissions from purged material resulting from immediate repair is greater than the emissions likely to result from delay of repair; and

ii. the purged material is collected and destroyed or recovered in control equipment that meets the requirements specified in OAC 3745-21-09(DD)(10).

d. A delay of repair for a valve beyond a process unit shutdown shall be allowed if:

i. a valve assembly replacement is necessary during the process unit shutdown, and

ii. the valve assembly supplies have been depleted, and

iii. valve assembly supplies had been sufficiently stocked before the supplies were depleted.

A delay of repair beyond the next process unit shutdown shall not be allowed for the valve unless the next process unit shutdown occurs sooner than 6 months after the first process unit shutdown.

e. A delay of repair for a pump shall be allowed if:

i. the repair requires the use of a dual mechanical seal system and associated barrier fluid system; and

ii. the repair is completed as soon as practicable, but no later than 6 months after the leak was detected.

d) Monitoring and/or Recordkeeping Requirements

(1) The permittee shall monitor and record daily the amount (in tons) of TDC loaded into the reactors.

(2) The permittee shall monitor and record daily (in tons) the type of TDC (i.e. passenger TDC/commercial TDC/truck TDC) loaded into the reactors.

(3) The permittee shall receive and maintain information from the supplier/marketer for each shipment of TDC processed in this EU, which shall contain the following information:

a. The date the TDC was received at the facility and the amount received

b. The name, address, and U.S. EPA identification number (if applicable) of the generator, transporter, processor/refiner, supplier, and/or marketer

Each record shall be kept in a readily accessible location for a period of not less than 5 years following the receipt of each shipment of TDC and shall be made available to the OEPA DMWM and/or the DAPC (OEPA NEDO) upon verbal or written request. Any authorized representative of the OEPA may sample or require sampling of any TDC shipments received, stored, or processed by/at this facility for periodic detailed analyses through an independent laboratory.

(4) The permittee shall perform daily checks, when the EU is in operation and when the weather conditions allow, for any visible PE from the stacks serving this EU and any visible emissions from the Thermolyzer. The presence or absence of any VE shall be noted in an operations log. If VEs are observed, the permittee shall also note the following in the operations log:

a. the color of the emissions;

b. whether the emissions are representative of normal operations;

c. if the emissions are not representative of normal operations, the cause of the abnormal emissions;

d. the total duration of any VE incident; and

e. any corrective actions taken to minimize or eliminate the VEs.

If VEs are present, a VE incident has occurred. The observer does not have to document the exact start and end times for the VE incident under item (d) above or continue the daily check until the incident has ended. The observer may indicate that the VE incident was continuous during the observation period (or, if known, continuous during the operation of the EU). With respect to the documentation of corrective actions, the observer may indicate that no corrective actions were taken if the VEs were representative of normal operations or specify the minor corrective actions that were taken to ensure that the EU continued to operate under normal conditions or specify the corrective actions that were taken to eliminate abnormal VEs.

(2) The permittee shall maintain the following information each day for this EU:

a. amount of NG fired in the Thermolyzer burners, in cubic feet/day;

b. amount of syngas fired in the Thermolyzer burners, in cubic feet/day; ~~and~~

c. amount of syngas fired in the enclosed flare, in cubic feet/day; **and**

d. **amount of lime slurry added to the GCU, in gallons per minute, as established during the most recent performance test that demonstrated compliance.**

(4) The permittee shall properly install, operate, and maintain equipment to continuously monitor the pressure drop across the GCUs (in pounds per square inch, gauge) the GCU

liquid flow rate (in gallons per minute) and the GCU liquid pH during operation of this EU, including periods of startup and shutdown. The permittee shall record the pressure drop, liquid flow rate, and pH hourly. The monitoring equipment shall be installed, calibrated, operated, and maintained in accordance with the manufacturer's recommendations, instructions, and operating manual(s), with any modifications deemed necessary by the permittee.

a. The acceptable range or limit for the pressure drop across the GCUs, the GCUs liquid flow rate, and the GCU liquid pH shall be based upon the manufacturer's specifications until such time as any required performance testing is conducted and the appropriate range for each parameter is established to demonstrate compliance.

b. Whenever the monitored value for any parameter deviates from the range(s) or minimum limit(s) established in accordance with this permit, the permittee shall promptly investigate the cause of the deviation. The permittee shall maintain records of the following information for each investigation:

   i. the date and time the deviation began;

   ii. the magnitude of the deviation at that time;

   iii. the date the investigation was conducted;

   iv. the name(s) of the personnel who conducted the investigation; and

   v. the findings and recommendations.

c. In response to each required investigation to determine the cause of a deviation, the permittee shall take prompt corrective action to bring the control equipment parameters within the acceptable range(s), or at or above the minimum limit(s) specified in this permit, unless the permittee determines that corrective action is not necessary and documents the reasons for that determination and the date and time the deviation ended.

   i. The permittee shall maintain records of the following information for each corrective action taken:

      (a) a description of the corrective action;

      (b) the date the corrective action was completed;

      (c) the date and time the deviation ended;

      (d) the total period of time (in minutes) during which there was a deviation;

      (e) the pressure drop and flow rate readings immediately after the corrective action was implemented; and

      (f) the name(s) of the personnel who performed the work.

ii. Investigation and records required by this paragraph do not eliminate the need to comply with the requirements of OAC rule 3745-15-06 if it is determined that a malfunction has occurred.

d. These range(s) and/or limit(s) for the pressure drop, liquid flow rate **and liquid pH** are effective for the duration of this permit, unless revisions are requested by the permittee and approved in writing by OEPA NEDO. The permittee may request revisions to the permitted range or limit for the pressure drop or liquid flow rate based upon information obtained during future performance tests that demonstrate compliance with the allowable PE rate for this/these EU(s). In addition, approved revisions to the range or limit will not constitute a relaxation of the monitoring requirements of this permit and may be incorporated into this permit by means of an administrative modification.

(2) The permittee shall monitor the **enclosed** flare to ensure that it is operated and maintained in conformance with its design and the requirements contained in this permit. The net heating value of a gas, the actual exit velocity for the **enclosed** flare, and the maximum permitted velocity for an air-assisted flare shall be determined as required by 40 CFR 60.18, 40 CFR 63.11, and OAC rule 3745-10(P), as applicable.

(3) The permittee shall record the following information each day for the **enclosed** flare and process operations:

a. all periods during which the pilot flame/sparker is not functioning properly; and

b. a log or record of operating time for the capture (collection) system, the **enclosed** flare, the monitoring equipment, and the EU.

