State of Ohio Environmental Protection Agency

RE: FINAL PERMIT TO INSTALL **CERTIFIED MAIL**
LUCAS COUNTY

Street Address: 122 S. Front Street
Lazarus Gov. Center **TELE:** (614) 644-3020 **FAX:** (614) 644-2329
Mailing Address: Lazarus Gov. Center P.O. Box 1049

Application No: 04-01367
Fac ID: 0448020085
DATE: 11/9/2004

BOC Americas (PGS), Inc.
Jim Merriam
575 Mountain Ave.
Murray Hill, NJ 07974

Enclosed please find an Ohio EPA Permit to Install which will allow you to install the described source(s) in a manner indicated in the permit. Because this permit contains several conditions and restrictions, I urge you to read it carefully.

The Ohio EPA is urging companies to investigate pollution prevention and energy conservation. Not only will this reduce pollution and energy consumption, but it can also save you money. If you would like to learn ways you can save money while protecting the environment, please contact our Office of Pollution Prevention at (614) 644-3469.

You are hereby notified that this action by the Director is final and may be appealed to the Ohio Environmental Review Appeals Commission pursuant to Chapter 3745.04 of the Ohio Revised Code. The appeal must be in writing and set forth the action complained of and the grounds upon which the appeal is based. It must be filed within thirty (30) days after the notice of the Directors action. A copy of the appeal must be served on the Director of the Ohio Environmental Protection Agency within three (3) days of filing with the Commission. An appeal may be filed with the Environmental Review Appeals Commission at the following address:

Environmental Review Appeals Commission
309 South Fourth Street, Room 222
Columbus, Ohio 43215

Sincerely,

Michael W. Ahern

Michael W. Ahern, Manager
Permit Issuance and Data Management Section
Division of Air Pollution Control

cc: **USEPA** **TDES**

STATE OF OHIO ENVIRONMENTAL PROTECTION AGENCY

Permit To Install	**Issue Date: 11/9/2004**
Terms and Conditions	**Effective Date: 11/9/2004**

FINAL PERMIT TO INSTALL 04-01367

Application Number:	04-01367
Facility ID:	0448020085
Permit Fee:	**$2000**
Name of Facility:	BOC Americas (PGS), Inc.
Person to Contact:	Jim Merriam
Address:	575 Mountain Ave. Murray Hill, NJ 07974

Location of proposed air contaminant source(s) [emissions unit(s)]:
1819 Woodville Rd.
Oregon, **Ohio**

Description of proposed emissions unit(s):
Two Hydrogen reformer trains.

The above named entity is hereby granted a Permit to Install for the above described emissions unit(s) 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 above described 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

Director

Part I - GENERAL TERMS AND CONDITIONS

A. Permit to Install General Terms and Conditions

1. Compliance Requirements

The emissions unit(s) identified in this Permit to Install shall remain in full compliance with all applicable State laws and regulations and the terms and conditions of this permit.

2. Reporting Requirements

The permittee shall submit required reports in the following manner:

a. Reports of any required monitoring and/or recordkeeping information shall be submitted to the appropriate Ohio EPA District Office or local air agency.

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 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 appropriate Ohio EPA District Office or local air agency. 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., 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.)

3. Records Retention Requirements

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.

4. Inspections and Information Requests

The Director of the Ohio EPA, or an authorized representative of the Director, may, subject to the safety requirements of the permittee and without undue delay, enter upon the premises of this source at any reasonable time for purposes of making inspections, conducting tests, examining records or reports pertaining to any emission of air contaminants, and determining compliance with any applicable State air pollution laws and regulations and the terms and conditions of this permit. 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, reopening or revoking this permit or to determine compliance with this permit. Upon verbal or written request, the permittee shall also furnish to the Director of the Ohio EPA, or an authorized representative of the Director, copies of records required to be kept by this permit.

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 of any emissions units or any associated air pollution control system(s) shall be reported to the appropriate Ohio EPA District Office or local air agency in accordance with paragraph (B) of 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 emissions unit(s) that is (are) served by such control system(s).

6. Permit Transfers

Any transferee of this permit shall assume the responsibilities of the prior permit holder. The appropriate Ohio EPA District Office or local air agency must be notified in writing of any transfer of this permit.

7. 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.

8. Termination of Permit to Install

This Permit to Install shall terminate within eighteen months of the effective date of the Permit to Install if the owner or operator has not undertaken a continuing program of installation or modification or has not entered into a binding contractual obligation to undertake and complete within a reasonable time a continuing program of installation or modification. 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.

9. Construction of New Sources(s)

The proposed emissions unit(s) shall be constructed in strict accordance with the plans and application submitted for this permit to the Director of the Ohio Environmental Protection Agency. There may be no deviation from the approved plans without the express, written approval of the Agency. Any deviations from the approved plans or the above conditions may lead to such sanctions

and penalties as provided under Ohio law. Approval of these plans does not constitute an assurance that the proposed facilities will operate in compliance with all Ohio laws and regulations. Additional facilities shall be installed upon orders of the Ohio Environmental Protection Agency if the proposed sources cannot meet the requirements of this permit or cannot meet applicable standards.

If the construction of the proposed emissions unit(s) has already begun or has been completed prior to the date the Director of the Environmental Protection Agency approves the permit application and plans, the approval does not constitute expressed or implied assurance that the proposed facility has been constructed in accordance with the approved plans. 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 the Permit to Install does not constitute an assurance that the proposed source will operate in compliance with all Ohio laws and regulations. Approval of the plans in any case is not to be construed as an approval of the facility as constructed and/or completed. Moreover, issuance of the Permit to Install 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.

10. 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.

11. Applicability

This Permit To Install is applicable only to the emissions unit(s) identified in the Permit To Install. Separate Permit To Install for the installation or modification of any other emissions unit(s) are required for any emissions unit for which a Permit To Install is required.

12. Best Available Technology

As specified in OAC Rule 3745-31-05, all new sources must employ Best Available Technology (BAT). Compliance with the terms and conditions of this permit will fulfill this requirement.

13. Source Operation and Operating Permit Requirements After Completion of Construction

This facility is permitted to operate each source described by this Permit to Install for a period of up to one year from the date the source commenced operation. This permission to operate is granted only if the facility complies with all requirements contained in this permit and all applicable air pollution laws, regulations, and policies. Pursuant to OAC Chapter 3745-35, the permittee shall submit a complete operating permit application within ninety (90) days after commencing operation of the emissions unit(s) covered by this permit.

14. Construction Compliance Certification

The applicant shall provide Ohio EPA with a written certification (see enclosed form) that the facility has been constructed in accordance with the Permit to Install application and the terms and conditions of the Permit to Install. The certification shall be provided to Ohio EPA upon completion of construction but prior to startup of the source.

15. 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 this Permit to Install.

B. Permit to Install Summary of Allowable Emissions

The following information summarizes the total allowable emissions, by pollutant, based on the individual allowable emissions of each air contaminant source identified in this permit.

SUMMARY (for informational purposes only)
TOTAL PERMIT TO INSTALL ALLOWABLE EMISSIONS

Pollutant	Tons Per Year
NOx	23.54
PM10	24.66
SO_2	5.52
CO	52.52
VOC	28.70
ammonia (air toxic)	25.50

PART II - SPECIAL TERMS AND CONDITIONS FOR SPECIFIC EMISSIONS UNIT(S)

A. Applicable Emissions Limitations and/or Control Requirements

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

Operations, Property, and/or Equipment		Applicable Rules/Requirements
P001- Hydrogen Reformer Train 1 - 514 mmBtu/hr methane steam reformer train with low NOx burners and selective catalytic reduction (SCR), NOx continuous emission monitor (CEM), burning refinery fuel gas, natural gas and PSA off-gas and a deaerator with vents		OAC rule 3745-17-07(A)(1)
		OAC rule 3745-17-11(B)(1)
		OAC rule 3745-18-06(E)(2)
stack emissions		OAC rule 3745-21-07(B)
	deaerator vent emissions	OAC rule 3745-23-06(B)
		OAC rule 3745-31-05(A)(3)
		OAC rule 3745-31-05(C)

	Applicable Emissions Limitations/Control Measures	11.39 tons ammonia per rolling, 12-month period. See section C.17.
OAC rule 3745-31-05(A)(3)	Visible particulate emissions from any stack shall not exceed 20% opacity as a six-minute average, unless otherwise specified by the rule. See section A.2.a. See section A.2.a. See section A.2.b. See section A.2.b. 3.09 lb/hr nitrogen oxides (NOx); 4.99 lb/hr carbon monoxide (CO); 3.24 lb/hr volatile organic compounds (VOC); 3.24 lb/hr particulate matter less than 10 microns (PM_{10}); 2.97 lb/hr sulfur dioxide (SO_2); and 10 ppmv ammonia. see section A.2.c. 11.77 tons NOx per rolling, 12-month period; 18.99 tons CO per rolling, 12-month period; 12.33 tons VOC per rolling, 12-month period; 12.33 tons particulate emissions/PM_{10} per rolling, 12-month period; 2.76 tons SO_2 per rolling, 12-month period; and	1.66 lb/hr and 7.27 TPY CO; 0.46 lb/hr and 2.02 TPY VOC (as methanol); see section A.2.d. 0.31 lb/hr and 1.36 TPY ammonia see section A.2.e.

