

SETTLEMENT AGREEMENT

This Settlement Agreement (“Agreement”) is made and entered into as of this 11th day of July, 2019 (the Effective Date), by and between Delaware City Refining Company LLC (“DCRC”) and the Delaware Department of Natural Resources and Environmental Control (“DNREC”) (collectively the “Parties”) to resolve certain matters associated with DCRC’s operations at its petroleum refinery located in Delaware City, Delaware (the “Refinery”).

WHEREAS, DCRC owns and operates the Refinery;

WHEREAS, DNREC has issued to DCRC multiple air quality construction and operating permits governing air emission sources at the Refinery (collectively, the “Air Permits”);

WHEREAS, DNREC alleges that DCRC has on specific occasions not complied with provisions of the Air Permits and applicable Federal and Delaware statutes relevant to air quality, including without limitation, the Federal Clean Air Act, 42 U.S.C. §§ 7401 et seq. (the “CAA”), and Delaware Environmental Control Statute, 7 Del. C. Chapter 60, and regulations related to air quality promulgated under either of these statutes, associated with DCRC’s operations at the Refinery (the “Compliance Matters”). Attachment “A” to this Agreement contains a summary of the Compliance Matters identified by DCRC and DNREC based on their review of available information relevant to the compliance of the Refinery with relevant and applicable legal standards related to air quality;

WHEREAS, on July 24, 2013, the Secretary of DNREC issued to DCRC Notice of Administrative Penalty Assessment and Secretary’s Order No. 2013-A-0022 (the “Penalty Notice”), alleging that DCRC’s operation of certain equipment at the Refinery on specified dates during 2011, 2012 and 2013 did not fully comply with standards allegedly applicable to the

relevant equipment pursuant to certain permit-based or regulatory standards. The allegations addressed in the Penalty Notice are among those included within the Compliance Matters;

WHEREAS, in response to and pursuant to the terms of the Penalty Notice, DCRC submitted to the Secretary a Request for Public Hearing to address the allegations set forth within the Penalty Notice. The Request for Public Hearing remains pending before DNREC;

WHEREAS, in resolution of DNREC's claims regarding the Compliance Matters, DCRC has agreed to pay an administrative penalty;

WHEREAS, DNREC modified DCRC's existing air quality operating permit to incorporate a facility-wide, aggregate NOx emissions limitation, pursuant to the 2010 Agreement Governing the Acquisition and Operation of the Delaware City Refinery;

WHEREAS, DCRC contends that the NOx Cap affords the Refinery the operational flexibility to achieve reductions in NOx emissions to the extent necessary to satisfy the NOx Cap, and therefore that the Refinery should not be subject to source-specific NOx emission limitations, except to the extent specifically required by law;

WHEREAS, DNREC contends that, notwithstanding the application of the NOx Cap to the Refinery, DNREC is authorized to impose unit-specific NOx emission standards for sources at the Refinery, and that air quality permits issued to Refinery sources should require proper operation of NOx emission control systems when such systems are installed;

WHEREAS, DCRC has submitted to DNREC applications to modify existing NOx emission sources at the Refinery to authorize construction and operation of emission control equipment to further reduce NOx emissions from relevant equipment, and DCRC contends that such NOx emission control equipment is not otherwise required for installation by any existing applicable legal standard;

WHEREAS, in issuing Air Permits to DCRC in response to such applications, DNREC has included unit-specific requirements relevant to NOx emission sources;

WHEREAS, DCRC has contested DNREC's inclusion in Air Permits of such unit-specific NOx emission standards in consideration of the applicability of the NOx Cap;

WHEREAS, DCRC submitted an application to DNREC requesting a permit authorizing DCRC to install and operate relevant equipment for use with steam injection in conjunction with existing Boilers 3 and 4 to further reduce NOx emissions from existing Boilers 3 and 4;

WHEREAS, after public notice DNREC issued to DCRC air quality permit No. APC-90/0290(CONSTRUCTION) (Amendment 10) – Boiler 3; APC-90/0291-CONSTRUCTION (Amendment 3) – Boiler 4 (the “Construction Permit”) dated July 15, 2013. The Construction Permit contained, among other provisions, unit-specific NOx emissions limitations applicable to the operation of Boilers 3 and 4 in conjunction with the new NOx emissions control equipment governed by the Construction Permit.

WHEREAS, DNREC issued to DCRC air quality permit No. APC-90/0290 (OPERATION) (Amendment 10) – Boiler 3; APC-90/0291-OPERATION (Amendment 3) – Boiler 4 (the “Boiler Operating 3/4 Permit”). The Boiler 3/4 Operating Permit continued to include, among other provisions, unit-specific NOx emission limitations applicable to the operation of Boilers 3 and 4 in conjunction with the new NOx emissions control equipment governed by the Boiler 3/4 Operating Permit;

WHEREAS, DCRC filed with the Environmental Appeals Board for the State of Delaware (the “EAB”) an appeal of the Boiler 3/4 Operating Permit, contending among other objections that the inclusion within the Boiler 3/4 Operating Permit of unit-specific conditions governing NOx emissions from Boilers 3 and 4 was inconsistent with the NOx Cap and

applicable law, and that appeal (Appeal No. 2014-04) remains pending before the EAB (the “Boiler 3/4 Operating Permit Appeal”);

WHEREAS DNREC contends the provisions in the Boiler 3/4 Operating Permit are necessary and appropriate, and not inconsistent with the NOx Cap and applicable law;

WHEREAS, DCRC submitted an application to DNREC requesting a permit authorizing DCRC to modify the existing combined cycle units (“CCUs”) at the Refinery to further reduce NOx emissions from the existing CCUs;

WHEREAS, after public notice, DNREC issued to DCRC air quality permit No. APC-97/0503 (CONSTRUCTION) (Amendment 10) (NSPS) – CCUs I and II (the “CCU Permit”) authorizing the requested modification of the CCUs. The CCU Permit included, among other provisions, unit-specific NOx emission limitations applicable to the operation of the CCUs in conjunction with the new NOx emissions control equipment governed by the CCU Permit;

WHEREAS, DCRC filed with the EAB an appeal of the CCU Permit, contending among other objections that the inclusion within the CCU Permit of unit-specific conditions governing NOx emissions from the CCUs was inconsistent with the NOx Cap and applicable law, and that appeal (Appeal No. 2014-05) remains pending before the EAB (the “CCU Permit Appeal”);

WHEREAS, DNREC contends the provisions in the CCU Permit are necessary and appropriate and not inconsistent with the NOx Cap and applicable law;

