

US EPA ARCHIVE DOCUMENT

July 28, 2011

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RETURN RECEIPT REQUESTED

Ms. Melanie Magee
Air Permits Section (6PD-R)
U.S. Environmental Protection Agency
1445 Ross Avenue
Dallas, TX 75202

Subject: Application for PSD Air Quality Permit, Greenhouse Gas Emissions
Additional Furnace Project
INEOS USA L.L.C.
Alvin, Brazoria County, Texas
TCEQ Customer Reference Number: CN602817884
TCEQ Regulated Entity Number: RN100238708

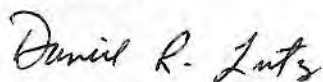
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AIR PERMITS SECTION
6PD-R

Dear Ms. Magee,

INEOS USA L.L.C. (INEOS) is submitting this Prevention of Significant Deterioration (PSD) air quality permit application for greenhouse gas (GHG) emissions from the Additional Furnace Project. The purpose of this application is to authorize the installation and operation of an additional cracking furnace at the No. 2 Olefins Unit. INEOS is concurrently submitting this application to the Texas Commission on Environmental Quality (TCEQ) to authorize other regulated pollutant emissions from the Additional Furnace Project. INEOS and our consultant, TITAN Engineering, are committed to working with the EPA to ensure a timely review of our permit application so that important project deadlines are met.

Please contact me at (713) 373-9300 or Ms. Shauna Dallmer of TITAN Engineering at (713) 253-8686 should you have any questions.

Sincerely,



Daniel Lutz
Environmental Compliance Advisor

DRL/nfs

Attachments: Additional Furnace Project PSD Permit Application

Permit Application Additional Furnace Project



INEOS USA LLC
P.O. Box 1488
Alvin, Texas 77512

CN: 602817884
RN: 100238708

Project No. 412-15

July 2011



TITAN Engineering, Inc.
Environmental Consulting and Management

2225 CR 90, Suite 105, Pearland, TX 77584
Phone: 281-412-7373 Fax: 281-413-4440
<http://www.titanengineering.com>

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Section 1 | Introduction

INEOS USA LLC (INEOS) operates an existing olefins manufacturing facility (No. 2 Olefins Unit) in Alvin, Brazoria County, Texas under Permit No. 95-PSD-TX-854 and various permits by rule. INEOS is submitting this application to authorize the installation and operation of an additional cracking furnace at the No. 2 Olefins Unit in accordance with Title 30 Texas Administrative Code (TAC) Chapter 116.

1.1 Purpose of Application

The INEOS Chocolate Bayou Plant is submitting this permit application in accordance with TCEQ Chapter 116 to authorize the installation and operation of a new cracking furnace, decoking drum and associated equipment. There will be no effect on the emissions from existing operations (No. 2 Olefins Unit) associated with this application. The purpose of the project is to allow an increase in capacity by ensuring that unit rates are maximized during periods when a furnace is off-line for decoking. Because the furnace is new, it will have increased yield, increased energy efficiency and lower NO_x emissions than the existing furnaces.

Specifically, the new proposed facilities will primarily consist of one cracking furnace, a new decoke cyclone/stack (dedicated to the new furnace), and fugitive emissions components. The new furnace will be rated at 495 MMBtu/hr (HHV) to produce ethylene. The furnace will be equipped with an ammonia selective catalytic reduction system (SCR) to reduce NO_x emissions. Since INEOS is still in the vendor selection phase of this project, the most likely operating scenario is being represented for permitting purposes. However, INEOS is committed to meet the emission limitations and control measures represented in this application.

INEOS is currently conducting an Air Quality Analysis (AQA) for the Project to demonstrate that the proposed Plant off-site contaminant impacts will be in compliance with state and federal requirements. The PSD AQA Report will be submitted as a separate stand-alone document subsequent to the submittal of this PSD air permit application.

1.2 NA/PSD Applicability

Because INEOS is proposing the installation of new facilities at a major source, the project has been reviewed for potential applicability for Nonattainment New Source Review (NA) and Prevention of Significant Deterioration Review (PSD). The project is considered a major modification. Pollutants associated with this project include greenhouse gases (GHG), carbon monoxide (CO), nitrogen oxides (NO_x), particulate matter (PM, PM₁₀, and PM_{2.5}), sulfur dioxide (SO₂), ammonia (NH₃) and volatile organic compounds (VOC). The greenhouse gases are calculated carbon dioxide equivalent CO₂e.

INEOS Chocolate Bayou is located in Brazoria County, which is designated as severe Nonattainment for ozone. This designation is based on the 8-hour ozone (1997) standards. VOC and NO_x are identified as precursors for ozone. Projects with an increase (not taking into account decreases) of 5 tpy of NO_x and/or VOC must undergo NA review. The VOC and NO_x emissions associated with this project have an

increase of greater than 5 tpy of VOC and NO_x, therefore contemporaneous netting was performed. The contemporaneous period is defined as five years before the start of construction to the start of operation. The nonattainment net change in emissions in the contemporaneous period are less than 25 tpy, therefore nonattainment permitting is not required for this project. Detailed netting tables are included in Appendix C.

PSD regulations apply to the following criteria pollutants: NO_x, SO₂, CO, PM, PM₁₀ and PM_{2.5}. A summary of PSD requirements are outlined in Table 1-1. As demonstrated, this project will trigger PSD permitting for PM₁₀ and PM_{2.5}.

Table 1-1

Emission Summary for PSD Federal Review

Pollutant	Proposed Emission (tons)	PSD Threshold (tons)	Is Project Netting Required?	Is PSD Permitting Required
NO _x	21.68	40	Yes	No
SO ₂	1.78	40	No	No
CO ₂ e	225,675.84	75,000	Yes	Yes
CO	97.88	100	No	No
PM	22.50	25	No	No
PM ₁₀	17.92	15	Yes	Yes
PM _{2.5}	10.37	10	Yes	Yes

Beginning on January 2, 2011, GHGs are a regulated NSR pollutant under the PSD major source permitting program when they are emitted by new sources or modifications in amounts that meet the Tailoring Rule's set of applicability thresholds, which phase in over time. For PSD purposes, GHGs are a single air pollutant defined as the aggregate group of the following gases: carbon dioxide (CO₂), nitrous oxide (N₂O), methane (CH₄), and hydrofluorocarbons (HFCs). For GHGs, the Tailoring Rule does not change the basic PSD applicability process for evaluating whether there is a new major source or modification. The applicability threshold for the source is based on CO₂ equivalent (CO₂e) emissions as well as its GHG mass emissions. Permits issued (and associated construction commenced) after July 1, 2011 and before June 30, 2013 fall into Step 2 of this rule. Therefore, PSD permitting requirements will for the first time apply to new construction projects that emit GHG (CO₂e) emissions of at least 100,000 tpy and modification to existing sources with emissions greater than 75,000 tpy even if they do not exceed the permitting thresholds for any other pollutant. In December 2010, EPA finalized a rule that designates EPA as the permitting authority for GHG emitting sources in Texas. This rule is in effect until the EPA approves a SIP that allows Texas to regulate GHG.

Because CO₂e emissions associated with the proposed project are above significance levels, INEOS is submitting a copy of this application to EPA.

1.3 TCEQ Forms and Information

TCEQ forms for the new proposed facilities are listed below and provided in Appendix A. TCEQ Table 2, the process flow diagram (PFD), and emission calculations are considered confidential and are provided under separate cover.

Form PI-1	General Application for Air Preconstruction Permit and Amendments
Table 1(a)	Emission Sources
Table 2	Material Balance (Confidential)
Table 30	Estimated Capital Cost and Fee Verification

1.4 Site Description

The INEOS Chocolate Bayou Plant is located in Brazoria County, which is classified as a severe non-attainment area for ozone. Figure 1-1 is an area map showing the location of the Chocolate Bayou Plant and the surrounding area. This figure includes a 3,000-foot radius circle and a 1-mile radius circle. As shown, there are no schools within 3,000 feet of the Chocolate Bayou Plant. Figure 1-2 is a plot plan showing plant boundaries in relation to geographical features such as highways, roads, streams, lakes, and significant facilities not owned or operated by INEOS.

1.5 Upstream/Downstream Analysis

The addition of a new cracking furnace and associated equipment is not expected to result in any production increase in any upstream or downstream facilities. For example, products from the Chocolate Bayou plant are typically transported via pipeline, so an increase in production rate will not result in any increased emissions from storage or loading.

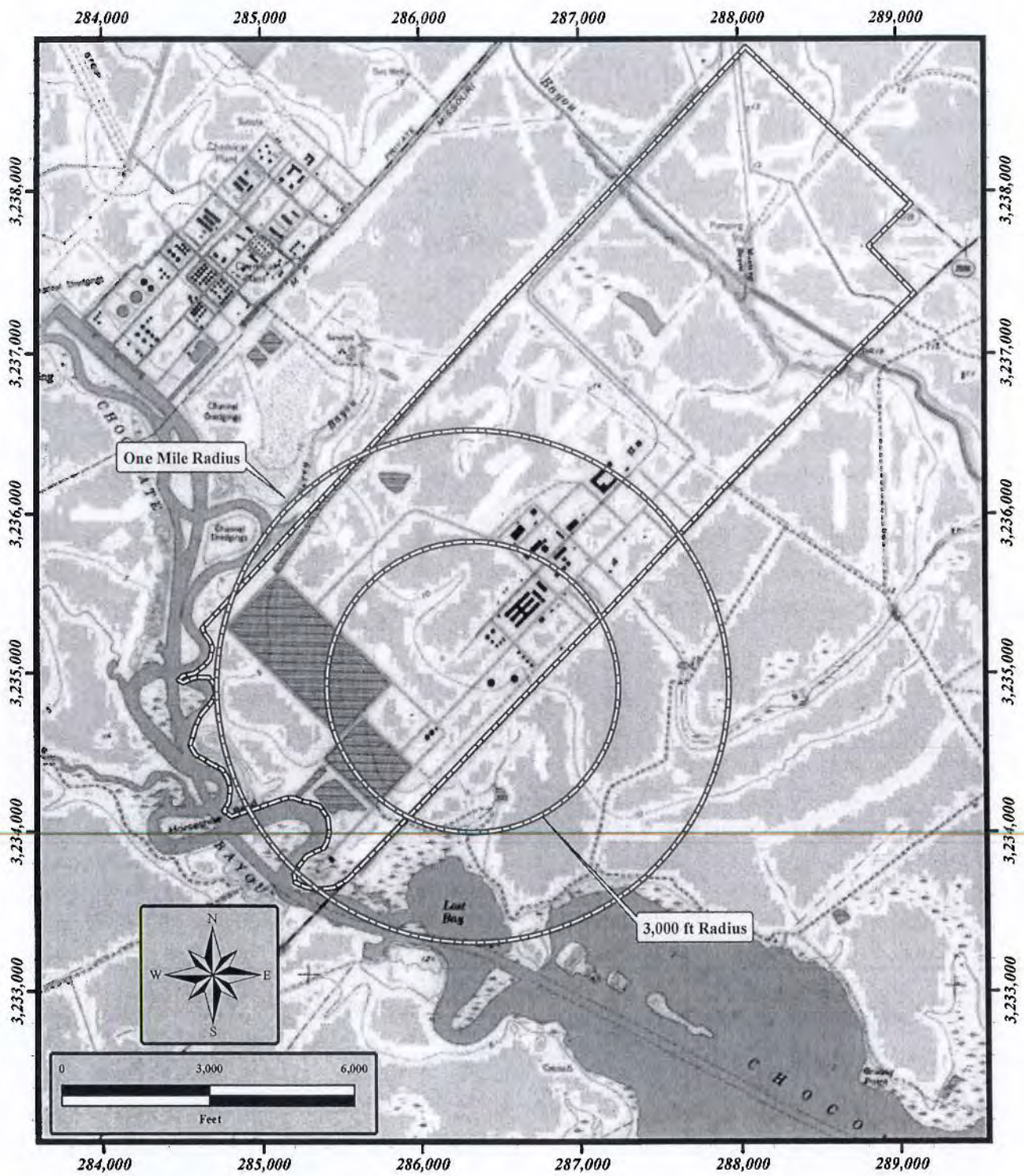
1.6 Permit Fee

Pursuant to § 116.141(a), the permit application fee is calculated based on the estimated capital cost of the project. The permit fee is calculated in Table 30. A check for the application fee has been submitted to the TCEQ Revenue Section under separate cover. Because the capital cost associated with the project is greater than \$2 million, a Professional Engineer (PE) signature is required. The Table 30, PE signature and a copy of the check can be found in Appendix A.

1.7 Public Notice

Air quality permit applications are required to comply with the Public Notice (PN) requirements of Title 30 TAC Chapter 39, Subchapters H and K. PN is required for permit amendments if the total net emission increases exceed the public notice de minimis levels in 30 TAC Chapter 39, Subchapter H. New emission increases are defined as the sum of the allowable emission increases and the allowable emission decreases for each air contaminant affected by the amendment application, per the TCEQ Draft *Guidance Document for Public Notice Procedures for New Source Review Air Quality Permit Applications*, dated October 25, 2001. There are no proposed project decreases associated with this project so the project emission increases are evaluated for public notice. Because these are new sources, net emission

increases were not calculated. The emission increases associated with this project will require PN. Please refer to Appendix C for more detail.