(6) A flow indicator that provides a record of vent stream flow diverted from being routed to the **enclosed** flare at least once every 15 minutes:

a. The flow indicator shall be installed at the entrance to any bypass line that could divert the vent stream from being routed to the **enclosed** flare, resulting in its emission to the atmosphere.

b. Where the bypass line valve is secured in the closed position with a car-seal or a lock-and-key type configuration, a flow indicator is not required. A visual inspection of the seal or closure mechanism shall be performed at least once every month to ensure that the valve is maintained in the closed position and the vent stream is not diverted through the bypass line.

(6) The permittee shall monitor the opening of the spent TDC tanks, after cooling, to ensure no visible emissions.

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(11) Except as otherwise provided in OAC 3745-21-09(DD)(2)(c) and (DD)(2)(d), equipment shall be monitored for leaks in accordance with the method specified OAC 3745-21-10(F) and as follows:

a. Any pump "in light liquid service" shall be monitored monthly.

b. Any valve "in gas/vapor service" or "in light liquid service" shall be monitored monthly, except that quarterly monitoring may be employed where no leaks are detected during two consecutive months. Quarterly monitoring may begin with the next calendar quarter following the two consecutive months of no detected leaks. Monitoring shall be conducted in the first month of each calendar quarter; and quarterly monitoring may continue until a leak is detected, at which time monitoring shall again be employed monthly.

c. The following equipment shall be monitored within 5 calendar days after evidence of a leak or potential leak from the equipment by visual, audible, olfactory, or other detection method:

i. a pump "in heavy liquid service";

ii. a valve "in heavy liquid service";

iii. a pressure relief device "in light liquid service" or "in heavy liquid service"; and

iv. a flange or other connector.

d. Any equipment in which a leak is detected, as defined in OAC 3745-21-09(DD)(2)(g), shall be monitored within 5 working days after each attempt to repair it, unless the equipment was not successfully repaired.

(12) For any valve "in gas/vapor service" or "in light liquid service", an alternative monitoring schedule may be employed, in lieu of the monitoring schedule specified in OAC 3745-21-09(DD)(2)(b)(ii), above, if meeting one of the three following requirements:

a. The valve is designated as "difficult to monitor" and is monitored once each calendar year if meeting all of the following conditions:

i. construction of the process unit commenced prior to May 9, 1986;

ii. the permittee demonstrates that the valve cannot be monitored without elevating the monitoring personnel more than 6 feet above a support surface; and

iii. the permittee has a written plan that requires monitoring of the valve at least once per year.

b. The valve is designated as "unsafe to monitor" and is monitored as frequently as practical during times when it is safe to monitor, provided the following conditions are met:

i. the permittee demonstrates that the valve is unsafe to monitor because monitoring personnel would be exposed to an immediate danger as a consequence of monitoring on a monthly basis; and

ii. the permittee adheres to a written plan that requires monitoring of the valve as frequently as practical during times when it is safe to monitor.

c. The valve qualifies for an alternative monitoring schedule based on a "skip period" as allowed per OAC 3745-21-09(DD)(12).

(13) The permittee may elect to implement an alternative monitoring schedule, to that of OAC 3745-21-09(DD)(2)(b)(ii) and as identified below, for the process unit valves if the following conditions are met:

a. no more than 2.0% of the process unit valves are leaking;

b. the permittee notifies the Director (the appropriate district office or local air agency) prior to implementing the alternative monitoring schedule; and such notification identifies:

i. which valves will be subject to the alternative monitoring schedule; and

ii. which work practice, identified in OAC 3745-21-09(DD)(12)(e), will be implemented;

c. the permittee monitors the valves initially monthly, to quarterly, as allowed and according to the requirements specified in OAC 3745-21-09(DD)(2)(b)(ii); and

d. the valves continue to meet with the conditions specified in OAC 3745-21-09(DD)(2)(g) to (DD)(2)(m).

If meeting all of the above conditions ("a" through "d"), one of the following monitoring periods for valve leak detection may be implemented:

a. after two consecutive quarterly leak detection periods with 2.0% or less of the process unit valves leaking, a monitoring program may begin in which the first quarter of every two consecutive quarterly leak detection periods is skipped; or

b. after 5 consecutive quarterly leak detection periods with 2.0% or less of the process unit valves leaking, a monitoring program may begin in which the first three quarters of every four consecutive quarterly periods is skipped.

The alternative monitoring schedule shall be based on skipping quarterly monitoring periods. Any valve "in vacuum service", "in heavy liquid service", or not "in VOC service" shall be excluded from the monitoring schedule. If the percentage of valves leaking from the process unit becomes greater than 2.0%, the permittee shall again comply with the monitoring requirements specified in OAC

3745-21-09(DD)(2)(b)(ii), but may revert to this alternative monitoring schedule after meeting and documenting all of the above requirements.

(14) The percentage of valves leaking, used to qualify for "skipped period" alternative monitoring schedule, shall be determined as the sum of the number of those valves found leaking during any portion of the current monitoring period and the number of those valves found leaking during a previous monitoring period for which repair has been delayed during the current monitoring period, divided by the total number of valves, and multiplied by 100.

(15) The following information shall be recorded in a log, that is kept in a readily accessible location, if the "skipped period" alternative monitoring schedule for leak detection of process unit valves is established:

a. the identification numbers of the valves subject to the alternative monitoring schedule;

b. the schedule established for monitoring the subject valves;

c. the valves exempt from the alternative monitoring schedule and reason for the exemption, i.e., "in vacuum service", "in heavy liquid service", or not "in VOC service";

d. the percentage of valves leaking during each monitoring period; and

e. the maximum instrument reading and date each valve was monitored.

(16) The permittee may elect to implement an alternative monitoring schedule to that of OAC 3745-21-09(DD)(2)(b)(ii) for the process unit valves, as provided in OAC 3745-21-09 (DD)(2)(d)(v), if the following conditions are met:

a. it can be demonstrated that no more than 2.0% of the process unit valves are leaking;

b. the permittee notifies the Director (the appropriate district office or local air agency) prior to implementing the alternative monitoring standard;

c. the demonstration of compliance to document that the percentage of valves leaking does not exceed 2.0% is conducted initially upon implementation and annually thereafter and as follows:

i. all valves subject to the alternative monitoring standard shall be monitored for leaks within a one-week period by the method specified in OAC 3745-21-10(F);

ii. any leak detected and measured with an instrument reading of 10,000 ppmv or greater shall be recorded as a leak; and

iii. the percentage of valves leaking shall be determined as the number of valves for which a leak is detected, divided by the number of valves monitored, and multiplied by 100.