2. Additional Terms and Conditions

2.a The emission limitation specified by this rule is less stringent than the emission limitation established pursuant to OAC rule 3745-31-05(A)(3)

2.b The permittee has satisfied the "latest available control techniques and operating practices" required pursuant to OAC rules 3745-21-07(B) and 3745-23-06(B) by committing to comply with the best available technology requirements established pursuant to OAC rule 3745-31-05(A)(3) in this permit to install.

2.c The permittee shall not burn in any fuel gas combustion device, any fuel gas that contains hydrogen sulfide (H_2S) in excess of 230 milligrams per dry standard cubic meter (0.10 grain per dry standard cubic foot or 159 ppmv at 14.7 psia and 60°F).

2.d The emissions of hazardous air pollutants (HAPs) from all emissions units at this facility, as identified in Section 112(b) of Title III of the Clean Air Act, shall be resticted to less than 10 tons per year for any individual HAP, and less than 25 tons per year for any combination of HAPs, as rolling 12-month summations.

2.e The pound per hour and ton per year emission limitations were established for PTI purposes to reflect the potential to emit for this emissions unit. Therefore, it is not necessary to develop record keeping and/or reporting requirements to ensure compliance with this limitation.

B. Operational Restrictions

1. The permittee shall burn only refinery fuel gas, natural gas and/or process Pressure Swing Absorption (PSA) purge gas in this emissions unit.

2. The quality of the refinery fuel gas burned in this emissions unit shall meet a hydrogen sulfide content which is sufficient to comply with a volume-weighted, daily average H_2S concentration no greater than 230 milligrams per dry standard cubic meter (0.10 grain per dry standard cubic foot or 159 ppmv at 14.7 psia and 60 °F). The process Pressure Swing Absorption (PSA) purge gas burned in this emissions unit shall meet a hydrogen sulfide content of 0.20 ppmv.

3. The maximum firing rate for all fuels combusted, for emissions unit P001, shall not exceed 3,911,512 mmBtu/yr based upon a rolling 12-month summation of the monthly firing rate. To ensure enforceability during the first 12 calendar months of operation following the issuance of this permit, the permittee shall not exceed the maximum cumulative firing rate (in mmBtu) as specified in the following table:

Emissions Unit ID: **P001**

Month(s)	Maximum Cumulative Firing Rate (in mmBtu) - all fuels
1	326,000
1-2	652,000
1-3	978,000
1-4	1,304,000
1-5	1,630,000
1-6	1,956,000
1-7	2,282,000
1-8	2,608,000
1-9	2,934,000
1-10	3,260,000
1-11	3,586,000
1-12	3,911,512

After the first 12 calendar months of operation following the startup of emissions unit P001, compliance with the maximum firing rate limitation shall be based upon a rolling 12-month summation of the cumulative firing rate (in mmBtu) for all fuels combusted.

4. The maximum volumetric flow rate of refinery fuel gas, for emissions unit P001, shall not exceed 963.6 mmscf/yr based upon a rolling 12-month summation of the monthly flow rate for refinery fuel gas and natural gas. To ensure enforceability during the first 12 calendar months of operation following the issuance of this permit, the permittee shall not exceed the maximum cumulative flow rate (in mmscf) as specified in the following table:

Month(s)	Maximum Cumulative Refinery Fuel Gas & Natural Gas Firing Rate (in mmscf)
1	81
1-2	162
1-3	243
1-4	324
1-5	405
1-6	486
1-7	567
1-8	648
1-9	729
1-10	810
1-11	891

1-12	963.6

After the first 12 calendar months of operation following the startup of emissions unit P001, compliance with the maximum flow rate for refinery fuel gas and natural gas shall be based upon a rolling 12-month summation of the cumulative flow rate of the refinery fuel gas and natural gas (in mmscf).

5. The permittee shall operate the selective catalytic reduction (SCR) unit whenever this emissions unit is in operation.

6. The permittee shall maintain a minimum ratio of the ammonia injection rate to the NOx inlet rate (molar ratio) of 1.0 whenever the SCR emissions control unit is in operation.

C. Monitoring and/or Recordkeeping Requirements

ALL FUELS COMBUSTED

1. For each day during which the permittee burns a fuel other than refinery fuel gas, natural gas and/or Pressure Swing Absorption (PSA) purge gas, the permittee shall maintain a record of the type, quantity, sulfur content in pound(s) of sulfur per mmdscf, and heating value in Btu/dscf of the fuel burned.

REFINERY FUEL GAS TERMS

2. The permittee shall collect or require the refinery fuel gas supplier to collect a representative sample of the refinery fuel gas that is received for burning in this emissions unit. The permittee shall perform or require the supplier to perform analyses of each daily refinery fuel gas sample for sulfur content, heat content and density in accordance with the appropriate ASTM methods.

3. The permittee shall maintain daily records of the density of the refinery fuel gas, the actual heating value of the refinery fuel gas, and the decimal fraction of sulfur in the refinery fuel gas as burned in this emissions unit.

The actual heating value (H) and density (D) of the refinery fuel gas shall be calculated as follows from the results of a daily refinery fuel gas compositional analysis using gas chromatography:

H = summation of (h_i x m_i)

m_i = the mass fraction of each chemical compound detected in the refinery fuel gas using chromatographic analysis; and

h_i = the heat content of each chemical compound detected in the refinery fuel gas, in Btu per pound of chemical.

D = (P x M) / (10.73 x T)

where:

10.73 = ideal gas constant with units of psia - cubic feet / lb mole - degrees Rankine
P = the refinery fuel gas line pressure, in psia;
T = the refinery fuel gas line temperature, in degrees Rankine; and
M = the molecular weight of refinery fuel gas, in lb/lb mole.

The molecular weight of the gas shall be calculated as follows:

M = summation of (MW_i x f_i)

where:

MW_i = the molecular weight of each chemical component of the refinery fuel gas, in lb/lb mole; and

f_i = the mole fraction of each chemical compound detected in the refinery fuel gas using gas chromatographic analysis.

As an alternative, the permittee may require the refinery fuel gas supplier to provide the above information.

4. The permittee shall install a hydrogen sulfide continuous emission monitor or require the refinery fuel gas supplier to provide a volume-weighted 24 hour daily average of the hydrogen sulfide CEMS data, in ppm and identify the H_2S CEM monitor.

5. The permittee shall maintain daily records of the 24 hour daily average of the decimal (mass) fraction of sulfur in the refinery gas. The decimal (mass) fraction of sulfur shall be calculated as follows:

$S = (A_{H2S} / 1X10^6) \times 0.9408$

where:

A_{H2S} = 24 hour daily average of the H_2S CEMS data, in ppm; and

0.9408 = the pound of sulfur per pound of hydrogen sulfide.

6. The permittee shall maintain daily records of the calculated, 24 hour daily SO_2 emission rate for the refinery fuel gas based upon the daily average of the sulfur content, daily heat content value, and daily density value of the refinery fuel gas. The SO_2 emission rate shall be calculated as follows, in accordance with OAC rule 3745-18-04(F)(3):

   ERG = (1x10^6/H) x (D) x (S) x (1.998)

   where:

   ERG = each 24 hour daily average SO_2 emission rate, in pounds of SO_2 per mmBtu;
   H = the calculated daily average heat value of the fuel, in Btu/dscf of refinery fuel gas;
   D = the density value of the fuel, in pounds per dscf of refinery fuel gas; and
   S = each 24 hour daily average decimal (mass) fraction of sulfur in the refinery fuel gas.

7. The permittee shall monitor and record the daily and monthly average flow rate of refinery fuel gas in terms of standard cubic feet per hour, mmBtu/hr, and mmBtu/month. Each month, the permittee shall add the monthly flow total rate to the total flow rate of refinery fuel gas for the previous 11 months to determine the rolling, 12-month summation of the monthly flow rate.