Grid Presented is UTM Zone 15, NAD 1927



TITAN Engineering, Inc.
 Environmental Consulting and Management
 2801 Network Boulevard, Suite 200
 Frisco, Texas 75034
 Phone: (469) 365-1100 • Fax: (469) 365-1199
www.titanengineering.com

FIGURE 1-1 AREA MAP
INEOS USA LLC
Chocolate Bayou Plant
July 2011
TITAN Project No. 412-15
from USGS Quadrangles
Mustang Bayou & Hoskins Mound, Texas
Date Maps Published 1977
Digital Data Courtesy of ESRI Online Datasets

NOTES

Map provided by RMT



TITAN Engineering, Inc.
 2801 NETWORK BLVD.
 SUITE 200
 FRISCO, TEXAS 75034
 (469) 365-1700 (669) 365-1799 fax
 www.titanengineering.com

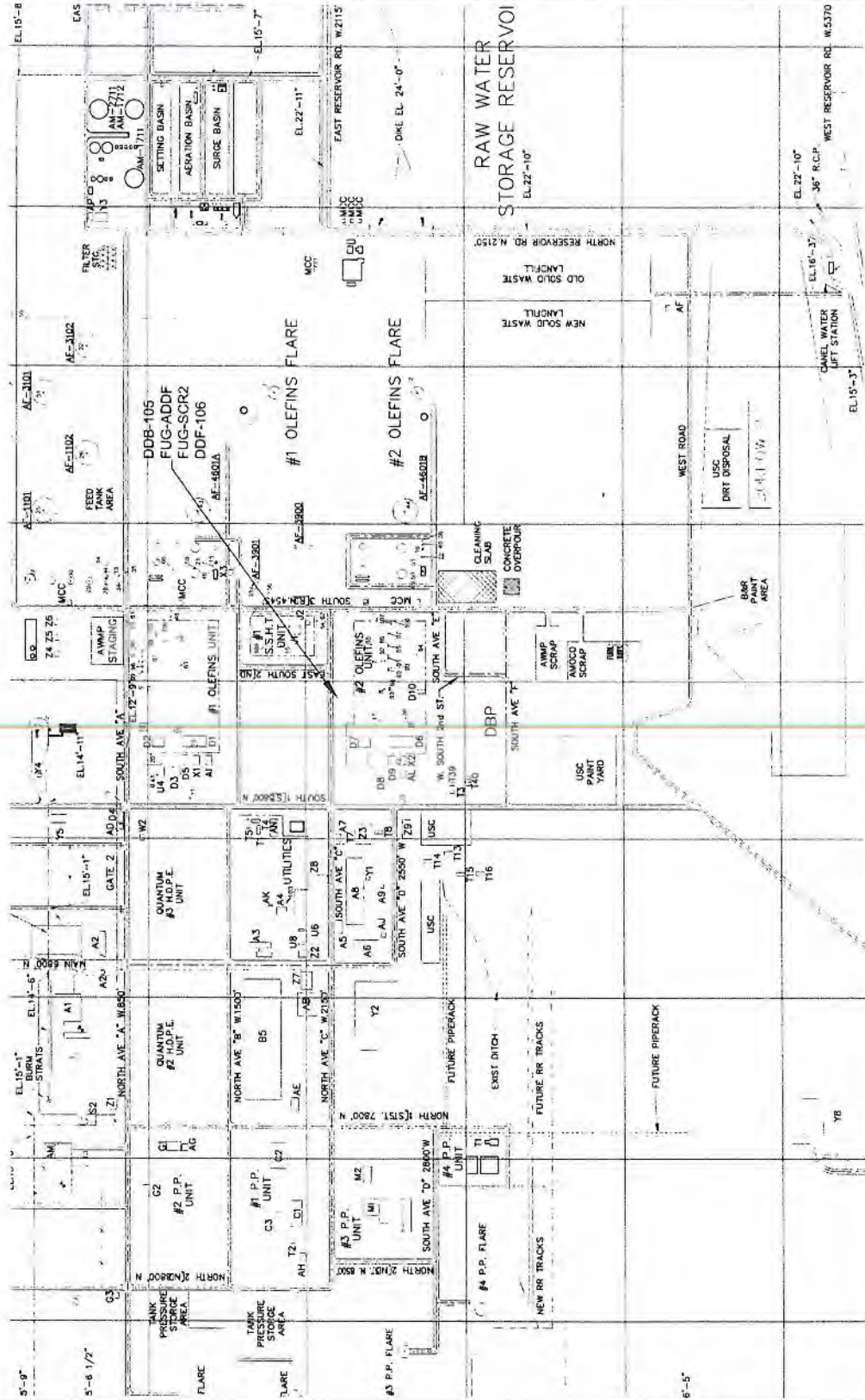
**FIGURE 1-2
 PLOT PLAN**

INEOS USA LLC
 Chocolate Bayou Plant

DESIGNED BY:	RMT	DETAILED BY:	TBI	CHECKED BY:	AI
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PROJECT NO.:	412-15	PLANT/FIGURES	T-INLOS412-15 Olefins No. 2 Furnace/Figures
DATE:	07/2011	PROJECT NO.:	412-15
DRAWING NO.:	TEJ-0000	REVISION:	0
FIGURE:	1-2		

EPN	Description	Easting	Northing
DOB-105	Furnace No. 105	286,473.18	3,235,438.88
FUG-ADDF	Furnace No. 105 VOC Fugitives	286,473.18	3,235,408.88
FUG-SCR2	Furnace No. 105 Ammonia Fugitives	286,473.18	3,235,438.88
DDF-106	Furnace No. 105 Decolke Cyclone	286,473.18	3,235,408.88



Section 2 | Process Description

This section and the Process Flow Diagram are located in the Confidential version of this application.

Section 3 | Emissions Basis

This section is located in the Confidential version of this application.

Section 4 | Best Available Control Technology (BACT)

The PSD regulation requirements of 40 Code of Federal Regulations (CFR) Subsection 52.21(j) require that Best Available Control Technology (BACT) be used to minimize the emissions of pollutants subject to PSD review from a new major source or a modification to an existing major source. Additionally, according to the TCEQ regulation §116.111(a)(2)(C), the proposed facility must be operated with Best Available Control Technology (BACT) for minimizing emissions to the atmosphere with consideration given to the technical practicality and economic reasonableness of reducing or eliminating the emissions from the facility. The pollutants subject to PSD review for the proposed application are PM₁₀ and PM_{2.5}. (GHG BACT is addressed separately in Section 5.) Additionally, TCEQ's New Source Review (NSR) policy requires BACT.

EPA recommends that the *1990 Draft New Source Review Workshop Manual* be used to determine BACT for PSD pollutants. According to this document, BACT determinations are made on a case by case basis using a "top-down" approach, with consideration given to technical practicability and economic reasonableness. Specifically the "top-down" approach shall include the following steps:

1. Identify all available control technologies;
2. Eliminate technically infeasible options;
3. Rank remaining control technologies;
4. Evaluate the most effective control and document results; and
5. Select BACT.

INEOS utilized the RACT/BACT/LAER Clearinghouse (RBLC) to identify the available control technologies which have been demonstrated and approved for the particulate sources associated with this project. These sources included pyrolysis cracking furnaces and decoke vents. The EPA maintains the RBLC. The RBLC is intended to function as a reference for state and local air pollution control agencies in making BACT/LAER decisions and thus has two basic purposes: 1) to provide state and local air pollution control agencies with current information on case-by-case control technology determinations that are made nationwide; and 2) to promote communication, cooperation, and sharing of control technology information among the permitting agencies.

The RBLC was accessed in a query of BACT using process type and pollutant and looking back over the past ten years. The query results can be found in the Appendix D.

4.1 Cracking Furnace | NO_x, CO, VOC and SO₂ Emissions

Based on guidance from the TCEQ, BACT for cracking furnaces with a design capacity greater than 300 MMBtu/hr is a SCR (achieving 0.03 lb NO_x/MMBtu to 0.06 lb NO_x/MMBtu). The proposed new cracking furnace is rated at 495 MMBtu/hr maximum (HHV) and equipped with a SCR. INEOS will burn high hydrogen fuel (~40% by volume) with the balance comprised of methane and 1 to 2% other (ethylene,

etc.). This will allow INEOS to achieve hourly NO_x emissions of 0.03 lbs NO_x/MMBtu and 0.01 lbs NO_x/MMBtu on an annual average. The higher hourly average is needed to accommodate the high hydrogen fuel. Therefore, INEOS meets current BACT for NO_x.

INEOS will minimize CO and VOC emissions through energy efficient design and utilizing good operating practices. The furnace will normally operate at a temperature greater than 2000° F to minimize VOC and CO emissions. In addition, INEOS will manage excess oxygen, such that CO emissions are minimized. The proposed furnace should operate at 0.044 lb CO/MMBtu. BACT for a furnace is an outlet concentration of 100 ppmv of CO, therefore INEOS meets BACT.

SO₂ emissions from the furnace will be minimized by limiting the short-term sulfur content of the fuel to 5 grains of total sulfur per 100 scf.

The furnaces will be equipped with a CEMS to continuously monitor excess oxygen (diluent), NO_x and CO emission rates. The fuel firing rate (MMBtu/hr) will be continuously monitored. The combination of furnace design, operating practices, and monitoring capabilities meet the criteria for BACT for NO_x, CO, VOC and SO₂.

4.2 Cracking Furnace | PM₁₀ and PM_{2.5} Emissions

Emissions of particulate matter (including PM₁₀ and PM_{2.5}) from natural gas/fuel gas fired furnaces result from inert solids in the fuel and combustion air from unburned fuel hydrocarbons that agglomerate to form particles that are emitted from the exhaust. Using natural gas or fuel gas with a low solids content and efficiency control technology in the furnaces will minimize combustion particulates from the furnace stack. INEOS will operate the furnace with high combustion efficiency and burn clean fuels to ensure thermal efficiency, high production yield and minimized soot and particulate matter emissions, which is BACT. A detailed step by step "top down" BACT discussion is included below.

4.2.1 STEP 1 | Identify All Available Control Technologies

A review of the RBLC found in Appendix D indicates that the only available control technologies are good combustion and the use of clean fuels (refinery gas, fuel gas or natural gas), good engineering design and proper combustion practices for gas fired furnaces, and conducting visible emissions observations. As recommended by EPA, INEOS included natural gas, process gas, and refinery gas combustion devices used in a variety of industries and processes that are similar but significantly different in operation than the proposed cracking furnace.

4.2.2 STEP 2 | Eliminate Technically Infeasible Option

INEOS considers all identified control technologies as technically feasible.

4.2.3 STEP 3 | Rank Remaining Control Technologies

Because there is only one available control technology, ranking is not required

4.2.4 STEP 4 | Evaluate the Remaining Control Efficiencies

Operating the furnace with good combustion results in a higher thermal efficiency and is therefore in the best interest of the operator. As a result, this reduces the amount of soot formed and particulate emissions.

4.2.5 STEP 5 | Select BACT

INEOS will be operating the cracking furnace with combustion of only natural gas and fuel gas. The fuels will be clean. INEOS will be purchasing a new furnace with all the latest engineering technology to ensure good combustion and therefore minimize particulate emissions. In addition, INEOS will conduct visible emission observations of the furnace stack on a quarterly basis. Therefore, INEOS meets BACT.

4.3 Decoke Cyclone/Stack

Particulate emissions will result from combustion of the coke build-up on the coils of the new furnace; some of which are emitted to the atmosphere through the Decoke Drum. A new decoking drum will be installed in association with this project that will be dedicated to the proposed new furnace.

INEOS researched the RACT/BACT/LAER (RBLC) Clearinghouse and the TCEQ website to identify control methods utilized to control decoking operations. A table summarizing the control determinations for particulates in the RBLC is included in Appendix D. The TCEQ website and the RBLC BACT for decoking emissions are associated with a fluid catalytic cracking unit not a pyrolysis cracking furnace. However, because the vent gas stream and characteristics for the decoking operation are similar, INEOS included these units for BACT determination purposes. INEOS was unable to find any BACT demonstrations specifically for PM_{2.5}. INEOS will meet BACT for PM_{2.5} by meeting BACT for PM and PM₁₀.

A detailed step by step "top down" BACT discussion is included below.

4.3.1 STEP 1 | Identify All Potential Control Technologies

Per the RBLC and TCEQ website, the available potential control technologies from decoking include the installation of wet scrubbers/cyclones, good combustion practices and conducting visible emission observations.

4.3.2 STEP 2 | Eliminate Technically Infeasible Option

INEOS considers all identified control technologies as technically feasible.

4.3.3 STEP 3 | Rank Remaining Control Technologies

Because INEOS is proposing to employ all available control technologies, ranking is not necessary.

4.3.4 STEP 4 | Evaluate the Remaining Control Efficiencies

Wet scrubbers/cyclones represent a variety of devices that are effective at removing particulate from exhaust streams with a relatively high efficiency. Scrubbers remove pollutant gases by *dissolving* or *absorbing* them.

Visible emissions observations are made and recorded in accordance with the requirements specified in 40 CFR § 64.7(c) to ensure particulate emissions are minimized. The visible emissions determination shall be conducted when weather conditions permit and should not include water vapor.

4.3.5 STEP 5 | Select BACT

Periodic decoking is inherent to the design and operation of a cracking furnace. As part of operating a thermally efficient furnace, all air pollutants and coke build-up are minimized. Coke acts as insulation on the furnace coils; therefore more fuel gas is required to reach the required temperature. Due to metallurgical limits and pressure drop, coking results in taking the furnace offline and temporarily suspending production. Therefore, it is in the best interest of the operator to minimize the amount of coke formed, decoking operations and therefore particulate emissions.

INEOS will equip the new decoke drum with a control device that will achieve control efficiencies of at least 99.9% for PM, 90% for PM₁₀ and 50% for PM_{2.5} and minimize particulate formed through good combustion practices.

INEOS will perform daily visible emission observations of the decoke stack (when in use) to minimize particulate emissions. INEOS is proposing that operating the cracking furnace with best-in-class thermal efficiency to minimize coke build up and therefore decoking emissions, and installing a control device on the decoke drum, should be considered BACT. As part of operating a thermally efficient furnace and practicing good combustion practices, all air pollutants and coke build up are minimized. Therefore, BACT is met.

4.4 Fugitive Components

Per TCEQ's website, current BACT for uncontrolled VOC emissions greater than 25 tpy is a 28 VHP Leak Detection and Repair Program (LDAR). INEOS utilizes TCEQ's 28VHP LDAR program to reduce emissions from VOC process fugitive components. All components designated as "difficult to monitor" are monitored annually. Therefore, BACT is met.

4.5 Ammonia Slip

Because ammonia SCR will be used to control NO_x emissions from the furnace, there will be fugitive components from the piping of ammonia. Based on the TCEQ website, Audio, Visual and Olfactory (AVO) Leak Detection and Repair (LDAR) inspection must be conducted once per shift. INEOS is proposing to conduct AVO once per shift for the ammonia fugitive components associated with this project, therefore BACT is met.

The ammonia slip will be limited to 10 ppmv, corrected to 3% oxygen, (averaged over a 24 hour period) as required in Chapter 117. Short-term average ammonia in the slip may be higher (20 ppmv ammonia). Limiting the amount of ammonia slip will reduce ammonia emissions, therefore BACT is met.

Section 5 | Greenhouse Gas PSD Evaluation and Top-Down BACT Review

INEOS is proposing to install and operate a new cracking furnace and the associated equipment (including decoking drum and fugitives) at the existing No. 2 Olefins Unit at the Chocolate Bayou Plant. The proposed project will occur at an existing major source, and has the potential to emit greater than 75,000 tpy of GHG as CO₂e. The project is scheduled to begin construction after July 1, 2011 and before June 20, 2013. Therefore, the project will meet the definition of a major modification under the current EPA GHG rules. Since EPA has not established national air ambient quality standards (NAAQS) for GHG, the permitting requirements are handled under prevention of significant deterioration (PSD). There are no creditable decreases of CO₂e emissions in the contemporaneous period that would change the PSD applicability determination.

5.1 Relevant Background

On June 3, 2010, EPA published final rules for permitting sources of GHGs under PSD, known as the "Tailoring Rule." The tailoring rule is being implemented in multiple steps. Projects that have permits issued and construction implementation occurring between July 1, 2011 and June 30, 2013 fall into Step 2 of this rule. Therefore, PSD permitting requirements will apply to major modifications that emit greater than 75,000 tpy of GHG as CO₂e at existing major sources even if they do not exceed permitting thresholds for any other pollutants. Under the Clean Air Act (CAA), PSD permit applications are required to:

- Establish and employ best available control technologies (BACT);
- Demonstrate compliance with air quality related values and PSD increments;
- Address impact on Class I areas (e.g. national parks and wilderness area); and
- Assess impacts on soils, vegetation and visibility.

In December 2010, EPA finalized a rule that designates EPA as the permitting authority for GHG emitting sources that will remain in effect until EPA approves a state implementation plan (SIP) that allows Texas to regulate GHGs.