All valves "in gas/vapor service" or "in light liquid service" in the process unit shall be subject to this alternative monitoring standard, except for valves not "in VOC service", valves "in vacuum service", and valves which are designated as unsafe to monitor as provided in OAC 3745-21-09(DD)(2)(c)(ii).

(17) When a leak is detected as described above, the leaking valve shall be repaired in accordance with OAC 3745-21-09(DD)(2)(h) and (DD)(2)(i). If the percentage of valves leaking from the process unit becomes greater than 2.0%, the permittee shall again comply with the monitoring requirements specified in OAC 3745-21-09(DD)(2)(b)(ii), but may revert to this alternative monitoring schedule after meeting and documenting all of the above requirements.

(18) The following equipment is excluded from the monitoring requirements of OAC 3745-21-09(DD)(2)(b):

a. any pump that has no externally actuated shaft penetrating the pump housing and that is designated for no detectable emissions as provided in OAC 3745-21-09(DD)(7);

b. any pump that is equipped with a dual mechanical seal which has a barrier fluid system and sensor that comply with the requirements specified in OAC 3745-21-09 (DD)(8);

c. any pump that is equipped with a closed vent system capable of capturing and transporting any leakage from the pump seal to control equipment, provided the closed vent system and the control equipment comply with the requirements specified in OAC 3745-21-09(DD)(9) and (DD)(10);

d. any valve that has no externally actuated stem penetrating the valve and that is designated for "no detectable emissions" as provided in OAC 3745-21-09(DD)(7); and

e. any valve that qualifies for the alternative monitoring standard based on the percentage of valves leaking, as provided in OAC 3745-21-09(DD)(13).

(19) Any pump "in light liquid service" shall be checked by visual inspection each calendar week for indications of liquids dripping from the pump seal, unless the pump is equipped with a closed vent system capable of transporting any leakage from the pump seal to control equipment, and the closed vent system and control equipment comply with the requirements specified in OAC 3745-21-09(DD)(9) and (DD)(10).

(20) Any sensor employed pursuant to OAC 3745-21-09(DD)(2)(d)(ii), for a pump equipped with a dual mechanical seal using a barrier fluid system and sensor; or a sensor employed pursuant to OAC 3745-21-09(DD)(3)(b), for a compressor equipped with a seal using a barrier fluid system and sensor; and complying with the requirements specified in OAC 3745-21-09(DD)(8), shall be checked daily, unless the sensor is equipped with an audible alarm.

(21) A leak is detected when:

a. a concentration of 10,000 ppmv or greater is measured from a potential leak interface of any equipment, that is monitored for leaks using the method specified in OAC 3745-21-10(F);

b. there is an indication of liquids dripping from the seal of a pump "in light liquid service"; or

c. a sensor employed pursuant to OAC 3745-21-09(DD)(2)(d)(ii) or (DD)(3)(b) indicates failure of the seal system, the barrier fluid system, or both.

(22) When a leak is detected, the following information shall be recorded in the leak repair log:

a. the identification number of the leaking equipment;

b. for each leak required to be monitored, the identification numbers of the leak detection instrument and its operator;

c. how the leak was detected, e.g., monitoring, visual inspection, odor detected, or sensor alarm/signal;

d. the date on which the leak was detected and the date of each attempt to repair the leaking equipment;

e. the methods of repair applied in each attempt to repair the leak;

f. one of the following entries within 5 working days after each attempt to repair the leaking equipment:

i. "not monitored," denoting the leaking equipment was presumed to still be leaking and it was not monitored; or

ii. if the leaking equipment was monitored with a leak detection instrument, the maximum concentration that was measured as follows:

(a) the actual reading in ppmv; or

(b) a record stating that the measured concentration was "below 10,000 ppmv"; or

(c) a record stating that the measured concentration was "above 10,000 ppmv";

g. if the leak is not repaired within 15 calendar days after the date on which it was detected:

i. a record stating that repair was delayed and the reason for the delay;

ii. if repair is being delayed until the next process unit shutdown due to technical infeasibility of repair, the signature of the operator whose decision it was that repair is technically infeasible without a process unit shutdown;

iii. the expected date of successful repair of the leak; and

iv. the dates of process unit shutdowns that occur while the leaking equipment is unrepaired; and

h. the date on which the leak was successfully repaired.

(23) The leak repair log shall be kept in a readily accessible location and maintained by the operator of the process unit. Each record shall be retained in the log for a minimum of five years following the date on which it was recorded.

(24) The following information shall be recorded for the/each process unit in a log that is kept in a readily accessible location:

a. a list of identification numbers for equipment subject to the requirements of OAC 3745-21-09(DD)(2) to (DD)(10);

b. a list of identification numbers for equipment designated for "no detectable emissions" as provided in OAC 3745-21-09(DD)(7), and the signature of the permittee/operator authorizing the designation of each piece of equipment;

c. a list of identification numbers for pressure relief devices subject to OAC 3745-21-09(DD)(4);

d. a list of identification numbers for closed vent systems subject to OAC 3745-21-09(DD)(9);

e. for compliance tests required under OAC 3745-21-09(DD)(4)(c), (DD)(7)(c), and (DD)(9)(c):

i. the date each compliance test is conducted;

ii. the background VOC emissions level measured during each compliance test; and

iii. the maximum instrument reading measured at the equipment during each compliance test;

f. the following information pertaining to valves subject to an alternative monitoring schedule, as provided in OAC 3745-21-09(DD)(2)(c):

i. a list of identification numbers for valves designated as unsafe to monitor, an explanation for each valve stating why the valve is unsafe to monitor, and the plan for monitoring each valve;

ii. a list of identification numbers for valves designated as difficult to monitor, an explanation for each valve stating why the valve is difficult to monitor, and the schedule for monitoring each valve; and

iii. a list of identification numbers for valves subject to the alternative monitoring schedule based on a "skip period", a schedule for monitoring these valves, and the percentage of valves leaking during each monitoring period;

g. the following information pertaining to closed vent systems and control equipment meeting the requirements of OAC 3745-21-09(DD)(9) and (DD)(10):

