

**TCEQ AIR QUALITY PERMIT NUMBER 102982**

<b>APPLICATION BY</b>	<b>§</b>	<b>BEFORE THE</b>
	<b>§</b>	
<b>EXXON MOBIL CORPORATION</b>	<b>§</b>	<b>TEXAS COMMISSION ON</b>
<b>BAYTOWN OLEFINS PLANT</b>	<b>§</b>	
<b>BAYTOWN, HARRIS COUNTY</b>	<b>§</b>	<b>ENVIRONMENTAL QUALITY</b>

**EXECUTIVE DIRECTOR'S RESPONSE TO PUBLIC COMMENT**

The Executive Director of the Texas Commission on Environmental Quality (the commission or TCEQ) files this Response to Public Comment (Response) on the New Source Review Authorization application and Executive Director's preliminary decision.

As required by Title 30 Texas Administrative Code (TAC) § 55.156, before an application is approved, the Executive Director prepares a response to all timely, relevant and material, or significant comments. The Office of Chief Clerk timely received comment letters from the following persons: U.S. Environmental Protection Agency (EPA), Environmental Integrity Project (EIP) on behalf of Sierra Club and Air Alliance Houston, and Mr. Jimbo Wells. This Response addresses all timely public comments received, whether or not withdrawn. If you need more information about this permit application or the permitting process, please call the TCEQ Public Education Program at 1-800-687-4040. General information about the TCEQ can be found at our website at [www.tceq.texas.gov](http://www.tceq.texas.gov).

**BACKGROUND**

Description of Facility

Exxon Mobil Corporation (ExxonMobil or Applicant) has applied to the TCEQ for a New Source Review (NSR) Authorization under Texas Clean Air Act (TCAA), §382.0518. This will authorize the construction of a new facility that may emit air contaminants.

This permit will authorize the Applicant to construct an ethylene production facility at an existing chemical manufacturing complex. The facility is located at 3525 Decker Dr., Baytown, Harris County. Contaminants authorized under this permit include organic compounds, nitrogen oxides, sulfur dioxide, carbon monoxide, ammonia, sulfuric acid and particulate matter including particulate matter with diameters of 10 microns or less and 2.5 microns or less.

Procedural Background

Before work is begun on the construction of a new facility that may emit air contaminants, the person planning the construction must obtain a permit from the commission. This permit application is for an initial issuance of Air Quality Permit Number 102982.

The permit application was received on May 22, 2012, and declared administratively complete on May 30, 2012. The Notice of Receipt and Intent to Obtain an Air Quality Permit (NORI or first public notice) for this permit application was published in English and in Spanish on June 22, 2012, in the *The Baytown Sun* and in *El Perico*, respectively. The Notice of Application and

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Preliminary Decision for an Air Quality Permit (NAPD or second public notice) was published on April 16, 2013, in English and in Spanish in the *The Baytown Sun* and in *El Perico*, respectively. On March 27, 2013, ExxonMobil filed a request with the commission to directly refer the permit application to the State Office of Administrative Hearings (SOAH) for a contested case hearing. The commission granted the motion at its Agenda on April 10<sup>th</sup>, 2013. ExxonMobil first published a Notice of Hearing in English on June 5, 2013. It then published an Amended Notice of Hearing in English on June 7, 2013, in *The Baytown Sun*. The Amended Notice of Hearing reflected a change in venue from Austin, Texas to Baytown, Texas.

On June 13, 2013, the TCEQ received an application from ExxonMobil "submitting information to more accurately determine particulate matter emissions" during the baseline time period for its PAL6, which is part of air quality permit no. 3452. This application does not affect the technical review conducted for permit no. 102982 and discussed in this Response.

### **COMMENTS AND RESPONSES**

**COMMENT 1:** EIP generally commented that the application fails to demonstrate that emissions from the proposed ethylene unit will protect human health and not degrade air quality in Harris County. EIP states that Harris County is non-attainment for ozone and "preliminary" monitoring shows that Harris County is not meeting the primary standard for particulate matter with diameters of 2.5 microns or less (PM<sub>2.5</sub>). Also, the annual standard for particulate matter with diameters of 10 microns or less (PM<sub>10</sub>) of 50 micrograms per cubic meter (µg/m<sup>3</sup>) in place at the time ExxonMobil's Flexible Permit/Plantwide Applicability Limit (FLEX/PAL) was issued in 2005 is much higher than the current PM<sub>2.5</sub> annual standard of 12 micrograms per cubic meter. EIP states that if the permit is issued, it will authorize "hundreds of tons of ozone forming pollutants and PM<sub>2.5</sub>" from the proposed ethylene plant each year. Additionally, EIP commented that the plant "will also release large amounts of pollution during malfunctions and upset events," and that the TCEQ has issued enforcement orders against the applicant for avoidable upsets. EIP also commented that the air quality analysis does not include data to show compliance with the current annual PM<sub>2.5</sub> standard of 12 µg/m<sup>3</sup>. Specifically, presuming that ExxonMobil made a demonstration that emissions of PM up to its PAL limit would not cause a violation of the 50 µg/m<sup>3</sup> PM<sub>10</sub> standard, this demonstration does not suffice to show that the PAL PM limit is protective of the far more stringent 12 µg/m<sup>3</sup> PM<sub>2.5</sub> standard. EIP comments that the commission must ensure that all emissions from the plant will be well-controlled and that the plant will be well-maintained and operated. EIP comments that the modeling demonstration is deficient because the Applicant failed to account for all emissions from units associated with the project, including a modification to the Train 5 Cogeneration Unit, planned maintenance, startup and shutdown (MSS) activities, use of the wastewater treatment facilities, depropanizer, and reliance on a vacated Significant Impact Level (SIL) for PM<sub>2.5</sub>. EIP also comments that the Applicant's modeling analysis did not predict impacts in excess of any SIL except for the 24-hour PM<sub>2.5</sub> standard and therefore, the analysis is deficient because it doesn't include any refined modeling for any pollutant.

**RESPONSE 1:**

*Air Quality Analysis*

The Baytown Olefins Plant is an existing major source of VOC and NO<sub>x</sub> located within Harris County which has been designated as being in severe nonattainment of the ozone standard. The facility applied for, and has operated under, a Plantwide Applicability Limit (PAL) for NO<sub>x</sub> and VOC, and underwent major new source review at the time of the PAL issuance.

The Applicant conducted an air quality analysis that included air dispersion modeling. The potential impacts of the current expansion project to human health and welfare, or the environment, were determined by comparing air dispersion modeling predicted concentrations from the proposed facilities to appropriate state and federal standards and effects screening levels. The specific health-based standards or guidance levels employed in evaluating the potential emissions include the National Ambient Air Quality Standards (NAAQS) and TCEQ standards contained in 30 Texas Administrative Code (30 TAC) Chapter 112, and TCEQ Effects Screening Levels (ESLs). In addition, the TCEQ used other standards set forth in 30 TAC Chapter 112 to address maximum ground level concentrations (GLCmax) at or beyond the property line for sulfur compounds.

The NAAQS, as defined in Title 40 of the Code of Federal Regulations (CFR) § 50.2, were created and are periodically reviewed by the EPA. The NAAQS include both primary and secondary standards. The primary standards are those which the Administrator of the EPA determines are necessary, with an adequate margin of safety, to protect the public health, including sensitive members of the population such as children, the elderly, and individuals with existing lung or cardiovascular conditions. Secondary NAAQS are those which the Administrator determines are necessary to protect the public welfare and the environment, including animals, crops, vegetation, and buildings, from any known or anticipated adverse effects associated with the presence of an air contaminant in the ambient air. The standards are set for the criteria pollutants: ozone, lead, carbon monoxide (CO), sulfur dioxide (SO<sub>2</sub>), nitrogen dioxide (NO<sub>2</sub>), and particulate matter (PM), which includes PM<sub>10</sub> and PM<sub>2.5</sub>.

The TCEQ used the Chapter 112 standards to evaluate sulfur compounds proposed to be emitted and ESLs to evaluate other constituents as a result of the new ethylene production plant. ESLs are constituent-specific guideline concentrations used in TCEQ's evaluation of predicted constituent concentrations in air. ESLs are developed by the Toxicology Division (TD) of the TCEQ, and are based on a constituent's potential to cause adverse health effects, odor nuisances, and/or effects on vegetation. These health-based screening levels are set at concentrations lower than those reported in studies to produce adverse health effects, and are set as a guideline to further protect the general public, including sensitive subgroups such as children, the elderly, or people with existing respiratory conditions. Adverse health effects are not expected to occur if the predicted air concentration of a constituent is below its ESL. The air concentration of a constituent above its ESL does not indicate an adverse effect will occur, but rather that further evaluation is warranted.

For this specific permit application, the original air dispersion modeling did not include duct burners proposed for the heat recovery steam generator of the gas turbine generator train

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(Cogen 5). In response to public comment, ExxonMobil updated the modeling to include duct burners. The tables provided in this response include modeling results with and without the duct burners.

With respect to the ESLs, for all constituents modeled, only the GLCmax for ammonia and light VOC exceeded their current one-hour ESL.<sup>1</sup>; therefore, these constituents were subject to further review and subsequently underwent a detailed health effects review by TCEQ's TD. The TD determined these predicted exceedances were acceptable. No other compound modeled was predicted to exceed its respective short and long term ESL.

**Minor NSR Production Project-Related Modeling Results for Health Effects**

<b>Pollutant &amp; CAS#</b>	<b>Scenario</b>	<b>Averaging Time</b>	<b>GLCmax (µg/m<sup>3</sup>)</b>	<b>10% ESL (µg/m<sup>3</sup>)</b>
benzene 71-43-2	NA	1-hr	14.8	17
benzene 71-43-2	NA	Annual	0.3	0.45
butadiene, 1,3- 106-99-0	NA	1-hr	8.7	51
butadiene, 1,3- 106-99-0	NA	Annual	0.9	0.99
butene, 1- 106-98-9	NA	1-hr	2.3	82
butane 106-97-8	NA	1-hr	1.5	2375
pentane, n- 109-66-0	NA	1-hr	4.9	410
ethyl benzene 100-41-4	NA	1-hr	6.3	74
toluene 108-88-3	NA	1-hr	7.5	64
xylene mixture 1330-20-7	NA	1-hr	6.3	35
naphthalene 91-20-3	NA	1-hr	6.3	44
isopropyl benzene 98-82-8	NA	1-hr	3.1	50
hexane, n- 110-54-3	NA	1-hr	3.1	530
hexane, n- 110-54-3	NA	Annual	0.3	20

<sup>1</sup> The ESLs (February 1, 2013) may be found on the TCEQ's website at [http://www.tceq.texas.gov/toxicology/esl/list\\_main.html#esl\\_1](http://www.tceq.texas.gov/toxicology/esl/list_main.html#esl_1)

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<b>Pollutant &amp; CAS#</b>	<b>Scenario</b>	<b>Averaging Time</b>	<b>GLCmax (µg/m<sup>3</sup>)</b>	<b>10% ESL (µg/m<sup>3</sup>)</b>
acetylene 74-86-2	NA	1-hr	492	2660
naphthenic distillate, heavy, solvent extract (heavy VOC) 64742-11-6	NA	1-hr	28	100

The annual maximum predicted concentrations for 1,3-butadiene and n-hexane were derived by multiplying the 1-hr maximum predicted concentrations by 0.1.