WHEREAS, the DNREC Secretary issued Secretary’s Order No. 2014-A-0014 (the “RACT Order”), approving *the Revision to Delaware State Implementation Plan for Meeting Reasonably Available Control Technology Requirements Under the Federal Clean Air Act* (the “RACT Regulation”). The RACT Order was published in the Delaware Register of Regulations on August 1, 2014;

WHEREAS, DCRC filed with the EAB an appeal of the RACT Regulation, contending that the RACT Regulation included unit-specific NOx emission standards for certain equipment at the Refinery that are not consistent with federal or state law, and that appeal (Appeal No. 2014-07) remains pending before the EAB (the “RACT Regulation Appeal”);

WHEREAS, DNREC contends that the RACT Regulation is consistent with federal and state law and is a sufficient regulatory basis to include those RACT limits within DCRC’s permits as federally enforceable limitations;

WHEREAS, DCRC submitted to DNREC an application requesting a permit authorizing DCRC to construct and operate an Induced Flue Gas Recirculation (“IFGR”) Project on Boilers 3 and 4 at the Refinery to further reduce NOx emissions from these existing sources;

WHEREAS, after public notice, DNREC issued to DCRC air quality permit No. APC-90/0290 (OPERATION) (Amendment 12) – Boiler 3; APC-90/0291-OPERATION (Amendment 5) – Boiler 4 (the “IFGR Boiler Permit”) authorizing the requested modification of Boilers 3 and 4. The IFGR Boiler Permit included, among other provisions, unit-specific NOx emission limitations applicable to the operation of Boilers 3 and 4 in conjunction with the new IFGR equipment governed by the IFGR Boiler Permit;

WHEREAS, DCRC filed with the EAB an appeal of the IFGR Boiler Permit, contending among other objections that the inclusion within the IFGR Boiler Permit of unit-specific conditions governing NOx emissions from Boilers 3 and 4 was inconsistent with the NOx Cap and applicable law, and that appeal (Appeal No. 2015-03) remains pending before the EAB (the “IFGR Boiler Permit Appeal”);

WHEREAS, DNREC contends the provisions in the IFGR Boiler are necessary and appropriate and not inconsistent with the NOx Cap and applicable law;

WHEREAS, DCRC has submitted to DNREC applications for the reissuance of and update to the existing facility-wide air quality operating permit, known as a “Title V Permit,” for the Refinery;

WHEREAS, after public notice, DNREC issued Secretary’s Order No. 2015-0005, governing the renewal of and revision to the Title V Permit for the Refinery, which included certain unit-specific NOx emission limitations (the “2015 Title V Permit”);

WHEREAS, DCRC filed with the EAB an appeal of the 2015 Title V Permit, contending among other objections that the inclusion within the 2015 Title V Permit of certain unit-specific conditions governing NOx emissions may be interpreted to be inconsistent with the NOx Cap and applicable law, and that appeal (Appeal No. 2015-05) remains pending before the EAB (the “2015 Title V Permit Appeal”);

WHEREAS, DNREC contends the challenged provisions in the 2015 Title V Permit are necessary and appropriate and not inconsistent with the NOx Cap and applicable law;

WHEREAS, DCRC submitted to DNREC an application requesting a permit authorizing DCRC to construct and operate a Selective Non-Catalytic Reduction (“SNCR”) System to further control NOx emissions downstream of the carbon monoxide boiler of the Fluid Catalytic Cracking Unit (“FCCU”) and its wet gas scrubber train at the Refinery;

WHEREAS, after public notice, DNREC issued to DCRC air quality permit No. APC-82/0981-CONSTRUCTION (Amendment 12)(NSPS) – FCCU, FCCU Carbon Monoxide Boiler, Wet Gas Scrubber (WGS) and Selective Non-Catalytic Reduction System (the “FCCU Permit”). The FCCU Permit includes, among other provisions, unit-specific NOx emission limitations applicable to the operation of the FCCU in conjunction with the new SNCR NOx emission control equipment;

WHEREAS, DCRC filed with the EAB an appeal of the FCCU Permit, contending among other objections that the inclusion within the FCCU Permit of additional unit-specific conditions governing NOx emissions from the FCCU was inconsistent with the NOx Cap and applicable law, and that appeal (Appeal No. 2015-06) remains pending before the EAB (the “FCCU Permit Appeal”);

WHEREAS, DNREC contends the provisions in the FCCU Permit are necessary and appropriate and not inconsistent with the NOx Cap and applicable law;

WHEREAS, DCRC submitted to DNREC applications to modify the Title V Permit to incorporate provisions from certain construction permits governing emission sources at the Refinery;

WHEREAS, thereafter DNREC issued a Significant Modification to the Title V Permit, dated April 11, 2017 (the “2017 Title V Permit Modification”) which included certain unit-specific NOx emission limitations and other conditions related to certain notification requirements;

WHEREAS, DCRC filed with the EAB an appeal of the 2017 Title V Permit Modification, contending among other objections that the inclusion within the 2017 Title V Permit Modification of certain unit-specific conditions governing NOx emissions may be interpreted to be inconsistent with the NOx Cap and applicable law and objecting to specific notification requirements, and that appeal (Appeal No. 2017-04) remains pending before the EAB (the “2017 Title V Permit Appeal”);

WHEREAS, DNREC contends the challenged provisions in the 2017 Title V Permit Modification are necessary and appropriate and not inconsistent with the NOx Cap and applicable law;

WHEREAS, the Parties intend through this Agreement to resolve without need for hearing before the EAB the Boiler 3/4 Permit Appeal, the CCU Permit Appeal, the RACT Regulation Appeal, the IFGR Boiler Permit Appeal, the 2015 Title V Permit Appeal, the FCCU Permit Appeal, and the 2017 Title V Permit Appeal (collectively the “Permit Appeals”);

WHEREAS, the Parties have agreed that settlement of the matters addressed by this Agreement is in the best interest of the Parties, and that entry of this Agreement is the most appropriate means of resolving the matters addressed herein.

NOW THEREFORE, without any admission of fact or law, it is hereby stipulated and agreed as follows:

I. APPLICATION AND SCOPE

1. The provisions of this Agreement shall apply to and be binding upon DNREC and DCRC, its and their officers, employees, agents, successors and assigns.

II. RESOLUTION OF PENDING PERMIT APPEALS

2. DNREC and DCRC have agreed to appropriate revisions to the permits subject to the Permit Appeals in order to resolve the application to Refinery emission sources of source-specific NO_x emission limitations in a manner that is fully consistent with the terms of this Agreement. The intended revised versions of the permits subject to the Permit Appeals are included within Attachment “B” to this Agreement.