i. detailed schematics, design specifications, and piping and instrumentation diagrams for the closed vent systems and collection and control equipment;

ii. the dates and descriptions of any changes in the design specifications above;

iii. a description of the parameter(s) monitored, as required in OAC 3745-21-09(DD)(10)(d), to ensure that the control equipment is operated and maintained in conformance with its design, and the reason for selecting the parameter(s);

iv. periods when the closed vent systems and control equipment are not operated as designed, including periods when a flare pilot light does not have a flame; and

v. dates of startups and shutdowns of the closed vent systems and control equipment;

h. the following information pertaining to barrier fluid systems and sensors described in OAC 3745-21-09(DD)(8):

i. a list of identification numbers of pumps and compressors equipped with such barrier fluid systems and sensors;

ii. the criteria that indicate failure of the seal system, the barrier fluid system, or both, as required in OAC 3745-21-09(DD)(8)(d) and an explanation of the criteria; and

iii. any changes to such criteria and the reasons for the changes;

i. the following information for use in determining an exemption for the process unit as provided in OAC 3745-21-09(DD)(17)(a):

i. an analysis demonstrating the design capacity of the process unit;

ii. a statement listing the feed and raw materials and products from the process unit and an analysis demonstrating whether these chemicals are heavy liquids or beverage alcohols; or

iii. **an analysis demonstrating that equipment that is documented as "not in VOC service" meets this condition; and**

j. the following information pertaining to specific equipment that are exempt as provided in OAC 3745-21-09(DD)(17)(b):

i. a list of identification numbers of equipment "in vacuum service";

ii. a list of identification numbers of equipment "not in VOC service" and the information or data used to demonstrate this; and

iii. a list of equipment subject to an equivalent emission requirement that is approved by the Director pursuant to OAC 3745-21-09 (DD)(16).

One recordkeeping system may be used to comply with the recordkeeping requirements for multiple process units provided the system identifies each process unit to which each record pertains.

(25) The following facility process units are exempted from the requirements of OAC 3745-21-09(DD)(2) to (DD)(6). Records shall be maintained to identify and document the process unit equipment meeting these requirements:

a. any process unit that has a design capacity to produce less than 1,100 tons per year;

b. any process unit that produces only heavy liquid chemicals from heavy liquid feed or raw materials;

c. any process unit that produces beverage alcohol;

d. any process unit that has no equipment "in VOC service" as determined in accordance with OAC 3745-21-10(O)(2); and

e. any process unit at a petroleum refinery, as defined in OAC 3745-21-01(E)(15).

(26) The following process equipment are exempt from the requirements of OAC 3745-21-09(DD)(2) to (DD)(6). Records shall be maintained to identify and document the process unit equipment meeting these requirements:

a. any equipment "not in VOC service", as determined in accordance with OAC 3745-21-10(O)(2);

b. any equipment "in vacuum service"; and

c. any equipment subject to an equivalent emission limitation as provided in OAC 3745-21-09(DD)(16).

e) Reporting Requirements

(1) The permittee shall identify the following information in the annual PER:

a. all days during which any visible PE were observed from the stack(s) serving this EU or from Thermolyzer operations;

b. all days during which any visible PE were observed from the char handling operations (TDC cooling tanks);

c. any corrective actions taken to minimize or eliminate the visible PE;

d. **any instance when any material other than TDC was processed**;

e. **any deviation from the NHSM standards in 40 CFR Section 241; and**

f. any instance that the daily volume of non-passenger car tires processed exceeded 10%.

(2) The permittee shall identify in the annual PER the following information concerning the operations of the GCUs during the 12-month reporting period for this EU:

a. each period of time (start time and date, and end time and date) when the pressure drop across the GCUs, the liquid flow rate, or the GCUs liquid pH was outside of the appropriate range or limit specified by the manufacturer and outside of the acceptable range following any required compliance demonstration;

b. any period of time (start time and date, and end time and date) when the EU was in operation and the process emissions were not vented to the **enclosed flare or the** GCUs;

c. each incident of deviation described in “a” or “b” (above) where a prompt investigation was not conducted;

d. each incident of deviation described in “a” or “b” where prompt corrective action, that would bring the pressure drop, liquid flow rate, or GCU liquid pH into compliance with the appropriate range or limit contained in this permit, was determined to be necessary and was not taken; and

e. each incident of deviation described in “a” or “b” where proper records were not maintained for the investigation and/or the corrective action(s), as identified in the monitoring and record keeping requirements of this permit.

(3) The permittee shall identify in the annual PER all periods of time during which the lime slurry addition did not meet the minimum flow rate established during the most recent performance test that demonstrated compliance.

(4) The permittee shall identify in the annual PER all periods of time during which the pilot flame/sparker was not functioning properly or the flare was not maintained as required in this permit. The reports shall include the date, time, and duration of each such period.

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(5) Semiannual reports shall be submitted to the Director by the first day of February and August and shall include the following information for each preceding semiannual period of operations:

a. the process unit identification;

b. the number of pumps "in light liquid service" associated with the process unit, excluding:

i. pumps that have no externally actuated shaft penetrating the pump housing and designated for "no detectable emissions"; and

ii. pumps equipped with a closed vent system capable of capturing and transporting leakage from the pump seal to control equipment meeting the requirements of OAC 3745-21-09(DD)(9) and (DD)(10).

c. the number of valves "in gas/vapor service" or "in light liquid service" associated with the process unit, excluding:

i. valves that have no externally actuated stem penetrating the valve and designated for "no detectable emission"; and

ii. valves qualified for the alternative monitoring standard based on the percentage of valves leaking, under the provision of OAC 3745-21-09(DD)(13).

d. the number of compressors associated with the process unit, excluding:

i. compressors designated for and meeting the requirements for "no detectable emissions";

ii. compressors equipped with a closed vent system capable of capturing and transporting leakage from the compressor seal to control equipment meeting the requirements of OAC 3745-21-09(DD)(9) and (DD)(10); and/or

iii. reciprocating compressors installed prior to 5/9/86, where it can be demonstrated that recasting or replacing the compressor would be the only means of complying with the requirement to equip it with a seal with a barrier fluid system and sensor.

e. for each month during the semiannual period:

i. the number of pumps "in light liquid service" for which leaks were detected (as required in this permit);

ii. the number of pumps "in light liquid service" for which leaks were not repaired within 15 calendar days after the date of leak detection;

iii. the number of valves "in gas/vapor service" or "in light liquid service" for which leaks were detected (as required in this permit);

iv. the number of valves "in gas/vapor service" or "in light liquid service" for which leaks were not repaired within 15 calendar days after the date of leak detection;

v. the number of compressors for which leaks were detected (as required in this permit);

vi. the number of compressors for which leaks were not repaired within 15 calendar days after the date of leak detection; and

vii. for each delay of repair allowed pursuant to OAC 3745-21-09(DD)(11), the reason for the delay.

f. the dates of process unit shutdowns that occurred within the semiannual period; and

g. the results of compliance tests for equipment identified as having "no detectable emissions", along with the associated equipment identification numbers from the compliance log.

