



John R. Kasich, Governor
Mary Taylor, Lt. Governor
Scott J. Nally, Director

5/2/2013

Bill Rupert
BP-Husky Refining LLC
4001 Cedar Point Road
Oregon, OH 43616

RE: DRAFT AIR POLLUTION PERMIT-TO-INSTALL

Facility ID: 0448020007
Permit Number: P0111667
Permit Type: Initial Installation
County: Lucas

Dear Permit Holder:

A draft of the Ohio Administrative Code (OAC) Chapter 3745-31 Air Pollution Permit-to-Install 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
P.O. 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 in writing 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

Certified Mail

Yes	TOXIC REVIEW
Yes	PSD
Yes	SYNTHETIC MINOR TO AVOID MAJOR NSR
Yes	CEMS
Yes	MACT/GACT
Yes	NSPS
No	NESHAPS
Yes	NETTING
No	MAJOR NON-ATTAINMENT
Yes	MODELING SUBMITTED
Yes	MAJOR GHG
No	SYNTHETIC MINOR TO AVOID MAJOR GHG

PUBLIC NOTICE – PUBLIC HEARING
ISSUANCE OF DRAFT PERMIT TO INSTALL
SUBJECT TO PREVENTION OF SIGNIFICANT DETERIORATION REVIEW
FOR THE BP HUSKY REFINING, TOLEDO REFINERY

Public Notice is hereby given that the Staff of the Ohio Environmental Protection Agency (EPA) has recommended to the Director that the Ohio EPA issue a draft action of a Permit to Install (PTI) to BP-Husky Refining, Toledo Refinery (BPH) located in Oregon, Lucas County, Ohio. The draft action (permit number P0111667) was issued on May 2, 2013.

The purpose of the TFO project is to allow BPH to process crude oils originating in the BPH Sunrise fields in Canada, or other crude oils having similar characteristics. The TFO Project will neither increase the refinery's overall crude capacity nor the amount of Canadian or other heavy sour crudes relative to what is currently being processed at the refinery.

The Project will not significantly increase emissions of any conventional pollutant when considered with contemporaneous and creditable increases and decreases at the facility. The Project will, however, trigger Prevention of Significant Deterioration (PSD) pre-construction review for GHGs

For PSD purposes, this project makes BPH a major facility. A PSD analysis was required for any increase in emissions of a pollutant exceeding the PSD threshold emissions level, or the significance levels. Non-Attainment New Source Review was not applicable, due to attainment status.

The emissions from the proposed Project are as follows:

Pollutant	Proposed Emissions (TPY)	PDS Trigger Level (TPY)
NO _x	-383.2	40
CO	-36.5	100
VOC	23.9	40
PM ₁₀	3.1	15
PM _{2.5}	-2.2	10
SO ₂	36.6	40
GHGs (CO ₂ e)	152,287	75,000

NO_x = Nitrogen Oxide

CO = Carbon Monoxide

VOC = Volatile Organic Compound

PM₁₀ = Particulate Matter <10 microns

PM_{2.5} = Particulate Matter <2.5 microns

SO₂ = Sulfur Dioxide

GHG (CO₂e) = Greenhouse Gases (CO₂ equivalent)

Based upon the above information, PSD review is required only for GHGs.

This facility is subject to the applicable attainment provisions of the Ohio Administrative Code (OAC) rules 3745-31-10 through 20.

A public hearing and information session on the draft air permit is scheduled for 6:30 p.m., Wednesday, June 5, 2013, at Lake Erie Center, 6200 Bayshore Drive, Oregon, OH 43616. 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 must be received by Ohio EPA/Toledo Division of Environmental Services by June 10, 2013. Comments received after June 10, 2013 may not be considered to be a part of the official record. Written comments may be submitted at the hearing or sent to Peter Park, Toledo Division of Environmental Services, 348 South Erie Street, Toledo, Ohio, 43604. Fax number: (419) 936-3959.

Further information concerning this application, which is available for public inspection, may be secured from Peter Park, Toledo Division of Environmental Services at the above address during normal business hours. Telephone number: (419) 936-3015. A copy of the application and draft permit will be available for review at the Oregon Branch of the Toledo-Lucas County Public Library, 3340 Dustin Road, Oregon. An electronic copy of the permit can be obtained directly by accessing the 2013 issued permits link on the following web page:

http://www.epa.state.oh.us/dapc/pti_issued/pti.html



**STAFF DETERMINATION FOR THE APPLICATION TO CONSTRUCT
UNDER THE PREVENTION OF SIGNIFICANT DETERIORATION REGULATIONS
FOR BP HUSKY REFINING, LLC
OREGON, OHIO
PERMIT NUMBER P0111667**

The Clean Air Act and regulations promulgated thereunder require that major air pollution sources undergoing construction or modification comply with all applicable Prevention of Significant Deterioration (PSD) provisions and nonattainment area New Source Review requirements. The federal PSD rules govern emission increases in attainment areas for major sources, which are sources with the potential to emit 250 tons per year or more of any pollutant regulated under the Clean Air Act, or 100 tons per year or more if the source is included in one of 28 source categories. In nonattainment areas, the definition of major source is one having at least 100 tons per year potential emissions. A major modification is one resulting in a contemporaneous increase in emissions which exceeds the significance level of one or more pollutants. Any changes in actual emissions within a five-year period are considered to be contemporaneous. In addition, Ohio now has incorporated the PSD and NSR requirements by rule under OAC 3745-31.

Both PSD and nonattainment rules require that certain analyses be performed before a facility can obtain a permit authorizing construction of a new source or major modification to a major source. The principal requirements of the PSD regulations are:

1. Best Available Control Technology (BACT) review - A detailed engineering review must be performed to ensure that BACT is being installed for the pollutants for which the new source is a major source.
2. Ambient Air Quality Review - An analysis must be completed to ensure the continued maintenance of the National Ambient Air Quality Standards (NAAQS) and that any increases in ambient air pollutant concentrations do not exceed the incremental values set pursuant to the Clean Air Act.

For nonattainment areas, the requirements are:

1. Lowest Achievable Emissions Rate (LAER) - New major sources must install controls that represent the lowest emission levels (highest control efficiency) that has been achieved in practice.
2. The emissions from the new major source must be offset by a reduction of existing emissions of the same pollutant by at least the same amount, and a demonstration must be made that the resulting air quality shows a net air quality benefit. This is more completely described in the Emission Offset Interpretative Ruling as found in Appendix S of 40 CFR Part 51.
3. The facility must certify that all major sources owned or operated in the state by the same entity are either in compliance with the existing State Implementation Plan (SIP) or are on an approved schedule resulting in full compliance with the SIP.



For rural ozone nonattainment areas, the requirements are:

1. LAER - New major sources must install controls that represent the lowest emissions levels (highest control efficiency) that has been achieved in practice.
2. The facility must certify that all major sources owned or operated in the state by the same entity are either in compliance with the existing SIP or are on an approved schedule resulting in full compliance with the SIP.

Finally, New Source Performance Standards (NSPS), SIP emission standards and public participation requirements must be followed in all cases.

SITE/FACILITY DESCRIPTION

The facility is in Oregon, Ohio, which is located in Lucas County. BP-Husky Refining, Toledo Refinery (BPH) is situated on 585 acres just east of the city of Toledo, near the Maumee River.

This area is classified as attainment or unclassifiable for all of the criteria pollutants, particulate matter less than 10 microns, particulate matter less than 2.5 microns, sulfur dioxide, nitrogen oxides, carbon monoxide, volatile organic compounds (ozone) and lead.

BPH is proposing some modifications at the refinery to increase the flexibility to process a higher percentage of crude oil feedstocks similar to that which will soon be available from their Sunrise oil development in Canada. This project is named the Toledo Feedstock Optimization (TFO) Project.

PROJECT DESCRIPTION

The purpose of the TFO project is to allow BPH to process crude oils originating in the BPH Sunrise fields in Canada, or other crude oils having similar characteristics. The TFO Project will neither increase the refinery's overall crude capacity nor the amount of Canadian or other heavy sour crudes relative to what is currently being processed at the refinery.

The TFO project will replace the existing heaters in the Crude Vacuum 1 process unit (P011), replace the existing Vacuum Tower, and upgrade the metallurgy in the Crude Tower and miscellaneous piping. It also includes changes to the Coker 3 unit (P036) to reduce the coke drum cycle time, and a modification to the Coker gas plant to improve light ends recovery and reduce total sulfur compounds in the fuel gas at the refinery. The Project includes the addition of a new benzene stripper to the Wastewater Treatment System (P025) to help treat the higher desalter waste water flow rates and installation of a new amine stripper to the existing TRP amine treatment system (P038) to improve fuel gas treatment. Finally, minor piping changes will be required in the following process units: Crude Vac 1 (P011); A-Diesel Hydrotreater (ADHT) (P028); and Coker 3 (P036).

A.



NEW SOURCE REVIEW (NSR)/PSD APPLICABILITY

The Project will not significantly increase emissions of any conventional pollutant when considered with contemporaneous and creditable increases and decreases at the facility. The Project will, however, trigger Prevention of Significant Deterioration (PSD) pre-construction review for GHGs.

The emissions from the proposed Project are as follows:

Pollutant	Proposed Emissions (TPY)	PSD Trigger Level (TPY)
NO _x	-383.2	40
CO	-36.5	100
VOC	23.9	40
PM ₁₀	3.1	15
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NO_x = Nitrogen Oxide

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PM₁₀ = Particulate Matter <10 microns

PM_{2.5} = Particulate Matter <2.5 microns

SO₂ = Sulfur Dioxide

GHG (CO₂e) = Greenhouse Gases (CO₂ equivalent)

Based upon the above information, PSD review is required only for GHGs.

BACT REVIEW

As part of the application for any source regulated under the PSD requirements, an analysis must be conducted that demonstrates that Best Available Control Technology will be employed by the source. In this specific case, the BACT analysis was conducted for GHGs.

Emission units that are subject to the requirement for GHG BACT are only those that are new or modified and have an increase in GHG emissions as a result of this project. The emissions units triggering this requirement are the new Crude 1 and Vacuum 1 heaters and the modified Coker 3 process unit. Emission units that are unchanged by the project are not subject to BACT.

The application used a "top-down" approach to determine an appropriate level of control.

The basic steps to be followed are:

- Identify all available potential control options;
- Eliminate technically infeasible options;



- Rank remaining technologies by control effectiveness;
- Evaluate the feasible controls by performance and cost analysis; and
- Select BACT

BACT Analysis for Greenhouse Gases

New Refinery Heaters (Crude 1 & Vac 1)

This project will install three new natural draft process heaters. Two of the new heaters will serve together as new Crude 1 Furnaces and will each be designed to burn refinery fuel gas (RFG) at the design fuel flow rate of 225 MMBtu/hour (HHV). A third furnace with a design firing of 150 MMBtu/hr (HHV) will serve as the new Vacuum 1 furnace.

The heaters will generate three GHGs as a result of the normal combustion process: CO₂, CH₄ and N₂O. However, CO₂ is the by far the most significant. Nearly all of the fuel carbon (99.9%) in the fuel gas is typically converted to CO₂ during combustion. This conversion is relatively independent of boiler or heater fuel type. Fuel carbon that is not converted to CO₂ results in CH₄, CO, and/or VOC emissions due to incomplete combustion. The conditions that favor formation of N₂O are typically the same as those that favor emissions of methane, which are low temperature or incomplete combustion. Even in units with poor combustion efficiency, the level of these pollutants is insignificant compared to CO₂ levels. Therefore, the GHG analysis for combustion units focuses on just CO₂. CO₂ is an effective surrogate for all combustion CO₂e. Also, options for controlling CO₂, such as ensuring complete combustion and maximum thermal efficiency, will minimize all three of the GHGs emitted.

Identify Potential Controls and Assess Feasibility

A review of the RACT/BACT/LAER Clearinghouse (RBLC) and EPA Guidance Document on GHG Technologies was conducted to identify potential controls on refinery heaters. The following table shows the results of the RBLC search for similar gas-fired heaters or boilers showing the technologies employed to minimize GHG emissions.

Snapshot of Relevant GHG BACT Determinations (2011-2012)

Facility	State or RBLC #	Emission Unit	GHG BACT Requirements
PORT DOLPHIN ENERGY LLC	FL-0330	4- 278 MMBtu/hr Boilers (Natural Gas Fuel)	Tuning, optimization, instrumentation and controls, insulation, and turbulent flow.
PYRAMAX CERAMICS, LLC - KING'S MILL FACILITY	GA-0147	9.8 MMBtu/hr Boiler (Natural Gas Fuel)	Good Combustion Practices, design, and thermal insulation. 5,809 tons CO ₂ e/rolling 12-months



Facility	State or RBLC #	Emission Unit	GHG BACT Requirements
NINEMILE POINT ELECTRIC GENERATING PLANT - ENTERGY LOUISIANA LLC	LA-0752	338 MMBtu/hr Auxiliary Boiler (Natural Gas Fuel)	Proper Operation and Good Combustion Practices Use of Natural Gas Fuel
GEISMAR ETHYLENE PLANT	LA-0759	180 MMBtu/hr Cracking Furnace (Natural Gas Fuel)	Low-emitting feedstocks, Energy efficient equipment, Process design improvement, Low-emitting and low- carbon fuel (>25 vol% hydrogen, annual ave.)
PYRAMAX CERAMICS, LLC	SC-0113	5 MMBtu/hr Natural Gas Boilers	Good Design and Combustion Practices. Record type and quantity of fuel consumed.
Indiana Gasification (2012 IDEM permit 147-30464-00060)	Indiana (Not yet in RBLC)	2 - 408 MMBtu/hr Auxiliary Boilers (with approx. 20% utilization)	Use of low-carbon gaseous fuel (natural gas or SNG); and Energy efficient boiler design (utilizing an economizer, condensate recovery, inlet air controls and blowdown heat recovery) CO ₂ < 88,167 tons per rolling 12-month period

Based on a review of the available information and the project design, the control measures considered for the proposed process heaters include:

- Use of low-carbon gaseous fuel;
- Excess air minimization with O₂ monitoring and inlet air controls;
- Enhanced heat recovery (air preheat or convection section);
- Periodic burner tuning; and
- Post-combustion CO₂ capture and sequestration.

For the purpose of this analysis, each of these measures is considered technically feasible, and is evaluated further in the following sections.

Ranking and Evaluation of Remaining Controls

Low-Carbon Fuel

The carbon content of the fuel, relative to its Btu value, can have significant impact on the overall GHG emissions. Gaseous fuels such as natural gas or refinery fuel gas (RFG) create significantly less GHG emissions per Btu than liquid or solid fuels. RFG is a mixture usually



containing primarily methane (C1), with some content of C2-C4 hydrocarbons, hydrogen, and other gases that are the non-condensable products from the top of light-end distillation columns in the refinery. RFG is produced at multiple locations in the refinery and is treated to remove H₂S, and routed to a central location (mix drum) to supply fuel to various locations in the refinery. As an example, the Toledo RFG streams have GHG emission factors in the range of 105-130 lb CO₂e/MMBtu. This compares favorably to 117 lb/MMBtu for natural gas and is significantly lower than 160 lb/MMBtu for diesel fuel and 210 lb/MMBtu for coal. The use of low-carbon RFG fuel is a feasible option, and is proposed for use by the heaters.

Excess Air Minimization with Oxygen Controls

Fuel combustion in refinery heaters is accomplished when the hydrocarbon in the fuel is oxidized into carbon dioxide and water. Oxygen is provided for combustion by ambient air that is mixed with the fuel prior to or during combustion. Optimum combustion is achieved through a mixture of air and fuel with a little excess air. If too little air is used, combustion may not be complete resulting in CO and unburned hydrocarbons being emitted as incomplete combustion products. However, if too much air is introduced, additional energy is needed to heat the air and maintain combustion temperature. Some of the heat to heat excess air is recovered. However, the excess air carries much of that heat out the stack. Air slightly in excess of the ideal stoichiometric fuel/air ratio is required for safety and to ensure complete combustion (minimizing CO and VOC emissions). A target of about 3% oxygen in the stack is considered optimal.

The use of too much air increases fuel consumption which translates to an increase in CO₂ emissions. Therefore, good control of the oxygen level is helpful to minimize fuel consumption in refinery heaters.

The amount of air drawn into a natural draft furnace can be controlled by adjustments to either stack dampers or inlet air registers. Installation of an oxygen monitor on the stack of the heater gives the operator the ability to make adjustments to these controls to optimize the excess air. Adjustments can be done manually on a periodic basis, or in some cases, can be automated. In this case, automation of the excess air control utilizing O₂ monitoring is a feasible strategy to minimize fuel use CO₂ emissions. BPH is proposing to install automated trim air controls on the proposed heaters.

Enhanced Heat Recovery (Air Preheat or Convection Section)

Measures to capture and productively utilize as much heat as reasonably possible from the warm stack gases will improve the energy efficiency of a heater (and decrease its GHG emissions). Two common methods of stack gas heat recovery from process heaters are use of either an air preheater or a convection section. Both methods introduce additional heat transfer surface area in contact with the warm stack flue gas to capture additional heat. An air preheater uses the recovered energy to raise the temperature of the combustion air. A convection section uses the heat to preheat the process liquid being heated by the heater or for some other direct process heat purposes. Either method will result in increased thermal efficiency of the heater by recovering more heat from the flue gas. The choice of which heat recovery method is best is project-specific and can achieve equivalent efficiency results. Refinery heaters most often recover the heat to preheat the process fluid in a convection section. Air preheating is typically used only on very large boilers and forced/induced draft heaters. Air heating on natural draft heaters is rarely utilized due to the need to overcome significant gas-side pressure drop



increases. Also, air preheat may increase NO_x emissions by increasing the flame temperature and causing more thermal NO_x formation.

BPH is proposing to install convection sections for heat recovery on the new Crude and Vac 1 heaters. The addition of this additional heat transfer area to preheat the process fluids will reduce the overall fuel consumption resulting in lower CO₂ emissions from fuel combustion. The convection section will be designed to reduce the stack temperature as much as is reasonable for the proposed heater design and operation. Sufficient temperature is required in the stack for the natural draft furnace to operate properly, and to avoid condensation in the stack.

Periodic Burner Tuning

Periodic maintenance of the burners, as well as checks and cleaning of fouling can help maintain heater and boiler efficiency. Poor burner operation can result in excess fuel usage as well as increased GHG emissions. Periodic burner tuning is required by the recent EPA Industrial and Commercial Boiler and Heater MACT regulation (Boiler MACT) on an annual basis for heaters without automatic O₂ trim control and every 5 years for heaters with automatic O₂ trim control. This option is considered feasible and BPH will implement burner tuning and inspections on the proposed heaters as currently required for large gas fired heaters at major sources in the Boiler MACT rule (every 5 years since the new and modified BPH heaters will have O₂ trim control).

Post-combustion CO₂ Capture and Sequestration

Carbon Capture and Sequestration (CCS) is a relatively new concept. As previously mentioned, in EPA's recent GHG BACT guidance, EPA takes the position that, "*for the purpose of a BACT analysis for GHGs, EPA classifies CCS as an add-on pollution control technology that is "available" for large CO₂-emitting facilities including fossil fuel-fired power plants and industrial facilities with high-purity CO₂ streams*". However, the proposed refinery process heaters do not fit into either of these categories (i.e.; large emitting or high-purity). The EPA guidance document provides little specific guidance on whether or how to consider CCS in situations outside of the above quoted examples. However, some guidance specific to medium-sized natural gas boilers is provided in Appendix F to the guidance document which presents an example GHG BACT analysis for a 250 MMBtu/hr natural gas fired boiler. In this EPA boiler example, carbon capture isn't listed or considered in the BACT analysis as a potentially available option.

Based on EPA's guidance, it seems clear that a CO₂ capture system for small to medium size combustion systems, such as the refinery process heaters, is not expected to be a reasonable BACT option. This is understandable because the capture of the CO₂ from a heater's exhaust is significantly more difficult than from the types of industrial gas streams that EPA references as having potential for CCS. The increased difficulty is due to four predominant factors: the heater exhaust's low CO₂ concentration, low pressure, low quantity of CO₂ available for capture, and the high variability of load for this unit. While these factors don't make it technically impossible, they do make it expensive and energy intensive as discussed below.

CO₂ Capture Difficulty: Gas fuel combustion exhaust streams have relatively low CO₂ concentrations. The exhaust streams are typically (6-9% CO₂ versus 12-15% for coal-boilers and >30% for high concentration industrial gas streams.) This means that for a gas fired process heater or boiler, a very large volume of gas needs to be treated to recover the CO₂. Additionally,



the low concentration and low pressure complicate the absorption and desorption of the CO₂, which increases the energy required. Also, a low pressure absorption system creates a low pressure CO₂ stream which requires a very high energy demand for compression prior to transport. All these factors make the application of CO₂ capture on any gas combustion exhaust extremely difficult and expensive.

Estimated Costs for Carbon Capture: The fact that CCS is too expensive can be illustrated quickly using industry estimates. By far the most significant costs are for capture of the CO₂ from the exhaust, and compressing it to the pressure required for transport and sequestration. The capture and compression steps are very energy-intensive and would also result in additional emissions of criteria pollutants. The *Report of the Interagency Task Force on Carbon Capture and Storage* (August 2010) reports that carbon capture is estimated to cost approximately \$95/metric ton CO₂ avoided (\$105/ton) for a post-combustion system on a new installation. These costs represent a levelized, or annualized, cost over the estimated life of the example configurations. If you apply this factor to the combined 330,864 tons/yr of CO₂ from the new Crude 1 and Vac 1 heaters, the cost for capture and compression alone (not including transport or sequestration) is approximately \$34,600,000 per year. This cost estimate is an annual cost (including capital recovery costs). Over the first 10 years of operation these costs would exceed \$300 million dollars. This is clearly an excessive cost.

Energy and other pollutants from Carbon Capture: In addition to the extremely high costs for CCS, it should be recognized that a large portion of these costs are energy related. The two largest energy requirements of carbon capture post-combustion are the energy required to regenerate the solvent and the energy to compress the captured CO₂ to typical pipeline pressures. Satisfying these high additional energy requirements create significant additional CO₂ emissions and emissions of other conventional pollutants.

For example, regeneration of the solvent in available CO₂ capture technologies require approximately 1,550-3,000 Btu/lb of CO₂ removed. This would equate to 117-226 MMBtu/hr of increased energy use associated with the capture of CO₂ from the two new heaters (which themselves have a combined design firing rate of (heaters with a design firing of 600 MMBtu/hr.) This does not include the significant power is required to compress the captured CO₂ to typical pipeline pressures (1,500 – 2,200 psia).

These significant additional requirements for steam and electricity require fossil fuels to be combusted either on or off site. These energy demands of CCS contribute to its significant cost and generate negative environmental consequences through the extra criteria pollutant emissions.

Sequestration Site Non-availability: Because of the extremely high costs of carbon capture and compression, BPH does not believe that CCS is an economically feasible option for GHG controls on this project. Further, BPH is unaware of any available suitable sequestration site or CO₂ transportation infrastructure that could be used by this project. Therefore, we additionally believe that CCS is infeasible due to lack of currently available sequestration site for permanent storage of any CO₂ captured. A few of the main challenges and issues of sequestration are briefly discussed below.



- *Access to a suitable sequestration site.* BPH does not have access to a suitable sequestration site, nor can one be developed in any timeframe compatible with this project. While sequestration is being studied for use in this region, there is presently no practical option. Funding from the Department of Energy (DOE) is supporting a substantial research and demonstration initiative called the Regional Carbon Sequestration Partnership (RCSP) program. This program has begun several large-scale CO₂ injection research projects. However, the results of these demonstrations won't be known for some time. Also, given the unprecedented nature of the CO₂ sequestration, many technical and legal issues remain to be addressed including the public acceptability of storage at any given site. These issues make the ultimate development of future sites uncertain.
- *Access to available transportation infrastructure.* There are a number of CO₂ commercial outlets in the Gulf Coast and some western states for CO₂, primarily for use in enhanced oil recovery. These operations are served by a number of CO₂ pipelines. However, there is no existing pipeline infrastructure within hundreds of miles of the BPH facility. The nearest is over 700 miles away in Jackson, Mississippi. The logistical challenges of constructing a pipeline from the BPH facility hundreds of miles to join up with the existing CO₂ pipeline infrastructure is completely impractical.

Selection of GHG BACT

For the technical, economic, and environmental reasons stated above, post-combustion capture of CO₂ from the proposed heaters is not considered an applicable and available control option. All other remaining technically feasible GHG control options are proposed as BACT:

- Use of low-carbon gaseous fuel (RFG or natural gas);
- Installation of automated trim air controls for with O₂ monitoring and Inlet Air Controls
- Heat Recovery through use of a convection section; and
- Periodic burner tuning and heater inspection as required by Boiler MACT (40 CFR 63 Subpart DDDDD).

Compliance will be demonstrated through records of the heater design, records of fuel usage, and maintenance records. Additionally, total annual CO₂ emissions shall not exceed 247,124 tons per rolling 12 months total for the new Crude 1 heaters and 82,345 tons per rolling 12 months for the new Vacuum 1 heater. These emissions will be calculated monthly to develop a rolling 12-month sum. (Note: CO₂ emissions limits are proposed rather than CO₂e because it represents over 99.5% of the CO₂e emissions from these combustion sources and is therefore a good surrogate for total GHG emissions.)

Coker 3 (P036) Drum Vent GHG BACT Analysis

During the bulk of the delayed coker operating cycle, vapors from the coke drum are routed to the coker product fractionator for liquid and gas product recovery and there are no emissions to the atmosphere. At the end of the coke drum cycle, after the drum is taken off line, it is depressured to a blowdown recovery system which routes the gas to the refinery fuel gas system.



The first emissions event occurs when the coke drum is vented to the atmosphere prior to it being opened to remove the accumulated coke. Residual vapors from the coking process that exist in equilibrium based on the temperature and pressure of the coke drums are released to the atmosphere during this step. Prior to this atmospheric venting, the drum has been steamed out and water flooded. The gases from this atmospheric venting consists of primarily steam, along with residual vapors from the coking process, and includes the GHGs methane (CH₄) and CO₂.

There were no coking units found in the RBLC database. However, the EPA GHG Guidance for Refineries listed lowering the pressure of the coke drum to 2 to 5 psig to minimize direct venting emissions as a possible GHG control measure. This option is technically feasible and was evaluated by BPH for Coker 3 based on the modifications occurring as part of the TFO project.

BPH already routinely depressures to less than 5 psig before opening the atmospheric vent on Coker 3. Depressuring further to 2 psig before venting would result in even less emissions. BPH understands that several refineries already operate with a 2 psig vent pressure limit. Therefore, BACT is proposed as venting the uncondensed coke drum vent vapors to the blowdown recovery system until the coke drums are depressured to no more than 2.0 psig. Compliance will be demonstrated through recording the pressure prior to coke drum vent opening to the atmosphere.

Fugitive Emissions GHG BACT Analysis (Coker 3 Unit (P036))

Small leaks from the piping connectors and the stem packing of valves can be sources of fugitive GHG emissions for equipment containing CH₄. The new piping components of the modified Coker gas plant and any new natural gas piping in the Coker 3 unit will contain CH₄. These piping components are designed not to leak, but statistically, a few leaks are expected to occur from time to time. As required by multiple regulations, all new VOC fugitive emission components will be integrated into the BP-Husky Leak Detection and Repair (LDAR) program. This program is designed to comply with applicable NSPS Subpart GGGa and Refinery MACT (Subpart CC) standards. The LDAR program promptly identifies leaking components through regular monitoring and institutes a schedule for the repair.

For the piping, such as the refinery fuel gas piping in the new piping of the modified coker gas plant which contains significant CH₄, these VOC LDAR regulations will serve to help control GHG emissions as well. BPH further proposes to extend the use of the existing refinery LDAR program to also include any new natural gas piping installed by this project in the modified process Coker 3 process unit (P036). Natural gas, which is predominately CH₄, is not a VOC, so it would not otherwise be required to be included in the refinery's LDAR program.

Such an LDAR program is a technically feasible method of controlling CH₄ emissions from equipment leaks. The fugitive GHG emissions after employment of these control practices are extremely small.

Therefore, compliance with the applicable NSPS GGGa and Refinery MACT (CC) LDAR regulations is proposed as BACT for fugitive GHG (CH₄) emissions from new piping components. Likewise, any new natural gas piping in the Coker 3 unit is proposed to be included in the



Permit Strategy Write-Up
BP-Husky Refining LLC
Permit Number: P0111667
Facility ID: 0448020007

refinery LDAR program.

CONCLUSION

Based upon the review of the permit to install application and the supporting documentation provided by the applicant, the Ohio EPA staff has determined the proposed installation will comply with all applicable State and Federal environmental regulations and that the requirements for BACT are satisfied. Therefore, the Ohio EPA staff recommends that a permit to install be issued to the BPH for the proposed installation as described in the P0111667 permit recommendation.



Permit Strategy Write-Up

1. Check all that apply:

Synthetic Minor Determination

Netting Determination

2. Source Description:

BP-Husky Refining is proposing some modifications at the refinery to allow it to process a higher percentage of crude oil feedstocks similar to that which will soon be available from their Sunrise oil development in Canada. This project is named the Toledo Feedstock Optimization (TFO) Project.

The permittee has indicated that the TFO Project will not increase the refinery's overall crude capacity and is not intended to increase the amount of Canadian crudes relative to what is currently being processed at the refinery. The TFO project allows the flexibility to substitute BPH's own Sunrise Canadian crude or other somewhat more corrosive crude oils for equivalent amounts of the Canadian and other heavy sour crude oils being processed today.

To ensure enforceability that the net emissions increase for this project is less than significant, the permittee applied for and obtained PTI P0111328 issued 1/4/2013. That permit put into place federally enforceable emissions reductions for sulfur dioxide emissions on a number of emissions units and requires the Crude and Vacuum 1 heaters (B015 and B031) to be permanently shutdown after replacement units for these heaters are in operation. These enforceable emissions reduction requirements have been carried forward into this permit.

The following emissions units are affected by this permitting action.

B017 (Coker 2 Furnace 77 MMBtu per hr)

This emissions unit is not being modified and is not affected by the TFO Project. It is included here for the sole purpose of incorporating into this permit the SO₂ emission limits and monitoring requirements applicable to this emissions unit that were established by P0111328 issued 1/4/2013. These SO₂ emission limits and monitoring requirements and the method for demonstrating compliance with those limitations are included in the facility-wide permit terms and conditions and cross-referenced in the unit-specific terms and conditions for this emissions unit. Compliance with the SO₂ emissions limitations will be monitored by a continuous emissions monitoring system (CEMS) that monitors total sulfur expressed as SO₂.

B019 (Crude Vac 2 Furnace 258 MMBtu per hr)

This emissions unit is not being modified and is not affected by the TFO Project. It is included here for the sole purpose of incorporating into this permit the SO₂ emission limits and monitoring requirements applicable to this emissions unit that were established by P0111328 issued 1/4/2013. These SO₂ emission limits and monitoring requirements and the method for demonstrating compliance with those limitations are included in the facility-wide permit terms and conditions and cross-referenced in the unit-specific terms and conditions for this



emissions unit. Compliance with the SO₂ emissions limitations will be monitored by a continuous emissions monitoring system (CEMS) that monitors total sulfur expressed as SO₂.

B022 (Naphtha Treater Heater 77 MMBtu per hr)

This emissions unit is not being modified and is not affected by the TFO Project. It is included here for the sole purpose of incorporating into this permit the SO₂ emission limits and monitoring requirements applicable to this emissions unit that were established by P0111328 issued 1/4/2013. These SO₂ emission limits and monitoring requirements and the method for demonstrating compliance with those limitations are included in the facility-wide permit terms and conditions and cross-referenced in the unit-specific terms and conditions for this emissions unit. Compliance with the SO₂ emissions limitations will be monitored by a continuous emissions monitoring system (CEMS) that monitors total sulfur expressed as SO₂.

B029 (A-DHT Furnace - 20 mmBtu/hr refinery fuel gas fired heater)

This emissions unit is not being modified and is not affected by the TFO Project. It is included here for the sole purpose of incorporating into this permit the SO₂ emission limits and monitoring requirements applicable to this emissions unit that were established by P0111328 issued 1/4/2013. These SO₂ emission limits and monitoring requirements and the method for demonstrating compliance with those limitations are included in the facility-wide permit terms and conditions and cross-referenced in the unit-specific terms and conditions for this emissions unit. Compliance with the SO₂ emissions limitations will be monitored by a continuous emissions monitoring system (CEMS) that monitors total sulfur expressed as SO₂.

B032 (230 mmBtu per hour heater fired with refinery fuel gas and/or natural gas (Coker 3 Furnace))

This emissions unit is not being modified and is not affected by the TFO Project. It is included here for the sole purpose of incorporating into this permit the SO₂ emission limits and monitoring requirements applicable to this emissions unit that were established by P0111328 issued 1/4/2013. These SO₂ emission limits and monitoring requirements and the method for demonstrating compliance with those limitations are included in the facility-wide permit terms and conditions and cross-referenced in the unit-specific terms and conditions for this emissions unit. Compliance with the SO₂ emissions limitations will be monitored by a continuous emissions monitoring system (CEMS) that monitors total sulfur expressed as SO₂.

B037 (225 mmBtu/hr (HHV) refinery process heater fired with any combination of refinery fuel gas, natural gas and/or LP gas (Crude 1 A Furnace))

This is a new emissions unit.

B038 (225 mmBtu/hr (HHV) refinery process heater fired with any combination of refinery fuel gas, natural gas and/or LP gas (Crude 1 B Furnace))

This is a new emissions unit.

B039 (150 mmBtu/hr (HHV) refinery process heater fired with any combination of refinery fuel gas, natural gas and/or LP gas (Vacuum 1 Furnace))

This is a new emissions unit.

P009 (Sulfur Recovery Unit (SRU) 1, 120 long tons per day, with tail gas treatment unit and thermal oxidizer)



This emissions unit is not being modified. The only emissions change at this unit is the permittee has requested a federally enforceable limitation be added of 75 tons SO₂ per rolling, 12-month period combined from P009 and P037 to ensure project SO₂ emissions remain less than the PSD significance level. The calculation for this limitation is included in the compliance method of the permit terms and conditions for this emissions unit.

P011 (Distillation tower and vacuum distillation tower identified as Crude 1 and Vacuum 1 (also known as Crude Vac 1). Vapors extracted from Crude Vac 1 are ducted via the Crude 1 Overhead System to the refinery fuel gas system. All fugitive emissions from Crude Vac 1 are included with this emissions unit)

This emissions unit is being modified by adding additional piping components resulting in additional fugitive VOC emissions and the Vacuum Tower is being replaced. The new piping components may result in a small increase in fugitive VOC emissions from equipment leaks. Fugitive VOC emissions for equipment leaks were calculated based on the procedures specified in EPA Protocol for Equipment Leak Emission Estimates (EPA document 453/R-95-017) and are included in the permit application.

This project will increase allowable fugitive VOC emissions from this emissions unit by 1.76 tons/yr to a total of 10.09 tons/yr VOC.

P025 Refinery WWT System: Process oily water system and storm water system (including drains, manholes, junction boxes, lift stations, laterals, and trunklines) within the refinery and refinery wastewater treatment system (excluding P013&P014) with the following treatment and control systems: carbon canisters and benzene stripper vented to the West Flare

This emissions unit is being modified by adding a new benzene stripper to help treat the higher desalter waste water flow rates. The new piping components may result in a small increase of fugitive VOC emissions from equipment leaks.

Fugitive VOC emissions for equipment leaks from the new benzene stripper were calculated based on the procedures specified in EPA Protocol for Equipment Leak Emission Estimates (EPA document 453/R-95-017) and are included in the permit application.

This project will increase VOC emission by 0.50 tons/yr.

P028 "A" Train Diesel Hydrotreater

This emissions unit is being modified by adding additional piping components. This may result in a small increase in fugitive VOC emissions from equipment leaks.

Fugitive VOC emissions for equipment leaks were calculated based on the procedures specified in EPA Protocol for Equipment Leak Emission Estimates (EPA document 453/R-95-017) and are included in the permit application.

The project will increase actual fugitive VOC emissions from this unit by 0.62 ton/yr. However, because this increase will not cause the existing limit on such emissions to be exceeded, the allowable fugitive VOC emissions from equipment leaks for this unit will remain 22.03 tons/yr VOC

P036 (Coker 3/ delayed petroleum coker)

This emissions unit is being modified by adding additional piping components resulting in



additional fugitive VOC emissions, and the coke drum cycle time is being reduced which will allow for increased coke production.

There are 4 types of emissions from this emissions unit: venting, cutting, draining, and fugitive emissions from equipment leaks. The potential emissions from this emissions are increasing due to a reduced coking cycle time to 14 hours that will increase the potential coking cycles from 423.5 cycles per year to 626 cycles per year.

Venting

After the coking cycle is completed and the coke is fully quenched, the coke drum is vented to the atmosphere to relieve the residual pressure in the drum so that the drum can be opened to remove the coke. Under current operating practices, the coke drum is vented to atmosphere once the drum is depressurized to 3 psig. This permit requires that the drum be depressurized to 2 psig prior to venting to atmosphere. This will result in a small emissions decrease per cycle, but that will be offset on an annual basis by the increased number of cycles per year.

Cutting

After the coke drum is vented and opened, a high pressure water stream is used to cut the coke from the coke drums. There are some evaporative emissions that occur during the cutting operations.

Water Handling

There are also some evaporative emissions that result from the handling and recycling of the water used to quench and cut the coke.

The permittee has indicated the following emissions based on venting at 2 psig based on data obtained during previous testing. More detailed information about the emissions calculations is included in the permit application.

	<u>Venting</u>	<u>Cutting</u>	<u>Draining</u>	<u>Total, tons/yr</u>
CO	0.24 ton/yr	0.01		0.25
CO ₂	7.3 tons/yr	0.2		7.51
CO _{2e}	779.7 tons/yr	24.9		804.62
H ₂ S	2.9 tons/yr	0.1	0.6	3.56
PM ₁₀ /PM _{2.5}	2.0 tons/yr			2.0
VOC	7.7 tons/yr	0.2	1.4	9.35

Fugitive VOC emissions for equipment leaks were calculated based on the procedures specified in EPA Protocol for Equipment Leak Emission Estimates (EPA document 453/R-95-017) and are included in the permit application.

Allowable fugitive VOC emissions from this emissions unit from equipment leaks will increase by 1.56 tons/yr VOC (3.2 tons/yr from the Coker 3 process unit + 1.62 tons/yr from the coker gas plant) to a total of 23.34 tons/yr VOC.

P037 (Sulfur Recovery Unit #2 and #3 with common tail gas treater, thermal oxidizer, and flare)

This emissions unit is not being modified. However because this unit might be affected by the project the permittee has requested a federally enforceable limitation be added of 75 tons SO₂ per rolling, 12-month period from P009 and P037 combined to ensure project SO₂ emissions remain less than the PSD significance level.

Compliance with this limits will be determined from the annual average stack flow rate as recorded by the continuous flow monitor and annual average SO₂ concentration in stack gas



as measured by the SO₂ continuous emissions monitoring system. The calculations are included in the compliance method of the permit terms and conditions for this emissions unit.

P038 (TRP Amine Treater)

This emissions unit is being modified by installing a new amine stripper to the existing TRP Amine treater to improve fuel gas treatment. . The only emissions from this amine stripper are the fugitive VOC emissions associated with equipment leaks.

Fugitive VOC emissions for equipment leaks from the new amine stripper were calculated based on the procedures specified in EPA Protocol for Equipment Leak Emission Estimates (EPA document 453/R-95-017) and are included in the permit application.

This project will increase actual fugitive VOC emissions from equipment leaks from this emissions unit by 0.36 tons/yr. However, since total fugitive VOC emissions will remain below current permitted allowables, the allowable emissions of VOC from equipment leaks from this unit will remain at a total of 5.0 tons/yr VOC.

3. Facility Emissions and Attainment Status:

This facility is a major source of CO, NO_x, PM_{2.5}, SO₂, VOC, HAP, and CO_{2e}. This facility is located in Lucas County, which is designated attainment for all criteria pollutants.

4. Source Emissions:

The following table identifies the emissions increases and decreases associated with this project.

The net emissions increases associated with the TFO Project are listed below.

Table 1 TFO Project Net Emissions Summary

	VOC	NOx	SO2	PM	PM10	PM2.5	CO	CO2e
Description	tpy	tpy	tpy	tpy	tpy	tpy	tpy	tpy
Project Emission Increases only	33.4	140.3	76.0	34.4	34.1	28.9	218.0	431,142
Project Emission Decreases only	-9.5	-327.6	-69.1	-13.1	-13.1	-13.1	-144.8	-221,344
Total Creditable/Contemporaneous Changes	n/a	-195.9	29.7	-17.9	-17.9	-17.9	-109.7	-57,511
Total Project Net Emission Changes	n/a	-383.2	36.6	3.4	3.1	-2.2	-36.5	152,287
PSD Significance Levels	40	40	40	25	15	10	100	75,000

As identified in Table 1 above, The VOC emissions increases associated with this project are less than the PSD significance level, and VOC is not subject to PSD requirements. Further review of the remaining pollutants in the above table need to be reviewed for PSD applicability, since the project emissions increases are above the PSD significance levels. As shown in the above Table, the netting analysis shows that the net emissions increase of all pollutants, except for greenhouse gases is less than the PSD significance levels. This project will be



subject to PSD requirements for greenhouse gases.

Contemporaneous Increases/Decreases

In order to net out of PSD requirements, all contemporaneous and creditable changes are considered. This project construction is assumed to begin in August 2013 with startup of the TFO project anticipated to be in late 2014 with final project startup in 2015. The contemporaneous period for this project (5 years prior to construction and the date that the increase from the change occurs) is assumed to begin in August 2008 and end in late 2015. Table 2 below identifies the past projects that are in the contemporaneous period.

Table 2 Contemporaneous Projects

Description of Project	Permit	Date of PTI	Anticipated Startup.
New Reformer 3 (includes shutdown of Reformer 1 & 2 and H2 Unit)	P0103694	8-7-09	Late 2012
New Oily water sewer drains	P0103974	3-23-09	Late 2012
New BGOT RGC Project	P0108950	5-4-12	2013
FCCU Preheat heater replacement (B018)	P0108887	5-4-12	Spring 2013
New 190,000 bbl Oil tank w fixed roof, conservation vent, and N ₂ blanket	P0107114	2-28-11	Late 2012

The details of the above contemporaneous projects are shown in Table 3 below.