3. DNREC will publish as draft permits the proposed revised permits included within Attachment “B” (the “Draft Revised Permits”) and take all necessary and lawful procedural steps to afford public notice of the Draft Revised Permits in accordance with DNREC’s administrative procedures. Following completion of such process, DNREC will consider any public comment provided, make any necessary or advisable revisions to the Draft

Revised Permits, and issue final air quality permits for each of the Draft Revised Permits (the “Final Revised Permits”). The Final Revised Permits may vary from the Draft Revised Permits based on consideration of relevant and applicable comments submitted during the public notice process.

4. DCRC shall withdraw its RACT Regulation Appeal within 30 days of the Effective Date of this Agreement.

5. Upon issuance of each Final Revised Permit, DCRC shall withdraw its corresponding appeal; provided however that, if the Final Revised Permit differs in any material respect from the provisions of the corresponding Draft Revised Permit, DCRC may elect to preserve its pending appeal of the corresponding air permit. In addition, DCRC may appeal any provision of a Final Revised Permit that materially differs from the corresponding Draft Revised Permit. Each party reserves all rights, claims and defenses in any subsequent proceeding, including without limitation any proceeding related to the relevant Final Revised Permit providing the underlying factual or legal bases continue to exist.

III. ADMINISTRATIVE PENALTY

6. For the outstanding violations and noncompliance alleged and claims relative to the Compliance Matters, DNREC hereby issues to DCRC an administrative penalty of Nine Hundred fifty thousand dollars (\$950,000.00) (the “Administrative Penalty”).

7. Within sixty (60) days of the Effective Date of this Agreement, DCRC shall submit to DNREC payment of the Administrative Penalty, by corporate check, payable to the

State of Delaware, and mailed to the following address:

Ralph K. Durstein III
Deputy Attorney General
Delaware Office of the Attorney General
Environmental Unit - Third Floor
102 W. Water Street
Dover, Delaware 19904

IV. EFFECT OF SETTLEMENT

8. DCRC's full and final satisfaction of Paragraph 7 and, if applicable, Paragraph 9 of this Agreement shall resolve all civil and administrative liability of DCRC to DNREC for the Compliance Matters (collectively, the "Claims"), and for any alleged violations and claims which occurred before October 31, 2018, that are substantially similar in kind and character to the Claims, even if not specifically identified in Attachment A (collectively, the "Related Claims"); provided that, if DNREC obtains information, not known to DNREC before the Effective Date, that DCRC withheld or falsely reported pertinent information or data, then this release as to the Related Claims shall be null and void and of no effect with respect to such withheld or falsely reported information or data. Further, the Claims include particulate matter emissions conditions related to the coke storage and handling complex (five coke conveyor baghouses and one pug mill scrubber) (the "Coke Storage Sources"), and DCRC has instituted measures designed to achieve and maintain compliance of the Coke Storage Sources with the applicable particulate matter emission standards. However, to the extent that noncompliance by any of the Coke Storage Sources is identified subsequent to the Effective Date, DCRC is not relieved through this Agreement of the obligation to institute such appropriate corrective measures as may be necessary to achieve and maintain compliance for each Coke Storage

Source. Instead, the inclusion among the Claims of the compliance issue for the Coke Storage Sources is intended to resolve only DCRC's liability through the Effective Date for civil or administrative penalties with respect to the allegations of noncompliance related to the Coke Storage Sources, and shall not limit any argument otherwise available to DNREC to pursue, subsequent to the Effective Date, any action against DCRC to require implementation of such corrective measures as may be necessary to achieve and maintain compliance for each of the Coke Storage Sources.

V. COKE STORAGE SOURCE STACK TESTING

9. DCRC shall complete an additional Department observed compliance test for each of the Coke Storage Sources in accordance with the emission testing provisions of Permit AQM-003/00016-Part 2(Renewal 1)(Revision 3) Condition 3-Table 1 (db.1.iii.E) no sooner than 11 months and no later than 13 months after the next passing stack test for the relevant Coke Storage Source. If the emissions test conducted after the Effective Date demonstrates that emissions from a Coke Storage Source do not satisfy the applicable emission standard, such test result shall indicate noncompliance for the source from the date of the test until such time as the violation has been corrected and a passing test achieved by the source.

V. GENERAL PROVISIONS

10. This Agreement shall be governed by, and interpreted under, the laws of the State of Delaware.

11. This Agreement is not a permit. Compliance with its terms does not guarantee compliance with any applicable federal, state, or local law or regulation. Nothing in this

Agreement shall be construed to be a ruling on, or determination of, any issue related to any federal, state or local permit.

12. Other Laws. Nothing in this Agreement shall relieve DCRC of its obligation to comply with all applicable federal, state, and local laws and regulations. Other than as expressly provided for in Section III, nothing contained in this Agreement shall be construed to prevent, alter, or limit the DNREC's ability to seek or obtain other remedies or sanctions available under federal, state, or local statutes or regulations, in response to any violation by DCRC of applicable statutes and regulations.

13. Third Parties.

a. This Agreement does not limit or affect the rights of DCRC or DNREC against any person or entity not party to this Agreement.

b. This Agreement shall not be considered to create rights in, or grant any cause of action to, any third party not a party to this Agreement, nor does it limit the rights of any person or entity not party to this Agreement against DCRC, except as otherwise provided by law.

14. Notice. Notifications to or communications with DNREC or DCRC shall be deemed submitted on the date they are postmarked and sent by certified or registered mail, return receipt requested, or on the date of actual receipt by any means, whichever is earlier. Written notification or communication concerning this Agreement shall be addressed as follows:

As to DCRC:

John Deemer
Manager, Health, Safety and Environment
Delaware City Refining Company LLC
4550 Wrangle Hill Road
Delaware City, DE 19706

and

Bart E, Cassidy, Esquire
Manko, Gold, Katcher & Fox, LLP
401 City Ave, Suite 901
Bala Cynwyd, PA 19004

As to DNREC:

David Fees, Director
Delaware Department of Natural Resources
and Environmental Control
Division of Air Quality
State Street Commons
100 W. Water Street
Dover, DE 19904

and

Ralph K. Durstein III
Deputy Attorney General
Delaware Office of the Attorney General
Environmental Unit – Third Floor
102 W. Water Street
Dover, DE 19904

15. Either party may change either its notice recipient or notice address by serving the other party with a notice setting forth such new notice recipient or address.