5.2 BACT Discussion

In the EPA March 2011 *PSD and Title V Permitting Guidance for Greenhouse Gases*, EPA recommends that the *1990 Draft New Source Review Workshop Manual* be used to determine BACT for GHG. According to this document, BACT determinations are made on a case by case basis using a "top-down" approach, with consideration given to technical practicability and economic reasonableness. Specifically the "top-down" approach shall include the following steps:

1. Identify all available control technologies;
2. Eliminate technically infeasible options;
3. Rank remaining control technologies;
4. Evaluate the most effective control and document results; and
5. Select BACT.

To identify all potential control technologies, INEOS reviewed the EPA's Sector GHG control white papers for petroleum refineries, natural gas combustion, and biomass energy. These papers were prepared by the Sector Policies and Programs Division, Office of Air Quality Planning and Standards. Although these documents address sources that are significantly different than those associated with this project, a sector paper on cracking furnaces and decoking is not currently available. When performing a "top-down" BACT analysis, an applicant is required to review control technologies for similar sources. These sources have been identified as the most similar and available to those associated with the proposed project. In addition, INEOS has researched the RACT/BACT/LAER Clearinghouse (RBLC) and the American Institute of Chemical Engineers (AIChE) website, webinars and papers. The only control method identified for control of CO₂ from decoking is good combustion practices. The database search was conducted for similar processes. The results of the RBLC are included in Appendix D.

The overall energy efficiency of the source through technologies, processes and practices at the facility should be included in the BACT determination. In general, a more energy efficient technology burns less fuel. Energy efficiency technologies in the BACT analysis helps reduce the production of combustion of GHG and other regulated NSR pollutants. Because the equipment associated with the proposed project will all be new, the equipment should be of the best engineering design and equipped with the latest technology to ensure energy efficiency. Performance benchmarking is an available tool that is useful in assessing energy efficiency. There are a number of resources available for benchmarking facilities, including EPA's ENERGY STAR program for industrial sources. ENERGY STAR has developed sector specific benchmarking tools called Energy Performance Indicators (EPI). These energy performance indicators are included in the EPA sponsored document *Energy Efficiency Improvement and Cost Saving Opportunities for the Petrochemical Industry: An ENERGY STAR Guide for Energy and Plant Manager*, Document Number LBNL-964E, dated June 2008. This tool is especially useful for GHG because the traditional method of collecting information, such as the RBLC, has yet to be populated with updated case-specific information due to the infancy of the program. INEOS utilized this document, which specifically addresses cracking furnaces, to complete the BACT GHG evaluation.

GHG emissions are associated with the cracking furnace, decoking drum and fugitive emissions. A detailed GHG BACT discussion is included below for each source associated with the proposed project. INEOS is still in the vendor selection phase of this project. This application represents the most likely operating scenario for purposes of preparing this application, but the actual operations may vary. However, INEOS is committing to meet the emission limitations and control measures represented in this application.

5.3 Cracking Furnace BACT Discussion

The majority of the contribution of GHG associated with the project is from the furnace. Stationary combustion sources primarily emit CO₂, but they also emit a small amount of N₂O and CH₄. Because INEOS will be installing a new furnace in association with this project, it will be equipped with all the latest technology for optimum thermal efficiency. The proposed cracking furnace will be fueled by natural gas and plant fuel gas. The combined fuel gas composition will contain mostly methane, 1-2% other materials (including ethylene) and hydrogen (averaging approximately 40% by volume). The furnace will be equipped with an ammonia slip selective catalytic reduction system (SCR) to reduce NO_x emissions. Consistent with federal NSPS and MACT for combustion devices, demonstration of compliance with control requirements do not apply during periods of startup, shutdown and malfunction.

5.3.1 Step 1 | Identify All Available Control Technologies

INEOS has identified the following currently available control technologies for controlling GHGs from cracking furnaces:

1. Carbon Capture and Storage (CCS) as add-on control; and
2. Energy Efficient Design and Operation
 - Efficient Furnace and Burner Design and Operation
 - Decoking
 - Periodic Tune Ups and Maintenance
 - Oxygen Trim Control
 - Heat Recovery
 - Low-Carbon Fuel

5.3.2 Step 2 | Eliminate Technically Infeasible Options

EPA has identified CCS as an add-on control technology that is available. The emerging CCS technology is an end of pipe add-on control method comprised of three stages (capture/compression, transport and storage).

5.3.2.1 Capture, Transport, and Storage

CCS would require adequate space for equipment to capture the flue gas exhaust and to separate and pressurize the CO₂ for transportation. The proposed project involves a cracking furnace burning low carbon content fuel. Therefore, the resulting low pressure exhaust stream has a lower level of CO₂ (concentration and volume) than would be produced at other facilities (e.g. natural gas compressor stations or coal-fired utility).

5.3.2.2 Storage

All CCS projects require geological storage (e.g. oil and natural gas reserves, un-mineable coal reserves, or underground saline formations). The logistical hurdles associated with geological storage are the availability of storage capacity and the potential environmental impacts associated with long term

storage of CO₂. For example, the effect of dissolving CO₂ in brine and the resulting brine displacement still needs to be resolved.

According to the guidance documents for GHG permitting and for reducing carbon dioxide emissions from bioenergy, EPA has concluded that although CCS is available it does not necessarily mean it would be selected as BACT due to its technical and economic infeasibility. In addition, EPA supports the conclusion of the Interagency Task Force on Carbon Capture that although current technologies could be used to capture CO₂ from new and existing plants, they are not ready for widespread implementation. This is primarily because they have not been demonstrated at the scale necessary to establish confidence in its operations.

Based on the issues identified above, CCS should not be considered a technically, economically, or commercially viable control option for this project.

5.3.3 STEP 3 | Rank Remaining Control Technologies

Because thermal efficiencies are work practice standards, it is difficult to identify discriminate control efficiencies for ranking. INEOS used *Available and Emerging Technology for Reducing Greenhouse Gas Emission from the Petroleum Industry* dated October 2010 and *Energy Efficiency Improvement and Cost Saving Opportunities for the Petrochemical Industry: An ENERGY STAR Guide for Energy and Plant Manager*, Document Number LBNL-964E, dated June 2008 to identify any available control efficiencies. The efficiency improvements/GHG reductions identified are as follows:

- Efficient Furnace and Burner Design (10%)
- Decoking (4-12%)
- Periodic Tune Ups and Maintenance (1-10%)
- Oxygen Trim Control (1-3%)
- Heat Recovery (8-18%)
- Low-Carbon Fuel (10-15%)

5.3.4 STEP 4 | Evaluate the Remaining Control Efficiencies

Because the following identified control efficiencies include operating practices and design, it is difficult to claim a control level for each. Studies or data are not readily available that identify a specific control level.

5.3.4.1 Energy Efficient Design and Operation

Because INEOS will be installing a new furnace in association with this project, it will be equipped with all of the latest technology for optimum thermal efficiency. A more energy-efficient technology will require less fuel and therefore result in lower emissions. INEOS is reviewing a number of contractors and furnaces. All furnaces evaluated have consistent performance and flue gas temperature. INEOS will select energy-efficient technologies which result in fewer overall emissions of all air pollutants per unit of energy produced. This can translate into collateral reduction in other pollutants including GHGs. While minimizing GHG, the burner design will still address safety and environmental concerns, most notably the reduction of NO_x emissions. An additional furnace will give INEOS the opportunity to utilize

energy more efficiently by allowing operational efficiency and optimization, decreasing the load on existing furnaces and boilers, and allowing INEOS to better manage maintenance and decoking operations. EPA believes that it is important to consider options that improve the overall energy efficiency of the source through technologies, processes and practices.

In addition, thermal efficiency can be achieved through good operating practices and regularly scheduled maintenance can be utilized to ensure maximum thermal efficiency. The furnace will be maintained according to specific operating and maintenance procedures at INEOS that will incorporate the vendor's recommendations. Improved heat transfer within a furnace can result in both energy savings and productivity gains; therefore it is in the best interest of INEOS to maintain a thermally efficient furnace. The first step to energy efficiency is reducing exhaust losses and the second is recovery of exhaust gas heat.

These operating practices include:

- **Decoking** - INEOS will perform decoking as necessary to improve the thermal efficiency of the furnaces. Because coke deposits act as insulation around the coils, more fuel is required to produce heat transfer through the coils. Periodic decoking will minimize the fuel required and therefore reduce emissions.
- **Periodic Tune Ups and Maintenance**- The furnace will be periodically tuned to maintain optimal thermal efficiency. In addition, maintenance will be performed routinely per vendor recommendations or the facility's maintenance plan. These measures include checking the fuel gas flow meter annually, the oxygen control analyzers quarterly, the burner tips on an as-needed basis and replacing or servicing components as needed.
- **Oxygen Trim Control** - Excess air will be limited to the amount necessary to ensure complete combustion. Too much excess air may lead to inefficient combustion, since energy must be used to heat the excess air. Oxygen analyzers are used to optimize the fuel/air mixture. INEOS will carefully manage the amount of excess oxygen added to the system (2 to 3.5 mol% dry excess during normal operation). INEOS also plans to include carbon monoxide analyzers at part of the Continuous Emissions Monitoring System (CEMS) to ensure proper combustion and optimization of excess air.
- **Heat Recovery** - The hot effluent from the cracking furnace is cooled in the primary and secondary quench exchangers that produce high pressure steam to recover energy and reduce the overall energy use in the plant. Tertiary quench exchangers also recover heat and contribute to overall energy efficiency. Finally, the furnace convective section is used to pre-heat or superheat boiler feed water, hydrocarbon feed, dilution steam, and high pressure steam to the extent that the final exiting flue gas temperature is reduced to its practical limit (i.e., the dew point temperature of the flue gas and the temperature of the process streams being heated).
- **Low-Carbon Fuel** - Another method to minimize CO₂ emissions is through fuel switching/selection. INEOS is using a combination of natural gas which has the lowest typical CO₂ emission factors and process gas which has lower carbon content due to the

high volume of hydrogen (approximately 40% by volume). The lower carbon content has less carbon available to convert to CO₂ and therefore lower emissions.

5.3.5 STEP 5 | Select BACT

INEOS is proposing that a thermally efficient furnace and operating under the parameters outlined above meets BACT requirements for CO₂. INEOS is proposing to employ all of the control identified in Step 4.

5.4 Decoking BACT Discussion

GHG emissions consist of CO₂ emissions from combustion of the coke build-up on the coils of the new furnace, some of which are emitted to the atmosphere through the Decoke Drum. A new decoking drum will be installed in association with this project that will be dedicated to the proposed new furnace. The total estimated annual CO₂ emission rate is only a minor contribution to the total GHG emissions. However, for completeness it is addressed in this BACT analysis.

INEOS researched the RACT/BACT/LAER Clearinghouse for control methods utilized to control decoking operations. There were two entries for decoking processes in the RBLC. No control methods were identified with either entry. BACT determination for CO₂ updated from decoking operations at this facility was defined as proper design operation of the furnace, therefore minimizing coke build-up. No additional conditions or monitoring requirements were required for this project for BACT.

5.4.1 STEP 1 | Identify All Potential Control Technologies

There are currently no existing demonstrated control technologies for CO₂ emissions from decoking operations. CO₂ emissions can be minimized by reducing the required decoking frequency through proper design and operation. This is the only technically feasible means of minimizing emissions.

5.4.2 STEP 2 | Eliminate Technically Infeasible Option

INEOS considers all identified control technologies as technically feasible.

5.4.3 STEP 3 | Rank Remaining Control Technologies

Because there is only one available control technology, ranking is not required

5.4.4 STEP 4 | Evaluate the Remaining Control Efficiencies

Periodic decoking is inherent to the design and operation of a cracking furnace. As part of operating a thermally efficient furnace, all air pollutants and coke build-up are minimized. Coke acts as insulation on the furnace coils; therefore more fuel gas is required to reach the required temperature. Due to metallurgical limits and pressure drop, coking results in taking the furnace offline and temporarily suspending production. Therefore, it is in the best interest of the operator to minimize the amount of coke formed, decoking operations and therefore CO₂ emissions.

5.4.5 STEP 5 | Select BACT

INEOS will minimize the number and duration of decoking operations, which should minimize the associated emissions. It is in INEOS' best interest to limit the decoking operation as no useful products are produced during this mode of operation. INEOS proposes this meets BACT.

5.5 Process Fugitives BACT Discussion

Hydrocarbon emissions from leaking piping components (process fugitives) associated with the proposed project include methane, a GHG. The total estimated annual methane emissions as CO₂e have a very minor contribution to the total GHG emissions. However, for completeness it is addressed in this BACT analysis.

5.5.1 STEP 1 | Identify All Potential Control Technologies

The only identified available control technology for process fugitive emissions of CO₂e is use of a leak detection and repair (LDAR) program. LDAR programs are designed to control VOC emissions and vary in stringency.

5.5.2 STEP 2 | Eliminate Technically Infeasible Option

The only available control technology for fugitives is LDAR, which is technically feasible.

5.5.3 STEP 3 | Rank Remaining Control Technologies

Because there is only one available control technology, ranking is not required

5.5.4 STEP 4 | Evaluate the Remaining Control Efficiencies

LDAR is currently only required for VOC sources. Methane is not considered a VOC, so LDAR is not required for streams containing a high content of methane. TCEQ's 28VHP LDAR is currently the most stringent program, which can achieve efficiencies of 97% for valves. INEOS will perform TCEQ's 28VHP program on all VOC lines associated with this project, this will result in a reduction of VOC and any associated methane (GHG) emissions from these piping components.

5.5.5 STEP 5 | Select BACT

INEOS proposes that conducting TCEQ's 28LAER for all VOC components associated with this project, and thus controlling any associated GHGs, as BACT.

5.6 Preconstruction Monitoring

EPA does not consider it necessary for applicants to gather monitoring data to assess ambient air.

5.7 Impacts Analysis and Preconstruction Monitoring

Monitoring for GHGs is not required because EPA regulations provide an exemption in sections 52.21(i)(5)(iii) and 51.166(i)(5)(iii) for pollutants that are not listed in the appropriate section of the regulations, and GHGs are not currently included in that list. But sections 52.21(m)(1)(ii) and 51.166(m)(1)(ii) of EPA's regulations apply to pollutants for which no NAAQS exists. However, GHG is not considered to affect ambient air quality as defined in Section 52.21(m)(1)(ii) or 51.166(m)(1)(ii) as was intended when these rules were written. This is consistent with the EPA Tailoring Rule and includes the following statement with respect to these requirements:

"There are currently no NAAQS or PSD increments established for GHG, and therefore these PSD requirements would not apply for GHG, even when PSD is triggered for GHG."

Because there are currently no NAAQS or PSD increment established for GHG no further assessment is required.

Section 6 | Considerations for Granting a Permit

As required by Sections IX and X of the TCEQ PI-1 permit application form, this section addresses the assurance of regulatory compliance by the proposed installation and operation of a new cracking furnace and associated equipment. The requirement contained in 30 TAC §116.111, General Application, states:

“The emissions from the proposed facility will comply with all rules and regulations of the commission and with the intent of the Texas Clean Air Act (TCAA), including the protection of the health and property of the public.”