**Minor NSR Site-wide Modeling Results for Health Effects**

<b>Pollutant &amp; CAS#</b>	<b>Scenario</b>	<b>Averaging Time</b>	<b>GLCmax (µg/m<sup>3</sup>)</b>	<b>GLCni (µg/m<sup>3</sup>)</b>	<b>ESL (µg/m<sup>3</sup>)</b>
ammonia 7664-41-7	with duct burners	1-hr	481	204	170
ammonia 7664-41-7	without duct burners	1-hr	481	204	170
ammonia 7664-41-7	with duct burners	Annual	2.6	0.5	17
ammonia 7664-41-7	without duct burners	Annual	2.6	< 2.6	17
ethylene 74-85-1	NA	1-hr	891	404	1400
ethylene 74-85-1	NA	Annual	7.6	< 7.6	34
naphtha, petroleum, light alkylate (light VOC) 64741-66-8	NA	1-hr	8979	3973	3500
naphtha, petroleum, light alkylate (light VOC) 64741-66-8	NA	Annual	24	< 24	350

**Minor NSR Hours of Exceedance for Health Effects**

<b>Pollutant</b>	<b>Scenario</b>	<b>Averaging Time</b>	<b>1 X ESL GLCni</b>	<b>2 X ESL GLCmax</b>
ammonia	with duct burners	1-hr	5	17
ammonia	without duct burners	1-hr	5	17
naphtha, petroleum, light alkylate (light VOC)	NA	1-hr	5	14

**Project-Related Modeling Results for State Property Line**

<b>Pollutant</b>	<b>Scenario</b>	<b>Averaging Time</b>	<b>GLCmax (µg/m<sup>3</sup>)</b>	<b>De Minimis (µg/m<sup>3</sup>)</b>
SO <sub>2</sub>	with duct burners	1-hr	6.4	14.3
SO <sub>2</sub>	without duct burners	1-hr	6.4	14.3
H <sub>2</sub> SO <sub>4</sub>	NA	1-hr	0.04	1
H <sub>2</sub> SO <sub>4</sub>	NA	24-hr	0.01	0.3

The Applicant performed a NAAQS analysis using air dispersion modeling that consisted of two distinct phases: a preliminary analysis and a cumulative (full) analysis. The preliminary analysis consists of modeling the proposed new or increased emissions from a source. The results of the preliminary analysis are then compared to the applicable SIL to determine whether a cumulative impact analysis is required. Results less than the SIL are considered de minimis and the proposed emissions are not expected to cause or contribute to a violation of the NAAQS. For this permit application, the results for all applicable criteria pollutants were below the corresponding SIL, except for the 24-hr PM<sub>2.5</sub> analysis.

**Modeling Results for Minor NSR De Minimis**

<b>Pollutant</b>	<b>Scenario</b>	<b>Averaging Time</b>	<b>GLCmax (µg/m<sup>3</sup>)</b>	<b>De Minimis (µg/m<sup>3</sup>)</b>
SO <sub>2</sub>	with duct burners	1-hr	2.2	7.8
SO <sub>2</sub>	without duct burners	1-hr	0.7	7.8
SO <sub>2</sub>	with duct burners	3-hr	5.8	25

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<b>Pollutant</b>	<b>Scenario</b>	<b>Averaging Time</b>	<b>GLCmax (µg/m<sup>3</sup>)</b>	<b>De Minimis (µg/m<sup>3</sup>)</b>
SO <sub>2</sub>	without duct burners	3-hr	5.8	25
SO <sub>2</sub>	with duct burners	24-hr	1.9	5
SO <sub>2</sub>	without duct burners	24-hr	1.9	5
SO <sub>2</sub>	with duct burners	Annual	0.03	1
SO <sub>2</sub>	without duct burners	Annual	0.03	1
PM <sub>10</sub>	with duct burners	24-hr	3.1	5
PM <sub>10</sub>	without duct burners	24-hr	3.1	5
PM <sub>2.5</sub>	with duct burners	24-hr	2.2	1.2
PM <sub>2.5</sub>	without duct burners	24-hr	2.2	1.2
PM <sub>2.5</sub>	with duct burners	Annual	0.2	0.3
PM <sub>2.5</sub>	without duct burners	Annual	0.2	0.3
NO <sub>2</sub>	with duct burners	1-hr	7.48	7.5
NO <sub>2</sub>	without duct burners	1-hr	7.44	7.5
NO <sub>2</sub>	with duct burners	Annual	0.5	1
NO <sub>2</sub>	without duct burners	Annual	0.5	1
CO	with duct burners	1-hr	683	2000
CO	without duct burners	1-hr	683	2000
CO	with duct burners	8-hr	425	500
CO	without duct burners	8-hr	425	500

The 1-hr NO<sub>2</sub> and 1-hr SO<sub>2</sub> GLCmax are based on the highest five-year average of the high, first high (H1H) predicted concentrations. The annual NO<sub>2</sub> and the 3-hr, 24-hr, and annual SO<sub>2</sub> GLCmax are based on the H1H predicted concentration over five years of meteorological data.

The GLCmax for all other pollutants and averaging times represent the H1H predicted concentrations over one year of meteorological data. The justification for selecting the EPA's interim 1-hr NO<sub>2</sub> and 1-hr SO<sub>2</sub> de minimis levels was based on the assumptions underlying EPA's development of the 1-hr NO<sub>2</sub> and 1-hr SO<sub>2</sub> de minimis levels, as explained in EPA guidance memoranda provided to permitting authorities.<sup>2</sup> TCEQ staff used the modeling data from the proposed facility to verify that ground level concentrations are not likely to adversely impact off-property receptors. The modeling predictions were reviewed by the TCEQ ADMT, and the modeling analysis was deemed to be acceptable.

#### *PM<sub>2.5</sub> NAAQS*

PM<sub>10</sub> and PM<sub>2.5</sub> are indicator pollutants for PM, and these pollutants have their own NAAQS standards, significant impact levels (SILs), and significant monitoring concentration (in the case of PM<sub>10</sub>). As the commenter stated, the 1997 24-hour and annual PM<sub>2.5</sub> NAAQS standards have changed. In 2006, the 24-hour PM<sub>2.5</sub> NAAQS standard was reduced from 65 µg/m<sup>3</sup> to 35 µg/m<sup>3</sup>. In 2012, the annual PM<sub>2.5</sub> NAAQS standard was reduced from 15 µg/m<sup>3</sup> to 12 µg/m<sup>3</sup>. The lowering of the PM<sub>2.5</sub> annual standard occurred while the permit application was pending and under review. ExxonMobil provided supplemental information detailed below to support how their application complies with EPA's new PM<sub>2.5</sub> standards. In addition, while the TCEQ recognizes the SIL for PM<sub>2.5</sub> has been vacated by the U.S. Court of Appeals for the D.C. Circuit, the EPA has recently issued guidance to permitting authorities not precluding the use of the PM<sub>2.5</sub> SIL entirely.<sup>3</sup> The EPA notes the PM<sub>2.5</sub> SIL values may continue to be used in some circumstances if permitting authorities take care to consider background concentrations prior to using these SIL values in particular ways. If background monitoring data shows that the difference between the PM<sub>2.5</sub> NAAQS and the monitored PM<sub>2.5</sub> background concentrations in the area is greater than the EPA's PM<sub>2.5</sub> SIL value, then the EPA believes it would be sufficient in most cases for permitting authorities to conclude that a proposed source with a PM<sub>2.5</sub> impact below the PM<sub>2.5</sub> SIL value will not cause or contribute to a violation of the PM<sub>2.5</sub> NAAQS and to forego a more comprehensive cumulative modeling analysis for PM<sub>2.5</sub>. For this particular application, the applicant provided a representative annual background of 11.2 µg/m<sup>3</sup> from an ambient air monitor (EPA AIRS monitor 482010058) located approximately two kilometers from the site. Following EPA's recommended approach<sup>4</sup>, the difference between the monitored background and the NAAQS is greater than the SIL. Therefore, since the predicted concentration from the proposed emissions is less than the SIL, a cumulative analysis is not needed and the proposed project would not be expected to cause or contribute to a violation of the PM<sub>2.5</sub> NAAQS.

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<sup>2</sup> See, [www.epa.gov/region07/air/nsr/nsrmemos/appwso2.pdf](http://www.epa.gov/region07/air/nsr/nsrmemos/appwso2.pdf) and [www.epa.gov/nsr/documents/20100629no2guidance.pdf](http://www.epa.gov/nsr/documents/20100629no2guidance.pdf)

<sup>3</sup> See, Question 3, <http://www.epa.gov/NSR/documents/20130304qa.pdf>

<sup>4</sup> See, <http://www.epa.gov/NSR/documents/20130304qa.pdf>, which sets forth the guidance for permitting authorities who continue to use the PM SIL in accordance with the January 22, 2013 ruling from the U.S. Court of Appeals for the D.C. Circuit. EPA has cautioned permitting authorities stating that "additional care should be taken by permitting authorities in how they apply those SILs so that the permitting record supports a conclusion that the source will not cause or contribute to a violation of the PM<sub>2.5</sub> NAAQS."

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Because the modeled impact for PM<sub>2.5</sub> is above the 24-hour SIL (or de minimis), a cumulative analysis including the addition of a background concentration was required. A background concentration for 24-hr PM<sub>2.5</sub> was obtained from the EPA AIRS monitor 482010058 located at 7210 ½ Bayway Drive, Baytown, Harris County. The Applicant used a three-year average (2009-2011) of the 98<sup>th</sup> percentile of the annual distribution of 24-hr concentrations for the 24-hr value. The use of this monitor for PM<sub>2.5</sub> is reasonable since this is the closest PM<sub>2.5</sub> monitor to the site and is located in an area surrounded by industry near the Houston ship channel that is similar to the project site

**Total Concentrations for Minor NSR NAAQS (Concentrations > De Minimis)**

<b>Pollutant</b>	<b>Scenario</b>	<b>Averaging Time</b>	<b>GLCmax (µg/m<sup>3</sup>)</b>	<b>Background (µg/m<sup>3</sup>)</b>	<b>Total Conc. = [Background + GLCmax] (µg/m<sup>3</sup>)</b>	<b>Standard (µg/m<sup>3</sup>)</b>
PM <sub>2.5</sub>	with duct burners	24-hr	9.7	21	30.7	35
PM <sub>2.5</sub>	without duct burners	24-hr	9.6	21	30.6	35

From the information above, the project under review is protective of both the (current) 24-hour and the (current) annual PM<sub>2.5</sub> NAAQS standards.

*The Air Quality Analysis accounts for all emissions at the site including from the Cogen 5 Unit and Planned MSS activities.*

As previously noted, there are also secondary NAAQS. They are standards that the Administrator determines are necessary to protect the public welfare and the environment, including animals, crops, vegetation, and buildings, from any known or anticipated adverse effects associated with the presence of an air contaminant in the ambient air. Because the emissions from this facility should not cause an exceedance of the NAAQS, air emissions from this facility are not expected to adversely impact land, livestock, crops, or visibility, nor should emissions interfere with the use and enjoyment of surrounding land or water.

MSS Activities

For the site-wide modeling analyses of ethylene, ammonia, light VOC, and PM<sub>2.5</sub>, the Applicant conservatively modeled planned MSS activities simultaneously. The planned MSS activities included emissions from combustion unit maintenance, temporary FRAC tanks, vacuum trucks, tank maintenance, combustion control device, small equipment maintenance, abrasive blasting, and thermal spray aluminum. The modeled MSS activities pertain to existing on-site sources authorized by permit 3452. The modeling did not include the types of planned MSS activities from the proposed project since the proposed project will not require additional authorization of allowable emissions for planned MSS. MSS emissions from the furnaces were not modeled at their annualized rates for the 1-hr NO<sub>2</sub> and SO<sub>2</sub> NAAQS analyses. The emission rates were based

on their short-term hourly MSS furnace compliance cap, which is higher than the routine furnace compliance cap. For the 1-hr SO<sub>2</sub> NAAQS analysis, the emissions were evenly distributed across the eight furnaces to meet the cap. For the 1-hr NO<sub>2</sub> NAAQS analysis, the emissions were distributed based on the maximum proposed emission rate for the individual furnace until the cap was met.