16. This Agreement shall be binding upon the Parties to this action, and their successors and assigns. The undersigned representative of each Party to this Agreement is authorized by the Party whom he or she represents to enter into the terms of this Agreement and bind that Party to them.

17. Modification. This Agreement may be modified only by the written consent of DNREC and DCRC.

18. This Agreement is entered into notwithstanding any other agreement between the Parties and constitutes the entire agreement and settlement between the Parties.

19. To the extent of any irreconcilable conflict between this Agreement and the requirements of federal and state law, the latter controls.

FOR THE STATE OF DELAWARE

By: 
Shawn M Garvin, Secretary
Delaware Department of Natural Resources
and Environmental Control

Date: 7/11/19

FOR DELAWARE CITY REFINING COMPANY LLC

By: 
Jeffery Coleman
Refinery Manager
Delaware City Refining Company LLC

Date: 7.9.2019

Attachment A
Compliance Matters

Affected Unit(s)	Date(s)	Description of Event	Permit Type
Alky	10/4/2016, 11/23/16	RQ release of flammable gas	AQM
CNHUU	1/1/18 to Present	The 12-month rolling PM10 emissions for 25-H-401 exceeded 2.4 TPY on a rolling 12-month basis.	AQM
Coker	6/13/2011, 9/4/18	Visible PM emission from the Coker Stack	AQM
Coker	1/28/13, 6/15/14, 4/13/15, 7/14/16, 7/15/16, 8/8/16, 8/25/16, 1/20/17, 2/12/17, 8/30/17, 9/18/17, 9/4/18	Excess CO from the Wet Gas Scrubber Stack	AQM
Coker	7/7/11, 4/13/15, 1/23/16, 8/8/16, 8/25/16, 9/4/18	Coker CO Boiler Firebox Temperature Dropped Below Minimum Required	AQM
Coker	7/15/11, 2/12/12, 1/16/13, 1/21/13 - 1/28/13, 6/11/13-6/12/13, 9/28/13, 11/23/13, 4/13/15 to 4/23/15, 4/29/15 to 5/5/15, 8/8/16, 8/25/16, 9/4/18	Coker CO Boiler Offline - Reportable Releases	AQM
Coker	4/25/15 to 4/29/15	Casing leak at FCU CO Boiler, release of SO ₂ less than 500 lb	AQM
Coker	8/15/11	Daily Coke Moisture Below 8%	AQM
Coker	3/28/12	Stack Test showed non-compliance with TSP gr/dscf Limit; retest on 4/16/12 showed compliance	AQM
Coker	2/11/15, 1/23/16, 1/26/16, 1/27/16, 1/28/16, 1/29/16, 1/30/16, 1/31/16, 2/1/16, 3/30/16, 8/8/16, 8/25/16, 8/26/16	Excess Visible Emissions (per Method 9)	AQM
Coke Silo	10/17/12, 3/21/15, 3/22/15, 3/23/15, 3/25/15, 12/7/15, 1/23/16, 4/2/16, 4/3/16, 4/4/16, 4/7/16, 4/8/16, 4/9/16, 4/10/16, 4/11/16, 4/12/16, 4/13/16, 4/14/16, 9/21/16, 11/15/16, 11/16/16, 12/25/16, 12/26/16, 12/27/16, 12/30/16, 12/31/16, 1/1/17, 1/2/17, 1/3/17, 1/4/17, 1/5/17, 1/6/17, 1/25/17, 1/26/17, 1/27/17, 1/28/17, 1/29/17, 12/17-22/17	Excess Visible Emissions at Coke Silo (per Method 9)	AQM
Coker	1/18/13	Coker Incinerator tripped offline during operation.	AQM
Coker	2/22/15	Leak at FCU - RQ Exceedance for H2S, 1,3-Butadiene, Methane, Ethane, Propane & Propylene	AQM
Coker	7/7/11 - 7/20/11	Coker WGS prescrubber recirculation discharge pressure analyzer not functioning properly	AQM
Coker	6/14/13 - 6/15/13	SNCR not operating while CO Boiler in Service	AQM

Affected Unit(s)	Date(s)	Description of Event	Permit Type
Coker	6/14/13, 4/13/15	Coker Backup Incinerator - Excess O2 below minimum	AQM
Coker	12/26/13, 6/15/14, 1/23/16, 6/30/16, 10/11/18	Prescrubber discharge pump pressure and/or Pressure Drop below minimum limit	AQM
Coker	1/30/14, 8/8/16, 8/25/16, 8/26/16, 9/4/18	Coker Burner overhead gas vented to the bypass stack	AQM
Coker	3/31/14	Percent Moisture Test not Performed on Coke Shipment	AQM
Coker	2/5/16	NOx emissions greater than 152.0 ppmvd on 7-day rolling average basis.	AQM
Coker	8/21/17	24-hour notice prior to planned shutdown not provided.	AQM
Coker	Fall 2013	Vessel venting record not maintained for five years for Fall 2013 FCU turnaround.	AQM
Coke Storage	1/1/2018 - Present (ongoing)	PM emissions from baghouses BH-1, BH-2, BH-3, BH-4 and BH-5 exceeded 0.014 grains/SCF.	AQM
Crude	7/1/11, 10/29/13, 10/2/15, 1/30/16, 1/31/16, 8/9/17	Crude Heater NOx emissions exceeded 0.04 lb/mmBtu on a 3-hour rolling average	AQM
Crude	6/21/11 - 6/22/11, 10/2/15, 1/30/16, 1/31/16	Crude heater NOx emissions exceeded the emissions limit after the 24 hour exemption for start-up	AQM
CCR	2/9/17	NOx emissions exceeded 0.20 lb/mmBtu on a 24-hour rolling average	AQM
CCR	10/28/17	One step in the CCR SSMP was not followed in response to low pH at the wet gas scrubber.	AQM
CCR	2/14/12, 6/17/12, 6/18/12, 4/16/14, 10/28/17	pH of the scrubbing liquid of the Vent Gas Scrubber below minimum limit	AQM
Desulfurizers	3/16/12	SO2 release (<500lbs) and visible emissions from the stack of 29-H-4 due to a furnace tube fire	AQM
Frozen Earth Storage Flare	7/14/10, 7/25/10	Intermittent visible emissions for greater than 5 minutes in a 2 hour period.	AQM
FCCU	5/26/11 - 5/27/11, 6/1/2011, 9/29/11, 12/11/11, 2/13/12, 9/6/12, 11/6/15, 1/23/16, 11/30/16, 11/23/17, 12/15/17, 8/22/18	FCCU CO Boiler Firebox Temperature dropped below minimum permit limit	AQM
FCCU	6/1/11, 6/17/11, 11/21/11, 8/19/14, 11/26/14, 5/9/15, 9/18/15, 9/19/15, 10/17/16, 11/4/15, 12/7/15, 1/10/16, 1/23/16, 1/29/16, 1/30/16, 2/11/16, 2/19/16, 11/30/16, 3/10/17, 8/12/17, 11/23/17, 11/27/17, 12/15/17, 8/22/18, 9/14/18	Concentration of CO from the FCCU WGS stack was in excess of permitted Limit	AQM