Table 3 Detailed Emissions Increases and Decreases from Projects Occurring in Contemporaneous Period

Description of Contemporaneous Project	Permit	Date of Change	NO _x (tons/yr)	CO (tons/yr)	SO ₂ (tons/yr)	PM/ PM ₁₀ / PM _{2.5} (tons/yr)	VOC (tons/yr)	H ₂ SO ₄ (tons/yr)	HAPs (tons/yr)	CO ₂ e (tons/yr)	NOTES/ Comments
New Oily water sewer drains	P0103974	Summer 2012					0.72	0.00		0	
New Oily Water Sewer Project Totals							0.72	0.00		0	
Reformer 3 (Note 1)	P01003694	Fall 2012	79.61	84.63	38.00	NA	28.27	1.75		287,477	
Shutdown of Reformer 1 Heater (B014)	P01003694	Fall 2012	-105.41	-55.94	-1.57	-5.06	-3.66	-0.07		-73,323	
Shutdown of Reformer 1 Regenerator Heater (B013)	P01003694	Fall 2012	-1.14	-0.96	-0.02	-0.09	-0.06	0.00		-928	
Shutdown of Reformer 2 Heater (B006)	P01003694	Fall 2012	-72.98	-86.63	-1.96	-7.84	-5.67	-0.09		-113,693	
Shutdown of Reformer 2 Regenerator Heater (B005)	P01003694	Fall 2012	-3.69	-3.10	-0.07	-0.28	-0.20	0.00		-3,693	
Shutdown of Reformer 1 (P019)	P01003694	Fall 2012					-1.74	0.00		-121	<= Using throughput factor based on 2011 reported GHG MRR emissions.
Shutdown of Reformer 2 (P020)	P01003694	Fall 2012					-0.19	0.00		-589	<= Using throughput factor based on 2011 reported GHG MRR emissions.
Shutdown of Hydrogen Heater (B001) and Hydrogen Plant (P042)	P01003694	Fall 2013	-64.29	-67.01	-1.40	-6.07	-4.50	-0.06		-176,546	<= Includes default GHG MRR LDAR factor for Hydrogen Plants
New Reformer 3 Contemporaneous Project Totals			-167.91	-129.01	32.98	-19.34	12.25	1.52	0.00	-81,416	
New 190,000 bbl Oil tank w fixed roof, conservation vent, and N2 blanket	P0107114	Late 2012					9.99				
New Oil Tank with fixed roof and N₂ blanket							9.99				
New BGOT RGC Project Fugitives	P0108950	Spring 2013					2.96		0.30		
Increase (B030) from BGOT RGC	P0108950	Spring 2013	6.99	3.79	1.13	0.34	0.25	0.05	0.12	6,767	<= SO ₂ emissions reflect issued permit allowable increase
Increase (B033) from BGOT RGC	P0108950	Spring 2013		12.01	3.86	1.09	0.79	0.18	0.01	17,745	
Increase Crude 1 Heater firing (9 MMBtu/hr increment)	P0108950	Spring 2013	Emissions not included in contemp totals because of double counting - This furnace is being shutdown for the TFO project								
Incremental feed rate increase to FCCU from BGOT RGC feed rate increase to BGOT unit	P0108950	Spring 2013	This source experienced an emissions decrease from the baseline period for the BGOT RGC project. No increases to show for the contemporaneous period.								
New Oily sewer drain plus Crude & Gas Tankage throughput increase	P0108950	Spring 2013					1.32				
New BGOT RGC Contemporaneous Project Totals			6.99	15.80	4.99	1.43	5.32	0.23	0.43	24,512	
Incremental Steam demand needed for replacement of FCCU Preheater Heater with heat exchangers	P0108887	Fall 2012	2.72	14.80	11.01	0.25	0.73	0.51	0.25	16,121	
New fugitive components for new FCCU heat exchangers	P0108887	Fall 2012					2.49			4	
FCCU Preheat Heater shutdown (B018)	P0108887	Fall 2012	-37.73	-11.32	-4.10	-0.26	-0.74	-0.19	-0.25	-16,732	
New FCCU Preheat Replacement Project Totals			-35.01	3.48	6.91	-0.01	2.48	0.32	0.00	-607	
Decrease in Reformer 3 Heater SO ₂ after the TFO start-up	P0111328	TBD	0.00	0.00	-15.20	0.00	0.00	0.00	0.00	0	
Reformer 3 Heater SO₂ Decreases			0.00	0.00	-15.20	0.00	0.00	0.00	0.00	0.00	
Contemporaneous Totals			-195.93	-109.73	29.68	-17.92	30.76	2.06	0.43	-57,511	



The Reformer 3 project (P0103694) was subject to PSD for particulate emissions, so the particulate emissions from the Reformer 3 project are not creditable towards the TFO project.

The Reformer 3 project permit P0103694 also required the shutdown of the existing Reformer 1 and 2 units and the existing Hydrogen Unit. The particulate emissions from the shutting down of these emissions units was not relied upon in the permitting of the new Reformer 3 unit, so the decreases associated with shutdown of Reformer 1 and 2, and the existing Hydrogen Unit remain creditable for TFO netting purposes, and are included in the TFO project as creditable decreases.

Project Creditable Decreases

BP-Husky will be installing equipment to improve the removal of organic sulfur compounds from the Coker 3 gas that will reduce the amount of sulfur compounds added to the refinery fuel gas system. BP-Husky has requested for federally enforceable SO₂ limitations to be added to the following emissions units in Table 4 in order for the SO₂ emissions reductions to be creditable for this project. A total sulfur expressed as SO₂ continuous emissions monitoring system will be installed to demonstrate compliance with the reduced SO₂ emissions limitations at these units.

Table 4 New Proposed SO₂ Annual Emissions

	RFG Source	Past Actual Baseline (2004/5)	Existing PTI SO ₂ allowable	Proposed New SO ₂ Limit	Project SO ₂ Emissions Change
Description		TPY	TPY	TPY	TPY
Naphtha Treater Heater (B022)	TIU	7.15	91.45	3.64	-4.46
Coker 3 Heater (B032)	EPA	20.46	20.46	11.64	-11.88
Coker 2 Heater (B017)	TIU	4.77	91.45	3.64	-2.08
Crude Vac 2 Heater (B019)	TIU	21.02	21.02	12.15	-12.07
Reformer 3 (B036)	ESMD	NA	NA	22.80	22.80
ADHT Heater (B029)	TIU	0.18	2.32	0.69	0.51

Compliance with the new restricted SO₂ emissions limits in Table 4 will be required after completion of the coker gas plant portion of this project, which may lag startup of the first SO₂ increasing scope of this project by up to 15 months. For this interim period, an interim group SO₂ limit on total SO₂ emissions from emissions units affected by the TFO project was added under PTI P0111328 issued 1/4/2013, and this group limit is carried over into this PTI P0111667. This interim limitation will be effective until the new permanent emissions limits identified in Table 5 become effective.

New SO₂ limit for SRUs



In order to ensure the net SO₂ emissions remain less than the PSD significance level, the permittee has requested that the combined SO₂ emissions from SRU #1 (P009) and SRU #2 and #3 (P037) be restricted to 75 tons per rolling, 12-month period. P009 does not currently have an annual SO₂ emissions limitation, and P037 currently has an allowable SO₂ emission limitation of 172 tons/yr. Compliance with this reduced SO₂ emission limitation of 80 tons per rolling, 12-month period will be demonstrated by data obtained from the continuous SO₂ emissions monitoring systems installed at P009 and P037.

TFO Project Emissions Summary

Table 5 below is a summary of the TFO project emissions.

Table 5 - TFO Project Emissions Summary

Code	OEPA ID	Description	VOC tpy	NO _x tpy	SO ₂ tpy	PM tpy	PM ₁₀ tpy	PM _{2.5} tpy	CO tpy	CO _{2e} tpy	Total HAP tpy
Crude Units (replace Heaters, upgrade piping)											
Mod	P011	Crude/ Vac 1 (fugitives)	1.8								
SD	B015	Crude 1 Heater (Shutdown)	-7.4	-300.0	-36.6	-10.2	-10.2	-10.2	-112.3	-171,690	-2.5
SD	B031	Vac 1 Heater (Shutdown)	-2.1	-27.6	-11.3	-2.9	-2.9	-2.9	-32.5	-49,653	-0.7
New	TBD	New Crude Heater	10.6	78.8	21.2	14.7	14.7	14.7	118.3	248,149	3.6
New	TBD	New Vac 1 Heater	3.5	26.3	7.1	4.9	4.9	4.9	39.4	82,716	1.2
Coker Units (expand unit capacity)											
Aff	B032	Coker 3 Heater	0.4	5.3	-7.7	0.6	0.6	0.6	6.7	2,472	0.0
Mod	P036	Coker 3 Drum vent and Fugitive	3.9			0.04	0.04	0.04	0.01	47.2	0.04
Aff	F002, F005, F006	Coke Handling (Pile/Handling/Crushing)				2.4	2.1	0.3			
ADHT Unit (increased utilization)											
Mod	P028	ADHT Unit (fugitives)	0.6								
Aff	B029	ADHT Heater (increase utilization)	0.3	3.5	0.8	0.4	0.4	0.4	4.1	6,834	0.1
Steam Boilers (increased steam use)											
Aff	B034/ B035	Boilers (increased Strm use)	2.8	18.9	5.6	3.9	3.9	3.9	43.2	64,269	1.0
Sulfur Recovery Complex (increased loading)											
Aff	P009/P037	SRU 1,2&3 (increased load)	0.4	7.6	41.3	0.6	0.6	0.6	6.3	26,654.8	0.1
Miscellaneous											
Aff	B017/B019/ B022	SO ₂ Credits for reducing TRS in RFG			-13.5						
Aff	P038	TRP Amine Treater - new Amine Stripper and associated equipment	0.4								
Aff	Various	Increased Cooling Water throughput	1.8			6.9	6.9	3.5			
Aff	Various	Increased product throughputs/tankage	0.2								
Aff	P025	WWT New Components	6.6								
		Project Emission Increases only	33.4	140.3	76.0	34.4	34.1	28.9	218.0	431,142	6.1
		Project Emission Decreases only	-9.5	-327.6	-69.1	-13.1	-13.1	-13.1	-144.8	-221,344	-3.3
		Total Creditable/Contemporaneous Changes	n/a	-195.9	29.7	-17.9	-17.9	-17.9	-109.7	-57,511	
		Total Project Net Emission Changes	n/a	-383.2	36.6	3.4	3.1	-2.2	-36.5	152,287	
		PSD Significance Levels	40	40	40	25	15	10	100	75,000	



New Emissions Unit Specific Emissions (Permit P0111667)

B037: 225 mmBtu/hr refinery process heater fired with any combination of refinery fuel gas, natural gas and/or LP gas (Crude 1 A Furnace)

Average refinery fuel gas heating value: 1,100 Btu/scf

Maximum refinery fuel gas flow rate: 0.20455 mmscf/hr

Estimated annual average refinery fuel gas flow rate: 0.1759 mmscf/hr

For sulfur dioxide emissions, the permittee submitted emissions estimates based on an estimated annual average firing rate of 0.20455 mmscf/hr and an estimated annual average total sulfur expressed as SO₂ content of 70 ppmv. The permittee will be required to maintain monthly records of the rolling, 12-month firing rate, and, since this is a new emissions unit, the permit will contain additional restrictions on emissions during the first 12 calendar months of operation.

The following emissions factors were used to establish permit allowable emissions.

CO: 0.06 lb/mmBtu – permittee’s engineering estimate

NO_x: 0.040 lb/mmBtu, 30-day rolling, NSPS Subpart Ja

PM₁₀/PM_{2.5}: 7.6 lb/mmscf, AP-42 table 1.4-2 dated 7/98

SO₂: 162 ppmv H₂S, NSPS Subpart Ja

70 ppmv total sulfur expressed as SO₂, 12-month rolling average, permittee’s estimate

VOC 5.5 lb/mmscf, AP-42 table 1.4-2 dated 7/98

Permit allowable CO and NO_x emissions are greater than 10 tons/yr, so these emissions limitations are subject to a BAT limitation under ORC 3704.03(T).

CO: $225 \text{ mmBtu/hr}(0.06 \text{ lb/mmBtu})(8760 \text{ hrs/yr})(\text{ton}/2000 \text{ lb}) = 59.13 \text{ tons/yr CO}$

NO_x: $225 \text{ mmBtu/hr}(0.04 \text{ lb/mmBtu})(8760 \text{ hrs/yr})(\text{ton}/2000 \text{ lb}) = 39.42 \text{ tons/yr NO}_x$

PM₁₀/PM_{2.5} $225 \text{ mmBtu/hr}(7.6 \text{ lb/mmscf})(\text{mmscf}/1020 \text{ mmBtu})(8760 \text{ hrs/yr})(\text{ton}/2000 \text{ lb}) = 7.34 \text{ tons/yr}$

SO₂: $(0.20455 \text{ mmscf/hr})(70 \text{ parts}/1\text{E}06 \text{ parts})(1\text{E}06 \text{ scf/mmscf})(64 \text{ lb/lb-mole})(\text{lb-mole}/379 \text{ scf})(8760 \text{ hrs/yr})(\text{ton}/2000 \text{ lbs}) = 10.59 \text{ tons/yr SO}_2$

VOC: $225 \text{ mmBtu/hr}(5.5 \text{ lb/mmscf})(\text{mmscf}/1020 \text{ mmBtu})(8760 \text{ hrs/yr})(\text{ton}/2000 \text{ lb}) = 5.31 \text{ tons/yr}$

B038: 225 mmBtu/hr refinery process heater fired with any combination of refinery fuel gas, natural gas and/or LP gas (Crude 1 B Furnace)

CO: $225 \text{ mmBtu/hr}(0.06 \text{ lb/mmBtu})(8760 \text{ hrs/yr})(\text{ton}/2000 \text{ lb}) = 59.13 \text{ tons/yr CO}$

NO_x: $225 \text{ mmBtu/hr}(0.04 \text{ lb/mmBtu})(8760 \text{ hrs/yr})(\text{ton}/2000 \text{ lb}) = 39.42 \text{ tons/yr NO}_x$

PM₁₀/PM_{2.5} $225 \text{ mmBtu/hr}(7.6 \text{ lb/mmscf})(\text{mmscf}/1020 \text{ mmBtu})(8760 \text{ hrs/yr})(\text{ton}/2000 \text{ lb}) = 7.34 \text{ tons/yr}$

SO₂: $(0.20455 \text{ mmscf/hr})(70 \text{ parts}/1\text{E}06 \text{ parts})(1\text{E}06 \text{ scf/mmscf})(64 \text{ lb/lb-mole})(\text{lb-mole}/379 \text{ scf})(8760 \text{ hrs/yr})(\text{ton}/2000 \text{ lbs}) = 10.59 \text{ tons/yr SO}_2$

VOC: $225 \text{ mmBtu/hr}(5.5 \text{ lb/mmscf})(\text{mmscf}/1020 \text{ mmBtu})(8760 \text{ hrs/yr})(\text{ton}/2000 \text{ lb}) = 5.31 \text{ tons/yr}$



B039 150 mmBtu/hr refinery process heater fired with any combination of refinery fuel gas, natural gas and/or LP gas (Vacuum 1 Furnace)

Average refinery fuel gas heating value: 1,100 Btu/scf
Maximum refinery fuel gas flow rate: 0.13636 mmscf/hr
Estimated annual average refinery fuel gas flow rate: 0.117 mmscf/hr

For sulfur dioxide emissions, the permittee submitted emissions estimates based on an estimated annual average firing rate of 0.13636 mmscf/hr and an estimated annual average total sulfur expressed as SO₂ content of 70 ppmv. The permittee will be required to maintain monthly records of the rolling, 12-month firing rate, and, since this is a new emissions unit, the permit will contain additional restrictions on emissions during the first 12 calendar months of operation.

The following emissions factors were used to establish permit allowable emissions.

CO: 0.06 lb/mmBtu – permittee’s engineering estimate
NO_x: 0.040 lb/mmBtu, 30-day rolling, NSPS Subpart Ja
PM₁₀/PM_{2.5}: 7.6 lb/mmscf, AP-42 table 1.4-2 dated 7/98
SO₂: 162 ppmv H₂S, NSPS Subpart Ja
70 ppmv total sulfur expressed as SO₂, 12-month rolling average, permittee’s estimate
VOC 5.5 lb/mmscf, AP-42 table 1.4-2 dated 7/98

Permit allowable CO and NO_x emissions are greater than 10 tons/yr, so these emissions limitations are subject to a BAT limitation under ORC 3704.03(T).

CO: 150 mmBtu/hr(0.06 lb/mmBtu)(8760 hrs/yr)(ton/2000 lb) = 39.42 tons/yr CO

NO_x: 150 mmBtu/hr(0.04 lb/mmBtu)(8760 hrs/yr)(ton/2000 lb) = 26.28 tons/yr NO_x

PM₁₀/PM_{2.5} 150 mmBtu/hr(7.6 lb/mmscf)(mmscf/1020 mmBtu)(8760 hrs/yr)(ton/2000 lb)= 4.90 tons/yr

SO₂: (0.13636 mmscf/hr)(70 parts/1E06 parts)(1E06 scf/mmscf)(64 lb/lb-mole)(lb-mole/379 scf)(8760 hrs/yr)(ton/2000 lbs)= 7.06 tons/yr SO₂

VOC: 150 mmBtu/hr(5.5 lb/mmscf)(mmscf/1020 mmBtu)(8760 hrs/yr)(ton/2000 lb)= 3.54 tons/yr

5. BAT/BACT

CO, NO_x, PM₁₀/PM_{2.5}, SO₂, VOC, and greenhouse gas emissions are subject to BAT limits under OAC rule 3745-31-05(D). Greenhouse gas emissions are subject to PSD requirements under OAC rule 3745-10 through 20. Emissions units B037, B038, B039, and P036 are subject to Greenhouse BACT requirements.

B037, B038, B039

BAT for NO_x emissions is compliance with the NSPS Subpart Ja standard of 0.04 lb/mmBtu as an annual average.

BAT for CO, PM₁₀/PM_{2.5}, and VOC emissions is good combustion practices.

BAT for SO₂ is compliance with the requirements of NSPS Subpart Ja.

BAT for greenhouse gases is compliance with the PSD BACT limitations.



BACT for greenhouse gases is:

Carbon dioxide (CO₂) emissions shall not exceed 123,562 per rolling, 12-month period from B037, 123,562 per rolling, 12-month period from B038, and 82,375 tons per rolling, 12-month period from B039;

Minimize excess air with a continuous oxygen trim system that maintains an optimum air to fuel ratio for B037, B038, and B039;

Periodic burner tuning according to the procedures specified in 40 CFR Part 63, Subpart DDDDD for B037, B038, and B039; and

Heat recovery designed to reduce the stack temperature as much as is reasonable for the proposed heater design and operation for B037, B038, and B039.

P036

The Coker 3 drum vent and fugitive VOC emissions from equipment leaks are subject to BACT requirements. BACT for the drum vent emissions is depressuring the coke drum to less than or equal to 2 psig prior to venting the drum to atmosphere. Carbon dioxide equivalent (CO₂e) emissions from coke drum venting and cutting shall not exceed 804.62 tons per rolling 12-months period.

Materials processed at the coker gas plant and new natural gas piping contain methane, and, therefore, fugitive greenhouse gases may be emitted by equipment leaks. BACT for fugitive greenhouse gas emissions from equipment leaks will be compliance with the leak detection and repair program requirements specified under 40 CFR Part 60, Subpart GGGa. The permittee will also include new natural gas piping installed at this emissions unit for this emissions unit in the leak detection and repair program for NSPS Subpart GGGa.

P011, P028

Changes at these emissions units involve changes to the piping. BAT for these emissions units is compliance with the leak detection and repair requirements of NSPS Subpart GGGa.

6. State Air Quality Analysis (Engineering Guide #69)

This permit is subject to PSD requirements for greenhouse gases, however, there is no National Ambient Air Quality Standard for greenhouse gases, so PSD modeling is not required for greenhouse gases. Listed below is a summary of net project emissions and an indication of whether state modeling is required per Ohio EPA Engineering Guide #69.

	Emissions, Tons per Year					
	CO	NO _x	PM ₁₀	SO ₂	VOC	GHG
Project Emissions After Netting	-36.5	-383.2	3.1	36.6	33.4	152.287
Ohio Modeling Significant Emission Rates	100	25	10	25	NA	NA
Is Ohio Modeling Required	NO	NO	NO	YES	NA	NA



State modeling is required for SO₂ emissions.

Below is a summary of project SO₂ emissions used in the modeling analysis.

Emissions Unit	SO ₂ emissions, lb/hr	SO ₂ emissions, tons/yr
B037 and B038 (New Crude 1 Furnace)	11.19	21.18
B015 (shutdown) (Crude 1 Furnace)	NA (emissions decrease)	-36.56
B039 (New Vacuum 1 Furnace)	3.73	7.06
B031 (shutdown) (Vacuum 1 Furnace)	NA (emissions decrease)	-11.25
B032 (Coker 3 Furnace)	NA (emissions decrease)	-7.74
B029 ADHT Furnace)	0.46	0.76
B034 and B035 (AQIstom Boilers)	2.98	5.64
P009 and P037 (SRU 1, SRU 2&3)	51.06	41.34

The permittee submitted modeling using the SCREEN3 model. The modeling study is included in the PTI application. Below is a summary of the modeling results.

Pollutant	Averaging Period	Ohio Acceptable Incremental Impact, (µg/m ³)	TFO Project Modeled impact, (µg/m ³)	% of Threshold
SO ₂	Annual	10	1.74	17
	24-hr	45.5	28.75	63
	3-hr	256	64.68	25

7. State Air Toxics Modeling, ORC 3704.03(F)(4)(a)

The permittee identified a summary of air toxics emissions increases associated with the TFO project for hexane, formaldehyde, and H₂S. Hexane and formaldehyde are the air toxics having the highest emission factor for combustion sources. The total emissions increase for formaldehyde and H₂S emissions is less than 1 ton/yr and do not require modeling. The total emissions increase for hexane emissions for the project is greater than 1 ton/yr, however, when combustion emissions are excluded as required by ORC 3704.03(F)(4)(i), the emissions increase of hexane is less than 1 ton/yr.

8. Conclusion: This project is required to comply with PSD requirements for greenhouse gas emissions. This project has netted out of PSD review for CO, NO_x, PM_{2.5}, SO₂, and the VOC emissions increases associated with this project are less than the PSD significance level.

9. Please provide additional notes or comments as necessary:

The below emissions in the Total Permit Allowable Emissions Summary are for P0111667 only.



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

<u>Pollutant</u>	<u>Tons Per Year</u>
<u>CO</u>	<u>168.38</u>
<u>NO_x</u>	<u>117.82</u>
<u>PM₁₀</u>	<u>22.51</u>
<u>PM_{2.5}</u>	<u>22.51</u>
<u>SO₂</u>	<u>296.41</u>
<u>VOC</u>	<u>77.75</u>
<u>CO₂e</u>	<u>330,866</u>



DRAFT

Division of Air Pollution Control
Permit-to-Install
for
BP-Husky Refining LLC

Facility ID:	0448020007
Permit Number:	P0111667
Permit Type:	Initial Installation
Issued:	5/2/2013
Effective:	To be entered upon final issuance



Division of Air Pollution Control
Permit-to-Install
for
BP-Husky Refining LLC

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Draft Permit-to-Install
BP-Husky Refining LLC
Permit Number: P0111667
Facility ID: 0448020007

Effective Date: To be entered upon final issuance

Authorization

Facility ID: 0448020007
Facility Description: Toledo Refinery
Application Number(s): M0001680, A0045758, A0046815
Permit Number: P0111667
Permit Description: Modifications to a petroleum refinery to increase the flexibility to process a higher percentage of alternative crude oil feedstocks.
Permit Type: Initial Installation
Permit Fee: \$11,850.00 *DO NOT send payment at this time, subject to change before final issuance*
Issue Date: 5/2/2013
Effective Date: To be entered upon final issuance

This document constitutes issuance to:

BP-Husky Refining LLC
4001 Cedar Point Road
P.O. Box 696
Oregon, OH 43697

of a Permit-to-Install 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 a Permit-to-Install for the 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 emissions unit(s) of environmental pollutants will operate in compliance with applicable State and Federal laws and regulations, and does not constitute expressed or implied assurance that if constructed or modified in accordance with those plans and specifications, the above described emissions unit(s) of pollutants will be granted the necessary permits to operate (air) or NPDES permits as applicable.

This permit is granted subject to the conditions attached hereto.

Ohio Environmental Protection Agency

Scott J. Nally
Director



Authorization (continued)

Permit Number: P0111667
Permit Description: Modifications to a petroleum refinery to increase the flexibility to process a higher percentage of alternative crude oil feedstocks.

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

Emissions Unit ID:	B019
Company Equipment ID:	Crude/Vac 2 Furnace
Superseded Permit Number:	P0111328
General Permit Category and Type:	Not Applicable
Emissions Unit ID:	B029
Company Equipment ID:	ADHT Furnace
Superseded Permit Number:	04-01346
General Permit Category and Type:	Not Applicable
Emissions Unit ID:	B032
Company Equipment ID:	Coker 3 Furnace
Superseded Permit Number:	04-01471
General Permit Category and Type:	Not Applicable
Emissions Unit ID:	B039
Company Equipment ID:	TBD
Superseded Permit Number:	
General Permit Category and Type:	Not Applicable
Emissions Unit ID:	P009
Company Equipment ID:	Sulfur Recovery Unit #1
Superseded Permit Number:	P0107122
General Permit Category and Type:	Not Applicable
Emissions Unit ID:	P011
Company Equipment ID:	Crude/Vac 1
Superseded Permit Number:	P0110958
General Permit Category and Type:	Not Applicable
Emissions Unit ID:	P025
Company Equipment ID:	Refinery WWT System
Superseded Permit Number:	P0103974
General Permit Category and Type:	Not Applicable
Emissions Unit ID:	P028
Company Equipment ID:	"A" Train Diesel Hydrotreater
Superseded Permit Number:	04-708
General Permit Category and Type:	Not Applicable
Emissions Unit ID:	P036
Company Equipment ID:	Coker 3
Superseded Permit Number:	04-01471
General Permit Category and Type:	Not Applicable
Emissions Unit ID:	P037
Company Equipment ID:	Sulfur Recovery Unit #2 and #3
Superseded Permit Number:	P0107122
General Permit Category and Type:	Not Applicable



Effective Date: To be entered upon final issuance

Emissions Unit ID: P038
 Company Equipment ID: TRP Amine Treater
 Superseded Permit Number: 04-1046
 General Permit Category and Type: Not Applicable

Group Name: Coker II & Naptha Treater Heater

Emissions Unit ID:	B017
Company Equipment ID:	Coker II Heater
Superseded Permit Number:	04-01290
General Permit Category and Type:	Not Applicable
Emissions Unit ID:	B022
Company Equipment ID:	Naptha Treater Heater
Superseded Permit Number:	04-01290
General Permit Category and Type:	Not Applicable

Group Name: Crude 1 A & B Furnaces

Emissions Unit ID:	B037
Company Equipment ID:	TBD
Superseded Permit Number:	
General Permit Category and Type:	Not Applicable
Emissions Unit ID:	B038
Company Equipment ID:	TBD
Superseded Permit Number:	
General Permit Category and Type:	Not Applicable



Draft Permit-to-Install
BP-Husky Refining LLC
Permit Number: P0111667
Facility ID: 0448020007
Effective Date: To be entered upon final issuance

A. Standard Terms and Conditions



1. Federally Enforceable Standard Terms and Conditions

- a) All Standard Terms and Conditions are federally enforceable, with the exception of those listed below which are enforceable under State law only:
 - (1) Standard Term and Condition A.2.a), Severability Clause
 - (2) Standard Term and Condition A.3.c) through A. 3.e) General Requirements
 - (3) Standard Term and Condition A.6.c) and A. 6.d), Compliance Requirements
 - (4) Standard Term and Condition A.9., Reporting Requirements
 - (5) Standard Term and Condition A.10., Applicability
 - (6) Standard Term and Condition A.11.b) through A.11.e), Construction of New Source(s) and Authorization to Install
 - (7) Standard Term and Condition A.14., Public Disclosure
 - (8) Standard Term and Condition A.15., Additional Reporting Requirements When There Are No Deviations of Federally Enforceable Emission Limitations, Operational Restrictions, or Control Device Operating Parameter Limitations
 - (9) Standard Term and Condition A.16., Fees
 - (10) Standard Term and Condition A.17., Permit Transfers

2. Severability Clause

- a) A determination that any term or condition of this permit is invalid shall not invalidate the force or effect of any other term or condition thereof, except to the extent that any other term or condition depends in whole or in part for its operation or implementation upon the term or condition declared invalid.
- b) All terms and conditions designated in parts B and C of this permit are federally enforceable as a practical matter, if they are required under the Act, or any of its applicable requirements, including relevant provisions designed to limit the potential to emit of a source, are enforceable by the Administrator of the U.S. EPA and the State and by citizens (to the extent allowed by section 304 of the Act) under the Act. Terms and conditions in parts B and C of this permit shall not be federally enforceable and shall be enforceable under State law only, only if specifically identified in this permit as such.

3. General Requirements

- a) The permittee must comply with all terms and conditions of this permit. Any noncompliance with the federally enforceable terms and conditions of this permit constitutes a violation of the Act, and is grounds for enforcement action or for permit revocation, revocation and re-issuance, or modification.



- b) It shall not be a defense for the permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the federally enforceable terms and conditions of this permit.
- c) This permit may be modified, revoked, or revoked and reissued, for cause. The filing of a request by the permittee for a permit modification, revocation and reissuance, or revocation, or of a notification of planned changes or anticipated noncompliance does not stay any term and condition of this permit.
- d) This permit does not convey any property rights of any sort, or any exclusive privilege.
- e) The permittee shall furnish to the Director of the Ohio EPA, or an authorized representative of the Director, upon receipt of a written request and within a reasonable time, any information that may be requested to determine whether cause exists for modifying or revoking this permit or to determine compliance with this permit. Upon request, the permittee shall also furnish to the Director or an authorized representative of the Director, copies of records required to be kept by this permit. For information claimed to be confidential in the submittal to the Director, if the Administrator of the U.S. EPA requests such information, the permittee may furnish such records directly to the Administrator along with a claim of confidentiality.

4. Monitoring and Related Record Keeping and Reporting Requirements

- a) Except as may otherwise be provided in the terms and conditions for a specific emissions unit, the permittee shall maintain records that include the following, where applicable, for any required monitoring under this permit:
 - (1) The date, place (as defined in the permit), and time of sampling or measurements.
 - (2) The date(s) analyses were performed.
 - (3) The company or entity that performed the analyses.
 - (4) The analytical techniques or methods used.
 - (5) The results of such analyses.
 - (6) The operating conditions existing at the time of sampling or measurement.
- b) Each record of any monitoring data, testing data, and support information required pursuant to this permit shall be retained for a period of five years from the date the record was created. Support information shall include, but not be limited to all calibration and maintenance records and all original strip-chart recordings for continuous monitoring instrumentation, and copies of all reports required by this permit. Such records may be maintained in computerized form.
- c) Except as may otherwise be provided in the terms and conditions for a specific emissions unit, the permittee shall submit required reports in the following manner:
 - (1) Reports of any required monitoring and/or recordkeeping of federally enforceable information shall be submitted to the Toledo Department of Environmental Services.



- (2) Quarterly written reports of (i) any deviations from federally enforceable emission limitations, operational restrictions, and control device operating parameter limitations, excluding deviations resulting from malfunctions reported in accordance with OAC rule 3745-15-06, that have been detected by the testing, monitoring and recordkeeping requirements specified in this permit, (ii) the probable cause of such deviations, and (iii) any corrective actions or preventive measures taken, shall be made to the Toledo Department of Environmental Services. The written reports shall be submitted (i.e., postmarked) quarterly, by January 31, April 30, July 31, and October 31 of each year and shall cover the previous calendar quarters. See A.15. below if no deviations occurred during the quarter.
 - (3) Written reports, which identify any deviations from the federally enforceable monitoring, recordkeeping, and reporting requirements contained in this permit shall be submitted (i.e., postmarked) to the Toledo Department of Environmental Services every six months, by January 31 and July 31 of each year for the previous six calendar months. If no deviations occurred during a six-month period, the permittee shall submit a semi-annual report, which states that no deviations occurred during that period.
 - (4) This permit is for an emissions unit located at a Title V facility. Each written report shall be signed by a responsible official certifying that, based on information and belief formed after reasonable inquiry, the statements and information in the report are true, accurate, and complete.
- d) The permittee shall report actual emissions pursuant to OAC Chapter 3745-78 for the purpose of collecting Air Pollution Control Fees.

5. Scheduled Maintenance/Malfunction Reporting

Any scheduled maintenance of air pollution control equipment shall be performed in accordance with paragraph (A) of OAC rule 3745-15-06. The malfunction, i.e., upset, of any emissions units or any associated air pollution control system(s) shall be reported to the Toledo Department of Environmental Services in accordance with paragraph (B) of OAC rule 3745-15-06. (The definition of an upset condition shall be the same as that used in OAC rule 3745-15-06(B)(1) for a malfunction.) The verbal and written reports shall be submitted pursuant to OAC rule 3745-15-06.

Except as provided in that rule, any scheduled maintenance or malfunction necessitating the shutdown or bypassing of any air pollution control system(s) shall be accompanied by the shutdown of the emission unit(s) that is (are) served by such control system(s).

6. Compliance Requirements

- a) The emissions unit(s) identified in this Permit shall remain in full compliance with all applicable State laws and regulations and the terms and conditions of this permit.
- b) Any document (including reports) required to be submitted and required by a federally applicable requirement in this permit shall include a certification by a responsible official that, based on information and belief formed after reasonable inquiry, the statements in the document are true, accurate, and complete.



- c) Upon presentation of credentials and other documents as may be required by law, the permittee shall allow the Director of the Ohio EPA or an authorized representative of the Director to:
 - (1) At reasonable times, enter upon the permittee's premises where a source is located or the emissions-related activity is conducted, or where records must be kept under the conditions of this permit.
 - (2) Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit, subject to the protection from disclosure to the public of confidential information consistent with ORC section 3704.08.
 - (3) Inspect at reasonable times any facilities, equipment (including monitoring and air pollution control equipment), practices, or operations regulated or required under this permit.
 - (4) As authorized by the Act, sample or monitor at reasonable times substances or parameters for the purpose of assuring compliance with the permit and applicable requirements.
- d) The permittee shall submit progress reports to the Toledo Department of Environmental Services concerning any schedule of compliance for meeting an applicable requirement. Progress reports shall be submitted semiannually or more frequently if specified in the applicable requirement or by the Director of the Ohio EPA. Progress reports shall contain the following:
 - (1) Dates for achieving the activities, milestones, or compliance required in any schedule of compliance, and dates when such activities, milestones, or compliance were achieved.
 - (2) An explanation of why any dates in any schedule of compliance were not or will not be met, and any preventive or corrective measures adopted.

7. Best Available Technology

As specified in OAC Rule 3745-31-05, new sources that must employ Best Available Technology (BAT) shall comply with the Applicable Emission Limitations/Control Measures identified as BAT for each subject emissions unit.

8. Air Pollution Nuisance

The air contaminants emitted by the emissions units covered by this permit shall not cause a public nuisance, in violation of OAC rule 3745-15-07.

9. Reporting Requirements

The permittee shall submit required reports in the following manner:

- a) Reports of any required monitoring and/or recordkeeping of state-only enforceable information shall be submitted to the Toledo Department of Environmental Services.
- b) Except as otherwise may be provided in the terms and conditions for a specific emissions unit, quarterly written reports of (a) any deviations (excursions) from state-only required emission



limitations, operational restrictions, and control device operating parameter limitations that have been detected by the testing, monitoring, and recordkeeping requirements specified in this permit, (b) the probable cause of such deviations, and (c) any corrective actions or preventive measures which have been or will be taken, shall be submitted to the Toledo Department of Environmental Services. If no deviations occurred during a calendar quarter, the permittee shall submit a quarterly report, which states that no deviations occurred during that quarter. The reports shall be submitted (i.e., postmarked) quarterly, by January 31, April 30, July 31, and October 31 of each year and shall cover the previous calendar quarters. (These quarterly reports shall exclude deviations resulting from malfunctions reported in accordance with OAC rule 3745-15-06.)

10. Applicability

This Permit-to-Install is applicable only to the emissions unit(s) identified in the Permit-to-Install. Separate application must be made to the Director for the installation or modification of any other emissions unit(s).

11. Construction of New Sources(s) and Authorization to Install

- a) This permit does not constitute an assurance that the proposed source will operate in compliance with all Ohio laws and regulations. This permit does not constitute expressed or implied assurance that the proposed facility has been constructed in accordance with the application and terms and conditions of this permit. The action of beginning and/or completing construction prior to obtaining the Director's approval constitutes a violation of OAC rule 3745-31-02. Furthermore, issuance of this permit does not constitute an assurance that the proposed source will operate in compliance with all Ohio laws and regulations. Issuance of this permit is not to be construed as a waiver of any rights that the Ohio Environmental Protection Agency (or other persons) may have against the applicant for starting construction prior to the effective date of the permit. Additional facilities shall be installed upon orders of the Ohio Environmental Protection Agency if the proposed facilities cannot meet the requirements of this permit or cannot meet applicable standards.
- b) If applicable, authorization to install any new emissions unit included in this permit shall terminate within eighteen months of the effective date of the permit if the owner or operator has not undertaken a continuing program of installation or has not entered into a binding contractual obligation to undertake and complete within a reasonable time a continuing program of installation. This deadline may be extended by up to 12 months if application is made to the Director within a reasonable time before the termination date and the party shows good cause for any such extension.
- c) The permittee may notify Ohio EPA of any emissions unit that is permanently shut down (i.e., 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) by submitting a certification from the authorized official that identifies the date on which the emissions unit was permanently shut down. Authorization to operate the affected emissions unit shall cease upon the date certified by the authorized official that the emissions unit was permanently shut down. At a minimum, notification of permanent shut down shall be made or confirmed by marking the affected emissions unit(s) as "permanently shut down" in Ohio EPA's "Air Services" along with the date the emissions unit(s) was permanently



removed and/or disabled. Submitting the facility profile update will constitute notifying of the permanent shutdown of the affected emissions unit(s).

- d) The provisions of this permit shall cease to be enforceable for each affected emissions unit after the date on which an emissions unit is permanently shut down (i.e., 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). All records relating to any permanently shutdown emissions unit, generated while the emissions unit was in operation, must be maintained in accordance with law. All reports required by this permit must be submitted for any period an affected emissions unit operated prior to permanent shut down. At a minimum, the permit requirements must be evaluated as part of the reporting requirements identified in this permit covering the last period the emissions unit operated.

No emissions unit certified by the authorized official as being permanently shut down may resume operation without first applying for and obtaining a permit pursuant to OAC Chapter 3745-31.

- e) The permittee shall comply with any residual requirements related to this permit, such as the requirement to submit a deviation report, air fee emission report, or other any reporting required by this permit for the period the operating provisions of this permit were enforceable, or as required by regulation or law. All reports shall be submitted in a form and manner prescribed by the Director. All records relating to this permit must be maintained in accordance with law.

12. Permit-To-Operate Application

The permittee is required to apply for a Title V permit pursuant to OAC Chapter 3745-77. The permittee shall submit a complete Title V permit application or a complete Title V permit modification application within twelve (12) months after commencing operation of the emissions units covered by this permit. However, if the proposed new or modified source(s) would be prohibited by the terms and conditions of an existing Title V permit, a Title V permit modification must be obtained before the operation of such new or modified source(s) pursuant to OAC rule 3745-77-04(D) and OAC rule 3745-77-08(C)(3)(d).

13. Construction Compliance Certification

The applicant shall identify the following dates in the online facility profile for each new emissions unit identified in this permit.

- a) Completion of initial installation date shall be entered upon completion of construction and prior to start-up.
- b) Commence operation after installation or latest modification date shall be entered within 90 days after commencing operation of the applicable emissions unit.

14. Public Disclosure

The facility is hereby notified that this permit, and all agency records concerning the operation of this permitted source, are subject to public disclosure in accordance with OAC rule 3745-49-03.



15. Additional Reporting Requirements When There Are No Deviations of Federally Enforceable Emission Limitations, Operational Restrictions, or Control Device Operating Parameter Limitations

If no deviations occurred during a calendar quarter, the permittee shall submit a quarterly report, which states that no deviations occurred during that quarter. The reports shall be submitted quarterly (i.e., postmarked), by January 31, April 30, July 31, and October 31 of each year and shall cover the previous calendar quarters.

16. Fees

The permittee shall pay fees to the Director of the Ohio EPA in accordance with ORC section 3745.11 and OAC Chapter 3745-78. The permittee shall pay all applicable permit-to-install fees within 30 days after the issuance of any permit-to-install. The permittee shall pay all applicable permit-to-operate fees within thirty days of the issuance of the invoice.

17. Permit Transfers

Any transferee of this permit shall assume the responsibilities of the prior permit holder. The new owner must update and submit the ownership information via the "Owner/Contact Change" functionality in Air Services once the transfer is legally completed. The change must be submitted through Air Services within thirty days of the ownership transfer date.

18. Risk Management Plans

If the permittee is required to develop and register a risk management plan pursuant to section 112(r) of the Clean Air Act, as amended, 42 U.S.C. 7401 et seq. ("Act"), the permittee shall comply with the requirement to register such a plan.

19. Title IV Provisions

If the permittee is subject to the requirements of 40 CFR Part 72 concerning acid rain, the permittee shall ensure that any affected emissions unit complies with those requirements. Emissions exceeding any allowances that are lawfully held under Title IV of the Act, or any regulations adopted thereunder, are prohibited.