   During the first 12 calendar months of operation following the issuance of this permit, the cumulative flow rate for refinery fuel gas and natural gas combusted is calculated by adding the current month's flow rate (mmscf/mo) to the flow rate for each calendar month since the issuance of this permit.

   PSA PURGE GAS

8. The permittee shall analyze the Process PSA purge gas burned in the reformer furnace at least once each month for the presence of hydrogen sulfide during normal operation. If the analyses shows that the hydrogen sulfide content is 0.20 ppmv or less for 6 consecutive calendar months of normal operation, the required frequency of analyses for the presence of hydrogen sulfide in the process PSA purge gas may be reduced to quarterly (once every 3 calendar months, when the emissions unit is in operation). If a subsequent analysis by the permittee indicates the presence of hydrogen sulfide greater than 0.20 ppmv, the permittee shall calculate the potential sulfur dioxide emissions from the reformer furnace based on combustion of the process PSA purge gas at maximum capacity. The permittee shall also revert to testing for the presence of hydrogen sulfide in the PSA purge gas on a monthly basis until the hydrogen sulfide content is 0.20 ppmv or less for 6 consecutive calendar months of normal operation.

SCR

9. The permittee shall maintain daily records that document any time periods when the SCR was not in service when the emissions unit was in operation.

10. The permittee shall continuously record, the ratio of the ammonia injection rate to the NOx inlet rate (molar ratio) for the SCR control unit. Also, based on the ammonia slip analysis required in section E., the permittee shall minimize ammonia slip while maintaining SCR effectiveness in a manner consistent with good engineering practices

NOx CEM

11. The permittee shall operate and maintain existing equipment to continuously monitor and record NO_x from this emissions unit in ppm converted to pounds per hour. Such continuous monitoring and recording equipment shall comply with the requirements specified in 40 CFR Part 60.13.

12. The permittee shall maintain records of all data obtained by the continuous NO_x monitoring system including, but not limited to, parts per million NO_x on an instantaneous (one-minute) basis, emissions of NO_x in units of the applicable standard in the appropriate averaging period (e.g., hourly), results of daily zero/span calibration checks, and magnitude of manual calibration adjustments.

All Fuels Combusted Recordkeeping

13. The permittee shall maintain monthly records of the following information:

    a. During the first 12 calendar months of operation following the issuance of this permit, the cumulative firing rate for all fuels combusted is calculated by adding the current month's firing rate (mmBtu) to the firing rate for each calendar month since the issuance of this permit.

    b. Beginning after the first 12 calendar months of operation following the issuance of this permit, the rolling 12-month summation of the maximum firing rate (mmBtu) for all fuels combusted is calculated by adding the current month's firing rate to the firing rate for the preceding eleven calendar month.

Air Toxics

14. The permit to install for this emissions unit (P001) was evaluated based on the actual materials and the design parameters of the emissions unit's exhaust system, as specified by the permittee in the permit to install application. The Ohio EPA's "Review of New Sources of Air Toxic Emissions" policy ("Air Toxic Policy") was applied for each pollutant emitted by this emissions unit using data from the permit to install application and the SCREEN 3.0 model. The predicted

1-hour maximum ground-level concentration from the use of the SCREEN 3.0 model was compared to the Maximum Acceptable Ground-Level Concentration (MAGLC). The following summarizes the results of the modeling for the "worst case" pollutant(s):

a. Pollutant: ammonia- 25.50 TPY (max) (for P001 and P002)

TLV (mg/m^3): 17.413

Maximum Hourly Emission Rate (lbs/hr): 5.24 (combined)

Predicted 1-Hour Maximum Ground-Level Concentration (µg/m^3): 3.16

MAGLC (µg/m^3): 414.6

b. Pollutant: Methanol - 4.04 TPY (for P001 and P002)

TLV (mg/m^3): 262.1

Maximum Hourly Emission Rate (lbs/hr): 0.92 (combined)

Predicted 1-Hour Maximum Ground-Level Concentration (µg/m^3): 48.66

MAGLC (µg/m^3): 6,240

15. Physical changes to or changes in the method of operation of the emissions unit after its installation could affect the parameters used to determine whether or not the "Air Toxic Policy" is satisfied. Consequently, prior to making a change that could impact such parameters, the permittee shall conduct an evaluation to determine that the "Air Toxic Policy" will still be satisfied. If, upon evaluation, the permittee determines that the "Air Toxic Policy" will not be satisfied, the permittee will not make the change. Changes that can affect the parameters used in applying the "Air Toxic Policy" include the following:

a. changes in the composition of the materials used (typically for coatings or cleanup materials), or the use of new materials, that would result in the emission of a compound with a lower Threshold Limit Value (TLV), as indicated in the most recent version of the handbook entitled "American Conference of Governmental Industrial Hygienists (ACGIH)," than the lowest TLV value previously modeled;

b. changes in the composition of the materials, or use of new materials, that would result in

an increase in emissions of any pollutant with a listed TLV that was proposed in the application and modeled; and

c. physical changes to the emissions unit or its exhaust parameters (e.g., increased/ decreased exhaust flow, changes in stack height, changes in stack diameter, etc.).

16. If the permittee determines that the "Air Toxic Policy" will be satisfied for the above changes, the Ohio EPA will not consider the change(s) to be a "modification" under OAC rule 3745-31-01(VV)(1)(a)(ii), and a modification of the existing permit to install will not be required. If the change(s) is (are) defined as a modification under other provisions of the modification definition (other than (VV)(1)(a)(ii)), then the permittee shall obtain a final permit to install prior to the change.

17. The permittee shall collect, record, and retain the following information when it conducts evaluations to determine that the changed emissions unit will still satisfy the "Air Toxic Policy:"

a. a description of the parameters changed (composition of materials, new pollutants emitted, change in stack/exhaust parameters, etc.);

b. documentation of its evaluation and determination that the changed emissions unit still satisfies the "Air Toxic Policy"; and,

c. where computer modeling is performed, a copy of the resulting computer model runs that show the results of the application of the "Air Toxic Policy" for the change.

D. Reporting Requirements

ALL FUELS COMBUSTED

1. The permittee shall submit deviation (excursion) reports that identify each day when a fuel other than refinery fuel gas, natural gas and/or Pressure Swing Absorption (PSA) purge 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 period in which the rolling, 12-month summation of the firing rate of all fuels combusted in the reformer exceeded the limitation specified in section B. of this permit and the actual cumulative quantity of the firing rate of all fuels combusted for each such month; The permittee shall submit quarterly deviation/excursion reports that identify each period in which the firing rate for all fuels combusted in Section B.3. was exceeded.

REFINERY FUEL GAS

3. The permittee shall submit quarterly deviation (excursion) reports that identify each 24 hour daily SO_2 emission rate, as calculated in section C.6., that exceeds the SO_2 emission limitation of 2.97 lb SO_2 per hour for the burning of refinery fuel gas.

4. The permittee shall submit quarterly deviation/excursion reports that identify each period in which the flow rate(s) for refinery fuel gas and/or natural gas in Section B.3. were exceeded.

PSA PURGE GAS

5. The permittee shall notify the Toledo Division of Environmental Services in writing of any analysis of the process PSA purge gas that exceeded 0.20ppmv of H2S. The notification shall include a copy of such record and shall be sent to the Toledo Division of Environmental Services within 30 days after the event occurs.

SCR

6. The permittee shall notify the Toledo Division of Environmental Services in writing of any daily record(s):

a. showing that the SCR was not in service when the emissions unit was in operation; and/or

b. showing that the ratio of the ammonia injection rate to the NOx inlet rate (molar ratio) for the SCR control unit falls below 1 or exceeds the maximum ammonia injection rate established during the most recent stack emissions test.

The notification shall include a copy of such record and shall be sent to the Toledo Division of Environmental Services within 30 days after the event occurs.

NOx CEM

7. Prior to the installation of the continuous NO_x monitoring system, 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 6 for approval by the Ohio EPA, Central Office.

8. Pursuant to OAC rules 3745-15-04, 3745-35-02, and ORC sections 3704.03(I) and 3704.031, 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 the date, commencement and completion times, duration, magnitude, reason (if known), and corrective actions taken (if any), of all instances of NO_x values in excess of the applicable limits specified in the terms and conditions of this permit. These reports shall also contain the total NO_x emissions for the calendar quarter (in tons).