As outlined in the following evaluation, the emissions from the proposed facilities will comply with all rules and regulations of the TCEQ and with the intent of the TCAA, including protection of the health and property of the public.

6.1 Chapter 101 | General Rules

This facility will comply with all the requirements of the TCEQ General Rules. Some notable rule compliance procedures are summarized below.

§ 101.2 Multiple Air Contaminant Sources or Properties

This section does not apply to this facility or project.

§ 101.3 Circumvention

INEOS does not currently use, nor does it plan to implement, any plan, activity or device that would conceal or appear to minimize the effects of an emission which would otherwise constitute a violation of the TCAA or regulations.

§ 101.4 Nuisance

Routine emission of air contaminants from the proposed facility are not expected to injure or adversely affect human health or welfare, or affect plant, animal life, or property in any way.

§ 101.5 Traffic Hazard

Emissions from this facility are not in such a quantity that would cause traffic hazards or interference in the surrounding areas.

§ 101.8 Sampling

INEOS will perform sampling as required by the TCEQ.

§ 101.9 Sampling Ports

If requested, INEOS will comply with this section as required by the TCEQ.

§ 101.10 Emissions Inventory Requirements

If requested, INEOS will file the appropriate emissions data to the agency on forms provided by the agency. It should be noted that INEOS submits completed Emissions Inventories annually.

§ 101.13-19 Administrative Provisions

INEOS will comply with the applicable rules in these sections.

§ 101.20 Compliance with Environmental Protection Agency Standards

INEOS's Chocolate Bayou Plant will meet all the applicable requirements of 40 CFR Part 60 (NSPS), Subparts A, Db, K, Kb, GG, VV, NNN and RRR.

The pyrolysis cracking furnace is subject to the VOC vent control requirements of NSPS Subpart RRR. All furnace process gases are discharged from the furnaces to the recovery section of the facility which consists of Distillation Units already subject to NSPS Subpart NNN. The organic compounds from the recovery section will typically be recovered with more than 99% efficiency.

INEOS's Chocolate Bayou Plant will meet all the applicable requirements of 40 CFR Part 63 (NESHAPS), Subparts A, and XX.

INEOS has addressed the PSD requirements associated with this application in Section 1.2 of this document.

§ 101.21 The National Primary and Secondary Ambient Air Quality Standards

The Chocolate Bayou Plant will continue to be operated in compliance with all applicable National Primary and Secondary Ambient Air Quality Standards (NAAQS).

§ 101.23 Alternate Emission Reduction ("Bubble") Policy

The operations of the Chocolate Bayou Plant will not be regulated by the Alternative Emission Reduction Policy.

§ 101.24-27 Fees

INEOS will submit all appropriately assessed fees to the TCEQ.

§ 101.28 Stringency Determination for Federal Operating Permits

INEOS is not requesting a stringency determination at this time; therefore, this section does not apply.

§ 101.30 Conformity of General Federal Actions to State Implementation Plans

A conformity determination is not required under this section because this application is not a federal action, and increases in VOC and NO_x emissions are less than 50 tons per year and 100 tons per year, respectively.

§101.150-155 Voluntary Supplemental Leak Detection Program

INEOS will comply with the applicable requirements in these sections.

§ 101.201 Emission Event Reporting and Recordkeeping Requirements

INEOS will notify the appropriate air pollution control agencies and the Executive Director of any unauthorized emissions that exceed a reportable quantity (as defined in 30 TAC 101) within 24 hours of discovery as required.

§ 101.211 Scheduled Maintenance, Startup, and Shutdown Reporting and Recordkeeping Requirements

INEOS will notify the appropriate air pollution control agencies and the Executive Director in writing at least ten days prior to any scheduled maintenance, start-up, or shutdown which will or may cause emissions which exceed a reportable quantity.

§ 101.221-224 Operational Requirements, Demonstrations, and Actions to Reduce Excessive Emissions

INEOS will comply with the applicable requirements in these sections.

§ 101.231-233 Variances

These sections do not apply to this permit application.

§ 101.300-311 Emission Credit Banking and Trading

These sections do not apply to this permit application because INEOS is not requesting any emissions reductions.

§ 101.330-339 Emissions Banking and Trading Allowances

These sections do not apply to this permit application because INEOS is not requesting any emissions reductions.

§ 101.350-363 Mass Emissions Cap and Trade Program

INEOS will comply with all requirements in these sections.

§ 101.370-379 Discrete Emission Credit Banking and Trading

These sections do not apply to this permit application because INEOS is not requesting any emissions reductions.

§ 101.380-385 System Cap Trading

This permit application does not involve emission banking and trading; therefore, these sections do not apply.

§ 101.390-403 Highly-Reactive Volatile Organic Compound Emissions Cap and Trade Program

INEOS will comply with all applicable requirements of HRVOC.

§ 101.501-508 Clean Air Interstate Rule

These sections do not apply.

6.2 Chapter 111 | Control of Air Pollution from Visible Emissions and Particulate Matter

§ 111.111-113 Visible Emissions

Visible emissions from any source associated with this permit application will not exceed opacity limitations specified by these sections.

§ 111.121-129 Incineration

There are no incinerators associated with the Chocolate Bayou Plant.

§ 111.131-139 Abrasive Blasting of Water Storage Tanks Performed by Portable Operations

There are no activities associated with this permit application involving abrasive cleaning of water storage tanks by portable operations.

§ 111.141-149 Materials Handling, Construction, Roads, Streets, Alleys, and Parking Lots

This rule does not apply. The facility is located in Brazoria County, which is not included in the Geographic Areas of Application.

§ 111.151-153 Emissions Limits on Nonagricultural Processes

Particulate emissions occurring during normal operation will not exceed allowable emission rates or concentration levels established for each source.

§ 111.171-175 Emissions Limits on Agricultural Processes

There are no agricultural processes at the Chocolate Bayou Plant.

§ 111.181-183 Exemptions for Portable or Transient Operations

The Chocolate Bayou Plant is not a portable or transient operation.

§ 111.201-221 Outdoor Burning

This activity is not part of this permit application; therefore, these sections do not apply.

6.3 Chapter 112 | Control of Air Pollution from Sulfur Compounds

INEOS will comply with all applicable net ground-level concentrations specified in this chapter. The SO₂ net ground-level concentration will not exceed 0.28 ppmv averaged over any 30 minute period.

6.4 Chapter 113 | Control of Air Pollution from Toxic Chemicals

INEOS will operate in compliance with all applicable requirements of this section.

6.5 Chapter 114 | Control of Air Pollution from Motor Vehicles

INEOS will operate in compliance with the requirements of this regulation as implemented in the State of Texas.

6.6 Chapter 115 | Control of Air Pollution from Volatile Organic Compounds

§ 115.110-119 Storage of Volatile Organic Compounds

There are no VOC emissions from non-combustion related processes associated with this permit application; therefore, this regulation does not apply.

§ 115.120-129 Vent Gas Control

~~There are no VOC emissions from non-combustion related processes associated with this permit application; therefore, this regulation does not apply.~~

§ 115.131-139 Water Separation

There are no water separator processes associated with this permit application; therefore, this regulation does not apply.

§ 115.140-149 Industrial Wastewater

There are no industrial wastewater generating processes associated with this permit application; therefore, this regulation does not apply.

§ 115.152-159 Municipal Solid Waste Landfills

INEOS does not operate a municipal solid waste landfill at this site; therefore, these sections do not apply.

§ 115.160-169 Batch Processes

There is not an affected batch process associated with this permit application.

§ 115.211-219 Loading and Unloading of Volatile Organic Compounds

These sections do not apply because the proposed permit application does not involve gasoline or VOC loading and unloading nor does it involve the filling of gasoline storage vessels for motor vehicle fuel dispensing facilities.

§ 115.221-229 Filling of Gasoline Storage Vessels (Stage I) for Motor Vehicle Fuel Dispensing Facilities

There is no motor vehicle fueling associated with this permit application; therefore, these sections do not apply.

§ 115.234-239 Control of Volatile Organic Compound Leaks from Transport Vessels

Materials loaded into tank trucks at this facility have vapor pressures less than 0.5 psia; therefore, these sections do not apply.

§ 115.240-249 Control of Vehicle Refueling Emissions (Stage II) at Motor Vehicle Fuel Dispensing Facilities

There is no motor vehicle fueling associated with this permit application; therefore, these sections do not apply.

§ 115.252-259 Control of Reid Vapor Pressure of Gasoline

The Chocolate Bayou Plant is not located in the El Paso area; therefore, these sections do not apply.

§ 115.311-319 Process Unit Turnaround and Vacuum-Producing Systems in Petroleum Refineries

The Chocolate Bayou Plant is not a petroleum refinery; therefore, these sections do not apply.

§ 115.322-329 Fugitive Emission Control in Petroleum Refineries in Gregg, Nueces, and Victoria Counties

The Chocolate Bayou Plant is not a petroleum refinery and is not located in one of these counties; therefore, these sections do not apply.

§ 115.352-359 Fugitive Emission Control in Petroleum Refining, Natural Gas/Gasoline Processing, and Petrochemical Processes in Ozone Non-attainment Areas

INEOS will comply with all applicable emission control, testing, monitoring and recordkeeping requirements of these sections.

§ 115.412-419 Degreasing Processes

There is not a degreasing process associated with this permit application.

§ 115.420-429 Surface Coating Processes

There is no surface coating process associated with this permit application.

§ 115.430-439 Flexographic and Rotogravure Printing

These sections do not apply to this permit application.

§ 115.440-449 Offset Lithographic Printing

These sections do not apply to this permit application.

§ 115.510-519 Cutback Asphalt

These sections do not apply to this permit application.

§ 115.531-539 Pharmaceutical Manufacturing Facilities

These sections do not apply to this permit application.

§ 115.540-549 Degassing or Cleaning of Stationary, Marine, and Transport Vessels

INEOS will comply with all applicable requirements related to MSS activities related to degassing or cleaning of vessels.

§ 115.552-559 Petroleum Dry Cleaning Systems

These sections do not apply to this permit application.

§ 115.600-619 Consumer Products

The Chocolate Bayou Plant does not sell, supply, offer for sale, distribute, or manufacture consumer products as defined in this section; therefore, these sections do not apply.

§ 115.720-729 Vent Gas Control

INEOS will comply with any applicable requirements of these sections.

§ 115.760-769 Cooling Tower Exchange Systems

INEOS will comply with any applicable requirements of these sections.

§ 115.780-789 Fugitive Emissions

INEOS will comply with any applicable requirements of these sections.

§ 115.901-916 Alternate Means of Control

INEOS is not requesting an AMOC; therefore, these sections do not apply.

§ 115.920-923 Early Reductions

INEOS is not requesting an extension to comply with any requirements in this chapter; therefore, these sections do not apply.

§ 115.930-940 Compliance and Control Plan Requirements

A schedule for achieving compliance with the applicable sections of this regulation will be provided upon request by the Executive Director. Emissions reduction credits and discrete emissions reduction credits will not be used to meet the emission control requirements of this chapter.

§ 115.950 Emissions Trading

INEOS will not be obtaining any reduction credits for this permit application; therefore, these sections do not apply.

6.7 Chapter 116 | Control of Air Pollution by Permits for New Construction or Modification

§ 116.110 Applicability

This permit application is submitted by INEOS to the TCEQ in order to obtain the appropriate authorization for the new cracking furnace.

§ 116.111 General Application

(a)(1) INEOS will submit a completed Form PI-1 and supporting documentation to comply with this section.

(a)(2) The following items are discussed:

(A) Protection of Public Health and Welfare

Emissions from the facilities will comply with all rules and regulations of the TCEQ and with the intent of the Texas Clean Air Act, including protection of the health and physical property of the people.

(B) Measurement of Emissions

INEOS will make provisions for measuring the air contaminants from the facilities covered by this permit application as determined by the Executive Director of the TCEQ.

(C) **Best Available Control Technology (BACT)**

The facilities covered by this permit application will utilize BACT, with consideration given to technical practicability and economic reasonableness or reducing or eliminating emissions on a group of facilities basis. Please see Section 4 of this document for a detailed BACT discussion.

(D) **New Source Performance Standards (NSPS)**

INEOS will continue to comply with all applicable NSPS requirements.

(E) **National Emission Standards for Hazardous Air Pollutants (NESHAP)**

INEOS will continue to comply with all applicable NESHAP requirements.

(F) **NESHAP for Source Categories (MACT)**

INEOS will continue to comply with all applicable MACT standards NESHAP requirements.

(G) **Performance Demonstration**

The facilities covered by this permit application will achieve the performance standards represented in this application.

(H) **Nonattainment Review**

The Chocolate Bayou Plant is an existing major stationary source of VOC and NO_x in Brazoria County, a designated severe nonattainment area for ozone. Nonattainment Review requirements are discussion under Section 1.2 of this document.

(I) **Prevention of Significant Deterioration (PSD) Review**

The Chocolate Bayou Plant is located in Brazoria County, which is classified as nonattainment for ozone. The PSD regulations apply to the following pollutants: NO_x, SO₂, CO, CO₂, PM₁₀, and PM_{2.5}. PSD requirements are discussed in Section 1.2 of this document.

(J) **Air Dispersion Modeling**

INEOS will perform air dispersion modeling upon request by the TCEQ.

(K) **Hazardous Air Pollutants**

This permit application does not propose a reconstruction or construction of a major source of HAPs as described in Section 112(g) of the Federal Clean Air Act. These sections do not apply.

(L) **Mass Cap and Trade Allowances**

This permit application does not propose a change regarding Mass Cap and Trade allowances.

- (b) INEOS will comply with all applicable requirements of Chapter 39 relating to Public Notice.

§ 116.112 Distance Limitations

INEOS will comply with all applicable distance limitation requirements set forth in this section.

§ 116.114 Applicable Review Schedule

INEOS will comply with all conditions of the TCEQ permit review schedule.

§ 116.115 General and Special Conditions

INEOS will comply with all applicable requirements set forth in this section and with all general and special conditions of the permit.

§ 116.116 Changes to Facilities

The Chocolate Bayou Plant will be operated in accordance with the representations made in this permit application and any ensuing applications. Changes in construction or operation resulting in changes in the method of controlling emissions, the character of the emissions, or an increase in emissions will be preceded by an appropriate authorization.

§ 116.117 Documentation and Notification of Changes to Qualified Facilities

INEOS is not claiming physical or operational modifications to a qualified facility under 30 TAC § 116.116(e).

§ 116.119 De Minimis Facilities or Sources

INEOS is not requesting consideration of this section in this permit application.

§ 116.120 Voiding of Permits

INEOS will comply with all applicable requirements of this section.

§ 116.127 Actual to Projected Actual and Emissions Exclusion Test for Emissions

INEOS will comply with all applicable requirements of this section when such projects necessitate such an action.

§ 116.130-137 Public Notification and Comment Procedures

INEOS will comply with all applicable requirements of this section for this permit application. See Section 1.7 for a detailed public notice discussion.

§ 116.140-143 Permit Fees

INEOS will comply with all applicable requirements of these sections for this permit application.