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BP-Husky Refining LLC
Permit Number: P0111667
Facility ID: 0448020007
Effective Date: To be entered upon final issuance

B. Facility-Wide Terms and Conditions



1. All the following facility-wide terms and conditions are federally enforceable with the exception of those listed below which are enforceable under state law only:
 - a) None.
2. The following emissions units contained in this permit are subject to 40 CFR Part 60 Subpart A and J: B017, B019, B022, B029, B032, P009, and P037. The complete NSPS requirements, including the NSPS General Provisions may be accessed via the internet from the electronic Code of Federal Regulations (e-CFR) website <http://ecfr.gov> or by contacting the appropriate Ohio EPA district or local air agency
3. The following emissions units contained in this permit are subject to 40 CFR Part 60 Subpart A and Ja: P036, B037, B038 and B039. The complete NSPS requirements, including the NSPS General Provisions may be accessed via the internet from the electronic Code of Federal Regulations (e-CFR) website <http://ecfr.gov> or by contacting the appropriate Ohio EPA district or local air agency.
4. The following emissions unit contained in this permit are subject to 40 CFR Part 60 Subpart A and GGGa: P009, P011, P025, P028, and P036, P038. The complete NSPS requirements, including the NSPS General Provisions may be accessed via the internet from the electronic Code of Federal Regulations (e-CFR) website <http://ecfr.gov> or by contacting the appropriate Ohio EPA district or local air agency.
5. The following emissions unit contained in this permit is subject to 40 CFR Part 60 Subpart A and QQQ: P025. The complete NSPS requirements, including the NSPS General Provisions may be accessed via the internet from the electronic Code of Federal Regulations (e-CFR) website <http://ecfr.gpoaccess.gov> or by contacting the appropriate Ohio EPA district or local air agency.
6. The following emissions unit contained in this permit is subject to 40 CFR Part 60 Subpart A and NNN: P036. The complete NSPS requirements, including the NSPS General Provisions may be accessed via the internet from the electronic Code of Federal Regulations (e-CFR) website <http://ecfr.gov> or by contacting the appropriate Ohio EPA district or local air agency.
7. The following emissions unit contained in this permit is subject to 40 CFR Part 61 Subpart A and FF: P025. The complete NSPS requirements, including the NSPS General Provisions may be accessed via the internet from the electronic Code of Federal Regulations (e-CFR) website <http://ecfr.gpoaccess.gov> or by contacting the appropriate Ohio EPA district or local air agency.
8. The following emissions units contained in this permit are subject to 40 CFR Part 63 Subpart A and CC: P009, P011, P025, P028, P036, P037 and P038. The complete NSPS and MACT requirements, including the MACT General Provisions may be accessed via the internet from the electronic Code of Federal Regulations (e-CFR) website <http://ecfr.gov> or by contacting the appropriate Ohio EPA district or local air agency.
9. The following emissions units contained in this permit are subject to 40 CFR Part 63 Subpart A and DDDDD: B017, B019, B022, B029, B032, B037, B038, and B039. The complete NSPS and MACT requirements, including the MACT General Provisions may be accessed via the internet from the electronic Code of Federal Regulations (e-CFR) website <http://ecfr.gov> or by contacting the appropriate Ohio EPA district or local air agency.
10. Interim sulfur dioxide (SO₂) limits



a) Applicable Emissions Limitations and/ or Control Requirements

(1) Interim SO₂ limit for B036, Reformer 3 heater

Beginning on the effective date of this permit, and continuing until the earlier of (a) the initial startup of the new Crude 1 Heaters (B037 and B038) and new Vacuum 1 Heater (B039) or (b) December 31, 2015, the SO₂ emissions from the Reformer 3 heater (B036) shall not exceed 30 tons SO₂ per year, as a rolling, 12-month summation of the monthly emissions. Thereafter, except as provided in paragraphs a)(2) and a)(3) below, the SO₂ emissions shall not exceed the level established in Permit to Install P0103694 issued on August 7, 2009 (38.00 tons per rolling, 12-month period).

(2) Interim Multi-Unit SO₂ Emission Limit

Beginning on the date of initial startup of heaters B037, B038 and B039 and continuing until the later of (a) fifteen (15) months thereafter, or (b) the completion of construction and initial shakedown of the modifications to the Coker Gas Plant being constructed as part of the Toledo Feedstock Optimization Project, the total combined SO₂ emissions from the units listed below shall not exceed 207.5 tons SO₂ per year as a rolling, 12-month summation of the monthly emissions.

B030	BGOT Heater
B033	East BGOT Heater
B015	Existing Crude 1 Heater
B031	Existing Vacuum 1 Heater
B037/B038	Replacements For Crude 1 Heater
B039	Replacement Vacuum 1 Heater
B019	Crude Vacuum 2 Heaters
B017	Coker 2 Heater
B032	Coker 3 Heater
B022	Naphtha Hydrotreater Heater
B029	ADHT Heater
B034/B035	Alstom Boilers (Incremental Firing)
B036	Reformer 3 Heater
P009	SRU 1
P037	SRU 2&3

(3) Beginning the later of (a) fifteen (15) months after initial startup of heaters B037, B038 and B039 or (b) the completion of construction and initial shakedown of the modifications to the Coker Gas Plant being constructed as part of the Toledo Feedstock Optimization Project, SO₂ emissions from the following heaters shall not exceed the limits included in Table 1:



Table 1 – Individual SO₂ emission Limits

Heater	Tons SO ₂ Per Rolling, 12-Month Period
B017, Coker 2 Heater	3.64
B019, Crude Vacuum 2 Heater	12.15
B022, Naphtha Hydrotreater Heater	3.64
B032, Coker 3 Heater	11.64
B036, Reformer 3 Heater	22.8
B029, ADHT Heater	0.94

- (4) For purposes of clarity, the first month used in a 12-month rolling average compliance period is the calendar month in which the emission limitation becomes effective, and the first complete 12-month rolling average compliance period is 12 calendar months later (e.g., for a limit effective on January 15, the first month in the period is January and the first complete 12-month period ends on the 31st of the following December).

b) Operational Restrictions

- (1) The Crude 1 (B015) and Vacuum 1 (B031) heaters shall be permanently shut down within 180 days after the initial startup of heaters B037, B038 and B039.
- (2) [40 CFR 63.7500(a) – Table 3(3)]

An existing process heater located at a major source facility must perform a one-time energy assessment on the major source facility by qualified energy assessor. An energy assessment completed on or after January 1, 2008, that meets or is amended to meet the energy assessment requirements Table 3 in the Appendices of 40 CFR 63 Subpart DDDDD satisfies this requirement. The assessment shall be completed by January 31, 2016 unless otherwise required or allowed by 40 CFR Part 63, Subpart DDDDD.

c) Monitoring and/or Recordkeeping Requirements

- (1) By no later than the date of initial startup of heaters B037, B038 and B039, the permittee shall install, calibrate, operate, and maintain instrumentation to monitor and record the concentration by volume (dry basis) of total sulfur (expressed as SO₂) in the refinery fuel gas burned in each of the heaters and boilers listed in a)(2) (except for the Reformer 3 Heater (B036)). Fuel gas combustion devices having a common source of fuel gas may be monitored at only one location, if monitoring at this location accurately represents the concentration of total sulfur in the fuel gas being burned. Such continuous monitoring and recording equipment shall comply with the requirements specified in ASTM D5504-08 or other applicable test and operated in accordance with 40 CFR 60.13. Data from the continuous total sulfur analyzer(s) shall be used to



demonstrate and report compliance with the SO₂ emissions limitations in a)(1), a)(2), and a)(3).

At least 45 days before commencing certification testing of the continuous total sulfur expressed as SO₂ monitoring system(s), the permittee shall develop and maintain a written quality assurance/quality control plan designed to ensure continuous valid and representative readings of total sulfur expressed as SO₂ emissions from the continuous monitor(s), in units of the applicable standard(s). The plan shall follow the requirements of 40 CFR Part 60, Appendix F. The quality assurance/quality control plan and a logbook dedicated to the continuous total sulfur (expressed as SO₂) monitoring system must be kept on site and available for inspection during regular office hours.

The plan shall include the requirement to conduct quarterly cylinder gas audits or relative accuracy audits as required in 40 CFR Part 60; and to conduct relative accuracy test audits in units of the standard(s), in accordance with and at the frequencies

Each continuous monitoring system consists of all the equipment used to acquire data and includes the sample extraction and transport hardware, sample conditioning hardware, analyzers, and data recording/processing hardware and software.

The permittee shall maintain documentation from Ohio EPA that the continuous total sulfur monitoring system has been certified in accordance with test methods contained in 40 CFR Part 60, Appendix B, or other test methods as approved by Ohio EPA, Central Office. The letter of certification shall be made available to the Ohio EPA upon request.

The permittee shall maintain records of all data obtained by the continuous total sulfur monitoring system including, emissions of total sulfur in units of the applicable standards in the appropriate averaging period, results of daily zero/span calibration checks, and magnitudes of manual calibration adjustments.

- (2) The permittee shall maintain records of all data obtained by the continuous total sulfur expressed as SO₂, including, but not limited to:
- a. concentration of SO₂ in parts per million for each cycle time of the analyzer, with no resolution less than one data point per minute required;
 - b. emissions of SO₂ in tons per rolling, 12-month period as calculated according to the following equation:
 - i. multiply the average firing rate (mmscf/hr) by the total sulfur expressed as SO₂ in fuel gas as measured by the total sulfur analyzer, divide by 1E06, and then multiply by (1E06 scf/mmscf);
 - ii. multiply i. above by the molecular weight of SO₂ (64 lb/lb-mole), and then divide by the standard molar volume (379 scf/lb-mole);



- iii. divide ii. above by 2,000 lbs/ton; and
 - iv. add the monthly SO₂ emissions (from iii. above) for the current month to the SO₂ emissions for the previous 11 months to determine the SO₂ emissions per rolling, 12-month period.
- c. results of quarterly cylinder gas audits;
 - d. results of daily zero/span calibration checks and the magnitude of manual calibration adjustments;
 - e. results of required relative accuracy test audit(s), including results in units of the applicable standard(s);
 - f. hours of operation of the emissions unit, and continuous total sulfur monitoring system;
 - g. the date, time, and hours of operation of the emissions unit without the continuous total sulfur monitoring system;
 - h. the date, time, and hours of operation of the emissions unit during any malfunction of the continuous total sulfur monitoring system; as well as,
 - i. the reason (if known) and the corrective actions taken (if any) for each such event in (g) and (h).

All valid data points generated and recorded by the continuous emission monitoring and data acquisition and handling system shall be used in the calculation of the pollutant concentration and/or emission rate over the appropriate averaging period.

- (3) For the period during which the Interim Multi-Unit SO₂ Emission Limit established by a)(2) is in effect, the permittee shall record and maintain records of
 - a. the daily average total sulfur concentration (expressed as SO₂) in the fuel gas burned in each of the heaters and boilers listed in a)(2);
 - b. the daily total SO₂ emissions from each such heater, listed in a)(2), calculated in accordance with e)(1)c; and
 - c. the total combined SO₂ emissions for all heaters and boilers listed in a)(2) for the calendar month and for the rolling, 12-month period.
- (4) After the individual SO₂ emission limitations in a)(3), Table 1 become effective, the Permittee shall record and maintain records of
 - a. the daily average total sulfur concentration (expressed as SO₂) in the fuel gas burned in each of the heaters listed in a)(3), (ii) the daily, monthly and rolling 12-month total SO₂ emissions from each such heater listed in a)(3) calculated in accordance with e)(1)(d)-(g), as applicable; and



- b. the daily average H₂S concentration in the fuel gas burned in the Reformer 3 Heater (P036), and (ii) the daily, monthly and rolling 12-month total SO₂ emissions from each such heater listed in a)(3) calculated in accordance with e)(1)(a) or (b) as applicable.
- (5) For purposes of calculating daily SO₂ emissions, the permittee shall monitor and record the following for each heater and boiler listed in a)(2):
- a. the volume of fuel burned in standard cubic feet per day; and
 - b. the daily average total sulfur concentration (expressed as SO₂) in fuel gas.
- d) Reporting Requirements
- (1) Unless other arrangements have been approved by the Director, all notifications and reports shall be submitted through the Ohio EPA's eBusiness Center: Air Services online web portal.
 - (2) The permittee shall submit quarterly deviation (excursion) reports that identify the following:
 - a. all exceedances of the rolling, 12-month emission limitations for SO₂ specified in 10.a).
- The quarterly deviation (excursion) reports shall be submitted in accordance with the reporting requirements of the Standard Terms and Conditions of this permit.
- (3) The permittee shall submit reports within 30 days following the end of each calendar quarter to the appropriate Ohio EPA District Office or local air agency, documenting all instances of SO₂ emissions in excess of the emission limits in a)(1), a)(2) or a)(3). The report shall document the date, commencement and completion times, duration, and magnitude of each exceedance, as well as the reason (if known) and the corrective actions taken (if any) for each exceedance. Excess emissions shall be reported in units of the applicable standard(s).
 - a. These quarterly reports shall be submitted by January 31, April 30, July 31, and October 31 of each year and shall include the following:
 - i. the facility name and address;
 - ii. the manufacturer and model number of the continuous total sulfur monitor;
 - iii. a description of any change in the equipment that comprises the continuous emission monitoring system (CEMS), including any change to the hardware, changes to the software that may affect CEMS readings, and/or changes in the location of the CEMS sample probe;
 - iv. the excess emissions report (EER)*, i.e., a summary of any exceedances during the calendar quarter, as specified above;



- v. the total SO₂ emissions for the calendar quarter (tons);
- vi. the total operating time (hours) of the emissions unit;
- vii. the total operating time of the continuous total sulfur monitoring system while the emissions unit was in operation;
- viii. results and dates of quarterly cylinder gas audits;
- ix. unless previously submitted, results and dates of the relative accuracy test audit(s), including results in units of the applicable standard(s), (during appropriate quarter(s));
- x. unless previously submitted, the results of any relative accuracy test audit showing the continuous total sulfur monitor out-of-control and the compliant results following any corrective actions;
- xi. the date, time, and duration of any/each malfunction** of the continuous total sulfur monitoring system, emissions unit, and/or control equipment;
- xii. the date, time, and duration of any downtime** of the continuous total sulfur monitoring system and/or control equipment while the emissions unit was in operation; and
- xiii. the reason (if known) and the corrective actions taken (if any) for each event in (b)(xi) and (xii).

Each report shall address the operations conducted and data obtained during the previous calendar quarter

* where no excess emissions have occurred or the continuous monitoring system(s) has/have not been inoperative, repaired, or adjusted during the calendar quarter, such information shall be documented in the EER quarterly report

** each downtime and malfunction event shall be reported regardless if there is an exceedance of any applicable limit

e) Testing Requirements

- (1) Compliance with the emission limitation(s) in a)(1), a)(2) and a)(3) of these terms and conditions shall be determined in accordance with the following methods:

- a. Emission Limitation

Reformer 3 Heater (B036) emissions shall not exceed 30 tons SO₂ per year, as a rolling 12-month summation of the monthly emissions during the period specified in a)(1).



Applicable Compliance Method:

The permittee shall demonstrate compliance with the allowable SO₂ emission limitation above as follows:

- i. multiply the daily fuel burned (mmscf) by the daily average concentration of the fuel total sulfur (ppmv) in scf sulfur / mmscf fuel;
- ii. multiply i. above by the molecular weight of SO₂ (64 lbs/lbmole), and then divide by the conversion factor of 379 (scf/lbmole), which is based on standard conditions at 60° F and 14.7 psia;
- iii. sum the daily emissions from ii. above for each day in the month to determine the monthly SO₂ emissions; and
- iv. add the monthly SO₂ emissions from iii. above for the current month to the SO₂ emissions for the previous 11 months to determine the SO₂ emissions per rolling, 12-month period.

Where:

Fuel total sulfur = Concentration of the H₂S measured in the fuel fired plus a 35 ppmv allowance for non-H₂S sulfur based on past testing at the BP-Husky refinery, or more recent test value if future testing is performed.

b. Emission Limitation

Reformer 3 Heater (B036) shall not exceed 22.8 tons SO₂ per year as a rolling 12-month summation of the monthly emissions during the period specified in a)(3).

Applicable Compliance Method:

The permittee shall demonstrate compliance with the allowable SO₂ emission limitation above as follows:

- i. multiply the daily fuel burned (mmscf) by the daily average concentration of the fuel total sulfur (ppmv) in scf sulfur / mmscf fuel;
- ii. multiply i. above by the molecular weight of SO₂ (64 lbs/lbmole), and then divide by the conversion factor of 379 (scf/lbmole), which is based on standard conditions at 60° F and 14.7 psia;
- iii. sum the daily emissions from ii. above for each day in the month to determine the monthly SO₂ emissions; and
- iv. add the monthly SO₂ emissions from iii. above for the current month to the SO₂ emissions for the previous 11 months to determine the SO₂ emissions per rolling, 12-month period.



Where:

Fuel total sulfur = concentration of the H₂S measured in the fuel fired plus a 35 ppmv allowance for non-H₂S sulfur based on past testing at the BP-Husky refinery, or a more recent test value if future testing is performed.

c. Emission Limitation

The total combined SO₂ emissions from the emissions units listed in a)(2) shall not exceed 207.5 tons SO₂ per year as a rolling, 12-month summation of the monthly emissions during the period specified in a)(2).

Applicable Compliance Method:

- i. Alstom Boiler (B034 & B035) incremental emissions of SO₂ shall be calculated by multiplying the Alstom boiler incremental firing rate (MMBtu/hr) by the number of hours of operation, dividing by the fuel heating value (btu/scf) multiplying by the daily average total sulfur in the fuel (ppmv) as recorded by the total sulfur continuous emissions monitoring system, dividing by the constant 379 (scf/lbmole), and multiplying by the molecular weight of SO₂ 64 lbs/lbmole. Sum the daily emissions for each day in the month to determine the monthly SO₂ emissions. Add the monthly SO₂ emissions for the current month to the SO₂ emissions for the previous 11 months to determine the SO₂ emissions per rolling, 12-month period.

The Alstom Boiler incremental firing rate shall be equal to 97 MMBtu/hr until the initial start-up of the modifications to the Coker Gas Plant and equal to 151 MMBtu/hr thereafter.

- ii. Calculate the Reformer 3 Heater (B036) SO₂ emissions by multiplying the daily fuel burned (mmscf) by the daily average concentration of the fuel total sulfur (ppmv) in (scf sulfur / mmscf fuel), multiplying by the molecular weight of SO₂ (64 lbs/lbmole) and dividing by the conversion of 379 (scf/lbmole) which is based on standard conditions at 60° F and 14.7 psia. Sum the daily emissions for each day in the month to determine the monthly SO₂ emissions. Add the monthly SO₂ emissions for the current month to the SO₂ emissions for the previous 11 months to determine the SO₂ emissions per rolling, 12-month period.

Where:

Fuel total sulfur = actual concentration of the H₂S in the fuel fired as measured by the H₂S continuous emissions monitoring system (CEMS) plus a 35 ppmv allowance for non-H₂S sulfur from past testing or more recent test value if future testing is performed.



35 ppmv non-H₂S sulfur is based on past testing at the BP-Husky refinery

- iii. For other Heaters listed in a)(2), SO₂ emissions shall be calculated by multiplying the daily fuel burned (mmscf) by the daily average concentration of the total sulfur in the fuel fired (scf sulfur/ mmscf fuel) as recorded by the total sulfur continuous emissions monitoring system divided by the constant 379 (scf/lbmole) and multiplied by the molecular weight of SO₂ 64 lbs/lbmole. Sum the daily emissions for each day in the month to determine the monthly SO₂ emissions. Add the monthly SO₂ emissions for the current month to the SO₂ emissions for the previous 11 months to determine the SO₂ emissions per rolling, 12-month period.
- iv. SO₂ emissions from SRU 1, 2, and 3 (P009 and P037) of a)(2) shall be calculated by using the monthly average SO₂ concentration from the CEMS and the calculated monthly total gas flow to determine the monthly total SO₂ emissions. Add the monthly SO₂ emissions for the current month to the SO₂ emissions for the previous 11 months to determine the SO₂ emissions per rolling, 12-month period
- d. Coker 2 heater (B017) shall not exceed 3.64 tons SO₂ per year as a rolling, 12-month summation of the monthly emissions beginning on the date specified in a.(3).

Applicable Compliance Method:

The permittee shall demonstrate compliance with the allowable SO₂ emission limitation above as follows:

- i. multiply the daily fuel burned (mmscf) by the daily average concentration of the fuel total sulfur (ppmv) in scf sulfur / mmscf fuel;
- ii. multiply i. above by the molecular weight of SO₂ (64 lbs/lbmole), and then divide by the conversion factor of 379 (scf/lbmole), which is based on standard conditions at 60° F and 14.7 psia;
- iii. sum the daily emissions from ii. above for each day in the month to determine the monthly SO₂ emissions; and
- iv. add the monthly SO₂ emissions from iii. above for the current month to the SO₂ emissions for the previous 11 months to determine the SO₂ emissions per rolling, 12-month period.
- e. **Emission Limitation**

Naphtha Treater Heater (B022) emissions shall not exceed 3.64 tons per year as a SO₂ per rolling, 12-month summation of the monthly emissions beginning on the date specified in a.(3).



Applicable Compliance Method:

The permittee shall demonstrate compliance with the allowable SO₂ emission limitation above as follows:

- i. multiply the daily fuel burned (mmscf) by the daily average concentration of the fuel total sulfur (ppmv) in scf sulfur / mmscf fuel;
- ii. multiply i. above by the molecular weight of SO₂ (64 lbs/lbmole), and then divide by the conversion factor of 379 (scf/lbmole), which is based on standard conditions at 60° F and 14.7 psia;
- iii. sum the daily emissions from ii. above for each day in the month to determine the monthly SO₂ emissions; and
- iv. add the monthly SO₂ emissions from iii. above for the current month to the SO₂ emissions for the previous 11 months to determine the SO₂ emissions per rolling, 12-month period.

f. Emission Limitation

Crude Vac 2 (B019) emissions shall not exceed 12.15 tons per year SO₂ as a rolling 12-month summation of the monthly emissions beginning on the date specified in a.(3).

Applicable Compliance Method:

The permittee shall demonstrate compliance with the allowable SO₂ emission limitation above as follows:

- i. multiply the daily fuel burned (mmscf) by the daily average concentration of the fuel total sulfur (ppmv) in scf sulfur / mmscf fuel;
- ii. multiply i. above by the molecular weight of SO₂ (64 lbs/lbmole), and then divide by the conversion factor of 379 (scf/lbmole), which is based on standard conditions at 60° F and 14.7 psia;
- iii. sum the daily emissions from ii. above for each day in the month to determine the monthly SO₂ emissions; and
- iv. add the monthly SO₂ emissions from iii. above for the current month to the SO₂ emissions for the previous 11 months to determine the SO₂

g. Emission Limitation

Coker 3 Heater (B032) shall not exceed 11.64 tons SO₂ per rolling, 12-months period, beginning on the date specified in a.(3).



Applicable Compliance Method:

The permittee shall demonstrate compliance with the allowable SO₂ emission limitation above as follows:

- i. multiply the daily fuel burned (mmscf) by the daily average concentration of the fuel total sulfur (ppmv) in scf sulfur / mmscf fuel;
- ii. multiply i. above by the molecular weight of SO₂ (64 lbs/lbmole), and then divide by the conversion factor of 379 (scf/lbmole), which is based on standard conditions at 60° F and 14.7 psia;
- iii. sum the daily emissions from ii. above for each day in the month to determine the monthly SO₂ emissions; and
- iv. add the monthly SO₂ emissions from iii. above for the current month to the SO₂ emissions for the previous 11 months to determine the SO₂ emissions per rolling, 12-month period.

h. Emission Limitation

ADHT Heater (B029) shall not exceed 0.94 tons SO₂ per rolling, 12-months period, beginning on the date specified in a.(3).

Applicable Compliance Method:

The permittee shall demonstrate compliance with the allowable SO₂ emission limitation above as follows:

- i. multiply the daily fuel burned (mmscf) by the daily average concentration of the fuel total sulfur (ppmv) in scf sulfur / mmscf fuel;
- ii. multiply i. above by the molecular weight of SO₂ (64 lbs/lbmole), and then divide by the conversion factor of 379 (scf/lbmole), which is based on standard conditions at 60° F and 14.7 psia;
- iii. sum the daily emissions from ii. above for each day in the month to determine the monthly SO₂ emissions; and
- iv. add the monthly SO₂ emissions from iii. above for the current month to the SO₂ emissions for the previous 11 months to determine the SO₂ emissions per rolling, 12-month period.

- (2) Within 60 days of installation, the permittee shall conduct certification tests of the continuous total sulfur (expressed as SO₂) monitoring system to demonstrate compliance with ASTM D5504-08 or other applicable test and ORC section 3704.03(I).

Personnel from the Ohio EPA Central Office and the appropriate Ohio EPA District Office or local air agency shall be notified 30 days prior to initiation of the applicable tests and shall be permitted to examine equipment and witness the certification tests. Two copies of the test results shall be submitted to Ohio EPA, one copy to the



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appropriate Ohio EPA District Office or local air agency and one copy to Ohio EPA Central Office, and pursuant to OAC rule 3745-15-04, within 30 days after the test is completed.

Certification of the continuous total sulfur expressed as SO₂ monitoring system shall be granted upon determination by the Ohio EPA, Central Office that the system meets the requirements of ASTM D3246-05; and ORC section 3704.03(I).



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C. Emissions Unit Terms and Conditions



1. B019, Crude/Vac 2 Furnace

Operations, Property and/or Equipment Description:

Crude Vac 2 Furnace 258 MMBtu per hr Higher Heating Value basis

a) The following emissions unit terms and conditions 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 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.	OAC rule 3745-31-05(D)	Nitrogen oxides (NO _x) emissions shall not exceed 262.8 tons per rolling, 12-month period. Sulfur dioxide (SO ₂) emissions shall not exceed 21.02 tons per rolling, 12-month period. See b)(2)a., b)(2)b., b)(2)h., and b)(2)i. See section B.10.a)(2), and B.10.a.(3)
b.	OAC rule 3745-17-07(A)(1)	Visible particulate emissions (PE) shall not exceed 20% opacity, as a 6-minute average, unless otherwise specified by the rule.
c.	OAC rule 3745-17-10(B)(1)	PE shall not exceed 0.020 pound per million Btu of heat input. See c)(1).
d.	OAC rule 3745-18-54(W)(1)	See b)(2)e.
e.	40 CFR Part 60, Subpart A (40 CFR 60.1-19)	See b)(2)f., b)(2)g., and b)(2)h.
f.	40 CFR Part 60, Subpart J (40 CFR 60.100-109) [In accordance with 60.101 This emissions unit is a fuel gas combustion device located at a	See b)(2)c. and b)(2)d. [60.104(a)(1)]



	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
	petroleum refinery and subject to the applicable emissions limitations/control requirements specified in this section.]	
g.	40 CFR Part 63, Subpart A (40 CFR 63.1 – 16)	See b)(2)i.
h.	40 CFR Part 63, Subpart DDDDD (40 CFR 63.7480-7575) [In accordance with 63.7575, this emissions unit is a large gaseous fuel subcategory existing process heater located at a major source of HAP emissions and subject to the applicable emissions limitations/control requirements specified in this section.]	See b)(2)i., c)(3), and c)(4) (63.7500(a) Table 3 requirements)

(2) Additional Terms and Conditions

- a. Beginning the later of (a) fifteen (15) months after initial startup of B037, B038, and B039, or (b) the completion of construction and initial shakedown of the modifications to the Coker Gas Plant , this sulfur dioxide (SO₂) emissions limit and all of its monitoring, record keeping and reporting requirements shall expire and sulfur dioxide (SO₂) emissions from this emissions unit shall not exceed 12.15 tons per rolling, 12-month period.

Section B.10.c) and 10.d) of this permit outlines the monitoring, record keeping, reporting, and compliance demonstration required to maintain compliance with the new SO₂ limit.

- b. Permit to Install 04-01290 issued 7/25/2002 incorporated the emission limits and schedules set out in paragraphs 14-18 and 21 of the Consent Decree (United States of America, et al., v. BP Exploration & Oil Co., et al., Civil Action No. 2:96CV095 RL, Date of Entry 8/29/2001) that require this emissions unit to be subject to the requirements of 40 CFR 60 Subpart J.
- c. The permittee shall burn no fuel gas in this emissions unit that has a volume-weighted 3-hour average hydrogen sulfide (H₂S) concentration in excess of 230 mg/dscm (0.10 gr/dscf), or the U.S. EPA-recognized equivalent concentration of 162 parts per million by volume of H₂S on a dry basis. Pursuant to the fuel gas definition in 40 CFR 60.101(d), this standard is also applicable if the permittee combines and combusts natural gas or liquefied petroleum (LP) gas in any proportion with refinery fuel gas in this emissions unit.



- d. The permittee may choose to comply with the applicable provisions of 40 CFR Part 60, Subpart Ja to satisfy the requirements of this subpart for this emissions unit.
- e. The emission limitation specified by OAC 3745-18-54(W)(1) is less stringent than the emission limitation specified pursuant to 40 CFR 60.104(a)(1).
- f. 40 CFR Part 60, Subpart A provides applicability provisions, definitions, and other general provisions that are applicable to this emissions unit.
- g. Pursuant to 40 CFR 60.13 and 40 CFR Part 60, Appendix F, the permittee shall maintain a written quality assurance/quality control plan for the continuous hydrogen sulfide monitoring system, designed to ensure continuous valid and representative readings of hydrogen sulfide emissions in units of the applicable standard(s). The plan shall follow the requirements of 40 CFR Part 60, Appendix F. The quality assurance/quality control plan and a logbook dedicated to the monitoring system must be kept on site and available for inspection during regular office hours.

The plan shall include the requirement to conduct quarterly cylinder gas audits or relative accuracy audits as required in 40 CFR Part 60; and to conduct relative accuracy test audits in units of the standard(s), in accordance with and at the frequencies required per 40 CFR Part 60.

[40 CFR 60.13] and [40 CFR Part 60, Appendix F]

- h. Pursuant to 40 CFR 60.2 and 40 CFR Part 60, Appendix F, the continuous emission monitoring system consists of all the equipment used to acquire data to provide a record of emissions and includes the sample extraction and transport hardware, sample conditioning hardware, analyzers, and data recording/processing hardware and software.
- i. This emissions unit is subject to the initial notification requirements of 40 CFR 63 Subpart DDDDD (Boiler MACT) as outlined in 63.9(b) (i.e., it is not subject to the emission limits, performance testing, monitoring, SSMP, or site-specific monitoring plans requirements of Subpart DDDDD or any other requirements in 40 CFR 63 Subpart A).

c) **Operational Restrictions**

- (1) The permittee shall burn only refinery fuel gas, natural gas, or LP gas in this emissions unit.
- (2) The quality of the natural gas, LP gas and/or refinery fuel gas burned in this emissions unit shall meet, on an "as burned" basis, a sulfur content that is sufficient to comply with the allowable hydrogen sulfide emission limitation of 0.10 grain per dry standard cubic foot as a volume-weighted, rolling 3-hour average.



(3) [40 CFR 63.7500(a) – Table 3(2)]

An existing process heater in the Gas 1 subcategory with heat input capacity of 10 million Btu per hour or greater shall conduct a tune-up of the boiler or process heater as specified in § 63.7540(a)(10) or (a)(12). Pursuant to 63.7540(a)(13), If the unit is not operating on the required date for a tune-up, the tune-up must be conducted within 30 calendar days of startup.

d) Monitoring and/or Recordkeeping Requirements

- (1) For each day during which the permittee burns a fuel other than natural gas, LP gas, or refinery fuel gas, the permittee shall maintain a record of the type and quantity of fuel burned in this emissions unit.
- (2) Each month, the permittee shall monitor and record the daily average volumetric firing rate in units of standard cubic feet per hour. From these data, the permittee shall calculate and maintain records of the monthly and rolling, 12-month total NO_x emission rates in units of tons in accordance with the procedure outlined in section f).
- (3) In order to demonstrate compliance with the emission limitation of 230 mg/dscm (0.10 grain/dscf or 162 parts per million by volume dry basis) of H₂S in the refinery fuel gas (and if applicable, combined fuel firing as noted in b)(2)b. above), the permittee shall operate and maintain an instrument for continuously monitoring and recording the concentration (dry basis) of H₂S in the refinery fuel gas or combined fuel stream before being burned in this emissions unit. The monitoring shall be conducted in accordance with 40 CFR 60.105(a)(4), as follows
 - a. The span value for this instrument shall be 425 mg/dscm of H₂S.
 - b. Fuel gas combustion devices having a common source of fuel gas may be monitored at only one location, if monitoring at this location accurately represents the concentration of H₂S in the fuel gas being burned.
 - c. The performance evaluations for this H₂S monitor under 40 CFR 60.13(c) shall use Performance Specification 7 of 40 CFR, Part 60, Appendix B. Method 11, 15, 15A, or 16 shall be used for conducting the relative accuracy evaluations.
- (4) Pursuant to 40 CFR 60.13 and 40 CFR Part 60, Appendix B, the permittee shall maintain on-site, the document of certification received from the U.S. EPA or the Ohio EPA's Central Office documenting that the continuous hydrogen sulfide monitoring system has been certified to meet the requirements of 40 CFR Part 60, Appendix B, Performance Specification 7. The letter/document of certification shall be made available to the Director (the appropriate Ohio EPA District Office or local air agency) upon request.
- (5) Pursuant to 40 CFR 60.13 and 40 CFR Part 60, Appendices B & F, the permittee shall operate and maintain equipment to continuously monitor and record hydrogen sulfide content of the fuel burned in this emissions unit in units of the applicable standard(s). The continuous monitoring and recording equipment shall comply with the requirements specified in 40 CFR Part 60.



The permittee shall maintain records of all data obtained by the continuous hydrogen sulfide monitoring system including, but not limited to:

- a. hydrogen sulfide content of the fuel burned in parts per million for each cycle time of the analyzer, with no resolution less than one data point per minute required;
- b. hydrogen sulfide content of the fuel burned, in units of the applicable standard(s) and in the appropriate averaging period;
- c. results of quarterly cylinder gas audits;
- d. results of daily zero/span calibration checks and the magnitude of manual calibration adjustments;
- e. results of required relative accuracy test audit(s), including results in units of the applicable standard(s);
- f. hours of operation of the emissions unit, continuous hydrogen sulfide monitoring system, and control equipment;
- g. the date, time, and hours of operation of the emissions unit without the control equipment and/or the continuous hydrogen sulfide monitoring system;
- h. the date, time, and hours of operation of the emissions unit during any malfunction of the control equipment and/or the continuous hydrogen sulfide monitoring system; as well as,
- i. the reason (if known) and the corrective actions taken (if any) for each such event in (g) and (h).

All valid data points generated and recorded by the continuous emission monitoring and data acquisition and handling system shall be used in the calculation of the pollutant concentration and/or emission rate over the appropriate averaging period.

- (6) In order to demonstrate compliance with the 21.02 tons SO₂ per rolling, 12-month period emission limitation, the permittee shall monitor and record the monthly average volumetric firing rate in units of standard cubic feet per month. From these data, the permittee shall calculate and maintain records of the monthly and rolling, 12-month total SO₂ emission rates in units of tons in accordance with the procedure outlined in section f).

Beginning the later of (a) fifteen (15) months after initial startup of B037, B038, and B039, or (b) the completion of construction and initial shakedown of the modifications to the Coker Gas Plant, this term and condition will become void and the terms and conditions of Section B.10.a)(3) will become applicable.

e) Reporting Requirements

- (1) The permittee shall submit deviation (excursion) reports that identify each day when a fuel other than natural gas, LP gas, or refinery fuel gas was burned in this emissions unit. Each report shall be submitted within 30 days after the deviation occurs.



- (2) The permittee shall submit quarterly deviation (excursion) reports that identify each month all exceedances of the following allowable emission limitations:
- a. 262.8 tons NO_x per rolling, 12-month period; and
 - b. 21.02 tons SO₂ per rolling, 12-month period.

The quarterly deviation (excursion) reports shall be submitted in accordance with the reporting requirements of the Standard Terms and Conditions of this permit.

Beginning the later of (a) fifteen (15) months after initial startup of B037, B038, and B039, or (b) the completion of construction and initial shakedown of the modifications to the Coker Gas Plant, term e)(2)b above will become void and the permittee will be required to comply with the terms and conditions of Section B.10.a)(3)

- (3) The permittee shall comply with the following quarterly reporting requirements for the emissions unit and its continuous hydrogen sulfide monitoring system:
- a. Pursuant to the monitoring, record keeping, and reporting requirements for continuous monitoring systems contained in 40 CFR 60.7 and 60.13(h) and the requirements established in this permit, the permittee shall submit reports within 30 days following the end of each calendar quarter to the appropriate Ohio EPA District Office or local air agency, documenting all instances of hydrogen sulfide content in excess of any applicable limit specified in this permit, 40 CFR Part 60, and any other applicable rules or regulations. The report shall document the date, commencement and completion times, duration, and magnitude of each exceedance, as well as, the reason (if known) and the corrective actions taken (if any) for each exceedance. Excess emissions shall be reported in units of the applicable standard(s).
 - b. These quarterly reports shall be submitted by January 31, April 30, July 31, and October 31 of each year and shall include the following:
 - i. the facility name and address;
 - i. the manufacturer and model number of the continuous hydrogen sulfide and other associated monitors;
 - ii. a description of any change in the equipment that comprises the continuous emission monitoring system (CEMS), including any change to the hardware, changes to the software that may affect CEMS readings, and/or changes in the location of the CEMS sample probe;
 - iii. the excess emissions report (EER)*, i.e., a summary of any exceedances during the calendar quarter, as specified above;
 - iv. the total operating time (hours) of the emissions unit;
 - v. the total operating time of the continuous hydrogen sulfide monitoring system while the emissions unit was in operation;



- vi. results and dates of quarterly cylinder gas audits;
- vii. unless previously submitted, results and dates of the relative accuracy test audit(s), including results in units of the applicable standard(s), (during appropriate quarter(s));
- viii. unless previously submitted, the results of any relative accuracy test audit showing the continuous hydrogen sulfide monitor out-of-control and the compliant results following any corrective actions;
- ix. the date, time, and duration of any/each malfunction** of the continuous hydrogen sulfide monitoring system, emissions unit, and/or control equipment;
- x. the date, time, and duration of any downtime** of the continuous hydrogen sulfide monitoring system while the emissions unit was in operation; and
- xi. the reason (if known) and the corrective actions taken (if any) for each event in (b)(xi) and (xii).

Each report shall address the operations conducted and data obtained during the previous calendar quarter.

* where no excess emissions have occurred or the continuous monitoring system(s) has/have not been inoperative, repaired, or adjusted during the calendar quarter, such information shall be documented in the EER quarterly report

** each downtime and malfunction event shall be reported regardless if there is an exceedance of any applicable limit

- (4) Unless other arrangements have been approved by the Director, all notifications and reports shall be submitted through the Ohio EPA's eBusiness Center: Air Services online web portal.

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:

262.8 tons NO_x per rolling, 12-month period

Applicable Compliance Method:

The NO_x emission limitation above shall be demonstrated as follows:



- i. multiply the monthly total gas flow (mmscf) by the monthly average fuel gas heating value (Btu/scf) and then multiply by the most recent NO_x emission factor (lb/MMBtu) determined by stack testing; and
- ii. add the monthly total to the total for the previous 11 calendar months to determine the rolling, 12-month total NO_x emissions.

If required, the permittee shall establish a new NO_x emission factor in units of pounds NO_x per million Btu of heat input using Methods 3A, 7E and 19 of 40 CFR Part 60, Appendix A. Alternative U.S. EPA-approved test methods may be used with prior approval from the Ohio EPA. Multiply the stack test derived emission factor by the monthly total quantity fuel gas burned to determine the monthly total NO_x emissions. Add the monthly total NO_x emissions to the total NO_x emissions for the previous 11 months to determine the rolling, 12-month total NO_x emissions.

b. Emission Limitation:

21.02 tons SO₂ per rolling, 12-month period

Applicable Compliance Method:

The SO₂ emission limitation above shall be demonstrated as follows:

- i. multiply the monthly average H₂S concentration by the monthly total gas flow to determine the lbs H₂S per month;
- ii. convert the H₂S to SO₂ at a rate of 34 pounds H₂S to 64 pounds SO₂ emissions; and
- iii. add the monthly total to the total for the previous 11 calendar months to determine the rolling, 12-month total SO₂ emissions.

Beginning the later of (a) fifteen (15) months after initial startup of B037, B038, and B039, or (b) the completion of construction and initial shakedown of the modifications to the Coker Gas Plant, term f)(1)b above will become void and be replaced with the terms and conditions of Section B.10.a)(3).

c. Emission Limitation:

The permittee shall burn no fuel gas in this emissions unit that has a volume-weighted 3-hour average H₂S concentration in excess of 230 mg/dscm (0.10 gr/dscf), or the U.S. EPA-recognized equivalent concentration of 162 parts per million by volume of H₂S on a dry basis.

Applicable Compliance Method:

Ongoing compliance with the hydrogen sulfide emission limitation(s) contained in this permit, 40 CFR Part 60, and any other applicable standard(s) shall be demonstrated through the data collected as required in the Monitoring and Record keeping Section of this permit; and through demonstration of compliance



with the quality assurance/quality control plan, which shall meet the requirements of 40 CFR Part 60.

d. Emission Limitation:

Visible PE shall not exceed 20% opacity, as a 6-minute average, unless otherwise specified by the rule.

Applicable Compliance Method:

If required, the permittee shall demonstrate compliance using Method 9 of 40 CFR Part 60, Appendix A. Alternative U.S. EPA-approved test methods may be used with prior approval from the Ohio EPA.

e. Emission Limitation:

PE shall not exceed 0.020 pound per million Btu of heat input.

Applicable Compliance Method:

Compliance with this limit is demonstrated through condition c)(1), which requires the permittee to burn only refinery fuel gas, natural gas, or LP gas in this emissions unit.

If required, the permittee shall demonstrate compliance using the methods and procedures specified in OAC rule 3745-17-03(B)(9). Alternative U.S. EPA - approved test methods may be used with prior approval from the Ohio EPA.

g) Miscellaneous Requirements

(1) None.



2. B029, ADHT Furnace

Operations, Property and/or Equipment Description:

A-DHT Furnace – 22.8 mmBtu/hr natural gas, LP gas, and refinery fuel gas fired heater with low NO_x burners

- a) The following emissions unit terms and conditions 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 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.	OAC rule 3745-31-05(A)(3) (PTI 04-01346 modification issued on 1/18/2007)	Carbon monoxide (CO) emissions shall not exceed 1.88 pounds per hour. Nitrogen oxides (NO _x) emissions shall not exceed 1.60 pounds per hour. Particulate matter emissions less than or equal to 10 microns in diameter (PM10) shall not exceed 0.17 pound per hour. Sulfur dioxide (SO ₂) emissions shall not exceed 0.60 pound per hour. Volatile organic compound (VOC) emissions shall not exceed 0.12 pound per hour. See b)(2)a.
b.	OAC rule 3745-31-05(D) (PTI 04-01346 modification issued on 1/18/2007)	CO emissions shall not exceed 7.21 tons per rolling, 12-month period. NO _x emissions shall not exceed 6.13 tons per rolling, 12-month period. PM10 emissions shall not exceed 0.65 ton per rolling, 12-month period. SO ₂ emissions shall not exceed 2.35 tons



	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
		per rolling, 12-month period. VOC emissions shall not exceed 0.47 ton per rolling, 12-month period. See b)(2)b., b)(2)c., and b)(2)i.
c.	OAC rule 3745-17-07(A)(1)	Visible particulate emissions (PE) shall not exceed 20% opacity, as a 6-minute average, unless otherwise specified by the rule. See c)(1).
d.	OAC rule 3745-17-10(B)(1)	PE shall not exceed 0.020 pound per million Btu of heat input. See c)(1)
e.	OAC rule 3745-18-54(W)(1)	See b)(2)f.
f.	40 CFR Part 60, Subpart A (40 CFR 60.1-19)	See b)(2)g. and b)(2)h.
g.	40 CFR Part 60, Subpart J (40 CFR 60.100-109) [In accordance with 60.101 This emissions unit is a fuel gas combustion device located at a petroleum refinery that was installed after Jun 11, 1973 and prior to May 14, 2007 and subject to the applicable emissions limitations/control requirements specified in this section.]	See b)(2)d., and b)(2)e. [60.104(a)(1)]
h.	40 CFR Part 63, Subpart A (40 CFR 63.1 – 16)	See b)(2)j. (63.7506(b))
i.	40 CFR Part 63, Subpart DDDDD (40 CFR 63.7480-7575) [In accordance with 63.7575, this emissions unit is a large gaseous fuel subcategory existing process heater located at a major source of HAP emissions and subject to the applicable emissions limitations/control requirements specified in this section.]	See b)(2)j., c)(2) and c)(3) (63.7500(a))



(2) Additional Terms and Conditions

- a. The requirements of this rule include compliance with the requirements of OAC rules 3745-17-07(A)(1), 3745-17-10(B)(1), OAC rule 3745-31-05(D), and 40 CFR Part 60, Subpart J.
- b. The A-DHT Furnace (B029) shall be limited to a maximum firing rate of 175,200 mmBtu per rolling, 12-month period.
- c. Beginning the later of (a) fifteen (15) months after initial startup of B037, B038, and B039, or (b) the completion of construction and initial shakedown of the modifications to the Coker Gas Plant, this sulfur dioxide (SO₂) emissions limit and all of its monitoring, record keeping and reporting requirements shall expire and sulfur dioxide (SO₂) emissions from this emissions unit shall not exceed 0.69 ton per rolling, 12-month period.