In the EPA guidance document dated March 1, 2011, "Additional Clarification Regarding Application of Appendix W Modeling Guidance for the 1-hr NO<sub>2</sub> National Ambient Air Quality Standard," the EPA "[r]ecommends that compliance demonstrations for the 1-hour NO<sub>2</sub> NAAQS address emission scenarios that can logically be assumed to be relatively continuous or which occur frequently enough to contribute significantly to the annual distribution of daily maximum 1-hour concentrations based on existing modeling guidelines, which provide sufficient discretion for reviewing authorities to not include intermittent emissions from emergency generators or startup/shutdown operations from compliance demonstrations for the 1-hour NO<sub>2</sub> standard under appropriate circumstances."<sup>5</sup> In addition, the document suggests that: "Another approach that may be considered in cases where there is more uncertainty regarding the applicability of this guidance would be to model impacts from intermittent emissions based on an average hourly rate, rather than the maximum hourly emission." Based on this guidance, the multipoint ground flare, the emergency engines, and the firewater pumps met the intermittent criteria as provided in EPA guidance.

The MSS activities from the multipoint ground flare (EPN FLAREXX2) were evaluated following EPA guidance on intermittent emissions for the 1-hr NO<sub>2</sub> and 1-hr SO<sub>2</sub> NAAQS analyses. Special Condition 22 of the draft permit authorizes the Applicant to use the multipoint ground flare on an as-needed basis and will be limited to 160 hours per year of operation. This source was included in the 1-hr NO<sub>2</sub> and 1-hr SO<sub>2</sub> modeling analyses using annual average emission rates based on 160 hours per year.

#### Malfunctions and Upsets

Finally, malfunction and upset events are defined in 30 TAC § 101.1 under emissions events. Emissions events include "any upset event or unscheduled maintenance, startup, or shutdown activity, from a common cause that results in unauthorized emissions of air contaminants from one or more emissions points at a regulated entity." Emission events are reportable under 30 TAC § 101, Subchapter F. The TCEQ does not authorize emission events or upsets. Emissions authorized by the proposed permit are due to normal operations, and planned maintenance, startup and shutdown only. General condition no. 9 requires that "[t]he permit holder shall provide notification for upsets and maintenance in accordance with 30 TAC §§ 101.201, 101.211, and 101.221 of this title (relating to Emissions Event Reporting and Recordkeeping Requirements; Scheduled Maintenance, Startup, and Shutdown Reporting and Recordkeeping Requirements; and Operational Requirements)."<sup>6</sup>

#### Upstream and Downstream Units (wastewater treatment facilities and depropanizer)

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<sup>5</sup> [http://www.epa.gov/region7/air/nsr/nsrmemos/appwno2\\_2.pdf](http://www.epa.gov/region7/air/nsr/nsrmemos/appwno2_2.pdf)

<sup>6</sup> See, 30 TAC 116.115(b)(2)(G)

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Please see comment and response 8 for a discussion about the effects of these facilities on the air quality analysis completed for this project.

*Conclusion*

Memos issued by the TCEQ Air Dispersion Modeling Team (ADMT) on January 29, 2013, and May 29, 2013, concluded that the modeling analysis was acceptable for all review types and pollutants.

**COMMENT 2:** EIP commented that the proposed unit is a “major stationary source of air pollution,” and that the Applicant may not rely on its “FLEX/PAL condition” in Flexible Permit 3452 to avoid PSD and nonattainment new source review (NNSR) requirements for permit 102982. EIP commented that the Applicant may not rely on either its FLEX/PAL PM or VOC emission limits for this project, and the project should undergo NNSR. As support, EIP comments that actual emissions for PM reported by the Applicant in 2010 and 2011 exceeded its corresponding PAL limit and that actual emission for VOC in 2007 exceeded its corresponding PAL limit. EIP also noted that the Applicant’s PAL for PM does not include cooling tower emissions and that actual emissions from certain sources, like flares, may be misrepresented, stating that “ExxonMobil underreports actual emissions in its FLEX/PAL compliance reports.” EIP commented that as a result of these exceedences over the PAL limit, the Applicant is in violation of its flexible permit and must undergo major NSR review for both pollutants. EIP also commented that the application fails to include a “netting demonstration for any pollutant.” EIP commented that the Applicant must demonstrate that the new plant’s emissions can be accommodated under the PAL limits in accordance with 30 TAC § 116.111(a)(2)(G). EIP also comments that Exxon incorrectly claims that it is not subject to federal NSR permitting requirements because the project increases can be accommodated under Exxon’s existing PAL.

**RESPONSE 2:** In its application and subsequent submittals, ExxonMobil provided emissions representations which show that the current Baytown facility is not exceeding PAL6 limits established in 2005, and that the proposed expansion can also operate within the established PAL6 limits. ExxonMobil represented that the PM PAL established in 2005 did not include PM emissions from existing cooling towers, consistent with TCEQ Air Permits Division (APD) practices at the time. Since the existing PAL6 PM limits are based on sitewide emissions without consideration of PM from cooling towers, emissions reported by ExxonMobil in the emissions inventory (PM) for existing cooling towers were not included in the evaluation of adequacy of PAL6 to accommodate the proposed ethylene unit. PM emissions from the new cooling towers proposed for the ethylene project were included in evaluation of the ability to maintain compliance with the PM PAL. Based on this approach, the application materials do not indicate that ExxonMobil’s operations are exceeding the PM PAL. On June 13, 2013, the TCEQ received an application from ExxonMobil “submitting information to more accurately determine particulate matter emissions” during the baseline time period for its PAL6. The review of the proposed ethylene unit was completed independent of that requested action.

VOC emissions from cooling towers were included in the VOC PAL; therefore, the evaluation of compliance with the VOC PAL did include reported EI emissions for VOC from cooling towers.

30 TAC § 116.186(b)(10) includes general provisions that are applicable to all PAL permits. Specifically, § 116.186(b)(1) delineates the applicability of the section, stating that section 116.186(b) does not itself authorize facilities to emit pollutants, but instead establishes an annual level beneath which new facilities, such as the one the subject of permit 102982, "will not be subject to major new source review for that pollutant." Read in conjunction with 30 TAC §116.190 (a) which states: "An increase in emissions from operational or physical changes at a facility, or emissions unit at a major stationary source, covered by a plant-wide applicability limit (PAL) permit is insignificant, for the purposes of major new source review under this subchapter, if the increase does not exceed the PAL." The proposed unit itself is not considered a major source unless its proposed emissions cannot fit below the established PAL.

PALs are issued to existing facilities that through years of operation are able to discern a typical amount of emissions to be emitted during operations. Generally, facilities requesting a PAL authorization will establish a baseline of actual emissions from each emission unit for a particular PAL pollutant. In 2005, ExxonMobil established a baseline for the 24-month period of January 1999 through December 2000 relying on emissions limitations for emissions sources authorized in flexible permit 3452, which had undergone BACT review. Therefore, the emissions during the baseline period established for the ExxonMobil PAL were less than actual emissions during the 24-month period, because of BACT. PAL6 has established a PM emission limit of 365.62 tons and a VOC emission limit of 435.77 tons/yr annually. In addition, there is an MSS emissions cap for PM of 14.61 tons/yr and for VOC of 42.04 tons/yr. These emission limits are the annual levels below which the new ethylene production plant must operate. ExxonMobil represented in its application that the projected emissions from the new ethylene plant will be below the annual applicable PAL limit; therefore, federal review is not required.

Additionally, ExxonMobil's permits have monitoring and recordkeeping methods in their permits special conditions that help it demonstrate compliance with its PAL. Specifically, the permit under evaluation, permit 102982, requires the company to install continuous flow monitors and composition analyzers on both of the flares. The flow monitors and composition analyzers are required to be installed as close as possible to the flare inlet so that the total vent stream to the flare is measured and analyzed. The permit conditions also contain quality assurance requirements such as monitor and analyzer calibrations, accuracy specifications, and monitor/analyzer on stream time. In addition, the net heating value of the material being routed to the flare and the exit velocity are required to be recorded at least once every 15 minutes. ExxonMobil's permit also contains recordkeeping requirements related to the vent stream flow and composition of the material being routed to the flare. Because of the monitor and analyzer requirements contained within the proposed permit, ExxonMobil will have a detailed and continuous accounting of the actual flows, compositions, and heating values of the materials being routed to their plant flares. Likewise, permit 3452 (the FLEX/PAL permit) also contains flare gas sampling requirements. This permit requires the company to measure the flow rate and analyze the material being routed to the flare, and also contains recordkeeping requirements. All of this information is used for determining PAL compliance.

**COMMENT 3:** EIP submitted several comments that the TCEQ issued a PAL that does not comply with both federal and state PAL requirements. Specifically, EIP commented that the TCEQ issued ExxonMobil a PAL in 2005 in accordance with state rules that EPA subsequently disapproved, and that while TCEQ has promulgated PAL rules the EPA has indicated it will

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approve, those rules are not the rules under which the Applicant's PAL was issued. EIP also commented that the PAL authorized for Permit No. 3452 only covers facilities in the table entitled "Emission Points, Emission Caps and Individual Emission Limitations" (MAERT) attached to that permit. Because the new ethylene plant is not authorized under Permit No. 3452 and the Draft Permit does not require ExxonMobil to include emissions from the new ethylene plant in its PAL compliance demonstrations, the Draft Permit fails to ensure compliance with the PAL limits. EIP commented that 30 TAC § 116.186(b)(9) provides that: "[failure] to use a monitoring system that meets the requirements of this section renders the PAL permit invalid." EIP questioned if ExxonMobil fails to implement monitoring systems that meets the TCEQ's PAL monitoring requirements at the ethylene plant, would that render the Draft Permit invalid or it would render the FLEX/PAL invalid. EIP requested information on what authority could render the permits invalid.

**RESPONSE 3:** ExxonMobil was issued a PAL permit (PAL6) in 2005 as TCEQ was developing its rules to implement the federal PAL program. EPA disapproved the entire TCEQ submittal based on its opinion that the issues in certain portions of TCEQ's State Implementation Plan (SIP) submittal package were not severable from the remainder of the PAL program rules. For example, one of EPA's concerns about TCEQ's 2005 submittal was that the TCEQ would issue a PAL to a "greenfield" site; however, as mentioned in response 1, the Baytown Olefins Plant is an already existing major source for NO<sub>x</sub> and VOC. The other concerns EPA had consist of inconsistencies between state PAL rules and federal PAL rules, all of which TCEQ addressed to EPA's satisfaction. Further, EPA's other concerns regarding that submittal have not been raised as issues concerning the Baytown Olefins Plant. EPA fully approved TCEQ's PAL program in 2011. PAL6 will be up for renewal in 2015 in accordance with TCEQ's SIP-approved rules. EIP's concern is therefore inapplicable to the expansion project at Baytown Olefins Plant.

PAL6 is enforceable for all facility or emission units at the major stationary source identified by TCEQ Regulated Entity Number RN102212925, not just the units listed on the MAERT.<sup>7</sup> This will include the new ethylene unit to be authorized by permit 102982. A PAL itself does not authorize emissions from facilities at a site, instead, it establishes an annual emission level below which new and modified facilities and emissions units at the site will not be subject to major new source review for pollutants listed in the PAL. ExxonMobil properly applied for a preconstruction permit in accordance with 30 TAC § 116.110, to authorize the construction of its new ethylene production plant. The emission limits established in the MAERT for permit 102982 have been evaluated and determined to be within the emission levels established in the PAL for each pollutant that is expected to be emitted, including those from the ethylene unit. ExxonMobil will be required to continue meeting all of the requirements of PAL6, as well as the regulations in 30 TAC Chapter 116, Subchapter C, Plant-Wide Applicability Limits.

