



Shell Chemical Appalachia LLC
300 Frankfort Rd
Monaca, PA 15061

April 24, 2020

Alex Sandy, Air Quality Engineering Specialist
Pennsylvania Department of Environmental Protection
Southwest Regional Office
400 Waterfront Drive
Pittsburgh, PA 15222

RE: Shell Chemical Appalachia LLC
Shell Polymers Monaca
Potter and Center Townships, Beaver County
Plan Approval Application – Design Updates (PA-04-00740C)
Technical Information Request Response (Confidential Original Version)

Dear Mr. Sandy:

Shell Chemical Appalachia LLC (“Shell”) is pleased to submit this additional information at your request to supplement the Design Updates Plan Approval Application submitted to Pennsylvania Department of Environmental Protection (PADEP) on February 14, 2020. This application requests to incorporate “as-built” changes in design and construction associated with the Shell Polymers Monaca site.

Due to the confidential nature of the information provided, Shell is submitting an original response that contains trade secret and confidential proprietary information as defined by the Pennsylvania Right to Know Law. Three additional copies with redacted confidential information and an electronic redacted copy will also be provided separately.

This application contains the following information.

- Summary Response to Request
- Enclosure 1 – Process Forms for Combustion Turbines with Duct Burners, and Emergency Generator Engines
- Enclosure 2 – Application Cross Referencing Table for Application Appendices and Attachments
- Enclosure 3 – Unit-by-Unit PTE Table
- Enclosure 4
 - Application Table 2-1 (April 2020 Revision)
 - Application Table 2-1 to Appendix B Calculations Cross Reference
 - Application Appendix B (April 2020 Revision)
- Enclosure 5 – Appendix B 2015 Emission Calculations to PA-04-00740A (Including Revisions Identified in the PADEP April 1, 2015 Review Memo)

Summary Response to Request

1. **PADEP request to use the Processes Application Forms:** The plan approval application submitted in support of the design updates used the Combustion Unit form (2700-PM-AQ0021 Rev. 6/2004) to provide information related to the three Combustion Turbine/Duct Burner Combined Cycle Units, four natural gas-fired reciprocating internal combustion engines, and two diesel-fired reciprocating internal combustion engines included in the application. PADEP has requested that the information related to these emission units be provided using the Processes form (2700-PM-AQ0007 Rev. 7/2004).

Shell Response: The requested forms are included as Enclosure 1 to this document.

2. **PADEP Appendix Reference Comment:** PADEP has requested that Shell review the table and internal section cross references within the plan approval application's appendices.

Shell Response: In response to the Department's request, a review of the plan approval application's appendices was performed to determine if the table and section cross referencing is correct. The results are as follows:

Appendix A: This appendix to the plan approval application contains the plan approval application forms. As a result, there is no table or section cross referencing within this appendix.

Appendix B: This appendix to the plan approval application contains the emissions estimates for the proposed project. Table 1-1 in Appendix B lists the categories of emissions units to be constructed or modified as part of the project, identifies the general methodology used to estimate the potential to emit for each unit type, and presents a cross reference to the Appendix B table where the detailed calculation is provided. As noted below, a revised version of Appendix B is included as Enclosure 4. The updated Appendix B-2 includes a more complete referencing system and the incorrect reference to Appendix B-2 has been removed.

Appendix C: This appendix to the plan approval application contains air dispersion modeling and Class II visibility analysis for the Shell Polymers Monaca site in Beaver County Pennsylvania. Appendix C was reviewed to ensure that the cross referencing of all tables, figures, attachments and sections within the appendices were correct. Based on that review the updates summarized in Enclosure 2 are made to provide additional clarity.

Appendix D: This appendix to the plan approval application contains the inhalation risk assessment for the Shell Polymers Monaca site. Appendix D comprises the three attachments which are the Inhalation Risk Assessment for the Shell Polymers Monaca site, as follows:

- Attachment A: Emission Estimates – This attachment to Appendix D contains the basis used to estimate the emissions rates for the compounds of potential concern (COPC) and a presentation of the emissions estimates for COPC emitted from each of the COPC emitting sources.
- Attachment B: Dispersion Modeling Analysis – This attachment to Appendix D documents the procedures used in the dispersion modeling analysis conducted to determine the ground level concentrations that were employed in the inhalation risk assessment.
- Attachment C: Inhalation Risk Assessment Analysis – This attachment to Appendix D documents the procedure used to determine the potential cancer and non-cancer inhalation risks from the COPC based on the air dispersion modeling results.

The three attachments that comprise Appendix D were reviewed to ensure that the cross referencing of all tables, figures, attachments and sections within the appendices were correct. Based on that review the updates summarized in Enclosure 2 are made to provide additional clarity.