9. 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 any continuous NO_x monitoring system downtime while the emissions unit was on line (date, time, duration and reason) along with any corrective action(s) taken. The permittee shall provide the emissions unit operating time during the reporting period and the date, time, reason and corrective action(s) taken for each time period of emissions unit and control equipment malfunctions. The total operating time of the emissions unit and the total operating time of the analyzer while the emissions unit was on line shall also be included in the quarterly report.

If there are no excess NOx emissions during the calendar quarter, the permittee shall submit a statement to that effect along with the emissions unit operating time during the reporting period and the date, time, reason, and corrective action(s) taken for each time period of emissions unit, control equipment, and/or monitoring system malfunctions. The total operating time of the emissions unit and the total operating time of the analyzer while the emissions unit was on line also shall be included in the quarterly report. These quarterly excess emission reports shall be submitted by January 30, April 30, July 30, and October 30 of each year and shall address the data obtained during the previous calendar quarter.

10. Pursuant to OAC rules 3745-15-04, 3745-35-02, and ORC sections 3704.03(I) and 3704.031, the permittee shall submit a summary of the excess emission report according to the requirements stated in 40 CFR Part 60.7. The summary shall be submitted to the Toledo Division of Environmental Services within 30 days following the end of each calendar quarter in a manner prescribed by the Director.

E. Testing Requirements

1. Compliance with the stack emissions limitation(s) in section A.1. of these terms and conditions shall be determined in accordance with the following methods:

   a. Emission Limitation:
   20% opacity as a 6-minute average

   Applicable Compliance Method:
   If required, compliance shall be demonstrated based upon the procedures specified in 40 CFR Part 60, Appendix A, Method 9 and OAC rule 3745-17-03(B)(1).

   b. Emission Limitation:
   3.09 pounds per hour NOx

   Applicable Compliance Method:
   The NOx continuous emissions monitor (CEM) shall be used to demonstrate compliance. Until certification of the NOx CEM, use the manufacturer supplied emission factor of 0.0601 lb/mmBtu and multiply by the daily average total fuel combusted per hour (mmBtu/hr). If required, compliance shall be demonstrated based upon the procedures specified in Methods 1 through 4 and 7 of 40 CFR Part 60, Appendix A. Alternative U.S. EPA-approved test methods can be used with prior approval from Ohio EPA.

   c. Emission Limitation:
   4.99 pounds per hour carbon monoxide (CO)

   Applicable Compliance Method:
   Multiply the manufacturer's supplied CO emission factor of 0.0097 lb/mmBtu of fuel gas burned by the daily average firing rate (mmBtu) per hour. If required, compliance shall be demonstrated based upon the procedures specified in Methods 1 through 4 and 10 of 40 CFR Part 60, Appendix A. Alternative U.S. EPA-approved test methods can be used with prior approval from Ohio EPA.

   d. Emission Limitation:

3.24 pounds per hour volatile organic compounds (VOC)

Applicable Compliance Method:
Multiply the manufacturer's supplied VOC emission factor of 0.0063 lb/mmBtu of fuel gas burned by the daily average firing rate (mmBtu) per hour. If required, compliance shall be demonstrated based upon the procedures specified in Methods 1 through 4 and 25 of 40 CFR Part 60, Appendix A. Alternative U.S. EPA-approved test methods can be used with prior approval from Ohio EPA.

e. Emission Limitation:
3.24 pound per hour PM_{10} emissions

Applicable Compliance Method:
Multiply the manufacturer's supplied particulate matter emission factor of 0.0063 lb/mmBtu of fuel gas burned by the daily average firing rate (mmBtu) per hour. If required, compliance shall be demonstrated based upon the procedures specified in Methods 201 and 202 of 40 CFR Part 51, Appendix M, and the procedures specified in OAC rule 3745-17-03(B)(9). Alternative U.S. EPA-approved test methods can be used with prior approval from Ohio EPA.

f. Emission Limitation:
2.97 pound per hour SO_2

Applicable Compliance Method:

The hourly emission limitation is based on operation at maximum capacity at a maximum H_2S concentration of 0.10 grain/dscm (159 ppmv at 14.7 psia and 60 ^oF). Therefore compliance with the 0.10 grain H_2S per dry standard cubic foot of fuel gas burned constitutes compliance with the hourly SO_2 emission limitation.

g. Emission Limitation:
11.77 tons NO_x per rolling 12-month period

Applicable Compliance Method:
The NOx continuous emissions monitoring system shall serve as demonstration of compliance with this emissions limit.

h. Emission Limitation:
18.99 tons CO per rolling 12-month period

Applicable Compliance Method:
Annual allowable emissions are based on the maximum firing rate of 3,911,512 mmBtu per rolling 12-month period. Therefore, compliance with the firing rate restriction under section B. constitutes compliance with the annual CO limit.

i. Emission Limitation:
12.33 tons VOC per rolling 12-month period

Applicable Compliance Method:
Annual allowable emissions are based on maximum firing rate of 3,911,512 mmBtu per rolling 12-month period. Therefore, compliance with the firing rate restriction under section B. constitutes compliance with the annual VOC limit.

j. Emission Limitation:
12.33 tons PM_{10} per rolling 12-month period

Applicable Compliance Method:
Annual allowable emissions are based on maximum firing rate of 3,911,512 mmBtu per rolling 12-month period. Therefore, compliance with the firing rate restriction under section B. constitutes compliance with the annual PM_{10} limit.

k. Emission Limitation:
2.76 tons SO_2 per rolling 12-month period

Applicable Compliance Method:
Compliance shall be demonstrated based upon the monitoring and record keeping requirements of section C. for the hydrogen sulfide in the refinery fuel gas and natural gas. If required, compliance shall be demonstrated based upon the procedures specified in Methods 1 through 4 and 6 of 40 CFR Part 60, Appendix A. Alternative U.S. EPA-approved test methods can be used with prior approval from Ohio EPA.

l. Emission Limitation:
10 ppmv dry basis of ammonia and 11.39 TPY

Applicable Compliance Method:
Compliance shall be demonstrated based upon the monitoring and record keeping requirements of section C. The results of the permittee's ammonia slip analysis shall be submitted to the Toledo Division of Environmental Services. The annual emission limitation is based on operation at maximum capacity with ammonia emissions of 10 ppmvd, therefore, compliance with the 10 ppmv dry basis constitutes compliance with the annual emission limitation.

m. Emission Limitation:
0.10 grain H_2S per dry standard cubic foot (159 ppmv at 14.7 psia and 60°F) of refinery fuel gas and/or natural gas burned as a volume-weighted, 24 hour daily average

Applicable Compliance Method:
Compliance shall be demonstrated based upon the monitoring and record keeping requirements of section C. If required, compliance shall also be demonstrated based upon the following methods: Method 11, 15, 15A, or 16 shall be used to determine the H2S concentration. The gases entering the sampling train should be at about atmospheric pressure. If the pressure in the refinery fuel gas lines is relatively high, a flow control valve may be used to reduce the pressure. If the line pressure is high enough to operate the sampling train without a vacuum pump, the pump may be eliminated from the sampling train. The sample shall be drawn from a point near the centroid of the fuel gas line.

i. For Method 11, the sampling time and sample volume shall be at least 10 minutes and 0.010 dscm (0.35 dscf). Two samples of equal sampling times shall be taken at about 1-hour intervals. The arithmetic average of these two samples shall constitute a run. For most fuel gases, sampling times exceeding 20 minutes may result in depletion of the collection solution, although fuel gases containing low concentrations of H2S may necessitate sampling for longer periods of time.
ii. For Method 15 or 16, at least three injects over a 1-hour period shall constitute a run.
iii. For Method 15A, a 1-hour sample shall constitute a run.

n. Emission Limitation:
0.20 ppmv from the process PSA purge gas

Applicable Compliance Method:
Compliance shall be demonstrated based upon the analysis of the process PSA purge gas and the recordkeeping requirements of section C.

