



7/22/2014

Michael Valigosky
UNIVERSITY OF TOLEDO - MAIN CAMPUS
2801 W BANCROFT ST
MS219
TOLEDO, OH 43606

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

Facility ID: 0448010805
Permit Number: P0116925
Permit Type: Initial Installation
County: Lucas

Certified Mail

Table with 2 columns: Status (No/Yes) and Item (TOXIC REVIEW, SYNTHETIC MINOR TO AVOID MAJOR NSR, CEMS, MACT/GACT, NSPS, NESHAPS, NETTING, MODELING SUBMITTED, SYNTHETIC MINOR TO AVOID TITLE V, FEDERALLY ENFORCABLE PTIO (FEPTIO), SYNTHETIC MINOR TO AVOID MAJOR GHG)

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, Toledo Blade. 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) Web page, www.epa.ohio.gov/dapc by clicking the "Search for Permits" link under the Permitting topic on the Programs tab. 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 Toledo Department of Environmental Services
348 South Erie Street
Toledo, OH 43604

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 Toledo Department of Environmental Services at (419)936-3015.

Sincerely,

Michael W. Ahern

Michael W. Ahern, Manager
Permit Issuance and Data Management Section, DAPC

Cc: U.S. EPA Region 5 Via E-Mail Notification
TDES; Michigan; Indiana; Canada

PUBLIC NOTICE

7/22/2014 Issuance of Draft Air Pollution Permit-To-Install and Operate

UNIVERSITY OF TOLEDO - MAIN CAMPUS

2801 W BANCROFT ST,

Toledo, OH 43606

Lucas County

FACILITY DESC.: Colleges, Universities, and Professional Schools

PERMIT #: P0116925

PERMIT TYPE: Initial Installation

PERMIT DESC: Installation of five 25.8 mmBtu/hr natural gas/distillate fuel oil-fired boilers in central steam plant after the removal of five identical existing boilers

The Director of the Ohio Environmental Protection Agency issued the draft permit above. The permit and complete instructions for requesting information or submitting comments may be obtained at: <http://epa.ohio.gov/dapc/permitsonline.aspx> by entering the permit # or: Kurt Bezeau, Toledo Department of Environmental Services, 348 South Erie Street, Toledo, OH 43604. Ph: (419)936-3015



Permit Strategy Write-Up

1. Check all that apply:

Synthetic Minor Determination

Netting Determination

2. Source Description:

The University of Toledo – Main Campus (UT), located at 2801 W. Bancroft in Toledo, Ohio, has submitted an application to install five new 600 hp (25.8 mmBtu/hr) steam coil generators in the Savage Arena steam plant (central steam plant). This facility currently has 12 permitted boilers. Of these 12 boilers, eight are located in the central steam plant (B011, B012, B013, B014, B019, B020, B021 and B022). The remaining existing boilers are located in Carter Hall West (B006), Carter Hall East (B007), and the Student Recreation Center (B017 & B018). The new steam coil generators are intended to replace five of the existing steam coil generators in the central steam plant: B011, B012, B013, B014 and B019 (all 25.8 mmBtu/hr).

The facility is currently considered a synthetic minor source with federally enforceable restrictions on the total fuel usage. The new steam coil generators will be 600 hp (25.8 mmBtu) natural gas fired, with No. 2 fuel oil back-up firing capabilities. To avoid a PSD review for SO₂ and NO_x, the facility has requested the same annual fuel restrictions that were requested for B011, B012, B013, B014, B019, B020, B021, and B022 (a rolling 12-month restriction of 1.0 million gallons of distillate fuel oil #2 and 1.0 million Mcuft (= 1 billion cubic feet) of natural gas).

TES notes some minor corrections to the calculated facility-wide emissions for CO, PE, PM₁₀, and VOC. The facility-wide emissions limits for CO and PE were incorrectly calculated in FEPTIO P0115356, issued 12/2/2013, as 44.34 tpy CO and 2.00 tpy PE. The calculated facility-wide emissions established in PTI 04-01507, issued 9/2/2008, as 47.56 tpy CO and 8.12 tpy PE are considered the potential to emit. An incorrect emission factor for both PM₁₀ and VOC emissions was used to calculate the individual and facility-wide PM₁₀ and VOC emissions limits in both PTI 04-01507 and P0115356. This PSW documents the correct emissions factors and individual and facility-wide PM₁₀ and VOC emissions calculations.

3. Facility Emissions and Attainment Status:

With Federally enforceable restrictions, the facility is a minor source for all criteria pollutants. Facility-wide emissions are 47.56 tpy of CO, 54.10 tpy of NO_x, 35.30 tpy of SO₂, 8.12 tpy of PE, and 3.13 tpy VOC due to a combined fuel usage restriction of 1.0 billion cubic feet of natural gas per year and the 1,000,000 gallons per year of fuel oil, established in PTI 04-01507, issued 9/2/2008.

Lucas County is designated attainment for all criteria pollutants.

4. Source Emissions:

The individual emission units will be restricted to 16.74 tons per year (tpy) of NO_x, 35.03 tpy of SO₂, 9.27 tpy of CO, 1.3 tpy of PE, 1.47 tpy of PM₁₀ and 0.61 tpy of VOC.



5. Conclusion:

The permittee has submitted an application to replace five 25.8 mmBtu (600 hp) steam coil generators in the central steam plant with five identical 25.8 mmBtu (600 hp) steam coil generators. They have requested the same annual fuel restrictions that were originally taken on the existing steam generators. It is recommended that this permit be issued draft/final to formalize the facility-wide restrictions to avoid undergoing a PSD review.

6. Please provide additional notes or comments as necessary:

The University of Toledo proposes to replace five existing 25.8 mmBtu natural gas/no. 2 fuel oil fired steam coil generators (B011, B012, B013, B014 and B019) with five new steam coil generators of same size and type in the central steam plant. Because this is a new installation of steam coil generators, which operate independently from any manufacturing operation, it is not considered a "like-kind" replacement and an installation permit (FEPTIO) is required (per the Ohio EPA "Replacement" Source Guidance" from Bob Hodanbosi, dated March 22, 1995).

With no restrictions, the facility could be considered an existing major source for SO₂ for PSD purposes. The new steam generators are gas fired, with No. 2 distillate fuel backup firing capabilities. In order to avoid PSD review for SO₂ and NO_x, the permittee has requested the same rolling 12-month restriction of 1.0 million gallons of No. 2 distillate fuel oil and 1.0 billion cubic feet of natural gas combined for all fuel burning equipment at this facility.

BAT Determination

The BAT determination for the five new boilers (B024 – B028) will be determined based on the February 7, 2014 interoffice memorandum which supersedes the *BAT Requirements for Permit Applications Filed on or After August 3, 2009* interoffice memorandums dated August 30, 2013 and December 10, 2009, issued after the February 2, 2010 U.S. District Court for the Southern District of Ohio ruling in *Sierra Club v. Christopher Korleski, Director of Ohio EPA*; a court decision which does not recognize the less than 10 tpy BAT exemption. This memorandum addresses permit processing after the U.S. District Court <10 tpy exemption decision.

Under this memorandum, the November 30, 2001 version of the BAT rule (OAC rule 3745-31-05) is the current version of the BAT rule (http://www.epa.ohio.gov/dapc/regqs/3745_31/3745_31_Historic.aspx). This means the Senate Bill 265 (S.B. 265) exemption cannot be used. The memorandum directs permit writers to follow a three-step procedure to determine the BAT limit: 1) Does a MACT/BACT/LAER limit apply? 2) does a RACT limit apply? 3) Case by Case BAT.

There are no MACT/BACT/LAER or RACT limits that apply to B024-B028. BAT will be determined using the case-by-case determination. BAT will be based on work practices, source design characteristics or design efficiency, raw material/throughput, or monthly allowables as applicable to each emissions unit. For these boilers, BAT will be established as design efficiency using manufacturers emissions factors for CO and NO_x as provided by the facility.

CO, NO_x, particulate, and SO₂ are the primary pollutants formed during combustion in an industrial boiler. The facility provided manufacturer's data for CO and NO_x. BAT as lb/mmBtu for both natural gas and distillate fuel oil will be established for these pollutants. BAT for PM₁₀ and VOC emissions will be established as a monthly allowable emission averaged over a 12-month rolling period. BAT for SO₂ emissions will be compliance with the SO₂ emissions limitation established under OAC rule 3745-31-05(D).



PM-10 emissions

The formation of particulate matter (PM) emissions from a stationary combustion source that is natural gas fired is very low. In a combustion process, particulate matter (PM) emissions are assumed equal to PM-10 emissions. Generally, PM-10 emissions from oil-fired boilers are dependent on the amount of sulfur in the fuel, which will be tracked by the permittee. Because there is not a National Ambient Air Quality Standard (NAAQS) for particulate emissions, BAT will be established for PM10 for which there is a NAAQS. Since manufacturer's data is not available for PM10, BAT will be established as a monthly allowable emission averaged over a 12-month rolling period.