Semiannual reports shall be submitted to the OEPA NEDO by the first day of February and August and shall include information for the preceding semiannual period.

(6) The permittee shall notify the OEPA NEDO of the intent-to-test the process control equipment not less than 30 days before the proposed initiation of the testing. The following information shall be included in the notification:

a. a statement indicating the purpose of the proposed test and the applicable paragraph of OAC 3745-21-09 for which compliance will be demonstrated;

b. a detailed description of the process unit and control device to be tested;

c. a detailed description of the test procedures, equipment and sampling sites; and

d. a timetable, setting forth the dates on which:

i. the testing will be conducted; and

ii. the final test report will be submitted.

The results of such compliance tests shall be reported to the OEPA NEDO within 30 days following the test date.

f) Testing Requirements

(1) Compliance with the Emissions Limitations and/or Control Requirements specified in section b) of these terms and conditions shall be determined in accordance with the following methods:

a. Emission Limitation:

Visible PE from any stack shall not exceed 20 percent opacity as a six-minute average, except as specified by rule.

Applicable Compliance Method:

Compliance with the stack visible PE limitation shall be determined through VE observations performed in accordance with U.S. EPA Method 9.

b. Emission Limitation:

There shall be no VE from the flare, except for periods not to exceed a total of 5 minutes during any 2 consecutive hours.

Applicable Compliance Method:

Compliance with the VE limitation shall be determined in accordance with U.S. EPA Method 22 in Appendix A of 40 CFR Part 60.

c. Emission Limitation:

PM emissions from each burner shall not exceed 0.020 lb/MMBtu of actual heat input.

Applicable Compliance Method:

Compliance with the PE limitation shall be determined through testing performed in accordance with U.S. EPA Method 5.

d. Emission Limitation:

NO_X emissions shall not exceed 0.21 lb/MMBtu.

Applicable Compliance Method:

Compliance with the NO_X limitation shall be determined in accordance with U.S. EPA Method 7E in Appendix A of 40 CFR Part 60.

(2) The net heating value of the gas being combusted at the flare shall be calculated as follows:

$$H_T = k \sum_{i=1}^{n} C_i H_i$$

where:

H_T = net heating value of the sample, MJ/scm; where the net enthalpy per mole of off gas is based on combustion at 25 degrees Celsius and 760 mm Hg, but the standard temperature of 20 degrees Celsius is used for determining the volume corresponding to one mole.

k = constant, 1.740 x 10^{-7} (1/ppm) (g mole/scm) (MJ/kcal), where the standard temperature for "g mole/scm" is 20 degrees Celsius.

C_i = concentration of sample component "I" in ppm on a wet basis, as measured for organics by Reference Method 18 and measured for hydrogen and carbon monoxide by ASTM D1946-90.

H_i = net heat of combustion of sample component "I", kcal/g mole at 25 degrees Celsius and 760 mm Hg. The heats of combustion may be determined using ASTM D4809-95 if published values are not available or cannot be calculated.

i = subscript denoting a specific component in the sample; and

n = total number of components within the sample.

The conversion factor of "26.84 Btu scm/MJ scf" can be used to convert the net heating value of the gas (H_T) from MJ/scm to Btu/scf.

(3) The actual exit velocity of the flare shall be determined by dividing the volumetric flow rate (in units of standard temperature and pressure) of the flare header or headers that feed the flare, as determined by Reference Methods 2, 2A, 2C, or 2D (found in 40 CFR 60, Appendix A), as appropriate, by the unobstructed (free) cross-sectional area of the flare tip.

The conversion factor of 3.281 ft/m can be used to convert the velocity from m/sec to ft/sec.

(4) The permittee shall conduct, or have conducted, emissions testing for this EU per the following requirements:

a. The emission testing shall be conducted within three months after start-up.

b. The emission testing shall be conducted to demonstrate compliance with the permit cited limitations and to confirm claims of constituents not present in the emissions or exhaust gas streams. (see g)(1) below)

c. The following test method(s) shall be employed to demonstrate compliance:

The thermolyzer 1 burner egress points:
Method 5 - PM.
Method 6 - SO_2
Method 7E – NO_X
Method 10 – CO
Method 16 - Total Reduced Sulfur
~~Method 15 - sulfides~~
Method 23 - Dioxins and Furans
Method 25A – VOC

Method 26 – HCl
Method 29 - metals
Method 202 - PM

Alternative U.S. EPA-approved test methods may be used with prior approval from OEPA.

d. During the emissions testing, each EU shall be operated under operational conditions approved in advance by the OEPA NEDO. Operational conditions that may need to be approved include, but are not limited to, the production rate, the type of material processed, material make-up (solvent content, etc.) or control equipment operational limitations (burner temperature, precipitator voltage, etc.). In general, testing shall be done under *worst case* conditions expected during the life of the permit. As part of the information provided in the ITT notification form described below, the permittee shall provide a description of the EU operational conditions they will meet during the emissions testing and describe why they believe *worst case* operating conditions will be met. Prior to conducting the test(s), the permittee shall confirm with the OEPA NEDO that the proposed operating conditions constitute *worst case*. Failure to test under the approved conditions may result in OEPA not accepting the test results as a demonstration of compliance.

e. Not later than 30 days prior to the proposed test date(s), the permittee shall submit an ITT notification to the OEPA NEDO. The ITT notification shall describe in detail the proposed test methods and procedures, the EU operating parameters, the time(s) and date(s) of the test(s) and the person(s) who will be conducting the test(s). Failure to submit such notification for review and approval prior to the test(s) may result in the OEPA NEDO refusal to accept the results of the emission test(s).

f. Personnel from the OEPA NEDO shall be permitted to witness the test(s), examine the testing equipment and acquire data and information necessary to ensure that the operation of the EU and the testing procedures provide a valid characterization of the emissions from the EU and/or the performance of the control equipment.

g. A comprehensive written report on the results of the emissions test(s) shall be signed by the person(s) responsible for the tests and submitted to the OEPA NEDO within 30 days following completion of the test(s). The permittee may request additional time for the submittal of the written report, where warranted, with prior approval from the appropriate OEPA NEDO

g) Miscellaneous Requirements

(1) The permittee has submitted sampling data from a similar EU that processed used tires the testing requirements above are meant to confirm the results of the test*

* “Test Results from CHZ Technologies Thermolyzer System, Letter from D. Ferro and M. Conway to J. Houle, August 15, 2017” within the document “Youngstown Thermal, LLC Thermolyzer Emissions Estimates, Prepared for Pennoni Associates, Inc. 417 Fifth

Avenue, Suite 501, New York, NY 10016, Prepared by TRC Environmental Corporation, 21 Griffin Road North, Windsor, Connecticut, October 2020."