Section B.10.c) and 10.d) of this permit outlines the monitoring, record keeping, reporting, and compliance demonstration required to maintain compliance with the new limit

- d. The permittee shall burn no fuel gas in this emissions unit that has a volume-weighted 3-hour average hydrogen sulfide (H₂S) concentration in excess of 230 mg/dscm (0.10 gr/dscf), or the U.S. EPA recognized equivalent concentration of 162 parts per million by volume of H₂S on a dry basis. Pursuant to the fuel gas definition in 40 CFR 60.101(d), this standard is also applicable if the permittee combines and combusts natural gas or liquefied petroleum (LP) gas in any proportion with refinery fuel gas in this emissions unit.
- e. The permittee may choose to comply with the applicable provisions of 40 CFR Part 60, Subpart Ja to satisfy the requirements of this subpart for this emissions unit.
- f. The emission limitation specified by OAC 3745-18-54(W)(1) is less stringent than the emission limitation specified pursuant to 40 CFR 60.104(a)(1).
- g. 40 CFR Part 60, Subpart A provides applicability provisions, definitions, and other general provisions that are applicable to this emissions unit.
- h. The permittee shall maintain a written quality assurance/quality control plan for the continuous hydrogen sulfide monitoring system, designed to ensure continuous valid and representative readings of hydrogen sulfide emissions in units of the applicable standard(s). The plan shall follow the requirements of 40 CFR Part 60, Appendix F. The quality assurance/quality control plan and a logbook dedicated to the monitoring system must be kept on site and available for inspection during regular office hours.

The plan shall include the requirement to conduct quarterly cylinder gas audits or relative accuracy audits as required in 40 CFR Part 60; and to conduct relative accuracy test audits in units of the standard(s), in accordance with and at the frequencies required per 40 CFR Part 60.



[40 CFR 60.13] and [40 CFR Part 60, Appendix F]

- i. The continuous emission monitoring system consists of all the equipment used to acquire data to provide a record of emissions and includes the sample extraction and transport hardware, sample conditioning hardware, analyzers, and data recording/processing hardware and software.
- j. This emissions unit is subject to the initial notification requirements of 40 CFR 63 Subpart DDDDD (Boiler MACT) as outlined in in 63.9(b) (i.e., it is not subject to the emission limits, performance testing, monitoring, SSMP, and site-specific monitoring plans requirements of Subpart DDDDD or any other requirements in 40 CFR 63 Subpart A).

c) Operational Restrictions

- (1) The permittee shall burn only natural gas, LP gas, and refinery fuel gas in this emissions unit.
- (2) [40 CFR 63.7500(a) – Table 3(2)]

An existing process heater in the Gas 1 subcategory with heat input capacity of 10 million Btu per hour or greater shall conduct a tune-up of the boiler or process heater as specified in § 63.7540(a)(10) or (a)(12). Pursuant to 63.7540(a)(13), If the unit is not operating on the required date for a tune-up, the tune-up must be conducted within 30 calendar days of startup.

d) Monitoring and/or Recordkeeping Requirements

- (1) For each day during which the permittee burns a fuel other than natural gas, LP gas, or refinery fuel gas, the permittee shall maintain a record of the type, quantity, and heating value in BTU/dscf of fuel burned in this emissions unit.
- (2) The permittee shall monitor and record the daily firing rate in terms of standard cubic feet per day, mmBtu per day. From these data, the permittee shall calculate and maintain records of the monthly and rolling, 12-month total NO_x emission rates in units of tons in accordance with the procedure outlined in section f).
- (3) In order to demonstrate compliance with the emission limitation of 230 mg/dscm (0.10 grain/dscf or 162 parts per million by volume dry basis) of H₂S in the refinery fuel gas (and if applicable, combined fuel firing as noted in b)(2)b. above), the permittee shall operate and maintain an instrument for continuously monitoring and recording the concentration (dry basis) of H₂S in the refinery fuel gas or combined fuel stream before being burned in this emissions unit. The monitoring shall be conducted in accordance with 40 CFR 60.105(a)(4), as follows
 - a. The span value for this instrument shall be 425 mg/dscm of H₂S.
 - b. Fuel gas combustion devices having a common source of fuel gas may be monitored at only one location, if monitoring at this location accurately represents the concentration of H₂S in the fuel gas being burned.



- c. The performance evaluations for this H₂S monitor under 40 CFR 60.13(c) shall use Performance Specification 7 of 40 CFR, Part 60, Appendix B. Method 11, 15, 15A, or 16 shall be used for conducting the relative accuracy evaluations.
- (4) Pursuant to 40 CFR 60.13 and 40 CFR Part 60, Appendix B, the permittee shall maintain on-site, the document of certification received from the U.S. EPA or the Ohio EPA's Central Office documenting that the continuous hydrogen sulfide monitoring system has been certified to meet the requirements of 40 CFR Part 60, Appendix B, Performance Specification 7. The letter/document of certification shall be made available to the Director (the appropriate Ohio EPA District Office or local air agency) upon request.
- (5) Pursuant to 40 CFR 60.13 and 40 CFR Part 60, Appendices B & F, the permittee shall operate and maintain equipment to continuously monitor and record hydrogen sulfide content of the fuel burned in this emissions unit in units of the applicable standard(s). The continuous monitoring and recording equipment shall comply with the requirements specified in 40 CFR Part 60.

The permittee shall maintain records of all data obtained by the continuous hydrogen sulfide monitoring system including, but not limited to:

- a. hydrogen sulfide content of the fuel burned in parts per million for each cycle time of the analyzer, with no resolution less than one data point per minute required;
- b. hydrogen sulfide content of the fuel burned, in units of the applicable standard(s) and in the appropriate averaging period;
- c. results of quarterly cylinder gas audits;
- d. results of daily zero/span calibration checks and the magnitude of manual calibration adjustments;
- e. results of required relative accuracy test audit(s), including results in units of the applicable standard(s);
- f. hours of operation of the emissions unit, continuous hydrogen sulfide monitoring system;
- g. the date, time, and hours of operation of the emissions unit without the continuous hydrogen sulfide monitoring system;
- h. the date, time, and hours of operation of the emissions unit during any malfunction of the continuous hydrogen sulfide monitoring system; as well as,
- i. the reason (if known) and the corrective actions taken (if any) for each such event in (g) and (h).

All valid data points generated and recorded by the continuous emission monitoring and data acquisition and handling system shall be used in the calculation of the pollutant concentration and/or emission rate over the appropriate averaging period.



- (6) In order to demonstrate compliance with the 2.35 tons SO₂ per rolling, 12-month period emission limitation, the permittee shall monitor and record the monthly average volumetric firing rate in units of standard cubic feet per month. From these data, the permittee shall calculate and maintain records of the monthly and rolling, 12-month total SO₂ emission rates in units of tons in accordance with the procedure outlined in section f).

Beginning the later of (a) fifteen (15) months after initial startup of B037, B038, and B039, or (b) the completion of construction and initial shakedown of the modifications to the Coker Gas Plant, this term and condition will become void and the terms and conditions of Section B.10.a)(3) will become applicable.

e) Reporting Requirements

- (1) The permittee shall submit deviation (excursion) reports that identify each day when a fuel other than natural gas, LP gas, or refinery fuel gas was burned in this emissions unit. Each report shall be submitted within 30 days after the deviation occurs.
- (2) The permittee shall submit quarterly deviation (excursion) reports that identify each month when:
- a. the firing rate of this emissions unit exceeded 175,200 mmBtu per rolling, 12-month period; and
 - b. SO₂ emissions from this emissions unit exceeded 2.35 tons per rolling, 12-month period.

Beginning the later of (a) fifteen (15) months after initial startup of B037, B038, and B039, or (b) the completion of construction and initial shakedown of the modifications to the Coker Gas Plant, the requirement to report on the 2.35 ton per rolling, 12-month period SO₂ emission limitation will become void, and permittee will be required to comply with the terms and conditions of Section B.10.a)(3).

- (3) The permittee shall comply with the following quarterly reporting requirements for the emissions unit and its continuous hydrogen sulfide monitoring system:
- a. Pursuant to the monitoring, record keeping, and reporting requirements for continuous monitoring systems contained in 40 CFR 60.7 and 60.13(h) and the requirements established in this permit, the permittee shall submit reports within 30 days following the end of each calendar quarter to the appropriate Ohio EPA District Office or local air agency, documenting all instances of hydrogen sulfide content in excess of any applicable limit specified in this permit, 40 CFR Part 60, and any other applicable rules or regulations. The report shall document the date, commencement and completion times, duration, and magnitude of each exceedance, as well as, the reason (if known) and the corrective actions taken (if any) for each exceedance. Excess emissions shall be reported in units of the applicable standard(s).



- b. These quarterly reports shall be submitted by January 31, April 30, July 31, and October 31 of each year and shall include the following:
- i. the facility name and address;
 - ii. the manufacturer and model number of the continuous hydrogen sulfide and other associated monitors;
 - iii. a description of any change in the equipment that comprises the continuous emission monitoring system (CEMS), including any change to the hardware, changes to the software that may affect CEMS readings, and/or changes in the location of the CEMS sample probe;
 - iv. the excess emissions report (EER)*, i.e., a summary of any exceedances during the calendar quarter, as specified above;
 - v. the total operating time (hours) of the emissions unit;
 - vi. the total operating time of the continuous hydrogen sulfide monitoring system while the emissions unit was in operation;
 - vii. results and dates of quarterly cylinder gas audits;
 - viii. unless previously submitted, results and dates of the relative accuracy test audit(s), including results in units of the applicable standard(s), (during appropriate quarter(s));
 - ix. unless previously submitted, the results of any relative accuracy test audit showing the continuous hydrogen sulfide monitor out-of-control and the compliant results following any corrective actions;
 - x. the date, time, and duration of any/each malfunction** of the continuous hydrogen sulfide monitoring system, and/or emissions unit;
 - xi. the date, time, and duration of any downtime** of the continuous hydrogen sulfide monitoring system while the emissions unit was in operation; and
 - xii. the reason (if known) and the corrective actions taken (if any) for each event in (b)(xi) and (xii).

Each report shall address the operations conducted and data obtained during the previous calendar quarter.

* where no excess emissions have occurred or the continuous monitoring system(s) has/have not been inoperative, repaired, or adjusted during the calendar quarter, such information shall be documented in the EER quarterly report

** each downtime and malfunction event shall be reported regardless if there is an exceedance of any applicable limit.



- (4) Unless other arrangements have been approved by the Director, all notifications and reports shall be submitted through the Ohio EPA's eBusiness Center: Air Services online web portal.
- 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:
- CO emissions shall not exceed 1.88 pounds per hour.
- Applicable Compliance Method:
- The hourly emission limitation was developed by multiplying the maximum heat input (22.8 mmBtu/hr) by the CO emission factor from AP-42 Table 1.4-1 dated 7/98 (84 lb/mmscf) divided by the average heating value for natural gas specified in AP-42 Table 1.4-1 dated 7/98 (1,020 Btu/scf).
- If required, the permittee shall demonstrate compliance with the hourly emission limitation using Methods 1 thru 4 and 10 of 40 CFR Part 60, Appendix A. Alternative U.S. EPA approved test methods may be used with prior approval from the Ohio EPA.
- b. Emission Limitation:
- CO emissions shall not exceed 7.21 tons per rolling, 12-month period.
- Applicable Compliance Method:
- The annual emission limitation was developed by multiplying the maximum allowable annual heat input (175,200 mmBtu/yr) by the CO emission factor from AP-42 Table 1.4-1 dated 7/98 (84 lb/mmscf) divided by the average heating value for natural gas specified in AP-42 Table 1.4-1 dated 7/98 (1,020 Btu/scf) and divided by 2,000 pounds per ton. Therefore, as long as compliance with the annual firing rate restriction is maintained, compliance with the annual limitation shall be demonstrated.
- .Emission Limitation:
- NO_x emissions shall not exceed 1.60 pounds per hour.
- Applicable Compliance Method:
- The hourly emission limitation was developed by multiplying the maximum heat input (22.8 mmBtu/hr) by the manufacturer's NO_x emission factor (0.07 lb/mmBtu).



If required, the permittee shall demonstrate compliance with the hourly emission limitation using Methods 1 thru 4 and 7 of 40 CFR Part 60, Appendix A. Alternative U.S. EPA approved test methods may be used with prior approval from the Ohio EPA.

c. Emission Limitation:

NO_x emissions shall not exceed 6.13 tons per rolling, 12-month period.

Applicable Compliance Method:

The annual emission limitation was developed by multiplying the maximum allowable annual heat input (175,200 mmBtu/yr) by the manufacturer's NO_x emission factor (0.07 lb/mmBtu) and dividing by 2,000 pounds per ton. Therefore, compliance with the annual emissions limitation is assumed if the permittee maintains compliance with the annual firing rate restriction.

d. Emission Limitation:

PM10 emissions shall not exceed 0.17 pound per hour.

Applicable Compliance Method:

The hourly emission limitation was developed by multiplying the maximum heat input (22.8 mmBtu/hr) by the PM10 emission factor from AP-42 Table 1.4-2 dated 7/98 (7.6 lb/mmscf) divided by the average heating value for natural gas specified in AP-42 Table 1.4-2 dated 7/98 (1,020 Btu/scf).

If required, the permittee shall demonstrate compliance with the hourly emission limitation using Methods 201 and 202 of 40 CFR Part 51, Appendix M. Alternative U.S. EPA approved test methods may be used with prior approval from the Ohio EPA.

e. Emission Limitation:

PM10 emissions shall not exceed 0.65 ton per rolling, 12-month period.

Applicable Compliance Method:

The annual emission limitation was developed by multiplying the maximum allowable annual heat input (175,200 mmBtu/yr) by the PM10 emission factor from AP-42 Table 1.4-2 dated 7/98 (7.6 lb/mmscf) divided by the average heating value for natural gas specified in AP-42 Table 1.4-2 dated 7/98 (1,020 Btu/scf) and divided by 2,000 pounds per ton. Therefore, as long as compliance with the annual firing rate restriction is maintained, compliance with the annual limitation shall be demonstrated.



f. Emission Limitation:

SO₂ emissions shall not exceed 0.60 pound per hour.

Applicable Compliance Method:

The hourly emission limitation was developed by multiplying the maximum heat input (22.8 mmBtu/hr) by the NSPS subpart J allowable concentration of H₂S in fuel gas (162 ppm) divided by 1 million, multiplied by the molecular weight of SO₂ (64 lb/lb-mole), divided by the ideal gas volume (379 ft³/lb-mole), divided by an estimated average heating value for refinery fuel gas (1000 Btu/scf) and multiplied by (1x10⁶ Btu/mmBtu).

Compliance with this emissions limitation shall be demonstrated by the monitoring and recordkeeping requirements for H₂S continuous emissions monitoring system in d).

g. Emission Limitation:

SO₂ emissions shall not exceed 2.35 tons per rolling, 12-month period.

Applicable Compliance Method:

The annual emission limitation was developed by multiplying the maximum allowable annual heat input (175,200 mmBtu/yr) by the NSPS subpart J allowable concentration of H₂S in fuel gas (162 ppm) divided by 1 million, multiplied by the molecular weight of SO₂ (64 lb/lb-mole), divided by the ideal gas volume (379 ft³/lb-mole), divided by the average heating value for refinery fuel gas (1100 Btu/scf) and multiplied by (1x10⁶ Btu/mmBtu), and divided by 2,000 pounds per ton. Therefore, as long as compliance with the maximum allowable H₂S concentration in the fuel gas and the maximum annual firing rate restriction is maintained, compliance with the annual emission limitation shall be demonstrated. .

Beginning the later of (a) fifteen (15) months after initial startup of B037, B038 and B039, or (b) the completion of construction and initial shakedown of the modifications to the Coker Gas Plant, term f)(1)(h) above will become void and be replaced with the terms and conditions of Section B.10.e)(1)h.

h. Emission Limitation:

VOC emissions shall not exceed 0.12 pound per hour.

Applicable Compliance Method:

The hourly emission limitation was developed by multiplying the maximum heat input (22.8 mmBtu/hr) by the VOC emission factor from AP-42 Table 1.4-2 dated 7/98 (5.5 lb/mmscf) divided by the average heating value for natural gas specified in AP-42 Table 1.4-2 dated 7/98 (1,020 Btu/scf).



If required, the permittee shall demonstrate compliance with this emission limitation through emission testing performed in accordance with Methods 1 through 4 and 18, 25 or 25A, as appropriate, of 40 CFR Part 60, Appendix A. Use of Method 18, 25 or 25A is to be selected based on the results of pre-survey stack sampling and U.S. EPA guidance documents. Alternative U.S. EPA-approved test methods may be used with prior approval from Ohio EPA.

i. Emission Limitation:

VOC emissions shall not exceed 0.47 ton per rolling, 12-month period.

Applicable Compliance Method:

The annual emission limitation was developed by multiplying the maximum allowable annual heat input (175,200 mmBtu/yr) by the VOC emission factor from AP-42 Table 1.4-2 dated 7/98 (5.5 lb/mmscf) divided by the average heating value for natural gas specified in AP-42 Table 1.4-2 dated 7/98 (1,020 Btu/scf) and divided by 2,000 pounds per ton. Therefore, as long as compliance with the hourly emission limitation and the annual firing rate restriction is maintained, compliance with the annual emission limitation shall be demonstrated..

j. Emission Limitation:

The permittee shall burn no fuel gas in this emissions unit that has a volume-weighted 3-hour average hydrogen sulfide (H₂S) concentration in excess of 230 mg/dscm (0.10 gr/dscf), or the U.S. EPA recognized equivalent concentration of 162 parts per million by volume of H₂S on a dry basis.

Applicable Compliance Method:

The H₂S continuous emissions monitoring system records required by d) shall serve as demonstration of compliance with this emission limitation.

If required, the permittee shall demonstrate compliance according to 40 CFR 60.106(f).

k. Emission Limitation:

Visible PE shall not exceed 20% opacity, as a 6-minute average, unless otherwise specified by the rule.

Applicable Compliance Method:

If required, compliance shall be demonstrated based upon the procedures specified in Method 9 of 40 CFR Part 60, Appendix A. Alternative U.S. EPA approved test methods may be used with prior approval from the Ohio EPA.



I. Emission Limitation:

PE shall not exceed 0.020 pound per million Btu of heat input.

Applicable Compliance Method:

Compliance with this emission limitation is demonstrated through condition c)(1), which requires this permittee to burn only refinery fuel gas, natural gas, or LP gas in this emissions unit..

If required, the permittee shall demonstrate compliance using the methods and procedures specified in OAC rule 3745-17-03(B)(9). Alternative U.S. EPA approved test methods may be used with prior approval from the Ohio EPA.

g) Miscellaneous Requirements

(1) None.



3. B032, Coker 3 Furnace

Operations, Property and/or Equipment Description:

247 mmBtu per hour (HHV) heater fired with refinery fuel gas and/or natural gas (Coker 3 Furnace)

a) The following emissions unit terms and conditions 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 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.	OAC rule 3745-31-05(A)(3) (PTI 04-01471, issued 7/17/2007)	Carbon monoxide (CO) emissions shall not exceed 18.94 pounds per hour and 82.96 tons per rolling, 12-month period. Nitrogen oxides (NO _x) emissions shall not exceed 14.95 pounds per hour and 65.48 tons per rolling, 12-month period. Particulate matter emissions less than or equal to 10 microns in diameter (PM10) shall not exceed 1.71 pounds per hour and 7.51 tons per rolling, 12-month period. Sulfur dioxide (SO ₂) emissions shall not exceed 4.60 pounds per hour and 20.46 tons per rolling, 12-month period. Volatile organic compound (VOC) emissions shall not exceed 1.24 pounds per hour and 5.43 tons per rolling, 12-month period. See b)(2)a. See Section B.10.a)(3)
b.	OAC rule 3745-31-05(D)	See b)(2)b., b)(2)h., and b)(2)i.
c.	OAC rule 3745-17-07(A)	Visible particulate emissions (PE) shall not exceed 20% opacity, as a 6-minute



	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
		average, unless otherwise specified by the rule.
d.	OAC rule 3745-17-10(B)(1)	PE shall not exceed 0.020 pound per million Btu of heat input. See c)(1)
e.	OAC rule 3745-18-54(W)(1)	See b)(2)d.
f.	40 CFR Part 60, Subpart A	See b)(2)f., b)(2)g., and b)(2)i.
g.	40 CFR Part 60, Subpart J (40 CFR 60.100-109) [In accordance with 60.101 This emissions unit is a fuel gas combustion device located at a petroleum refinery that was installed after Jun 11, 1973 and prior to May 14, 2007 and subject to the applicable emissions limitations/control requirements specified in this section.]	See b)(2)c., b)(2)e. [60.104(a)(1)]
h.	40 CFR Part 63, Subpart A (40 CFR 63.1 – 16)	See b)(2)j. (63.7506(b))
i.	40 CFR Part 63, Subpart DDDDD (40 CFR 63.7480-7575) [In accordance with 63.7575, this emissions unit is a large gaseous fuel subcategory existing process heater located at a major source of HAP emissions and subject to the applicable emissions limitations/control requirements specified in this section.]	See b)(2)i. c)(3), and c)(4). (63.7500(a))

(2) Additional Terms and Conditions

- a. The requirements of this rule include compliance with the requirements of OAC rules 3745-17-07(A)(1), 3745-17-10(B)(1), 40 CFR Part 60, Subpart J, and OAC rule 3745-31-05(D).
- b. Beginning the later of (a) fifteen (15) months after initial startup of B037, B038, and B039, or (b) the completion of construction and initial shakedown of the modifications to the Coker Gas Plant, this emissions of sulfur dioxide (SO₂) and all of its monitoring, record keeping and reporting requirements shall expire and sulfur dioxide (SO₂) emissions from this emissions unit shall not exceed 11.64 tons per rolling, 12-month period.



Section B.10.c) and 10.d) of this permit outlines the monitoring, record keeping, reporting, and compliance demonstration required to maintain compliance with the new SO₂ limit.

- c. The permittee shall burn no fuel gas in this emissions unit that has a volume-weighted 3-hour average hydrogen sulfide (H₂S) concentration greater than 230 mg/dscm (0.10 gr/dscf), or the U.S. EPA recognized equivalent concentration of 162 parts per million by volume of H₂S on a dry basis. Pursuant to the fuel gas definition in 40 CFR 60.101(d), this standard is also applicable if the permittee combines and combusts natural gas or liquefied petroleum (LP) gas in any proportion with refinery fuel gas in this emissions unit.
- d. The emission limitation specified by OAC rule 3745-18-54(W)(1) is less stringent than the emission limitation specified pursuant to 40 CFR 60.104(a)(1).
- e. The permittee may choose to comply with the applicable provisions of 40 CFR Part 60, Subpart Ja to satisfy the requirements of this subpart for this emissions unit.
- f. 40 CFR Part 60, Subpart A provides applicability provisions, definitions, and other general provisions that are applicable to this emissions unit.
- g. The permittee shall maintain a written quality assurance/quality control plan for the continuous hydrogen sulfide monitoring system, designed to ensure continuous valid and representative readings of hydrogen sulfide emissions in units of the applicable standard(s). The plan shall follow the requirements of 40 CFR Part 60, Appendix F. The quality assurance/quality control plan and a logbook dedicated to the monitoring system must be kept on site and available for inspection during regular office hours.

The plan shall include the requirement to conduct quarterly cylinder gas audits or relative accuracy audits as required in 40 CFR Part 60; and to conduct relative accuracy test audits in units of the standard(s), in accordance with and at the frequencies required per 40 CFR Part 60.

[40 CFR 60.13] and [40 CFR Part 60, Appendix F]

- h. The continuous emission monitoring system consists of all the equipment used to acquire data to provide a record of emissions and includes the sample extraction and transport hardware, sample conditioning hardware, analyzers, and data recording/processing hardware and software. [40 CFR 60.2 and 40 CFR Part 60, Appendix F]
- i. This emissions unit is subject to the initial notification requirements in 40 CFR 63 Subpart DDDDD (Boiler MACT) as outlined in 63.9(b) (i.e., it is not subject to the emission limits, performance testing, monitoring, SSMP, site-specific monitoring plans of this Subpart DDDDD or any other requirements in 40 CFR 63 Subpart A).



c) Operational Restrictions

- (1) The permittee shall burn only natural gas, LP gas, and refinery fuel gas in this emissions unit.
- (2) The quality of the natural gas, LP gas and/or refinery fuel gas burned in this emissions unit shall meet, on an "as burned" basis, a sulfur content that is sufficient to comply with the allowable hydrogen sulfide emission limitation of 0.10 grain per dry standard cubic foot as a volume-weighted, rolling 3-hour average.
- (3) [40 CFR 63.7500(a) – Table 3(2)] An existing process heater in the Gas 1 subcategory with heat input capacity of 10 million Btu per hour or greater shall conduct a tune-up of the boiler or process heater as specified in § 63.7540(a)(10) or (a)(12). Pursuant to 63.7540(a)(13), if the unit is not operating on the required date for a tune-up, the tune-up must be conducted within 30 calendar days of startup.

d) Monitoring and/or Recordkeeping Requirements

- (1) For each day during which the permittee burns a fuel other than natural gas, LP gas, or refinery fuel gas, the permittee shall maintain a record of the type and quantity of fuel burned in this emissions unit.
- (2) In order to demonstrate compliance with the emission limitation of 230 mg/dscm (0.10 grain/dscf or 162 parts per million by volume dry basis) of H₂S in the refinery fuel gas (and if applicable, combined fuel firing as noted in b)(2)b. above), the permittee shall operate and maintain an instrument for continuously monitoring and recording the concentration (dry basis) of H₂S in the refinery fuel gas or combined fuel stream before being burned in this emissions unit. The monitoring shall be conducted in accordance with 40 CFR 60.105(a)(4), as follows
 - a. The span value for this instrument shall be 425 mg/dscm of H₂S.
 - b. Fuel gas combustion devices having a common source of fuel gas may be monitored at only one location, if monitoring at this location accurately represents the concentration of H₂S in the fuel gas being burned.
 - c. The performance evaluations for this H₂S monitor under 40 CFR 60.13(c) shall use Performance Specification 7 of 40 CFR, Part 60, Appendix B. Method 11, 15, 15A, or 16 shall be used for conducting the relative accuracy evaluations.
- (3) Pursuant to 40 CFR 60.13 and 40 CFR Part 60, Appendix B, the permittee shall maintain on-site, the document of certification received from the U.S. EPA or the Ohio EPA's Central Office documenting that the continuous hydrogen sulfide monitoring system has been certified to meet the requirements of 40 CFR Part 60, Appendix B, Performance Specification 7. The letter/document of certification shall be made available to the Director (the appropriate Ohio EPA District Office or local air agency) upon request.
- (4) Pursuant to 40 CFR 60.13 and 40 CFR Part 60, Appendices B & F, the permittee shall operate and maintain equipment to continuously monitor and record hydrogen sulfide content of the fuel burned in this emissions unit in units of the applicable standard(s).



The continuous monitoring and recording equipment shall comply with the requirements specified in 40 CFR Part 60.

The permittee shall maintain records of all data obtained by the continuous hydrogen sulfide monitoring system including, but not limited to:

- a. hydrogen sulfide content of the fuel burned in parts per million for each cycle time of the analyzer, with no resolution less than one data point per minute required;
- b. hydrogen sulfide content of the fuel burned, in units of the applicable standard(s) and in the appropriate averaging period;
- c. results of quarterly cylinder gas audits;
- d. results of daily zero/span calibration checks and the magnitude of manual calibration adjustments;
- e. results of required relative accuracy test audit(s), including results in units of the applicable standard(s);
- f. hours of operation of the emissions unit, continuous hydrogen sulfide monitoring system;
- g. the date, time, and hours of operation of the emissions unit without the continuous hydrogen sulfide monitoring system;
- h. the date, time, and hours of operation of the emissions unit during any malfunction of the continuous hydrogen sulfide monitoring system; as well as,
- i. the reason (if known) and the corrective actions taken (if any) for each such event in (g) and (h).

All valid data points generated and recorded by the continuous emission monitoring and data acquisition and handling system shall be used in the calculation of the pollutant concentration and/or emission rate over the appropriate averaging period.

- (5) In order to demonstrate compliance with the 20.46 tons SO₂ per rolling, 12-month period emission limitation, the permittee shall monitor and record the monthly average volumetric firing rate in units of standard cubic feet per month. From these data, the permittee shall calculate and maintain records of the monthly and rolling, 12-month total SO₂ emission rates in units of tons in accordance with the procedure outlined in section f).
- (6) The permittee shall monitor and record the daily average firing rate in terms of standard cubic feet per hour. From these data, the permittee shall calculate and maintain records of the monthly and rolling, 12-month total CO, NO_x, PE, and VOC emission rates in units of tons per month and tons per year in accordance with the procedure outlined in section f)



Beginning the later of (a) fifteen (15) months after initial startup of B037, B038, and B039, or (b) the completion of construction and initial shakedown of the modifications to the Coker Gas Plant, this term and condition will become void and the terms and conditions of Section B.10.a)(3) will become applicable.

e) Reporting Requirements

- (1) The permittee shall submit deviation (excursion) reports that identify each day when a fuel other than natural gas, LP gas, or refinery fuel gas was burned in this emissions unit. Each report shall be submitted within 30 days after the deviation occurs.
- (2) The permittee shall comply with the following quarterly reporting requirements for the emissions unit and its continuous hydrogen sulfide monitoring system:
 - a. Pursuant to the monitoring, record keeping, and reporting requirements for continuous monitoring systems contained in 40 CFR 60.7 and 60.13(h) and the requirements established in this permit, the permittee shall submit reports within 30 days following the end of each calendar quarter to the appropriate Ohio EPA District Office or local air agency, documenting all instances of hydrogen sulfide content in excess of any applicable limit specified in this permit, 40 CFR Part 60, and any other applicable rules or regulations. The report shall document the date, commencement and completion times, duration, and magnitude of each exceedance, as well as, the reason (if known) and the corrective actions taken (if any) for each exceedance. Excess emissions shall be reported in units of the applicable standard(s).
 - b. These quarterly reports shall be submitted by January 31, April 30, July 31, and October 31 of each year and shall include the following:
 - i. the facility name and address;
 - ii. the manufacturer and model number of the continuous hydrogen sulfide and other associated monitors;
 - iii. a description of any change in the equipment that comprises the continuous emission monitoring system (CEMS), including any change to the hardware, changes to the software that may affect CEMS readings, and/or changes in the location of the CEMS sample probe;
 - iv. the excess emissions report (EER)*, i.e., a summary of any exceedances during the calendar quarter, as specified above;
 - v. the total operating time (hours) of the emissions unit;
 - vi. the total operating time of the continuous hydrogen sulfide monitoring system while the emissions unit was in operation;



- vii. results and dates of quarterly cylinder gas audits;
- viii. unless previously submitted, results and dates of the relative accuracy test audit(s), including results in units of the applicable standard(s), (during appropriate quarter(s));
- ix. unless previously submitted, the results of any relative accuracy test audit showing the continuous hydrogen sulfide monitor out-of-control and the compliant results following any corrective actions;
- x. the date, time, and duration of any/each malfunction** of the continuous hydrogen sulfide monitoring system, and/or emissions unit;
- xi. the date, time, and duration of any downtime** of the continuous hydrogen sulfide monitoring system while the emissions unit was in operation; and
- xii. the reason (if known) and the corrective actions taken (if any) for each event in (b)(xi) and (xii).

Each report shall address the operations conducted and data obtained during the previous calendar quarter.

* where no excess emissions have occurred or the continuous monitoring system(s) has/have not been inoperative, repaired, or adjusted during the calendar quarter, such information shall be documented in the EER quarterly report

** each downtime and malfunction event shall be reported regardless if there is an exceedance of any applicable limit

- (3) The permittee shall submit deviation (excursion) reports that identify each day when the CO, NO_x, PE, and/or VOC pound per hour and/or rolling, 12-month emission limitations specified under A.I.1 were exceeded. The reports shall be submitted (i.e., postmarked) to the Toledo Division of Environmental Services quarterly, by January 31, April 30, July 31, and October 31 of each year and shall cover the previous calendar quarters
- (4) Unless other arrangements have been approved by the Director, all notifications and reports shall be submitted through the Ohio EPA's eBusiness Center: Air Services online web portal.

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:

CO emissions shall not exceed 18.94 pounds per hour.



Applicable Compliance Method:

The hourly emission limitation was developed by multiplying the maximum heat input (230 mmBtu/hr) by the CO emission factor from AP-42 Table 1.4-1 dated 7/98 (84 lb/mmScf) divided by the average heating value for natural gas specified in AP-42 Table 1.4-1 dated 7/98 (1,020 Btu/scf).

If required, the permittee shall demonstrate compliance with the hourly emission limitation using Methods 1 thru 4 and 10 of 40 CFR Part 60, Appendix A. Alternative U.S. EPA-approved test methods may be used with prior approval from the Ohio EPA.

b. Emission Limitation:

CO emissions shall not exceed 82.96 tons per rolling, 12-month period.

Applicable Compliance Method:

The annual emission limitation was developed by multiplying the hourly emission limitation (18.94 lbs/hr) by the maximum annual hours of operation (8,760 hrs/yr) and divided by 2,000 pounds per ton. Therefore, as long as compliance with the hourly allowable emission limitation is maintained, compliance with the annual limitation shall be demonstrated.

c. Emission Limitation:

NO_x emissions shall not exceed 14.95 pounds per hour.

Applicable Compliance Method:

The hourly emission limitation was developed by multiplying the maximum heat input (230 mmBtu/hr) by the NO_x emission factor for this emissions unit as determined using Method 7E of 40 CFR Part 60, Appendix A on August 17, 1999 (0.065 lb/mmBtu).

If required, the permittee shall demonstrate compliance with the hourly emission limitation using Methods 1 thru 4 and 7E of 40 CFR Part 60, Appendix A. Alternative U.S. EPA approved test methods may be used with prior approval from the Ohio EPA.

d. Emission Limitation:

NO_x emissions shall not exceed 65.48 tons per rolling, 12-month period.

Applicable Compliance Method:

Compliance may be demonstrated by multiplying the rolling, 12-month firing rate in mmBtu by the NO_x emission factor determined during the most recent emissions test that demonstrated compliance divided by 2,000 pounds per ton. On August 17, 1999, the permittee conducted a Method 7E compliance test demonstrating an average NO_x emission rate of 0.065 lb/mmBtu.



e. Emission Limitation:

PM10 emissions shall not exceed 1.71 pounds per hour.

Applicable Compliance Method:

The hourly emission limitation was developed by multiplying the maximum heat input (230 mmBtu/hr) by the PM10 emission factor from AP-42 Table 1.4-2 dated 7/98 (7.6 lb/mm scf) divided by the average heating value for natural gas specified in AP-42 Table 1.4-2 dated 7/98 (1,020 Btu/scf).

If required, the permittee shall demonstrate compliance with the hourly emission limitation using Methods 201 and 202 of 40 CFR Part 51, Appendix M. Alternative U.S. EPA approved test methods may be used with prior approval from the Ohio EPA.

f. Emission Limitation:

PM10 emissions shall not exceed 7.51 tons per rolling, 12-month period.

Applicable Compliance Method:

The annual emission limitation was developed by multiplying the allowable hourly emission rate (1.71 lbs/hr) by the maximum annual hours of operation (8,760 hrs/yr) and divided by 2,000 pounds per ton. Therefore, as long as compliance with the hourly allowable emission limitation is maintained, compliance with the annual limitation shall be demonstrated..

g. Emission Limitation:

SO₂ emissions shall not exceed 4.60 pounds per hour.

Applicable Compliance Method:

The hourly emission limitation was developed by multiplying the maximum heat input in mmBtu/hr (230 mmBtu/hr) by the NSPS subpart J allowable concentration of H₂S in fuel gas (162 ppmv) divided by 1 million, multiplied by the molecular weight of SO₂ (64 lb/lb-mole), divided by the ideal gas volume (379 ft³/lb-mole), divided by an estimated average heating value for refinery fuel gas (1324 Btu/scf), and multiplied by (1x10⁶ Btu/mmBtu).

Compliance with this emissions limitation shall be demonstrated by the monitoring and record keeping requirements for H₂S continuous emissions monitoring system in d).

h. Emission Limitation:

SO₂ emissions shall not exceed 20.46 tons per rolling, 12-month period.



Applicable Compliance Method:

The annual emission limitation was developed by multiplying the maximum heat input (230 mmBtu/hr) by the NSPS subpart J allowable concentration of H₂S in fuel gas (162 ppmv) divided by 1 million, multiplied by the molecular weight of SO₂ (64 lb/lb-mole), divided by the ideal gas volume (379 ft³/lb-mole), divided by an annual average heating value of fuel burned (1347 Btu per standard cubic foot), and multiplied by (1x10⁶ Btu/mmBtu), multiplying by the maximum hours of usage (8760 hr/yr) and divided by 2,000 pounds per ton.

Therefore, as long as compliance with the hourly emissions limit and the maximum allowable H₂S concentration in the fuel gas is maintained, compliance with the annual emission limitation shall be demonstrated..

Beginning the later of (a) fifteen (15) months after initial startup of B037, B038 and B039, or (b) the completion of construction and initial shakedown of the modifications to the Coker Gas Plant, term f)(1)(h) above will become void and be replaced with the terms and conditions of Section B.10.e)(1)g.

i. Emission Limitation:

VOC emissions shall not exceed 1.24 pounds per hour.

Applicable Compliance Method:

The hourly emission limitation was developed by multiplying the maximum heat input (230 mmBtu/hr) by the VOC emission factor from AP-42 Table 1.4-2 dated 7/98 (5.5 lb/mmscf) divided by the average heating value for natural gas specified in AP-42 Table 1.4-2 dated 7/98 (1,020 Btu/scf).

If required, the permittee shall demonstrate compliance with this emission limitation through emission testing performed in accordance with Methods 1 through 4 and 18, 25 or 25A, as appropriate, of 40 CFR Part 60, Appendix A. Use of Method 18, 25 or 25A is to be selected based on the results of pre-survey stack sampling and U.S. EPA guidance documents. Alternative U.S. EPA approved test methods may be used with prior approval from Ohio EPA.

j. Emission Limitation:

VOC emissions shall not exceed 5.43 ton per rolling, 12-month period.

Applicable Compliance Method:

The annual emission limitation was developed by multiplying the allowable hourly emission rate (1.24 lbs/hr) by the maximum annual hours of operation (8,760 hrs/yr) and divided by 2,000 pounds per ton. Therefore, as long as compliance with the hourly allowable emission limitation is maintained, compliance with the annual limitation shall be demonstrated.



k. Emission Limitation:

The permittee shall burn no fuel gas in this emissions unit that has a volume-weighted 3-hour average hydrogen sulfide (H₂S) concentration in excess of 230 mg/dscm (0.10 gr/dscf), or the U.S. EPA recognized equivalent concentration of 162 parts per million by volume of H₂S on a dry basis.

Applicable Compliance Method:

The H₂S continuous emissions monitoring system records required by d) shall serve as demonstration of compliance with this emission limitation.

If required, the permittee shall demonstrate compliance according to 40 CFR 60.106(f).

l. Emission Limitation:

Visible PE shall not exceed 20% opacity, unless otherwise specified by the rule.

Applicable Compliance Method:

If required, compliance shall be demonstrated based upon the procedures specified in Method 9 of 40 CFR Part 60, Appendix A. Alternative U.S. EPA approved test methods may be used with prior approval from the Ohio EPA.

m. Emission Limitation:

PE shall not exceed 0.020 pound per million Btu of heat input.

Applicable Compliance Method:

Compliance with this emission limitation is demonstrated through compliance with condition c)(1), which requires this permittee to burn only refinery fuel gas, natural gas, or LP gas in this emissions unit..

If required, the permittee shall demonstrate compliance using the methods and procedures specified in OAC rule 3745-17-03(B)(9). Alternative U.S. EPA approved test methods may be used with prior approval from the Ohio EPA.

g) Miscellaneous Requirements

(1) None.



4. B039, Vacuum 1 Furnace

Operations, Property and/or Equipment Description:

150 mmBtu/hr (HHV) refinery process heater fired with any combination of refinery fuel gas, natural gas and/or LP gas (Vacuum 1 Furnace)

- a) The following emissions unit terms and conditions 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 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) – Ohio Best Available Technology (BAT) requirements	Carbon monoxide (CO) emissions shall not exceed 0.06 lb/mmBtu heat input. See b)(2)b.
b.	OAC rule 3745-31-05(A)(3), as effective 11/30/01	Particulate matter emissions less than or equal to 10 microns in diameter (PM10) and particulate matter emissions less than or equal to 2.5 microns in diameter (PM2.5) shall not exceed 7.451E-03 lb/mmBtu heat input and 4.90 tons per rolling, 12-month period. Volatile organic compound (VOC) emissions shall not exceed 0.0054 lb/mmBtu heat input and 3.54 tons per rolling, 12-month period. See., b)(2)b., b)(2)c., and b)(2)d and c)(1).
c.	OAC rule 3745-31-10 through 20	Carbon dioxide(CO ₂) as a surrogate for GHG emissions shall not exceed 82,375 tons per rolling, 12-month period.
d.	OAC rule 3745-31-05(A)(3), as effective 12/01/06	See b)(2)e.
e.	OAC rule 3745-31-05(D) (Synthetic minor restriction to avoid major new source review)	Sulfur dioxide (SO ₂) emissions shall not exceed 7.06 tons per rolling, 12-month period.