Affected Unit(s)	Date(s)	Description of Event	Permit Type
FCCU	6/17/11, 10/2/11 - 10/25/11, 7/27/12, 8/19/14, 8/22/14, 11/30/16, 11/23/17, 12/15/17, 8/22/18	FCCU CO Boiler Offline - Reportable Releases SO2 emissions from the Wet Gas Scrubber exceeded permitted limit	AQM
FCCU	7/7/11	Gasket Leak at FCCU Gas Plant - RQ Exceedance for H2S	AQM
FCCU	1/29/13	FCCU startup period exceeded 80 hours - CO emissions greater than 500ppm	AQM
FCCU	5/23/11 - 6/1/11	Prescrubber discharge pump pressure and/or Pressure Drop below minimum limit	AQM
FCCU	10/2/13, 3/17/14, 10/21/15, 1/23/16, 9/16/18	Continuous monitoring for the secondary indicator, minimum discharge pressure of the scrubber pump, was not maintained	AQM
FCCU	12/17/17 to 1/30/18	Upset in the DGA regeneration system at the FCCU resulted in exceedance of the 3hr average H2S in fuel gas limit and four 24-hr period RQ exceedances for SO2.	AQM
FCCU	8/2/15 to 8/6/15, 8/9/15	FCCU upset event resulted in a release, fire and flaring: CO emissions greater than 500 ppm, RQ exceedance for SO2, an exceedance of the 3hr average H2S in Fuel gas limit and greater than 20% opacity for an aggregate of more than 3 minutes in any one hour period.	AQM
FCCU	8/21/15	Release from the FCCU Fractionator Column resulted in RQ exceedances for H2S and flammable gas (propane/ propylene).	AQM
FCCU	8/28/15	RQ release of SO2 (State only <500 lb) due to leak in COB duct	AQM
FCCU	1/18-20/2018	RQ release of CO and CO exceeded 860 lb/hr limit for planned shutdowns.	AQM
FCCU	3/10/17	Excess Visible Emissions	AQM
FCCU	1/24/16	Daily calibrations were not performed for the FCCU RFG H2S analyzer for five days	AQM
FCCU	9/3/16 to 9/7/16	Daily visual inspections were not documented	AQM
Gasoline Dispensing	7/1/14 to 1/28/15	RQ exceedance of H2S due to process line leak	AQM
HVC	4/20/16	Excess Visible Emissions	AQM
MVR	12/14/16	Barge loaded without use of MVRS.	AQM
MVR	4/29/17		AQM

Affected Unit(s)	Date(s)	Description of Event	Permit Type
MVR	1/17/14, 1/19/14, 1/20/14, 1/25/14, 1/29/14, 1/30/14, 2/2/14, 2/2/14, 2/10/14, 2/13/14, 2/20/14, 7/12/14, 7/27/14, 7/27/14, 7/30/14, 8/7/14, 8/10/14	Shipments of crude oil by barge to facilities other than the PBF refinery in Paulsboro, NJ.	AQM
Oil Movements	1/1/14 to 6/5/14	Daily and weekly visual tank inspections were not documented	AQM
Oil Movements	5/29/12	Release of flammable gas	AQM
Oil Movements	11/7/13	Tank 285-TF-200 floating roof not floating on stored liquid surface.	AQM
Oil Movements	7/1/14 to 11/4/14	Required gaskets missing on MACT 1 tanks	AQM
Oil Movements	11/17/16	Tank 60-TF-28 floating roof not floating on stored liquid surface.	AQM
Oil Movements	2/19/16 to 5/10/16	Tank 71-TF-28 floating roof not floating on stored liquid surface.	AQM
Oil Movements	12/31/16	For tank 471-TF-28, the internal floating roof and its closure seals were not inspected at least once during a five year period and a complete inspection of any cover and the double seal on tank 471-TF-28 was not completed within 5 years.	AQM
Oil Movements	12/31/16	Primary seal gap measurements were not completed at least once every 5 years and the secondary seal gap measurement was not completed once during the year for tank 323-TF-136.	AQM
Oil Movements	12/31/16	Secondary seal gap measurements not completed at least once per year for tanks: 001-TF-200, 048-TF-112, 261-TF-50, 263-TF-112, 282-TF-200	AQM
Oil Movements	4/21/17	Complete inspection of any cover and double seal not completed within 5 years for Tank 047-TF-78.	AQM
Oil Movements	9/22/16	For Tank 224-TF-112, the secondary seal developed a tear, a new seal was installed after the 45-day deadline.	AQM
Refinery	4/19/11, 5/27/11, 2/12/12, 2/5/13, 10/12/13, 2/5/14, 3/12/14, 9/25/14, 12/22/14, 11/2/15, 12/10/15, 1/23/16 to 1/30/16	Odors beyond property boundaries	AQM
Refinery	6/1/10 - 6/30/10, 12/1/10 - 12/31/10, 12/1/11	Missed LDAR Inspections	AQM