2. Compliance with the deaerator emissions limitation(s) in section A.1. of these terms and conditions shall be determined in accordance with the following methods:

a. Emission Limitation:
1.66 pounds per hour and 7.27 TPY CO

Applicable Compliance Method:
These emission limitations are based on the potential to emit of this emissions unit while

operating at maximum capacity for 8760 hours per year. If required, the permittee shall demonstrate compliance with the hourly emission limitation 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 Ohio EPA.

b. Emission Limitation:
0.46 pound per hour and 2.02 TPY volatile organic compounds (VOC)

Applicable Compliance Method:
Compliance shall be demonstrated using a mass balance approach. A minimum of eight (8) runs are required and shall consist of collecting process samples and flow rate data for all streams that enter and exit the deaerator including the steam (condensate). The samples must be collected in an inert container such as glass with Teflon lined lids with zero headspace. The samples must be chilled until analysis and analyzed within 72 hours of collection for ppm VOC as carbon by weight by the condensate trap analysis in Method 25. Process flow rates must be obtained using calibrated instruments. Aside from the VOC emissions rate, the deaerator vent rate must be calculated as the difference between total inlet and outlet flows for quality assurance. A negative value, a high positive value or large deviation between runs may be an indicator of an error and may result in rejection of the test results. Alternative U.S. EPA-approved test methods can be used with prior approval from Ohio EPA.

c. Emission Limitation:
0.31 pound per hour and 1.36 TPY ammonia

Applicable Compliance Method:
These emission limitations are based on the potential to emit of this emissions unit while operating at maximum capacity for 8760 hours per year. If required, the permittee shall demonstrate compliance with the hourly emission limitation using U.S. EPA Conditional Test Method (CTM) 027. Alternative U.S. EPA approved test methods may be used with prior approval from Ohio EPA.

3. Emission testing requirements:

a. The permittee shall conduct, or have conducted, emission testing for this emissions unit in accordance with the following requirements:

i. The emission testing shall be conducted within 180 days of startup.

ii. The emission testing shall be conducted to demonstrate compliance with the allowable mass emission rate for NO_X from the reformer stack and VOC emissions from the deaerator vent stack.

iii. The following test method(s) shall be employed to demonstrate compliance with the allowable mass emission rate(s):

NOx: Methods 1 through 4 and 7 or 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.

VOC: Methods 25 of 40 CFR Part 60, Appendix A. Alternative U.S. EPA-approved test methods may be used with prior approval from the Ohio EPA.

ammonia: U.S. EPA Conditional Test Method (CTM) 027. The permittee shall record all the SCR operating parameters during the test, including the ammonia injection rate, every 15 minutes. Alternative U.S. EPA-approved test methods can be used with prior approval from Ohio EPA.

iv. The test(s) shall be conducted while the emissions unit is operating at or near its maximum capacity, unless otherwise specified or approved by the Toledo Division of Environmental Services.

v. A relative accuracy test audit conducted within this time frame may be used in lieu

of the requirements for NOx in section E.4.a.iii. procedures.

b. Not later than 30 days prior to the proposed test date(s), the permittee shall submit an "Intent to Test" notification to the Toledo Division of Environmental Services. 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 Toledo Division of Environmental Services's refusal to accept the results of the emission test(s).

c. Personnel from the Toledo Division of Environmental Services 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.

d. 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 Toledo Division of Environmental Services 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 Toledo Division of Environmental Services.

5. NOx CEM: Within 60 days of the plant startup, the permittee shall conduct certification tests of such equipment pursuant to ORC section 3704.03(I) and 40 CFR Part 60, Appendix B, Performance Specification 6. Personnel from 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. In accordance with OAC rule 3745-15-04, all copies of the test results shall be submitted to the appropriate Ohio EPA District Office or local air agency within 30 days after the test is completed. Copies of the test results shall be sent to the appropriate Ohio EPA District Office or local air agency and the Ohio EPA, Central Office. Certification of the continuous NO_x monitoring system shall be granted upon determination by the Ohio EPA, Central Office that the system meets all requirements of ORC section 3704.03(I) and 40 CFR Part 60, Appendix B, Performance Specification 6.

F. Miscellaneous Requirements

1. NOx CEM: Within 180 days of the plant startup, the permittee shall develop a written quality assurance/quality control plan for the continuous NO_x monitoring system designed to ensure continuous valid and representative readings of NO_x emissions in units of the applicable standard. 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.

2. The terms and conditions of this PTI A.1 through F.1 are federally enforceable.

PART II - SPECIAL TERMS AND CONDITIONS FOR SPECIFIC EMISSIONS UNIT(S)

A. Applicable Emissions Limitations and/or Control Requirements

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

Operations, Property, and/or Equipment		Applicable Rules/Requirements
P002- Hydrogen Reformer Train 2 - 514 mmBtu/hr methane steam reformer train with low NOx burners and selective catalytic reduction (SCR), NOx continuous emission monitor (CEM), burning refinery fuel gas, natural gas and PSA off-gas and a deaerator with vents		OAC rule 3745-17-07(A)(1)
		OAC rule 3745-17-11(B)(1)
		OAC rule 3745-18-06(E)(2)
	deaerator vent emissions	OAC rule 3745-21-07(B)
stack emissions		OAC rule 3745-23-06(B)
		OAC rule 3745-31-05(A)(3)
		OAC rule 3745-31-05(C)

	Applicable Emissions Limitations/Control Measures	
		period; and 11.39 tons ammonia per rolling, 12-month period. See section C.17.
	Visible particulate emissions from any stack shall not exceed 20% opacity as a six-minute average, unless otherwise specified by the rule. See section A.2.a.	1.66 lb/hr and 7.27 TPY CO; 0.46 lb/hr and 2.02 TPY VOC (as methanol); see section A.2.d. 0.31 lb/hr and 1.36 TPY ammonia see section A.2.e.
OAC rule 3745-31-05(A)(3)	See section A.2.a. See section A.2.b. See section A.2.b. 3.09 lb/hr nitrogen oxides (NOx); 4.99 lb/hr carbon monoxide (CO); 3.24 lb/hr volatile organic compounds (VOC); 3.24 lb/hr particulate matter less than 10 microns (PM_{10}); 2.97 lb/hr sulfur dioxide (SO_2); and 10 ppmv ammonia. see section A.2.c. 11.77 tons NOx per rolling, 12-month period; 18.99 tons CO per rolling, 12-month period; 12.33 tons VOC per rolling, 12-month period; 12.33 tons particulate emissions/PM_{10} per rolling, 12-month period; 2.76 tons SO_2 per rolling, 12-month	

2. Additional Terms and Conditions

2.a The emission limitation specified by this rule is less stringent than the emission limitation established pursuant to OAC rule 3745-31-05(A)(3)

2.b The permittee has satisfied the "latest available control techniques and operating practices" required pursuant to OAC rules 3745-21-07(B) and 3745-23-06(B) by committing to comply with the best available technology requirements established pursuant to OAC rule 3745-31-05(A)(3) in this permit to install.

2.c The permittee shall not burn in any fuel gas combustion device, any fuel gas that contains hydrogen sulfide (H_2S) in excess of 230 milligrams per dry standard cubic meter (0.10 grain per dry standard cubic foot or 159 ppmv at 14.7 psia and 60°F).

2.d The emissions of hazardous air pollutants (HAPs) from all emissions units at this facility, as identified in Section 112(b) of Title III of the Clean Air Act, shall be resticted to less than 10 tons per year for any individual HAP, and less than 25 tons per year for any combination of HAPs, as rolling 12-month summations.

2.e The pound per hour and ton per year emission limitations were established for PTI purposes to reflect the potential to emit for this emissions unit. Therefore, it is not necessary to develop record keeping and/or reporting requirements to ensure compliance with this limitation.

B. Operational Restrictions

1. The permittee shall burn only refinery fuel gas, natural gas and/or process Pressure Swing Absorption (PSA) purge gas in this emissions unit.

2. The quality of the refinery fuel gas burned in this emissions unit shall meet a hydrogen sulfide content which is sufficient to comply with a volume-weighted, daily average H_2S concentration no greater than 230 milligrams per dry standard cubic meter (0.10 grain per dry standard cubic foot or 159 ppmv at 14.7 psia and 60 °F). The process Pressure Swing Absorption (PSA) purge gas burned in this emissions unit shall meet a hydrogen sulfide content of 0.20 ppmv.

3. The maximum firing rate for all fuels combusted, for emissions unit P002, shall not exceed 3,911,512 mmBtu/yr based upon a rolling 12-month summation of the monthly firing rate. To ensure enforceability during the first 12 calendar months of operation following the issuance of this permit, the permittee shall not exceed the maximum cumulative firing rate (in mmBtu) as specified in the following table:

Maximum Cumulative

Month(s)	Firing Rate (in mmBtu) - all fuels
1	326,000
1-2	652,000
1-3	978,000
1-4	1,304,000
1-5	1,630,000
1-6	1,956,000
1-7	2,282,000
1-8	2,608,000
1-9	2,934,000
1-10	3,260,000
1-11	3,586,000
1-12	3,911,512

After the first 12 calendar months of operation following the startup of emissions unit P002, compliance with the maximum firing rate limitation shall be based upon a rolling 12-month summation of the cumulative firing rate (in mmBtu) for all fuels combusted.