The monitoring systems required by the draft permit meet the requirements for a PAL monitoring system as described in 30 TAC § 116.186(c). Specifically, the draft permit requires the Applicant to use continuous emissions monitoring systems (CEMs) or emission factors to monitor PAL pollutant emissions. Implementation of these monitoring systems does not compromise the validity of the PAL permit. The general monitoring requirements for PAL permits required by the EPA may be found in 40 CFR § 51.165(f)(12)(i)(A) - (D) and

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<sup>7</sup> 30 TAC § 116.186(a).

§51.166(w)(12)(i)(a) - (d). In addition, 40 CFR § 51.165(f)(12)(i) and § 51.166(w)(12)(i) require that a monitoring system in a PAL permit be based on "sound science and meets generally acceptable scientific procedures for data quality and manipulation." Such monitoring systems must be one of the four general monitoring approaches available in the federal PAL rules. 40 CFR § 51.165(f)(12)(i)(D) and § 51.166(w)(12)(i)(d) state that failure to use a monitoring system that meets the applicable federal rules renders a PAL invalid.<sup>8</sup> In 2012, the TCEQ amended its PAL rules in Chapter 116 to include language that provides that failure to use a monitoring system that meets the requirements of 30 TAC § 116.186 renders a PAL permit invalid.<sup>9</sup> This rule was subsequently approved by the EPA as part of the Texas SIP. Based on the text and context of both the federal rule and its accompanying preamble, the phrase "failure to use" means a failure to install or failure to operate the prescribed monitoring device or system required to operate under a PAL permit. In addition, implementation of these monitoring systems in permit 102982 does not compromise the validity of permit 3452, which is a separate permit.

**COMMENT 4:** EIP submitted several comments about the interrelationship between permit 102982 and the PAL permit 3452. First, EIP commented that ExxonMobil should not have applied for a new, stand-alone NSR permit and that Exxon's PAL which requires "state authorization must be obtained by permit amendment, permit by rule, or standard permit prior to start of construction for new facilities." Further, EIP questioned how the general and special conditions included in PALs issued by the TCEQ will apply to the proposed plant and how 30 TAC 116.186 will apply to the draft permit and permit 3452. EIP commented that the draft permit for the proposed ethylene plant does not "incorporate" the Applicant's FLEX/PAL permit or indicate the new plant must be included in compliance demonstrations for permit 3452, failing to ensure "compliance" with the FLEX/PAL limits. EIP states that the Applicant must submit a permit alteration or amendment to the PAL permit no. 3452 in order to accomplish this. EIP commented that "[i]f an applicant may avoid PAL requirements for a new source at a site covered by a PAL by authorizing that source under a new permit while relying on the PAL to avoid PSD and/or NNSR requirements, many of the PAL requirement will not directly apply to the new permit. . ." ExxonMobil may not rely on its FLEX/PAL to avoid PSD requirements for PM<sub>2.5</sub> and ExxonMobil improperly relied on EPA's expired PM<sub>10</sub> Surrogacy Policy to avoid PM<sub>2.5</sub> PSD review requirements. As of May 16, 2011, EPA has vacated the PM<sub>10</sub> Surrogacy Policy and it may not be relied on for any application.

**RESPONSE 4:** 30 TAC 116.186(a) states that a PAL is enforceable for all facilities or emissions units at a major stationary source. A PAL permit does not itself authorize facilities at a site; therefore, it is appropriate that permit 102982 will authorize the new construction and operation of an ethylene plant, which is an expansion at the Baytown Olefins Plant. All conditions and representations contained in permit 102982 as a stand-alone permit are enforceable, and the Applicant does not need to alter or amend its PAL for permit 102982 to be enforceable. ExxonMobil's application for permit 102982 does not avoid PSD or federal NSR as discussed in responses 1 and 2. Response 1 contains a thorough discussion of the PM<sub>2.5</sub> modeling

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<sup>8</sup> See discussion in 67 *Federal Register* 80211 - 80214, December 31, 2002.

<sup>9</sup> See 37 Tex Reg 6051 (The preamble amending 30 TAC § 116.186.(b)(9) explains EPA's position that specific monitoring definitions are essential for the enforceability of and providing the means for determining compliance with a PAL program).

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submitted by the Applicant and reviewed by the TCEQ ADMT. Response 2 refers to 30 TAC § 116.190(a) which states: "An increase in emissions from operational or physical changes at a facility, or emissions unit at a major stationary source, covered by a plant-wide applicability limit (PAL) permit is insignificant, for the purposes of major new source review under this subchapter, if the increase does not exceed the PAL." The Applicant has provided information representing emissions from the new unit will not exceed the established PAL limits. Please see response 5 for a discussion about EPA's PM<sub>10</sub> Surrogacy Policy.

**COMMENT 5:** EIP submitted comments stating that the PAL in permit 3452 does not include a limit for PM<sub>2.5</sub> and, as a criteria pollutant subject to Federal Clean Air Act PSD and NNSR regulation, the PAL must include it. EIP also commented that as a "matter of law" the Applicant may not use the U.S. EPA's PM<sub>10</sub> surrogacy policy to demonstrate compliance with PM<sub>2.5</sub> PSD requirements. EIP further commented that PALs must be based on reliable information about actual emissions during a two-year baseline period and that the PAL as established in 2005 didn't have sufficient information to actually establish a PM<sub>2.5</sub> PAL limit. Alternatively, if the applicant did have sufficient information to establish a PAL PM<sub>2.5</sub> limit in 2005, then using the surrogacy policy has been inappropriate. EIP also noted that the PM<sub>2.5</sub> standards have changed since the EPA allowed the use of the surrogacy policy in 1997, and thus, a PAL PM<sub>2.5</sub> limit based on a PM<sub>10</sub> limit using the surrogacy policy may not be protective of the recently revised PM<sub>2.5</sub> NAAQS. EIP generally queried about the use of the PM<sub>10</sub> Surrogacy Policy and how it relates to Texas' permitting practice. Specifically, EIP asked for Texas' authority on how:

- EPA's PM<sub>10</sub> Surrogacy Policy applies/applied to PAL permits;
- Texas may rely on the PM<sub>10</sub> Surrogacy Policy to issue permits;
- EPA's PM<sub>10</sub> Surrogacy Policy should apply to PSD applicability determinations for PM<sub>2.5</sub>;
- EPA's PM<sub>10</sub> Surrogacy Policy was applied to establish the Applicant's PM<sub>10</sub> FLEX/PAL limit;
- Monitoring Requirements in the Applicant's FLEX/PAL are sufficient to ensure compliance with the FLEX/PAL PM limits.

**RESPONSE 5:** PAL6 was issued in conjunction with Flexible Permit No. 3452 to the Applicant in 2005, and included an emission limit for particulate matter. The PAL limits for PM were established by taking previously authorized PM limits from Flexible Permit No. 3452. As stated in response 1, ExxonMobil is required to operate within the existing PM PAL limit, which include the subsets PM<sub>2.5</sub> and PM<sub>10</sub> as indicator pollutants for PM. (See response 1.). In 2005, reliable PM<sub>2.5</sub> data was unavailable and the EPA allowed the use of the PM<sub>10</sub> surrogacy policy to complete the evaluation of particulate matter (PM). This surrogacy policy was developed because when the EPA adopted the PM<sub>2.5</sub> standard in 1997, it recognized the technical challenges that permitting authorities faced regarding the implementation of PM<sub>2.5</sub> into new source review permitting programs. For nearly eight years after the EPA implemented its surrogacy policy, the EPA continued to acknowledge the outstanding difficulties related to implementing a PM<sub>2.5</sub> NSR program. The difficulties included the lack of the necessary and specific tools to calculate the emissions of PM<sub>2.5</sub>. The TCEQ recognizes the EPA ended the use of its PM<sub>10</sub> surrogacy policy in May 2011 and does not rely on the surrogacy policy to issue new source review permits. During its technical reviews of Flexible Permit No. 3452 and PAL6, ED staff reviewed the proposed BACT and applied all applicable state and federal regulations to

those permits. Permit 102982 is a new permit to construct an ethylene plant and the TCEQ did not rely on the PM<sub>10</sub> surrogacy policy during its technical review to establish the PM<sub>2.5</sub> limits contained in the draft permit. PM is one of the criteria pollutants under evaluation for this project and ExxonMobil represented that the PM<sub>10</sub> and PM<sub>2.5</sub> emissions associated with the project will be within the established PAL6 PM limit. ExxonMobil provided a site-wide modeling demonstration which showed protection of the current PM<sub>2.5</sub> NAAQS. Please see Response 1 for more information. The monitoring systems required by the draft permit meet the requirements for a PAL monitoring system as described in 30 TAC § 116.186(c). Please see response 3, for a discussion of the monitoring systems in the draft permit.

**COMMENT 6:** EIP commented that the Applicant's emissions for its FLEX/PAL for NO<sub>x</sub>, SO<sub>2</sub>, and H<sub>2</sub>SO<sub>4</sub> are not based on baseline actual emissions; instead, they were calculated by adding together emissions from each Baytown Olefins Plant emissions source operating at maximum rate capacity utilizing controls determined to be BACT when the Flexible Permit was issued. ExxonMobil's PAL application states that actual baseline emissions were not used to calculate PAL limits for these pollutants because they were higher than calculated PTE emissions. The proposed PAL limit for each pollutant was equal to the existing Flexible Permit Cap. Actual baseline emissions could only exceed a plant's potential to emit (PTE) if emissions during the baseline period exceeded those limits. Thus, it is clear that the baseline actual emissions numbers for these pollutants were not adjusted downward to exclude emissions in excess of limits that applied at the time the PAL amendment was issued, as Texas's PAL rules require.

**RESPONSE 6:** When Flexible Permit 3452 was issued in 2001, an emissions cap was established by applying then current BACT to the existing furnaces. As a result, the cap was less than the prior two-year actual emissions. When PAL6 was issued, several additional furnaces were added to the flexible cap, and the PAL was set equal to the new flexible cap.

**COMMENT 7:** EIP commented that Exxon plans to use ethylene produced at the Baytown ethylene production unit as feedstock for a new polyethylene unit that will be constructed at Exxon's nearby Mont Belvieu Plastics Plant. Exxon's proposed ethylene production unit and the proposed polyethylene unit should be considered a single source for permitting purposes, unless Exxon demonstrates that the proposed ethylene production unit is not a support facility for the new polyethylene unit and that the two facilities do not satisfy the three factor test EPA has established for single-source determinations.

**RESPONSE 7:** 40 CFR § 70.2 contains the definition of a "major source," which lists a three-factor test the EPA and permitting authorities must use to determine whether a site is a major source for federal permitting purposes. Specifically, the emission-producing activities of an operator constitute a single source if they are: under common control by the same person (or persons under common control), located on one or more contiguous or adjacent properties, and in a single major industrial grouping (the same two-digit SIC code). The TCEQ has codified into rule this test in 30 TAC § 122.27 states: "The total of all stationary sources located on one or more contiguous or adjacent properties, which are under common control of the same person (or persons under common control). A research and development operation and a collocated manufacturing facility shall be considered a single site if they each have the same two-digit Major Group Standard Industrial Classification (SIC) code (as described in the Standard Industrial Classification Manual, 1987) or the research and development operation is a support

facility for the manufacturing facility.” According the application file, ethylene produced from the Baytown Olefins Plant is sent into a pipeline network used by many facilities in the area, not just to the Mont Belvieu Plastics Plant, which produce polyethylene and are not operated or owned by the Applicant. In addition, the plants in question share no contiguous or adjacent borders. The Baytown Olefins Plant and the Mont Belvieu Plastics Plant do not meet the state or federal definition of a single major source.