Affected Unit(s)	Date(s)	Description of Event	Permit Type
Refinery	Various	Deviations as reported in Semi-Annual LDAR reports	AQM
Refinery	6/1/10 - 6/30/10, 5/20/18	Late Report - SOCMH HON	AQM
Refinery	11/14/11, 7/19/12, 8/9/12	Invalid Delay of Repair Determination	AQM
Refinery	11/27/11	Interruption of power to the refinery resulted in hydrocarbon flaring (>500lbs SO ₂); shutdown of the FCCU CO Boiler, exceedance of minimum operating temperature of the WWTP Incinerator, and the shutdown of multiple operating units	AQM
Refinery	12/31/11	Report demonstrating the justification for reliance upon the 1% set aside value from insignificant sources toward the NO _x Cap limitations submitted late	AQM
Refinery	7/29/11, 10/26/11, 1/30/12, 4/26/12, 4/27/12, 7/27/12, 1/30/13, 5/11/15, 11/1/16 to 11/30/16, Q2 2017, August 2017	Reports indicating CEMS with greater than 5% downtime	AQM
Refinery	9/21/14, 2/22/2015	Delayed RQ exceedance reporting due to incident specific circumstances.	AQM
Refinery	10/15/14, 2/3/15, 1/10/17, 1/30/17, 2/13/17, 2/20/17, 9/30/17, 10/1/17, 10/16/17, 10/23/17, 1/14/18, 1/21/18, 7/30/18	Stack test report submitted more than 60 days after testing completed.	AQM
Refinery	6/30/14, 7/23/14, 8/29/14	Records for HVAC service work were not kept for refrigerant leak calculations, quantity of refrigerant added and type of service performed. Record of "Refrigerant Recovery or Recycling Device Acquisition Form" was not available for the refrigerant recovery device being used.	AQM
Refinery	2/21/16, 5/29/16	Failed to submit an updated correction for the accident history within six months for incidents on 8/21/15 and 11/29/15 (RMP)	AQM
Refinery	Various	From time to time, missing caps and plugs (open ended lines) on equipment in VOC service may be discovered through the refinery's internal audit programs	AQM
SRU	6/1/11, 7/18/11, 7/20/11, 10/5/11, 10/17/11, 3/15/13, 8/23/13, 6/3/14, 6/18/15, 12/27/15, 1/23/16, 1/24/16, 4/20/17	SO ₂ emission exceeded permitted limit of 250ppm on a 12 hour rolling average	AQM
SRU	12/11/14	RQ release to air of Sulfur Dioxide	AQM

Affected Unit(s)	Date(s)	Description of Event	Permit Type
SRU	7/25/11, 10/17/11, 10/21/11, 10/29/11, 4/26/12, 5/16/12, 10/22/12, 2/6/14, 11/15/14, 11/19/14, 1/23/16, 1/24/16, 1/25/16, 2/22/16, 8/21/17	Negative Pressure Not Maintained in the Sulfur Pit Back up unit (SRU-2/SCOT 1) not on line when SRU-1/SCOT II was lost due to power failure	AQM
SRU	2/22/16	Excess Visible Emissions	AQM
SRU	8/16/17	RQ release to air of Benzene	AQM
Tetra	9/21/14	Benzene flow restrictor seal on loading arm was discovered to be broken.	AQM
Tetra	7/21/14 to 11/11/14; 7/22/2015 to 7/27/2015		AQM
Tetra	11/27/11, 4/8/13, 8/7/13, 1/7/14, 8/19/14, 4/7/15, 5/19/15, 9/7/15, 12/7/15, 1/23/16 to 2/4/16, 4/11/17, 7/5/18,	32-H-101 3-hour rolling average temperature below permitted minimum	AQM
Tetra	10/26/10, 4/9/11, 4/10/11, 4/21/11, 4/26/11, 5/26/11, 6/1/11, 6/4/11, 8/21/11, 1/30/12, 6/19/12, 8/23/12, 1/23/13, 2/24/15, 11/14/15, 1/30/16, 2/3/16, 1/6/17, 2/7/17, 6/21/18		AQM
Utilities/Boiler House		Main Stack Opacity Greater than Permitted Limits	AQM
Utilities/Boiler House	10/11/12	Boiler 3 Stack Test showed non-compliance with TSP Limit	AQM
Utilities/Boiler House	1/19/16	Boiler 4 NOx Emissions Exceeded the 24-HR Rolling Average Limit	AQM
Utilities/Boiler House	12/24/14	Failed to submit a complete supplement to the Title V permit application within 12 months of RGGI permit issuance.	AQM
Utilities/Boiler House	9/7/11, 9/10/11, 9/11/11, 10/20/11, 10/22/11, 10/25/11, 1/14/12, 1/22/12, 2/6/12, 6/22/12, 6/26/12, 1/23/13, 9/27/13, 8/8/14, 8/22/14, 11/10/14, 12/20/14, 3/29/18, 6/27/18	CO Emissions Exceeded the Hourly Limit	AQM
Utilities/Combustion Turbines	1/22/12, 8/8/14, 12/20/14, 6/10/16, 6/11/16, 6/12/16, 6/14/16, 6/27/18	NOx Emissions Exceeded the Hourly Limit	AQM
Utilities/Combustion Turbines	1/24/12	Stack Test showed non-compliance with H2SO4 TPY Limit; retest on 4/20/12 showed compliance	AQM
Utilities/Cooling Towers	6/30/12, 12/31/15	Quarterly TSS sample was not obtained for cooling tower	AQM
Utilities/Flares	6/1/10 - 6/30/10; 1/23/16 to 1/29/16; 1/31/16 to 2/3/16, 4/3/17	Flare recovery compressors were temporarily out of service	AQM
Utilities/Flares	6/1/10 - 6/30/10, 6/12/11 - 6/18/11	Gas samples from flare header not collected	AQM
Utilities/Flares	5/25/11, 6/6/11, 6/8/11, 4/25/12, 6/22/12	Flare Pilot Outage	AQM
Utilities/Flares	8/1/2018	H2S CEMS not in service	AQM