Effective Date: To be entered upon final issuance

	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
		See b)(2)k., and Section B.
f.	OAC rule 3745-17-07(A)(1)	Visible particulate emissions (PE) shall not exceed 20% opacity, as a 6-minute average, unless otherwise specified by the rule. See c)(1).
g.	OAC rule 3745-17-10(B)(1)	PE shall not exceed 0.020 pound per million Btu of heat input. See c)(1).
h.	OAC rule 3745-18-54(W)(1)	See b)(2)f.
i.	40 CFR Part 60, Subpart A (40 CFR 60.1-19)	See b)(2)g. through b)(2)j.
j.	40 CFR Part 60, Subpart Ja (40 CFR 60.100a – 60.109a) [In accordance with 60.101a, this emissions unit is a fuel gas combustion device located at a petroleum refinery that was installed after May 14, 2007 and subject to the applicable emissions limitations/control requirements specified in this section.]	See b)(2)a.
k.	40 CFR Part 63, Subpart A (40 CFR 63.1-16)	Table 10 to Subpart DDDDD of Part 63 — Applicability of General Provisions to Subpart DDDDD shows which parts of the General Provisions in 40 CFR 63.1-16 are applicable to Subpart DDDDD.
l.	40 CFR Part 63, Subpart DDDDD (40 CFR 63.7480 – 7575) [In accordance with 63.7485, this emissions unit is a new process heater designed to burn gas 1 subcategory fuels that is located at a major source of HAP]	There are no applicable emissions limitations specified by this rule for this emissions unit. The permittee shall comply with the applicable work practice standards of Table 3 to Subpart DDDDD. [63.7500(a), 63.7540(a)(12)] See c)(3).



(2) Additional Terms and Conditions

- a. The permittee shall comply with the emissions limits in b)(2)a.i. and ii. below.
 - i. The permittee shall comply with either the emission limit in paragraph b)(2)a.i.(a) or the fuel gas concentration limit in paragraph b)(2)a.i.(b).
 - (a) The permittee shall not discharge or cause the discharge of any gases into the atmosphere that contain SO₂ in excess of 20 ppmv (dry basis, corrected to 0-percent excess air) determined hourly on a 3-hour rolling average basis and SO₂ in excess of 8 ppmv (dry basis, corrected to 0-percent excess air), determined daily on a 365 successive calendar day rolling average basis; or
 - (b) The permittee shall not burn in any fuel gas combustion device any fuel gas that contains H₂S in excess of 162 ppmv determined hourly on a 3-hour rolling average basis and H₂S in excess of 60 ppmv determined daily on a 365 successive calendar day rolling average basis.
 - (c) The permittee has elected to comply with H₂S limits in permit condition b)(2)a.i.(b). Therefore, the remaining monitoring, recordkeeping, reporting and testing requirements in this permit are reflective of that compliance option. If the permittee decides to revise the compliance option at a later date as allowed by 40 CFR 60.102a(g)(1), this will be allowed upon notification to Ohio EPA. The permittee shall submit a permit modification request to Ohio EPA prior to the change.
 - ii. The permittee shall not discharge to the atmosphere any emissions of NO_x in excess of the applicable limits in paragraphs b)(2)a.ii.(a) through (d).
 - (a) The permittee shall comply with the limit in either paragraph b)(2)a.ii.(a)(i) or (ii). The permittee may comply with either limit at any time, provided that the appropriate parameters for each alternative are monitored as specified in 40 CFR 60.107a; if fuel gas composition is not monitored as specified in 40 CFR 60.107a(d), the permittee must comply with the concentration limits in paragraph b)(2)a.ii.(a)(i) as follows.
 - (i) 40 ppmv (dry basis, corrected to 0-percent excess air) determined daily on a 30-day rolling average basis; or
 - (ii) 0.040 pounds per million British thermal units (lb/MMBtu) higher heating value basis determined daily on a 30-day rolling average basis.
 - (iii) The permittee has elected to comply with NO_x limits in permit condition b)(2)a.ii.(a)(ii). Therefore, the remaining



monitoring and recordkeeping requirements in this permit are reflective of that compliance option. If the permittee decides to revise the compliance option at a later date as allowed by 40 CFR 60.102a(g)(2), this will be allowed upon notification to Ohio EPA. The permittee shall submit an administrative permit modification request to Ohio EPA prior to the change.

- b. The requirements of OAC 3745-31-05(A)(3) also include compliance with the requirements OAC rule 3745-31-10 through 20, OAC rule 3745-17-07(A)(1), OAC rule 3745-17-10(B)(1), and the applicable provisions for SO₂ specified in 40 CFR Part 60, Subpart Ja.
- c. All PM₁₀ emissions are assumed to be less than or equal to 2.5 microns in diameter because the permittee shall burn only natural gas, LP gas, and refinery fuel gas in this emissions unit.
- d. 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 BAT emission limitations/control measures no longer apply for pollutants with potential emissions less than 10 tons per year..
- e. 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 listed under OAC rule 3745-31-05(A)(3) do not apply to the PM_{2.5}, PM₁₀, SO₂ or VOC emissions from this air contaminant source since the uncontrolled potential to emit for PM_{2.5}, PM₁₀, SO₂ and VOC is less than 10 tons per year taking into account the federally enforceable restriction on the maximum H₂S concentration in the fuel gas specified under 40 CFR Part 60, Subpart Ja.

- f. The emission limitation specified by OAC 3745-18-54(W)(1) is less stringent than the emission limitation specified pursuant to 40 CFR 60.102a(g)(1).
- g. 40 CFR Part 60, Subpart A provides applicability provisions, definitions, and other general provisions that are applicable to this emissions unit.
- h. Each continuous hydrogen sulfide monitoring system shall be certified to meet the requirements of 40 CFR Part 60, Appendix B, Performance Specification 7.



At least 45 days before commencing certification testing of the continuous hydrogen sulfide monitoring system(s), the permittee shall develop and maintain a written quality assurance/quality control plan designed to ensure continuous valid and representative readings of hydrogen sulfide emissions from the continuous monitor(s), in units of the applicable standard(s). The plan shall follow the requirements of 40 CFR Part 60, Appendix F. The quality assurance/quality control plan and a logbook dedicated to the monitoring system must be kept on site and available for inspection during regular office hours.

The plan shall include the requirement to conduct quarterly cylinder gas audits or relative accuracy audits as required in 40 CFR Part 60; and to conduct relative accuracy test audits in units of the applicable standard(s), in accordance with and at the frequencies required per 40 CFR Part 60.

- i. Each continuous NO_x monitoring system shall be certified to meet the requirements of 40 CFR Part 60, Appendix B, Performance Specification 2. At least 45 days before commencing certification testing of the continuous NO_x monitoring system(s), the permittee shall develop and maintain a written quality assurance/quality control plan designed to ensure continuous valid and representative readings of NO_x emissions from the continuous monitor(s), in units of the applicable standard(s). The plan shall follow the requirements of 40 CFR Part 60, Appendix F. The quality assurance/quality control plan and a logbook dedicated to the continuous NO_x monitoring system must be kept on site and available for inspection during regular office hours.

The plan shall include the requirement to conduct quarterly cylinder gas audits or relative accuracy audits as required in 40 CFR Part 60; and to conduct relative accuracy test audits in units of the standard(s), in accordance with and at the frequencies required per 40 CFR Part 60.

- j. The continuous emission monitoring systems consists of all the equipment used to acquire data to provide a record of emissions and includes the sample extraction and transport hardware, sample conditioning hardware, analyzers, and data recording/processing hardware and software.
- k. The emissions of CO₂ as a surrogate for GHG shall not exceed 82,375 tons per rolling, 12-month period and sulfur dioxide shall not exceed 7.06 tons per rolling, 12-month period. To ensure federal enforceability during the first 12 calendar months of operation or the first 12 calendar months following the issuance of this permit, the permittee shall not exceed the emission levels specified in the following table:



<u>Month(s)</u>	<u>Maximum Allowable Cumulative Emissions of SO₂(Tons)</u>	<u>Maximum Allowable Cumulative Emissions of CO₂e(Tons)</u>
1	1.41	16,469
1-2	2.12	24,704
1-3	2.61	30,468
1-4	3.11	36,233
1-5	3.60	41,997
1-6	4.09	47,761
1-7	4.59	53,526
1-8	5.08	59,290
1-9	5.58	65,054
1-10	6.07	70,818
1-11	6.57	76,583
1-12	7.06	82,37

After the first 12 calendar months of operation or the first 12 calendar months following the issuance of this permit, compliance with the annual emission limitation for CO₂e and SO₂ shall be based upon the rolling, 12-month summations of the monthly emissions for CO₂e and SO₂

c) Operational Restrictions

- (1) The permittee shall burn only natural gas, LP gas, and refinery fuel gas in this emissions unit.
- (2) See 40 CFR Part 60, Subpart Ja (40 CFR 60.100a – 60.109a).
- (3) See 40 CFR Part 63, Subpart DDDDD (40 CFR 63.7480 – 7575).

[40 CFR 63.7500(a)(1) – Table 3]

A new or existing boiler or process heater in the Gas 1 subcategory with heat input capacity of 10 million Btu per hour or greater shall conduct a tune-up of the process heater as specified in § 63.7540.

[40 CFR 63.7540(a)(12)]

If your process heater has a continuous oxygen trim system that maintains an optimum air to fuel ratio, and the unit is designed to burn gas 1, you must conduct a tune-up of the



boiler or process heater every 5 years as specified in paragraphs 63.7540(a)(10)(i) through (vi) to demonstrate continuous compliance. You may delay the burner inspection specified in paragraph (a)(10)(i) of this section until the next scheduled or unscheduled unit shut down, but you must inspect each burner at least once every 72 months.

[40 CFR 63.7540(a)(13)]

If the unit is not operating on the required date for a tune-up, the tune-up must be conducted within 30 calendar days of startup.

[40 CFR 63.7510(g)]

For new affected sources (as defined in § 63.7490), you must demonstrate initial compliance with the applicable work practice standards in Table 3 to this subpart within the applicable schedule as specified in § 63.7540(a) following the initial compliance date specified in § 63.7495(a). Thereafter, you are required to complete the applicable tune-up as specified in § 63.7540(a).

d) **Monitoring and/or Recordkeeping Requirements**

- (1) For each day during which the permittee burns a fuel other than natural gas, LP gas, or refinery fuel gas, the permittee shall maintain a record of the type and quantity of fuel burned in this emissions unit
- (2) The permittee shall record the following for this emissions unit:
 - a. the volume, in mmscf, of fuel gas combusted per month;
 - b. the volume, in mmscf, of fuel gas combusted per rolling, 12-month period;
 - c. the CO₂ emission rate, in tons, for each month of operation;
 - d. the SO₂ emission rate, in tons, for each month of operation; and
 - e. beginning after the first 12 calendar months of operation or the first 12 calendar months following the issuance of this permit, the rolling, 12-month summation of the monthly CO₂e and SO₂ emissions, in tons.

Also, during the first 12 calendar months of operation or the first 12 calendar months following the issuance of this permit, the permittee shall record the cumulative CO₂e and SO₂ emissions, in tons, for each calendar month.

- (3) In order to demonstrate compliance with the emission limitation of 230 mg/dscm (0.10 grain/dscf) (the equivalent concentration is 162 parts per million by volume dry basis) of H₂S in the refinery fuel gas (and if applicable, combined fuel firing as noted in b)(2)b. above), the permittee shall operate and maintain an instrument for continuously monitoring and recording the concentration (dry basis) of H₂S in the refinery fuel gas or combined fuel stream before being burned in this emissions unit. The monitoring shall be conducted in accordance with 40 CFR 60.105(a)(4), as follows.



- a. The span value for this instrument shall be 425 mg/dscm of H₂S.
 - b. Fuel gas combustion devices having a common source of fuel gas may be monitored at only one location, if monitoring at this location accurately represents the concentration of H₂S in the fuel gas being burned.
 - c. The performance evaluations for this H₂S monitor under 40 CFR 60.13(c) shall use Performance Specification 7 of 40 CFR, Part 60, Appendix B. Method 11, 15, 15A, or 16 shall be used for conducting the relative accuracy evaluations.
- (4) The permittee shall operate and maintain equipment to continuously monitor and record H₂S emissions from this emissions unit in units of the applicable standard(s). The continuous monitoring and recording equipment shall comply with the requirements specified in 40 CFR Part 60.

The permittee shall maintain records of all data obtained by the continuous H₂S monitoring system including, but not limited to:

- a. emissions of H₂S in parts per million for each cycle time of the analyzer, with no resolution less than one data point per minute required;
- b. emissions of H₂S, in units of the applicable standard(s) and in the appropriate averaging period (ppmv determined hourly on a 3-hour rolling average basis and determined daily on a 365 successive calendar day rolling average basis);
- c. results of quarterly cylinder gas audits;
- d. results of daily zero/span calibration checks and the magnitude of manual calibration adjustments;
- e. of the applicable standard(s);
- f. hours of operation of the emissions unit, continuous H₂S monitoring system;
- g. the date, time, and hours of operation of the emissions unit without the continuous H₂S monitoring system;
- h. the date, time, and hours of operation of the emissions unit during any malfunction of the continuous H₂S monitoring system; as well as,
- i. the reason (if known) and the corrective actions taken (if any) for each such event in (g) and (h).

All valid data points generated and recorded by the continuous emission monitoring and data acquisition and handling system shall be used in the calculation of the pollutant concentration and/or emission rate over the appropriate averaging period.

- (5) Regarding the installation of the continuous NO_x monitoring system, within 30 days of achieving maximum production but not later than 150 days of startup of this emission unit, the permittee shall submit information detailing the location of the sampling site in accordance with the siting requirements in 40 CFR Part 60, Appendix B, Performance



Specification 2. The Ohio EPA, Central Office shall approve the proposed sampling site and certify that the continuous NO_x monitoring system meets the requirements of Performance Specification 2. Once received, the letter/document of certification shall be maintained on-site and shall be made available to the Director (the appropriate Ohio EPA District Office or local air agency) upon request.

- (6) The permittee shall install, operate, and maintain equipment to continuously monitor and record NO_x emissions from this emissions unit in units of the applicable standard(s). The continuous monitoring and recording equipment shall comply with the requirements specified in 40 CFR Part 60.

The permittee shall maintain records of all data obtained by the continuous NO_x monitoring system including, but not limited to:

- a. emissions of NO_x in parts per million for each cycle time of the analyzer, with no resolution less than one data point per minute required;
- b. emissions of NO_x in units of the applicable standard(s) in the appropriate averaging period;
- c. results of quarterly cylinder gas audits;
- d. results of daily zero/span calibration checks and the magnitude of manual calibration adjustments;
- e. results of required relative accuracy test audit(s), including results in units of the applicable standard(s);
- f. hours of operation of the emissions unit, continuous NO_x monitoring system;
- g. the date, time, and hours of operation of the emissions unit without the continuous NO_x monitoring system;
- h. the date, time, and hours of operation of the emissions unit during any malfunction of the continuous NO_x monitoring system; as well as,
- i. the reason (if known) and the corrective actions taken (if any) for each such event in (g) and (h).

All valid data points generated and recorded by the continuous emission monitoring and data acquisition and handling system shall be used in the calculation of the pollutant concentration and/or emission rate over the appropriate averaging period.

- (7) In order to demonstrate compliance with the 7.06 tons SO₂ per rolling, 12-month period emission limitation, the permittee shall install, operate, and maintain equipment to continuously monitor and record total sulfur (expressed as SO₂) emissions from this emissions unit in units of the applicable standard(s). The continuous monitoring and recording equipment shall comply with the requirements specified in 40 CFR Part 60 as outlined in Section B10. of this permit.



- (8) See 40 CFR Part 60, Subpart Ja (40 CFR 60.100a – 60.109a).
 - (9) See 40 CFR Part 63, Subpart DDDDD (40 CFR 63.7480 – 7575).
- e) Reporting Requirements
- (1) For each day during which the permittee burns a fuel other than natural gas, LP gas, or refinery fuel gas, the permittee shall maintain a record of the type and quantity of fuel burned in this emissions unit
 - (2) Pursuant to the 40 CFR Part 60.7, the permittee is hereby advised of the requirement to report the following at the appropriate times:
 - 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); and
 - d. Date of performance testing (if required, at least 30 days prior to testing).
 - (3) The permittee shall comply with the following quarterly reporting requirements for the emissions unit and its continuous H₂S monitoring system:
 - a. Pursuant to the monitoring, record keeping, and reporting requirements for continuous monitoring systems contained in 40 CFR 60.7 and 60.13(h) and the requirements established in this permit, the permittee shall submit reports within 30 days following the end of each calendar quarter to the appropriate Ohio EPA District Office or local air agency, documenting all instances of H₂S content in excess of any applicable limit specified in this permit, 40 CFR Part 60, and any other applicable rules or regulations. The report shall document the date, commencement and completion times, duration, and magnitude of each exceedance, as well as, the reason (if known) and the corrective actions taken (if any) for each exceedance. Excess emissions shall be reported in units of the applicable standard(s).
 - b. These quarterly reports shall be submitted by January 31, April 30, July 31, and October 31 of each year and shall include the following:
 - i. the facility name and address;
 - ii. the manufacturer and model number of the continuous hydrogen sulfide and other associated monitors;
 - iii. a description of any change in the equipment that comprises the continuous emission monitoring system (CEMS), including any change to the hardware, changes to the software that may affect CEMS readings, and/or changes in the location of the CEMS sample probe;



- iv. the excess emissions report (EER)*, i.e., a summary of any exceedances during the calendar quarter, as specified above;
- v. the total operating time (hours) of the emissions unit;
- vi. the total operating time of the continuous hydrogen sulfide monitoring system while the emissions unit was in operation;
- vii. results and dates of quarterly cylinder gas audits;
- viii. unless previously submitted, results and dates of the relative accuracy test audit(s), including results in units of the applicable standard(s), (during appropriate quarter(s));
- ix. unless previously submitted, the results of any relative accuracy test audit showing the continuous hydrogen sulfide monitor out-of-control and the compliant results following any corrective actions;
- x. the date, time, and duration of any/each malfunction** of the continuous hydrogen sulfide monitoring system, emissions unit, and/or control equipment;
- xi. the date, time, and duration of any downtime** of the continuous hydrogen sulfide monitoring system and/or control equipment while the emissions unit was in operation; and
- xii. the reason (if known) and the corrective actions taken (if any) for each event in (b)(x) and (xi).

Each report shall address the operations conducted and data obtained during the previous calendar quarter.

* where no excess emissions have occurred or the continuous monitoring system(s) has/have not been inoperative, repaired, or adjusted during the calendar quarter, such information shall be documented in the EER quarterly report

** each downtime and malfunction event shall be reported regardless if there is an exceedance of any applicable limit

- (4) The permittee shall comply with the following quarterly reporting requirements for the emissions unit and its continuous NO_x monitoring system:
 - a. Pursuant to the monitoring, record keeping, and reporting requirements for continuous monitoring systems contained in 40 CFR 60.7 and 60.13(h) and the requirements established in this permit, the permittee shall submit reports within 30 days following the end of each calendar quarter to the appropriate Ohio EPA District Office or local air agency, documenting all instances of NO_x emissions in excess of any applicable limit specified in this permit, 40 CFR Part 60, OAC Chapters 3745-14 and 3745-23, and any other applicable rules or regulations. The report shall document the date, commencement and completion times, duration, and magnitude of each exceedance, as well as the reason (if known)



and the corrective actions taken (if any) for each exceedance. Excess emissions shall be reported in units of the applicable standard(s).

- b. These quarterly reports shall be submitted by January 31, April 30, July 31, and October 31 of each year and shall include the following:
- i. the facility name and address;
 - ii. the manufacturer and model number of the continuous NO_x and other associated monitors;
 - iii. a description of any change in the equipment that comprises the continuous emission monitoring system (CEMS), including any change to the hardware, changes to the software that may affect CEMS readings, and/or changes in the location of the CEMS sample probe;
 - iv. the excess emissions report (EER)*, i.e., a summary of any exceedances during the calendar quarter, as specified above;
 - v. the total operating time (hours) of the emissions unit;
 - vi. the total operating time of the continuous NO_x monitoring system while the emissions unit was in operation;
 - vii. results and dates of quarterly cylinder gas audits;
 - viii. unless previously submitted, results and dates of the relative accuracy test audit(s), including results in units of the applicable standard(s), (during appropriate quarter(s));
 - ix. unless previously submitted, the results of any relative accuracy test audit showing the continuous NO_x monitor out-of-control and the compliant results following any corrective actions;
 - x. the date, time, and duration of any/each malfunction** of the continuous NO_x monitoring system, emissions unit, and/or control equipment;
 - xi. the date, time, and duration of any downtime** of the continuous NO_x monitoring system and/or control equipment while the emissions unit was in operation; and
 - xii. the reason (if known) and the corrective actions taken (if any) for each event in (b)(x) and (xi).

Each report shall address the operations conducted and data obtained during the previous calendar quarter.

* where no excess emissions have occurred or the continuous monitoring system(s) has/have not been inoperative, repaired, or adjusted during the calendar quarter, such information shall be documented in the EER quarterly report



** each downtime and malfunction event shall be reported regardless if there is an exceedance of any applicable limit.

- (5) See 40 CFR Part 60, Subpart Ja (40 CFR 60.100a – 60.109a).
- (6) See 40 CFR Part 63, Subpart DDDDD (40 CFR 63.7480 – 7575).
- (7) Unless other arrangements have been approved by the Director, all notifications and reports shall be submitted through the Ohio EPA's eBusiness Center: Air Services online web portal.

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:

CO emissions shall not exceed 0.06 lb/mmBtu heat input.

Applicable Compliance Method:

This emission limitation was established based on the permittee's engineering estimate. If required, compliance with the CO emissions limitation above shall be demonstrated using Methods 1 through 4 and 10 of 40 CFR Part 60, Appendix A. Alternative U.S. EPA approved test methods may be used with prior approval from the Ohio EPA.

b. Emission Limitation:

NO_x emissions shall not exceed: 40 ppmv (dry basis, corrected to 0-percent excess air) determined daily on a 30-day rolling average basis; or 0.040 lb/MMBtu higher heating value basis determined daily on a 30-day rolling average basis.

Applicable Compliance Method:

The permittee shall demonstrate initial compliance according to the requirements of 40 CFR 60.104a(i) and 40 CFR 60.8.

Ongoing compliance with the NO_x emission limitation(s) shall be demonstrated through the data collected as required in the Monitoring and Recordkeeping Section of this permit; and through demonstration of compliance with the quality assurance/quality control plan, which shall meet the requirements of 40 CFR Part 60.

c. Emission Limitation:

PM10 and PM2.5 emissions shall not exceed 7.451E-03 lb/mmBtu heat input each



Applicable Compliance Method:

The PM₁₀/PM_{2.5} emission limitation above was developed by dividing the PM₁₀/PM_{2.5} emission factor from AP-42 Table 1.4-2 dated 7/98 (7.6 lb/mm scf) by the average heating value for natural gas specified in AP-42 Table 1.4-2 dated 7/98 (1,020 Btu/scf).

If required, the permittee shall demonstrate compliance with the hourly PM₁₀/PM_{2.5} allowable emission limitation using Methods 201A and 202 of 40 CFR Part 51, Appendix M. Alternative U.S. EPA-approved test methods may be used with prior approval from the Ohio EPA.

d. Emission Limitation:

PM₁₀ and PM_{2.5} emissions shall not exceed 4.90 tons per rolling, 12-month period.

Applicable Compliance Method:

The tons per year emission limitation above was developed by dividing the PM₁₀/PM_{2.5} emission factor from AP-42 Table 1.4-2 dated 7/98 (7.6 lb/mm scf) by the average heating value for natural gas specified in AP-42 Table 1.4-2 dated 7/98 (1,020 Btu/scf), multiplying by the maximum heat input (150 mmBtu/hr HHV), multiplying by the maximum annual hours of operation (8,760 hours), and then dividing by 2,000 pounds per ton. Therefore, as long as compliance with the lb/mmBtu allowable emission limitation is maintained, compliance with the annual emission limitation shall be demonstrated.

e. Emission Limitations:

The permittee shall not discharge or cause the discharge of any gases into the atmosphere that contain SO₂ in excess of 20 ppmv (dry basis, corrected to 0-percent excess air) determined hourly on a 3-hour rolling average basis and SO₂ in excess of 8 ppmv (dry basis, corrected to 0-percent excess air), determined daily on a 365 successive calendar day rolling average basis; or

The permittee shall not burn in any fuel gas combustion device any fuel gas that contains H₂S in excess of 162 ppmv determined hourly on a 3-hour rolling average basis and H₂S in excess of 60 ppmv determined daily on a 365 successive calendar day rolling average basis.

Applicable Compliance Method:

The permittee has elected to comply with H₂S limits established in permit condition b)(2)a.i.(b), rather than the SO₂ limits under b)(2)a.i.(a). The permittee shall demonstrate initial compliance with the H₂S limits according to the requirements of 40 CFR 60.104a(j) and 40 CFR 60.8.

Ongoing compliance with the H₂S limitation(s) shall be demonstrated through the data collected as required in the Monitoring and Recordkeeping Section of this



permit; and through demonstration of compliance with the quality assurance/quality control plan, which shall meet the requirements of 40 CFR Part 60.

If the permittee chooses to comply with the SO₂ limits in b)(2)a.i.(a), initial compliance with this emission limitation shall be determined in accordance with the procedures specified in 40 CFR 60.104a(j) and 40 CFR 60.8.

If the permittee chooses to comply with the SO₂ limits in b)(2)a.i.(a), then ongoing compliance with the SO₂ emission limitation(s) contained in this permit, 40 CFR Part 60, and any other applicable standard(s) shall be demonstrated through the data collected as required in 40 CFR Part 60, Subparts A and Ja; and through demonstration of compliance with the quality assurance/quality control plan, which shall meet the requirements of 40 CFR Part 60.

f. Emission Limitation:

SO₂ emissions shall not exceed 7.06 tons per rolling, 12-month period

Applicable Compliance Method:

The annual emission limitation above was developed by multiplying the maximum firing rate per rolling, 12-month period (0.1364 mmscf/hr) by the permittee's maximum rolling, 12-month average total sulfur expressed as SO₂ concentration in fuel gas (70 ppm), divided by 1E06, multiplied by (1E06 scf/mmscf), multiplied by the molecular weight of SO₂ (64 lb/lb-mole), divided by the standard molar volume (379 scf/lb-mole), and divided by (2,000 lbs/ton).

Ongoing compliance with this emission limitation shall be demonstrated through the data collected as required in the Monitoring and Record keeping Section of this permit; and through demonstration of compliance with the quality assurance/quality control plan, which shall meet the testing and recertification requirements of 40 CFR Part 60.

g. Emission Limitation:

VOC emissions shall not exceed 0.0054 lb/mmBtu heat input.

Applicable Compliance Method:

The hourly emission limitation was developed by dividing the VOC emission factor from AP-42 Table 1.4-2 dated 7/98 (5.5 lb/mmscf) by the average heating value for natural gas specified in AP-42 Table 1.4-2 dated 7/98 (1,020 Btu/scf).

If required, the permittee shall demonstrate compliance with this emission limitation through emission testing performed in accordance with Methods 1 through 4 and 18, 25 or 25A, as appropriate, of 40 CFR Part 60, Appendix A. Use of Method 18, 25 or 25A is to be selected based on the results of pre-survey stack sampling and U.S. EPA guidance documents. Alternative U.S. EPA-approved test methods may be used with prior approval from Ohio EPA.



h. Emission Limitation:

VOC emissions shall not exceed 3.54 tons per rolling, 12-month period.

Applicable Compliance Method:

The tons per year emission limitation above was developed by dividing the VOC emission factor from AP-42 Table 1.4-2 dated 7/98 (5.5 lb/mmscf) by the average heating value for natural gas specified in AP-42 Table 1.4-2 dated 7/98 (1,020 Btu/scf), multiplying by the maximum heat input (150 mmBtu/hr), multiplying by the maximum annual hours of operation (8,760 hours), and then dividing by 2,000 pounds per ton. Therefore, as long as compliance with the short-term allowable emission limitation is maintained, compliance with the annual emission limitation shall also be demonstrated.

i. Emission Limitation:

Visible PE shall not exceed 20 percent opacity, as a six-minute average, unless otherwise specified by the rule.

Applicable Compliance Method:

If required, the permittee shall demonstrate compliance using Method 9 of 40 CFR Part 60, Appendix A. Alternative U.S. EPA-approved test methods may be used with prior approval from the Ohio EPA.

j. Emission Limitation:

PE shall not exceed 0.020 pound per million Btu of heat input.

Applicable Compliance Method:

Compliance with this emission limitation may be demonstrated by the following one-time calculation of potential to emit: Divide the particulate emission factor from Table 1.4-2 of AP-42 dated 7/98 (1.9 lb/mmscf) by the average heating value for natural gas specified in Table 1.4-2 of AP-42 dated 7/98 (1,020 Btu/scf) to obtain the maximum particulate emissions (0.002 lb/mmBtu).

If required, the permittee shall demonstrate compliance using the methods and procedures specified in OAC rule 3745-17-03(B)(9). Alternative U.S. EPA-approved test methods may be used with prior approval from the Ohio EPA.

k. Emission Limitation:

CO₂e emissions shall not exceed 82,347 tons per rolling, 12-month period.

Applicable Compliance Method:

The allowable CO₂e emissions limitation was established to reflect the potential to emit for this emissions unit based on an emission factor (125.4 lbs CO₂e/mmBtu) derived from actual refinery fuel gas data collected pursuant to the



GHG MMR rule (40 CFR Part 98) from 2010 up to June 13, 2012, and is based on the highest annual average emission factor calculated during this time period for the TIU Mix Drum. This emissions limitation was established by multiplying the CO₂e emission factor (125.4 lbs CO₂e/mmBtu) by the maximum hourly heat input (150 mmBtu/hr), multiplying by the maximum annual hours of operation (8,760 hrs/yr) and dividing by 2,000 pounds per ton.

Compliance shall be demonstrated by multiplying the annual average site-specific emission factor (lb/mmscf) derived from actual refinery fuel gas data collected pursuant to the GHG MMR rule (40 CFR Part 98) by the actual fuel usage (mmscf/rolling, 12-month period) and dividing by 2,000 pounds per ton.

- (2) The permittee shall conduct, or have conducted, emission testing for this emissions unit in accordance with the following requirements:
- a. The emission testing shall be conducted within 60 days of achieving the maximum production rate at which the emissions unit(s) will be operated, but not later than 180 days after initial startup.
 - b. The emission testing shall be conducted to:
 - i. demonstrate compliance with the allowable mass emission rate(s) for CO₂ and NO_x in the appropriate averaging period(s);
 - ii. demonstrate compliance with the allowable concentration of H₂S in the fuel gas burned, except that a performance tests are not required when a new affected fuel gas combustion device is added to a common source of fuel gas that previously demonstrated compliance.
 - c. The following test method(s) shall be employed to demonstrate compliance with the allowable mass emission rate(s):
 - i. for CO₂, Methods 1 thru 4 and 10 of 40 CFR Part 60, Appendix A; and
 - ii. for NO_x, 40 CFR 60.104a(i).

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

- d. The test(s) shall be conducted under those representative conditions that challenge to the fullest extent possible a facility's ability to meet the applicable emissions limits and/or control requirements, unless otherwise specified or approved by the appropriate Ohio EPA District Office or local air agency. Although this generally consists of operating the emissions unit at its maximum material input/production rates and results in the highest emission rate of the tested pollutant, there may be circumstances where a lower emissions loading is deemed the most challenging control scenario. Failure to test under these conditions is justification for 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 "Intent to Test" notification to the appropriate Ohio EPA District Office or local air agency. The "Intent to Test" notification shall describe in detail the proposed test methods and procedures, the emissions unit 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 Ohio EPA District Office's or local air agency's refusal to accept the results of the emission test(s).
 - f. Personnel from the appropriate Ohio EPA District Office or local air agency 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 emissions unit and the testing procedures provide a valid characterization of the emissions from the emissions unit 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 or persons responsible for the tests and submitted to the appropriate Ohio EPA District Office or local air agency 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 Ohio EPA District Office or local air agency.
- (3) Within 60 days of achieving the maximum production rate at which the emissions unit(s) will be operated, but not later than 180 days after initial startup, the permittee shall conduct certification tests of any newly installed continuous hydrogen sulfide monitoring system in units of the applicable standard(s), to demonstrate compliance with 40 CFR Part 60, Appendix B, Performance Specification 7 and ORC section 3704.03(I).

Personnel from the Ohio EPA Central Office and the appropriate Ohio EPA District Office or local air agency shall be notified 30 days prior to initiation of the applicable tests and shall be permitted to examine equipment and witness the certification tests. Two copies of the test results shall be submitted to Ohio EPA, one copy to the appropriate Ohio EPA District Office or local air agency and one copy to Ohio EPA Central Office, and pursuant to OAC rule 3745-15-04, within 30 days after the test is completed.

Certification of the continuous hydrogen sulfide monitoring system shall be granted upon determination by the Ohio EPA, Central Office that the system meets the requirements of 40 CFR Part 60, Appendix B, Performance Specification 7 and ORC section 3704.03(I).

Ongoing compliance with the hydrogen sulfide emission limitation(s) contained in this permit, 40 CFR Part 60, and any other applicable standard(s) shall be demonstrated through the data collected as required in the Monitoring and Record keeping Section of this permit; and through demonstration of compliance with the quality assurance/quality control plan, which shall meet the requirements of 40 CFR Part 60.

- (4) Within 60 days of achieving the maximum production rate at which the emissions unit(s) will be operated, but not later than 180 days after initial startup, the permittee shall conduct certification tests of the continuous NO_x monitoring system in units of the



applicable standard(s) to demonstrate compliance with 40 CFR Part 60, Appendix B, Performance Specifications 2; and ORC section 3704.03(I).

Personnel from the Ohio EPA Central Office and the appropriate Ohio EPA District Office or local air agency shall be notified 30 days prior to initiation of the applicable tests and shall be permitted to examine equipment and witness the certification tests. Two copies of the test results shall be submitted to Ohio EPA, one copy to the appropriate Ohio EPA District Office or local air agency and one copy to Ohio EPA Central Office, and pursuant to OAC rule 3745-15-04, within 30 days after the test is completed.

Certification of the continuous NO_x monitoring system shall be granted upon determination by the Ohio EPA, Central Office that the system meets the requirements of 40 CFR Part 60, Appendix B, Performance Specifications 2; and ORC section 3704.03(I).

Ongoing compliance with the NO_x emission limitation(s) contained in this permit, 40 CFR Part 60, and any other applicable standard(s) shall be demonstrated through the data collected as required in the Monitoring and Recordkeeping Section of this permit; and through demonstration of compliance with the quality assurance/quality control plan, which shall meet the requirements of 40 CFR Part 60.

- (5) See 40 CFR Part 60, Subpart Ja (40 CFR 60.100a – 60.109a).
 - (6) See 40 CFR Part 63, Subpart DDDDD (40 CFR 63.7480 – 7575).
- g) Miscellaneous Requirements
- (1) None.



5. P009, Sulfur Recovery Unit #1

Operations, Property and/or Equipment Description:

Sulfur Recovery Unit (SRU) #1, 120 long tons per day, with tail gas treatment unit, sulfur pit, and thermal oxidizer

a) The following emissions unit terms and conditions 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 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.	OAC rule 3745-31-05(D)	The combined sulfur dioxide (SO ₂) emissions from SRU #1, SRU #2, and SRU #3 (emissions units P009 and P037) shall not exceed 75 tons per rolling, 12-month period. See b)(2)a. through b)(2)c.
b.	OAC rule 3745-17-07(A)	See b)(2)g.
c.	OAC rule 3745-17-11(B)(1)	See b)(2)h.
d.	OAC rule 3745-18-54(W)(7)	See b)(2)i.
e.	OAC rule 3745-21-09(T)	See b)(2)j.
f.	40 CFR Part 60, Subpart J (40 CFR 60.100-109) [In accordance with 40 CFR 60.104(a)(1) this emissions unit is a Claus sulfur recovery plant with a design capacity for sulfur feed of greater than 20 long tons per day that includes a fuel gas combustion device (incinerator) where construction commenced after 10/4/1976 and prior to 5/14/2007 and is subject to the emissions limitations/ control measures specified in this section]	See b)(2)d. through b)(2)f.



	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
g.	40 CFR Part 60, Subpart A (40 CFR 60.1-19)	See b)(2)l. through b)(2)n.
h.	40 CFR Part 63, Subpart A (40 CFR 60.1-16)	Table 6 to Subpart CC - Applicability of NESHAP General Provisions to Subpart CC, specifies which parts of the General Provisions in 40 CFR 63.1-16 apply. Table 44 to Subpart UUU of Part 63 — Applicability of NESHAP General Provisions to Subpart UUU shows which parts of the General Provisions in 40 CFR 63.1-16 apply.
i.	40 CFR Part 63, Subpart CC (40 CFR 60.640 – 63.657) [In accordance with 40 CFR 63.648(a) this emissions unit is a petroleum refinery process unit located at an existing major of hazardous air pollutants subject to the emissions limitations/control measure specified in this section.]	See b)(2)k.
j.	40 CFR Part 63, Subpart UUU (40 CFR 63.1560 – 63.1579) [In accordance with 40 CFR 63.1562, this emissions unit is a sulfur recovery plant with a Claus sulfur recovery unit and tail gas treatment unit, located at an existing major source of HAP emissions, that is subject to the NSPS for sulfur oxides in 40 CFR 60.104(a)(2) and subject to the emission limitations/control measures specified in this section.]	The SO ₂ emission limitation specified by this rule is equivalent to that specified by 40 CFR Part 60, Subpart J under 40 CFR 60.104(a)(2)(i). [Table 29 to 40 CFR Part 63, Subpart UUU]

(2) Additional Terms and Conditions

- a. This permit to install incorporates the emission limits and schedules set out in paragraphs 14-18 and 21 of the Consent Decree (United States of America, et al., v. BP Exploration & Oil Co., et al., Civil Action No. 2:96CV095 RL). Operational Restrictions.



- b. The permittee shall re-route all NSPS sulfur recovery pit emissions such that they are treated, monitored, and included as part of the sulfur recovery plant's emissions subject to the NSPS Subpart J limit for SO₂, 40 CFR 60.104(a)(2), by no later than the first turnaround of the Claus train that occurs after July 18, 2001.
- c. Upon start-up of the new crude heaters (B037 and B038) and vacuum heater (B039) the combined sulfur dioxide (SO₂) emissions from SRU #1 (P009), and SRU #2 & SRU #3 (P037) shall not exceed 75 tons per rolling, 12-month period.

For purposes of clarity, the first month used in a 12-month rolling average compliance period is the calendar month in which the emission limitation becomes effective, and the first complete 12-month rolling average compliance period is 12 calendar months later (e.g., for a limit effective on January 15, the first month in the period is January and the first complete 12-month period ends on the 31st of the following December).

- d. The permittee shall not burn in the tail gas incinerator any refinery fuel gas that contains hydrogen sulfide (H₂S) in excess of 230 mg/dscm (0.10 gr/dscf)(the equivalent concentration is 162 parts per million by volume of H₂S dry basis) as a volume-weighted, rolling 3-hour average concentration greater than 0.10 grain per dry standard cubic foot, except during periods of startup, shutdown or malfunction of the refinery fuel gas amine systems provided that the permittee shall to the extent practicable, maintain and operate any affected facility including associated air pollution control equipment in a manner consistent with good air pollution control practices for minimizing emissions. The monitoring, record keeping and reporting requirements for compliance with this condition is maintained under B032 of this permit.
- e. The permittee may choose to comply with the applicable provisions of 40 CFR Part 60, Subpart Ja to satisfy the requirements of this subpart for this emissions unit.
- f. The permittee shall not discharge or cause the discharge of any gases into the atmosphere from the Claus sulfur recovery plant containing in excess of 250 ppm SO₂ by volume (dry basis) at zero percent excess air as a rolling, 12-hour average.
- g. This emissions unit is exempt from the visible PE limitations specified in OAC rule 3745-17-07(A) pursuant to OAC rule 3745-17-07(A)(3)(h) because the emissions unit is not subject to a mass emission limitation in OAC rule 3745-17-11.
- h. The uncontrolled mass rate of particulate emissions (PE)* from this emissions unit is less than 10 pounds/hour. Therefore, pursuant to OAC rule 3745-17-11(A)(2)(a)(ii), Figure II of OAC rule 3745-17-11 does not apply. In addition, Table I of OAC rule 3745-17-11 does not apply because the process weight rate is equal to zero. "Process weight" is defined in OAC rule 3745-17-01(B)(17).

* The burning of gaseous fuels is the only source of PE from this emissions unit



- i. The emission limitation specified by OAC rule 3745-18-54(W)(7) is less stringent than the emission limitation specified by 40 CFR Part 60, Subpart J.
- j. The permittee shall comply with the applicable leak detection and repair requirements specified in OAC rule 3745-21-09(T).

Consistent with the U.S. EPA streamlining policy, the permittee may elect to demonstrate compliance with OAC rule 3745-21-09(T) by demonstrating compliance with the equipment leak standards in 40 CFR Part 63, Subpart CC for both equipment in organic HAP service and equipment not in organic HAP service. The MACT level monitoring of 40 CFR Part 63, Subpart CC is generally more stringent than the LDAR requirements of OAC rule 3745-21-09(T)

- k. The permittee shall comply with the applicable leak detection and repair requirements specified in 40 CFR Part 63, Subpart CC.
- l. 40 CFR Part 60, Subpart A provides applicability provisions, definitions, and other general provisions that are pertinent to emissions units affected by 40 CFR Part 60.
- m. The permittee shall maintain a written quality assurance/quality control plan for the continuous SO₂ monitoring system, designed to ensure continuous valid and representative readings of SO₂ emissions in units of the applicable standard(s). The plan shall follow the requirements of 40 CFR Part 60, Appendix F. The quality assurance/quality control plan and a logbook dedicated to the continuous SO₂ monitoring system must be kept on site and available for inspection during regular office hours.

The plan shall include the requirement to conduct quarterly cylinder gas audits or relative accuracy audits as required in 40 CFR Part 60; and to conduct relative accuracy test audits in units of the standard(s), in accordance with and at the frequencies required per 40 CFR Part 60.