SO2 emissions

The level of SO2 formed from the combustion of fuels containing sulfur depends directly on the sulfur content of the fuel burned. 40 CFR 60, Subpart Dc establishes sulfur limits of 0.50 pound SO2 per million Btu) heat input; or, as an alternative combust no oil that contains greater than 0.5 weight percent sulfur. The synthetic minor restriction for SO2 emissions will be based on these sulfur emissions standards when burning distillate fuel oil. The synthetic minor determination in PTI 04-01507 was based on the combustion of natural gas and distillate fuel oil. An AP-42 emissions factor for SO2 emissions from burning natural gas (0.6 lb/ million cubic feet) was used to establish the synthetic minor limit for SO2. The BAT and synthetic minor determinations are included in this permit (compliance with 40 CFR 60, Subpart Dc and 35.30 tpy SO2 emissions).

VOC emissions

The formation of VOCs from a stationary combustion source such as an industrial boiler is considered to be minor. Since manufacturer's data is not available, BAT will be established as a monthly allowable emission averaged over a 12-month rolling period.

Source Emissions

The AP-42 emission factors for natural gas and No. 2 distillate fuel oil will be used as the first estimate for each boiler's regulated pollutants, the worst case or largest emission factor will be used:

CO: (25.8 mmBtu/hr)(0.082 lb CO/mmBtu) = 2.12 lbs/hr natural gas
 (2.12 lbs/hr)(8,760 hrs/yr)/(2,000 lbs/ton) = 9.29 tons/yr

NO_x: (25.8 mmBtu/hr)(0.19 lbNO_x /mmBtu) = 4.90 lbs/hr fuel oil, mfrvlaue
 (4.90 lbs/hr)(8,760 hrs/yr)/(2,000 lbs/ton) = 21.46 tons/yr

PE:(25.8 mmBtu/hr)(0.014 lb PE/mmBtu) = 0.36 lb/hr fuel oil
 (0.36 lb/hr)(8,760 hrs/yr)/(2,000 lbs/ton) = 1.58 tons/yr

SO₂: (25.8 mmBtu/hr)(0.50 lb SO₂/mmBtu) = 12.90 lbs/hr fuel oil
 (12.90 lbs/hr)(8,760 hrs/yr)/(2,000 lbs/ton) = 56.50 tons/yr

VOC: (25.8 mmBtu/hr)(0.0054 lb OC/mmBtu) = 0.14 lb/hr natural gas
 (0.14 lb/hr)(8,760 hrs/yr)/(2,000 lbs/ton) = 0.61 ton/yr

So, the unrestricted tons pollutant per year evaluation:

Pollutant	CO	NO _x	PE	PM ₁₀	SO ₂	OC
Single emission unit	9.29	21.46	1.58	-	56.50	0.61
five emission units	46.45	107.3 ¹	7.9	-	282.5 ¹	3.05
PSD significant increase	100	40	25	15	40	40



¹ additional restrictions will be necessary to avoid PSD review

Permit Allowable Emissions

The permittee continues to volunteer fuel restrictions of 1.0 million gallons per year fuel oil and 1.0 billion cubic feet per year of natural gas to avoid a significant increase status for SO₂ and NO_x.

Where,

$(25.8 \text{ mmBtu/hour})(8 \text{ emissions units})(8,760 \text{ hours/year}) = 1,808,000$ is the unrestricted total heat input
 $(1,000,000 \text{ gallons/year})(0.14 \text{ mmBtu/gallon}) = 140,000 \text{ mmBtu/year}$ utilizing fuel oil
 $(1,000 \text{ mmcuft/year})(1,020 \text{ mmBtu/mmcuft}) = 1,020,000 \text{ mmBtu/year}$ utilizing natural gas
 $140,000 \text{ mmBtu/year} + 1,020,000 \text{ mmBtu/year} = 1,160,000 \text{ mmBtu/year}$ is the restricted total heat input
 $226,000 \text{ mmBtu/year} - 140,000 \text{ mmBtu/year} = 86,000 \text{ mmBtu/year}$ per unit for unrestricted natural gas burned after total restricted fuel oil combusted

CO: natural gas:
 $(0.082 \text{ lb CO/mmBtu})(1,020,000 \text{ mmBtu/yr})/(2000 \text{ lbs/ton}) = 41.82 \text{ tpy}$

fuel oil:
 $(0.040 \text{ lb CO/mmBtu})(140,000 \text{ mmBtu/yr})/(2,000 \text{ lbs/ton}) = 2.8 \text{ tpy}$

PTE allowable per emissions unit:
 $(0.082 \text{ lb CO/mmBtu})(226,000 \text{ mmBtu/yr})/(2000 \text{ lbs/ton}) = 9.27 \text{ tpy}$

facility-wide allowable:
 $(1,160,000 \text{ mmBtu/yr})(0.082 \text{ lb CO/mmBTU})(1 \text{ t}/2000 \text{ lb}) = 47.56 \text{ tpy}$

Emission factors used for the steam generators in this project were based on the worst-case of manufacturer's design efficiency data or AP-42, "Compilation of Air Pollutant Emission Factors", 5th Edition, Section 1.4 dated 7/98 for natural gas combustion and AP-42, "Compilation of Air Pollutant Emission Factors", 5th Edition, Section 1.3 dated 5/10 for No. 2 distillate fuel oil combustion.

The worst-case CO emissions for the steam generators were based on:

natural gas: an emission factor supplied by AP-42, Table 1.4-1 of 0.082 pound of CO per million Btu for natural gas combustion

distillate oil: and an emission factor supplied by the manufacturer of 0.04 pound of CO per million Btu for distillate fuel oil combustion. Since the emission factor is larger than AP-42 of 0.036 pound of CO per million Btu for distillate fuel oil combustion, the potential facility-wide restricted PTE will be based on manufacturer's design efficiency data instead of AP-42.

NO_x: natural gas:
 $(0.08 \text{ lbNO}_x/\text{mmBtu})(1,020,000 \text{ mmBtu/yr})/(2,000 \text{ lbs/ton}) = 40.80 \text{ tpy}$

fuel oil:
 $(0.19 \text{ lbNO}_x/\text{mmBtu})(140,000 \text{ mmBtu/yr})/(2,000 \text{ lbs/ton}) = 13.30 \text{ tpy}$



PTE allowable per emissions unit:
 $(0.08 \text{ lbNO}_x/\text{mmBtu})(86,000 \text{ mmBtu/yr})/(2,000 \text{ lbs/ton}) + (0.19 \text{ lbNO}_x/\text{mmBtu})(140,000 \text{ mmBtu/yr})/(2,000 \text{ lbs/ton}) = 16.74 \text{ tpy}$

facility-wide allowable:
 $40.80 \text{ tpy} + 13.30 \text{ tpy} = 54.10 \text{ tpy}$

Emission factors used for the steam generators in this project were based on the worst-case of manufacturer's design efficiency data or AP-42, "Compilation of Air Pollutant Emission Factors", 5th Edition, Section 1.4 dated 7/98 for natural gas combustion and AP-42, "Compilation of Air Pollutant Emission Factors", 5th Edition, Section 1.3 dated 5/10 for No. 2 distillate fuel oil combustion.

The NO_x emissions for the steam generators were based on emission factors supplied by the manufacturer of 0.08 pound of NO_x per million Btu for natural gas combustion and 0.19 pound of NO_x per million Btu for distillate fuel oil combustion. Since these emission factors are larger than AP-42 of 0.031 pound of NO_x per million Btu for natural gas combustion and 0.14 pound of NO_x per million Btu for distillate fuel oil combustion, the potential facility-wide restricted PTE will be based on these emission factors instead of AP-42.

PE:natural gas:
 $(0.0075 \text{ lb PE/mmBtu})(1,020,000 \text{ mmBtu/yr})/(2,000 \text{ lbs/ton}) = 3.83 \text{ tpy}$

fuel oil:
 $(0.014 \text{ lb PE/mmBtu})(140,000 \text{ mmBtu/yr})/(2,000 \text{ lbs/ton}) = 0.98 \text{ tpy}$

PTE allowable per emissions unit:
 $(0.0075 \text{ lb PE/mmBtu})(86,000 \text{ mmBtu/yr})/(2,000 \text{ lbs/ton}) + (0.014 \text{ lb PE/mmBtu})(140,000 \text{ mmBtu/yr})/(2,000 \text{ lbs/ton}) = 1.3 \text{ tpy}$

facility-wide allowable:
 $(1,160,000 \text{ mmBtu/yr})(0.014 \text{ lb PE/mmBtu})(1 \text{ t}/2000 \text{ lb}) = 8.12 \text{ tpy}$

Emission factors used for the steam generators in this project were based on the worst-case of manufacturer's design efficiency data or AP-42, "Compilation of Air Pollutant Emission Factors", 5th Edition, Section 1.4 dated 7/98 for natural gas combustion and AP-42, "Compilation of Air Pollutant Emission Factors", 5th Edition, Section 1.3 dated 5/10 for No. 2 distillate fuel oil combustion.