4, The maximum volumetric flow rate of refinery fuel gas, for emissions unit P002, shall not exceed 963.6 mmscf/yr based upon a rolling 12-month summation of the monthly flow rate for refinery fuel gas and natural gas. To ensure enforceability during the first 12 calendar months of operation following the issuance of this permit, the permittee shall not exceed the maximum cumulative flow rate (in mmscf) as specified in the following table:

Month(s)	Maximum Cumulative Refinery Fuel Gas & Natural Gas Firing Rate (in mmscf)
1	81
1-2	162
1-3	243
1-4	324
1-5	405
1-6	486
1-7	567
1-8	648
1-9	729
1-10	810
1-11	891

1-12	963.6

After the first 12 calendar months of operation following the startup of emissions unit P002, compliance with the maximum flow rate for refinery fuel gas and natural gas shall be based upon a rolling 12-month summation of the cumulative flow rate of the refinery fuel gas and natural gas (in mmscf).

5. The permittee shall operate the selective catalytic reduction (SCR) unit whenever this emissions unit is in operation.

6. The permittee shall maintain a minimum ratio of the ammonia injection rate to the NOx inlet rate (molar ratio) of 1.0 whenever the SCR emissions control unit is in operation.

C. Monitoring and/or Recordkeeping Requirements

ALL FUELS COMBUSTED

1. For each day during which the permittee burns a fuel other than refinery fuel gas, natural gas and/or Pressure Swing Absorption (PSA) purge gas, the permittee shall maintain a record of the type, quantity, sulfur content in pound(s) of sulfur per mmdscf, and heating value in Btu/dscf of the fuel burned.

REFINERY FUEL GAS TERMS

2. The permittee shall collect or require the refinery fuel gas supplier to collect a representative sample of the refinery fuel gas that is received for burning in this emissions unit. The permittee shall perform or require the supplier to perform analyses of each daily refinery fuel gas sample for sulfur content, heat content and density in accordance with the appropriate ASTM methods.

3. The permittee shall maintain daily records of the density of the refinery fuel gas, the actual heating value of the refinery fuel gas, and the decimal fraction of sulfur in the refinery fuel gas as burned in this emissions unit.

The actual heating value (H) and density (D) of the refinery fuel gas shall be calculated as follows from the results of a daily refinery fuel gas compositional analysis using gas chromatography:

H = summation of (h_i x m_i)

m_i = the mass fraction of each chemical compound detected in the refinery fuel gas using chromatographic analysis; and

h_i = the heat content of each chemical compound detected in the refinery fuel gas, in Btu per pound of chemical.

$D = (P \times M) / (10.73 \times T)$

where:

10.73 = ideal gas constant with units of psia - cubic feet / lb mole - degrees Rankine
P = the refinery fuel gas line pressure, in psia;
T = the refinery fuel gas line temperature, in degrees Rankine; and
M = the molecular weight of refinery fuel gas, in lb/lb mole.

The molecular weight of the gas shall be calculated as follows:

M = summation of ($MW_i \times f_i$)

where:

MW_i = the molecular weight of each chemical component of the refinery fuel gas, in lb/lb mole; and

f_i = the mole fraction of each chemical compound detected in the refinery fuel gas using gas chromatographic analysis.

As an alternative, the permittee may require the refinery fuel gas supplier to provide the above information.

4. The permittee shall install a hydrogen sulfide continuous emission monitor or require the refinery fuel gas supplier to provide a volume-weighted 24 hour daily average of the hydrogen sulfide CEMS data, in ppm and identify the H_2S CEM monitor.

5. The permittee shall maintain daily records of the 24 hour daily average of the decimal (mass) fraction of sulfur in the refinery gas. The decimal (mass) fraction of sulfur shall be calculated as follows:

$S = (A_{H2S} / 1X10^6) \times 0.9408$

where:

A_{H2S} = 24 hour daily average of the H_2S CEMS data, in ppm; and

0.9408 = the pound of sulfur per pound of hydrogen sulfide.

6. The permittee shall maintain daily records of the calculated, 24 hour daily SO_2 emission rate for the refinery fuel gas based upon the daily average of the sulfur content, daily heat content value, and daily density value of the refinery fuel gas. The SO_2 emission rate shall be calculated as follows, in accordance with OAC rule 3745-18-04(F)(3):

   ERG = (1x10^6/H) x (D) x (S) x (1.998)

   where:

   ERG = each 24 hour daily average SO_2 emission rate, in pounds of SO_2 per mmBtu;
   H = the calculated daily average heat value of the fuel, in Btu/dscf of refinery fuel gas;
   D = the density value of the fuel, in pounds per dscf of refinery fuel gas; and
   S = each 24 hour daily average decimal (mass) fraction of sulfur in the refinery fuel gas.

7. The permittee shall monitor and record the daily and monthly average flow rate of refinery fuel gas in terms of standard cubic feet per hour, mmBtu/hr, and mmBtu/month. Each month, the permittee shall add the monthly flow total rate to the total flow rate of refinery fuel gas for the previous 11 months to determine the rolling, 12-month summation of the monthly flow rate.

   During the first 12 calendar months of operation following the issuance of this permit, the cumulative flow rate for refinery fuel gas and natural gas combusted is calculated by adding the current month's flow rate (mmscf/mo) to the flow rate for each calendar month since the issuance of this permit.

   PSA PURGE GAS

8. The permittee shall analyze the Process PSA purge gas burned in the reformer furnace at least once each month for the presence of hydrogen sulfide during normal operation. If the analyses shows that the hydrogen sulfide content is 0.20 ppmv or less for 6 consecutive calendar months of normal operation, the required frequency of analyses for the presence of hydrogen sulfide in the process PSA purge gas may be reduced to quarterly (once every 3 calendar months, when the emissions unit is in operation). If a subsequent analysis by the permittee indicates the presence of hydrogen sulfide greater than 0.20 ppmv, the permittee shall calculate the potential sulfur dioxide emissions from the reformer furnace based on combustion of the process PSA purge gas at maximum capacity. The permittee shall also revert to testing for the presence of hydrogen sulfide in the PSA purge gas on a monthly basis until the hydrogen sulfide content is 0.20 ppmv or less for 6 consecutive calendar months of normal operation.

   SCR

9. The permittee shall maintain daily records that document any time periods when the SCR was not in service when the emissions unit was in operation.

10. The permittee shall continuously record, the ratio of the ammonia injection rate to the NOx inlet rate (molar ratio) for the SCR control unit. Also, based on the ammonia slip analysis required in section E., the permittee shall minimize ammonia slip while maintaining SCR effectiveness in a manner consistent with good engineering practices

NOx CEM

11. The permittee shall operate and maintain existing equipment to continuously monitor and record NO_x from this emissions unit in ppm converted to pounds per hour. Such continuous monitoring and recording equipment shall comply with the requirements specified in 40 CFR Part 60.13.

12. The permittee shall maintain records of all data obtained by the continuous NO_x monitoring system including, but not limited to, parts per million NO_x on an instantaneous (one-minute) basis, emissions of NO_x in units of the applicable standard in the appropriate averaging period (e.g., hourly), results of daily zero/span calibration checks, and magnitude of manual calibration adjustments.

All Fuels Combusted Recordkeeping

13. The permittee shall maintain monthly records of the following information:

    a. During the first 12 calendar months of operation following the issuance of this permit, the cumulative firing rate for all fuels combusted is calculated by adding the current month's firing rate (mmBtu) to the firing rate for each calendar month since the issuance of this permit.

    b. Beginning after the first 12 calendar months of operation following the issuance of this permit, the rolling 12-month summation of the maximum firing rate (mmBtu) for all fuels combusted is calculated by adding the current month's firing rate to the firing rate for the preceding eleven calendar month.