- n. The continuous emission monitoring system consists of all the equipment used to acquire data to provide a record of emissions and includes the sample extraction and transport hardware, sample conditioning hardware, analyzers, and data recording/processing hardware and software.

c) Operational Restrictions

- (1) See 40 CFR Part 60, Subpart J (40 CFR 60.100 – 60.109).
- (2) See 40 CFR Part 63, Subpart CC (40 CFR 60.640 – 63.657).
- (3) See 40 CFR Part 63, Subpart UUU (40 CFR 63.1560 – 63.1579).



d) Monitoring and/or Recordkeeping Requirements

- (1) The permittee shall operate and maintain an instrument for continuously monitoring and recording the concentration (dry basis, zero percent excess air) of SO₂ emissions into the atmosphere. The monitor shall include an oxygen monitor for correcting the data for excess air.
 - a. The span values for this monitor are 500 ppm SO₂ and 25 percent O₂.
 - b. The performance evaluations for this SO₂ monitor under 40 CFR 60.13(c) shall use Performance Specification 2. Methods 6 or 6C and 3 or 3A shall be used for conducting the relative accuracy evaluations.
- (2) The permittee shall maintain on-site, the document of certification received from the U.S. EPA or the Ohio EPA's Central Office documenting that the continuous SO₂ monitoring system has been certified to meet the requirements of 40 CFR Part 60, Appendix B, Performance Specification 2. The letter/document of certification shall be made available to the Director (the appropriate Ohio EPA District Office or local air agency) upon request. [40 CFR 60.13] and [40 CFR Part 60, Appendix B]
- (3) The permittee shall operate and maintain equipment to continuously monitor and record SO₂ emissions from this emissions unit in units of the applicable standard(s). The continuous monitoring and recording equipment shall comply with the requirements specified in 40 CFR Part 60.

The permittee shall maintain records of all data obtained by the continuous SO₂ monitoring system including, but not limited to:

- a. emissions of SO₂ in parts per million for each cycle time of the analyzer, with no resolution less than one data point per minute required;
- b. emissions of SO₂ in units of ppm SO₂ by volume (dry basis) at zero percent excess as a rolling, 12-hour average;
- c. results of quarterly cylinder gas audits;
- d. results of daily zero/span calibration checks and the magnitude of manual calibration adjustments;
- e. results of required relative accuracy test audit(s), including results in units of the applicable standard(s);
- f. hours of operation of the emissions unit, continuous SO₂ monitoring system, and control equipment;
- g. the date, time, and hours of operation of the emissions unit without the continuous SO₂ monitoring system;
- h. the date, time, and hours of operation of the emissions unit during any malfunction of the control equipment and/or the continuous SO₂ monitoring system; as well as,



- i. the reason (if known) and the corrective actions taken (if any) for each such event in (g) and (h).

All valid data points generated and recorded by the continuous emission monitoring and data acquisition and handling system shall be used in the calculation of the pollutant concentration and/or emission rate over the appropriate averaging period.

- (4) The permittee shall monitor and record the monthly average stack oxygen content, fuel gas burned in the thermal oxidizer rate (in scf), and tail gas treater vent gas rate (in scf), and determine the monthly total gas flow. In addition, the permittee shall calculate and record the monthly average SO₂ concentration in the SRU stack from the data recorded by the continuous emission monitor. From these data, the permittee shall calculate and record the monthly total SO₂ emissions for that month and the 12-month, rolling summation of the monthly emissions in accordance with the procedures specified in f).
 - (5) The permittee shall maintain records of the following:
 - a. monthly SO₂ emissions from this emissions unit;
 - b. the combined SO₂ emissions from SRU #1 (P009), SRU #2 and #3 (P037) per rolling, 12-month period.
 - (6) See 40 CFR Part 60, Subpart J (40 CFR 60.100 – 60.109).
 - (7) See 40 CFR Part 63, Subpart CC (40 CFR 60.640 – 63.657).
 - (8) See 40 CFR Part 63, Subpart UUU (40 CFR 63.1560 – 63.1579).
- e) Reporting Requirements

- (1) Upon start-up of the new crude heaters (B037 and B038) and vacuum heater (B039) the permittee shall submit quarterly deviation (excursion) reports that identify each month when the combined SO₂ emissions from SRU #1, and SRU #2, and SRU #3 (emissions units P009 and P037) exceeded 75 tons per rolling, 12-month period.

The quarterly deviation (excursion) reports shall be submitted in accordance with the reporting requirements of the Standard Terms and Conditions of this permit.

- (2) The permittee shall comply with the following quarterly reporting requirements for the emissions unit and its continuous SO₂ monitoring system:
 - a. Pursuant to the monitoring, record keeping, and reporting requirements for continuous monitoring systems contained in 40 CFR Parts 60.7 and 60.13(h) and the requirements established in this permit, the permittee shall submit reports within 30 days following the end of each calendar quarter to the appropriate Ohio EPA District Office or local air agency, documenting all instances of SO₂ emissions in excess of any applicable limit specified in this permit, 40 CFR Part 60, OAC Chapter 3745-18, and any other applicable rules or regulations. The report shall document the date, commencement and completion times, duration, and magnitude of each exceedance, as well as the reason (if known) and the



corrective actions taken (if any) for each exceedance. Excess emissions shall be reported in units of the applicable standard(s).

- b. These quarterly reports shall be submitted by January 31, April 30, July 31, and October 31 of each year and shall include the following:
- i. the facility name and address;
 - ii. the manufacturer and model number of the continuous SO₂ and other associated monitors;
 - iii. a description of any change in the equipment that comprises the continuous emission monitoring system (CEMS), including any change to the hardware, changes to the software that may affect CEMS readings, and/or changes in the location of the CEMS sample probe;
 - iv. the excess emissions report (EER)*, i.e., a summary of any exceedances during the calendar quarter, as specified above;
 - v. the total SO₂ emissions for the calendar quarter (tons);
 - vi. the total operating time (hours) of the emissions unit;
 - vii. the total operating time of the continuous SO₂ monitoring system while the emissions unit was in operation;
 - viii. results and dates of quarterly cylinder gas audits;
 - ix. unless previously submitted, results and dates of the relative accuracy test audit(s), including results in units of the applicable standard(s), (during appropriate quarter(s));
 - x. unless previously submitted, the results of any relative accuracy test audit showing the continuous SO₂ monitor out-of-control and the compliant results following any corrective actions;
 - xi. the date, time, and duration of any/each malfunction** of the continuous SO₂ monitoring system, emissions unit, and/or control equipment;
 - xii. the date, time, and duration of any downtime** of the continuous SO₂ monitoring system and/or control equipment while the emissions unit was in operation; and
 - xiii. the reason (if known) and the corrective actions taken (if any) for each event in (b)(xi) and (xii).

Each report shall address the operations conducted and data obtained during the previous calendar quarter.



* where no excess emissions have occurred or the continuous monitoring system(s) has/have not been inoperative, repaired, or adjusted during the calendar quarter, such information shall be documented in the EER quarterly report

** each downtime and malfunction event shall be reported regardless if there is an exceedance of any applicable limit

- (3) See 40 CFR Part 60, Subpart J (40 CFR 60.100 – 60.109).
- (4) See 40 CFR Part 63, Subpart CC (40 CFR 60.640 – 63.657).
- (5) See 40 CFR Part 63, Subpart UUU (40 CFR 63.1560 – 63.1579).
- (6) Unless other arrangements have been approved by the Director, all notifications and reports shall be submitted through the Ohio EPA's eBusiness Center: Air Services online web portal.

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:

The permittee shall not burn in the tail gas incinerator any refinery fuel gas that contains H₂S in excess of 230 mg/dscm (0.10 gr/dscf or 162 ppmvd) as a volume-weighted, rolling 3-hour average.

Applicable Compliance Method:

Ongoing compliance shall be demonstrated through the data collected as required in the Monitoring and Recordkeeping Section of Emissions Unit B032 of this permit, and through demonstration of compliance with the quality assurance/quality control plan, which shall meet the requirements of 40 CFR Part 60. If required, compliance shall also be demonstrated based upon the methods and procedures of 40 CFR 60.106(e)(1).

b. Emission Limitation:

250 ppm SO₂ by volume (dry basis) at zero percent excess air as a rolling, 12-hour average

Applicable Compliance Method:

Ongoing compliance shall be demonstrated through the data collected as required in the Monitoring and Recordkeeping Section of this permit, and through demonstration of compliance with the quality assurance/quality control plan, which shall meet the testing and recertification requirements of 40 CFR Part 60.



If required, the permittee shall demonstrate compliance using the methods and procedures of 40 CFR 60.106(f).

c. Emission Limitation:

Upon start-up of the new crude heaters (B037 and B038) and vacuum heater (B039) the combined sulfur dioxide (SO₂) emissions from SRU #1, and SRU #2 & SRU #3 (emissions units P009 and P037) shall not exceed 75 tons per rolling, 12-month period.

Applicable Compliance Method:

The monthly emissions of SO₂ from this emissions unit are calculated by multiplying the calculated total flue gas volume (scf/month) corrected to 0% O₂ by the SO₂ density at 60 F (0.1733 lb SO₂/ft³ SO₂) multiplied by a temperature correction factor of (560R /520R) to correct the SO₂ density to the standard temperature (100 F) of the SO₂ CEMs then multiplied by the monthly average concentration of SO₂ in the flue gas (ppmv) as measured by the CEMS, divided by 1E06, and divided by 2,000 pounds per ton.

Add the SO₂ emissions from the current month to the total SO₂ emissions for the previous 11 months to determine the tons of SO₂ emitted per rolling, 12-month period from this emissions unit. Add the tons of SO₂ emissions per rolling, 12-month period from Emissions Unit P009 to the tons of SO₂ emissions per rolling, 12-month period from Emissions Unit P037 to determine the combined emissions from P009 and P037.

Compliance with this emissions limitation shall be demonstrated by the monitoring and recordkeeping requirements specified in d).

- (2) See 40 CFR Part 60, Subpart J (40 CFR 60.100 – 60.109).
- (3) See 40 CFR Part 63, Subpart CC (40 CFR 60.640 – 63.657).
- (4) See 40 CFR Part 63, Subpart UUU (40 CFR 63.1560 – 63.1579).

g) Miscellaneous Requirements

- (1) None.



6. P011, Crude/Vac 1 Process Unit

Operations, Property and/or Equipment Description:

Distillation tower and vacuum distillation tower identified as Crude 1 and Vacuum 1 (also known as Crude Vac 1). Vapors extracted from Crude Vac 1 are ducted via the Crude 1 Overhead System to the refinery fuel gas system. All fugitive emissions from Crude Vac 1 are included with this emissions unit.

a) The following emissions unit terms and conditions 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 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) (Chapter 31 Modification, Best Available Technology (BAT) conditions)	10.09 tons per year volatile organic compound (VOC) emissions (from equipment leaks) See b)(2)h.
b.	OAC rule 3745-31-05(D) (PTI P0110958 issued 9/11/2012)	See b)(2)a.
c.	OAC rule 3745-18-54(W)(2)	The sulfur dioxide (SO ₂) emissions from this emissions unit shall not exceed 0.40 pound per ton of actual process weight input. See b)(2)a.
d.	OAC rule 3745-21-09(M)(1)	See b)(2)b.
e.	OAC rule 3745-21-09(T)	See b)(2)c.
f.	40 CFR Part 60, Subpart A (40 CFR 60.1-19)	See b)(2)d.
g.	40 CFR Part 60, Subpart GGGa (40 CFR 60.590a – 60.593a) [In accordance with 40 CFR 60.590a, this emissions unit is a process unit located at a petroleum refinery which has equipment (defined by 40 CFR 60.591a) that	See b)(2)e. [60.592(a)]



	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
	was added after 11/7/2006 and subject to the emissions limitations/control measures specified in this section]	
h.	40 CFR Part 63, Subpart A (40 CFR 60.1-16)	Table 6 to subpart CC specifies the provisions of subpart A of this part that apply and those that do not apply to owners and operators of sources subject to subpart CC. [63.642(c)]
i.	40 CFR Part 63, Subpart CC (40 CFR 60.640 - 63.657) [In accordance with 40 CFR 63.640, this emissions unit is a petroleum refining process unit located at an existing major source of HAP emissions subject to the emissions limitations/control measures specified in this section.]	See b)(2)f. and b)(2)g. [63.640(d)(5)] [63.640(p)(2)]

(2) Additional Terms and Conditions

- a. The permittee shall vent the Vac 1 Vent Gas to the refinery fuel gas system. The SO₂ emission limitation specified by OAC rule 3745-18-54(W)(2) is less stringent than the emission limitation specified under 40 CFR 60.104. All refinery heaters and boilers burning refinery fuel gas are subject to the standards for sulfur oxides under 40 CFR 60.104 (NSPS Subpart J) or 40 CFR 60.102a(g)(1) (NSPS Subpart Ja) which restricts the permittee from burning in any fuel gas combustion device any fuel gas that contains hydrogen sulfide (H₂S) in excess of 230 mg/dscm (0.10 gr/dscf), or the U.S. EPA recognized equivalent concentration of 162 parts per million by volume of H₂S on a dry basis. Continuous compliance with this emission limitation is monitored by the permittee's hydrogen sulfide continuous monitoring systems (CEMS). Monitoring, recordkeeping, reporting and testing requirements for the fuel gas CEMS are contained under specific emissions unit terms and conditions for fuel burning equipment.
- b. The permittee shall control the emissions from the vacuumdistillation tower (Vac 1) by piping the vapors to the refinery fuel gas system (OAC rule 3745-21-09(M)(1)).
- c. The permittee shall comply with the applicable requirements for equipment leaks specified in OAC rule 3745-21-09(T).



Consistent with the U.S. EPA streamlining policy, the permittee may elect to demonstrate compliance with OAC rule 3745-21-09(T) by demonstrating compliance with the equipment leak standards in 40 CFR Part 60, Subpart GGGa for both equipment in organic HAP service and equipment not in organic HAP service. The MACT level monitoring of 40 CFR Part 60, Subpart GGGa is generally more stringent than the LDAR requirements of OAC rule 3745-21-09(T).

- d. 40 CFR Part 60 subpart A provides the applicability provisions, definitions, and other general provisions that are pertinent to emissions units affected by 40 CFR Part 60.
 - e. The permittee shall comply with the applicable requirements for equipment leaks specified in 40 CFR Part 60, Subpart GGGa.
 - f. Pursuant to 40 CFR 63.640(p)(2), equipment leaks that are subject to the provisions of 40 CFR 63 Subpart CC and 40 CFR Part 60, subpart GGGa, are required to comply only with the provisions specified in 40 CFR part 60, subpart GGGa.
 - g. Vapors from this process are ducted to the refinery's fuel gas system and therefore are not part of the Subpart CC affected source per 63.640(d)(5). No testing, monitoring, recordkeeping, or reporting is required under this subpart for refinery fuel gas system or emission points routed to refinery fuel gas systems.
 - h. The annual VOC emission limitation was established for PTI purposes to reflect the potential to emit for this emissions unit. Therefore, it is not necessary to develop monitoring, record keeping and/or reporting requirements to ensure compliance with this limitation
- c) Operational Restrictions
- (1) See 40 CFR Part 60, Subpart GGGa (40 CFR 60.590a – 60.593a).
 - (2) See 40 CFR Part 63, Subpart CC (40 CFR 60.640 – 63.657).
- d) Monitoring and/or Recordkeeping Requirements
- (1) See 40 CFR Part 60, Subpart GGGa (40 CFR 60.590a – 60.593a).
 - (2) See 40 CFR Part 63, Subpart CC (40 CFR 60.640 – 63.657).
- e) Reporting Requirements
- (1) See 40 CFR Part 60, Subpart GGGa (40 CFR 60.590a – 60.593a).
 - (2) See 40 CFR Part 63, Subpart CC (40 CFR 60.640 – 63.657).



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:

The SO₂ emissions from this emissions unit shall not exceed 0.40 pound per ton of actual process weight input.

Applicable Compliance Method:

Compliance with this emissions limitation is demonstrated by venting the process vapors produced at this emissions unit to the refinery fuel gas system where the hydrogen sulfide concentration of fuel gas is reduced to less than 230 mg/dscm (0.10 gr/dscf), or the U.S. EPA-recognized equivalent concentration of 162 parts per million by volume of H₂S on a dry basis.

b. Emission Limitation:

10.09 tons per year VOC emissions from equipment leaks

Applicable Compliance Method:

As long as compliance with the applicable leak monitoring and repair requirements of NSPS Subpart GGGa are maintained compliance with the with this emission limit above shall be demonstrated.

The emission limit of 10.09 tons per year VOC emissions from equipment leaks was established to reflect the potential to emit for this emissions unit using the procedures specified in *Protocol for Equipment Leak Emission Estimates* (EPA document 453/R-95-017, subsequent updates to *Protocol for Equipment Leak Emission Estimates*, or alternative emission factor approved by Ohio EPA) to calculate the VOC emissions from equipment leaks. A summary of the calculations was submitted to Ohio EPA in Application for P0112686. Per permit condition 3(b)(2)(f), no ongoing compliance demonstration is required.

(2) See 40 CFR Part 60, Subpart GGGa (40 CFR 60.590a – 60.593a).

(3) See 40 CFR Part 63, Subpart CC (40 CFR 60.640 – 63.657).

g) Miscellaneous Requirements

(1) None.



7. P025, Refinery WWT System

Operations, Property and/or Equipment Description:

Process oily water system and storm water system (including drains, manholes, junction boxes, lift stations, laterals, and trunklines) within the refinery and refinery wastewater treatment system (excluding Belt Filter Presses P013 & P014) with the following treatment and control systems: carbon canisters and three benzene strippers with non-condensables vented to the Hydrocarbon Flare System

a) The following emissions unit terms and conditions 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 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) (Chapter 31 Modification) Best Available Technology (BAT) requirements	See b)(2)a.
b.	OAC rule 3745-21-09(M)(2)	See b)(2)b.
c.	OAC rule 3745-21-09(T)	See b)(2)c.
d.	OAC rule 3745-21-09(UU)(4)	See b)(2)d.
e.	40 CFR Part 60, Subpart A (40 CFR 60.1-19)	40 CFR Part 60, Subpart A provides applicability provisions, definitions, and other general provisions that are pertinent to emissions units subject to 40 CFR 60. The definitions listed under 40 CFR 60.691 apply for all standards and requirements under 40 CFR Part 60, Subpart QQQ.
f.	40 CFR Part 60, Subpart GGGa (40 CFR 60.590a-593a)	The permittee shall comply with the applicable requirements of 40 CFR Part 60, Subpart GGGa for the piping components of the three benzene strippers in the process unit within P025 for the purpose of Subpart GGGa.
g.	40 CFR Part 60, Subpart QQQ (40 CFR 60.640-699)	Group 2 wastewater streams that are managed in a piece of equipment subject



	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
	<p>[In accordance with 40 CFR 60.690(a)(4), this emissions unit is an aggregate facility subject to the emission limitations/control measures specified in this section]</p>	<p>to 40 CFR Part 60, Subpart QQQ, shall comply with the requirements of 40 CFR 60.692-1 to 60.692-5 and 40 CFR 60.693-1 and 60.693-2, except during periods of startup, shutdown or malfunction.</p> <p>A group 1 wastewater stream managed in a piece of equipment that is also subject to the provisions of 40 CFR Part 60, Subpart QQQ, is required to comply only with 40 CFR Part 63, Subpart CC.</p> <p>See b)(2)e.</p>
h.	<p>40 CFR Part 61, Subpart A (40 CFR 61.01-61.19)</p>	<p>40 CFR Part 61, Subpart A provides applicability provisions, definitions, and other general provisions that are pertinent to emissions units affected by 40 CFR Part 61. The definitions listed in 40 CFR 61.341 apply for all the standards and requirements under 40 CFR Part 61, Subpart FF.</p>
i.	<p>40 CFR Part 61, Subpart FF (40 CFR 61.340-61.359)</p> <p>[In accordance with 40 CFR 61.340, this emission unit is a petroleum refinery subject to the emissions limitations/control measures specified in this section.]</p>	<p>Comply with all the applicable standards and requirements of 40 CFR Part 61, Subpart FF.</p> <p>See b)(2)f.</p>
j.	<p>40 CFR Part 63, Subpart A (40 CFR 63.1-63.16)</p>	<p>Table 6 of 40 CFR Part 63, Subpart CC specifies the provisions of 40 CFR Part 63, Subpart A, that apply and those do not apply to permittees of sources subject to Subpart CC.</p> <p>[63.642(c)]</p>
k.	<p>40 CFR Part 63, Subpart CC (40 CFR 63.640-63.657)</p> <p>[In accordance with 40 CFR 63.641, this emission unit is a group 1 wastewater stream</p>	<p>Comply with the applicable wastewater provisions specified in 40 CFR 63.647</p> <p>Comply with the applicable requirements of 40 CFR 63.640(p)(2).</p> <p>See b)(2)g.</p>



(2) Additional Terms and Conditions

- a. Compliance with the requirements of this rule includes compliance with the requirements of OAC rule 3745-21-09(M)(2), OAC rule 3745-21-09(T), OAC rule 3745-21-09(UU)(4), 40 CFR Part 60, Subpart QQQ, 40 CFR Part 61, Subpart FF, and 40 CFR Part 63, Subpart CC.
- b. Except for any wastewater separator which is used solely for once-through, noncontact cooling water or for intermittent tank farm drainage resulting from accumulated precipitation, the permittee shall control the emissions of VOC from any wastewater separator by equipping all forebay sections and other separator sections with covers and seals which minimize the amount of oily water exposed to the ambient air. In addition, all covers and forebay and separator sections shall be equipped with lids and seals which are kept in a closed position at all times, except when in actual use. [OAC 3745-21-09(M)(2)]
- c. The permittee shall comply with the applicable requirements for equipment leaks specified in OAC rule 3745-21-09(T).

Consistent with the U.S. EPA streamlining policy, the permittee may elect to demonstrate compliance with OAC rule 3745-21-09(T) by demonstrating compliance with the equipment leak standards in 40 CFR Part 60, Subpart GGGa for both equipment in organic HAP service and equipment not in organic HAP service. The NSPS and MACT level monitoring of 40 CFR Part 60, Subpart GGGa is generally more stringent than the LDAR requirements of OAC rule 3745-21-09(T).

- d. All process wastewater from the crude desalter shall be discharged to a steam stripper for the removal of condensable hydrocarbons, and all VOC emissions from the steam stripper shall be vented to a flare that complies with the requirements of OAC 3745-21-09(DD)(10)(d). [OAC 3745-21-09(UU)(4)]
- e. Individual Drain Systems Subject to 40 CFR Part 60, Subpart QQQ



TABLE 1
Individual Drain Systems
Subject to 40 CFR Part 60, Subpart QQQ

Emissions Unit ID	Facility Description	Individual Drain System Description	Controls
P025	Lift station for T157, T159, and T161	Junction Box	Tight seal cover
P025	Lift station for T153-T156	Junction Box	Tight seal cover
P034	Stormwater Diversion Chamber	Junction Box	Tight seal cover and carbon canister
P028	"A" Train Diesel Hydrotreater	Drains in entire unit	Water seals
P029	"B" Train Gas Oil Hydrotreater	Drains in entire unit	Water seals
P036	Coker 3	Drains in entire unit	Water seals
P037	SRU #2 and #3	Drains in entire unit	Water seals
T153	Storage of petroleum liquids	Tank drain system	Drain/dike valve
T154	Storage of petroleum liquids	Tank drain system	Drain/dike valve
T155	Storage of petroleum liquids	Tank drain system	Drain/dike valve
T156	Storage of petroleum liquids	Tank drain system	Drain/dike valve
T157	Storage of petroleum liquids	Tank drain system	Drain/dike valve
T159	Storage of petroleum liquids	Tank drain system	Drain/dike valve
T161	Storage of petroleum liquids	Tank drain system	Drain/dike valve
T163	Storage of petroleum liquids	Tank drain system	Drain/dike valve
T164	Storage of petroleum liquids	Tank drain system	Drain/dike valve
T166	Storage of petroleum liquids	Tank drain system	Drain/dike valve
T167	Storage of petroleum liquids	Tank drain system	Drain/dike valve
P025	84-inch trunk line sewer (existing)	Drains refinery process units, tank fields, parking lots, building roofs	Water seals



TABLE 1 Individual Drain Systems Subject to 40 CFR Part 60, Subpart QQQ			
Emissions Unit ID	Facility Description	Individual Drain System Description	Controls
P025	72-inch sewer (installed pursuant PTI P0103974 issued 3/23/2009)	Drains the east tank field, a portion of the west tank field, and parking lots and building roofs located in the south end of the refinery. Discharges to the existing 84-inch trunk line sewer.	Water seals
P025	(2) 54-inch sewers (installed pursuant PTI P0103974 issued 3/23/2009)	One drains a portion of the west tank field and parking lots and building roofs located in the south end of the refinery. The other drains refinery process units. Both 54-inch sewers discharge to the new 72-inch trunk line sewer.	Water seals
P025	Separator (existing)	Treatment of oily water and storm water received from the refinery through the existing 84-inch trunk line sewer.	Floating roof covers

f. Table II, Benzene Waste NESHAPs (40 CFR Part 61, Subpart FF) Affected Equipment

The Toledo refinery complies with the 6 Mg/yr option in Subpart FF [61.342(e)]. This compliance option allows the refinery some discretion on which portions of the waste water system are controlled as long as the uncontrolled total benzene quantity (as determined by procedures in 40 CFR 61.355(k)) is less than or equal to 6.0 Mg/yr. To meet this requirement, the refinery at the time of issuance of this permit, shall control the following equipment in benzene waste service to the standards of 40 CFR Part 61, Subpart FF.



Effective Date: To be entered upon final issuance

Affected Unit Description	Applicable Standard (Controls)
Sump #1	[61.346 - Standards: Individual Drain Systems] (Carbon Canisters)
Sump #2	[61.346 - Standards: Individual Drain Systems] (Carbon Canisters)
Sump #3	[61.346 - Standards: Individual Drain Systems] (Carbon Canisters)
T166 (PR-500014)	[40 CFR 61.351 - Alternative Standards for Tanks] (EFR in compliance with NSPS Kb standards)
T167 (PR-500015)	[40 CFR 61.351 - Alternative Standards for Tanks] (EFR in compliance with NSPS Kb standards)
3 Parallel Vacuum Benzene Strippers (1 new one being installed pursuant this permit)	[40 CFR 61.348 - Standards: Treatment Processes] (Closed vent system vented to the main hydrocarbon flare system (West& East flares). If West flare taken out of service, there is a backup tie into the SRU #1 Acid Gas Flare.)
Drain at T089 (PR-500151) to Sump #1	[61.346 - Standards: Individual Drain Systems] (Water Seal)
Drain at T010 (PR-500152) to Sump #1	[61.346 - Standards: Individual Drain Systems] (Water Seal)
Drain at T011 (PR-500153) to Sump #1	[61.346 - Standards: Individual Drain Systems] (Water Seal)
Drain at T016 (PR-500154) to Sump #1	[61.346 - Standards: Individual Drain Systems] (Water Seal)
Drain at T017 (PR-500155) to Sump #1	[61.346 - Standards: Individual Drain Systems] (Water Seal)
Drain at T018 (PR-500156) to Sump #1	[61.346 - Standards: Individual Drain Systems] (Water Seal)
Drain at T019 (PR-500157) to Sump #1	[61.346 - Standards: Individual Drain Systems] (Water Seal)
Drain at T044 (PR-500158) to Sump #1	[61.346 - Standards: Individual Drain Systems] (Water Seal)
Drain at T041 (PR-500130) to Sump #2	[61.346 - Standards: Individual Drain Systems] (Water Seal)
Drain at T040 (PR-500131) to Sump #2	[61.346 - Standards: Individual Drain Systems] (Water Seal)
Drain at T120 (PR-500132) to Sump #2	[61.346 - Standards: Individual Drain Systems] (Water Seal)



Drain at T084 (PR-500134) to Sump #2	[61.346 - Standards: Individual Drain Systems] (Water Seal)
Drain at T085 (PR-500135) to Sump #2	[61.346 - Standards: Individual Drain Systems] (Water Seal)
Drain at T035 (PR-500143) to Sump #2	[61.346 - Standards: Individual Drain Systems] (Water Seal)
Drain at T166 (PR-500014) to Sump #6	[61.346 - Standards: Individual Drain Systems] (Water Seal)
Drain at T167 (PR-500015) to Sump #6	[61.346 - Standards: Individual Drain Systems] (Water Seal)
Drain at Desalters	Piped to the benzene wastewater stripper (Waste Treatment Unit) which has its overhead non-condensable exhaust routed to the West Flare (closed vent system)

Note: The Oil Water Sewer API Separators do not need to meet the requirements of 40 CFR 61.347 because the refinery complies with the 40 CFR 61.342(e) (6 Mg/yr option), not 40 CFR 61.342(c).

g. Pursuant to 40 CFR 63.640(p)(2), equipment leaks subject to the requirements of 40 CFR 63 Subpart CC and 40 CFR 60 Subpart GGGa, need only comply with the requirements of 40 CFR 60 Subpart GGGa.

c) Operational Restrictions

- (1) See 40 CFR Part 63, Subpart CC (40 CFR 63.640-657).
- (2) See 40 CFR Part 61, Subpart FF (40 CFR 61.340-359).
- (3) See 40 CFR Part 60, Subpart QQQ (40 CFR 60.690-699).
- (4) See 40 CFR Part 60, Subpart GGGa (40 CFR 60.590a-593a).

d) Monitoring and/or Recordkeeping Requirements

- (1) See 40 CFR Part 63, Subpart CC (40 CFR 63.640-657).
- (2) See 40 CFR Part 61, Subpart FF (40 CFR 61.340-359).
- (3) Carbon Canisters Monitoring for 40 CFR 61 Subpart FF compliance. The permittee shall comply with either section d)(3)a. or d)(3)b. below at all locations where a carbon canister(s) is utilized as the control device under the Benzene Waste NESHAP (40 CFR 61.354(d)).



- a. Utilizing primary and secondary carbon canisters in series:
 - i. The permittee shall monitor for breakthrough between the primary and secondary carbon canisters at times when there is actual flow to the carbon canister, in accordance with the frequency specified in 40 CFR 61.354(d) The permittee shall replace the secondary carbon canisters with fresh carbon canisters immediately when VOC breakthrough of 50 ppm is detected. The original secondary carbon canister or a new carbon canister will be used as the new primary carbon canister. For this section, "immediately" means within twenty-four (24) hours.
 - ii. The permittee shall maintain a supply of fresh carbon canisters at each facility at all times.
 - iii. Until installation of the second carbon canister all monitoring shall be conducted as specified in
- b. Utilizing single carbon canisters:
 - i. The permittee shall monitor for breakthrough from the carbon canisters at times when there is actual flow to the carbon canister, in accordance with the frequency specified in 40 CFR 61.354(d)
 - ii. For the single canister option, canisters will be replaced immediately when breakthrough is determined as follows:
 - (a) For canisters less than or equal to 55 gallon drum size, breakthrough is any reading of VOC above background. The permittee currently monitors these weekly to determine breakthrough;
 - (b) For canisters larger than 55 gallons, breakthrough is defined as either:
 - (i) 50 ppm VOC; or
 - (ii) 1 ppm benzene. To use 1 ppm benzene, canisters must be monitored for VOC. When a reading of 10 ppm VOC is detected, monitoring for benzene must be conducted on the following schedule:

Daily if the historical replacement interval is two weeks or less, or Monday, Wednesday and Friday, if the historical replacement interval is greater than two weeks.
 - iii. For purposes of section d)(3).b, the term "immediately" shall be defined to mean: within eight (8) hours for canisters with historical replacement intervals of two weeks or less; or within twenty-four (24) hours for canisters with a historical replacement interval of more than two weeks.



- iv. The permittee shall maintain a supply of fresh carbon canisters at each facility at all times.
 - v. Single carbon canisters can be replaced with a dual system at any time provided US EPA is notified and single canister monitoring is continued until the second canister is installed.
- (4) Records for sections d)(3)a. and d)(3)b. shall be maintained in accordance with 40 CFR 61.356(j)(10) for carbon adsorbers not regenerated directly on site
- (5) Monitoring requirement for OAC rule 3745-21-09.
- a. Except for any wastewater separator which is used solely for once-through, noncontact cooling water or for intermittent tank farm drainage resulting from accumulated precipitation, the permittee shall check all separator covers and forebay and separator sections by visual inspections quarterly to ensure that they are equipped with lids and seals that are kept in a closed position at all times except when in actual use.

[OAC rule 3745-21-09(M)(2)]
 - b. The permittee shall collect and record the following information each day: the operating times for the Benzene wastewater stripper system including piping from the decanter, Tanks 14 & 15 to the Benzene strippers and the piping system to the West flare, and the crude desalters. At times when the hydrocarbon flare is out of service for maintenance or repair, the permittee will vent to the SRU 1 Acid Gas Flare.

[OAC rule 3745-21-09(UU)(4)]
- (6) See 40 CFR Part 60, Subpart QQQ (40 CFR 60.690-699).
- (7) See 40 CFR Part 60 Subpart GGGa (40 CFR 60.590a-593a)
- e) Reporting Requirements
- (1) See 40 CFR Part 63, Subpart CC (40 CFR 63.640-657).
 - (2) See 40 CFR Part 61, Subpart FF (40 CFR 61.340-359).
 - (3) See 40 CFR Part 60, Subpart QQQ (40 CFR 60.690-699).
 - (4) See 40 CFR Part 60, Subpart GGGa (40 CFR 60.590a-593a).
 - (5) Deviation Reporting Requirements for OAC rule 3745-21-09

The permittee shall submit quarterly deviation (excursion) reports that identify the following: Except for any wastewater separator which is used solely for once-through, noncontact cooling water or for intermittent tank farm drainage resulting from accumulated precipitation, the permittee shall submit deviation (excursion reports) that identify all occurrences where covers, forebay and other separator sections were not



equipped with lids, seals, or kept in a closed position except when in actual use. The quarterly reports shall be submitted, electronically through Ohio EPA Air services, 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). If no deviations occurred during the quarter the permittee shall submit a statement that no deviations occurred during the calendar quarter.

The quarterly deviation (excursion) reports shall be submitted in accordance with the reporting requirements of the Standard Terms and Conditions of this permit.

[OAC rule 3745-21-09(M)(2)]

- (6) Unless other arrangements have been approved by the Director, all notifications and reports shall be submitted through the Ohio EPA's eBusiness Center: Air Services online web portal.

- f) Testing Requirements
 - (1) See 40 CFR Part 63, Subpart CC(40 CFR 63.640-657).
 - (2) See 40 CFR Part 61, Subpart FF(40 CFR 61.340-359).
 - (3) See 40 CFR Part 60, Subpart QQQ (40 CFR 60.690-699)
 - (4) See 40 CFR Part 60, Subpart GGGa.

- g) Miscellaneous Requirements
 - (1) None.



8. P028, "A" Train Diesel Hydrotreater

Operations, Property and/or Equipment Description:

"A" Train Diesel Hydrotreater. All fugitive emissions from ADHT are included with this emissions unit

a) The following emissions unit terms and conditions 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 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) (Chapter 31 Modification) Best Available Technology (BAT) requirements	22.03 tons per year volatile organic compound (VOC) emissions (from equipment leaks). See b)(2)e.
b.	OAC rule 3745-21-09(T)	See b)(2)a.
c.	40 CFR Part 60, Subpart A (40 CFR 60.1-19)	See b)(2)b.
d.	40 CFR Part 60, Subpart GGa (40 CFR 60.590a – 60.593a) [In accordance with 40 CFR 60.590a, this emissions unit is a process unit located at a petroleum refinery which has equipment (defined by 40 CFR 60.591a) that was added after 11/7/2006 and subject to the emissions limitations/control measures specified in this section]	See b)(2)c. [60.592a]
e.	40 CFR Part 63, Subpart A (40 CFR 60.1-16)	Table 6 of 40 CFR Part 63, Subpart CC specifies the provisions of 40 CFR Part 63, Subpart A, that apply and those do not apply to permittees of sources subject to Subpart CC. [63.642(c)]



Effective Date: To be entered upon final issuance

	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
f.	40 CFR Part 63, Subpart CC (40 CFR 60.640 - 63.657) [In accordance with 40 CFR 63.640, this emissions unit is a petroleum refining process unit located at an existing major source of HAP emissions subject to the emissions limitations/control measures specified in this section.]	See b)(2)d. [63.640(p)(2)].

(2) Additional Terms and Conditions

- a. The permittee shall comply with applicable requirements for equipment leaks specified in OAC rule 3745-21-09(T).

Consistent with the U.S. EPA streamlining policy, the permittee may elect to demonstrate compliance with OAC rule 3745-21-09(T) by demonstrating compliance with the equipment leak standards in 40 CFR Part 60, Subpart GGGa for both equipment in organic HAP service and equipment not in organic HAP service. The NSPS and MACT level monitoring of 40 CFR Part 60, Subpart GGGa is generally more stringent than the LDAR requirements of OAC rule 3745-21-09(T).

- b. 40 CFR Part 60 subpart A provides applicability provisions, definitions, and other general provisions that are pertinent to emissions units affected by 40 CFR Part 60.
- c. The permittee shall comply with applicable requirements for equipment leaks specified in 40 CFR Part 60, Subpart GGGa.
- d. Pursuant to 40 CFR 63.640(p)(2), equipment leaks subject to 40 CFR 63 Subpart CC and 40 CFR 60 Subpart GGGa need only comply with the applicable leak detection and repair requirements specified in 40 CFR Part 60, Subpart GGGa.
- e. The annual VOC emission limitation was established for PTI purposes to reflect the potential to emit for this emissions unit. Therefore, it is not necessary to develop monitoring, record keeping and/or reporting requirements to ensure compliance with this limitation

c) Operational Restrictions

- (1) See 40 CFR Part 60, Subpart GGGa (40 CFR 60.590a – 60.593a).
- (2) See 40 CFR Part 63, Subpart CC (40 CFR 60.640 – 63.657).



d) Monitoring and/or Recordkeeping Requirements

- (1) See 40 CFR Part 60, Subpart GGGa (40 CFR 60.590a – 60.593a).
- (2) See 40 CFR Part 63, Subpart CC (40 CFR 60.640 – 63.657).

e) Reporting Requirements

- (1) See 40 CFR Part 60, Subpart GGGa (40 CFR 60.590a – 60.593a).
- (2) See 40 CFR Part 63, Subpart CC (40 CFR 60.640 – 63.657).

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:

22.03 tons per year VOC emissions, from equipment leaks

Applicable Compliance Method:

As long as compliance with the applicable leak monitoring and repair requirements of NSPS Subpart GGGa is maintained, compliance with the emission limitation above shall be demonstrated.

The emission limit of 22.03 tons per year VOC emissions from equipment leaks was established to reflect the potential to emit for this emissions unit using the procedures specified in *Protocol for Equipment Leak Emission Estimates* (EPA document 453/R-95-017, subsequent updates to *Protocol for Equipment Leak Emission Estimates*, or alternative emission factor approved by Ohio EPA) to calculate the VOC emissions from equipment leaks. A summary of the calculations was submitted to Ohio EPA in Application for P0112686.

Per permit condition 3(b)(2)(f), no ongoing compliance demonstration is required.

- (2) See 40 CFR Part 60, Subpart GGGa (40 CFR 60.590a – 60.593a).
- (3) See 40 CFR Part 63, Subpart CC (40 CFR 60.640 – 63.657).

g) Miscellaneous Requirements

- (1) None.



9. P036, Coker 3

Operations, Property and/or Equipment Description:

Coker 3/ delayed petroleum coker with Bubble tower, Blowdown Scrubbing System, Coker Gas Treatment Plant and two Coke drums.

a) The following emissions unit terms and conditions 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 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) (Chapter 31 Modification)	The combined volatile organic compound (VOC) emissions from coke drum venting, coke cutting and coke drum draining shall not exceed 9.35 tons per rolling, 12-month period. 13.99 tons per year volatile organic compound (VOC) emissions (from equipment leaks) See c)(1), and c)(2)
b.	OAC rule 3745-31-10 through 20	Carbon dioxide equivalent (CO ₂ e) emissions from coke drum venting and coke cuttings shall not exceed 804.62 tons per rolling, 12-month period.
c.	OAC rule 3745-21-09(T)	See b)(2)a.
d.	40 CFR Part 60, Subpart A (40 CFR 60.1 – 60.19)	See b)(2)b.
e.	40 CFR Part 60, Subpart Ja (40 CFR 60.100a – 60.109a)	The permittee shall depressurize each coke drum to 5 psig or less prior to discharging the coke drum steam exhaust to the atmosphere. This limitation is less stringent than that limitation established by ORC 3704.03(T).



Effective Date: To be entered upon final issuance

	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
		[60.103(i)]
f.	40 CFR Part 60, Subpart GGGa (40 CFR 60.590a – 60.593a)	See b)(2)c.
g.	40 CFR Part 60, Subpart NNN (40 CFR 60.660 – 60.668) [In accordance with 40 CFR 60.660, this emissions unit includes an absorber/stripper and debutanizer distillation process that produces chemicals listed in 40 CFR 60.667 (propane and butane)]	See b)(2)f. [60.662]
h.	40 CFR Part 63, Subpart A (40 CFR 63.1 – 63.16)	Table 6 to Subpart CC of 40 CFR Part 63 — General Provisions Applicability to Subpart CC shows which parts of the General Provisions of 40 CFR 60.1 -16 apply. [63.642(c)]
i.	40 CFR Part 63, Subpart CC (40 CFR 63.640 -63.657) [In accordance with 40 CFR 63.640, this emissions unit is a petroleum refining process unit located at an existing major source of HAP emissions subject to the emissions limitations/control measures specified in this section.]	See b)(2)d. and b)(2)e. (40 CFR 63.640(p)(2))

(2) Additional Terms and Conditions

- a. The permittee shall comply with all the applicable requirements of OAC rule 3745-21-09(T). Consistent with the U.S. EPA streamlining policy, the permittee may elect to demonstrate compliance with OAC rule 3745-21-09(T) by demonstrating compliance with the equipment leak standards in 40 CFR Part 60, Subpart GGGa for both equipment in organic HAP service and equipment not in organic HAP service. The NSPS level monitoring of 40 CFR Part 60, Subpart GGGa is generally more stringent than the LDAR requirements of OAC rule 3745-21-09(T).
- b. 40 CFR Part 60, Subpart A provides applicability provisions, definitions, and other general provisions that are pertinent to emissions units affected by 40 CFR Part 60.