The worst-case particulate emissions for the steam generators were based on:

natural gas: an emission factor supplied by the manufacturer of 0.0075 pound of PE per million Btu. Since the emission factor is larger than AP-42 of 0.002 pound of PE per million Btu for natural gas combustion, the potential facility-wide restricted PTE will be based manufacturer's design efficiency data instead of AP-42.

distillate oil: an emission factor supplied by AP-42, Table 1.3-1 of 0.014 pound of PE per million Btu.

PM₁₀: natural gas:
 $(7.6 \text{ lb PM}_{10}/\text{mmcuft})(1,000 \text{ mmcuft/yr})/(2,000 \text{ lbs/ton}) = 3.8 \text{ tpy}$



fuel oil:

$$(2.3 \text{ lb PM}_{10}/1000 \text{ gal})(1,000,000 \text{ gal/yr})/(2,000 \text{ lbs/ton}) = 1.15 \text{ tpy}$$

AP-42 emissions factors for PM10 are based on condensable and filterable particulate. Therefore, PM10 emissions for the burners were calculated using 1.3 lb/1,000 gal (total condensable particulate matter, Table 1.3-2 emissions factor) plus 1.0 lb/1,000 gal (PM10 filterable particulate matter for PM10, Table 1.3-6 emissions factor) for a total PM10 emission factor 2.3 lb/1,000 gal.

The PM10 calculation in PTI 04-01507 and FEPTIO P0115356 incorrectly identified the emissions factors for PM10 emissions. This permit strategy write-up documents the correct PM10 emissions.

PTE allowable per emissions unit:

$$(7.6 \text{ lb PM}_{10}/\text{mmcuft})(86,000 \text{ mmBtu/yr})(\text{mmcuft}/1,020 \text{ mmBtu})/(2,000 \text{ lbs/ton}) + (2.3 \text{ lb PM}_{10}/1000 \text{ gal})(1,000,000 \text{ gal/yr})/(2,000 \text{ lbs/ton}) = 1.47 \text{ tpy}$$

facility-wide allowable:

$$3.80 \text{ tpy} + 1.15 \text{ tpy} = 4.95 \text{ tpy}$$

SO₂: natural gas:

$$(0.6 \text{ lb SO}_2/\text{mmcuft})(1,000 \text{ mmcuft/yr})/(2,000 \text{ lbs/ton}) = 0.30 \text{ tpy}$$

fuel oil:

$$(0.50 \text{ lb SO}_2/\text{mmBtu})(140,000 \text{ mmBtu/yr})/(2,000 \text{ lbs/ton}) = 35.00 \text{ tpy}$$

PTE allowable per emissions unit:

$$(0.6 \text{ lb SO}_2/\text{mmcuft})(86,000 \text{ mmBtu/yr})(\text{mmcuft}/1,020 \text{ mmBtu})/(2,000 \text{ lbs/ton}) + (0.50 \text{ lb SO}_2/\text{mmBtu})(140,000 \text{ mmBtu/yr})/(2,000 \text{ lbs/ton}) = 35.03 \text{ tpy}$$

facility-wide allowable:

$$0.30 \text{ tpy} + 35.00 \text{ tpy} = 35.30 \text{ tpy}$$

VOC: natural gas:

$$(5.5 \text{ lb OC}/\text{mmscf} \div 1,020 \text{ lb}/\text{mmBtu}/\text{mmscf})(1,020,000 \text{ mmBtu/yr})/(2,000 \text{ lbs/ton}) = 2.75 \text{ tpy}$$

fuel oil:

$$(0.0014 \text{ lb OC}/\text{mmBtu})(140,000 \text{ mmBtu/yr})/(2,000 \text{ lbs/ton}) = 0.098 \text{ tpy}$$

The VOC emissions are based on AP-42 emissions factors. VOC emissions for the burners were calculated using a distillate fuel oil emissions factor of 0.2 lb NMTOC/1,000 gal * 1,000 gal/140 mmBtu = 0.0014 lb NMTOC/mmBtu (Table 1.3-3 industrial boiler, distillate oil fired emissions factor) and a natural gas emissions factor of 5.5 lb VOC/mmscf (Table 1.4-2 VOC emissions factor).

The VOC calculations in PTI 04-01507 and FEPTIO P0115356 incorrectly identified the distillate fuel oil emissions factor for VOC emissions. This permit strategy write-up documents the correct VOC emissions.



PTE allowable per emissions unit:

$$(5.5 \text{ lb OC/mmscf} \div 1,020 \text{ lb/mmBtu/mmscf})(226,000 \text{ mmBtu/yr}) / (2000 \text{ lbs/ton}) = 0.61 \text{ tpy}$$

facility-wide allowable:

$$(1,160,000 \text{ mmBtu/yr}) (5.5 \text{lb OC/mmscf} \div 1,020 \text{ lb/mmBtu/mmscf}) (1 \text{ t}/2000 \text{ lb}) = 3.13 \text{ tpy}$$

Facility-wide restricted PTE, tons/yr

	CO	NO _x	PE	PM ₁₀	SO ₂	VOC
PTE per emission unit	9.27	16.74	1.3	1.47	35.03	0.61
PTE 8 emission units	47.56	54.10	8.12	4.95	35.30	3.13

Five identical boilers (25.8 mmBtu) will be removed as part of this project (B011, B012, B013, B014 and B019) which will not result in an increase in emissions. Therefore, PSD is not triggered. At these emission levels Title V will not apply.

Greenhouse Gases – CO₂e emissions

CO₂e emissions will be calculated based on the fuel usage restrictions the facility has requested (natural gas = 1,020,000 mmBtu/yr and #2 fuel oil = 140,000 mmBtu/yr) and AP-42 emission factors.

CO₂e calculations were performed using AP-42 Ch. 1.3 Fuel Oil Combustion & 1.4 Natural Gas Combustion. Greenhouse gas (GHG) emission factors (1 for CO₂, 310 for N₂O, and 21 for CH₂) were obtained from 40 CFR 98 Table A-1.

Natural Gas:

$$(1,020,000 \text{ mmBtu/yr}) * [(120,000 \text{ lb/mmscf}) + (0.64 \text{ lb/mmscf} * 310) + (2.3 \text{ lb/mmscf} * 21)] * (\text{mmscf}/1,020 \text{ mmBtu}) * (\text{ton}/2,000 \text{ lb}) = 60,123 \text{ tpy of CO}_2\text{e}$$

#2 fuel oil:

$$(140,000 \text{ mmBtu/yr}) * \{ [(22,300 \text{ lb}/10^3 \text{ gal}) + (0.26 \text{ lb}/10^3 \text{ gal} * 310) + (0.216 \text{ lb}/10^3 \text{ gal} * 21)] / (140 \text{ mmBtu}/10^3 \text{ gal}) \} * (\text{ton}/2,000 \text{ lb}) = 11,193 \text{ tpy of CO}_2\text{e}$$

Total = 71,316 tpy CO₂e

This facility is not a major source of GHG emissions.

Modeling

Engineering Guide #69 does not require modeling for “like-kind replacements” if all emissions parameters remain the same since there would be no increase in impact due to the permit action. New modeling to demonstrate compliance with the Ohio EPA’s “Air Toxics Policy” for B024-B028, was not necessary because there were not any changes to the stack, temperatures, etc. as part of this new installation.

Applicable Regulations

ORC 3704.03(T) BAT requirements for emissions units with emissions ≥ 10 tons/yr

Following the SB265 BAT Decision Flowchart dated March 2008, when uncontrolled PTE > 10 tons/yr and rule-based PTE > 10 tons/yr, either BAT requirements under the 2006 BAT rules apply or the permittee needs to request voluntary restrictions to avoid BAT. BAT Limits in the



permit are expressed according to the Ohio EPA's 2/7/2014 BAT guidance memo. Allowable NOx and SO2 emissions are greater than 10 tons per year, while potential emissions from all other pollutants are less than 10 tons per year. Since the permittee has requested federally enforceable restrictions to limit the potential to emit, BAT will be set as lb/mmBtu (manufacturer's data provided by the facility).

OAC rule 3745-31-05(A)(3), as effective 11/30/2001

BAT requirements for emissions units having potential emissions of less than 10 tons/yr. This requirement remains in effect until approval of the 12/01/2006 version of OAC rule 3745-31-05(A)(3) by U.S. EPA as part of Ohio's state implementation plan. Per the Ohio EPA's 2/7/2014 BAT guidance memo, BAT will be expressed as lb/mmBtu (manufacturer's data provided by the facility) for CO and a monthly allowable emission averaged over a 12-month rolling period for PM10 and VOC.