**COMMENT 8:** EIP commented that the permit application is incomplete because it does not assess the effect of the emissions from the new plant on the upstream and downstream units at the Baytown Olefins Plant. EIP states that Exxon’s application indicates that deethanizer bottoms product generated at the proposed ethylene production unit will be sent to the existing depropanizer at Exxon’s Baytown Olefins Plant. Presumably, this will lead to increased emissions from the existing depropanizer. It is unclear whether emissions increases from existing facilities associated with operation of the proposed ethylene plant have been adequately accounted for in the application. EIP specifically asks whether the project will increase the total amount of feed processed at the base plant depropanizer and if so, will that increase fugitive emissions from that unit. If not, will there be a “cap on the throughput at the base plant depropanizer?” EIP also questions whether “bottoms from the deethanizer” will cause an increase in flaring during routine operations, or SSM, and how the Applicant estimated these emissions. Finally, they query whether the Applicant calculated the marginal increase in combustion emissions at the boilers. EIP asks further about how emissions increases related to existing utilities including firewater, industrial water, domestic water, boiler feed water, plant air, hydrogen, electricity, and marginal steam product may be utilized. EIP commented that these activities will likely have an emissions impact on existing units at the plant, but that the permit does not indicate that these emissions have been counted or explain why there will not be any emissions impact. EIP also comments that Exxon must account for all emissions increases associated with construction and operation of the proposed ethylene unit, even if those increases occur at units authorized under separate permits.

**RESPONSE 8:** Please see response 1 for a general discussion of the emissions increases expected at Baytown Olefins Plant in conjunction with permit 102982. Part 1, section 2.2.2.2 of the application contains the process description for deethanizer and acetylene converter. It states: “[t]he Deethanizer bottoms products, hydrocarbons with more than two carbon atoms, is sent to the Depropanizer in the existing plant facilities.” In the January 18 supplement to the NSR Application, ExxonMobil clarified “that there will be no increase in allowable emissions from the existing plant facilities due to the operation of the proposed ethylene plant.” 30 TAC § 116.186 (a) authorizes ExxonMobil to operationally manage emissions from its entire Baytown Olefins Plant on a rolling 12-month basis in order to not exceed annual PAL limits for NO<sub>x</sub>, CO, VOC, SO<sub>2</sub> and PM. Emissions from the depropanizer are authorized under permit 3452 and will not be authorized by permit 102982, and comments related to the depropanizer should be made in relation to permit 3452. Further, ExxonMobil is not requesting to change those permit limits and has not proposed an emissions cap in this permit application. ExxonMobil provided representations of the effect of the proposed project on existing units at the plant. As part of the technical review, this information was considered when developing the draft special conditions and establishing the maximum allowable emission rates for Permit 102982.

**COMMENT 9:** EIP claims Exxon has provided a vague account of the general methodology it used to calculate some emissions from various facilities, and the actual calculations as well as detailed information about estimates and assumptions used to make the calculations has not been made available to the public. EIP also commented that ExxonMobil cannot demonstrate that emissions from its new ethylene plant can be maintained under existing FLEX/PAL limits. In consideration of the amount of PM and VOC emissions ExxonMobil has reported to the Emissions Inventory and the large potential VOC and PM emissions from the ethylene plant, EIP commented that it is improbable that ExxonMobil can operate its new ethylene plant without violating its PAL PM and VOC limits. EIP commented that ExxonMobil states that it will "operationally manage the plant, including various emissions reduction measures, as necessary, to ensure that none of the PALs will be exceeded after the proposed new emissions sources becomes operational," but that an applicant may not avoid major NSR requirements by implementing artificial and unreasonable restrictions on a source's potential to emit or by promising to manage existing emissions under a significance threshold that is not technically practicable or economically feasible to meet. EIP commented that ExxonMobil's application representations are not all directly included as Draft Permit special conditions and they should be included on the face of the permit to ensure that they are practicably enforceable.

**RESPONSE 9:** The draft permit includes Special Conditions that will ensure compliance with the maximum allowable emission rates. It also provides emission limits for normal operations and planned maintenance, start-up, and shutdown associated with equipment that is to be authorized by the permit. In addition to explicit requirements in the Special Conditions, ExxonMobil is required to comply with the short-term (hourly) and long-term (annual) emission rates identified on the MAERT, as well as all representations made in the application and subsequent submittals. The Special Conditions and MAERT in the draft permit have been reviewed for adequacy to demonstrate compliance with the emission limits by the TCEQ Office of Compliance and Enforcement and local programs. Please see response 1 for the Applicant's demonstration that the expansion project can operate within the PAL limits. Response 2 contains a discussion of how the Applicant is not avoiding federal review of the expansion project.

When ExxonMobil submitted its application for permit 102982, it provided a vast amount of technical information about the proposed project, including design specifications and emissions calculations, some of which ExxonMobil marked "confidential." When an Applicant marks certain application materials as "confidential," § 382.041(a) of the Texas Health and Safety Code (THSC) requires the TCEQ to keep such information confidential subject to an opinion from the Office of the Attorney General. ExxonMobil is bound by the representations it has made in its application materials. The General Conditions of the draft permit, which are included with the permit upon issuance, state: "facilities covered by this permit shall be constructed and operated as specified in the application for the permit. All representations regarding construction plans and operation procedures contained in the permit application shall be conditions upon which the permit is issued. Variations from these representations shall be unlawful unless the permit holder first makes application to the Texas Commission on Environmental Quality (commission) Executive Director to amend this permit in that regard and such amendment is approved [Title 30 Texas Administrative Code 116.116 (30 TAC 116.116)]."

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**COMMENT 10:** EIP objects to the application because it fails to include critical information about emissions from the proposed plant, and fails to demonstrate that Exxon's emissions calculations were made correctly on the basis of reliable information. EIP claims information has been improperly withheld from public review and marked "confidential" and while the "confidential" portion of the application may contain more detailed information about Exxon's bases for its emission calculations, this information has improperly been withheld from public review.

**RESPONSE 10:** As stated in response 9, ExxonMobil submitted technical information about the proposed project, including design specifications and emissions calculations that consisted of both public and information marked "confidential." Public portions of the draft permit and other updates to the application are kept in a file maintained by the permit engineer reviewing the application until the permit is issued, as well as at the TCEQ Regional Office where the facility will be located. An open records request may be submitted to review this information and any individuals may request to view permit application materials not marked "confidential." When an Applicant submits information marked confidential, § 382.041(a) of the THSC requires the agency to keep such information confidential subject to an opinion from the Office of the Attorney General.

**COMMENT 11:** EIP comments that some information is absent from the application and the Executive Director must direct Exxon to supplement and re-notice the application once complete. Examples of absent information include: modeling conducted for the 1997 expansion project used as the basis for predicting emissions from wastewater collection and treatment system and the acetylene converter regeneration vent; input parameters for AP-42 emissions estimation procedures; and assumptions used for calculations for the flare.

**RESPONSE 11:** ExxonMobil provided supporting technical information about the proposed project, including design specifications and emissions calculations some of which information was marked "confidential." Please refer for responses 9 and 10 for more information.

**COMMENT 12:** EIP comments that Exxon's application incorrectly presumes that federal case-by-case technology-based emissions control requirements do not apply for this application. Exxon fails to include a demonstration that controls consistent with these federal requirements will be used at the proposed ethylene production unit.

**RESPONSE 12:** As stated previously, ExxonMobil has demonstrated in its application materials that the proposed expansion will not exceed PAL6 and in accordance with § 116.186(b)(1), new and modified facilities or units under a PAL at a major stationary source are not subject to major new source review. Based on the application materials, federal review is not required for this permitting action because ExxonMobil's proposed operations do not exceed established PAL limits.

**COMMENT 13:** EIP commented that ExxonMobil's BACT demonstration is deficient, and that the Applicant must include a detailed BACT analysis for all facilities at the proposed ethylene production unit. Exxon's application fails to include a thorough and well-documented BACT analysis for any facility to be authorized under the requested permit. EIP also commented that

the ED "must scrutinize this application to ensure the greatest level of pollution reduction is required by the permit." EIP further commented that ExxonMobil must provide an evaluation of proposed BACT controls that includes the following performance elements: capture efficiency, emission reduction efficiency, reliability, on-stream time, and enforceability. As stated in TCEQ guidance, "If an applicant fails to include a discussion of the proposed level of performance for the emission reduction option(s) chosen, as well as the necessary supporting documentation for the represented performance elements, the application is considered deficient." EIP commented that ExxonMobil's application information regarding planned MSS activities and emissions is incomplete and that ExxonMobil failed to demonstrate that proposed emission controls for planned MSS activities satisfy BACT. EIP commented that ExxonMobil indicated that the proposed project will meet BACT for emissions from MSS activities by adopting similar requirements for equipment openings and vacuum trucks as currently applied to the existing plant as specified in Permit 3452. This includes employing best management practices to minimize MSS activities and reduce emissions from these activities in accordance with BACT requirements, which may include utilization of various control devices such as engines, carbon canisters, flares, thermal oxidizers, or other control device. EIP commented that this BACT analysis for MSS activities is deficient because: it fails to demonstrate that the proposed controls are the best available and fails to identify specific controls for all planned MSS activities. In addition, the application fails to even specify the activities to be authorized under the proposed permit.

**RESPONSE 13:** As part of the evaluation of applications for new or amended permits, the permit reviewer identifies all sources of air contaminants at the proposed facility to ensure that the facility will use the BACT for the sources and types of contaminants emitted. BACT is technology that best controls air emissions with consideration given to the technical practicability and economic reasonableness of reducing or eliminating those emissions with additional controls. It is designed to minimize the level of emissions from specific sources at a facility. ExxonMobil represented in its permit application that BACT will be applied to sources of emissions at the proposed site. A Tier 1 BACT analysis was performed on this project and the proposed BACT meets the requirements.<sup>10</sup> As stated previously, the contaminants to be emitted include particulate matter, carbon monoxide, volatile organic compounds, nitrogen oxides, and sulfur dioxide. The primary control measures applied to the new plant are low NO<sub>x</sub> burners, selective catalytic reduction (SRC), cyclonic separation, drift eliminators, and leak detection and repair programs. Other control measures required by the draft permit include property line setbacks to provide buffer zones and restrictions on visible fugitive emissions. As part of the technical review, TCEQ found no representations among the allowable emission rates that would preclude ExxonMobil from maintaining compliance with the PAL limits. 30 TAC §116.186 (4)(A) requires an Applicant to whom a PAL has been issued to keep a copy of the PAL permit at the plant site; therefore, the information regarding planned MSS for permit 10282 is complete. TCEQ rules require ExxonMobil not to exceed the PAL limits currently in place for any and all units within the Baytown Olefins Plant. ExxonMobil must operationally manage all facilities within the plant in order to achieve compliance with its PAL cap.

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<sup>10</sup> TCEQ's BACT review is a tiered sequential approach. Tier I BACT requires emissions reductions approved for recently issued permits for the same process or industry.

**COMMENT 14:** EIP commented Exxon's application does not propose to apply BACT to each individual furnace that will be authorized under the requested permit. Rather, the application proposes that BACT will be achieved by the furnace section without demonstrating or proposing emission limits sufficient to demonstrate that emissions from each furnace will be consistent with BACT.