§ 116.150 New Major Source or Major Modification in Ozone Nonattainment Areas

The Chocolate Bayou Plant is an existing major stationary source of VOC and NO_x in Brazoria County, a designated severe ozone nonattainment area. Please refer to Section 1.2 of this document for further discussion.

§ 116.151 New Major Source or Major Modification in Nonattainment Areas Other than Ozone

The Chocolate Bayou Plant is located in Brazoria County, which is attainment for all pollutants other than ozone; therefore, this section does not apply.

§ 116.160-163 Prevention of Significant Deterioration (PSD) Review

The Chocolate Bayou Plant is located in Brazoria County, which is classified as nonattainment for ozone. The PSD regulations apply to the following pollutants: NO_x, SO₂, CO, CO₂, PM₁₀, and PM_{2.5}. PSD requirements are discussed in Section 1.2 of this document.

§ 116.170-176 Emission Reductions: Offsets

Emission offsets are not required for this permit application.

§ 116.178 Relocations and Changes of Location for Portable Facilities

The Chocolate Bayou Plant is not a portable or transient operation.

§116.180-198 Plant-wide Applicability Permits

INEOS is not applying for a plant-wide applicability permit with this permit application; therefore, these sections do not apply.

§ 116.310-315 Permit Renewals

The permit will be renewed according to the applicable renewal schedule.

§ 116.400-406 Hazardous Air Pollutants: Regulations Governing Constructed or Reconstructed Major Sources (FCAA, § 112[g], 40 CFR Part 63)

INEOS will comply with all applicable requirements of this section for this permit application.

§ 116.601-620 Standard Permits

These sections do not apply.

§ 116.710-765 Flexible Permits

These sections do not apply.

§ 116.770-870 Permits for Grandfathered Facilities

These sections do not apply.

§ 116.910-931 Electric Generating Facility Permits

These sections do not apply.

§ 116.1010-1070 Multiple Plant Permits

These sections do not apply.

§ 116.1200 Emergency Orders

INEOS will apply for an emergency order in compliance with these rules if a catastrophic event occurs that necessitates such an action.

§ 116.1400-1428 Permits for Specific Designated Facilities

The Chocolate Bayou Plant does not meet the criteria set forth in these sections; therefore, these sections do not apply.

§ 116.1500-1540 Best Available Retrofit Technology (BART)

INEOS is not requesting consideration of these sections to this permit application; therefore, these sections do not apply.

6.8 Chapter 117 | Control of Air Pollution From Nitrogen Compounds

INEOS will comply with the applicable requirements of these sections.

30 TAC 117 governs NO_x emissions from the following types of facilities: Major Sources in an applicable Ozone Non-Attainment Area, acid manufacturers, and gas-fired combustion unit manufacturers, distributors, retailers, and installers. 30 TAC 117 also governs NO_x emissions from Minor Sources located in the Houston/Galveston ozone Non-Attainment Area and sources located in specified counties in Central and East Texas. The Plant will be located in Brazoria County which is part of the Houston/Galveston-Brazoria Area. INEOS will comply with the applicable rules of this section.

§117.100-156 Combustion Control: Beaumont-Port Arthur

This section does not apply as the Plant will not be within the geographic area of applicability.

§117.200-256 Combustion Control: Dallas-Fort Worth

This section does not apply as the Plant will not be within the geographic area of applicability.

§117.300-356 Combustion Control: Houston-Galveston-Brazoria

This section will apply. Per §117.303, the new source of combustion will comply with all the emission and operating limits specified under this subpart. Therefore, the Plant will comply with this rule.

§117.400-456 Combustion Control Dallas/Fort Worth 8-HR

This section does not apply as the Plant will not be within the geographic area of applicability

**§117.1000-1056 Combustion Control at Major Utility Electric Generation Sources
Beaumont-Port Arthur**

This section does not apply as the Plant will not be within the geographic area of applicability.

**§117.1100-1156 Combustion Control at Major Utility Electric Generation Sources
Dallas-Fort Worth**

This section does not apply as the Plant will not be within the geographic area of applicability.

**§117.1200-1256 Combustion Control at Major Utility Electric Generation Sources
Houston-Galveston-Brazoria**

This section does not apply as the Plant will not be a Utility Electric Generation Source.

**§117.1300-1356 Combustion Control at Major Utility Electric Generation Sources
Dallas-Fort Worth 8-HR**

This section does not apply as the Plant will not be within the geographic area of applicability.

§117.2000-2045 Combustion Control at Minor Sources

The Plant is a major source, and not a minor source. Therefore, this section of 30 TAC 117 does not apply

§117.3000-3056 Multi-Region Combustion Control

The Plant will be located in Brazoria County which is not within the geographic area of applicability. In addition, The Plant is not a cement kiln and does not have water heaters, small boilers or process heaters. Therefore, this section of 30 TAC 117 does not apply.

§117.4000-4050 Acid Manufacturing

The Plant is not an acid manufacturer. Therefore, this section of 30 TAC 117 does not apply.

§117.8000-8140 General Monitoring and Testing Requirements

The Plant will perform monitoring and testing as defined in these sections as a part of this permit application and will comply with these rules.

§117.9000-9300 Compliance Schedule

The Plant will follow the compliance schedule as defined in these sections as a part of this permit application.

6.9 Chapter 118 | Control of Air Pollution Episodes

In the event of an air pollution episode, INEOS will comply with any applicable order issued by the Executive Director.

6.10 Chapter 122 | Federal Operating Requirements

The Olefins Business Unit is covered by Federal Operating Permit No. O-2327. INEOS will comply with all applicable requirements of this chapter.

Appendix A | Forms



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Update: The TCEQ **requires** that a Core Data Form be submitted on all incoming applications unless a Regulated Entity and Customer Reference Number have been issued by the TCEQ and no core data information has changed. For more information regarding the Core Data Form, call (512) 239-5175 or go to the TCEQ Web site at www.tceq.state.tx.us/permitting/central_registry/guidance.html.

I. APPLICANT INFORMATION		
A. Company or Other Legal Name: INEOS USA LLC		
Texas Secretary of State Charter/Registration Number (<i>if applicable</i>):		
B. Company Official Contact Name : Theresa Vitek		
Title: Manager, SHE Department		
Mailing Address: P.O. Box 1488		
City: Alvin	State: TX	ZIP Code: 77512-1488
Telephone No: 281-581-3498	Fax No.: 281-581-3604	E-mail Address: theresa.vitek@ineos.com
C. Technical Contact Name: Daniel Lutz		
Title: Environmental Compliance Advisor		
Company Name: INEOS USA LLC		
Mailing Address: P.O. Box 1488		
City: Alvin	State: TX	ZIP Code: 77512-1488
Telephone No.: 713-373-9300	Fax No.: 281-581-3604	E-mail Address: Daniel.Lutz@ineos.com
D. Facility Location Information:		
Street Address: 2 Miles south of intersection FM 2917 on FM 2004		
If no street address, provide clear driving directions to the site in writing:		
City: Alvin	County: Brazoria	ZIP Code: 77511
E. TCEQ Account Identification Number (leave blank if new site or facility): BL-0002-S		
F. Is a TCEQ Core Data Form (TCEQ Form No. 10400) attached?		<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO
G. TCEQ Customer Reference Number (<i>leave blank if unknown</i>): CN602817884		
H. TCEQ Regulated Entity Number (<i>leave blank if unknown</i>): RN100238708		
II. IMPORTANT GENERAL INFORMATION		
A. Is confidential information submitted with this application?		<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
If "YES," is each "confidential" page marked "CONFIDENTIAL" in large red letters?		<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO



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II. IMPORTANT GENERAL INFORMATION (continued)		
B. Is this application in response to a TCEQ investigation or enforcement action?		<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO
If "YES", attach a copy of any correspondence from the TCEQ		
C. Number of New Jobs: 0		
D. Names of the State Senator and district number for this facility site: Honorable Mike Jackson, District 11		
Names of State Representative and district number for this facility site: Honorable Dennis Bonnen, District 25		
E. For Concrete Batch Plants, and PSD, or Nonattainment Permits that require public notice, name of the County Judge for this facility site: Honorable Joe King		
Mailing Address: 111 East Locust Street		
City: Angleton	State: Texas	ZIP Code: 77515
F. For Concrete Batch Plants, is the facility located in a municipality or an extraterritorial jurisdiction of a municipality?		<input type="checkbox"/> YES <input type="checkbox"/> NO
If "YES," list the name(s) of the Presiding Officer(s) for this facility site:		
Mailing Address:		
City:	State:	ZIP Code:
III. FACILITY AND SOURCE INFORMATION		
A. Site Name: Chocolate Bayou Plant		
B. Area Name/Type of Facility:		<input checked="" type="checkbox"/> Permanent <input type="checkbox"/> Portable
C. Principal Company Product or Business: Olefins and Polymers Production		
Principal Standard Industrial Classification Code: 2869		
D. Projected Start of Construction Date: 07/01/2012		Projected Start of Operation Date: 10/01/2013
IV. TYPE OF PERMIT ACTION REQUESTED		
A. Permit Number (if existing):		
B. Is this an initial permit application?		<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
If "YES," check the type of permit requested (check <u>all</u> that apply):		
<input checked="" type="checkbox"/> State Permit	<input type="checkbox"/> Nonattainment Federal Permit	
<input type="checkbox"/> Flexible Permit	<input checked="" type="checkbox"/> Prevention of Significant Deterioration Federal Permit	
<input type="checkbox"/> Multiple Plant Permit	<input type="checkbox"/> Hazardous Air Pollutants Permit Federal Clean Air Act § 112(g)	
Other: _____		



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IV. TYPE OF PERMIT ACTION REQUESTED (continued)		
C. Is this a permit amendment?	<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	
Is this a permit revision?? (SB 1126 change)	<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	
If "YES," check the type of permit requested (<i>check all that apply</i>): <input type="checkbox"/> State Permit Amendment <input type="checkbox"/> Flexible Permit Amendment <input type="checkbox"/> Multiple Plant Permit Amendment <input type="checkbox"/> Nonattainment Major Modification <input type="checkbox"/> Prevention of Significant Deterioration Major Modification <input type="checkbox"/> Hazardous Air Pollutants Permit Federal Clean Air Act § 112(g) Modification Other: _____		
D. Is a permit renewal application being submitted in conjunction with this amendment in accordance with Senate Bill 1673? [THSC 382.055(a)(2)](80 th Legislative)	<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	
E. Is this application for a change of location of previously permitted facilities?	<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	
If "YES," answer IVE. 1. - IVE. 4.		
1. Current location of facility:		
Street Address (<i>If no street address, provide clear driving directions to the site in writing.</i>):		
City:	County:	ZIP Code:
2. Proposed location of facility:		
Street Address (<i>If no street address, provide clear driving directions to the site in writing.</i>):		
City:	County:	ZIP Code:
3. Will the proposed facility, site, and plot plan meet all current technical requirements of the permit special conditions?	<input type="checkbox"/> YES <input type="checkbox"/> NO	
If "NO," attach detailed information.		
4. Is the site where the facility is moving considered major?	<input type="checkbox"/> YES <input type="checkbox"/> NO	
F. Is this a relocation?	<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	
G. Are there any standard permits, exemptions or permits by rule to be consolidated into this permit?	<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	



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IV. TYPE OF PERMIT ACTION REQUESTED <i>(continued)</i>	
H. Are you permitting a facility or group of facilities that have planned maintenance, startup and shutdown emissions that cannot be authorized by a permit by rule or standard permit or that are authorized by a permit by rule or standard permit and are being rolled into this permit?	<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO
If "YES," attach information on any changes to emissions under this application as specified in Sections IX, and X.	
If "YES," answer IVH. 1 -IVH. 3.	
1. Are the activities to be included in this permit covered by any previously existing MSS authorizations?	<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO
If "YES," provide a listing of all other authorizations (permit by rule or standard permit and the associated registration number if any).	
2. Have the emissions been previously submitted as part of an emissions inventory?	<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO
3. List which years the MSS activities were included in emissions inventory submittals:	
I. Federal Operating Permit Requirements (30 TAC Chapter 122 Applicability)	
Is this facility located at a site required to obtain a federal operating permit under 30 TAC Chapter 122?	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
1. Identify the requirements of 30 TAC Chapter 122 that will be triggered if this PI-1 application is approved. <input checked="" type="checkbox"/> FOP Significant Revision <input type="checkbox"/> FOP Minor <input type="checkbox"/> Application for an FOP Revision <input type="checkbox"/> Operational Flexibility/Off-Permit Notification <input type="checkbox"/> Streamlined Revision for GOP <input type="checkbox"/> To be determined <input type="checkbox"/> None	
2. Identify the type(s) of FOP(s) issued and/or FOP application(s) submitted/pending for the site (check all that apply)	
<input type="checkbox"/> GOP Issued <input type="checkbox"/> GOP application/revision application: submitted or under APD review <input checked="" type="checkbox"/> SOP Issued <input type="checkbox"/> SOP application/revision application: submitted or under APD review	
V. PERMIT FEE INFORMATION	
A. Fee paid for this application:	\$ 75,000.00
1. Is a copy of the check or money order attached to the original submittal of this application?	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> N/A
2. Is a Table 30 entitled, "Certification of estimated Capital Cost and Fee Verification," attached?	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> N/A



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VI. PUBLIC NOTICE APPLICABILITY		
A. Is this a new permit application or a change of location application?	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO	
B. Is this an application for a major modification of a PSD, NA or 30 TAC § 112(g) permit?	<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	
C. Is this a state permit amendment application?	<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	
If "YES," answer VIC. 1. - VIC. 3.		
1. Is there any change in character of emissions in this application?	<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	
Is there a new air contaminant in this application?	<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	
2. Do the facilities handle, load, unload, dry, manufacture, or process grain, seed, legumes, or vegetables fibers (agricultural facilities)?	<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	
3. List the total annual emission increases associated with the application (<i>list all that apply</i>): See Table 1(a).		
Volatile Organic Compounds (VOC):	tpy	
Sulfur Dioxide (SO ₂):	tpy	
Carbon Monoxide (CO):	tpy	
Hazardous Air Pollutants (HAPs):	tpy	
Nitrogen Oxides (NO _x):	tpy	
Particulate Matter (PM):	tpy	
PM ₁₀ :	tpy	
PM _{2.5} :	tpy	
Lead (Pb):	tpy	
Other air contaminants not listed above:	tpy	
VII. PUBLIC NOTICE INFORMATION (<i>complete if applicable</i>)		
A. Responsible Person:		
Name (<input type="checkbox"/> Mr. <input checked="" type="checkbox"/> Mrs. <input type="checkbox"/> Ms. <input type="checkbox"/> Dr.): Theresa Vitek		
Title: Manager, SHE Department		
Mailing Address: P.O. Box 1488		
City: Alvin	State: TX	ZIP Code: 77512-1488
Telephone No.: 281-581-3498	Fax No.: 281-581-3604	E-mail Address: theresa.vitek@ineos.com