OAC rule 3745-31-05(A)(3)(a)(ii), as effective 12/01/2006

This rule has not yet been approved by U.S. EPA as part of Ohio's state implementation plan. After U.S. EPA approves this rule as part of the SIP, then BAT requirements will no longer be in effect for pollutants with potential emissions of less than 10 tons per year. Since the uncontrolled potential to emit for CO, PM10, and VOC emissions is less than 10 tons/yr, the emissions for these pollutants will not be subject to BAT requirements upon approval of the 12/01/2006 version of OAC rule 3745-31-05(A)(3) by U.S. EPA as part of Ohio's state implementation plan.

OAC rule 3745-31-05(D)

Synthetic minor limitation on potential to emit to restrict NOx and SO2 emissions to less than major source thresholds to avoid PSD, Title V, and MACT.

$(1,000,000 \text{ gal/yr})(0.14 \text{ mmBtu/gal}) = 140,000 \text{ mmBtu/yr}$ utilizing oil

PTE operation of one 25.8 mmBtu/hr boiler (8760 hr/yr) = 226,000 mmBtu/yr
for a potential operation of 226,000 - 140,000 mmBtu/yr = 86,000 mmBtu utilizing natural gas.

SO2: $(1,000 \text{ mmcft/yr})(0.6 \text{ lb SO}_2/\text{mmscf}) \div (2,000 \text{ lbs/ton}) = 0.30 \text{ tpy}$
 $(140,000 \text{ mmBtu/yr})(0.50 \text{ lb SO}_2/\text{mmBtu}) \div (2,000 \text{ lbs/ton}) = 35.00 \text{ tpy}$

Total SO2: 35.30 tpy

A combined emissions limit for B020-B022 and B024-B028 will be restricted to 35.30 tpy SO2.

Similarly for NOx, PTE becomes;

NOx: $(1,020,000 \text{ mmBtu/yr})(0.08 \text{ lb SO}_2/\text{mmBtu}) \div (2,000 \text{ lbs/ton}) = 40.80 \text{ tpy}$
 $(140,000 \text{ mmBtu/yr})(0.19 \text{ lb SO}_2/\text{mmBtu}) \div (2,000 \text{ lbs/ton}) = 13.30 \text{ tpy}$

Total NOx: 54.10 tpy



A combined emissions limit for B020-B022 and B024-B028 will be restricted to 54.10 tpyNOx.

OAC rule 3745-17-07(A)(1)	20% opacity as a 6-minute average, unless otherwise specified by the rule
OAC rule 3745-17-10(B)(1)	0.020 lb PE/mmBtu actual heat input
OAC rule 3745-18-06(A)	exemption from OAC rule 3745-18-06(D) on days when only natural gas is fired
OAC rule 3745-18-06(D)	1.6 lbs SO2/mmBtu actual heat input on days when No. 2 fuel oil is fired
40 CFR Part 60, Subpart Dc	

§ 60.40c Applicability and delegation of authority.

(a) the affected facility to which this subpart applies is each steam generating unit for which construction, modification, or reconstruction is commenced after June 9, 1989 and that has a maximum design heat input capacity of 29 megawatts (MW) (100 million British thermal units per hour (MMBtu/hr)) or less, but greater than or equal to 2.9 MW (10 MMBtu/hr).

§ 60.40c (d) no owner or operator of an affected facility that combusts oil shall cause to be discharged into the atmosphere from that affected facility any gases that contain SO₂ in excess of 215 ng/J (0.50 lb/MMBtu) heat input; or, as an alternative, no owner or operator of an affected facility that combusts oil shall combust oil in the affected facility that contains greater than 0.5 weight percent sulfur.

(h) For (distillate oil-fired affected facilities with heat input capacities between 2.9 and 29 MW (10 and 100 MMBtu/hr)), compliance with the emission limits or fuel oil sulfur limits under this section may be determined based on a certification from the fuel supplier, as described under §60.48c(f), as applicable.

§ 60.40d imposes no additional particulate restrictions on oil fired steam generating units of less than 8.7 MW (30 mmBtu/hr).

PSD PSD review would apply if any criteria pollutant were currently permitted at greater than 250 tpy. Based on the 129 mmBtu/hr total of the equipment to be removed and allowing 10 mmBtu/hr for each of the four remaining boilers, we estimate that the total existing capacity of the facility is less than 240 mmBtu/hr. Using emissions levels established as BAT in the general permit: 0.082 lb CO/mmBtu, 0.14 lbNOx/mmBtu, 0.014 lb PE/mmBtu, 0.50 lb SO₂/mmBtu and 0.011 lb OC/mmBtu, the existing facility-wide emissions may be estimated as follows:

240 mmBtu/hr (0.082 lb CO/mmBtu)(8,760 hrs/yr)÷(2,000 lbs/ton) = 86
240 mmBtu/hr (0.14 lbNOx/mmBtu)(8,760 hrs/yr)÷(2,000 lbs/ton) = 147
240 mmBtu/hr (0.014 lb PE/mmBtu)(8,760 hrs/yr)÷(2,000 lbs/ton) = 15
240 mmBtu/hr (0.50 lb SO₂/mmBtu)(8,760 hrs/yr)÷(2,000 lbs/ton) = 526
240 mmBtu/hr (0.011 lb OC/mmBtu)(8,760 hrs/yr)÷(2,000 lbs/ton) = 12

Therefore, without additional restrictions, UT will be considered to be a major for SO₂, and PSD review will apply.



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

<u>Pollutant</u>	<u>Tons Per Year</u>
CO	47.56 (3.22 increase)
NOx	54.10 (unchanged)
PM10	4.95 (0.65 increase)
SO2	35.30 (unchanged)
VOC	3.13 (0.24 increase)



DRAFT

**Division of Air Pollution Control
Permit-to-Install and Operate
for
UNIVERSITY OF TOLEDO - MAIN CAMPUS**

Facility ID:	0448010805
Permit Number:	P0116925
Permit Type:	Initial Installation
Issued:	7/22/2014
Effective:	To be entered upon final issuance
Expiration:	To be entered upon final issuance



Division of Air Pollution Control
Permit-to-Install and Operate
for
UNIVERSITY OF TOLEDO - MAIN CAMPUS

Table of Contents

Authorization	1
A. Standard Terms and Conditions	3
1. What does this permit-to-install and operate ("PTIO") allow me to do?.....	4
2. Who is responsible for complying with this permit?	4
3. What records must I keep under this permit?	4
4. What are my permit fees and when do I pay them?.....	4
5. When does my PTIO expire, and when do I need to submit my renewal application?	4
6. What happens to this permit if my project is delayed or I do not install or modify my source?	5
7. What reports must I submit under this permit?	5
8. If I am required to obtain a Title V operating permit in the future, what happens to the operating provisions and PER obligations under this permit?	5
9. What are my obligations when I perform scheduled maintenance on air pollution control equipment? ...	5
10. Do I have to report malfunctions of emissions units or air pollution control equipment? If so, how must I report?	6
11. Can Ohio EPA or my local air agency inspect the facility where the emission unit(s) is/are located?	6
12. What happens if one or more emissions units operated under this permit is/are shut down permanently?	6
13. Can I transfer this permit to a new owner or operator?.....	7
14. Does compliance with this permit constitute compliance with OAC rule 3745-15-07, "air pollution nuisance"?	7
15. What happens if a portion of this permit is determined to be invalid?	7
B. Facility-Wide Terms and Conditions.....	8
C. Emissions Unit Terms and Conditions	10
1. Emissions Unit Group -new boilers 2014: B024,B025,B026,B027,B028.....	11



Draft Permit-to-Install and Operate
UNIVERSITY OF TOLEDO - MAIN CAMPUS
Permit Number: P0116925
Facility ID: 0448010805
Effective Date: To be entered upon final issuance

Authorization

Facility ID: 0448010805
Application Number(s): A0050794
Permit Number: P0116925
Permit Description: Installation of five 25.8 mmBtu/hr natural gas/distillate fuel oil-fired boilers in central steam plant after the removal of five identical existing boilers
Permit Type: Initial Installation
Permit Fee: \$2,000.00 *DO NOT send payment at this time, subject to change before final issuance*
Issue Date: 7/22/2014
Effective Date: To be entered upon final issuance
Expiration Date: To be entered upon final issuance
Permit Evaluation Report (PER) Annual Date: To be entered upon final issuance

This document constitutes issuance to:

UNIVERSITY OF TOLEDO - MAIN CAMPUS
2801 W BANCROFT ST
Toledo, OH 43606

of a Permit-to-Install and Operate for the emissions unit(s) identified on the following page.