**RESPONSE 14:** The furnaces associated with the proposed project are designed to achieve BACT of 0.015 lb/MMBtu on a 24-hour rolling average and 0.01 lb/MMBtu on a rolling annual average. In consideration of the co-location and interoperability of the furnaces, compliance with the BACT limits will be demonstrated across all furnaces in operation. TCEQ believes that BACT is applied to the furnaces.

**COMMENT 15:** EIP commented that the Applicant will build eight steam cracking furnaces as part of this proposed project, but that the application fails to provide sufficient information about the design and operation of the furnaces. EIP also commented that the application does not comply with 30 TAC § 116.111 because it does not "meaningfully demonstrate" compliance with its applicable requirements. EIP specifically requests information about:

- The maximum design capacity for each furnace;
- Whether all furnaces will have the same design;
- How temperature, air flow rate, excess air, and other operating variables will be controlled;
- An assembly drawing, dimensioned and to scale, in plane, elevation, and as many sections as needed to show clearly the operation of the combustion unit;
- Interior dimensions and features of the equipment necessary to calculate performance;
- The control efficiency of the SCR used to control NO<sub>x</sub> emissions;
- Information regarding how the Applicant's "proprietary" burner design differs from other burners and how these differences will affect their performance;
- Emission factors and other inputs used to calculate emission limits;
- Comparison of the proposed control to the performance achieved at other similar facilities or the performance proposed in recent applications for similar facilities;
- Information demonstrating that the 44.56 lb/hour NO<sub>x</sub> limit used to improve the Applicant's modeling results is achievable.

EIP requested that the ED identify all representations that are specific and enforceable in the permit application related to design and operation of the furnaces.

**RESPONSE 15:** The PI-1 application form is required for all NSR permit submittals and was signed by the Applicant. ExxonMobil is bound by the representations within its application, and the application is an enforceable document. Exxon Mobil provided sufficient application information for an accurate technical review to be conducted in order to develop emission limits and determine air quality impacts that show the proposed plant will operate in accordance with all applicable federal and state rules and regulations. The additional suggested information by the commenter is not necessary to determine compliance with the applicable federal and state rules and requirements.

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ExxonMobil will install and operate SCR on the furnace vents to control NO<sub>x</sub> emissions to 0.01 lb/MMBtu annually. This meets BACT for furnace operation. ExxonMobil will install a CEMS in order to monitor emissions and adjust operational parameters to achieve the 44.56 lb/hr NO<sub>x</sub> hourly compliance cap used in the modeling exercise and stated in Table 1(a) in the application. As part of their application, ExxonMobil provided the Executive Director's staff with an explanation of how they will comply with all applicable federal and state requirements. The draft permit and other updates to the application are kept in a file maintained by the permit engineer reviewing the application until the permit is issued, as well as at the TCEQ Regional Office where the facility will be located.

**COMMENT 16:** EIP submitted several comments about the “decoking” of the steam cracking furnaces. They stated that the opacity limit for this activity is “less stringent than the Texas SIP requires,” and that PM and CO limits are less stringent than those proposed in recent permit applications. EIP also commented that the Applicant must demonstrate that its operations can comply with opacity limits set in the Texas SIP. Specifically, EIP uses Dow's application for its Freeport ethylene project as an example of acceptable BACT for “decoking.” EIP further commented that two conditions, Special Condition 8 and 21(B), are not sufficient BACT. EIP commented that the PM limits for “decoking” is not BACT, commenting “a well-designed cyclonic scrubber will achieve a higher control efficiency,” than the requirement of 95% in Special Condition 8.<sup>11</sup> EIP also commented that the MAERT emission limits for CO, PM, PM<sub>10</sub>, and PM<sub>2.5</sub> do not ensure compliance with BACT and that if these limits were calculated based on the number of coking cycles each furnace will complete annually, then the number of cycles should be limited in the permit. Alternatively, EIP suggests that if the limits are established using emission rates, then those rates should be enforceable permit conditions. EIP also commented that if “decoking” will result in an increase in VOC and NO<sub>x</sub> emissions, then the MAERT should be updated to reflect limits for these pollutants. EIP also commented that the application fails to include information regarding the Applicant's speciation of PM emissions during “decoking” events.

**RESPONSE 16:** In its application, ExxonMobil evaluated options to further reduce potential emissions, including routing decoking emissions back to its furnaces. It determined it was not technically feasible for their proposed design.

A Tier 1 BACT review was conducted by the TCEQ on the proposed cracking furnaces in ExxonMobil's application. BACT comparative analyses are based on an annual reduction of pollutants (ton per year). The initial PM and CO limits, and PM speciation, contained in the draft permit were based on the representations made by ExxonMobil in their permit application and subsequent submittals. During technical review, the Executive Director's staff limited emissions to the rates identified in the MAERT for those sources whose emissions are based on emission factors and operating parameters and determined add-on controls were not necessary to meet best available control technology. Further, Special Condition 8 in the draft permit limits visible emissions to 30 percent in any six-minute period using EPA Method 22. However, since the total flow rate from each furnace is less than 100,000 actual cubic feet per minute during decoking operations, 30 TAC § 111.111, Control of Air Pollution from Visible Emissions and Particulate Matter, Requirements for Specified Sources, limits visible emissions from these

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<sup>11</sup> EIP referenced Formosa Plastic's 2012 Expansion Project Application in this comment.

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sources to 20% opacity over a six-minute period. Therefore, in response to this comment, Special Condition No. 8 has been updated to limit visible emissions to 20% opacity from the cyclonic scrubbers.

Special Condition 21.B in the draft permit excludes planned operations during "Decoking Mode" from the concentration limits established in Special Condition 7.C. The MAERT establishes alternate maximum short-term (hourly) and long-term (annual) allowable emission rates for EPN BAYTOWN OLEFINS PLANTXXDECOKE, BAYTOWN OLEFINS PLANT XX Decoke Cap. All other requirements for the furnaces apply during decoking operations. Based on the technical review and representations made by ExxonMobil, concentrations during some stages of planned decoking operations may be higher than guaranteed for normal operations; however, mass emission rates will not exceed those authorized by the MAERT. Compliance during planned decoking operations will be determined by calculating mass emission rates using CEMs data. Additional requirements, including inspections and maintenance of minimum steam flow rates, have been added to the Special Conditions to ensure good operating practices during planned decoking operations.

The MAERT limits in the draft permit for decoking operations were based on the total solid coke released annually during decoking operations for the furnaces as represented by ExxonMobil. Short-term emissions were determined using the maximum release rate of solid coke. The release rates were based on process knowledge provided by ExxonMobil based on operation of similar furnaces at the same site. The release rates were represented as confidential business information; therefore, they are not included as explicit limits in the Special Conditions. The General Conditions of permit 102982, if issued, and TCEQ rules will bind the Applicant to its representations made in the permit application and subsequent submittals. During the technical review, the confidential representations were evaluated against established BACT for furnace decoking operations and determined to be adequate.

Based on the permit application and supporting representations made by ExxonMobil, emissions of NO<sub>x</sub> and VOC during planned decoking operations will be not higher than what was established and authorized for normal operations. During planned decoking operations, ExxonMobil will be required to comply with the emission rates established in the MAERT for EPN BAYTOWN OLEFINS PLANTXXFURNACE, BAYTOWN OLEFINS PLANT-XX Furnace Vent Cap. The air quality modeling analysis was conducted using the maximum allowable emission rates in the MAERT; therefore, alternate limits in the MAERT are not required.

As to the Dow facility referenced by the commenter, the levels of control for the projects proposed for Dow Freeport (0.01 lb/MMBtu annually) as well as for Chevron Phillips (0.01 lb/MMBtu annually) are consistent with what ExxonMobil is proposing (0.01 lb/MMBtu annually). Neither of these other permits has been issued or demonstrated to be able to operate within these limits; however, TCEQ anticipates issuing permits for these projects with those limits. Applicants are required to demonstrate compliance with all applicable federal and state rules and regulations, which ExxonMobil has done; therefore, no further BACT analysis was necessary. Neither the EPA nor the TCEQ require applicants to submit information from other similar permit applications as support for their application for an air quality permit.

With regard to the control efficiency of PM during decoking, special Condition 9 of the draft permit requires ExxonMobil to prove 95% control efficiency of PM during decoking which is considered BACT. Upon completion of testing, the cyclone may achieve much greater control efficiency. Formosa Plastics' proposed cyclone efficiency of 99.7% control is based on an untested, proposed Formosa design.

In addition, four (4) decoking vents were modeled as point sources. Stack parameters were based on design information/considerations, process knowledge, and/or operating information from similar equipment. ExxonMobil represented that only two (2) furnaces are decoked concurrently; therefore, the modeling used a reasonable "worst-case" approach based on two furnaces. The modeled emission rate reflects the total mass emitted during a 24-hour period for the worst case. As stated throughout this Response, ExxonMobil is bound by the representations it made in its application. Emission rates for decoking operations are represented on the Table 1(a), Emission Point Summary, and are included as emission rate limitations in the MAERT as EPN BAYTOWN OLEFINS PLANTXXDECOKE. As required by Special Condition No. 8 of the draft permit, ExxonMobil will be required to operate cyclonic scrubbers during decoking events. In addition, all other requirements for the furnaces, with the exception of the concentration limits as specified in Special Condition No. 21.B, apply to decoking operations. Special Condition 9 requires ExxonMobil to complete a compliance demonstration for the coking facilities prior to commencement of operation. Based on a review of other recently issued permits and active projects, these controls are consistent with Tier 1 BACT for furnace decoking operations of this size and configuration

**COMMENT 17:** EIP commented that the permit application lacks information about the new duct burners which will be added to the Train 5 Cogeneration Unit, and are necessary to generate additional steam for the new ethylene plant. EIP noted that these burners were referenced in the Applicant's application for GHG/PSD permit from the EPA, but does not see any similar information included in this permit application. EIP comments that the Air Quality modeling analysis for the ethylene plant does not include emissions from the duct burners, and that as a physical change to an existing unit, the Applicant must demonstrate that the emissions will be controlled with BACT. EIP also commented that the additional heat from the burners may impair the performance of the SCR controlling NO<sub>x</sub> emissions in the Train 5 Unit.

**RESPONSE 17:** Please see response 1 for a discussion about the duct burners and the air quality analysis related to permit 102982.

Because the proposed duct burners will be authorized under Permit 3452, information relating to size and design is more appropriately found in subsequent applications for that air quality permit. However, for purposes of demonstrating acceptable impacts for the new ethylene production plant, including proposed changes to other facilities affected by this project but authorized by other permits (e.g., duct burners for Cogen 5 in Flexible Permit No. 3452), ExxonMobil provided preliminary design information including emissions calculations and operating parameters for the duct burners, which are enforceable representations. These were evaluated in conjunction with emissions from proposed permit 102982, and determined to be acceptable. ExxonMobil currently operates a CEMS which measures NO<sub>x</sub> emissions from the exhaust of Cogen 5. Should the performance of the SCR currently controlling emissions have a shortened life due to additional heat generation from the duct burners, ExxonMobil will be

required to replace the catalyst on a more frequent basis in order to continue operating within the existing permit limits. Emissions from the duct burners will be managed under the existing PAL limits, therefore major NSR is not triggered. ExxonMobil must complete all appropriate permitting actions authorizing the installation of duct burners to Cogen 5 prior to construction. The TCEQ agrees that permitting action will require a BACT demonstration and evaluation prior to approval. Any requests for information related to the potential increase in emissions from the Cogen 5 unit should be made in relation to that permitting action for permit 3452.