(2) This EU processes Tire Derived Chips (TDC) which are produced from scrap tires, per 40 CFR Part 241 (Solid wastes used as fuels or ingredients in combustion units), TDC are not considered a solid waste. Therefore, the following rules are not applicable:

40 CFR Part 60, Subpart E – Standards of Performance for Incinerator;

40 CFR Part 60, Subpart Eb – Standards of Performance for Large Municipal Waste Combustors for Which Construction is Commenced After September 20, 1994 or for Which Modification or Reconstruction is Commenced After June 19, 1996;

40 CFR Part 60, Subpart AAAA – Standards of Performance for Small Municipal Waste Combustion Units for Which Construction is Commenced After August 30, 1999 or for Which Modification or Reconstruction is Commenced After June 6, 2001;

40 CFR Part 60, Subpart CCCC – Standards of Performance for Commercial and Industrial Solid Waste Incineration Units;

40 CFR Part 60, Subpart EEEE – Standards of Performance for Other Solid Waste Incineration Units for Which Construction is Commenced After December 9, 2004 or for Which Modification or Reconstruction is Commenced on or After June 16, 2006.

(3) This EU does not produce a product or require a chemical that is regulated by any of the following rules:

40 CFR Part 60, Subpart VVa – Standards of Performance for Equipment Leaks of VOC in the Synthetic Organic Chemicals Manufacturing Industry for Which Construction, Reconstruction, or Modification Commenced After November 7, 2006;

40 CFR Part 60, Subpart RRR – Standards of Performance for Volatile Organic Compound Emissions From Synthetic Organic Chemical Manufacturing Industry (SOCMI) Reactor Processes.

(4) This EU does not employ highly aromatic or carbochemical heavy oils to produce carbon black and therefore, is not a carbon black production unit (i.e., "affected source" as defined in 40 CFR Part 63, Subpart MMMMMM, the NESHAP for Carbon Black Production Area Sources).

The definition of 'product' in 40 CFR Part 63, Subpart YY is: "Product means a compound or chemical which is manufactured as the intended product of the applicable production process unit as defined in § 63.1103. By-products, isolated intermediates, impurities, wastes, and trace contaminants are not considered products." This also provides justification that this EU is not a carbon black production unit because the char from the tires is a byproduct of the production of syngas.

2. Emissions Unit Group - Boilers: B006 and B007

EU ID	Operations, Property and/or Equipment Description
B006	55.0 MMBtu/hr boiler burning NG or Syngas from TDC. Equipped with low-NOx burner and Flue Gas Recirculation. Victory Energy Model # VS-4-51
B007	55.0 MMBtu/hr boiler burning NG or Syngas from TDC. Equipped with low-NOx burner and Flue Gas Recirculation. Victory Energy Model # VS-4-51

a) The following EU T & C are federally enforceable with the exception of those listed below which are enforceable under state law only:

(1) b)(1)c.

b) Applicable Emissions Limitations and/or Control Requirements

(1) The specific operation(s), property, and/or equipment that constitute each EU along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures are identified below. Emissions from each unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
a.	ORC 3704.03(T)	**When combusting Syngas:** NO_X emissions shall not exceed 0.07 lb/MMBtu
b.	OAC rule 3745-31-05(A)(3)(a)(ii)	See b)(2)a.
c.	OAC rule 3745-31-05(E) To avoid BAT	**When combusting Syngas or NG:** CO emissions shall not exceed 0.04 lb/MMBtu SO_2 emissions shall not exceed 0.04 lb/MMBtu See b)(2)b.
d.	40 CFR Part 60, Subpart Dc	See d)(1) and e)(3)
e.	OAC rule 3745-17-10(B)(1)	PM emissions from each burner shall not exceed 0.020 lb/MMBtu of actual heat input.
f.	OAC rule 3745-17-07(A)(1)	Visible PE shall not exceed 20% opacity as a 6-minute average.
g.	OAC rule 3745-18-06(E)(2)	Less stringent than limit established pursuant to OAC rule 3745-31-05(E)
h.	OAC rule 3745-110	Less stringent than limit established pursuant to ORC 3704.03(T).

(2) Additional Terms and Conditions

a. **When combusting NG**:

The BAT requirements under OAC rule 3745-31-05(A)(3) do not apply to the emissions of NO_X, VOC, SO_2 and PM_{10} from this air contaminant source since the calculated uncontrolled annual emission rates for each pollutant are less than 10 TPY.

When combusting Syngas:

The BAT requirements under OAC rule 3745-31-05(A)(3) do not apply to the emissions of CO, VOC, SO_2, and PM_{10} from this air contaminant source since the calculated uncontrolled annual emission rates for each pollutant are less than 10 TPY.

b. Per application A0072686, when combusting syngas and/or NG, uncontrolled CO and SO_2 emissions are below 10 TPY.

c) Operational Restrictions

(1) The permittee shall only burn syngas from P001 or NG in these EUs.

(2) When burning syngas, the syngas shall be introduced into the flame zone.

d) Monitoring and/or Recordkeeping Requirements

(1) The permittee shall maintain the following information each day for these EUs:

a. amount of NG fired, in cubic feet/day;

b. amount of syngas fired, in cubic feet/day;

(2) The permittee shall perform daily checks, when each EU is in operation and when the weather conditions allow, for any visible PE from the stack serving each EU. The presence or absence of any VE shall be noted in an operations log. If VEs are observed, the permittee shall also note the following in the operations log:

a. the color of the emissions;

b. whether the emissions are representative of normal operations;

c. if the emissions are not representative of normal operations, the cause of the abnormal emissions;

d. the total duration of any VE incident; and

e. any corrective actions taken to minimize or eliminate the VEs.