Ohio Environmental Protection Agency (EPA) District Office or local air agency responsible for processing and administering your permit:

Toledo Department of Environmental Services
348 South Erie Street
Toledo, OH 43604
(419)936-3015

The above named entity is hereby granted this Permit-to-Install and Operate for the air contaminant source(s) (emissions unit(s)) listed in this section pursuant to Chapter 3745-31 of the Ohio Administrative Code. Issuance of this permit does not constitute expressed or implied approval or agreement that, if constructed or modified in accordance with the plans included in the application, the described emissions unit(s) will operate in compliance with applicable State and Federal laws and regulations.

This permit is granted subject to the conditions attached hereto.

Ohio Environmental Protection Agency

Craig W. Butler
Director



Authorization (continued)

Permit Number: P0116925
 Permit Description: Installation of five 25.8 mmBtu/hr natural gas/distillate fuel oil-fired boilers in central steam plant after the removal of five identical existing boilers

Permits for the following Emissions Unit(s) or groups of Emissions Units are in this document as indicated below:

Group Name: new boilers 2014

Emissions Unit ID:	B024
Company Equipment ID:	Steam Generator #1
Superseded Permit Number:	
General Permit Category and Type:	Not Applicable
Emissions Unit ID:	B025
Company Equipment ID:	Steam Generator
Superseded Permit Number:	
General Permit Category and Type:	Not Applicable
Emissions Unit ID:	B026
Company Equipment ID:	Steam Generator #3
Superseded Permit Number:	
General Permit Category and Type:	Not Applicable
Emissions Unit ID:	B027
Company Equipment ID:	Steam Generator #4
Superseded Permit Number:	
General Permit Category and Type:	Not Applicable
Emissions Unit ID:	B028
Company Equipment ID:	Steam Generator #7
Superseded Permit Number:	
General Permit Category and Type:	Not Applicable



Draft Permit-to-Install and Operate
UNIVERSITY OF TOLEDO - MAIN CAMPUS
Permit Number: P0116925
Facility ID: 0448010805
Effective Date: To be entered upon final issuance

A. Standard Terms and Conditions



1. What does this permit-to-install and operate ("PTIO") allow me to do?

This permit allows you to install and operate the emissions unit(s) identified in this PTIO. You must install and operate the unit(s) in accordance with the application you submitted and all the terms and conditions contained in this PTIO, including emission limits and those terms that ensure compliance with the emission limits (for example, operating, recordkeeping and monitoring requirements).

2. Who is responsible for complying with this permit?

The person identified on the "Authorization" page, above, is responsible for complying with this permit until the permit is revoked, terminated, or transferred. "Person" means a person, firm, corporation, association, or partnership. The words "you," "your," or "permittee" refer to the "person" identified on the "Authorization" page above.

The permit applies only to the emissions unit(s) identified in the permit. If you install or modify any other equipment that requires an air permit, you must apply for an additional PTIO(s) for these sources.

3. What records must I keep under this permit?

You must keep all records required by this permit, including monitoring data, test results, strip-chart recordings, calibration data, maintenance records, and any other record required by this permit for five years from the date the record was created. You can keep these records electronically, provided they can be made available to Ohio EPA during an inspection at the facility. Failure to make requested records available to Ohio EPA upon request is a violation of this permit requirement.

4. What are my permit fees and when do I pay them?

There are two fees associated with permitted air contaminant sources in Ohio:

- PTIO fee. This one-time fee is based on a fee schedule in accordance with Ohio Revised Code (ORC) section 3745.11, or based on a time and materials charge for permit application review and permit processing if required by the Director.

You will be sent an invoice for this fee after you receive this PTIO and payment is due within 30 days of the invoice date. You are required to pay the fee for this PTIO even if you do not install or modify your operations as authorized by this permit.

- Annual emissions fee. Ohio EPA will assess a separate fee based on the total annual emissions from your facility. You self-report your emissions in accordance with Ohio Administrative Code (OAC) Chapter 3745-78. This fee assessed is based on a fee schedule in ORC section 3745.11 and funds Ohio EPA's permit compliance oversight activities. For facilities that are permitted as synthetic minor sources, the fee schedule is adjusted annually for inflation. Ohio EPA will notify you when it is time to report your emissions and to pay your annual emission fees.

5. When does my PTIO expire, and when do I need to submit my renewal application?

This permit expires on the date identified at the beginning of this permit document (see "Authorization" page above) and you must submit a renewal application to renew the permit. Ohio EPA will send a renewal notice to you approximately six months prior to the expiration date of this permit. However, it is



very important that you submit a complete renewal permit application (postmarked prior to expiration of this permit) even if you do not receive the renewal notice.

If a complete renewal application is submitted before the expiration date, Ohio EPA considers this a timely application for purposes of ORC section 119.06, and you are authorized to continue operating the emissions unit(s) covered by this permit beyond the expiration date of this permit until final action is taken by Ohio EPA on the renewal application.

6. What happens to this permit if my project is delayed or I do not install or modify my source?

This PTIO expires 18 months after the issue date identified on the “Authorization” page above unless otherwise specified if you have not (1) started constructing the new or modified emission sources identified in this permit, or (2) entered into a binding contract to undertake such construction. This deadline can be extended by up to 12 months, provided you apply to Ohio EPA for this extension within a reasonable time before the 18-month period has ended and you can show good cause for any such extension.

7. What reports must I submit under this permit?

An annual permit evaluation report (PER) is required in addition to any malfunction reporting required by OAC rule 3745-15-06 or other specific rule-based reporting requirement identified in this permit. Your PER due date is identified in the Authorization section of this permit.

8. If I am required to obtain a Title V operating permit in the future, what happens to the operating provisions and PER obligations under this permit?

If you are required to obtain a Title V permit under OAC Chapter 3745-77 in the future, the permit-to-operate portion of this permit will be superseded by the issued Title V permit. From the effective date of the Title V permit forward, this PTIO will effectively become a PTI (permit-to-install) in accordance with OAC rule 3745-31-02(B). The following terms and conditions of this permit will no longer be applicable after issuance of the Title V permit: Section B, Term 1.b) and Section C, for each emissions unit, Term a)(2).

The PER requirements in this permit remain effective until the date the Title V permit is issued and is effective, and cease to apply after the effective date of the Title V permit. The final PER obligation will cover operations up to the effective date of the Title V permit and must be submitted on or before the submission deadline identified in this permit on the last day prior to the effective date of the Title V permit.

9. What are my obligations when I perform scheduled maintenance on air pollution control equipment?

You must perform scheduled maintenance of air pollution control equipment in accordance with OAC rule 3745-15-06(A). If scheduled maintenance requires shutting down or bypassing any air pollution control equipment, you must also shut down the emissions unit(s) served by the air pollution control equipment during maintenance, unless the conditions of OAC rule 3745-15-06(A)(3) are met. Any emissions that exceed permitted amount(s) under this permit (unless specifically exempted by rule) must be reported as deviations in the annual permit evaluation report (PER), including nonexempt excess emissions that occur during approved scheduled maintenance.



10. Do I have to report malfunctions of emissions units or air pollution control equipment? If so, how must I report?

If you have a reportable malfunction of any emissions unit(s) or any associated air pollution control system, you must report this to the Toledo Department of Environmental Services in accordance with OAC rule 3745-15-06(B). Malfunctions that must be reported are those that result in emissions that exceed permitted emission levels. It is your responsibility to evaluate control equipment breakdowns and operational upsets to determine if a reportable malfunction has occurred.

If you have a malfunction, but determine that it is not a reportable malfunction under OAC rule 3745-15-06(B), it is recommended that you maintain records associated with control equipment breakdown or process upsets. Although it is not a requirement of this permit, Ohio EPA recommends that you maintain records for non-reportable malfunctions.

11. Can Ohio EPA or my local air agency inspect the facility where the emission unit(s) is/are located?

Yes. Under Ohio law, the Director or his authorized representative may inspect the facility, conduct tests, examine records or reports to determine compliance with air pollution laws and regulations and the terms and conditions of this permit. You must provide, within a reasonable time, any information Ohio EPA requests either verbally or in writing.

12. What happens if one or more emissions units operated under this permit is/are shut down permanently?

Ohio EPA can terminate the permit terms associated with any permanently shut down emissions unit. "Shut down" means the emissions unit has been physically removed from service or has been altered in such a way that it can no longer operate without a subsequent "modification" or "installation" as defined in OAC Chapter 3745-31.

You should notify Ohio EPA of any emissions unit that is permanently shut down by submitting a certification that identifies the date on which the emissions unit was permanently shut down. The certification must be submitted by an authorized official from the facility. You cannot continue to operate an emission unit once the certification has been submitted to Ohio EPA by the authorized official.