Air Toxics

14. The permit to install for this emissions unit (P002) was evaluated based on the actual materials and the design parameters of the emissions unit's exhaust system, as specified by the permittee in the permit to install application. The Ohio EPA's "Review of New Sources of Air Toxic Emissions" policy ("Air Toxic Policy") was applied for each pollutant emitted by this emissions unit using data from the permit to install application and the SCREEN 3.0 model. The predicted 1-hour maximum ground-level concentration from the use of the SCREEN 3.0 model was compared to the Maximum Acceptable Ground-Level Concentration (MAGLC). The following summarizes the results of the modeling for the "worst case" pollutant(s):

    a. Pollutant: ammonia- 25.50 TPY (max) (for P001 and P002)

TLV (mg/m^3): 17.413

Maximum Hourly Emission Rate (lbs/hr): 5.24 (combined)

Predicted 1-Hour Maximum Ground-Level
Concentration (µg/m^3): 3.16

MAGLC (µg/m^3): 414.6

b. Pollutant: Methanol - 4.04 TPY (for P001 and P002)

TLV (mg/m^3): 262.1

Maximum Hourly Emission Rate (lbs/hr): 0.92 (combined)

Predicted 1-Hour Maximum Ground-Level Concentration ($\mu g/m^3$): 48.66

MAGLC ($\mu g/m^3$): 6,240

15. Physical changes to or changes in the method of operation of the emissions unit after its installation could affect the parameters used to determine whether or not the "Air Toxic Policy" is satisfied. Consequently, prior to making a change that could impact such parameters, the permittee shall conduct an evaluation to determine that the "Air Toxic Policy" will still be satisfied. If, upon evaluation, the permittee determines that the "Air Toxic Policy" will not be satisfied, the permittee will not make the change. Changes that can affect the parameters used in applying the "Air Toxic Policy" include the following:

    a. changes in the composition of the materials used (typically for coatings or cleanup materials), or the use of new materials, that would result in the emission of a compound with a lower Threshold Limit Value (TLV), as indicated in the most recent version of the handbook entitled "American Conference of Governmental Industrial Hygienists (ACGIH)," than the lowest TLV value previously modeled;

    b. changes in the composition of the materials, or use of new materials, that would result in an increase in emissions of any pollutant with a listed TLV that was proposed in the application and modeled; and

    c. physical changes to the emissions unit or its exhaust parameters (e.g., increased/ decreased exhaust flow, changes in stack height, changes in stack diameter, etc.).

16. If the permittee determines that the "Air Toxic Policy" will be satisfied for the above changes, the Ohio EPA will not consider the change(s) to be a "modification" under OAC rule 3745-31-01(VV)(1)(a)(ii), and a modification of the existing permit to install will not be required. If the change(s) is (are) defined as a modification under other provisions of the modification definition (other than (VV)(1)(a)(ii)), then the permittee shall obtain a final permit to install prior to the change.

17. The permittee shall collect, record, and retain the following information when it conducts evaluations to determine that the changed emissions unit will still satisfy the "Air Toxic Policy:"

    a. a description of the parameters changed (composition of materials, new pollutants emitted, change in stack/exhaust parameters, etc.);

b. documentation of its evaluation and determination that the changed emissions unit still satisfies the "Air Toxic Policy"; and,

c. where computer modeling is performed, a copy of the resulting computer model runs that show the results of the application of the "Air Toxic Policy" for the change.

D. Reporting Requirements

ALL FUELS COMBUSTED

1. The permittee shall submit deviation (excursion) reports that identify each day when a fuel other than refinery fuel gas, natural gas and/or Pressure Swing Absorption (PSA) purge 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 period in which the rolling, 12-month summation of the firing rate of all fuels combusted in the reformer exceeded the limitation specified in section B. of this permit and the actual cumulative quantity of the firing rate of all fuels combusted for each such month; The permittee shall submit quarterly deviation/excursion reports that identify each period in which the firing rate for all fuels combusted in Section B.3. was exceeded.

REFINERY FUEL GAS

3. The permittee shall submit quarterly deviation (excursion) reports that identify each 24 hour daily SO_2 emission rate, as calculated in section C.6., that exceeds the SO_2 emission limitation of 2.97 lb SO_2 per hour for the burning of refinery fuel gas.

4. The permittee shall submit quarterly deviation/excursion reports that identify each period in which the flow rate(s) for refinery fuel gas and/or natural gas in Section B.3. were exceeded.

PSA PURGE GAS

5. The permittee shall notify the Toledo Division of Environmental Services in writing of any analysis of the process PSA purge gas that exceeded 0.20ppmv of H2S. The notification shall include a copy of such record and shall be sent to the Toledo Division of Environmental Services within 30 days after the event occurs.

SCR

6. The permittee shall notify the Toledo Division of Environmental Services in writing of any daily record(s):

a. showing that the SCR was not in service when the emissions unit was in operation; and/or

b. showing that the ratio of the ammonia injection rate to the NOx inlet rate (molar ratio) for the SCR control unit falls below 1 or exceeds the maximum ammonia injection rate established during the most recent stack emissions test.

The notification shall include a copy of such record and shall be sent to the Toledo Division of Environmental Services within 30 days after the event occurs.

NOx CEM

7. Prior to the installation of the continuous NO_x monitoring system, 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 6 for approval by the Ohio EPA, Central Office.

8. Pursuant to OAC rules 3745-15-04, 3745-35-02, and ORC sections 3704.03(I) and 3704.031, 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 the date, commencement and completion times, duration, magnitude, reason (if known), and corrective actions taken (if any), of all instances of NO_x values in excess of the applicable limits specified in the terms and conditions of this permit. These reports shall also contain the total NO_x emissions for the calendar quarter (in tons).

9. 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 any continuous NO_x monitoring system downtime while the emissions unit was on line (date, time, duration and reason) along with any corrective action(s) taken. The permittee shall provide the emissions unit operating time during the reporting period and the date, time, reason and corrective action(s) taken for each time period of emissions unit and control equipment malfunctions. The total operating time of the emissions unit and the total operating time of the analyzer while the emissions unit was on line shall also be included in the quarterly report.

If there are no excess NOx emissions during the calendar quarter, the permittee shall submit a statement to that effect along with the emissions unit operating time during the reporting period and the date, time, reason, and corrective action(s) taken for each time period of emissions unit, control equipment, and/or monitoring system malfunctions. The total operating time of the emissions unit and the total operating time of the analyzer while the emissions unit was on line also shall be included in the quarterly report. These quarterly excess emission reports shall be submitted by January 30, April 30, July 30, and October 30 of each year and shall address the data obtained during the previous calendar quarter.

10. Pursuant to OAC rules 3745-15-04, 3745-35-02, and ORC sections 3704.03(I) and 3704.031, the permittee shall submit a summary of the excess emission report according to the requirements stated in 40 CFR Part 60.7. The summary shall be submitted to the Toledo Division of Environmental Services within 30 days following the end of each calendar quarter in a manner prescribed by the Director.

E. Testing Requirements

1. Compliance with the stack emissions limitation(s) in section A.1. of these terms and conditions shall be determined in accordance with the following methods:

   a. Emission Limitation:
   20% opacity as a 6-minute average

   Applicable Compliance Method:
   If required, compliance shall be demonstrated based upon the procedures specified in 40 CFR Part 60, Appendix A, Method 9 and OAC rule 3745-17-03(B)(1).

   b. Emission Limitation:
   3.09 pounds per hour NOx

   Applicable Compliance Method:
   The NOx continuous emissions monitor (CEM) shall be used to demonstrate compliance. Until certification of the NOx CEM, use the manufacturer supplied emission factor of 0.0601 lb/mmBtu and multiply by the daily average total fuel combusted per hour (mmBtu/hr). If required, compliance shall be demonstrated based upon the procedures specified in Methods 1 through 4 and 7 of 40 CFR Part 60, Appendix A. Alternative U.S. EPA-approved test methods can be used with prior approval from Ohio EPA.

   c. Emission Limitation:
   4.99 pounds per hour carbon monoxide (CO)

   Applicable Compliance Method:
   Multiply the manufacturer's supplied CO emission factor of 0.0097 lb/mmBtu of fuel gas burned by the daily average firing rate (mmBtu) per hour. If required, compliance shall be demonstrated based upon the procedures specified in Methods 1 through 4 and 10 of 40 CFR Part 60, Appendix A. Alternative U.S. EPA-approved test methods can be used with prior approval from Ohio EPA.

   d. Emission Limitation:

3.24 pounds per hour volatile organic compounds (VOC)

Applicable Compliance Method:
Multiply the manufacturer's supplied VOC emission factor of 0.0063 lb/mmBtu of fuel gas burned by the daily average firing rate (mmBtu) per hour. If required, compliance shall be demonstrated based upon the procedures specified in Methods 1 through 4 and 25 of 40 CFR Part 60, Appendix A. Alternative U.S. EPA-approved test methods can be used with prior approval from Ohio EPA.

e. Emission Limitation:
3.24 pound per hour PM_{10} emissions

Applicable Compliance Method:
Multiply the manufacturer's supplied particulate matter emission factor of 0.0063 lb/mmBtu of fuel gas burned by the daily average firing rate (mmBtu) per hour. If required, compliance shall be demonstrated based upon the procedures specified in Methods 201 and 202 of 40 CFR Part 51, Appendix M, and the procedures specified in OAC rule 3745-17-03(B)(9). Alternative U.S. EPA-approved test methods can be used with prior approval from Ohio EPA.

