

US EPA ARCHIVE DOCUMENT

From: Eric Quiat [equiat@zephyrenv.com]
Sent: Tuesday, March 25, 2014 10:55 AM
To: LeDoux, Erica
Cc: Karen Olson; Tammy Lasater
Subject: RE: Responses to Formosa Olefins Expansion GHG Application Questions

Erica,

The elevated flares are steam assisted and the low pressure flares are air assisted.

Regards,
Eric Quiat, P.E.
Project Engineer
Zephyr Environmental Corporation
2600 Via Fortuna, Suite 450
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From: LeDoux, Erica [mailto:LeDoux.Erica@epa.gov]
Sent: Monday, March 24, 2014 4:41 PM
To: Eric Quiat
Cc: Karen Olson; Tammy Lasater
Subject: RE: Responses to Formosa Olefins Expansion GHG Application Questions

Thanks Eric!

Are the flares for this project (2 ground low pressure and the 2 elevated flares) air assisted, steam assisted, non-assisted or pressure-assisted?

Thank you,

Erica Le Doux

From: Eric Quiat [mailto:equiat@zephyrenv.com]
Sent: Thursday, March 20, 2014 10:21 AM
To: LeDoux, Erica
Cc: Karen Olson; Tammy Lasater
Subject: FW: Responses to Formosa Olefins Expansion GHG Application Questions

Erica,

It looks like we previously addressed flare gas recovery systems in our response to item #1 below in this 8/9/13 email.

Regards,

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From: Eric Quiat
Sent: Friday, August 09, 2013 11:08 AM
To: LeDoux, Erica (LeDoux.Erica@epa.gov)
Cc: Magee, Melanie (Magee.Melanie@epa.gov); Robinson, Jeffrey (Robinson.Jeffrey@epa.gov); 'braganza.bonnie@epa.gov'; Tammy Lasater
Subject: Responses to Formosa Olefins Expansion GHG Application Questions

Erica,

Please see responses to your questions in bold, blue text below. Attachments are provided, and mentioned, where applicable. Please let me know if you have any follow up questions or if you would like a hard copy of any of the attachments mailed to your office.

Regards,

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From: LeDoux, Erica [mailto:LeDoux.Erica@epa.gov]
Sent: Friday, July 26, 2013 4:22 PM
To: Tammy Lasater / FDDE
Cc: Robinson, Jeffrey; Magee, Melanie; Braganza, Bonnie; Eric Quiat
Subject: RE: Formosa GHG Application Gas Turbines Project

Tammy,

Thank you for Formosa Plastics Corporation (FPC) response to the GHG Application Determination Letter for the Olefins3/Propane Hydrogenation(PDH) Plant that was included in the revised permit application. Please provide written clarification to the following questions:

1) Please explain the proposed elevated flare system. Currently, it appears on the process flow diagram as two separate elevated flares. Is this an accurate representation. Please explain the design and operation of the proposed two stage flare. Are the two low pressure flares enclosed? Was a flare recovery system evaluated for this project. Please supplement the BACT analysis to support its elimination.

The elevated flare system (FIN/EPNs OL3-FLRA, OL3-FLRB) is a two stage flare system designed to provide safe control for vent gas streams that cannot be recycled in the process or routed to the fuel gas system. The flow diagram was intended to illustrate that the flare consists of two stages with separate waste gas streams routed to two separate tips although it does share the same vertical conveyance/structure.

Waste gases generated during normal operation and routine maintenance will be routed to the first stage flare tip (EPN OL3-FLRA) and the second stage tip will not be operated at this time. The second stage flare tip (EPN OL3-FLRB) is designed to manage the additional high volume flows from certain startup and shutdown waste gas streams and during emergency scenarios. Both 1st and 2nd stage flare tips are designed with natural gas pilots. The two stage design allows the more routine and smaller flows to be handled in a flare tip sized and designed for those rates and the more intermittent and large flows to be handled in a flare tip sized for those flows. This design was intended to address the low velocity, low-Btu flare operation concerns raised recently by the TCEQ with a flare tip size which is better matched to the potential expected flows.

The two low pressure flares (EPNs OL3-LPFLR1, OL3-LPFLR2) are being designed as enclosed flares.

Flare gas recovery is already incorporated into the current plant design such that the off-gas generated in the process is captured upstream of the flare gas header. These off-gases are recovered for use in the plant fuel gas system or recycled for reprocessing in the plant as described in Section 6.7.1.1 (Minimization of Waste Gas to the Flare) of the application. The gases that are unable to be recovered have variable compositions of inerts (N₂, etc) and highly

variable flow (often produced from maintenance degassing or a short duration of high flows, such as startup shutdown activities) such that a flare gas recovery system cannot practically be designed to handle them. Minimization of waste gas to the flare via the PDH and Olefins 3 fuel gas system designs is proposed as BACT in section 6.7.5 of the permit application.

2) On page 23 of the revised application in the heat recovery section a stream 24 is discussed, but is not shown on the process flow diagram. Please resolve. Stream 24 is shown on the attached sheet labeled "DETAIL PDH REACTOR."

3) On the process flow diagram BFD -03, a stream 17 is shown as "Mixed C3s to Export - Replaces Purchased Feed". An explanation is not provided in the process description on page 21 for stream 17. Is this stream utilized in the PDH unit? The Mixed C3 Stream (no. 17) is comprised of approximately 80 mol% propylene and 20 mol% propane. This stream composition is also known as RGP (Refinery Grade Propylene). Since the mass flowrate of this stream is not expected to be very large, our intent is to send it to the existing PPU (Propylene Purification Unit) near Olefins I for purification to polymer grade propylene. This stream will replace the current supply of RGP purchased and imported from an external seller.

4) Please verify the proposed 108 decoke events for the 14 olefin furnaces per rolling 12 month period. The proposed 108 decoke events in the revised application doesn't appear to comport with the frequency of 12 events/yr/furnace. Please verify emission calculations as well. The emission calculations are correct and are based on 12 decoking events/ furnace/yr for the 14 furnaces. This totals 168 decoking events per year; therefore, the annual decoking frequency in the revised application should have been revised from 108 events per year to 168 event per year to coincide with this design change. This revision was inadvertently overlooked. Sorry for any confusion that may have caused. An updated Section 6.3 of the permit application is attached which references the correct number of decoking events.

5) Does the proposed steam boilers in the Olefin3 plant provide steam for the regeneration of reactor catalyst in the PDH unit?
Yes.

6) Will Formosa be providing a supplemental submission to address question 2, 5 and 6 from the Determination Letter?

Thank you for following up on this item. FPC TX has collected the necessary information to respond to questions 2, 5 and 6 of the Olefins Expansion application letter; the supplemental responses are provided in the PDF attachment to this message titled "Supplemental Olefins App Responses, Q2,5 &6". Let us know if you would like a hard copy sent to you and we will do so; otherwise, we will consider this electronic submittal sufficient.

Also, I am checking on the response to the email below pertaining to the Gas Turbine project. I wanted to make sure that I haven't missed a submission.

The responses to your previous questions regarding the Gas Turbine application are being provided in a separate email.

Thank you, Erica

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