You must comply with all recordkeeping and reporting for any permanently shut down emissions unit in accordance with the provisions of the permit, regulations or laws that were enforceable during the period of operation, such as the requirement to submit a PER, air fee emission report, or malfunction report. You must also keep all records relating to any permanently shutdown emissions unit, generated while the emissions unit was in operation, for at least five years from the date the record was generated.

Again, you cannot resume operation of any emissions unit certified by the authorized official as being permanently shut down without first applying for and obtaining a permit pursuant to OAC Chapter 3745-31.



13. Can I transfer this permit to a new owner or operator?

You can transfer this permit to a new owner or operator. If you transfer the permit, you must follow the procedures in OAC Chapter 3745-31, including notifying Ohio EPA or the local air agency of the change in ownership or operator. Any transferee of this permit must assume the responsibilities of the transferor permit holder.

14. Does compliance with this permit constitute compliance with OAC rule 3745-15-07, "air pollution nuisance"?

This permit and OAC rule 3745-15-07 prohibit operation of the air contaminant source(s) regulated under this permit in a manner that causes a nuisance. Ohio EPA can require additional controls or modification of the requirements of this permit through enforcement orders or judicial enforcement action if, upon investigation, Ohio EPA determines existing operations are causing a nuisance.

15. What happens if a portion of this permit is determined to be invalid?

If a portion of this permit is determined to be invalid, the remainder of the terms and conditions remain valid and enforceable. The exception is where the enforceability of terms and conditions are dependent on the term or condition that was declared invalid.



Draft Permit-to-Install and Operate
UNIVERSITY OF TOLEDO - MAIN CAMPUS
Permit Number: P0116925
Facility ID: 0448010805
Effective Date: To be entered upon final issuance

B. Facility-Wide Terms and Conditions



1. This permit document constitutes a permit-to-install issued in accordance with ORC 3704.03(F) and a permit-to-operate issued in accordance with ORC 3704.03(G).
 - a) For the purpose of a permit-to-install document, the facility-wide terms and conditions identified below are federally enforceable with the exception of those listed below which are enforceable under state law only.
 - (1) None.
 - b) For the purpose of a permit-to-operate document, the facility-wide terms and conditions identified below are enforceable under state law only with the exception of those listed below which are federally enforceable.
 - (1) None.
2. The following emission units contained in this permit are subject to 40 CFR Part 60, Subpart Dc, Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units: B024-B028. The complete NSPS requirements may be accessed via the internet from the Electronic Code of Federal Regulations (e-CFR) website <http://ecfr.gpoaccess.gov> or by contacting the Toledo Division of Environmental Services.
3. The permittee is advised that this facility may be subject to the "Generally Available Control Technology" (GACT) requirements under 40 CFR Part 63, Subpart JJJJJJ, the National Emissions Standards for Hazardous Air Pollutants (NESHAP) for Industrial, Commercial, and Institutional Boilers Area Sources for emissions units B019-B022 and B024-B028. The U.S. EPA is responsible for the administration of the requirements of this rule at this time. It should be noted that the enforcement authority of the GACT requirements is not delegated to Ohio EPA at the time of this permit processing. The complete requirements of this rule (including the Part 63 General Provisions) may be accessed via the Internet from the Electronic code of Federal Regulations (e-CFR) website <http://www.ecfr.gov/> or by contacting the appropriate Ohio EPA District Office or Local Air Agency.



Draft Permit-to-Install and Operate
UNIVERSITY OF TOLEDO - MAIN CAMPUS
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C. Emissions Unit Terms and Conditions



1. Emissions Unit Group -new boilers 2014: B024,B025,B026,B027,B028

EU ID	Operations, Property and/or Equipment Description
B024	25.8 mmBtu/hr (600 hp) steam generator fired with natural gas or no. 2 fuel oil.
B025	25.8 mmBtu/hr (600 hp) steam generator fired with natural gas or no. 2 fuel oil.
B026	25.8 mmBtu/hr (600 hp) steam generator fired with natural gas or no. 2 fuel oil.
B027	25.8 mmBtu/hr (600 hp) steam generator fired with natural gas or no. 2 fuel oil.
B028	25.8 mmBtu/hr (600 hp) steam generator fired with natural gas or no. 2 fuel oil.

a) This permit document constitutes a permit-to-install issued in accordance with ORC 3704.03(F) and a permit-to-operate issued in accordance with ORC 3704.03(G).

(1) For the purpose of a permit-to-install document, the emissions unit terms and conditions identified below are federally enforceable with the exception of those listed below which are enforceable under state law only.

a. None.

(2) For the purpose of a permit-to-operate document, the emissions unit terms and conditions identified below are enforceable under state law only with the exception of those listed below which are federally enforceable.

a. b)(1)d., c)(4), d)(3), e)(3), f)(1)c. and f)(1)f.

b) Applicable Emissions Limitations and/or Control Requirements

(1) The specific operation(s), property, and/or equipment that constitute each emissions unit 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)	Install burners that are designed to meet 0.08 pound nitrogen oxides (NOx) per mmBtu of heat input when combusting natural gas shall and 0.19 pound NOx per mmBtu of heat input when combusting distillate fuel oil. See b)(2)a.
b.	OAC rule 3745-31-05(A)(3), as effective 11/30/01	Install burners that are designed to meet 0.080 pound carbon monoxide (CO) per mmBtu of heat input when combusting natural gas and 0.040 pound CO per mmBtu when combusting distillate fuel oil.



	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
		<p>Emissions of particulate matter 10 microns or less (PM10) from this emissions unit shall not exceed 0.123 ton per month averaged over a 12-month rolling period.</p> <p>Volatile Organic Compound (VOC) emissions from this emissions unit shall not exceed 0.05 ton per month averaged over a 12-month rolling period.</p> <p>See b)(2)b.</p>
c.	OAC rule 3745-31-05(A)(3)(a)(ii), as effective 12/01/06	see b)(2)c.
d.	OAC rule 3745-31-05(D) (synthetic minor restrictions to avoid PSD and Title V)	<p>NOx emissions from emissions units B020 through B022 and B024 through B028 combined shall not exceed 54.10tons per rolling, 12-month period.</p> <p>SO₂ emissions from emissions units B020 through B022 and B024 through B028 combined shall not exceed 35.30tons per rolling, 12-month period.</p> <p>See b)(2)d. through b)(2)f.</p>
e.	OAC rule 3745-17-07(A)(1)	Visible particulate emissions from the stack serving this emissions unit shall not exceed 20% opacity, as a six-minute average, except as provided by rule.
f.	OAC rule 3745-17-10(B)(1)	PE shall not exceed 0.020 pound per million Btu of actual heat input.
g.	OAC rule 3745-18-06(D)	<p>Exempt, by the provisions of OAC rule 3745-18-06(A) during any calendar day in which natural gas is the only fuel burned.</p> <p>See b)(2)g.</p>
h.	<p>40 CFR Part 60, Subpart Dc (40 CFR 60.40c – 60.48c)</p> <p>In accordance with 40 CFR 60.40c(a) this emissions unit is a 25.8 mmBtu/hr boiler which can combust natural gas or distillate oil</p>	<p>During any calendar day in which fuel oil is burned, the emissions of SO₂ from this emissions unit shall not exceed 215 nanograms per Joule (0.50 pound SO₂ per million Btu) heat input;</p> <p>or, as an alternative</p>



	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
		<p>the permittee shall combust no oil that contains greater than 0.5 weight percent sulfur.</p> <p>See b)(2)h.</p>

(2) Additional Terms and Conditions

- a. The requirements of this rule also include compliance with the sulfur dioxide limitation established under OAC rule 3745-31-05(D).
- b. The permittee has satisfied the Best Available Technology (BAT) requirements pursuant to Ohio Administrative Code (OAC) paragraph 3745-31-05(A)(3), as effective November 30, 2001, in this permit. On December 1, 2006, paragraph (A)(3) of OAC rule 3745-31-05 was revised to conform to the Ohio Revised Code (ORC) changes effective August 3, 2006 (Senate Bill 265 changes), such that BAT is no longer required by State regulations for National Ambient Air Quality Standards (NAAQS) pollutant(s) less than ten tons per year. However, that rule revision has not yet been approved by U.S. EPA as a revision to Ohio's State Implementation Plan (SIP). Therefore, until the SIP revision occurs and the U.S. EPA approves the revisions to OAC rule 3745-31-05, the requirement to satisfy BAT still exists as part of the federally-approved SIP for Ohio. Once U.S. EPA approves the December 1, 2006 version of OAC rule 3745-31-05, then these emission limitations/control measures no longer apply.

b)(1)b., f)(1)g., f)(1)h. and f)(1)j.
- c. This rule paragraph applies once U.S. EPA approves the December 1, 2006 version of OAC rule 3745-31-05 as part of the State Implementation Plan.