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VII. PUBLIC NOTICE INFORMATION (complete if applicable)			
B. Technical Contact:			
Company Name : INEOS USA LLC			
Name (<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Mrs. <input type="checkbox"/> Ms. <input type="checkbox"/> Dr.): Daniel Lutz			
Title: Environmental Compliance Advisor			
Mailing Address: P.O. Box 1488			
City: Alvin		State: TX	ZIP Code: 77512-1488
Telephone No.: 713-373-9300	Fax No.: 281-581-3604	E-mail Address: Daniel.Lutz@ineos.com	
C. Application in Public Place:			
Name of Public Place: Alvin Library			
Physical Address: 105 South Gordon			
City: Alvin		County: Brazoria	
The public place has granted authorization to place the application for public viewing and copying?			<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
The public place has internet access available for the public?			<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> N/A
Complete VII.D. 1. - VII.D. 3., as applicable.			
D.1. Name of the Mayor for this facility site:			
Gary Appelt			
Mailing Address: 216 W Sealy St			
City: Alvin		State: TX	ZIP Code: 77511
D.2. Name of the Federal Land Manager for this facility site:			
Mailing Address:			
City:	State:		ZIP Code:
D.3. Name of the Indian Governing Body for this facility site:			
Mailing Address:			
City:	State:		ZIP Code:



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VII. PUBLIC NOTICE INFORMATION <i>(complete if applicable)</i>				
E. Is a bilingual program required by the Texas Education Code in the School District?				<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO
Are the children who attend either the elementary school or the middle school closest to your facility eligible to be enrolled in a bilingual program provided by the district?				<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO
If "YES," which language is required by the bilingual program?				
VIII. SMALL BUSINESS CLASSIFICATION <i>(required)</i>				
A. Does this company (including parent companies and subsidiary companies) have fewer than 100 employees or less than \$6 million in annual gross receipts?				<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO
B. Is the site a major source under 30 TAC Chapter 122, Federal Operating Permit Program?				<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
C. Are the site emissions of any individual air contaminant greater than 50 tpy?				<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
D. Are the site emissions of all air contaminants combined greater than 75 tpy?				<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
IX. TECHNICAL INFORMATION				
A. Is a current area map attached?				<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
Are any schools located within 3,000 feet of this facility?				<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO
B. Is a plot plan of the plant property attached?				<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
C. Is a process flow diagram and a process description attached?				<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
D. Maximum Operating Schedule:		Hours: 24	Day(s): 7	Week(s): 52
Seasonal Operation?				<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO
If "YES," please describe.				
E. Are worst-case emissions data and calculations attached?				<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
1. Is a Table 1(a) entitled, "Emission Point Summary Table," attached?				<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
2. Is a Table 2 entitled, "Material Balance Table," attached?				<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
3. Are equipment, process, or control device tables attached?				<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
F. Are actual emissions for the last two years (determination federal applicability) attached?				<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO



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X. STATE REGULATORY REQUIREMENTS	
<i>Applicants must be in compliance with all applicable state regulations to obtain a permit or amendment.</i>	
A. The emissions from the proposed facility will comply with all rules and regulations of the TCEQ and details are attached?	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
B. The proposed facility will be able to measure emissions of significant air contaminants and details are attached?	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
C. A demonstration of Best Available Control Technology (BACT) is attached?	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
D. The proposed facilities will achieve the performance in the permit application and compliance demonstration or record keeping information is attached?	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
E. Is atmospheric dispersion modeling attached?	<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO
F. Does this application involve any air contaminants for which a "disaster review" is required?	<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO
If "YES," details must be attached.	
<i>Note: For a list of air contaminants for which a "disaster review" will be required, refer to the NSRPD Disaster Review Guidance Document at www.tceq.state.tx.us/permitting/air/rules/federal/63/63hmpg.html.</i>	
G. Is this facility or group of facilities located at a site within an Air Pollutant Watch List (APWL) area?	<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO
If "YES," answer X.G. 1. - X.G. 3.	
1. List the APWL Site Number:	
2. Does the site emit a pollutant of concern for the APWL area in which the site is located?	<input type="checkbox"/> YES <input type="checkbox"/> NO
3. If "YES," list the pollutant(s) of concern emitted by this site:	
H. Is this facility or group of facilities located at a site within the Houston/Galveston nonattainment area? (Brazoria, Chambers, Fort Bend, Galveston, Harris, Liberty, Montgomery, or Waller Counties)	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
If "YES," answer X.H. 1. - X.H. 4.	
1. Does the facility or group of facilities located at this site have an uncontrolled design capacity to emit 10 tpy or more of NO _x ?	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
2. Is this site subject to 30 TAC Chapter 101, Subchapter H, Division 3 (Mass Emissions Cap and Trade)?	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
3. Does this action make the site subject to 30 TAC Chapter 101, Subchapter H, Division 3 (Mass Emissions Cap and Trade)?	<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO
4. Does this action require the site to obtain additional emission allowances?	<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO

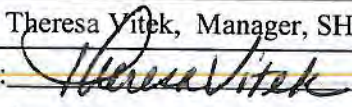


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XI. FEDERAL REGULATORY REQUIREMENTS Applicants must be in compliance with all applicable federal regulations to obtain a permit or amendment. <i>If any of the following questions are answered "YES, the application must contain detailed attachments addressing applicability, identify federal regulation Subparts, show how requirements are met, and include compliance information.</i>	
A. Does a Title 40 Code of Federal Regulations Part 60, (40 CFR Part 60) New Source Performance Standard (NSPS) apply to a facility in this application?	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
B. Does 40 CFR Part 61, National Emissions Standard for Hazardous Air Pollutants (NESHAP) apply to a facility in this application?	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
C. Does a 40 CFR Part 63, Maximum Achievable Control Technology (MACT) standard apply to a facility in this application?	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
D. Does nonattainment permitting requirements apply to this application?	<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO
E. Does prevention of significant deterioration permitting requirements apply to this application?	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
F. Does Hazardous Air Pollutant Major Source [FAA § 112(g)] requirements apply to this application?	<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO
XII. COPIES OF THIS APPLICATION	
A. Has the required fee been sent separately with a copy of this Form PI-1 to the TCEQ Revenue Section? (MC 214, P.O. Box 13088, Austin, Texas 78711).	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> N/A
B. Are the Core Data Form, Form PI-1, and all attachments being sent to the TCEQ in Austin?	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
OPTIONAL: Has an extra copy of the Core Data Form, Form PI-1 and all attachments been sent to the TCEQ in Austin?	<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO
If "YES," please mark this application as "COPY."	
C. Is a copy of the Core Data Form, the Form PI-1, and all attachments being sent to the appropriate TCEQ regional office?	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
D. Is a copy of the Core Data Form, the Form PI-1, and all attachments being sent to each appropriate local air pollution control program(s)?	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
List all local air pollution control program(s):	
E. Is a copy of the Core Data Form, Form PI-1, and all attachments (without confidential information) being sent to the EPA Region 6 office in Dallas, Texas? (federal applications only)	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
F. This facility is located within 100 kilometers of the Rio Grande River and a copy of the application was sent to the International Boundary and Water Commission (IBWC):	<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO
G. This facility is located within 100 kilometers of a federally-designated Class I area and a copy of the application was sent to the appropriate Federal Land Manager:	<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO



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XIII. PROFESSIONAL ENGINEER (P.E.) SEAL	
Is the estimated capital cost of the project greater than \$2 million dollars?	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
If "YES," the application must be submitted under the seal of a Texas licensed Professional Engineer (P.E.).	
XIV. DELINQUENT FEES AND PENALTIES	
Notice: This form will not be processed until all delinquent fees and/or penalties owed to the TCEQ or the Office of the Attorney General on behalf of the TCEQ is paid in accordance with the "Delinquent Fee and Penalty Protocol." For more information regarding Delinquent Fees and Penalties, go to the TCEQ Web site at: www.tceq.state.tx.us/agency/delin/index.html .	
XV. SIGNATURE	
The signature below confirms that I have knowledge of the facts included in this application and that these facts are true and correct to the best of my knowledge and belief. I further state that to the best of my knowledge and belief, the project for which application is made will not in any way violate any provision of the Texas Water Code (TWC), Chapter 7, Texas Clean Air Act (TCAA), as amended, or any of the air quality rules and regulations of the Texas Commission on Environmental Quality or any local governmental ordinance or resolution enacted pursuant to the TCAA. I further state that I understand my signature indicates that this application meets all applicable nonattainment, prevention of significant deterioration, or major source of hazardous air pollutant permitting requirements. I further state that I have read and understand TWC §§ 7.177-7.183, which defines <u>CRIMINAL OFFENSES</u> for certain violations, including intentionally or knowingly making or causing to be made false material statements or representations in this application, and TWC § 7.187, pertaining to <u>CRIMINAL PENALTIES</u> .	
NAME:	Theresa Yitek, Manager, SHE Department
SIGNATURE:	 <i>Original Signature Required</i>
DATE:	7/28/11



TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Table 1(a) Emission Point Summary

Date:	July 2010	Permit No.:	NA
Area Name:	No. 2 Olefins Unit		
		Regulated Entity No.:	100238708
		Customer Reference No.:	602817884

Review of applications and issuance of permits will be expedited by supplying all necessary information requested on this Table.

AIR CONTAMINANT DATA					
1. Emission Point		2. Component or Air Contaminant Name	3. Air Contaminant Emission Rate		
EPN (A)	FIN (B)		NAME (C)	Pounds per Hour (A)	TPY (B)
DD8-105	DDB-105	Furnace No. 105	NO _x	14.85	21.68
			CO	21.78	95.40
			VOC	3.72	16.28
			SO ₂	0.41	1.78
			NH ₃	4.77	10.45
			PM	5.14	22.50
			PM ₁₀	4.06	17.77
			PM _{2.5}	2.31	10.12
			CO ₂ e	81,592.35	255,588.70
			VOC	0.94	4.12
			NH ₃	0.02	0.10
			CO	103.46	2.48
			VOC	0.09	0.01
			PM	1.36	0.39
PM ₁₀	1.35	0.39			
PM _{2.5}	0.84	0.24			
CO ₂	3,630.95	87.14			
FUG-ADDF	FUG-ADDF	Furnace No. 105 VOC Fugitives			
FUG-SCR2	FUG-SCR2	Furnace No. 105 Ammonia Fugitives			
DDF-106	DDF-106	Furnace No. 105 Decoke Cyclone			

EPN = Emission Point Number
 FIN = Facility Identification Number

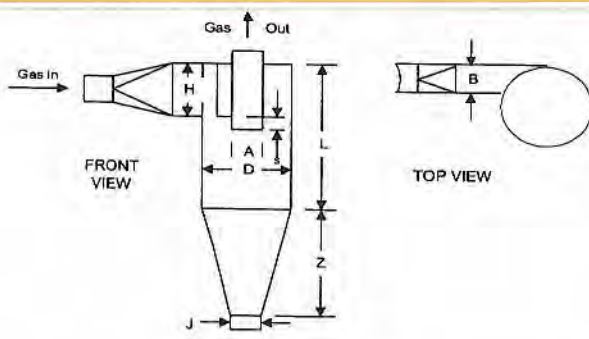
TABLE 6
BOILERS AND HEATERS

Type of Device: Furnace			Manufacturer: TBD			
Number from flow diagram: DDB-105			Model Number:			
CHARACTERISTICS OF INPUT						
Type Fuel	Chemical Composition (% by Weight)		Inlet Air Temp °F (after preheat)		Fuel Flow Rate (scfm* or lb/hr)	
Fuel Gas	Hydrogen (30-40%) Ehylene (0-2%) Methane (balance)				Average 11,270 scfm	Design Maximum
			Gross Heating Value of Fuel		Total Air Supplied and Excess Air	
			(specify units) 732 Btu/scf		Average _____ scfm* _____ % excess (vol)	Design Maximum _____ scfm * _____ % excess (vol)
HEAT TRANSFER MEDIUM						
Type Transfer Medium	Temperature °F		Pressure (psia)		Flow Rate (specify units)	
(Water, oil, etc.)	Input	Output	Input	Output	Average	Design Maxim
OPERATING CHARACTERISTICS						
Ave. Fire Box Temp. at max. firing rate	Fire Box Volume(ft. ³), (from drawing)		Gas Velocity in Fire Box (ft/sec) at max firing rate		Residence Time in Fire Box at max firing rate (sec)	
STACK PARAMETERS						
Stack Diameters	Stack Height	Stack Gas Velocity (ft/sec)			Stack Gas	Exhaust
		(@Ave.Fuel Flow Rate)	(@Max. Fuel Flow Rate)	Temp °F	scfm	
CHARACTERISTICS OF OUTPUT						
Material	Chemical Composition of Exit Gas Released (% by Volume)					
	See emissions calculations.					
Attach an explanation on how temperature, air flow rate, excess air or other operating variables are controlled.						

Also supply an assembly drawing, dimensioned and to scale, in plan, elevation, and as many sections as are needed to show clearly the operation of the combustion unit. Show interior dimensions and features of the equipment necessary to calculate in performance.

*Standard Conditions: 70 °F, 14.7 psia

TABLE 10
CYCLONE SEPARATORS

Point Number (from Flow Diagram) DDF-106		Manufacturer & Model No. (if available)		
Name of Abatement Device Furnace No. 105 Decoke Cyclone		Type of Particulate Controlled Coke Fines		
GAS STREAM CHARACTERISTICS				
Flow Rate (acfm)		Gas Stream Temperature(°F)	Particulate Grain Loading (grain/scf)	
Design Maximum	Average Expected 100,000	600-750	Inlet 0.9	Outlet 0.09
PARTICULATE DISTRIBUTION (By Weight)				
Micron Range	Inlet		Outlet	
0.0-1.0	0.09 %		39.90 %	
1.0-3.0	0.18 %		7.98 %	
3.0-5.0	0.18 %		7.98 %	
5-10	0.55 %		0.24 %	
10-20	3.90 %		1.73 %	
over 20	95.10 %		42.16 %	
CYCLONE CHARACTERISTICS				
Type of Cyclone (check appropriate boxes):				
<input type="checkbox"/> wet		<input type="checkbox"/> single		<input checked="" type="checkbox"/> quadruple
<input checked="" type="checkbox"/> dry		<input type="checkbox"/> dual		<input type="checkbox"/> multiclone
Give Dimensions of Cyclone (See sample sketch):				
1. B ___ in.	5. Z ___ in.			
2. H ___ in.	6. D ___ in.			
3. S ___ in.	7. A ___ in.			
4. L ___ in.	8. J ___ in.			
Method of Removal of Particulate from from Cyclone <u>Manual Unloading</u>				
Pressure drop through cyclone (inches water) _____				
ADDITIONAL INFORMATION				

- On separate sheets attach the following:
- A. Details regarding principle of operation
 - B. An assembly drawing (Front and Top View) of the abatement device dimensioned and to scale clearly showing the design, size and shape.
- If the device has bypasses, safety valves, etc., include in drawing and specify when such bypasses are to be used and under what conditions.



Texas Commission on Environmental Quality
Table 30
Estimated Capital Cost and Fee Verification

Include estimated cost of the equipment and services that would normally be capitalized according to standard and generally accepted corporate financing and accounting procedures. Tables, checklists, and guidance documents pertaining to air quality permits are available from the Texas Commission on Environmental Quality, Air Permits Division Web site at www.tceq.state.tx.us/nav/permits/air_permits.html.