Affected Unit(s)	Date(s)	Description of Event	Permit Type
Utilities/Flares	6/4/11, 6/14/11, 6/15/11 - 6/16/11, 6/23/11, 6/28/11, 7/4/11 - 7/5/11, 7/25/11, 9/9/11, 9/15/11, 9/30/11, 10/3/11, 10/14/11, 11/21/11, 12/2/11, 12/22/11, 12/24/11, 4/4/12, 4/25/12, 7/5/12, 7/9/12, 7/10/12, 8/6/12, 8/28/12, 10/30/12, 11/17/12, 1/22/13, 3/2/13, 3/10/13, 4/18/13, 4/24/13, 5/7/13, 10/2/13, 11/16/13, 1/3/14, 2/5/14, 4/17/14, 4/22/14, 4/25/14, 8/19/14, 10/10/14, 11/19/14, 12/31/14, 2/7/15, 2/11/15, 3/14/15, 4/7/15, 7/22/15, 9/14/15, 9/29/15, 12/7/15, 2/8/16 to 2/18/16, 10/21/16, 2/8/17, 3/10/17, 3/15/17, 4/12/17, 4/27/17, 7/25/17, 1/9/18, 2/19/18, 7/4-5/18	Hydrocarbon Flaring - release of SO ₂ < 500 lbs	AQM
Utilities/Flares	6/3/11, 7/1/11, 7/6/11 - 7/8/11, 7/23/11, 8/20/11, 10/26/11, 11/17/11, 2/6/12, 2/12/12, 2/13/12, 5/7/12 - 5/10/12, 8/26/12, 2/18/13, 4/8/13, 11/3/13, 12/30/13, 1/3/14, 1/7/14, 3/14/14, 3/28/14, 8/15/14, 8/21/15, 1/23/16 to 2/3/16, 4/11/16, 4/20/16, 6/28/16, 7/14/16, 11/9/16, 4/29/17, 10/16/17	Hydrocarbon Flaring - release of SO ₂ > 500 lbs	AQM
Utilities/Flares	1/23/16 to 2/3/16, 2/9-10/16, 2/17-18/16	Discharge to the flare in excess of 500,000 scf in any 24-hr period	AQM
Utilities/Flares	3/28/17	Fuel gas burned in flare exceeded 162 ppmv H ₂ S on a three hour average basis	AQM
Utilities/Flares	6/28/16	Hydrocarbon Flaring - RQ release of H ₂ S	AQM
Utilities/Flares	10/14/11, 2/13/12, 1/23/16, 1/24/16, 4/29/17	Visible emissions for greater than 5 minutes during a consecutive 2 hour period	AQM
Utilities/Flares	10/26/11 - 12/1/11	North Flare Camera Malfunction	AQM
Utilities/Flares	5/26/11 - 5/27/11	Acid Gas Flaring during Startup of the FCCU	AQM
Utilities/Flares	3/12/14	Acid Gas Flaring and Coker CO Boiler bypass due to Power Interruption, RQ releases of CO, SO ₂ , H ₂ S, HCN, NH ₃ .	AQM
Utilities/Flares	1/23/16, 1/26/16	Acid Gas Flaring associated with refinery wide power loss incident.	AQM
Utilities/Flares	2/22/16	Acid Gas Flaring associated with loss of SRU-1	AQM
Utilities/Package Boilers	3/20/11, 3/22/11	Package Boiler Exceeded Heat Input Limit	AQM

Affected Unit(s)	Date(s)	Description of Event	Permit Type
WWTP - OWS	Q3 2017 7/14/10, 6/7/11, 8/30/11, 2/11/12, 6/22/12, 8/22/12, 1/24/13, 11/18/13, 2/7/14, 4/6/15, 1/23/16, 7/22/16, 5/8/17	Quarterly visual inspection of newly installed drain plugs at Pier 2 and Pier 3 were not formally documented.	AQM
WWTP Incinerator		Rolling 3 hour minimum temperature exceedance	AQM

Attachment B
Draft Revised Permits

May 19, 2014 Month XX, 2019

"Draft/Proposed" Permit: APC-90/0290-OPERATION (Amendment 139)(FE) – Boiler 3
"Draft/Proposed" Permit: APC-90/0291-OPERATION (Amendment 36)(FE) – Boiler 4
Delaware City Power Plant – Boilers 3 & 4 Steam Injection Project and Induced Flue Gas Recirculation Projects
Delaware City Refinery

Formatted: Font: Not Bold

Formatted: Font: Not Bold

Delaware City Refining Company
4550 Wrangle Hill Road
Delaware City, DE 19706

ATTENTION: Jose Dominguez Jeffery Coleman
Refinery Manager

Dear Mr. Dominguez Coleman:

Pursuant to 7 **DE Admin. Code** 1102, Section 2.1.3, approval of the Department of Natural Resources and Environmental Control is hereby granted for the operation of Boilers 3 and 4 Steam Injection Project and Induced Flue Gas Recirculation (IFGR) Project on Riley Stoker Boiler 3 with a design heat input of 618 mmBtu/hour and Foster Wheeler Boiler 4 with a design heat input of 737 mmBtu/hour, located at the Delaware City Power Plant in the Delaware City Refinery in accordance with the following documents:

- Application submitted on Forms AQM-1, AQM-2, AQM-3.1 and AQM-5 dated April 12, 2013 and signed by Herman Seedorf;
- Application submitted on Forms AQM-1, AQM-2, AQM-3.1 and AQM-5 dated October 16, 2014 and signed by Jose Dominguez.
- Settlement Agreement dated July XX, 2019.-

This permit is issued subject to the following conditions:

1. **General Provisions**

- 1.1. This permit expires 5 years from the date of issuance.
- 1.2. Representatives of the Department may, at any reasonable time, inspect this facility.
- 1.3. This permit may not be transferred to another person, owner, or operator unless the transfer has been approved in advance by the Department. Approval (or disapproval) of the permit transfer will be provided by the Department in writing. A request for a permit

The Premcor Refining Group Inc.

Delaware City Power Plant – Boilers 3 & 4 Steam Injection Project

"Draft/Proposed" Permit: APC-90/0290-OPERATION (Amendment 130)(FE) – Boiler 3

"Draft/Proposed" Permit: APC-90/0291-OPERATION (Amendment 63)(FE) – Boiler 4

May 19, 2014 Month XX, 2019

Page 2

transfer shall be received by the Department at least 30 days before the date of the requested permit transfer. This request shall include:

- 1.3.1 Signed letters from each person stating the permit transfer is agreeable to each person; and
- 1.3.2 An Applicant Background Information Questionnaire pursuant to 7 Del. C. Chapter 79 if the person receiving the permit has not been issued any permits by the Department in the previous 5 years.
- 1.4 The owner or operator shall not initiate construction, install, or alter any equipment or facility or air contaminant control device which will emit or prevent the emission of an air contaminant prior to submitting an application to the Department pursuant to 7 DE Admin. Code 1102, and, when applicable 1125, and receiving approval of such application from the Department; except as authorized by this permit or exempted in the Regulations.
- 1.5 The owner or operator shall submit a complete supplement to the Title V permit application pursuant to 7 DE Admin. Code 1130, Section 5(b) within 12 months of the date of issuance of this permit. The application shall address all applicable requirements including those of 40 CFR Part 64 (Compliance Assurance Monitoring) if applicable.