3. PADEP Request Unit-by-Unit Potential to Emit (PTE) Values: PADEP has requested a summary table that provides the PTE of each emissions unit and the source-wide PTE.

Shell Response: In response to the Department's request, Shell developed a summary of the PTEs for each emissions unit located at the Shell Polymers Monaca site. The summary is included as Enclosure 3. While developing the enclosure some inconsistencies were identified in the values presented in Table 2-1 and Appendix B of the plan approval application submitted by Shell on February 14, 2020. An update to Table 2-1 and Appendix B is included as Enclosure 4. In addition to these updates Enclosure 4 includes a table that provides a cross reference between the values presented in Table 2-1 and location of the detailed calculation that supports that value within Appendix B. This additional table is entitled "Table 2-1 Values to Appendix B Detailed Calculation Cross Reference."

At the bottom of each of the tables included in the 2020 application's Appendix B (see Enclosure 4) the difference between the original 2015 plan approval PTE for that emissions unit and the 2020 updated PTE for that emissions unit is calculated. Table 2-1 presents these values. For purposes of completeness and to ensure that the Department has ready access to the origin of the values presented from the 2015 Appendix B that are used to calculate this difference, a copy of 2015 Appendix B (PADEP revision) is included as Enclosure 5. The term PADEP revision is used to indicate that this version has been updated based on the corrections/adjustments identified in the Department's April 1, 2015 review memorandum, as follows:

- **Enclosure 5, Appendix B, Table B-9.** Emergency Generator Emission Estimates: In accordance with the Department's review memorandum, the emissions estimates have been updated in accordance with emission factor values derived from the applicable emissions standards in accordance with 40 CFR 60.4212(c). Additionally, the VOC fraction of the NO_x + NMHC LAER limit has been updated in accordance with the TOC emission factor (and subtracting methane) of AP-42 Table 3.4-1 for large diesel-fired engines.
- **Enclosure 5, Appendix B, Table B-11.** Fire Water Pump Emission Estimates: In accordance with the Department's review memorandum, the emissions estimates have been updated in accordance with emission factor values derived from the applicable emissions standards in accordance with 40 CFR 60.4212(c).
- **Enclosure 5, Appendix B Table B-24.** PE Handling and Loadout PM PTE: In accordance with the Department's review memorandum and the PM LAER limit the PM calculation is updated to be based on a 0.005 gr/dscf loading.
- **Enclosure 5, Appendix B Table B-25.** Residual VOC Estimate: In accordance with the Department's review memorandum, the annual VOC emissions associated with residual VOC in the polyethylene was determined based on 1.6MM metric tons of annual polyethylene production.
- **Enclosure 5, Appendix B, Table B-37.** VOC Control System Low Pressure Thermal Incinerator Emissions Estimate: In accordance with the Department's review memorandum, the emissions factor used to estimate PM has been updated to a value used in the Department's review memorandum, 0.0019 lb/MMBtu.
- **Enclosure 5, Appendix B, Table B-42.** Truck Transport Road Emissions Estimates: In accordance with the Department's review memorandum, the emissions calculation was updated to use an appropriate daily precipitation correction term and throughput maximum in terms of tons.

It should be noted that one correction made by the Department as part of their review has not been made. In the 2015 application's Appendix B Table B-24 the PM₁₀/PM_{2.5} rate is calculated as 17 percent of the PM rate where the PM rate is based on a 0.01 gr/dscf particulate loading. As noted above, per the Department's review the PM rate of 0.01 gr/dscf was correctly updated to the LAER limit of 0.005 gr/dscf. The Department's review memo incorrectly updates the PM₁₀/PM_{2.5} calculation using a PM₁₀/PM_{2.5} rate of 0.0009 gr/dscf (*i.e.*, 17% or 0.005). Shell is unaware of any technical basis available that supports the use of the 17 percent value on a 0.005 gr/dscf loading. As a result, this second update is not made in the revised Enclosure 5, Appendix B. It should be noted that this incorrect assumption is carried forward into the calculation of the sitewide emissions limit in Section C, Condition 005 of Plan Approval #04-00740A. The sitewide emissions limits in this condition should be updated to the sitewide ton per year values presented in Enclosure 3.

Shell requests that PADEP consider and include this additional information in its review of this Design Updates Plan Approval Application for the Shell Polymers Monaca site. Please contact me at 724-709-2411 or jim.sewell@shell.com or Kim Kaal at 724-709-2467 or kimberly.kaal@shell.com if you have any questions or need additional information.

Sincerely,



H. James Sewell
CSU Environmental Manager, Attorney-in-Fact