**COMMENT 18:** EIP commented that the application “dramatically underestimates the VOC emissions” from elevated and multi-point ground flares proposed at the site, stating that the application lacks information or a basis for how the Applicant will achieve a 99% control efficiency for hydrocarbons containing four carbons or less and 98% control efficiency for hydrocarbons containing four carbons or more. EIP also recommends that ExxonMobil install a flow meter, a parametric gas chromatograph, a continuously variable steam control, a video camera pointed at the flare tip and a meteorological station that measures local wind conditions. EIP also commented that the permit must include a condition that prohibits the Applicant from operating the flare in a “wake-dominated state” as EPA obtained in a consent decree with a different company (BP Whiting).

**RESPONSE 18:** In the application and subsequent submittals, ExxonMobil represented the short term and long term emissions which would be controlled by the flares. The design destruction efficiency for each flare was applied to the controlled vent streams to determine the maximum allowable emission rates from each flare. This is consistent with TCEQ guidance for estimating emissions from flares. BACT for the ethylene production plant includes ExxonMobil installing a flow meter and a composition analyzer in order to demonstrate the waste streams routed to the flares are consistent with what was represented in the application and used to determine maximum allowable emission rates. In addition, 40 CFR § 60.18, General Control Device and Work Practice Requirements, requires flares operate with “a flame . . . present at all times,” which generally necessitates a video camera pointed at the flare tip in order to demonstrate compliance. Section 60.18 also requires that flares be operated with no visible emissions. The elevated flare requires, and is equipped with, variable steam control. The ground flare also proposed by ExxonMobil is pressure-assisted; therefore, variable steam control is unnecessary. Parametric gas chromatographs and meteorological stations which measure local wind conditions are not required by rule or by BACT. Operation of a flare in a non-wake-dominated state is not required by rule or by BACT.

**COMMENT 19:** EIP submitted comments about a new cooling tower proposed at the site. EIP commented that the Applicant likely underestimated the emissions of VOC from its new proposed cooling tower, by failing to make “reasonable assumptions about malfunctions.” EIP requested the Applicant provide information about the particle size distributions it used to determine its emissions estimates. It asked whether the application included estimations of emissions from the cooling tower in its modeling protocol. EIP also commented that the Applicant should revise its emissions calculations for VOCs or alternatively, include “monitoring requirements” for the cooling tower. EIP also commented that the emission limits for the cooling tower are unenforceable because of a footnote on Special Condition 13. They request that the footnote be deleted. EIP also requested clarification on whether ExxonMobil submitted

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revised modeling that reflects the change from a 0.001% drift eliminator originally represented and the 0.0005% drift eliminator required by the draft permit conditions.

**RESPONSE 19:** As stated previously, ExxonMobil is required to operate within the established limits of the approved PAL for VOC emissions. PALs afford a certain degree of operational flexibility requiring its holders to operationally manage the emissions from all the units over which the PAL covers. Therefore, if the scenario the commenter suggests were to occur, ExxonMobil would be required to operationally manage the VOC emissions occurring at *all* the units underneath the PAL at the site. The onus to timely repair equipment lies with the Applicant. The TCEQ cannot issue a draft permit authorizing hypothetical “unauthorized” emissions when the federally enforceable PAL allows Applicants the opportunity to manage the emissions of a PAL pollutant elsewhere on the site. If an exceedance of the PAL should occur, such emissions may fall into the category of a reportable emissions event as discussed in response 1. As part of its application and subsequent submittals, ExxonMobil provided a droplet size distribution for the new cooling tower emission calculations, and this information was considered during technical review of the draft permit. It was determined that this information complies with all applicable federal and state rules and regulations. The Applicant submitted a change from a 0.001% drift eliminator to 0.0005%, which will result in *lower* actual emissions from the new cooling tower. Revised modeling was unnecessary since the change resulted in a decrease in emissions with no change in other modeling inputs.

The emission rate limits established in the MAERT for the cooling towers were based on two factors: representations of maximum total dissolved solids (TDS) in the cooling water, and efficiency of the drift eliminator proposed with the application. Compliance is demonstrated by calculating PM emission rates using the cooling water flow rate and monitored conductivity (as a surrogate for TDS using site-specific correlation), along with the represented fractions for PM<sub>10</sub> and PM<sub>2.5</sub>. The footnote on the MAERT in the draft permit applies only to the VOC emissions from the cooling tower. In response to this comment, footnote “(5)” has been deleted from the Source Name column [BAYTOWN OLEFINS PLANT-XX Fugitives (5)] and added to the Air Contaminant Name column [VOC (5)].

**COMMENT 20:** EIP stated that many units at the plant will need “regular, planned maintenance” and noted that [planned] MSS activities must be permitted in accordance with 30 TAC § 116.111. EIP comments that the draft permit does not establish “sufficiently stringent” limits and offers that the MSS emissions from the ethylene plant may not be managed under the MSS emission limits contained in permit 3452. They comment that Special Condition 1 of Flexible Permit No. 3452 specifically states that only emissions units listed in that permit are authorized by it. EIP requests that the ED identify agency guidance or legal authority that indicates when or why it would be appropriate to authorize MSS emissions for a new source under an existing permit and explain how the MSS limits contained in permit 3452 are an enforceable condition of Permit No. 102982.

**RESPONSE 20:** Special Condition 20 in the draft permit contains the information for planned MSS for permit 102982. Permit No. 3425 includes both allowable emission rates (MAERT) and Special Conditions which identify required controls during planned MSS activities. Specifically, Special Conditions 24 through 42, Attachment A (Inherently Low Emitting Activities),

Attachment B (Routine Maintenance Activities) and Attachment C (MSS Activity Summary) identify the allowable activities and associated restrictions and controls.

**COMMENT 21:** EIP commented the MSS BACT demonstration in the draft permit is “deficient” and fails to specify the activities to be authorized under the permit. EIP states that the Applicant “must actually identify the specific controls it will use to control planned MSS emissions and demonstrate that those controls are the best available (emphasis removed).” EIP comments that the permit doesn’t define MSS or indicate how planned MSS is to be different from unplanned MSS. EIP comments the draft permit must include:

- A detailed description of the planned MSS activities and emissions the permit will authorize
- A description of the controls that will be used to control MSS emissions from each authorized activity
- An evaluation of the BACT performance elements for each such control
- An evaluation of alternative controls
- An account of the control performance required for similar planned MSS activities in permit applications for similar facilities
- And documentation supporting the performance elements evaluation

**RESPONSE 21:** Special Condition 20 in the draft permit details the MSS activities associated with the draft permit.<sup>12</sup> Permit No. 3425 includes both allowable emission rates (MAERT) and Special Conditions which identify required controls during planned MSS activities. Specifically, Special Conditions 24 through 42, Attachment A (Inherently Low Emitting Activities), Attachment B (Routine Maintenance Activities) and Attachment C (MSS Activity Summary) identify the allowable activities and associated restrictions and controls. ExxonMobil has represented that the planned MSS emissions from the proposed project will not exceed the emission rates previously authorized for the Baytown Olefins Manufacturing plant through Permit No. 3452. Planned MSS emissions were authorized in Permit No. 3452 through an amendment that was issued on May 16, 2011. This amendment intended to authorize all planned MSS emissions from the olefins plant and afforded flexibility to accommodate planned MSS from future projects. As part of the technical review of the MSS amendment for Permit No. 3452, worst case emissions were modeled to determine if predicted off site impacts from MSS activities would be acceptable. If the Applicant operates according to its representations made in the application, TCEQ has determined that the planned MSS emissions are adequately protective of human health and welfare.

The Executive Director concluded the draft permit sufficiently limits emissions related to MSS activities. Please see response 1. In addition, the TCEQ does not authorize unplanned MSS emissions. The activities that are included in the planned MSS authorized in Draft Permit 102982 for the furnaces (EPN BAYTOWN OLEFINS PLANTXXFURNACE) are identified in

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<sup>12</sup> Special Condition 20 states: “Allowable emissions for planned MSS activities associated with the facilities authorized by this permit are contained in Permit No. 3452, unless specified otherwise in this permit.”

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Special Condition 21 of the draft permit. Although not explicitly stated in the Special Conditions, the ground flare (EPN FLAREXX2) will control primarily emissions from planned MSS activities and is limited to 160 hours per year as indicated in Special Condition No. 22. The requirements for unplanned MSS emissions and emissions events are in 30 TAC § 101 Subchapter F, Emissions Events and Scheduled Maintenance, Startup and Shutdown Activities. Further, General Condition No. 10, Compliance with Rules, states: "if more than one state or federal rule or regulation or permit condition is applicable, the most stringent limit or condition shall govern and be the standard by which compliance shall be demonstrated." In addition, General Condition No. 1 states, "all representations regarding construction plans and operation procedures contained in the permit application shall be conditions upon which the permit is issued." As part of the technical review, emissions from both routine operations as well as planned MSS activities directly related to the equipment that is being installed as part of this project were evaluated and determined to meet BACT and to be protective of human health and the environment. Please see response 13 for more information about BACT associated with planned MSS activities for the proposed ethylene production plant.

**COMMENT 22:** EIP commented that the draft permit does not establish conditions on "flaring" units that will minimize the duration of planned MSS activities. They also comment that the Applicant may not rely on historical flare data at the Olefins plant without demonstrating that the data is BACT for the ethylene plant. EIP commented that the Draft Permit does not establish conditions on the operation of emissions units venting to the flares that minimize the duration of planned MSS events and restrict the amount of gas vented during these events consistent with BACT. EIP requests that the Applicant identify the emission units that will vent to flares during MSS activities. Further, EIP questions:

- How did the ED calculate EM's annual flare limits;
- What emission factors were used for each pollutant and what other variables were used to calculate each limit;
- What information the ED used in his review to confirm that inputs for these calculations were appropriate, and;
- What enforceable representations has the Applicant made regarding flaring beyond those in the draft permit

EIP commented that MSS Emissions may not be authorized and managed under Permit No. 3452 MSS emission caps. The Draft Permit states that emissions from MSS activities at the ExxonMobil's ethylene plant will be managed under Permit No. 3452. Emissions from the new ethylene plant are not authorized or limited by Permit No. 3452 since that permit states that only emissions units listed in [permit 3452] are authorized by it and limits authorized MSS activities to those represented in ExxonMobil's January 5, 2008 permit application. The MSS emissions from the ethylene plant are new emissions and must be specifically authorized by a new permit or through an amendment to an existing permit. EIP requested information identifying any agency guidance or other legal authority indicating when and why it is appropriate to authorize MSS emissions from a new source under an existing permit without requiring an amendment to the existing permit and an explanation on how Permit No. 3452 limits, as applied to the new ethylene plant, are enforceable.

**REPOSE 22:** In ExxonMobil's application and subsequent submittals, it identified activities that may result in planned maintenance, startup and shutdown emissions. Some of these planned MSS activities are directly related to the equipment that is being installed as part of this project and are authorized in draft Permit No. 102982. This includes startup emissions from the furnaces (during SCR startup) and decoking operations. The flare emissions authorized by the draft permit (EPN BAYTOWN OLEFINS PLANTXXFLARE) include control of emissions from planned MSS activities in the facility. Other planned MSS emissions that are more general in nature, not directly related to the equipment that is being installed as part of this project, and consistent with the activities identified in permit 3452, Attachment A, Inherently Low Emitting Activities, and Attachment B, Routine Maintenance Activities, will be managed as part of facility-wide activities. This is consistent with current TCEQ practices for authorizing emissions from planned MSS activities at new and existing facilities. Maximum allowable emission rates for the draft permit include short-term (hourly) and long-term (annual) mass emission rates for the flare system (EPN BAYTOWN OLEFINS PLANTXXFLARE).