The best available technology (BAT) requirements under OAC rule 3745-31-05(A)(3) do not apply to the uncontrolled carbon monoxide (CO) emissions, particulate matter less than 10 microns (PM₁₀) and volatile organic compound (VOC) emissions from this air contaminant source since the potential to emit for CO, PM₁₀ and VOC is less than 10 tons per year.
- d. The facility-wide usage of distillate fuel oil shall not exceed 1.0 million gallons as a rolling, 12-month summation of oil received.
- e. The facility-wide usage of natural gas shall not exceed 1.0 billion standard cubic feet (1.0 million Mscf) as a rolling, 12-month summation of natural gas received.
- f. The University of Toledo – Main Campus shall permanently shut down emissions units B011, B012, B013, B014, and B019 upon startup of the units under this federally enforceable permit to install.



- g. The requirements of this rule also include compliance with the emission limitation established pursuant to 40 CFR 60 subpart Dc.
 - h. The application and enforcement of the provisions of the New Source Performance Standards (NSPS), as promulgated by the United States Environmental Protection Agency, 40 CFR Part 60, are delegated to the Ohio Environmental Protection Agency. The requirements of 40 CFR Part 60 are also federally enforceable.
- c) **Operational Restrictions**
- (1) The permittee shall only burn natural gas or distillate fuel oil with $\leq 0.5\%$ sulfur by weight in this emissions unit.
 - (2) The quality of the oil burned in this emissions unit shall meet a sulfur content that is sufficient to comply with the allowable sulfur dioxide emission limitation specified in this permit (0.50 pound SO₂ per million Btu of heat input).
 - (3) Pursuant to 40 CFR 60.42c(i), the sulfur dioxide emission limit for fuel oil applies at all times, including periods of startup, shutdown, and malfunctions.
 - (4) Compliance with the fuel usage limitation(s) shall be based upon a rolling, 12-month summation of the monthly quantities of fuel(s) received.
- d) **Monitoring and/or Recordkeeping Requirements**
- (1) For each day during which the permittee burns a fuel other than natural gas or distillate fuel oil with $\leq 0.5\%$ sulfur by weight, the permittee shall maintain a record of the type and quantity of fuel burned in this emissions unit.
 - (2) For each shipment of oil received for burning at this facility, the permittee shall maintain records of the total quantity of oil received, the permittee's or oil supplier's analyses for sulfur content and heat content, and the calculated sulfur dioxide emission rate (in pounds per million Btu). The sulfur dioxide emission rate shall be calculated in accordance with the formula(s) specified in OAC rule 3745-18-04(F) and 40 CFR 60.44c. A shipment may be comprised of multiple tank truck loads from the same supplier's batch, or may be represented by single or multiple pipeline deliveries from the same supplier's batch, and the quality of the oil for those loads or pipeline deliveries may be represented by a single batch analysis from the supplier.

The permittee shall perform or require the supplier to perform the analyses for sulfur content and heat content in accordance with 40 CFR Part 60, Appendix A, Method 19, or the appropriate ASTM methods, such as D240 Standard Test Method for Heat of Combustion of Liquid Hydrocarbon Fuels by Bomb Calorimeter and D4294, Standard Test Method for Sulfur in Petroleum and Petroleum Products by Energy-Dispersive X-Ray Fluorescence Spectrometry, or equivalent methods as approved by the director.



- (3) The permittee shall maintain monthly records of the following information:
 - a. the facility-wide natural gas usage rate (in Mscf, on an as received basis) for each month;
 - b. the rolling, 12-month summation of the facility-wide natural gas usage rates (in Mscf);
 - c. the facility-wide distillate fuel oil usage rate (in gallons, on an as received basis) for each month; and
 - d. the rolling, 12-month summation of the facility-wide distillate fuel oil usage rates (in gallons).
- e) Reporting Requirements
 - (1) The permittee shall submit deviation (excursion) reports that identify each day when a fuel other than natural gas or distillate fuel oil with $\leq 0.5\%$ sulfur by weight was burned in this emissions unit. Each report shall be submitted within 30 days after the deviation occurs.
 - (2) The permittee shall notify the director (the Toledo Division of Environmental Services) in writing of any record which shows a deviation from the allowable sulfur dioxide emission limitation contained in this permit, based upon the sulfur dioxide emission rates calculated in accordance with the formula(s) specified in OAC rule 3745-18-04(F) and 40 CFR 60.44c. The notification shall include a copy of such record and shall be sent to the director (the Toledo Division of Environmental Services) within 45 days after the deviation occurs.
 - (3) The permittee shall submit quarterly deviation (excursion) reports that identify:
 - a. all deviations (excursions) of the following emission limitations, operational restrictions and/or control device operating parameter limitations that restrict the potential to emit (PTE) of any regulated air pollutant and have been detected by the monitoring, record keeping and/or testing requirements in this permit:
 - i. any exceedance of the monthly average 12-month rolling limitations;
 - ii. all exceedances of the rolling, 12-month natural gas usage limitation for this emissions unit;
 - iii. all exceedances of the rolling, 12-month fuel oil usage limitation for this emissions unit;
 - iv. all days when a fuel other than natural gas or distillate fuel oil with $\leq 0.5\%$ sulfur by weight was burned in this emissions unit; and
 - v. all deviations from the allowable sulfur dioxide emission limitation contained in this permit, based upon the sulfur dioxide emission rates calculated in accordance with the formula(s) specified in OAC rule 3745-18-04(F) and 40 CFR 60.44c.



- b. the probable cause of each deviation (excursion);
- c. any corrective actions that were taken to remedy the deviations (excursions) or prevent future deviations (excursions); and
- d. the magnitude and duration of each deviation (excursion).

If no deviations (excursions) occurred during a calendar quarter, the permittee shall submit a report that states that no deviations (excursions) occurred during the quarter.

The quarterly reports shall be submitted each year by January 31 (covering October to December), April 30 (covering January to March), July 31 (covering April to June), and October 31 (covering July to September), unless an alternative schedule has been established and approved by the Director (the appropriate District Office or local air agency).

- (4) The permittee shall submit an annual Permit Evaluation Report (PER) to the Ohio EPA. The PER must be submitted by the due date identified in the Authorization section of this permit. The permit evaluation report shall cover a reporting period of no more than twelve months for each air contaminant source identified in this permit.
- (5) All applications, notifications or reports required by terms and conditions in this permit to be submitted or "reported in writing" are to be submitted to Ohio EPA through the Ohio EPA's eBusiness Center: Air Services web service ("Air Services"). Ohio EPA will accept hard copy submittals on an as-needed basis if the permittee cannot submit the required documents through the Ohio EPA eBusiness Center. In the event of an alternative hard copy submission in lieu of the eBusiness Center, the post-marked date or the date the document is delivered in person will be recognized as the date submitted. Electronic submission of applications, notifications, or reports required to be submitted to Ohio EPA fulfills the requirement to submit the required information to the Director, the District Office or Local Air Agency, and/or any other individual or organization specifically identified as an additional recipient identified in this permit unless otherwise specified. Consistent with OAC rule 3745-15-03, the required application, notification or report is considered to be "submitted" on the date the submission is successful using a valid electronic signature. Signature by the signatory authority may be represented as provided through procedures established in Air Services.
- (6) Pursuant to the NSPS, the permittee is required to report the following information at the appropriate times (if the information has not already been reported):
 - a. construction date (no later than 30 days after such date);
 - b. anticipated start-up date (not more than 60 days or less than 30 days prior to such date);
 - c. actual start-up date (within 15 days after such date);
 - d. date of performance testing (if required, at least 30 days prior to testing); and



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

Reports are to be sent to the Toledo Division of Environmental Services and to:

Ohio Environmental Protection Agency
DAPC - Permit Management Unit
P.O. Box 163669
Columbus, Ohio 43216-3669

- (7) The permittee shall submit a summary report identifying the actual date of permanent shutdown for the existing emissions units B011, B012, B013, B014, and B019 no later than 13 calendar months following the start-up of this emissions unit.

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 particulate emissions from the stack serving this emissions unit shall not exceed 20% opacity, as a six-minute average.

Applicable Compliance Method:

If required, compliance shall be determined through visible emissions observations performed in accordance with 40 CFR Part 60, Appendix A, Method 9 and the procedures specified in OAC rule 3745-17-03(B)(1).

- b. Emission Limitation:

Install burners that are designed to meet 0.08 pound nitrogen oxides (NO_x) per mmBtu of heat input when combusting natural gas shall and 0.19 pound NO_x per mmBtu of heat input when combusting distillate fuel oil.

Applicable Compliance Method:

Compliance with the emissions limitations above is based on the manufacturer's design specification sheet for the burner emissions dated 12/19/2011 as provided in FEPTIO application A0050794 submitted on May 21, 2014.

- c. Emission Limitation:

The combined emissions of NO_x from emissions units B020 through B022 and B024 through B028 shall not exceed 54.10 tons per rolling, 12-month period.