- c. The permittee shall comply with the applicable requirements of 40 CFR Part 60, subpart GGGa.
 - d. Pursuant to 40 CFR 63.640(p)(2), equipment leaks that are subject to the provisions of both 40 CFR Part 60, Subpart GGGa and 40 CFR Part 63, Subpart CC are required to comply only with the provisions specified in 40 CFR Part 60, Subpart GGGa.
 - e. This emissions unit does not contain a miscellaneous process vent as defined under 40 CFR 63.641 since the gaseous streams from the Coker Blowdown vent are routed to the refinery fuel gas system. Pursuant to 63.640(d)(5) Emission points routed to a fuel gas system, as defined in 40 CFR 63.641 no testing, monitoring, recordkeeping, or reporting is required for refinery fuel gas systems or emission points routed to refinery fuel gas systems.
 - f. The permittee shall comply with the requirements in 40 CFR Part 60, Subpart NNN as they apply to the vent from the Coker Gas Plant unless US EPA approves alternative requirements. The permittee has indicated that a request to use an alternative monitoring plan will be submitted to U.S. EPA for the Coker Gas Plant.
- c) Operational Restrictions
- (1) Until the startup of the P036 modifications associated with of the TFO project occur, the permittee shall vent the coker blowdown emission to the refinery flare gas recovery system.
 - (2) After startup of the P036 modifications associated with of the TFO project occur, the permittee shall do the following:
 - a. The permittee shall depressurize each coke drum to 2.0 psig or less prior to discharging the coke drum exhaust to the atmosphere.
 - b. Uncondensed coke drum blowdown vent vapors from this emissions unit shall be vented to the wet gas compressor/refinery fuel gas system during normal operations so long as the drum pressure exceeds 2.0 psig.
 - (3) See 40 CFR Part 60, Subpart GGGa (40 CFR 60.590a – 60.593a).
 - (4) See 40 CFR Part 60, Subpart Ja (40 CFR 60.100a – 60.109a).
 - (5) See 40 CFR Part 60, Subpart NNN (40 CFR 60.660 – 60.668).
 - (6) See 40 CFR Part 63, Subpart CC (40 CFR 63.640 – 60.657)
- d) Monitoring and/or Recordkeeping Requirements
- (1) Emissions occurring during any malfunction, bypassing control equipment, startup or shutdown period must be quantified and recorded.



- (2) Until the startup of the P036 modifications associated with the TFO project occur, the permittee shall maintain records of all periods when the blowdown emissions from this emissions unit were not vented to the flare gas recovery system.
- (3) After the startup of the P036 modifications associated with the TFO project, the permittee shall maintain records of all periods when the blowdown emissions from this emissions unit were not vented to the refinery fuel gas system when the coker drum pressure exceeded 2.0 psig. and any periods when the coke drum was initially vented to the atmosphere when the drum pressure exceeded 2.0 psig.
- (4) The permittee shall record the pressure inside the coke drum prior to discharging the coke drum steam to atmosphere.
- (5) See 40 CFR Part 60, Subpart GGGa (40 CFR 60.590a – 60.593a).
- (6) See 40 CFR Part 60, Subpart Ja (40 CFR 60.100a – 60.109a).
- (7) See 40 CFR Part 60, Subpart NNN (40 CFR 60.660 – 60.668).
See 40 CFR Part 63, Subpart CC(40 CFR 63.640 -63.657).

e) Reporting Requirements

- (1) The permittee shall submit quarterly deviation (excursion) reports of the following:
 - a. Each month when the combined VOC emissions from coke drum venting, coke cutting and coke drum draining exceeded 9.3 tons per rolling, 12-month period.
 - b. Until the start-up of the P036 modifications associated with the TFO project occur, all periods when the blowdown emissions from this emissions unit were not vented to the flare gas recovery system.
 - c. After the start-up of the P036 modifications associated with the TFO project, all periods when blowdown vent vapors from this emissions unit were vented to the atmosphere without first depressuring the coker drum to less than 2.0 psi; and the actual coke drum pressure, for each such event.

If no deviations occurred during a calendar quarter, the permittee shall submit a quarterly report, which states that no deviations occurred during that quarter.

The quarterly deviation (excursion) reports shall be submitted in accordance with the reporting requirements of the Standard Terms and Conditions of this permit.

- (2) See 40 CFR Part 60, Subpart GGGa (40 CFR 60.590a – 60.593a).
- (3) See 40 CFR Part 60, Subpart Ja(40 CFR 60.100a – 60.109a).
- (4) See 40 CFR Part 60, Subpart NNN (40 CFR 60.660 – 60.668).
- (5) See 40 CFR Part 63, Subpart CC (40 CFR 63.640 -63.657).



- (6) Unless other arrangements have been approved by the Director, all notifications and reports shall be submitted through the Ohio EPA's eBusiness Center: Air Services online web portal.
- 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:
- The combined VOC emissions from coke drum venting, coke cutting, and coke drum draining shall not exceed 9.3 tons per rolling, 12-month period.
- Applicable Compliance Method:
- The allowable VOC emission limitation above was developed by multiplying the permittee's combined VOC emission factor (for venting, cutting, and draining based on stack testing submitted in Permit to Install Application no. A0045758) of 29.8568 lb/cycle by the maximum coking cycles per year (626), and then dividing by 2,000 pounds per ton.
- If required, the permittee shall verify the coke cutting emission factor using Methods 1 through 4 and 18, 25 or 25A, as appropriate, and Method 204 of 40 CFR Part 60, Appendix A. Alternative U.S. EPA-approved test methods may be used with prior approval from the Ohio EPA.
- b. Emission Limitation:
- 13.99 tons per year VOC emissions from equipment leaks.
- Applicable Compliance Method:
- As long as compliance with the applicable leak monitoring and repair requirements of NSPS Subpart GGG is maintained, compliance with the emission limitation above shall be demonstrated.
- The emission limit of 13.99 tons per year VOC emissions from equipment leaks was established to reflect the potential to emit for this emissions unit using the procedures specified in *Protocol for Equipment Leak Emission Estimates* (EPA document 453/R-95-017, subsequent updates to *Protocol for Equipment Leak Emission Estimates*, or alternative emission factor approved by Ohio EPA) to calculate. A summary of the calculations was submitted to Ohio EPA in Application for P0112686. Per condition b)(2)(h), not ongoing compliance demonstration is necessary.
- c. Emission Limitation:
- The combined CO₂e emissions from coke drum venting, and coke cutting shall not exceed 804.62 tons per rolling, 12-month period.



Applicable Compliance Method:

The CO₂e emission limitation above was developed by multiplying the permittee's combined CO₂e emission factor [for venting, cutting, and draining based on stack testing submitted in Permit to Install Application A0045758] of 2570.69 lbs CO₂e/cycle by the maximum expected coking cycles per year (626), and then dividing by 2,000 pounds per ton.

- (2) See 40 CFR Part 60, Subpart GGGa (40 CFR 60.590a – 60.593a).
 - (3) See 40 CFR Part 60, Subpart Ja (40 CFR 60.100a – 60.109a).
 - (4) See 40 CFR Part 60, Subpart NNN (40 CFR 60.660 – 60.668).
 - (5) See 40 CFR Part 63, Subpart CC (40 CFR 63.640 -63.657).
- g) Miscellaneous Requirements
- (1) None.



10. P037, Sulfur Recovery Unit #2 and #3

Operations, Property and/or Equipment Description:

Sulfur Recovery Unit #2 and #3 with common tail gas treater, sulfur pits, and thermal oxidizer

a) The following emissions unit terms and conditions 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 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.	OAC rule 3745-31-05(A)(3) (PTI 04-1046 as modified on August 5, 1998)	Carbon monoxide (CO) emissions shall not exceed 2.7 lbs/hr and 8.07 tons per rolling, 12-month period. Nitrogen oxides (NO _x) emissions shall not exceed 4.4 lbs/hr and 12.76 tons per rolling, 12-month period. Particulate matter emissions less than or equal to 10 microns in diameter (PM10) shall not exceed 0.6 lb/hr and 1.74 tons per rolling, 12-month period; Sulfur dioxide (SO ₂) emissions from this emissions unit shall not exceed 172 tons per rolling, 12-month period. Fugitive volatile organic compound (VOC) emissions from equipment leaks shall not exceed 6.2 tons per year (from fugitive equipment leaks) See b)(2)a. and b)(2)n.
b.	OAC rule 3745-31-05(D)	The combined sulfur dioxide (SO ₂) emissions from SRU #1, SRU #2, and SRU #3 (emissions units P009 and P037)



	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
		shall not exceed 75 tons per rolling, 12-month period. See b)(2)b. and b)(2)c.
c.	OAC rule 3745-07-07(A)(1)	See b)(2)d.
d.	OAC rule 3745-17-11(B)(1)	See b)(2)e.
e.	OAC rule 3745-18-06(E)(2)	See b)(2)n.
f.	OAC rule 3745-21-09(T)	See b)(3)f.
g.	40 CFR Part 60, Subpart A (40 CFR 60.1-19)	See b)(2)g., b)(2)l., and b)(2)m.
h.	40 CFR Part 60, Subpart J (40 CFR 60.100-109) [In accordance with 40 CFR 60.104(a)(1) this emissions unit is a Claus sulfur recovery plant with a design capacity for sulfur feed of greater than 20 long tons per day that includes a fuel gas combustion device (incinerator) where construction commenced after 10/4/1976 and prior to 5/14/2007 and is subject to the emissions limitations/ control measures specified in this section]	See b)(2)h. and i. [60.104(a)]
i.	40 CFR Part 60, Subpart GGG (40 CFR 60.590 - 593) [In accordance with 40 CFR 63.640(p) equipment leaks that are also subject to the provisions of 40 CFR 60 and 61 are required to comply with the requirements of 40 CFR Part 63, Subpart CC.]	See b)(2)j. [60.592]
j.	40 CFR Part 63, Subpart A (40 CFR 63.1-16)	Table 6 to Subpart CC — General Provisions Applicability to Subpart CC, specifies which parts of the General Provisions in 40 CFR 63.1-16 apply. Table 44 – Applicability of NESHAP General Provisions to Subpart UUU shows which part of the General Provisions in 40 CFR 63.1-16 apply. [40 CFR 63.642(c) and 63.1577]
k.	40 CFR Part 63, Subpart CC	see b)(2)k.



	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
	(40 CFR 640 - 679) [In accordance with 40 CFR 63.648(a) this emissions unit is a petroleum refinery process unit located at an existing major of hazardous air pollutants subject to the emissions limitations/control measure specified in this section.]	[63.648]
i.	40 CFR Part 63, Subpart UUU (40 CFR 63.1560-1579) [In accordance with 40 CFR 63.1562, this emissions unit is a sulfur recovery plant with a Claus sulfur recovery unit and tail gas treatment unit, located at an existing major source of HAP emissions, that is subject to the NSPS for sulfur oxides in 40 CFR 60.104(a)(2) and subject to the emission limitations/control measures specified in this section.]	The SO ₂ emission limitation specified by this rule is equivalent to that specified by 40 CFR Part 60, Subpart J under 40 CFR 60.104(a)(2)(i). [Table 29 to 40 CFR Part 63, Subpart UUU]

(2) Additional Terms and Conditions

- a. The requirements of this rule also include compliance with OAC rule 3745-21-09(T), 40 CFR Part 60, Subpart GGG, and 40 CFR 60 Subpart J.
- b. This permit to install incorporates the emission limits and schedules set out in paragraphs 14-18 and 21 of the Consent Decree (United States of America, et al., v. BP Exploration & Oil Co., et al., Civil Action No. 2:96CV095 RL).

The permittee shall re-route all NSPS sulfur recovery plant sulfur pit emissions such that they are treated, monitored, and included as part of the sulfur recovery plant's emissions subject to the NSPS Subpart J limit for SO₂, 40 CFR 60.104(a)(2), by no later than the first turnaround of the Claus train that occurs after July 18, 2001.

- c. Upon initial startup of the new crude heaters (B037 and B038) and vacuum heater (B039), the combined sulfur dioxide (SO₂) emissions from SRU #1 (P009), and SRU #2 & SRU #3 (P037) shall not exceed 75 tons per rolling, 12-month period

For purposes of clarity, the first month used in a 12-month rolling average compliance period is the calendar month in which the emission limitation



becomes effective, and the first complete 12-month rolling average compliance period is 12 calendar months later (e.g., for a limit effective on January 15, the first month in the period is January and the first complete 12-month period ends on the 31st of the following December).

- d. This emissions unit is exempt from the visible PE limitations specified in OAC rule 3745-17-07(A) pursuant to OAC rule 3745-17-07(A)(3)(h) because the emissions unit is not subject to a mass emission limitation in OAC rule 3745-17-11.
- e. The uncontrolled mass rate of particulate emissions (PE)* from this emissions unit is less than 10 pounds/hour. Therefore, pursuant to OAC rule 3745-17-11(A)(2)(a)(ii), Figure II of OAC rule 3745-17-11 does not apply. In addition, Table I of OAC rule 3745-17-11 does not apply because the process weight rate is equal to zero. "Process weight" is defined in OAC rule 3745-17-01(B)(17).

* The burning of gaseous fuels is the only source of PE from this emissions unit
- f. The permittee shall comply with the applicable leak detection and repair requirements specified in OAC rule 3745-21-09(T).
- g. 40 CFR Part 60, Subpart A provides applicability provisions, definitions, and other general provisions that are pertinent to emissions units affected by 40 CFR Part 60.
- h. The permittee shall not burn in the tail gas incinerator or any refinery fuel gas that contains hydrogen sulfide (H₂S) in excess of 230 mg/dscm (0.10 gr/dscf)(the equivalent concentration is 162 parts per million by volume of H₂S dry basis) as a volume-weighted, rolling 3-hour average concentration greater than 0.10 grain per dry standard cubic foot, except during periods of startup, shutdown or malfunction of the refinery fuel gas amine systems provided that the permittee shall to the extent practicable, maintain and operate any affected facility including associated air pollution control equipment in a manner consistent with good air pollution control practices for minimizing emissions. The monitoring, record keeping, and reporting requirements for these requirements are maintained under B032 of this permit.
- i. The permittee shall not discharge or cause the discharge of any gases into the atmosphere from the Claus sulfur recovery plant containing in excess of 250 ppm SO₂ by volume (dry basis) at zero percent excess as a rolling, 12-hour average.
- j. Pursuant to 40 CFR 63.640(p)(1) equipment leaks that are also subject to the provisions of 40 CFR part 60 Subpart GGG, are required to comply only with the provisions specified in 40 CFR 63 Subpart CC
- k. The permittee shall comply with the applicable leak detection and repair requirements specified in 40 CFR Part 63, subpart CC.
- l. The permittee shall maintain a written quality assurance/quality control plan for the continuous SO₂ monitoring system, designed to ensure continuous valid and



representative readings of SO₂ emissions in units of the applicable standard(s). The plan shall follow the requirements of 40 CFR Part 60, Appendix F. The quality assurance/quality control plan and a logbook dedicated to the continuous SO₂ monitoring system must be kept on site and available for inspection during regular office hours.

The plan shall include the requirement to conduct quarterly cylinder gas audits or relative accuracy audits as required in 40 CFR Part 60; and to conduct relative accuracy test audits in units of the standard(s), in accordance with and at the frequencies required per 40 CFR Part 60.

The continuous emission monitoring system consists of all the equipment used to acquire data to provide a record of emissions and includes the sample extraction and transport hardware, sample conditioning hardware, analyzers, and data recording/processing hardware and software.

- m. The emission limitation specified by OAC rule 3745-18-06(E)(2) is less stringent than the limitation specified by 40 CFR Part 60, Subpart J.
- n. The annual VOC emission limitation was established for PTI purposes to reflect the potential to emit for this emissions unit. Therefore, it is not necessary to develop monitoring, record keeping and/or reporting requirements to ensure compliance with this limitation.

c) Operational Restrictions

- (1) A pilot flame shall be maintained at all times in the TRP Acid Gas flare's pilot light burner.
- (2) See 40 CFR Part 60, Subpart J (40 CFR 60.100-109).
- (3) See 40 CFR Part 63, Subpart CC (40 CFR 60.640-679).
- (4) See 40 CFR Part 63, Subpart UUU (40 CFR 63.1560-1579).

d) Monitoring and/or Recordkeeping Requirements

- (1) The permittee shall monitor and record the monthly average volumetric firing rate in the Thermal Oxidizer in units of standard cubic feet per month. From these data, the permittee shall calculate and maintain records of the monthly and rolling, 12-month total CO, NO_x and PM10 emission rates in units of tons in accordance with the procedure outlined in section f).
- (2) The permittee shall properly install, operate and maintain a device to continuously monitor the presence of the flare pilot flame when the emissions unit 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. For each day the emissions unit is in operation, the permittee shall record all periods during which there was no flare pilot flame or the monitoring equipment was not operating.



- (3) The permittee shall operate and maintain an instrument for continuously monitoring and recording the concentration (dry basis, zero percent excess air) of SO₂ emissions into the atmosphere. The monitor shall include an oxygen monitor for correcting the data for excess air.
 - a. The span values for this monitor are 500 ppm SO₂ and 25 percent O₂.
 - b. The performance evaluations for this SO₂ monitor under 40 CFR 60.13(c) shall use Performance Specification 2. Methods 6 or 6C and 3 or 3A shall be used for conducting the relative accuracy evaluations.
- (4) The permittee shall maintain on-site, the document(s) of certification received from the U.S. EPA or the Ohio EPA's Central Office documenting that the continuous SO₂ monitoring system has been certified to meet the requirements of 40 CFR Part 60, Appendix B, Performance Specifications 2 and 6. The letter(s)/document(s) of certification shall be made available to the Director (the appropriate Ohio EPA District Office or local air agency) upon request.
- (5) The permittee shall operate and maintain equipment to continuously monitor and record SO₂ emissions from this emissions unit in units of the applicable standard(s). The continuous monitoring and recording equipment shall comply with the requirements specified in 40 CFR Part 60.

The permittee shall maintain records of all data obtained by the continuous SO₂ monitoring system including, but not limited to:

- a. emissions of SO₂ in parts per million for each cycle time of the analyzer, with no resolution less than one data point per minute required;
- b. emissions of SO₂ in pounds per hour, ppm SO₂ by volume (dry basis) at zero percent excess as a rolling, 12-hour average, and tons SO₂ per rolling, 12-month period;
- c. results of quarterly cylinder gas audits;
- d. results of daily zero/span calibration checks and the magnitude of manual calibration adjustments;
- e. results of required relative accuracy test audit(s), including results in units of the applicable standard(s);
- f. hours of operation of the emissions unit, continuous SO₂ monitoring system;
- g. the date, time, and hours of operation of the emissions unit without the control equipment and/or the continuous SO₂ monitoring system;
- h. the date, time, and hours of operation of the emissions unit during any malfunction of the control equipment and/or the continuous SO₂ monitoring system; as well as,



- i. the reason (if known) and the corrective actions taken (if any) for each such event in (g) and (h).

All valid data points generated and recorded by the continuous emission monitoring and data acquisition and handling system shall be used in the calculation of the pollutant concentration and/or emission rate over the appropriate averaging period.

- (6) The permittee shall monitor and record the monthly average stack oxygen content, fuel gas burned in the thermal oxidizer rate, and tail gas treater vent gas rate, and determine the monthly total gas flow. In addition, the permittee shall calculate and record the monthly average SO₂ concentration in the SRU stack from the data recorded by the continuous emission monitor. From these data, the permittee shall calculate and record the monthly total SO₂ emissions for that month and the 12-month, rolling summation of the monthly emissions in accordance with the procedures specified in f).
- (7) Emissions occurring during any malfunction, bypassing, startup or shutdown period shall be quantified and recorded.
- (8) The permittee shall maintain records of the following:
 - a. monthly SO₂ emissions from this emissions unit;
 - b. the combined SO₂ emissions from SRU #1 (P009), SRU #2 and #3 (P037) per rolling, 12-month period.
- (9) See 40 CFR Part 60, Subpart J (40 CFR 60.100-109).
- (10) See 40 CFR Part 63, Subpart CC (40 CFR 60.640-679).
- (11) See 40 CFR Part 63, Subpart UUU (40 CFR 63.1560-1579).

e) Reporting Requirements

- (1) After the initial startup of the TFO project, the permittee shall submit quarterly deviation (excursion) reports that identify each month when the combined SO₂ emissions from SRU #1, and SRU #2 & SRU #3 (emissions units P009 and P037) exceeded 75 tons per rolling, 12-month period.

The quarterly deviation (excursion) reports shall be submitted in accordance with the reporting requirements of the Standard Terms and Conditions of this permit.

- (2) The permittee shall comply with the following quarterly reporting requirements for the emissions unit and its continuous SO₂ monitoring system:
 - a. Pursuant to the monitoring, record keeping, and reporting requirements for continuous monitoring systems contained in 40 CFR Parts 60.7 and 60.13(h) and the requirements established in this permit, the permittee shall submit reports within 30 days following the end of each calendar quarter to the appropriate Ohio EPA District Office or local air agency, documenting all instances of SO₂ emissions in excess of any applicable limit specified in this permit, 40 CFR Part 60, OAC Chapter 3745-18, and any other applicable rules or regulations. The



report shall document the date, commencement and completion times, duration, and magnitude of each exceedance, as well as the reason (if known) and the corrective actions taken (if any) for each exceedance. Excess emissions shall be reported in units of the applicable standard(s).

- b. These quarterly reports shall be submitted by January 31, April 30, July 31, and October 31 of each year and shall include the following:
- i. the facility name and address;
 - ii. the manufacturer and model number of the continuous SO₂ and other associated monitors;
 - iii. a description of any change in the equipment that comprises the continuous emission monitoring system (CEMS), including any change to the hardware, changes to the software that may affect CEMS readings, and/or changes in the location of the CEMS sample probe;
 - iv. the excess emissions report (EER)*, i.e., a summary of any exceedances during the calendar quarter, as specified above;
 - v. the total SO₂ emissions for the calendar quarter (tons);
 - vi. the total operating time (hours) of the emissions unit;
 - vii. the total operating time of the continuous SO₂ monitoring system while the emissions unit was in operation;
 - viii. results and dates of quarterly cylinder gas audits;
 - ix. unless previously submitted, results and dates of the relative accuracy test audit(s), including results in units of the applicable standard(s), (during appropriate quarter(s));
 - x. unless previously submitted, the results of any relative accuracy test audit showing the continuous SO₂ monitor out-of-control and the compliant results following any corrective actions;
 - xi. the date, time, and duration of any/each malfunction** of the continuous SO₂ monitoring system, and emissions unit;
 - xii. the date, time, and duration of any downtime** of the continuous SO₂ monitoring system and/or control equipment while the emissions unit was in operation; and
 - xiii. the reason (if known) and the corrective actions taken (if any) for each event in (b)(xi) and (xii).

Each report shall address the operations conducted and data obtained during the previous calendar quarter.



* where no excess emissions have occurred or the continuous monitoring system(s) has/have not been inoperative, repaired, or adjusted during the calendar quarter, such information shall be documented in the EER quarterly report

** each downtime and malfunction event shall be reported regardless if there is an exceedance of any applicable limit

[40 CFR 60.7]

- (3) The permittee shall submit quarterly deviation (excursion) reports that identify each period when emissions exceeded any of the following emissions limitations:
- a. 8.07 tons CO per rolling, 12-month period;
 - b. 12.76 tons NO_x per rolling, 12-month period; and
 - c. 1.74 tons PM₁₀ per rolling, 12-month period.

The quarterly deviation (excursion) reports shall be submitted in accordance with the reporting requirements of the Standard Terms and Conditions of this permit.

- (4) See 40 CFR Part 60, Subpart J (40 CFR 60.100-109).
- (5) See 40 CFR Part 63, Subpart CC (40 CFR 60.640-679).
- (6) See 40 CFR Part 63, Subpart UUU (40 CFR 63.1560-1579).
- (7) Unless other arrangements have been approved by the Director, all notifications and reports shall be submitted through the Ohio EPA's eBusiness Center: Air Services online web portal.

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:

CO emissions shall not exceed 2.7 pounds per hour.

Applicable Compliance Method:

Compliance may be demonstrated by multiplying the maximum heat input to the thermal oxidizer (29 mmBtu/hr) by the CO emission factor from AP-42 Table 1.4-1 dated 7/98 (84 lb/mm scf) divided by the average heating value for natural gas specified in AP-42 Table 1.4-1 dated 7/98 (1,020 Btu/scf).

If required, the permittee shall demonstrate compliance with the hourly emission limitation using Methods 1 thru 4 and 10 of 40 CFR Part 60, Appendix A.



Alternative U.S. EPA approved test methods may be used with prior approval from the Ohio EPA.

b. Emission Limitation:

CO emissions shall not exceed 8.07 tons per rolling, 12-month period.

Applicable Compliance Method:

Compliance may be demonstrated by multiplying the actual firing rate of the thermal oxidizer per rolling, 12-month period (mmscf) by the CO emission factor from AP-42 Table 1.4-1 dated 7/98 (84 lb/mmscf), and dividing by 2,000 pounds per ton.

c. Emission Limitation:

NO_x emissions shall not exceed 4.4 lbs/hr

Applicable Compliance Method:

Compliance may be demonstrated by multiplying the maximum heat input to the thermal oxidizer (29 mmBtu/hr) by the manufacturer's guaranteed low-NO_x burner emission factor of 0.10 lb/mmBtu.

If required, Methods 1 through 4 and Method 7E of 40 CFR Part 60, Appendix A shall be used to demonstrate compliance. Alternative U.S. EPA approved test methods may be used with prior approval from the Ohio EPA.

d. Emission Limitation:

NO_x emissions shall not exceed 12.76 tons per rolling, 12-month period

Applicable Compliance Method:

Compliance may be demonstrated by multiplying the maximum firing rate to the thermal oxidizer (29 mmBtu/hr) by the NO_x emission limitation (0.10 lb/mmBtu), multiplying by the maximum annual operating hours (8,760 hours), and divided by 2,000 pounds per ton.

e. Emission Limitation:

PM-10 emissions shall not exceed 0.6 lb/hr

Applicable Compliance Method:

Compliance may be demonstrated by multiplying the maximum heat input to the thermal oxidizer (29 mmBtu/hr) by the PM-10 emission factor from AP-42 Table 1.4-2 dated 7/98 (7.6 lb/mmscf), and dividing by the average heating value for natural gas specified in AP-42 Table 1.4-1 dated 7/98 (1,020 Btu/scf).



If required, Methods 201 and 202 of 40 CFR Part 51, Appendix M shall be used to demonstrate compliance. Alternative U.S. EPA approved test methods may be used with prior approval from the Ohio EPA.

f. Emission Limitation:

PM₁₀ emissions shall not exceed 1.74 tons per rolling, 12-month period

Applicable Compliance Method:

Compliance may be demonstrated by multiplying the maximum heat input to the thermal oxidizer (29 mmBtu/hr) by the PM-10 emission factor from AP-42 Table 1.4-2 dated 7/98 (7.6 lb/mm³scf), divided by the average heating value for natural gas specified in AP-42 Table 1.4-1 dated 7/98 (1,020 Btu/scf), multiplying by the maximum annual operating hours (8,760 hrs/yr), and dividing by 2,000 pounds per ton.

g. Emission Limitation:

250 ppm by volume (dry basis) of sulfur dioxide (SO₂) at zero percent excess air

Applicable Compliance Method The monitoring and recordkeeping requirements of d) shall be used to demonstrate compliance. If required, the procedures outlined under 40 CFR 60.106(f) shall be used to demonstrate compliance.

h. Emission Limitation:

6.2 tons per year VOC emissions (from fugitive equipment leaks)

Applicable Compliance Method:

Compliance with this emissions limit is demonstrated by compliance with the applicable leak monitoring and repair requirements of NSPS Subpart GGG.

The emission limit of 6.2 tons per year VOC emissions from equipment leaks was established to reflect the potential to emit for this emissions unit using the procedures specified in Protocol for Equipment Leak Emission Estimates (EPA document 453/R-95-017, subsequent updates to Protocol for Equipment Leak Emission Estimates, or alternative emission factor approved by Ohio EPA) to calculate the VOC emissions from equipment leaks. Per condition b)2)(o), no ongoing compliance demonstration is required.

i. Emission Limitation:

SO₂ emissions from this emissions unit shall not exceed 172 tons per rolling, 12-month period.

Applicable Compliance Method:

Compliance with this emissions limitation shall be demonstrated by compliance with the emissions limitation specified in j).



j. Emission Limitation:

Following the initial startup of the new crude heaters (B037 and B038) and vacuum heater (B039), the combined SO₂ emissions from SRU #1, SRU #2, and SRU #3 (emissions units P009 and P037) shall not exceed 75 tons per rolling, 12-month period.

Applicable Compliance Method:

The monthly emissions of SO₂ from this emissions unit are calculated by multiplying the calculated total flue gas volume (scf/month) corrected to 0% O₂ by the SO₂ density at 60 F (0.1733 lb SO₂/ft³ SO₂) multiplied by a temperature correction factor of (560R/ 520R) to correct the SO₂ density to the standard temperature of the SO₂ CEMS (100 F) then multiplied by the monthly average concentration of SO₂ in the flue gas (ppmv) as measured by the CEMS, divided by 1E06, and divided by 2,000 pounds per ton. Add the SO₂ emissions from the current month to the total SO₂ emissions for the previous 11 months to determine the tons of SO₂ emitted per rolling, 12-month period from this emissions unit. Add the tons of SO₂ emissions per rolling, 12-month period from Emissions Unit P009 to the tons of SO₂ emissions per rolling, 12-month period from Emissions Unit P037 to determine the combined emissions from P009 and P037.

Compliance with this emissions limitation shall be demonstrated by the monitoring and recordkeeping requirements specified in d).

- (2) Ongoing compliance with the SO₂ emission limitations contained in this permit, 40 CFR Part 60 and any other applicable standard(s) shall be demonstrated through the data collected as required in the Monitoring and Record keeping Section of this permit; and through demonstration of compliance with the quality assurance/quality control plan, which shall meet the testing and recertification requirements of 40 CFR Part 60.
- (3) See 40 CFR Part 60, Subpart J (40 CFR 60.100-109).
- (4) See 40 CFR Part 63, Subpart CC (40 CFR 60.640-679).
- (5) See 40 CFR Part 63, Subpart UUU (40 CFR 63.1560 – 1579).

g) Miscellaneous Requirements

- (1) None.



11. P038, TRP Amine Treater

Operations, Property and/or Equipment Description:

TRP Amine treating unit

a) The following emissions unit terms and conditions 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 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)	5.0 tons per year volatile organic compound (VOC) emissions (from equipment leaks) See b)(2)f. and b)(2)g.
b.	OAC rule 3745-21-09(T)	See b)(2)a.
c.	40 CFR Part 60, Subpart A (40 CFR 60.1-19)	See b)(2)b.
d.	40 CFR Part 60, Subpart GGGa (40 CFR 60.590a – 60.593a) [In accordance with 40 CFR 60.590a, this emissions unit is a process unit located at a petroleum refinery which has equipment (defined by 40 CFR 60.591a) that was added after 11/7/2006 and subject to the emissions limitations/control measures specified in this section]	The permittee shall comply with applicable requirements for equipment leaks specified in 40 CFR Part 60, Subpart GGGa. [60.592(a)]
e.	40 CFR Part 63, Subpart A (40 CFR 60.1-16)	Table 6 to subpart CC specifies the provisions of subpart A of this part that apply and those that do not apply to owners and operators of sources subject to subpart CC. [63.642(c)]
f.	40 CFR Part 63, Subpart CC (40 CFR 60.640 - 63.657)	See b)(2)d. and b)(2)e.



	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
	[In accordance with 40 CFR 63.640, this emissions unit is a petroleum refining process unit located at an existing major source of HAP emissions subject to the emissions limitations/control measures specified in this section.]	[63.640(d)(5)] [63.640(p)(2)]

(2) Additional Terms and Conditions

- a. The permittee shall comply with applicable requirements for equipment leaks specified in OAC rule 3745-21-09(T).

Consistent with the U.S. EPA streamlining policy, the permittee may elect to demonstrate compliance with OAC rule 3745-21-09(T) by demonstrating compliance with the equipment leak standards in 40 CFR Part 60, Subpart GGGa for both equipment in organic HAP service and equipment not in organic HAP service. The MACT level monitoring of 40 CFR Part 60, Subpart GGGa is generally more stringent than the LDAR requirements of OAC rule 3745-21-09(T).
- b. 40 CFR Part 60 subpart A provides applicability provisions, definitions, and other general provisions that are pertinent to emissions units affected by 40 CFR Part 60.
- c. The permittee shall comply with applicable requirements for equipment leaks specified in 40 CFR Part 60, Subpart GGGa.
- d. Pursuant to 40 CFR 63.640(p)(2), equipment leaks that are subject to the provisions of both 40 CFR Part 60, Subpart GGGa and 40 CFR Part 63, Subpart CC are required to comply only with the provisions specified in 40 CFR Part 60, Subpart GGGa.
- e. Vapors from this process are ducted to the refinery's fuel gas system and therefore are not part of the Subpart CC affected source per 63.640(d)(5). No testing, monitoring, recordkeeping, or reporting is required under this subpart for refinery fuel gas system or emission points routed to refinery fuel gas systems.
- f. Compliance with the requirements of this rule includes compliance with the requirements of OAC rule 3745-21-09(T), and 40 CFR Part 60, Subpart GGGa.
- g. The annual emission limitation was established for PTI purposes to reflect the potential to emit for this emissions unit. Therefore, it is not necessary to develop monitoring, record keeping and/or reporting requirements to ensure compliance with this limitation.



c) Operational Restrictions

- (1) See 40 CFR Part 60, Subpart GGGa (40 CFR 60.590a – 60.593a).
- (2) See 40 CFR Part 63, Subpart CC (40 CFR 60.640 – 63.657).

d) Monitoring and/or Recordkeeping Requirements

- (1) See 40 CFR Part 60, Subpart GGGa (40 CFR 60.590a – 60.593a).
- (2) See 40 CFR Part 63, Subpart CC (40 CFR 60.640 – 63.657).

e) Reporting Requirements

- (1) See 40 CFR Part 60, Subpart GGGa (40 CFR 60.590a – 60.593a).
- (2) See 40 CFR Part 63, Subpart CC (40 CFR 63.640 – 63.657).

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:

5.0 tons per year VOC emissions from equipment leaks

Applicable Compliance Method:

As long as compliance with the applicable leak monitoring and repair requirements of NSPS Subpart GGGa is maintained, compliance with the emission limitation above shall be demonstrated.

The emission limit of 5.0 tons per year VOC emissions from equipment leaks was established to reflect the potential to emit for this emissions unit using the procedures specified in Protocol for Equipment Leak Emission Estimates (EPA document 453/R-95-017, subsequent updates to Protocol for Equipment Leak Emission Estimates, or alternative emission factor approved by Ohio EPA) to calculate the VOC emissions from equipment leaks. A summary of the calculations was submitted to Ohio EPA in Application for P0112686. Per condition b)(2)f., no ongoing compliance demonstration is required.

- (2) See 40 CFR Part 60, Subpart GGGa (40 CFR 60.590a – 60.593a).
- (3) See 40 CFR Part 63, Subpart CC (40 CFR 60.640 – 63.657).



Draft Permit-to-Install
BP-Husky Refining LLC
Permit Number: P0111667
Facility ID: 0448020007

Effective Date: To be entered upon final issuance

g) Miscellaneous Requirements

- (1) None.



12. Emissions Unit Group -B017 and B022: Coker II Heater and Naptha Treater Heater

EU ID	Operations, Property and/or Equipment Description
B017	Coker 2 Heater 77 MMBtu per hr (HHV)
B022	Naphtha Treater Heater 77 MMBtu per hr (HHV)

- a) The following emissions unit terms and conditions 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 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.	OAC rule 3745-31-05(D)	See b)(2)a., b)(2)b., b)(2)h., and b)(2)i.
b.	OAC rule 3745-17-07(A)(1)	Visible particulate emissions (PE) shall not exceed 20% opacity, as a 6-minute average, unless otherwise specified by the rule.
c.	OAC rule 3745-17-10(B)(1)	PE shall not exceed 0.020 pound per million Btu of heat input. See c)(1).
d.	OAC rule 3745-18-54(W)(1)	See b)(2)e.
e.	40 CFR Part 60, Subpart A (40 CFR 60.1-19)	See b)(2)f., b)(2)g., and b)(2)i.
f.	40 CFR Part 60, Subpart J (40 CFR 60.100-109) [In accordance with 60.101 This emissions unit is a fuel gas combustion device located at a petroleum refinery and subject to the applicable emissions limitations/control requirements specified in this section.]	See b)(2)c. and b)(2)d. [60.104(a)(1)]
g.	40 CFR Part 63, Subpart A (40 CFR 63.1 – 16)	See b)(2)j.
h.	40 CFR Part 63, Subpart DDDDD (40 CFR 63.7480-7575)	See b)(2)j. c)(2) and c)(3). [63.7500(a) Table 3 requirements]



	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
	[In accordance with 63.7575, this emissions unit is a large gaseous fuel subcategory existing process heater located at a major source of HAP emissions and subject to the applicable emissions limitations/control requirements specified in this section.]	

(2) Additional Terms and Conditions

- a. Beginning the later of (a) fifteen (15) months after initial startup of B037, B038, and B039, or (b) the completion of construction and initial shakedown of the modifications to the Coker Gas Plant, the emissions of sulfur dioxide (SO₂) from each of these emissions units shall not exceed 3.64 tons per rolling, 12-month period.

Section B.10.c) and) of this permit outlines the monitoring, record keeping and reporting requirements and compliance demonstration required to maintain compliance with this emissions limit.

- b. Permit to Install 04-01290 issued 7/25/2002 incorporated the emission limits and schedules set out in paragraphs 14-18 and 21 of the Consent Decree (United States of America, et al., v. BP Exploration & Oil Co., et al., Civil Action No. 2:96CV095 RL, Date of Entry 8/29/2001) that require this emissions unit to be subject to the requirements of 40 CFR 60 Subpart J.
- c. The permittee shall burn no fuel gas in this emissions unit that has a volume-weighted 3-hour average hydrogen sulfide (H₂S) concentration in excess of 230 mg/dscm (0.10 gr/dscf), or the U.S. EPA recognized equivalent concentration of 162 parts per million by volume of H₂S on a dry basis. Pursuant to the fuel gas definition in 40 CFR 60.101(d), this standard is also applicable if the permittee combines and combusts natural gas or liquefied petroleum (LP) gas in any proportion with refinery fuel gas in this emissions unit.
- d. The permittee may choose to comply with the applicable provisions of 40 CFR Part 60, Subpart Ja to satisfy the requirements of this subpart for this emissions unit.
- e. The emission limitation specified by OAC rule 3745-18-54(W)(1) is less stringent than the emission limitation specified pursuant to 40 CFR 60.104(a)(1).
- f. 40 CFR Part 60, Subpart A provides applicability provisions, definitions, and other general provisions that are applicable to this emissions unit.
- g. The permittee shall maintain a written quality assurance/quality control plan for the continuous hydrogen sulfide monitoring system, designed to ensure



continuous valid and representative readings of hydrogen sulfide emissions in units of the applicable standard(s). The plan shall follow the requirements of 40 CFR Part 60, Appendix F. The quality assurance/quality control plan and a logbook dedicated to the monitoring system must be kept on site and available for inspection during regular office hours.

The plan shall include the requirement to conduct quarterly cylinder gas audits or relative accuracy audits as required in 40 CFR Part 60; and to conduct relative accuracy test audits in units of the standard(s), in accordance with and at the frequencies required per 40 CFR Part 60. [40 CFR 60.13 and 40 CFR Part 60, Appendix F]

- h. The continuous emission monitoring system consists of all the equipment used to acquire data to provide a record of emissions and includes the sample extraction and transport hardware, sample conditioning hardware, analyzers, and data recording/processing hardware and software.
- i. This emissions unit is subject to the initial notification requirements of 40 CFR 63 Subpart DDDDD (Boiler MACT) as outlined in 63.9(b) (i.e., it is not subject to the emission limits, performance testing, monitoring, SSMP, or site-specific monitoring plans of this Subpart DDDDD or any other requirements in 40 CFR 63 Subpart A).

c) Operational Restrictions

- (1) The permittee shall burn only refinery fuel gas, natural gas, or LP gas in this emissions unit.
- (2) [40 CFR 63.7500(a) – Table 3(2)]

An existing process heater in the Gas 1 subcategory with heat input capacity of 10 million Btu per hour or greater shall conduct a tune-up of the boiler or process heater as specified in § 63.7540(a)(10) or (a)(12). Pursuant to 63.7540(a)(13), If the unit is not operating on the required date for a tune-up, the tune-up must be conducted within 30 calendar days of startup.

d) Monitoring and/or Recordkeeping Requirements

- (1) For each day during which the permittee burns a fuel other than refinery fuel gas, natural gas, or LP gas, the permittee shall maintain a record of the type and quantity of fuel burned in this emissions unit.
- (2) The permittee shall record the following for this emissions unit:
 - a. the volume of fuel gas combusted per month; and
 - b. the volume of fuel gas combusted per rolling, 12-month period.
- (3) In order to demonstrate compliance with the emission limitation of 230 mg/dscm (0.10 grain/dscf or 162 parts per million by volume dry basis) of H₂S in the refinery fuel gas (and if applicable, combined fuel firing as noted in b)(2)b. above), the permittee shall



operate and maintain an instrument for continuously monitoring and recording the concentration (dry basis) of H₂S in the refinery fuel gas or combined fuel stream before being burned in this emissions unit. The monitoring shall be conducted in accordance with 40 CFR 60.105(a)(4), as follows

- a. The span value for this instrument shall be 425 mg/dscm of H₂S.
 - b. Fuel gas combustion devices having a common source of fuel gas may be monitored at only one location, if monitoring at this location accurately represents the concentration of H₂S in the fuel gas being burned.
 - c. The performance evaluations for this H₂S monitor under 40 CFR 60.13(c) shall use Performance Specification 7 of 40 CFR, Part 60, Appendix B. Method 11, 15, 15A, or 16 shall be used for conducting the relative accuracy evaluations.
- (4) Pursuant to 40 CFR 60.13 and 40 CFR Part 60, Appendix B, the permittee shall maintain on-site, the document of certification received from the U.S. EPA or the Ohio EPA's Central Office documenting that the continuous hydrogen sulfide monitoring system has been certified to meet the requirements of 40 CFR Part 60, Appendix B, Performance Specification 7. The letter/document of certification shall be made available to the Director (the appropriate Ohio EPA District Office or local air agency) upon request.
- (5) Pursuant to 40 CFR 60.13 and 40 CFR Part 60, Appendices B & F, the permittee shall operate and maintain equipment to continuously monitor and record hydrogen sulfide content of the fuel burned in this emissions unit in units of the applicable standard(s). The continuous monitoring and recording equipment shall comply with the requirements specified in 40 CFR Part 60.