The MAERT limits include emissions from both routine operations and planned MSS activities. Other intermittent activities that were not represented as planned would not be authorized by this permit; rather they are regulated by 30 TAC § 101 Subchapter F. In their application and subsequent submittals, ExxonMobil provided annual flare limit calculations based on empirical waste stream speciation and design data from similar facilities. The multi-point ground flare (EPN FLAREXX2) is authorized to control emissions from planned MSS activities and is limited to 160 hours in a rolling 12-month period as indicated in draft permit Special Condition No. 22. ExxonMobil will be required to maintain records of the operation of the multi-point ground flare (Special Condition No. 26.J). The elevated flare (EPN FLAREXX1) controls primarily emissions from normal operations and is authorized to emit up to 8,760 hours per year. Emissions of NO<sub>x</sub>, CO, and SO<sub>2</sub> from the flares were based on maximum gas volume flows for short-term and annual flare off gas volume flows for long-term. The emission rates were determined using established emission factors. This is consistent with TCEQ guidance on estimating emissions from flares. The VOC emission rate was based on design information for the streams to be controlled at a standard control efficiency of 99% for hydrocarbons with two or three carbons and 98% for all other organic compounds. Emission limits are based on maximum design parameters represented by ExxonMobil for all predicted streams, including planned MSS and normal operations.

Special Condition 19 of the Draft Permit states: "the holder of this permit shall minimize emissions during planned maintenance, start-up and shutdown (MSS) activities by operating the facility and associated air pollution control equipment in accordance with good air pollution control practices, safe operating practices, and protection of the facility." ExxonMobil represented planned MSS emissions that could reasonably be expected to occur once the facility is operational. General Condition 1 states: "all representations regarding construction plans and operation procedures contained in the permit application shall be conditions upon which the permit is issued." In addition, ExxonMobil is required to comply with both short-term and long-term mass emission rate limitations in the MAERT which are based on the represented planned MSS activities.

**COMMENT 23:** EIP commented that ExxonMobil's PAL limits are inconsistent with federal and Texas PAL Requirements that PAL limits be based on baseline actual emissions.

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ExxonMobil's PAL limits for NO<sub>x</sub>, SO<sub>2</sub>, and H<sub>2</sub>SO<sub>4</sub> were not based on baseline actual emissions; instead, they were calculated by adding together emissions from each Baytown Olefins Plant emissions source operating at maximum rate capacity utilizing controls determined to be BACT when the Flexible Permit was issued. ExxonMobil's PAL application states that actual baseline emissions were not used to calculate PAL limits for these pollutants because they were higher than calculated PTE emissions. The proposed PAL limit for each pollutant was equal to the existing Flexible Permit Cap. Actual baseline emissions could only exceed a plant's PTE if emissions during the baseline period exceeded those limits. Thus, it is clear that the baseline actual emissions numbers for these pollutants were not adjusted downward to exclude emissions in excess of limits that applied at the time the PAL amendment was issued, as Texas's PAL rules require.

**RESPONSE 23:** When Flexible Permit 3452 was issued in 2001, an emissions cap was established by applying then current BACT to the existing furnaces. As a result, the cap was less than the prior two-year actual emissions. When PAL6 was issued, several additional furnaces were added to the flexible cap, and PAL was set equal to the new flexible cap.

**COMMENT 24:** Mr. Jimbo Wells commented that the Applicant should repair its existing facilities in the Baytown area before building new facilities, stating that "in many cases" its existing facilities are "beyond the retirement state of the equipment." He also commented that some equipment at the plant has not been inspected recently because if it were, "they will have to shut down or repair it." Mr. Wells supported expansion at the plant, but also supported the Applicant putting "safety over production," and to "stop taking calculated risks," with the lives of community members.

**RESPONSE 24:** As stated elsewhere in this Response, the Applicant has applied for a new authorization in accordance with 30 TAC § 116.111 for a preconstruction permit to build a new ethylene production unit. The Applicant has demonstrated in its application materials that the plant, if operated in accordance with the conditions of the draft permit, will be protective of human health and safety, and public welfare.

Individuals are encouraged to report any concerns about suspected noncompliance with the terms of any permit or other environmental regulation by contacting the Houston Regional Office at 713-767-3500, or by calling the twenty-four hour toll-free Environmental Complaints Hotline at 1-888-777-3186. If the facility is found to be out of compliance with the terms and conditions of its permit, it will be subject to investigation and possible enforcement action.

Under the citizen-collected evidence program, individuals can provide information on possible violations of environmental law and the information can be used by the TCEQ to pursue enforcement. In this program, citizens can become involved and may eventually testify at a hearing or trial concerning the violation. For additional information, see the TCEQ publication *Do You Want to Report an Environmental Problem? Do You Have Information or Evidence?* This booklet is available in English and Spanish from the TCEQ Publications office at 512-239-0028, and may be downloaded from the agency website at [www.tceq.texas.gov](http://www.tceq.texas.gov) (Publications, Document No. 278).

**COMMENT 25:** EPA commented that Special Conditions 9 & 23 – Permit No. PAL 6, which is referenced in the Technical Review sheet prepared in conjunction with this permit action includes PALs for Nitrogen Oxides (NO<sub>x</sub>), Carbon Monoxide (CO), Particulate Matter (PM), Sulfur Dioxide (SO<sub>2</sub>), and Volatile Organic Compounds (VOC). The Technical Review Sheet indicates the PAL emission limits from PAL6 are not being increased by this permit action and therefore, PSD requirements are not triggered. EPA stated that each unit included in the PAL should utilize monitoring approaches which are clearly specified as a permit condition and meet the minimum requirements as described in detail in subparagraphs (A)-(D) of the 30 TAC § 116.186 rule, which include appropriate monitoring approaches such as mass balance equations, CEMs, PEMS, CPMS, or emission factors. It appears that CEMs is only specified for ongoing monitoring NO<sub>x</sub> and CO for the furnaces. EPA asked how ongoing compliance will be determined for the furnaces for the remaining pollutants covered by the other PALs. Further, it asked how will the monitoring requirements for the decoking facilities demonstrate ongoing compliance with all the PAL emission limits, including CO, NO<sub>x</sub>, VOC, SO<sub>2</sub>, as described in TAC 116.186 rule.

**RESPONSE 25:** The monitoring systems required by the draft permit meet the requirements for a PAL monitoring system as described in 30 TAC § 116.186(c). Specifically, continuous emissions monitoring systems (CEMs) or emission factors are used to monitor PAL pollutant emissions. CEMs will be used to demonstrate ongoing compliance with NO<sub>x</sub> and CO limits. Compliance with the VOC and SO<sub>2</sub> emission limits will be demonstrated using monitored operating parameters (e.g. fuel flow to furnaces) and emission factors represented by ExxonMobil. As part of the technical review, monitoring of PAL pollutants was evaluated for adequacy of ongoing compliance with the PAL limits. ExxonMobil's monitoring and recordkeeping requirements are consistent with those required of all NSR applicants.

**COMMENT 26:** EPA referenced Special Condition 25, commenting that although the permit states initial stack testing is required to establish the actual pattern and quantities of air contaminants being emitted into the atmosphere from the furnaces, Permit Condition 25(a) (which details in Permit Condition 7) only specifically mentions the pollutants NO<sub>x</sub>, CO, and ammonia (NH<sub>3</sub>) as the pollutants needing initial testing. In order to be practicably enforceable, the permit must also require initial compliance monitoring of the furnaces for PM, VOC, and SO<sub>2</sub>. EPA also comments that PAL monitoring requirements dictate that each individual emission point covered by a PAL have appropriate monitoring requirements as stated in TAC 116.186(c)(2) since compliance with the permit's emission limits determine compliance with PAL6. Further, EPA asks how the monitoring requirements for the decoking facilities will demonstrate initial compliance with all the PAL emission limits, including CO, NO<sub>x</sub>, VOC, and SO<sub>2</sub>, as described in TAC 116.186 rule.

**RESPONSE 26:** In response to comment, Special Condition 25.A.(7)(a) has been updated to include initial stack testing for VOC, SO<sub>2</sub>, PM<sub>10</sub>, and PM<sub>2.5</sub> for the furnaces. Based on representations submitted by ExxonMobil, emissions of CO, NO<sub>x</sub>, VOC, and SO<sub>2</sub> during decoking events will not be greater than normal furnace operation. Since emissions of PM (including fractions) may be higher during decoking operations, the initial compliance demonstration within Special Condition 25 may not be adequate to demonstrate initial compliance with the PAL limits for PM. Therefore, ExxonMobil is required to propose a testing plan prior to start of

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Exxon Mobil Corporation, Permit No. 102982  
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any decoking operation as required by Special Condition 9. TCEQ's approval of the testing plan will be contingent on the adequacy of demonstration of compliance with all PAL pollutants.

**COMMENT 27:** EPA referenced the MAERT – Emission Point No. (EPN) BAYTOWN OLEFINS PLANTXXFURNACE which delineates a furnace vent cap with covers either Emission Point Numbers (EPNs). EPN BAYTOWN OLEFINS PLANTXXDECOKE is defined as a furnace decoke cap which covers four EPNs. EPN BAYTOWN OLEFINS PLANTXXFLARE is defined as a flare system cap which covers two EPNs. EPA requested a description of the caps' relationship to the NO<sub>x</sub>, SO<sub>2</sub>, CO, PM, and VOC PAL limits of the PAL6 permit and commented it should be included in the permit to ensure permit clarity regarding compliance requirements.

**RESPONSE 27:** In response to this comment, Special Condition 28 was added to clearly identify the relationship between the sources authorized under Permit 102982 and the existing PAL6 as authorized in Permit 3452.

**COMMENT 28:** EPA commented the Technical Review sheet, which was developed to discuss the basis for Permit 102982 requirements, references Flexible Permit 3452 and Permit PAL6. However, the final copy of Permit No 3452 sent to the EPA from the TCEQ issued July 14, 2011) does not reference Permit No. PAL6. EPA asks if PAL6 is a separate document, then please forward it to the EPA. EPA also commented it could not locate is on the Remote Document Server.

**RESPONSE 28:** The TCEQ does not create a separate permit document for PALs. The PAL is referenced in the special conditions, MAERT, or both. PAL6 was initially approved on August 24, 2005 without being referenced, although it was authorized. For clarity, ExxonMobil has altered Permit 3452 to directly reference PAL6.

**COMMENT 29:** EPA commented that since the Technical Review Sheet references Flexible Permit No. 3452, it also reviewed [Flexible Permit No. 3452's] provisions since they directly impact the permit conditions included in the initial issuance of Permit No. 102982. Permit 102982 (issued July 14, 2011) contains FLEX/PAL emission limits in conditions 1.A and 1.B. Is the FLEX/PAL limit the same as the PAL limit?

**RESPONSE 29** ExxonMobil established the PAL based on the Flexible Permit caps in Permit 3452 and they are both the same.

**COMMENT 30:** EPA commented for ease in understanding and review of this permit which is affected by permit conditions in Flexible permit 3452 and PAL6, it should discuss both permit numbers so there is a clear understanding to the public and the EPA of how the entire facility is regulated, since all emission units in this permit are covered under the PALs for NO<sub>x</sub>, CO, VOC, PM, and SO<sub>2</sub>.

**RESPONSE 30:** Special Condition 28 has been added to require that the proposed permit be included in ExxonMobil's demonstration of compliance with PAL6.

**CHANGES MADE IN RESPONSE TO COMMENT**

In response to public comment, the Executive Director has changed certain provisions of the draft permit. These changes and the reasons for these changes are more fully described above.

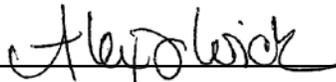
Respectfully submitted,

Texas Commission on Environmental Quality

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REPRESENTING THE  
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