Applicable Compliance Method:

This emission limitation was established to reflect the potential to emit for eight emissions units utilizing the allowable quantity of fuel oil (1 million gallons per year) and the allowable quantity of natural gas (1 million Mscf per year). At 140 mmBtu per 1000 gallons, fuel oil usage accounts for 140,000 mmBtu of heat input per year. At 1020 Btu per scf, natural gas oil usage accounts for 1,020,000 mmBtu of heat input per year.

The annual emissions of NO_x may be calculated as the sum of the emissions from fuel oil combustion added to the emissions from natural gas combustion. Fuel oil emissions may be calculated by multiplying the technical emissions limitation (0.19 pound of NO_x per mmBtu of heat input - worst case manufacturer's emission factor for B020–B022 and B024 – B028 by the distillate fuel oil heat input (140,000 million Btu per year) and dividing by 2000 pounds per ton. Natural gas emissions may be calculated by multiplying the technical emissions limitation (0.08 pound of NO_x per mmBtu of heat input - worst case manufacturer's emission factor for B020–B022 and B024 – B028 by the natural gas heat input (1,020,000 million Btu per year) and dividing by 2000 pounds per ton.

$$(0.19 \text{ lb/mmBtu})(140,000 \text{ mmBtu/yr})(1 \text{ t}/2000 \text{ lb}) = 13.30 \text{ tpy}$$

$$(0.08 \text{ lb/mmBtu})(1,020,000 \text{ mmBtu/yr})(1 \text{ t}/2000 \text{ lb}) = 40.80 \text{ tpy}$$

d. Emission Limitation:

0.50 pound of SO₂ per mmBtu (215 nanograms per Joule) of heat input when combusting fuel oil

Applicable Compliance Method:

Compliance with the allowable sulfur dioxide emission limitation may be demonstrated by emission rate calculations performed in accordance with the specifications of 40 CFR 60.44c.

If required, the permittee shall demonstrate compliance with this emission limitation through emission tests performed in accordance with Method 19 or Methods 1 through 4 and 6 of 40 CFR, Part 60 Appendix A. Alternate, equivalent methods may be used upon approval by the Toledo Division of Environmental Services.

e. Emission Limitation:

combust no oil that contains greater than 0.5 weight percent sulfur

Applicable Compliance Method:

Compliance may be demonstrated by the methods and procedures of 40 CFR 60.44c. Alternate, equivalent methods may be used upon approval by the Toledo Division of Environmental Services.



f. Emission Limitation:

The combined emissions of sulfur dioxide (SO₂) from emissions units B020 through B022 and B024 through B028 shall not exceed 35.30 tons per rolling, 12-month period.

Applicable Compliance Method:

This emission limitation was established to reflect the potential to emit for eight emissions units utilizing the allowable quantity of fuel oil (1 million gallons per year) and the allowable quantity of natural gas (1 million Mscft per year). At 140 mmBtu per 1000 gallons, fuel oil usage accounts for 140,000 mmBtu of heat input per year.

The annual emissions of SO₂ may be calculated as the sum of the emissions from fuel oil combustion added to the emissions from natural gas combustion. Fuel oil emissions may be calculated by multiplying the technical emissions limitation (0.50 pound of SO₂ per mmBtu of heat input) by the distillate fuel oil heat input (140,000 million Btu per year) and dividing by 2000 pounds per ton. Natural gas emissions may be calculated by multiplying the technical emissions limitation (0.6 pound of SO₂ per million cubic feet of natural gas) by the maximum natural gas usage rate (1,000 million cubic feet of natural gas per year) and dividing by 2000 pounds per ton.

$$(0.50 \text{ lb/mmBtu})(140,000 \text{ mmBtu/yr})(1 \text{ t}/2000 \text{ lb}) = 35.00 \text{ tpy}$$

$$(0.6 \text{ lb/mmcf})(1,000 \text{ mmcf/yr})(1 \text{ t}/2000 \text{ lb}) = 0.30 \text{ tpy}$$

g. Emission Limitation:

Install burners that are designed to meet 0.080 pound carbon monoxide (CO) per mmBtu of heat input when combusting natural gas and 0.040 pound CO per mmBtu when combusting distillate fuel oil.

Applicable Compliance Method:

Compliance with the emissions limitations above is based on the manufacturer's design specification sheet for the burner emissions dated 12/19/2011 as provided in FEPTIO application A0050794 submitted on May 21, 2014.

h. Emission Limitation:

PM10 emissions shall not exceed 0.123 ton per month averaged over a 12-month rolling period.

Applicable Compliance Method:

This emission limitation was established to reflect the potential to emit for this emissions unit operating at maximum capacity (25.8 mmBtu per hour) for 8760 hours per year (226,000 mmBtu per year), while utilizing the maximum allowable quantity of fuel oil (1 million gallons per year). At 140 mmBtu per 1000 gallons,



fuel oil usage accounts for 140,000 mmBtu of heat input per year. The balance of the heat input from the combustion of natural gas (226,000 - 140,000) equals 86,000 mmBtu per year. At 1,020 Btu per cubic foot of natural gas this usage equates to 84.3 million cubic feet of natural gas combusted per year.

The monthly average per rolling 12-months emissions of PM₁₀ may be calculated as the sum of the emissions from fuel oil combustion added to the emissions from natural gas combustion. Fuel oil emissions may be calculated by multiplying the technical emissions limitation (2.3 pound of PM₁₀ per 1,000 gallons) by the maximum distillate fuel oil usage (1 million gallons per year) and dividing by 2000 pounds per ton. Natural gas emissions may be calculated by multiplying the technical emissions limitation (7.6 pound of PM₁₀ per million cubic feet of natural gas) by the natural gas heat input rate (86 mmBtu per year) and dividing by 2000 pounds per ton and divide by 12 months per year to determine the tons of VOC emissions averaged over a rolling, 12-month period.

$$[(2.3 \text{ lb}/1,000 \text{ gallons})(1,000,000 \text{ gallons/yr})(1 \text{ t}/2000 \text{ lb}) + (7.6 \text{ lb}/\text{mmcft})(86 \text{ mmBtu/yr})(1 \text{ t}/2000 \text{ lb})] \div 12 \text{ months/year} = 0.123 \text{ ton per rolling 12-months}$$

If required, Methods 201 and 202 of 40 CFR Part 51, Appendix M, or other U.S. EPA-approved test method, with prior approval from the Ohio EPA, shall be used to develop a site-specific emissions factor.

i. Emission Limitation:

0.020 pound PE per mmBtu of heat input (from OAC 3745-17-10(B)(1))

Applicable Compliance Method:

If required, the permittee shall demonstrate compliance with this emission limitation by the test method specified in paragraph (B)(12) of rule 3745-17-01 of the Administrative Code, except that for "USEPA Method 5" the probe and filter holder heating systems in the sampling train shall be set to provide a gas temperature no greater than three hundred twenty degrees Fahrenheit (one hundred sixty degrees Celsius). The heat content of fuels shall be determined according to ASTM D5685-05 or ASTM E870-82 for solid fuels, ASTM D240-02 for liquid fuels, and ASTM D1826-94 for gaseous fuels.

j. Emission Limitation:

VOC emissions shall not exceed 0.05 ton per month averaged over a 12-month rolling period.

Applicable Compliance Method:

This emission limitation was established to reflect the potential to emit for this emissions unit operating at maximum capacity (25.8 mmBtu per hour) for 8760 hours per year (226,000 mmBtu per year). Natural gas has a higher emission factor than fuel oil, based on AP-42 (0.0054 pounds VOC per mmBtu for natural gas vs. 0.002 pound VOC per mmBtu for distillate fuel oil) and the facility wide



restriction on natural gas combustion is greater than the annual combustion of this emissions unit (1000 mmcuft/yr times 1,020 mmBtu/mmcuft = 1.02 million mmBtu per year), therefore the combustion of natural gas will be used to determine the potential to emit.

The monthly average per rolling 12-months emissions of VOC may be calculated by multiplying the technical emissions limitation (5.5 pound of VOC per mmcuft of heat input) by the maximum annual heat input of the emissions unit (226,000 million Btu per year) and dividing by 2000 pounds per ton and divide by 12 months per year to determine the tons of VOC emissions averaged over a rolling, 12-month period.

$[(5.5 \text{ lb/mmBtu} \div 1,020 \text{ mmBtu/mmcuft})(226,000 \text{ mmBtu/yr})(1 \text{ t}/2000 \text{ lb})] \div 12 \text{ months/year} = 0.05 \text{ ton per rolling 12-months}$

If required, Methods 1 through 4 and 25A of 40 CFR, Part 60 Appendix A. Alternate, equivalent methods may be used upon approval by the Toledo Division of Environmental Services, shall be used to develop a site-specific emissions factor.

g) Miscellaneous Requirements

- (1) None.