The permittee shall maintain records of all data obtained by the continuous hydrogen sulfide monitoring system including, but not limited to:

- a. hydrogen sulfide content of the fuel burned in parts per million for each cycle time of the analyzer, with no resolution less than one data point per minute required;
- b. hydrogen sulfide content of the fuel burned, in units of the applicable standard(s) and in the appropriate averaging period;
- c. results of quarterly cylinder gas audits;
- d. results of daily zero/span calibration checks and the magnitude of manual calibration adjustments;
- e. results of required relative accuracy test audit(s), including results in units of the applicable standard(s);
- f. hours of operation of the emissions unit, continuous hydrogen sulfide monitoring system;
- g. the date, time, and hours of operation of the emissions unit without the continuous hydrogen sulfide monitoring system;



- h. the date, time, and hours of operation of the emissions unit during any malfunction of the continuous hydrogen sulfide monitoring system; as well as,
- i. the reason (if known) and the corrective actions taken (if any) for each such event in (g) and (h).

All valid data points generated and recorded by the continuous emission monitoring and data acquisition and handling system shall be used in the calculation of the pollutant concentration and/or emission rate over the appropriate averaging period.

- (6) The permittee shall maintain records of the monthly average H₂S of the fuel burned in this emissions unit as well as the rolling, 12-month SO₂ emissions.

Beginning the later of (a) fifteen (15) months after initial startup of B037, B038, and B039, or (b) the completion of construction and initial shakedown of the modifications to the Coker Gas Plant, this term and condition will become void, and the terms and conditions of Section B.10.a)(3) will become applicable.

e) Reporting Requirements

- (1) The permittee shall submit deviation (excursion) reports that identify each day when a fuel other than refinery fuel gas, natural gas, or LP gas was burned in this emissions unit. Each report shall be submitted within 30 days after the deviation occurs.
- (2) The permittee shall comply with the following quarterly reporting requirements for the emissions unit and its continuous hydrogen sulfide monitoring system:
 - a. Pursuant to the monitoring, record keeping, and reporting requirements for continuous monitoring systems contained in 40 CFR 60.7 and 60.13(h) and the requirements established in this permit, the permittee shall submit reports within 30 days following the end of each calendar quarter to the appropriate Ohio EPA District Office or local air agency, documenting all instances of hydrogen sulfide content in excess of any applicable limit specified in this permit, 40 CFR Part 60, and any other applicable rules or regulations. The report shall document the date, commencement and completion times, duration, and magnitude of each exceedance, as well as, the reason (if known) and the corrective actions taken (if any) for each exceedance. Excess emissions shall be reported in units of the applicable standard(s).
 - b. These quarterly reports shall be submitted by January 31, April 30, July 31, and October 31 of each year and shall include the following:
 - i. the facility name and address;
 - ii. the manufacturer and model number of the continuous hydrogen sulfide and other associated monitors;
 - iii. a description of any change in the equipment that comprises the continuous emission monitoring system (CEMS), including any change to



the hardware, changes to the software that may affect CEMS readings, and/or changes in the location of the CEMS sample probe;

- iv. the excess emissions report (EER)*, i.e., a summary of any exceedances during the calendar quarter, as specified above;
- v. the total operating time (hours) of the emissions unit;
- vi. the total operating time of the continuous hydrogen sulfide monitoring system while the emissions unit was in operation;
- vii. results and dates of quarterly cylinder gas audits;
- viii. unless previously submitted, results and dates of the relative accuracy test audit(s), including results in units of the applicable standard(s), (during appropriate quarter(s));
- ix. unless previously submitted, the results of any relative accuracy test audit showing the continuous hydrogen sulfide monitor out-of-control and the compliant results following any corrective actions;
- x. the date, time, and duration of any/each malfunction** of the continuous hydrogen sulfide monitoring system, emissions unit;
- xi. the date, time, and duration of any downtime** of the continuous hydrogen sulfide monitoring system while the emissions unit was in operation; and
- xii. the reason (if known) and the corrective actions taken (if any) for each event in (b)(xi) and (xii).

Each report shall address the operations conducted and data obtained during the previous calendar quarter.

* where no excess emissions have occurred or the continuous monitoring system(s) has/have not been inoperative, repaired, or adjusted during the calendar quarter, such information shall be documented in the EER quarterly report

** each downtime and malfunction event shall be reported regardless if there is an exceedance of any applicable limit

- (3) Unless other arrangements have been approved by the Director, all notifications and reports shall be submitted through the Ohio EPA's eBusiness Center: Air Services online web portal.

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:

The permittee shall burn no fuel gas in this emissions unit that has a volume weighted 3-hour average hydrogen sulfide (H₂S) concentration in excess of 230 mg/dscm (0.10 gr/dscf), or the U.S. EPA recognized equivalent concentration of 162 parts per million by volume of H₂S on a dry basis.

Applicable Compliance Method:

Ongoing compliance with the hydrogen sulfide emission limitation(s) contained in this permit, 40 CFR Part 60, and any other applicable standard(s) shall be demonstrated through the data collected as required in the Monitoring and Record keeping Section of this permit; and through demonstration of compliance with the quality assurance/quality control plan, which shall meet the requirements of 40 CFR Part 60.

b. Emission Limitation:

Visible particulate emissions shall not exceed 20% opacity, unless otherwise specified by the rule.

Applicable Compliance Method:

If required, the permittee shall demonstrate compliance using Method 9 of 40 CFR Part 60, Appendix A. Alternative U.S. EPA approved test methods may be used with prior approval from the Ohio EPA.

c. Emission Limitation:

PE shall not exceed 0.020 pound per million Btu of heat input.

Applicable Compliance Method:

Compliance with this limit is demonstrated through condition c)(1), which requires the permittee to burn only refinery fuel gas, natural gas, or LP gas in this emissions unit.

If required, the permittee shall demonstrate compliance using the methods and procedures specified in OAC rule 3745-17-03(B)(9). Alternative U.S. EPA approved test methods may be used with prior approval from the Ohio EPA.

g) Miscellaneous Requirements

(1) None.



13. Emissions Unit Group -Crude 1 A & B Furnaces: B037,B038,

EU ID	Operations, Property and/or Equipment Description
B037	225 mmBtu/hr (HHV) refinery process heater fired with any combination of refinery fuel gas, natural gas and/or LP gas (Crude 1 A Furnace)
B038	225 mmBtu/hr (HHV) refinery process heater fired with any combination of refinery fuel gas, natural gas and/or LP gas (Crude 1 B Furnace)

a) The following emissions unit terms and conditions 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 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) – Ohio Best Available Technology (BAT) requirements	Carbon monoxide (CO) emissions shall not exceed 0.06 lb/mmBtu heat input.
b.	OAC rule 3745-31-05(A)(3), as effective 11/30/01	Particulate matter emissions less than or equal to 10 microns in diameter (PM10) and particulate matter emissions less than or equal to 2.5 microns in diameter (PM2.5) shall not exceed 7.451E-03 lb/mmBtu heat input and 7.34 tons per rolling, 12-month period. Volatile organic compound (VOC) emissions shall not exceed 0.0054 lb/mmBtu heat input and 5.31 tons per rolling, 12-month period. See b)(2)b., b)(2)c., and b)(2)d, and c)(1)
c.	OAC rule 3745-31-10 through 20	Carbon dioxide (CO ₂) as a surrogate for GHG emissions shall not exceed 123,562 tons per rolling, 12-month period.
d.	OAC rule 3745-31-05(A)(3), as effective 12/01/06	See b)(2)e.
e.	OAC rule 3745-31-05(D)	Sulfur dioxide (SO ₂) emissions shall not



	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
	(Synthetic minor restriction to avoid major new source review)	exceed 10.59 tons per rolling, 12-month period. See b)(2)k and Section B
f.	OAC rule 3745-17-07(A)(1)	Visible particulate emissions (PE) shall not exceed 20% opacity, as a 6-minute average, unless otherwise specified by the rule.
g.	OAC rule 3745-17-10(B)(1)	PE shall not exceed 0.020 pound per million Btu of heat input. See c)(1).
h.	OAC rule 3745-18-54(W)(1)	See b)(2).
i.	40 CFR Part 60, Subpart A (40 CFR 60.1-19)	See b)(2)g. through b)(2)i., and b)(2)j.
j.	40 CFR Part 60, Subpart Ja (40 CFR 60.100a – 60.109a) [In accordance with 60.101a, this emissions unit is a fuel gas combustion device located at a petroleum refinery that was installed after May 14, 2007 and subject to the applicable emissions limitations/control requirements specified in this section.]	See b)(2)a.
k.	40 CFR Part 63, Subpart A (40 CFR 63.1-16)	Table 10 to Subpart DDDDD of Part 63 — Applicability of General Provisions to Subpart DDDDD shows which parts of the General Provisions in 40 CFR 63.1-16 are applicable to Subpart DDDDD.
l.	40 CFR Part 63, Subpart DDDDD (40 CFR 63.7480 – 7575) [In accordance with 63.7485, this emissions unit is a new process heater designed to burn gas 1 subcategory fuels that is located at a major source of HAP]	There are no applicable emission limitations specified by this rule for this emissions unit. The permittee shall comply with the applicable work practice standards of Table 3 to Subpart DDDDD. [63.7500(a), 63.7540(a)(12)] See c)(3), (4), (5), and (6)

(2) Additional Terms and Conditions

- a. The permittee shall comply with the emission limits in b)(2)a.i. and ii. below.
 - i. The permittee shall comply with either the emission limit in paragraph b)(2)a.i.(a) or the fuel gas concentration limit in paragraph b)(2)a.i.(b).



Pursuant to the fuel gas definition in 40 CFR 60.101a, this standard is also applicable if the permittee combines and combusts natural gas or liquefied petroleum (LP) gas in any proportion with refinery fuel gas in this emissions unit.

- (a) The permittee shall not discharge or cause the discharge of any gases into the atmosphere that contain SO₂ in excess of 20 ppmv (dry basis, corrected to 0-percent excess air) determined hourly on a 3-hour rolling average basis and SO₂ in excess of 8 ppmv (dry basis, corrected to 0-percent excess air), determined daily on a 365 successive calendar day rolling average basis; or
 - (b) The permittee shall not burn in any fuel gas combustion device any fuel gas that contains H₂S in excess of 162 ppmv determined hourly on a 3-hour rolling average basis and H₂S in excess of 60 ppmv determined daily on a 365 successive calendar day rolling average basis.
 - (c) The permittee has elected to comply with H₂S limits in permit condition b)(2)a.i.(b). Therefore, the remaining monitoring, recordkeeping, reporting and testing requirements in this permit are reflective of that compliance option. If the permittee decides to revise the compliance option at a later date as allowed by 40 CFR 60.102a(g)(1), this will be allowed upon notification to Ohio EPA. The permittee shall submit a permit modification request to Ohio EPA prior to the change.
- ii. The permittee shall not discharge to the atmosphere any emissions of NO_x in excess of the applicable limits in paragraphs b)(2)a.ii.(a) through (d).
- (a) The permittee shall comply with the limit in either paragraph b)(2)a.ii.(a)(i) or (ii). The permittee may comply with either limit at any time, provided that the appropriate parameters for each alternative are monitored as specified in 40 CFR 60.107a; if fuel gas composition is not monitored as specified in 40 CFR 60.107a(d), the permittee must comply with the concentration limits in paragraph b)(2)a.ii.(a)(i) as follows.
 - (i) 40 ppmv (dry basis, corrected to 0-percent excess air) determined daily on a 30-day rolling average basis; or
 - (ii) 0.040 pounds per million British thermal units (lb/MMBtu) higher heating value basis determined daily on a 30-day rolling average basis.
 - (iii) The permittee has elected to comply with NO_x limits in permit condition b)(2)a.ii.(a)(ii). Therefore, the remaining monitoring and recordkeeping requirements in this permit are reflective of that compliance option. If the permittee



decides to revise the compliance option at a later date as allowed by 40 CFR 60.102a(g)(2), this will be allowed upon notification to Ohio EPA. The permittee shall submit an administrative permit modification request to Ohio EPA prior to the change.

- b. The requirements of OAC 3745-31-05(A)(3) also include compliance with the requirements of OAC rule 3745-31-10 through 20, OAC rule 3745-17-07(A)(1), OAC rule 3745-17-10(B)(1), OAC rule 3745-18-54(W)(1), and the applicable provisions for SO₂ specified in 40 CFR Part 60, Subpart Ja.
- c. All PM₁₀ emissions are assumed to be less than or equal to 2.5 microns in diameter based on c)(1) which requires that the permittee only burn natural gas, LP gas, and refinery fuel gas in this emissions unit.
- d. 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 BAT emission limitations/control measures no longer apply for pollutants with potential emissions less than 10 tons/year.
- e. 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 listed under OAC rule 3745-31-05(A)(3) do not apply to the PM_{2.5}, PM₁₀, SO₂ or VOC emissions from this air contaminant source since the uncontrolled potential to emit for PM_{2.5}, PM₁₀, SO₂ and VOC is less than 10 tons per year taking into account the federally enforceable restriction on the maximum H₂S concentration in fuel gas specified under 40 CFR Part 60, Subpart Ja.

- f. The emission limitation specified by OAC rule 3745-18-54(W)(1) is less stringent than the emission limitation specified pursuant to 40 CFR 60.102a(g)(1).
- g. 40 CFR Part 60, Subpart A provides applicability provisions, definitions, and other general provisions that are applicable to this emissions unit.
- h. Each continuous hydrogen sulfide monitoring system shall be certified to meet the requirements of 40 CFR Part 60, Appendix B, Performance Specification 7. At least 45 days before commencing certification testing of the continuous hydrogen sulfide monitoring system(s), the permittee shall develop and maintain



a written quality assurance/quality control plan designed to ensure continuous valid and representative readings of hydrogen sulfide emissions from the continuous monitor(s), in units of the applicable standard(s). The plan shall follow the requirements of 40 CFR Part 60, Appendix F. The quality assurance/quality control plan and a logbook dedicated to the monitoring system must be kept on site and available for inspection during regular office hours.

The plan shall include the requirement to conduct quarterly cylinder gas audits or relative accuracy audits as required in 40 CFR Part 60; and to conduct relative accuracy test audits in units of the standard(s), in accordance with and at the frequencies required per 40 CFR Part 60.

- i. Each continuous NO_x monitoring system shall be certified to meet the requirements of 40 CFR Part 60, Appendix B, Performance Specification 2. At least 45 days before commencing certification testing of the continuous NO_x monitoring system(s), the permittee shall develop and maintain a written quality assurance/quality control plan designed to ensure continuous valid and representative readings of NO_x emissions from the continuous monitor(s), in units of the applicable standard(s). The plan shall follow the requirements of 40 CFR Part 60, Appendix F. The quality assurance/quality control plan and a logbook dedicated to the continuous NO_x monitoring system must be kept on site and available for inspection during regular office hours.

The plan shall include the requirement to conduct quarterly cylinder gas audits or relative accuracy audits as required in 40 CFR Part 60; and to conduct relative accuracy test audits in units of the standard(s), in accordance with and at the frequencies required per 40 CFR Part 60.

- j. The continuous emission monitoring systems consists of all the equipment used to acquire data to provide a record of emissions and includes the sample extraction and transport hardware, sample conditioning hardware, analyzers, and data recording/processing hardware and software.
- k. The emissions of CO₂ and sulfur dioxide from this emissions unit shall not exceed 123,562 tons per rolling, 12-month period and 10.59 tons per rolling, 12-month period, respectively. To ensure enforceability during the first 12 calendar months of operation or the first 12 calendar months following the issuance of this permit, the permittee shall not exceed the emission levels specified in the following table:



Effective Date: To be entered upon final issuance

<u>Month(s)</u>	<u>Maximum Allowable Cumulative Emissions of SO₂(Tons)</u>	<u>Maximum Allowable Cumulative Emissions of CO₂(Tons)</u>
1	2.12	24,712
1-2	3.18	37,069
1-3	3.92	45,718
1-4	4.66	54,367
1-5	5.40	63,017
1-6	6.14	71,666
1-7	6.88	80,315
1-8	7.62	88,965
1-9	8.37	97,614
1-10	9.11	106,263
1-11	9.85	114,913
1-12	10.59	123,562

After the first 12 calendar months of operation or the first 12 calendar months following the issuance of this permit, compliance with the annual emission limitation for CO₂ and SO₂ shall be based upon the rolling, 12-month summations of the monthly emissions for CO₂ and SO₂.

c) Operational Restrictions

- (1) The permittee shall burn only natural gas, LP gas, and refinery fuel gas in this emissions unit.
- (2) See 40 CFR Part 60, Subpart Ja (40 CFR 60.100a – 60.109a).
- (3) 40 CFR 63.7500(a)(1) – Table 3]

A new or existing boiler or process heater in the Gas 1 subcategory with heat input capacity of 10 million Btu per hour or greater shall conduct a tune-up of the process heater as specified in § 63.7540.

- (4) [40 CFR 63.7540(a)(12)]

If your process heater has a continuous oxygen trim system that maintains an optimum air to fuel ratio, and the unit is designed to burn gas 1, you must conduct a tune-up of the boiler or process heater every 5 years as specified in paragraphs 63.7540(a)(10)(i)



through (vi) to demonstrate continuous compliance. You may delay the burner inspection specified in paragraph (a)(10)(i) of this section until the next scheduled or unscheduled unit shut down, but you must inspect each burner at least once every 72 months.

- (5) [40 CFR 63.7540(a)(13)]

If the unit is not operating on the required date for a tune-up, the tune-up must be conducted within 30 calendar days of startup.

- (6) [40 CFR 63.7510(g)]

For new affected sources (as defined in § 63.7490), you must demonstrate initial compliance with the applicable work practice standards in Table 3 to this subpart within the applicable schedule as specified in § 63.7540(a) following the initial compliance date specified in § 63.7495(a). Thereafter, you are required to complete the applicable tune-up as specified in § 63.7540(a).

- (7) See 40 CFR Part 63, Subpart DDDDD (40 CFR 63.7480 – 7575).

d) Monitoring and/or Recordkeeping Requirements

- (1) For each day during which the permittee burns a fuel other than natural gas, LP gas, or refinery fuel gas, the permittee shall maintain a record of the type and quantity of fuel burned in this emissions unit.

- (2) The permittee shall record the following for this emissions unit:

- a. the volume, in mmscf, of fuel gas combusted per month;
- b. the volume, in mmscf, of fuel gas combusted per rolling, 12-month period;
- c. the CO₂e emission rate, in tons, for each month of operation;
- d. the SO₂ emission rate, in tons, for each month of operation; and
- e. beginning after the first 12 calendar months of operation or the first 12 calendar months following the issuance of this permit, the rolling, 12-month summation of the monthly CO₂e and SO₂ emissions, in tons.

Also, during the first 12 calendar months of operation or the first 12 calendar months following the issuance of this permit, the permittee shall record the cumulative CO₂e and SO₂ emissions, in tons, for each calendar month.

- (3) In order to demonstrate compliance with the emission limitation of 162 parts per million by volume dry basis of H₂S in the refinery fuel gas (and if applicable, combined fuel firing as noted in b)(2)a.i. above), the permittee shall operate and maintain an instrument for continuously monitoring and recording the concentration (dry basis) of H₂S in the refinery fuel gas or combined fuel stream before being burned in this emissions unit. The monitoring shall be conducted in accordance with 40 CFR 60.107a(a)(2), as follows



- a. The span value for this instrument shall be 300 ppmv H₂S.
 - b. Fuel gas combustion devices having a common source of fuel gas may be monitored at only one location, if monitoring at this location accurately represents the concentration of H₂S in the fuel gas being burned.
 - c. The performance evaluations for this H₂S monitor under 40 CFR 60.13(c) shall use Performance Specification 7 of 40 CFR, Part 60, Appendix B. Method 11, 15, 15A, or 16 shall be used for conducting the relative accuracy evaluations. The method ANSI/ASME PTC 19.10-1981, "Flue and Exhaust Gas Analyses," is an acceptable alternative to EPA Method 15A.
- (4) Pursuant to 40 CFR 60.13 and 40 CFR Part 60, Appendices B & F, the permittee shall operate and maintain equipment to continuously monitor and record hydrogen sulfide emissions from this emissions unit in units of the applicable standard(s). The continuous monitoring and recording equipment shall comply with the requirements specified in 40 CFR Part 60.

The permittee shall maintain records of all data obtained by the continuous hydrogen sulfide monitoring system including, but not limited to:

- a. emissions of hydrogen sulfide in parts per million for each cycle time of the analyzer, with no resolution less than one data point per minute required;
- b. emissions of hydrogen sulfide, in units of the applicable standard(s) and in the appropriate averaging period (ppmv determined hourly on a 3-hour rolling average basis and determined daily on a 365 successive calendar day rolling average basis);
- c. results of quarterly cylinder gas audits;
- d. results of daily zero/span calibration checks and the magnitude of manual calibration adjustments;
- e. of the applicable standard(s);
- f. hours of operation of the emissions unit, and continuous hydrogen sulfide monitoring system;
- g. the date, time, and hours of operation of the emissions unit without the continuous hydrogen sulfide monitoring system;
- h. the date, time, and hours of operation of the emissions unit during any malfunction of the continuous hydrogen sulfide monitoring system; as well as,
- i. the reason (if known) and the corrective actions taken (if any) for each such event in (g) and (h).

All valid data points generated and recorded by the continuous emission monitoring and data acquisition and handling system shall be used in the calculation of the pollutant concentration and/or emission rate over the appropriate averaging period.



- (5) Regarding installation of the continuous NO_x monitoring system, within 30 days of achieving maximum production but not later than 150 days of startup of this emission unit, the permittee shall submit information detailing the proposed location of the sampling site in accordance with the siting requirements in 40 CFR Part 60, Appendix B, Performance Specification 2. The Ohio EPA, Central Office shall approve the proposed sampling site and certify that the continuous NO_x monitoring system meets the requirements of Performance Specification 2. Once received, the letter/document of certification shall be maintained on-site and shall be made available to the Director (the appropriate Ohio EPA District Office or local air agency) upon request.
- (6) The permittee shall install, operate, and maintain equipment to continuously monitor and record NO_x emissions from this emissions unit in units of the applicable standard(s). The continuous monitoring and recording equipment shall comply with the requirements specified in 40 CFR Part 60.

The permittee shall maintain records of all data obtained by the continuous NO_x monitoring system including, but not limited to:

- a. emissions of NO_x in parts per million for each cycle time of the analyzer, with no resolution less than one data point per minute required;
- b. emissions of NO_x in units of the applicable standard(s) in the appropriate averaging period;
- c. results of quarterly cylinder gas audits;
- d. results of daily zero/span calibration checks and the magnitude of manual calibration adjustments;
- e. results of required relative accuracy test audit(s), including results in units of the applicable standard(s);
- f. hours of operation of the emissions unit, and continuous NO_x monitoring system;
- g. the date, time, and hours of operation of the emissions unit without the continuous NO_x monitoring system;
- h. the date, time, and hours of operation of the emissions unit during any malfunction of the continuous NO_x monitoring system; as well as,
- i. the reason (if known) and the corrective actions taken (if any) for each such event in (g) and (h).

All valid data points generated and recorded by the continuous emission monitoring and data acquisition and handling system shall be used in the calculation of the pollutant concentration and/or emission rate over the appropriate averaging period.

- (7) In order to demonstrate compliance with the 10.59 tons SO₂ per rolling, 12-month period emission limitation, the permittee shall install, operate, and maintain equipment to continuously monitor and record total sulfur (expressed as SO₂) emissions from this emissions unit in units of the applicable standard(s). The continuous monitoring and



recording equipment shall comply with the requirements specified in 40 CFR Part 60 as outlined in Section B of this permit.

- (8) See 40 CFR Part 60, Subpart Ja (40 CFR 60.100a – 60.109a).

See 40 CFR Part 63, Subpart DDDDD (40 CFR 63.7480 – 7575).

e) Reporting Requirements

- (1) The permittee shall submit deviation (excursion) reports that identify each day when a fuel other than natural gas, LP gas, or refinery fuel gas was burned in this emissions unit. Each report shall be submitted within 30 days after the deviation occurs.

- (2) Pursuant to the 40 CFR Part 60.7, the permittee is hereby advised of the requirement to report the following at the appropriate times:

- 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); and
- d. Date of performance testing (if required, at least 30 days prior to testing).

- (3) The permittee shall comply with the following quarterly reporting requirements for the emissions unit and its continuous hydrogen sulfide monitoring system:

- a. Pursuant to the monitoring, record keeping, and reporting requirements for continuous monitoring systems contained in 40 CFR 60.7 and 60.13(h) and the requirements established in this permit, the permittee shall submit reports within 30 days following the end of each calendar quarter to the appropriate Ohio EPA District Office or local air agency, documenting all instances of hydrogen sulfide content in excess of any applicable limit specified in this permit, 40 CFR Part 60, and any other applicable rules or regulations. The report shall document the date, commencement and completion times, duration, and magnitude of each exceedance, as well as, the reason (if known) and the corrective actions taken (if any) for each exceedance. Excess emissions shall be reported in units of the applicable standard(s).

- b. These quarterly reports shall be submitted by January 31, April 30, July 31, and October 31 of each year and shall include the following:

- i. the facility name and address;
- ii. the manufacturer and model number of the continuous hydrogen sulfide and other associated monitors;
- iii. a description of any change in the equipment that comprises the continuous emission monitoring system (CEMS), including any change to



- the hardware, changes to the software that may affect CEMS readings, and/or changes in the location of the CEMS sample probe;
- iv. the excess emissions report (EER)*, i.e., a summary of any exceedances during the calendar quarter, as specified above;
 - v. the total operating time (hours) of the emissions unit;
 - vi. the total operating time of the continuous hydrogen sulfide monitoring system while the emissions unit was in operation;
 - vii. results and dates of quarterly cylinder gas audits;
 - viii. unless previously submitted, results and dates of the relative accuracy test audit(s), including results in units of the applicable standard(s), (during appropriate quarter(s));
 - ix. unless previously submitted, the results of any relative accuracy test audit showing the continuous hydrogen sulfide monitor out-of-control and the compliant results following any corrective actions;
 - x. the date, time, and duration of any/each malfunction** of the continuous hydrogen sulfide monitoring system, and/or emissions unit;
 - xi. the date, time, and duration of any downtime** of the continuous hydrogen sulfide monitoring system while the emissions unit was in operation; and
 - xii. the reason (if known) and the corrective actions taken (if any) for each event in (b)(xi) and (xii).

Each report shall address the operations conducted and data obtained during the previous calendar quarter.

* where no excess emissions have occurred or the continuous monitoring system(s) has/have not been inoperative, repaired, or adjusted during the calendar quarter, such information shall be documented in the EER quarterly report

** each downtime and malfunction event shall be reported regardless if there is an exceedance of any applicable limit

- (4) The permittee shall comply with the following quarterly reporting requirements for the emissions unit and its continuous NO_x monitoring system:
 - a. Pursuant to the monitoring, record keeping, and reporting requirements for continuous monitoring systems contained in 40 CFR 60.7 and 60.13(h) and the requirements established in this permit, the permittee shall submit reports within 30 days following the end of each calendar quarter to the appropriate Ohio EPA District Office or local air agency, documenting all instances of NO_x emissions in excess of any applicable limit specified in this permit, 40 CFR Part 60, OAC Chapters 3745-14 and 3745-23, and any other applicable rules or regulations.



The report shall document the date, commencement and completion times, duration, and magnitude of each exceedance, as well as the reason (if known) and the corrective actions taken (if any) for each exceedance. Excess emissions shall be reported in units of the applicable standard(s).

- b. These quarterly reports shall be submitted by January 31, April 30, July 31, and October 31 of each year and shall include the following:
- i. the facility name and address;
 - ii. the manufacturer and model number of the continuous NO_x and other associated monitors;
 - iii. a description of any change in the equipment that comprises the continuous emission monitoring system (CEMS), including any change to the hardware, changes to the software that may affect CEMS readings, and/or changes in the location of the CEMS sample probe;
 - iv. the excess emissions report (EER)*, i.e., a summary of any exceedances during the calendar quarter, as specified above;
 - v. the total operating time (hours) of the emissions unit;
 - vi. the total operating time of the continuous NO_x monitoring system while the emissions unit was in operation;
 - vii. results and dates of quarterly cylinder gas audits;
 - viii. unless previously submitted, results and dates of the relative accuracy test audit(s), including results in units of the applicable standard(s), (during appropriate quarter(s));
 - ix. unless previously submitted, the results of any relative accuracy test audit showing the continuous NO_x monitor out-of-control and the compliant results following any corrective actions;
 - x. the date, time, and duration of any/each malfunction** of the continuous NO_x monitoring system, and/or emissions unit;
 - xi. the date, time, and duration of any downtime** of the continuous NO_x monitoring system while the emissions unit was in operation; and
 - xii. the reason (if known) and the corrective actions taken (if any) for each event in (b)(x) and (xi).

Each report shall address the operations conducted and data obtained during the previous calendar quarter.

* where no excess emissions have occurred or the continuous monitoring system(s) has/have not been inoperative, repaired, or adjusted during the calendar quarter, such information shall be documented in the EER quarterly report



** each downtime and malfunction event shall be reported regardless if there is an exceedance of any applicable limit.

- (5) See 40 CFR Part 60, Subpart Ja (40 CFR 60.100a – 60.109a).
- (6) See 40 CFR Part 63, Subpart DDDDD (40 CFR 63.7480 – 7575).
- (7) Unless other arrangements have been approved by the Director, all notifications and reports shall be submitted through the Ohio EPA's eBusiness Center: Air Services online web portal.

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:

CO emissions shall not exceed 0.06 lb/mmBtu heat input.

Applicable Compliance Method:

This emission limitation was established based on the permittee's engineering estimate. If required, compliance with the CO emission limitation above shall be demonstrated using Methods 1 through 4 and 10 of 40 CFR Part 60, Appendix A. Alternative U.S. EPA-approved test methods may be used with prior approval from the Ohio EPA.

b. Emission Limitations:

NO_x emissions shall not exceed: 40 ppmv (dry basis, corrected to 0-percent excess air) determined daily on a 30-day rolling average basis; or 0.040 lb/MMBtu higher heating value basis determined daily on a 30-day rolling average basis.

Applicable Compliance Method:

The permittee shall demonstrate initial compliance according to the requirements of 40 CFR 60.104a(i) and 40 CFR 60.8.

Ongoing compliance with the NO_x emission limitation(s) shall be demonstrated through the data collected as required in the Monitoring and Recordkeeping Section of this permit; and through demonstration of compliance with the quality assurance/quality control plan, which shall meet the requirements of 40 CFR Part 60.

c. Emission Limitation:

PM10 and PM2.5 emissions shall not exceed 7.451E-03 lb/mmBtu heat input each



Applicable Compliance Method:

The PM₁₀/PM_{2.5} emission limitation above was developed by dividing the PM₁₀/PM_{2.5} emission factor from AP-42 Table 1.4-2 dated 7/98 (7.6 lb/mm scf) by the average heating value for natural gas specified in AP-42 Table 1.4-2 dated 7/98 (1,020 Btu/scf).

If required, the permittee shall demonstrate compliance with the hourly PM₁₀/PM_{2.5} allowable emission limitation using Methods 201A and 202 of 40 CFR Part 51, Appendix M. Alternative U.S. EPA-approved test methods may be used with prior approval from the Ohio EPA.

d. Emission Limitation:

PM₁₀ and PM_{2.5} emissions shall not exceed 7.34 tons per rolling, 12-month period.

Applicable Compliance Method:

The tons per year emission limitation above was developed by dividing the PM₁₀/PM_{2.5} emission factor from AP-42 Table 1.4-2 dated 7/98 (7.6 lb/mm scf) by the average heating value for natural gas specified in AP-42 Table 1.4-2 dated 7/98 (1,020 Btu/scf), multiplying by the maximum heat input (225 mmBtu/hr HHV), multiplying by the maximum annual hours of operation (8,760 hours), and then dividing by 2,000 pounds per ton. Therefore, as long as compliance with the lb/mmBtu allowable emission limitation is maintained, compliance with the annual emission limitation shall be demonstrated.

e. Emission Limitation:

The permittee shall not discharge or cause the discharge of any gases into the atmosphere that contain SO₂ in excess of 20 ppmv (dry basis, corrected to 0-percent excess air) determined hourly on a 3-hour rolling average basis and SO₂ in excess of 8 ppmv (dry basis, corrected to 0-percent excess air), determined daily on a 365 successive calendar day rolling average basis; or

The permittee shall not burn in any fuel gas combustion device any fuel gas that contains H₂S in excess of 162 ppmv determined hourly on a 3-hour rolling average basis and H₂S in excess of 60 ppmv determined daily on a 365 successive calendar day rolling average basis.

Applicable Compliance Method:

The permittee has elected to comply with the H₂S limits established in permit condition b)(2)a.i.(b), rather than the SO₂ limits under b)(2)a.i.(a). The permittee shall demonstrate initial compliance with the H₂S limits according to the requirements of 40 CFR 60.104a(j) and 40 CFR 60.8.

Ongoing compliance with the H₂S limitation(s) shall be demonstrated through the data collected as required in the Monitoring and Recordkeeping Section of this



permit; and through demonstration of compliance with the quality assurance/quality control plan, which shall meet the requirements of 40 CFR Part 60.

If the permittee chooses to comply with the SO₂ limits in b)(2)a.i.(a), initial compliance with this emission limitation shall be determined in accordance with the procedures specified in 40 CFR 60.104a(j) and 40 CFR 60.8.

If the permittee chooses to comply with the SO₂ limits in b)(2)a.i.(a), then Ongoing compliance with the SO₂ emission limitation(s) contained in this permit, 40 CFR Part 60, and any other applicable standard(s) shall be demonstrated through the data collected as required in 40 CFR Part 60, Subparts A and Ja; and through demonstration of compliance with the quality assurance/quality control plan, which shall meet the requirements of 40 CFR Part 60.

f. Emission Limitation:

SO₂ emissions shall not exceed 10.59 tons per rolling, 12-month period

Applicable Compliance Method:

The annual emission limitation above was developed by multiplying the average firing rate per rolling, 12-month period (0.2045 mmscf/hr) by the permittee's maximum rolling, 12-month average total sulfur expressed as SO₂ concentration in the fuel gas (70 ppm), divided by 1E06, multiplied by (1E06 scf/mmscf), multiplied by the molecular weight of SO₂ (64 lb/lb-mole), divided by the standard molar volume (379 scf/lb-mole), and then divided by (2,000 lbs/ton).

Ongoing compliance with this emission limitation shall be demonstrated through the data collected as required in the Monitoring and Record keeping Section of this permit; and through demonstration of compliance with the quality assurance/quality control plan, which shall meet the testing and recertification requirements of 40 CFR Part 60.

g. Emission Limitation:

VOC emissions shall not exceed 0.0054 lb/mmBtu heat input.

Applicable Compliance Method:

The hourly emission limitation was developed by dividing the VOC emission factor from AP-42 Table 1.4-2 dated 7/98 (5.5 lb/mmscf) by the average heating value for natural gas specified in AP-42 Table 1.4-2 dated 7/98 (1,020 Btu/scf).

If required, the permittee shall demonstrate compliance with this emission limitation through emission testing performed in accordance with Methods 1 through 4 and 18, 25 or 25A, as appropriate, of 40 CFR Part 60, Appendix A. Use of Method 18, 25 or 25A is to be selected based on the results of pre-survey stack sampling and U.S. EPA guidance documents. Alternative U.S. EPA-approved test methods may be used with prior approval from Ohio EPA.



h. Emission Limitation:

VOC emissions shall not exceed 5.31 tons per rolling, 12-month period.

Applicable Compliance Method:

The tons per year emission limitation above was developed by dividing the VOC emission factor from AP-42 Table 1.4-2 dated 7/98 (5.5 lb/mm scf) by the average heating value for natural gas specified in AP-42 Table 1.4-2 dated 7/98 (1,020 Btu/scf), multiplying by the maximum heat input (225 mmBtu/hr), multiplying by the maximum annual hours of operation (8,760 hours), and then dividing by 2,000 pounds per ton. Therefore, as long as compliance with the short-term allowable emission limitation is maintained, compliance with the annual emission limitation shall be demonstrated.

i. Emission Limitation:

Visible PE shall not exceed 20 percent opacity as a six-minute average, unless otherwise specified by the rule.

Applicable Compliance Method:

If required, the permittee shall demonstrate compliance using Method 9 of 40 CFR Part 60, Appendix A. Alternative U.S. EPA-approved test methods may be used with prior approval from the Ohio EPA.

j. Emission Limitation:

PE shall not exceed 0.020 pound per million Btu of heat input.

Applicable Compliance Method:

Compliance with this emission limitation may be demonstrated by the following one-time calculation of potential to emit. Divide the particulate emission factor from Table 1.4-2 of AP-42 dated 7/98 (1.9 lb/mm scf) by the average heating value for natural gas specified in Table 1.4-2 of AP-42 dated 7/98 (1,020 Btu/scf) to obtain the maximum particulate emissions (0.002 lb/mmBtu).

If required, the permittee shall demonstrate compliance using the methods and procedures specified in OAC rule 3745-17-03(B)(9). Alternative U.S. EPA-approved test methods may be used with prior approval from the Ohio EPA.

k. Emission Limitation:

CO₂e emissions shall not exceed 123,569 tons per rolling, 12-month period.

Applicable Compliance Method:

The allowable CO₂e emissions limitation was established to reflect the potential to emit for this emissions unit based on an emission factor (125.4 lbs CO₂e/mmBtu) derived from actual refinery fuel gas data collected pursuant to the



GHG MMR rule (40 CFR Part 98) from 2010 up to June 13, 2012, and is based on the highest annual average emission factor calculated during this time period for the TIU Mix Drum. This emissions limitation was established by multiplying the CO₂e emission factor (125.4 lbs CO₂e/mmBtu) by the maximum hourly heat input (225 mmBtu/hr), multiplied by the maximum annual hours of operation (8,760 hrs/yr) and divided by 2,000 pounds per ton.

Compliance shall be demonstrated by multiplying the annual average site-specific emission factor (lb/mmscf) derived from actual refinery fuel gas data collected pursuant to the GHG MRR rule (40 CFR Part 98) by the actual fuel usage (mmscf/rolling, 12-month period) and dividing by 2,000 pounds per ton.

- (2) The permittee shall conduct, or have conducted, emission testing for this emissions unit in accordance with the following requirements:
- a. The emission testing shall be conducted within 60 days of achieving the maximum production rate at which the emissions unit(s) will be operated, but not later than 180 days after initial startup.
 - b. The emission testing shall be conducted to:
 - i. demonstrate compliance with the allowable mass emission rate(s) for CO and NO_x in the appropriate averaging period(s);
 - ii. demonstrate compliance with the allowable concentration of H₂S in the fuel gas burned, except that a performance tests are not required when a new affected fuel gas combustion device is added to a common source of fuel gas that previously demonstrated compliance;
 - c. The following test method(s) shall be employed to demonstrate compliance with the allowable mass emission rate(s):
 - i. for CO, Methods 1 thru 4 and 10 of 40 CFR Part 60, Appendix A.
 - ii. for NO_x, 40 CFR 60.104a(i);

Alternative U.S. EPA-approved test methods may be used with prior approval from the Ohio EPA.
 - d. The test(s) shall be conducted under those representative conditions that challenge to the fullest extent possible a facility's ability to meet the applicable emissions limits and/or control requirements, unless otherwise specified or approved by the appropriate Ohio EPA District Office or local air agency. Although this generally consists of operating the emissions unit at its maximum material input/production rates and results in the highest emission rate of the tested pollutant, there may be circumstances where a lower emissions loading is deemed the most challenging control scenario. Failure to test under these conditions is justification for 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 "Intent to Test" notification to the appropriate Ohio EPA District Office or local air agency. The "Intent to Test" notification shall describe in detail the proposed test methods and procedures, the emissions unit 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 Ohio EPA District Office's or local air agency's refusal to accept the results of the emission test(s).
 - f. Personnel from the appropriate Ohio EPA District Office or local air agency 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 emissions unit and the testing procedures provide a valid characterization of the emissions from the emissions unit 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 or persons responsible for the tests and submitted to the appropriate Ohio EPA District Office or local air agency 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 Ohio EPA District Office or local air agency.
- (3) Within 60 days of achieving the maximum production rate at which the emissions unit(s) will be operated, but not later than 180 days after initial startup, the permittee shall conduct certification tests of any newly installed continuous hydrogen sulfide monitoring system in units of the applicable standard(s), to demonstrate compliance with 40 CFR Part 60, Appendix B, Performance Specification 7 and ORC section 3704.03(I).

Personnel from the Ohio EPA Central Office and the appropriate Ohio EPA District Office or local air agency shall be notified 30 days prior to initiation of the applicable tests and shall be permitted to examine equipment and witness the certification tests. Two copies of the test results shall be submitted to Ohio EPA, one copy to the appropriate Ohio EPA District Office or local air agency and one copy to Ohio EPA Central Office, and pursuant to OAC rule 3745-15-04, within 30 days after the test is completed.

Certification of the continuous hydrogen sulfide monitoring system shall be granted upon determination by the Ohio EPA, Central Office that the system meets the requirements of 40 CFR Part 60, Appendix B, Performance Specification 7 and ORC section 3704.03(I).

Ongoing compliance with the hydrogen sulfide emission limitation(s) contained in this permit, 40 CFR Part 60, and any other applicable standard(s) shall be demonstrated through the data collected as required in the Monitoring and Record keeping Section of this permit; and through demonstration of compliance with the quality assurance/quality control plan, which shall meet the requirements of 40 CFR Part 60.

- (4) Within 60 days of achieving the maximum production rate at which the emissions unit(s) will be operated, but not later than 180 days after initial startup, the permittee shall conduct certification tests of the continuous NO_x monitoring system in units of the



applicable standard(s) to demonstrate compliance with 40 CFR Part 60, Appendix B, Performance Specifications 2; and ORC section 3704.03(I).

Personnel from the Ohio EPA Central Office and the appropriate Ohio EPA District Office or local air agency shall be notified 30 days prior to initiation of the applicable tests and shall be permitted to examine equipment and witness the certification tests. Two copies of the test results shall be submitted to Ohio EPA, one copy to the appropriate Ohio EPA District Office or local air agency and one copy to Ohio EPA Central Office, and pursuant to OAC rule 3745-15-04, within 30 days after the test is completed.

Certification of the continuous NO_x monitoring system shall be granted upon determination by the Ohio EPA, Central Office that the system meets the requirements of 40 CFR Part 60, Appendix B, Performance Specifications 2; and ORC section 3704.03(I).

Ongoing compliance with the NO_x emission limitation(s) contained in this permit, 40 CFR Part 60, and any other applicable standard(s) shall be demonstrated through the data collected as required in the Monitoring and Recordkeeping Section of this permit; and through demonstration of compliance with the quality assurance/quality control plan, which shall meet the requirements of 40 CFR Part 60.

- (5) See 40 CFR Part 60, Subpart Ja (40 CFR 60.100a – 60.109a).
 - (6) See 40 CFR Part 63, Subpart DDDDD (40 CFR 63.7480 – 7575).
- g) Miscellaneous Requirements
- (1) None.