If VEs are present, a VE incident has occurred. The observer does not have to document the exact start and end times for the VE incident under item (d) above or continue the daily check until the incident has ended. The observer may indicate that the VE incident was continuous during the observation period (or, if known, continuous during the operation of the EU). With respect to the documentation of corrective actions, the observer may indicate that no corrective actions were taken if the VEs were representative of normal operations or specify the minor corrective actions that were taken to ensure that the EU continued to operate under normal conditions, or specify the corrective actions that were taken to eliminate abnormal VEs.

(3) In order to maintain compliance with the applicable emission limitation(s) contained in this permit, the acceptable combustion temperature within the boilers, during any period of time when the EU(s) is/are ~~in operation~~ **combusting syngas**, shall not be less than the lowest temperature measured (in degrees Fahrenheit) during the most recent compliant stack test **(when syngas was being combusted)**. Until compliance testing has been conducted, the boilers shall be operated and maintained in accordance with the manufacturer's recommendations, instructions, and the operating manual.

(4) The permittee shall properly install, operate, and maintain continuous temperature monitors and recorder(s) that measure and record(s) the combustion temperature within the boilers when the EU(s) are in operation, including periods of startup and shutdown. The permittee shall record the combustion temperature on an hourly basis. The monitoring equipment shall be installed, calibrated, operated, and maintained in accordance with the manufacturer's recommendations, instructions, and operating manual(s), with any modifications deemed necessary by the permittee. The acceptable temperature setting shall be based upon the manufacturer's specifications until such time as any required performance testing is conducted and the appropriate temperature range is established to demonstrate compliance. These records shall be maintained at the facility for a period of no less than 5 years.

(5) **When syngas is being combusted:** Whenever the monitored ~~averaged~~ combustion temperature within the boilers deviates from the range or limit established in accordance with this permit, the permittee shall promptly investigate the cause of the deviation. The permittee shall maintain records of the following information for each investigation:

a. the date and time the deviation began;

b. the magnitude of the deviation at that time;

c. the date the investigation was conducted;

d. the name(s) of the personnel who conducted the investigation; and

e. the findings and recommendations.

In response to each required investigation to determine the cause of a deviation, the permittee shall take prompt corrective action to bring the operation of the boiler within the acceptable range/limit specified in this permit, unless the permittee determines that corrective action is not necessary and documents the reasons for that determination and the date and

time the deviation ended. The permittee shall maintain records of the following information for each corrective action taken:

f. a description of the corrective action;

g. the date corrective action was completed;

h. the date and time the deviation ended;

i. the total period of time (in minutes) during which there was a deviation;

j. the temperature readings immediately after the corrective action was implemented; and

k. the name(s) of the personnel who performed the work.

Investigation and records required by this paragraph do not eliminate the need to comply with the requirements of OAC rule 3745-15-06 if it is determined that a malfunction has occurred.

The temperature range/limit is effective for the duration of this permit, unless revisions are requested by the permittee and approved in writing by the OEPA NEDO. The permittee may request revisions to the permitted temperature range/limit based upon information obtained during future performance tests that demonstrate compliance with the allowable emission rate(s) for the controlled pollutant(s). In addition, approved revisions to the temperature range/limit will not constitute a relaxation of the monitoring requirements of this permit and may be incorporated into this permit by means of a permit modification.

(6) A flow indicator that provides a record of vent stream flow diverted from being routed to the boiler at least once every 15 minutes for each affected facility.

a. The flow indicator shall be installed at the entrance to any bypass line that could divert the vent stream from being routed to the boiler or process heater, resulting in its emission to the atmosphere.

b. Where the bypass line valve is secured in the closed position with a car-seal or a lock-and-key type configuration, a flow indicator is not required. A visual inspection of the seal or closure mechanism shall be performed at least once every month to ensure that the valve is maintained in the closed position and the vent stream is not diverted through the bypass line.

(4) A temperature monitoring device in the firebox equipped with a continuous recorder and having an accuracy of ±1 percent of the temperature being monitored expressed in degrees Celsius or ±0.5 °C, whichever is greater, for boilers or process heaters of less than 44 MW (150 MMBtu/hr) design heat input capacity. Any vent stream introduced with primary fuel into a boiler or process heater is exempt from this requirement.

(8) The permittee shall collect samples, at least three times per week, of the syngas for gas chromatographic analysis. The permittee shall collect the syngas samples using procedures that will ensure the sample containers are adequately purged prior to sample collection, thereby, ensuring a representative syngas sample. The permittee shall maintain a copy of the sampling procedure on-site.

(9) The permittee shall maintain weekly records of the weekly average actual heating value of the syngas as burned in this EU. The actual heating value (H), in (Btu/scf), of the syngas shall be calculated as follows from the results of the weekly syngas compositional analysis using gas chromatography:

$$H = \sum\left(h_i * m_i\right)$$

Where:

h_i = the HHV of each chemical compound detected in the syngas, in Btu/lb of chemical, as found in the most recent edition of the Gas Processors Supplies Association (GPSA) manual

m_i = the mass fraction of each chemical compound detected in the syngas using chromatography analysis

(10) The permittee shall use one of the following methods to conduct the compositional analysis of the syngas samples:

ASTM D1945 – 96

ASTM D1945 – 96 (Wasson Modification)

GPA Method 2261 – 90

When using the Wasson Modification of ASTM Method D 1945 – 96, the permittee shall follow, at a minimum, QA/QC requirements specified in ASTM D1945 – 96. The permittee shall also operate and maintain the Wasson gas chromatographic instrumentation according to the manufacturer's specification and recommendations. Alternative, equivalent methods may be used with written approval by the OEPA NEDO upon request.

e) Reporting Requirements

(1) The permittee shall submit deviation (excursion) reports that identify each day when a fuel other than syngas from P001 or NG was burned in each EU. Each report shall be submitted within 30 days after the deviation occurs.