f. Emission Limitation:
2.97 pound per hour SO_2

Applicable Compliance Method:
The hourly emission limitation is based on operation at maximum capacity at a maximum H_2S concentration of 0.10 grain/dscm (159 ppmv at 14.7 psia and 60 ^oF). Therefore compliance with the 0.10 grain H_2S per dry standard cubic foot of fuel gas burned constitutes compliance with the hourly SO_2 emission limitation.

g. Emission Limitation:
11.77 tons NO_x per rolling 12-month period

Applicable Compliance Method:
The NOx continuous emissions monitoring system shall serve as demonstration of compliance with this emissions limit.

h. Emission Limitation:
18.99 tons CO per rolling 12-month period

Applicable Compliance Method:
Annual allowable emissions are based on the maximum firing rate of 3,911,512 mmBtu

per rolling 12-month period. Therefore, compliance with the firing rate restriction under section B. constitutes compliance with the annual CO limit.

i. Emission Limitation:
12.33 tons VOC per rolling 12-month period

Applicable Compliance Method:
Annual allowable emissions are based on maximum firing rate of 3,911,512 mmBtu per rolling 12-month period. Therefore, compliance with the firing rate restriction under section B. constitutes compliance with the annual VOC limit.

j. Emission Limitation:
12.33 tons PM_{10} per rolling 12-month period

Applicable Compliance Method:
Annual allowable emissions are based on maximum firing rate of 3,911,512 mmBtu per rolling 12-month period. Therefore, compliance with the firing rate restriction under section B. constitutes compliance with the annual PM_{10} limit.

k. Emission Limitation:
2.76 tons SO_2 per rolling 12-month period

Applicable Compliance Method:
Compliance shall be demonstrated based upon the monitoring and record keeping requirements of section C. for the hydrogen sulfide in the refinery fuel gas and natural gas. If required, compliance shall be demonstrated based upon the procedures specified in Methods 1 through 4 and 6 of 40 CFR Part 60, Appendix A. Alternative U.S. EPA-approved test methods can be used with prior approval from Ohio EPA.

l. Emission Limitation:
10 ppmv dry basis of ammonia and 11.39 TPY

Applicable Compliance Method:
Compliance shall be demonstrated based upon the monitoring and record keeping requirements of section C. The results of the permittee's ammonia slip analysis shall be submitted to the Toledo Division of Environmental Services. The annual emission limitation is based on operation at maximum capacity with ammonia emissions of 10 ppmvd, therefore, compliance with the 10 ppmv dry basis constitutes compliance with the annual emission limitation.

m. Emission Limitation:
0.10 grain H_2S per dry standard cubic foot (159 ppmv at 14.7 psia and 60°F) of refinery fuel gas and/or natural gas burned as a volume-weighted, 24 hour daily average

Applicable Compliance Method:
Compliance shall be demonstrated based upon the monitoring and record keeping requirements of section C. If required, compliance shall also be demonstrated based upon the following methods: Method 11, 15, 15A, or 16 shall be used to determine the H2S concentration. The gases entering the sampling train should be at about atmospheric pressure. If the pressure in the refinery fuel gas lines is relatively high, a flow control valve may be used to reduce the pressure. If the line pressure is high enough to operate the sampling train without a vacuum pump, the pump may be eliminated from the sampling train. The sample shall be drawn from a point near the centroid of the fuel gas line.

i. For Method 11, the sampling time and sample volume shall be at least 10 minutes and 0.010 dscm (0.35 dscf). Two samples of equal sampling times shall be taken at about 1-hour intervals. The arithmetic average of these two samples shall constitute a run. For most fuel gases, sampling times exceeding 20 minutes may result in depletion of the collection solution, although fuel gases containing low concentrations of H2S may necessitate sampling for longer periods of time.

ii. For Method 15 or 16, at least three injects over a 1-hour period shall constitute a run.

iii. For Method 15A, a 1-hour sample shall constitute a run.

n. Emission Limitation:
0.20 ppmv from the process PSA purge gas

Applicable Compliance Method:
Compliance shall be demonstrated based upon the analysis of the process PSA purge gas and the recordkeeping requirements of section C.

2. Compliance with the deaerator emissions limitation(s) in section A.1. of these terms and conditions shall be determined in accordance with the following methods:

a. Emission Limitation:
1.66 pounds per hour and 7.27 TPY CO

Applicable Compliance Method:
These emission limitations are based on the potential to emit of this emissions unit while

operating at maximum capacity for 8760 hours per year. If required, the permittee shall demonstrate compliance with the hourly emission limitation 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 Ohio EPA.

b. Emission Limitation:
0.46 pound per hour and 2.02 TPY volatile organic compounds (VOC)

Applicable Compliance Method:
Compliance shall be demonstrated using a mass balance approach. A minimum of eight (8) runs are required and shall consist of collecting process samples and flow rate data for all streams that enter and exit the deaerator including the steam (condensate). The samples must be collected in an inert container such as glass with Teflon lined lids with zero headspace. The samples must be chilled until analysis and analyzed within 72 hours of collection for ppm VOC as carbon by weight by the condensate trap analysis in Method 25. Process flow rates must be obtained using calibrated instruments. Aside from the VOC emissions rate, the deaerator vent rate must be calculated as the difference between total inlet and outlet flows for quality assurance. A negative value, a high positive value or large deviation between runs may be an indicator of an error and may result in rejection of the test results. Alternative U.S. EPA-approved test methods can be used with prior approval from Ohio EPA.

c. Emission Limitation:
0.31 pound per hour and 1.36 TPY ammonia

Applicable Compliance Method:
These emission limitations are based on the potential to emit of this emissions unit while operating at maximum capacity for 8760 hours per year. If required, the permittee shall demonstrate compliance with the hourly emission limitation using U.S. EPA Conditional Test Method (CTM) 027. Alternative U.S. EPA approved test methods may be used with prior approval from Ohio EPA.

3. Emission testing requirements:

a. The permittee shall conduct, or have conducted, emission testing for this emissions unit in accordance with the following requirements:

i. The emission testing shall be conducted within 180 days of startup.

ii. The emission testing shall be conducted to demonstrate compliance with the

allowable mass emission rate for NO_X from the reformer stack and VOC emissions from the deaerator vent stack.

iii. The following test method(s) shall be employed to demonstrate compliance with the allowable mass emission rate(s):

NOx: Methods 1 through 4 and 7 or 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.

VOC: Methods 25 of 40 CFR Part 60, Appendix A. Alternative U.S. EPA-approved test methods may be used with prior approval from the Ohio EPA.

ammonia: U.S. EPA Conditional Test Method (CTM) 027. The permittee shall record all the SCR operating parameters during the test, including the ammonia injection rate, every 15 minutes. Alternative U.S. EPA-approved test methods can be used with prior approval from Ohio EPA.

iv. The test(s) shall be conducted while the emissions unit is operating at or near its maximum capacity, unless otherwise specified or approved by the Toledo Division of Environmental Services.

v. A relative accuracy test audit conducted within this time frame may be used in lieu of the requirements for NOx in section E.4.a.iii. procedures.

b. Not later than 30 days prior to the proposed test date(s), the permittee shall submit an "Intent to Test" notification to the Toledo Division of Environmental Services. 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 Toledo Division of Environmental Services's refusal to accept the results of the emission test(s).

c. Personnel from the Toledo Division of Environmental Services 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.

d. 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 Toledo Division of Environmental Services 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 Toledo Division of Environmental Services.

5. NOx CEM: Within 60 days of the plant startup, the permittee shall conduct certification tests of such equipment pursuant to ORC section 3704.03(I) and 40 CFR Part 60, Appendix B, Performance Specification 6. Personnel from 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. In accordance with OAC rule 3745-15-04, all copies of the test results shall be submitted to the appropriate Ohio EPA District Office or local air agency within 30 days after the test is completed. Copies of the test results shall be sent to the appropriate Ohio EPA District Office or local air agency and the Ohio EPA, Central Office. Certification of the continuous NO_x monitoring system shall be granted upon determination by the Ohio EPA, Central Office that the system meets all requirements of ORC section 3704.03(I) and 40 CFR Part 60, Appendix B, Performance Specification 6.

F. Miscellaneous Requirements

1. NOx CEM: Within 180 days of the plant startup, the permittee shall develop a written quality assurance/quality control plan for the continuous NO_x monitoring system designed to ensure continuous valid and representative readings of NO_x emissions in units of the applicable standard. 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.

2. The terms and conditions of this PTI A.1 through F.1 are federally enforceable.