I. DIRECT COSTS [30 TAC § 116.141(c)(1)]	Estimated Capital Cost
A. A process and control equipment not previously owned by the applicant and not currently authorized under this chapter	\$ >25MM
B. Auxiliary equipment, including exhaust hoods, ducting, fans, pumps, piping, conveyors, stacks, storage tanks, waste disposal facilities, and air pollution control equipment specifically needed to meet permit and regulation requirements	\$ 0.00
C. Freight charges	\$ 0.00
D. Site preparation, including demolition, construction of fences, outdoor lighting, road and parking areas	\$ 0.00
E. Installation, including foundations, erection of supporting structures, enclosures or weather protection, insulation and painting, utilities and connections, process integration, and process control equipment	\$ 0.00
F. Auxiliary buildings, including materials storage, employee facilities, and changes to existing structures	\$ 0.00
G. Ambient air monitoring network	\$ 0.00
II. INDIRECT COSTS [30 TAC § 116.141(c)(2)]	Estimated Capital Cost
A. Final engineering design and supervision, and administrative overhead	\$ 0.00
B. Construction expense, including construction liaison, securing local building permits, insurance, temporary construction facilities, and construction clean-up	\$ 0.00
C. Contractor's fee and overhead	\$ 0.00
TOTAL ESTIMATED CAPITAL COST	\$ >25MM

I certify that the total estimated capital cost of the project as defined in 30 TAC § 116.141 is equal to or less than the above figure. I further state that I have read and understand Texas Water Code § 7.179, which defines **CRIMINAL OFFENSES** for certain violations, including intentionally or knowingly making, or causing to be made, false material statements or representations.

Company Name: INEOS USA LLC
 Company Representative Name (please print): Theresa Vitek Title: SHE Manager
 Company Representative Signature: *Theresa Vitek*

Estimated Capital Cost	Permit Application Fee	PSD/Nonattainment Application Fee
Less than \$300,000	\$900 (minimum fee)	\$3,000 (minimum fee)
\$300,000 to \$25,000,000	0.30% of capital cost	
\$300,000 to \$7,500,000		1.0% of capital cost
Greater than \$25,000,000	\$75,000 (maximum fee)	
Greater than \$7,500,000		\$75,000 (maximum fee)

PERMIT APPLICATION FEE (from table above) = \$ 75,000.00 Date: 7/28/11

**AGRIFOS FERTILIZER L.L.C.
PASADENA, TX
INEOS CHOCOLATE BAYOU NEW CRACKING FURNACE
PSD AND PN NOTICE APPLICABILITY TABLE**

Proposed Emissions

Pollutant	Project Emission Increases (tpy)	PSD Threshold (tpy)	PSD Contemporaneous Netting Required?
NO _x	21.68	40	No
CO	97.88	100	No
VOC	16.29	NA	NA
SO ₂	1.78	40	No
NH ₃	10.55	NA	NA
PM	22.89	25	No
PM ₁₀	18.16	15	Yes
PM _{2.5}	10.37	10	Yes

Proposed MAERT Increases

Pollutant	Proposed MAERT Increases (tpy)	PN Threshold (tpy)	PN Applicable?
NO _x	21.68	5	Yes
CO	97.88	50	Yes
VOC	16.29	5	Yes
SO _x	1.78	10	No
NH ₃	10.55	5	Yes
PM	22.89	5	Yes
PM ₁₀	18.16	5	Yes
PM _{2.5}	10.37	5	Yes

TEXAS COMMISSION ON ENVIRONMENTAL
 QUALITY
 PO Box 13088
 AUSTIN TX 78711-3088

Your Vendor Number is 80257556

Document	Your document	Date	Deductions	Gross amount
1900001934	TCEQ10196	06/27/2011	0.00	75,000.00
SEND CK TO DAN LUTZ@ SHE-MARINA VIEW				
Sum total			(0.00)	75,000.00

Inquiries concerning this payment should be directed to our office. Please call (800) 924-5598 or email to IneosAPDept@ineos.com.

In order to affect timely invoice payments please place your vendor P.O. or paykey number on all future invoices. Your vendor number is 80257556.

INEOS Olefins and Polymers USA A Division of Ineos USA LLC 2600 South Shore Blvd. Suite 500 Attn: Accounts Payable League City, TX 77573	CITIBANK, N.A. ONE PENN'S WAY NEW CASTLE, DE 19720	62-20 311 Check No. 4000211051 06/30/2011
PAY *** SEVENTY-FIVE THOUSAND USD***		*****75,000.00* USD
To The Order OF TEXAS COMMISSION ON ENVIRONMENTAL QUALITY PO Box 13088 AUSTIN TX 78711-3088	PER: <u> <i>Todd M. Hing</i> </u> PER: <u> <i>Blaine Peck</i> </u>	

Professional Engineer Certification

I, Shauna R. Dallmer, a registered professional engineer in the State of Texas (Registration No. 97052), hereby certify that this document was reviewed by me or by others under my direct supervision. In preparing this document, reliance was placed upon information provided by INEOS USA L.L.C.

Shauna R. Dallmer

Name of Professional Engineer

Shauna R. Dallmer

Signature

97052

Registration Number

Texas

State

July 27, 2011

Date

Seal



TITAN Engineering, Inc.
P.E. Firm No. F-001835
2225 CR 90 Suite 105
Pearland, Texas 77584

Appendix B | Emission Calculations (CONFIDENTIAL)

Appendix C | Netting Tables

**TABLE PSD-2
PROJECT CONTEMPORANEOUS CHANGES¹**

Company: INEOS USA LLC
Permit Application No. :

Page 1 of 1
Criteria Pollutant: NO_x

PROJECT DATE ²	EMISSION UNIT AT WHICH REDUCTION OCCURED ³		PERMIT No.	PROJECT NAME OR ACTIVITY	ALLOWABLE EMISSIONS AFTER THE ACTIVITY ⁴ (tons/year)	ACTUAL EMISSIONS PRIOR TO THE ACTIVITY ⁴ (tons/year)	(A-B) ⁶ (tons/year)	CREDITABLE DECREASE OR INCREASE ⁸	REASON CODE ⁷
	FIN	EPN							
Nov 2008	N/A	N/A	95	Flexible Cap Insignificant Contribution 9%	105.31	0.00	105.31		
Dec 2008	GT-1	A-100	95	Retrofit on Cogen	256.77	485.96	-229.19	-229.19	b
May 2011	UTILCMP4	UTILCMP4	PBR	New Air Compressor at Utilities	2.57	0.00	2.57	2.57	
May 2011	UTILCMP5	UTILCMP5	PBR	New Air Compressor at Utilities	2.57	0.00	2.57	2.57	
May 2011	UTILCMP6	UTILCMP6	PBR	New Air Compressor at Utilities	2.57	0.00	2.57	2.57	
Oct 2013	DDB-105	DDB-105		New Cracking Furnace at Olefins No. 2	21.68	0.00	21.68	21.68	
TOTAL								-94.49	

NOTES:

- 1 Individual PSD-2 Tables should be used to summarize a combination of activities which may be considered a single project for each regulated pollutant.
- 2 Date activity occurred and is documented. Attach Table PSD-3 for each project reduction claimed which explains how the reduction is creditable.
- 3 Emission Point No. as designated in TNRCC Permit or Emissions Inventory.
- 4 All records and calculations for these values need to be available upon request. Actual emissions should be estimated as an average of the actual emissions over the two-year period prior to the Project's Activity Date.
- 5 Allowable (column A) - Actual (column B) for all emissions.
- 6 If portion of the decrease not creditable, enter creditable amount. If all of decrease is creditable or if this line is an increase, enter column C again. Sum all values in this column and place in box at bottom of column.
- 7 For emission decreases:
Enter one of the following reason codes:
e1a - 101.29(e)1(A) Shutdowns
e1b - 101.29(e)1(B) Continuous Emission Monitors
e1c - 101.29(e)1(C) Reduction by Review
e1d - 101.29(e)1(D) Reduction by Standardized Calculation
oth - other Describe on Table PSD-3.
Also reference appropriate PSD-3 page of this submittal
- 8 Sum all values for this page.

**TABLE PSD-2
PROJECT CONTEMPORANEOUS CHANGES¹**

Company: INEOS USA LLC

Permit Application No. :

PROJECT DATE ²	EMISSION UNIT AT WHICH REDUCTION OCCURRED ³		PERMIT No.	PROJECT NAME OR ACTIVITY	ALLOWABLE EMISSIONS AFTER THE ACTIVITY ⁴ (tons/year)	ACTUAL EMISSIONS PRIOR TO THE ACTIVITY ⁴ (tons/year)	(tons/year) DIFFERENCE (A-B) ⁶	CREDITABLE DECREASE OR INCREASE ⁸	REASON CODE ⁷
	FIN	EPN							
1 Jan 2008	P2FLARE	GM-1401	5419	Polypropylene Flare	25.00	23.83	1.18	1.2	d
2 Jan 2008	FGE-801	FGE-801	5419	Polypropylene Cooling Tower (Process Area Shutdown)	0.00	0.21	-0.21	-0.2	
3 Jan 2008	P2VALVEFUG	FUG2VPP	5419	Process Fugitives (Process Area Shutdown)	0.00	38.25	-38.25	-38.2	
4 Jan 2008	P2CLASPIER	FGM-306A&B	5419	Pellet Classifier (Process Area Shutdown)	0.00	0.01	-0.01	0.0	
5 Jan 2008	P2FINBLDG	FINBLDG	5419	Polypropylene Finishing (Process Area Shutdown)	0.00	11.73	-11.73	-11.7	
6 Jan 2008	P2PELSEP	SEP	5419	PP2 Pellet Separator (Process Area Shutdown)	0.00	1.03	-1.03	-1.0	
7 Jan 2008	SHOPPER	SHOPPER	5419	PP2 Strings Hopper (Process Area Shutdown)	0.00	2.94	-2.94	-2.9	
8 Jan 2008	P2FUGWC	FUGWCPP2	5419	PP2 wastewater collection (Process Area Shutdown)	0.00	8.90	-8.90	-8.90	
9 Nov 2008	N/A	N/A	95	Flexible Cap Insignificant factor contribution	58.30	0.00	58.30	58.30	
10 May 2011	UTILCMP4	UTILCMP4	PBR	New Air Compressor at Utilities	0.98	0.00	0.98	0.98	
11 May 2011	UTILCMP5	UTILCMP5	PBR	New Air Compressor at Utilities	0.98	0.00	0.98	0.98	
12 May 2011	UTILCMP6	UTILCMP6	PBR	New Air Compressor at Utilities	0.98	0.00	0.98	0.98	
13 Oct 2013	DDB-105	DDB-105		New Cracking Furnace at Olefins No. 2	16.28	0.00	16.28	16.28	
14 Oct 2013	FUG-ADDF	FUG-ADDF		New Cracking Furnace at Olefins No. 2	4.12	0.00	4.12	4.12	
15 Oct 2013	DDF-106	DDF-106		New Cracking Furnace at Olefins No. 2	0.01	0.00	0.01	0.01	
Total								19.78	

NOTES:

- 1 Individual PSD-2 Tables should be used to summarize a combination of activities which may be considered a single project for each regulated pollutant.
- 2 Date activity occurred and is documented. Attach Table PSD-3 for each project reduction claimed which explains how the reduction is creditable.
- 3 Emission Point No. as designated in TNRCC Permit or Emissions Inventory.
- 4 All records and calculations for these values need to be available upon request. Actual emissions should be estimated as an average of the actual emissions over the two-year period prior to the Project's Activity Date.
- 5 Allowable (column A) - Actual (column B) for all emissions.
- 6 If portion of the decrease not creditable, enter creditable amount. If all of decrease is creditable or if this line is an increase, enter column C again. Sum all values in this column and place in box at bottom of column.
- 7 For emission decreases:
 Enter one of the following reason codes:
 e1a - 101.29(e)1(A) Shutdowns
 e1b - 101.29(e)1(B) Continuous Emission Monitors
 e1c - 101.29(e)1(C) Reduction by Review
 e1d - 101.29(e)1(D) Reduction by Standardized Calculation
 oth - oth Describe on Table PSD-3.
 Also reference appropriate PSD-3 page of this submittal
- 8 Sum all values for this page.

Appendix D | RBLC Tables

Clearinghouse es (PM₁₀, PM_{2.5})