(2) The permittee shall identify the following information in the annual PER:

a. all days during which any visible PE were observed from the stack serving each EU;

b. any corrective actions taken to minimize or eliminate the visible PE;

c. **when combusting syngas,** each period of time (start time and date, and end time and date) when the combustion temperature within the boilers was outside of the range specified by the manufacturer and/or outside of the acceptable range following any required compliance demonstration;

d. any period of time (start time and date, and end time and date) when the EUs were in operation and the process emissions were not vented to the boilers;

e. each incident of deviation described in “a” or “b” (above) where a prompt investigation was not conducted;

f. each incident of deviation described in “a” or “b” where prompt corrective action, that would bring the EUs into compliance and/or the temperature within the boilers into compliance with the acceptable range, was determined to be necessary and was not taken; and

g. each incident of deviation described in “a” or “b” where proper records were not maintained for the investigation and/or the corrective action(s).

(3) The owner or operator of each affected facility shall submit notification of the date of construction or reconstruction and actual startup. This notification shall include:

a. The design heat input capacity of the affected facility and identification of fuels to be combusted in the affected facility.

b. If applicable, a copy of any federally enforceable requirement that limits the annual capacity factor for any fuel or mixture of fuels under 60.42c, or 60.43c.

c. The annual capacity factor at which the owner or operator anticipates operating the affected facility based on all fuels fired and based on each individual fuel fired.

d. Notification if an emerging technology will be used for controlling SO_2 emissions. The Administrator will examine the description of the control device and will determine whether the technology qualifies as an emerging technology. In making this determination, the Administrator may require the owner or operator of the affected facility to submit additional information concerning the control device. The affected facility is subject to the provisions of 60.42c(a) or (b)(1), unless and until this determination is made by the Administrator.

(4) The permittee shall submit quarterly reports that identify the average weekly syngas composition.

f) Testing Requirements

(1) Compliance with the Emissions Limitations and/or Control Requirements specified in section b) of these terms and conditions shall be determined in accordance with the following methods:

a. Emission Limitation:

Visible PE from the exhaust stack serving each EU shall not exceed 20% opacity, as a 6-minute average, except as provided by the rule.

Applicable Compliance Method:

If required, compliance with this emission limitation shall be demonstrated through visible emission observations performed in accordance with the methods and procedures specified in 40 CFR Part 60, Appendix A, Method 9.

b. Emission Limitation:

When combusting Syngas: NO_X emissions shall not exceed 0.07 lb/MMBtu

Applicable Compliance Method:

Compliance with this emission limitation shall be demonstrated through stack testing performed in accordance with the methods and procedures specified in 40 CFR Part 60, Appendix A, Method 7.

c. Emission Limitation:

When combusting Syngas or NG: CO emissions shall not exceed 0.04 lb/MMBtu

Applicable Compliance Method:

Compliance with this emission limitation shall be demonstrated through stack testing performed in accordance with the methods and procedures specified in 40 CFR Part 60, Appendix A, Method 10.

d. Emission Limitation:

When combusting Syngas or NG: SO_2 emissions shall not exceed 0.04 lb/MMBtu

Applicable Compliance Method:

Compliance with this emission limitation shall be demonstrated through stack testing performed in accordance with the methods and procedures specified in 40 CFR Part 60, Appendix A, Method 6.

e. Emission Limitation:

PM emissions from each burner shall not exceed 0.020 lb/MMBtu of actual heat input.

Applicable Compliance Method:

If required, compliance with this emission limitation shall be demonstrated through stack testing performed in accordance with the methods and procedures specified in 40 CFR Part 60, Appendix A, Method 5.

(2) The permittee shall conduct, or have conducted, emissions testing for this EU per the following requirements:

a. The emission testing shall be conducted within three months after start-up.

b. The emission testing shall be conducted to demonstrate compliance with the permit cited limitations and to confirm claims of constituents not present in the emissions or exhaust gas streams. (see g)(1) below)

c. The following test method(s) shall be employed to demonstrate compliance:

The boiler inlet point(s):
~~Method 26 – HCl~~
Method 25 - VOC

The boiler egress points:
Method 5 - PM.
Method 6 - SO_2
Method 7E - NO_X
Method 10 - CO
~~Method 15 - Sulfides~~
Method 16 - Total Reduced Sulfur
Method 23A - Dioxins and Furans
Method 25A - VOC
Method 26 or 26A - HCl
Method 29 - metals
Method 202 - PM

Alternative U.S. EPA-approved test methods may be used with prior approval from OEPA.

d. During the emissions testing, each EU shall be operated under operational conditions approved in advance by the OEPA Northeast DO. Operational conditions that may need to be approved include, but are not limited to, the production rate, the type of material processed, material make-up (solvent content, etc.) or control equipment operational limitations (burner temperature, precipitator voltage, etc.). In general, testing shall be done under *worst case* conditions expected during the life of the permit. As part of the information provided in the ITT notification form described below, the permittee shall provide a description of the EU operational conditions they will meet during the emissions testing and describe why they believe *worst case* operating conditions will be met. Prior to conducting the test(s), the permittee shall confirm with the OEPA Northeast DO that the proposed operating conditions constitute *worst case*. Failure to test under the approved conditions may result in OEPA not accepting the test results as a demonstration of compliance.

f. Not later than 30 days prior to the proposed test date(s), the permittee shall submit an ITT notification to the OEPA Northeast DO. The ITT notification shall describe in detail the proposed test methods and procedures, the EU operating parameters, the time(s) and date(s) of the test(s) and the person(s) who will be conducting the test(s). Failure to submit such notification for review and approval prior to the test(s) may result in the OEPA Northeast DO refusal to accept the results of the emission test(s).

g. Personnel from the OEPA Northeast DO shall be permitted to witness the test(s), examine the testing equipment and acquire data and information necessary to ensure that the operation of the EU and the testing procedures provide a valid characterization of the emissions from the EU and/or the performance of the control equipment.

h. A comprehensive written report on the results of the emissions test(s) shall be signed by the person(s) responsible for the tests and submitted to the OEPA Northeast DO within 30 days following completion of the test(s). The permittee may request additional time for the submittal of the written report, where warranted, with prior approval from the appropriate OEPA Northeast DO.

g) Miscellaneous Requirements

(1) The permittee has submitted sampling data from a similar EU that processed used tires the testing requirements above are meant to confirm the results of the test*

* "Test Results from CHZ Technologies Thermolyzer System, Letter from D. Ferro and M. Conway to J. Houle, August 15, 2017" within the document "Youngstown Thermal, LLC Thermolyzer Emissions Estimates, Prepared for Pennoni Associates, Inc. 417 Fifth Avenue, Suite 501, New York, NY 10016, Prepared by TRC Environmental Corporation, 21 Griffin Road North, Windsor, Connecticut, October 2020."