Throughput Unit	Pollutant	Emission Limit 1	Emission Limit 2	Standard Emission Limit	Control Description	Basis	Comments
MMBTU/H	PM10	NONE INCLUDED	NONE INCLUDED	NOT AVAILABLE	PROPER EQUIPMENT DESIGN AND OPERATION, GOOD COMBUSTION PRACTICES AND USE OF GASEOUS FUELS		
MMBTU/H	PM10	NONE INCLUDED	NONE INCLUDED	NOT AVAILABLE	COMPLY WITH 40 CFR NNN AND RRR		
MMBTU/H	PM10	NONE INCLUDED	NONE INCLUDED	0.0074 LB/MMBTU	PROPER EQUIPMENT DESIGN AND OPERATION, GOOD COMBUSTION PRACTICES AND USE OF GASEOUS FUELS		
MMBTU/H	PM10	2.6 LB/H			CLEAN FUELS		
MMBTU/H	PM10	2.53 LB/H	11.1 T/YR		CLEAN FUELS AND VISIBLE EMISSIONS 20% OPACITY OVER 6 MIN AVG		
MMBTU/H	PM10	18.7 LB/H (3 HR AVG)	81.9 TPY	0.0156 LB/MMBTU	GOOD COMBUSTION PRACTICES AND VISIBLE EMISSIONS LIMITED 10% OPACITY OVER 6 MINUTE AVERAGE		
MMBTU/H	PM10	3.4000 LB/H (calendar day)			(N) BURN ONLY REFINERY FUEL GAS/NATURAL GAS	BACT-PSD	PM10 EMISSIONS ESTIMATED USING EMISSION FACTOR BASED ON BP STACK TESTING ON SIMILAR BOILERS BURNING RFG. EMISSION FACTOR IS 12.74 LB OF TOTAL PARTICULATE (FILTERABLE PLUS CONDENSABLE) PER MILLION STANDARD CUBIC FEET OF RFG COMBUSTED.
MMBTU/H	PM/PM10	16.7000 LB/H	63.0000 T/YR	0.0075 LB/MMBTU	None	None	EQUIPPED WITH AN AMMONIA SLIP SCR.
MMBTU/H	PM10	0.0080 LB/MMBTU		0.0080 LB/MMBTU	(P) GOOD ENGINEERING DESIGN AND PROPER COMBUSTION PRACTICES	BACT-PSD	
MMBTU/H	PM10	0.0080 LB/MMBTU		0.0080 LB/MMBTU	(P) GOOD ENGINEERING DESIGN AND PROPER COMBUSTION PRACTICES	BACT-PSD	
MMBTU/H	PM10	0.0080 LB/MMBTU		0.0080 LB/MMBTU	(P) GOOD ENGINEERING DESIGN AND PROPER COMBUSTION PRACTICES	BACT-PSD	
MMBTU/H	PM/PM10	0.0080 LB/MMBTU		0.0080 LB/MMBTU	(P) GOOD ENGINEERING DESIGN AND PROPER COMBUSTION PRACTICES	BACT-PSD	
MMBTU/H	PM10	0.0080 LB/MMBTU		0.0080 LB/MMBTU	(P) GOOD ENGINEERING DESIGN AND PROPER COMBUSTION PRACTICES	BACT-PSD	
MMBTU/H	PM10	0.0080 LB/MMBTU		0.0080 LB/MMBTU	(P) GOOD ENGINEERING DESIGN AND PROPER COMBUSTION PRACTICES	BACT-PSD	
MMBTU/H	PM10	1.2000 LB/H	4.4900 T/YR	0.0080 LB/MMBTU CALCULATED USING THROUGHPUT	(P) GOOD COMBUSTION PRACTICES, GOOD ENGINEERING DESIGN, AND CLEAN BURNING FUEL		
MMBTU/H	PM10	1.5800 LB/H	6.1300 T/YR	0.0080 LB/MMBTU CALCULATED USING THROUGHPUT	(P) GOOD COMBUSTION PRACTICES, GOOD ENGINEERING DESIGN, AND CLEAN BURNING FUEL		
MMBTU/H	PM10	2.8800 LB/H	10.7600 T/YR	0.0080 LB/MMBTU CALCULATED USING THROUGHPUT	(P) GOOD COMBUSTION PRACTICES, GOOD ENGINEERING DESIGN, AND CLEAN BURNING FUEL	BACT-PSD	
MMBTU/H	PM	1.1000 LB/H	3.2000 T/YR	0.0030 LB/MMBTU CALCULATED USING THROUGHPUT	None	Other Case-by-Case	
MMBTU/H	PM	1.0500 LB/H	3.8000 T/YR	0.0030 LB/MMBTU CALCULATED USING THROUGHPUT	None	Other Case-by-Case	
MMBTU/H	PM	1.1000 LB/H	3.4000 T/YR	0.0030 LB/MMBTU CALCULATED USING THROUGHPUT	None	Other Case-by-Case	
MMBTU/H	PM	1.1000 LB/H	3.0000 T/YR	0.0030 LB/MMBTU CALCULATED USING THROUGHPUT	None	Other Case-by-Case	
MMBTU/H	PM	1.1000 LB/H	2.9000 T/YR	0.0030 LB/MMBTU	None	Other Case-by-Case	
MMBTU/H	PM	1.1000 LB/H	3.5000 T/YR	0.0030 LB/MMBTU CALCULATED USING THROUGHPUT	None	Other Case-by-Case	
MMBTU/H	PM	1.1000 LB/H	3.8000 T/YR	0.0030 LB/MMBTU CALCULATED USING THROUGHPUT	None	Other Case-by-Case	
MMBTU/H	PM	1.0500 LB/H EACH	4.0400 T/YR EACH	0.0030 LB/MMBTU EACH, CALCULATED USING MAX THROUGHPUT	None	Other Case-by-Case	
MMBTU/H	PM	1.0000 LB/H	4.0000 T/YR	0.0030 LB/MMBTU EACH, CALCULATED USING MAX THROUGHPUT	None	Other Case-by-Case	
MMBTU/H	PM	1.0000 LB/H	3.8000 T/YR	0.0030 LB/MMBTU CALCULATED USING MAX THROUGHPUT	None	Other Case-by-Case	
MMBTU/H	PM	1.3300 LB/H EACH	31.9000 T/YR COMBINED	0.0040 LB/MMBTU EACH, CALCULATED USING MAX THROUGHPUT	None	Other Case-by-Case	SUBJECT TO PSD REVIEW UNDER PSD-TX-302M1
MMBTU/H	PM/PM10	0.73 LB/H	3.8000 T/YR	0.0030 LB/MMBTU CALCULATED USING THROUGHPUT	None		
MMBTU/H	PM/PM10	2.0000 LB/H	8.4000 T/YR	0.0040 LB/MMBTU CALCULATED USING MAX THROUGHPUT	None	Other Case-by-Case	
MMBTU/H	PM	155.0000 LB/H	675.0000 T/YR	1.0000 LB/1000 LB COKE	None	BACT-PSD	
MMBTU/H	PM10	0.5000 LB/H	2.2000 T/YR	0.002 LB/MMBTU CALCULATED	None	NA	
MMBTU/H	PM10	0.5000 LB/H	2.2000 T/YR	0.002 LB/MMBTU CALCULATED	None	NA	
MMBTU/H	PM	0.5100 LB/H	18.9900 T/YR	0.00204 LB/MMBTU CALCULATED	None	NA	
MMBTU/H	PM	0.5100 LB/H	18.9900 T/YR	0.00204 LB/MMBTU CALCULATED	None	NA	
MMBTU/H	PM10	0.03 LB/H	0.13 T/YR				
MMBTU/H	PM	0.1500 LB/H	0.0300 T/YR				
MMBTU/H	PM	0.9900 LB/H	4.3300 T/YR	0.004 LB/MMBTU CALCULATED	None	NA	

RACT/BACT/LAER Clearinghouse Results for Decoke Units (PM₁₀, PM_{2.5})

en	SIC Code	County/ Parish	State	Permit Number	Permit Date	Process	Primary Fuel	Throughput Unit	Throughput Unit	Pollutant	Emission Limit 1	Emission Limit 2	Standard Emission	Control Description	Efficiency	Basin	Comments
						DECOKE STACK (F-01)				PM	11.4000 LB/H	1.0000 T/YR		None		Other Case by Case	
						DECOKE STACK (F-01)				VE	10% opacity 6 min avg			None		Other Case by Case	
						DECOKE STACK (B-01)				PM	2.0000 LB/H	0.1000 T/YR		None		Other Case by Case	
						DECOKE STACK (B-01)				VE	10% opacity 6 min avg			None		Other Case by Case	
						DECOKE STACK (C-01)				PM	10.4000 LB/H	1.0000 T/YR		None		Other Case by Case	
						DECOKE STACK (C-01)				VE	10% opacity 6 min avg			10% opacity 6 min avg		Other Case by Case	
						(A) DECOKE STACK (D-01)				PM	8.5000 LB/H EACH	1.0000 T/YR EACH		Wet Cyclone		Other Case by Case	
						DECOKE STACK (D-01)				VE	10% opacity 6 min avg			Wet Cyclone		Other Case by Case	
						DECOKE STACK (E-01)				PM	11.4000 LB/H	1.0000 T/YR		None		Other Case by Case	
						DECOKE STACK (E-01)				VE	10% opacity 6 min avg			None		Other Case by Case	
						(F) DECOKE STACK (F-01 & F-01)				PM	20.4000 LB/H EACH	1.0000 T/YR EACH		None		Other Case by Case	
						DECOKE STACK (F-01 & F-01)				VE	10% opacity 6 min avg			None		Other Case by Case	
						(G) DECOKE STACK (G-01 & G-01)				PM	14.4000 LB/H EACH	0.9200 T/YR EACH		None		Other Case by Case	
						DECOKE STACK (G-01 & G-01)				VE	10% opacity 6 min avg			None		Other Case by Case	
						(H) DECOKE STACK (H-01)				PM	14.6000 LB/H EACH	0.7700 T/YR EACH		None		Other Case by Case	
						DECOKE STACK (H-01)				PM10	19.9000 LB/H	0.8000 T/YR		Wet Cyclone		Other Case by Case	
						DECOKE STACK (I-01)				PM10	34.9000 LB/H	1.5000 T/YR		Wet Cyclone		Other Case by Case	
						DECOKE DRUM (J) for Pyrolysis Furnace				PM10	7.5000 LB/H	1.4000 T/YR		None		NA	
						DECOKE STACK (K-01)				PM10	0.5000 LB/H	0.1000 T/YR		(A) CYCLONE SEPARATOR	90%	BACT-PSD	
						DECOKE STACK (L-01)				PM10	0.5000 LB/H	0.1000 T/YR		(A) CYCLONE SEPARATOR	90%	BACT-PSD	
						DECOKE STACK (M-01)				PM10	6.2000 LB/H	1.0000 T/YR		(A) CYCLONE SEPARATOR	90%	BACT-PSD	
						DECOKE STACK (N-01)				PM10	0.8000 LB/H	0.0200 T/YR		(A) CYCLONE SEPARATOR	90%	BACT-PSD	
						DECOKE STACK (O-01)				PM10	0.8000 LB/H	0.0200 T/YR		(A) CYCLONE SEPARATOR	90%	BACT-PSD	
						DECOKE STACK (P-01)				PM10	8.2000 LB/H	0.8000 T/YR		(A) CYCLONE SEPARATOR	90%	BACT-PSD	
						DECOKE STACK (Q-01)				PM10	931.2000 T/YR MILLING	0.9000 LB	0.9000 LB	(A) WET GAS SCRUBBER	95%	BACT-PSD	
						DECOKE STACK (R-01)				PM10	365-DAY SUM OF DAILY EMISSIONS	365-DAY SUM OF DAILY EMISSIONS	365-DAY SUM OF DAILY EMISSIONS	(A) WET GAS SCRUBBER	95%	BACT-PSD	
						DECOKE STACK (S-01)				PM	0.4000 LB/1000 LB PER BURNOFF	165.9600 T/YR		(A) WET GAS SCRUBBER	95%	BACT-PSD	
						DECOKE STACK (T-01)				PM10	0.5000 LB/1000 LB COKE BURN THREE-HOUR AVERAGE	0.012 LB/MAMTU CALCULATED		(A) WET GAS SCRUBBER	MOVE TO DECOKE	Other Case by Case	
						DECOKE STACK (U-01)				PM10	0.0000 LB/1000 LB COKE BURN THREE-HOUR AVERAGE	0.012 LB/MAMTU CALCULATED		(A) WET GAS SCRUBBER	MOVE TO DECOKE	Other Case by Case	

BY NO LATER THAN DECEMBER 31, 2005, THE APPLICANT SHALL SUBMIT TO THE AGENCIES A COPY OF THE TEST PLAN TO BE USED TO DETERMINE THE EFFICIENCY OF THE CONTROL DEVICE. THE TEST PLAN SHALL BE APPROVED BY THE AGENCIES. THE TEST PLAN SHALL BE SUBMITTED TO THE AGENCIES IN ACCORDANCE WITH EPA REGIONAL METHOD 5-B.

RACT/BACT/LAER Clearinghouse Results for Decoke Units (CO₂)

Facility ID	Facility	Facility Description	SIC Code	County	State	Permit Number	Permit Date (actual)	Project	Primary Fuel	Throughput (MMBtu/Day)	Throughput (MMBtu/Day)	Pollutant	Emission Limit 1	Emission Limit 2	Control Description	Effectivity	Unit	Comments
TX-050	BP AMCO CHEMICAL COMPANY	ETHYLENEGLYCOL MANUFACTURING, OLFINES COMPLEX	289	HARRIS	TX	PSD-TX-64		DECOKE STACK, DPF, LOI	METHANE	2625	18,000,000	Carbon Dioxide	7,000 T/YR		None installed		BACT PSD	THE RACT/RACT/LAER DATABASE WAS SEARCHED FOR THIS FACILITY TYPE AND SIMILAR PROCESSES WERE FOUND BUT THERE WERE NO PROJECT NOTES THE REASONING BEING THAT BURNING OF THESE UNIT EFFLUENTS IS NOT HEATED AND ANY CO ₂ PRESENT ON THE CATALYST IS CONVERTED TO CO AND CO ₂ LIMITED GOOD COMBUSTION PRACTICES TO MEET BACT SINCE GOOD COMBUSTION PRACTICES ARE IN PLACE AND NO ADDITIONAL CONDITIONS FOR AUTOMATIC WERE REQUIRED FOR THE AMPLIMENT
TX-050	BP AMCO CHEMICAL COMPANY	ETHYLENEGLYCOL MANUFACTURING, OLFINES COMPLEX	289	HARRIS	TX	PSD-TX-64		N-18, REFORMING OR IN REFORMING EFFLUENT Conversion process (stripping, reforming, etc.)	METHANE	2625	18,000,000	Carbon Dioxide	7,000 T/YR		None installed		BACT PSD	THE RACT/RACT/LAER DATABASE WAS SEARCHED FOR THIS FACILITY TYPE AND SIMILAR PROCESSES WERE FOUND BUT THERE WERE NO PROJECT NOTES THE REASONING BEING THAT BURNING OF THESE UNIT EFFLUENTS IS NOT HEATED AND ANY CO ₂ PRESENT ON THE CATALYST IS CONVERTED TO CO AND CO ₂ LIMITED GOOD COMBUSTION PRACTICES TO MEET BACT SINCE GOOD COMBUSTION PRACTICES ARE IN PLACE AND NO ADDITIONAL CONDITIONS FOR AUTOMATIC WERE REQUIRED FOR THE AMPLIMENT
TX-050	BP AMCO CHEMICAL COMPANY	ETHYLENEGLYCOL MANUFACTURING, OLFINES COMPLEX	289	HARRIS	TX	PSD-TX-64		N-20, CATALYST REGENERATION EFFLUENT	METHANE	3100.00	18,000,000	Carbon Dioxide	7,000 T/YR		None installed		BACT PSD	THE RACT/RACT/LAER DATABASE WAS SEARCHED FOR THIS FACILITY TYPE AND SIMILAR PROCESSES WERE FOUND BUT THERE WERE NO PROJECT NOTES THE REASONING BEING THAT BURNING OF THESE UNIT EFFLUENTS IS NOT HEATED AND ANY CO ₂ PRESENT ON THE CATALYST IS CONVERTED TO CO AND CO ₂ LIMITED GOOD COMBUSTION PRACTICES TO MEET BACT SINCE GOOD COMBUSTION PRACTICES ARE IN PLACE AND NO ADDITIONAL CONDITIONS FOR AUTOMATIC WERE REQUIRED FOR THE AMPLIMENT
TX-050	BP AMCO CHEMICAL COMPANY	ETHYLENEGLYCOL MANUFACTURING, OLFINES COMPLEX	289	HARRIS	TX	PSD-TX-64		N-21, REACTOR REGENERATION EFFLUENT, Petroleum refining conversion process (stripping, reforming, etc.)	METHANE	3064.81	18,000,000	Carbon Dioxide	7,000 T/YR		None installed		BACT PSD	THE RACT/RACT/LAER DATABASE WAS SEARCHED FOR THIS FACILITY TYPE AND SIMILAR PROCESSES WERE FOUND BUT THERE WERE NO PROJECT NOTES THE REASONING BEING THAT BURNING OF THESE UNIT EFFLUENTS IS NOT HEATED AND ANY CO ₂ PRESENT ON THE CATALYST IS CONVERTED TO CO AND CO ₂ LIMITED GOOD COMBUSTION PRACTICES TO MEET BACT SINCE GOOD COMBUSTION PRACTICES ARE IN PLACE AND NO ADDITIONAL CONDITIONS FOR AUTOMATIC WERE REQUIRED FOR THE AMPLIMENT