2. Emission Limitations

- 2.1 For the purpose of this condition, "TPY" is defined as "tons emitted in any rolling twelve month period". Air contaminant emission levels from the operation of Boilers 1, 2, 3, 4, 4 package boilers and the CCUs, shall not exceed the following and those specified by 7 DE Admin. Code 1100:
 - 2.1.1 NO_x:
 - 2.1.1.1 NO_x emissions shall not exceed those prescribed in Condition 3, Table 1a.5.i. of Permit: **AQM-003/00016 – Part 3 (Renewal 21)(Revision 53)** dated April 12, 2018, 5, 2014.
 - 2.1.1.2 NO_x emissions shall not exceed those achieved by proper operation of the boilers and associated Steam Injection and IFGR systems and 0.136 lb/mmBtu from each of Boilers 3 & 4 on a 24-hour rolling average.
 - 2.1.1.3 The lb/mmBtu emissions standards for Boilers 3 & 4 in Condition 2.1.1.2 shall not apply during periods not to exceed 6 hours during each planned startup and shutdown. Instead, the boilers shall not exceed 0.2 lbs/mmBtu on a 24 hour average basis.
 - 2.1.1.4 Condition 2.1.1.2 shall not apply during periods when the Steam Injection and/or IFGR is unavailable due to maintenance, malfunction, steam emergency or other abnormal steam demand scenarios for a period not to exceed 7 days as defined in Condition 3.3.
 - 2.1.2 Sulfur Dioxide (SO₂) Emissions: SO₂ emissions from the CCUs, Boilers 1, 2, and 3 and the 4 package boilers combined shall not exceed 306.4 TPY. SO₂ emissions shall not exceed the following unit specific limits: 61.4 TPY for Boiler 1, 71.2 TPY for Boiler 2, 61.4 TPY for Boiler 3 and 39.4 TPY from the 4 package boilers.

The Premcor Refining Group Inc.

Delaware City Power Plant – Boilers 3 & 4 Steam Injection Project

"Draft/Proposed" Permit: APC-90/0290-OPERATION (Amendment 130)(FE) – Boiler 3

"Draft/Proposed" Permit: APC-90/0291-OPERATION (Amendment 63)(FE) – Boiler 4

May 19, 2014 Month XX, 2019

Page 3

- 2.1.3 Carbon Monoxide (CO) Emissions:
CO emissions from the CCUs, Boilers 1, 2, and 3 and the 4 package boilers combined shall not exceed 470.2 TPY. CO emissions shall not exceed the following unit specific limits: 92.0 TPY for Boiler 1, 106.6 TPY for Boiler 2, and 92.0 TPY for Boiler 3 and 59.6 TPY from the 4 package boilers. CO emissions shall not exceed 0.034 lb/mmBtu for Boiler 1, 2 and 3 on a 24-hour rolling average basis and 0.034 lb/mmBtu for each package boiler.
- 2.1.4 Particulate Matter (PM₁₀) Emissions:
2.1.4.1 PM₁₀ emissions from the CCUs, Boilers 1, 2, and 3 and the 4 package boilers combined shall not exceed 311.0 TPY (inclusive of 235.4 TPY H₂SO₄ mist from Boilers 1, 2 & 3 and the CCUs). PM₁₀ emissions shall not exceed the following unit specific limits: 24 TPY for Boiler 1, 27.8 TPY for Boiler 2, and 92 TPY for Boiler 3 and 18.2 TPY for the 4 package boilers.
2.1.4.2 PM₁₀ emissions including H₂SO₄ shall not exceed the following limits:
2.1.4.2.1 0.0104 lb/mmBtu when firing natural gas or refinery fuel gas in Boilers 1, 2, and 3 and each package boiler.
- 2.1.5 Total Suspended Particles (TSP) Emissions:
2.1.5.1 TSP emissions from the CCUs, Boilers 1, 2, and 3 and the 4 package boilers combined shall not exceed 78.7 TPY. TSP emissions shall not exceed the following unit specific limits: 13.5 TPY for Boiler 1, 15.7 TPY for Boiler 2, and 13.5 TPY for Boiler 3 and 9.5 TPY for the 4 package boilers.
2.1.5.2 TSP emissions shall not exceed the following limits:
2.1.5.2.1 0.0062 lb/mmBtu when firing natural gas or refinery fuel gas in Boilers 1, 2 and 3.
2.1.5.2.2 0.0054 lb/mmBtu when firing natural gas or refinery fuel gas in each package boiler. [RESERVED]
- 2.1.6 Volatile Organic Compounds (VOC) Emissions:
2.1.6.1 VOC emissions from the CCUs, Boilers 1, 2, and 3 and the 4 package boilers combined shall not exceed 22.7 TPY. VOC emissions shall not exceed the following unit specific limits: 3.8 TPY for Boiler 1, 4.4 TPY for Boiler 2, and 3.8 TPY for Boiler 3 and 2.5 TPY for the 4 package boilers.
2.1.6.2 VOC emissions shall not exceed the following limits:
2.1.6.2.1 0.0014 lb/mmBtu when firing natural gas or refinery fuel gas in Boilers 1, 2, and 3 and each package boiler.
- 2.1.7 Sulfuric Acid (H₂SO₄) Emissions:
Emissions from the CCUs and Boiler 1, 2, and 3 and the 4 package boilers combined shall not exceed 235.4 TPY. H₂SO₄ emissions shall not exceed the following unit specific limits: 9.4 TPY for Boiler 1, 10.9 TPY for Boiler 2, 71.6 TPY for Boiler 3 and 6.4 TPY for the 4 package boilers.

The Premcor Refining Group Inc.

Delaware City Power Plant – Boilers 3 & 4 Steam Injection Project

"Draft/Proposed" Permit: APC-90/0290-OPERATION (Amendment 130)(FE) – Boiler 3

"Draft/Proposed" Permit: APC-90/0291-OPERATION (Amendment 63)(FE) – Boiler 4

May 19, 2014 Month XX, 2019

Page 4

2.1.8 Lead (Pb) Emissions:

Pb emissions from the CCUs and Boilers 1-3 combined shall not exceed 0.02 tons on a rolling twelve month basis.

- 2.2 None of the boilers shall emit visible air contaminants exceeding 20% opacity for an aggregate of more than 3 minutes in any 1 hour period, or more than 15 minutes in any 24 hour period.
- 2.3 Odors from this source shall not be detectable beyond the plant property line in sufficient quantities such as to cause a condition of air pollution.

3. Operational Limitations:

- 3.1 Only desulfurized refinery fuel gas (RFG) with a hydrogen sulfide content less than 0.1 grain/dscf on a 3 hour rolling average and/or natural gas may be fired in Boilers 1, 2, 3, and 4 and the 4 package boilers.
- 3.2 Except during periods of startup and shutdown, the burner steam injection systems and IFGR systems in Boilers 3 and 4 shall be working in a manner consistent with maintaining 0.163 lb/MMBtu NOX on a 24 hour rolling average.
- 3.3 Except as provided by Condition 3.3.2, Boilers 3 and/or 4 shall not be operated unless the respective Steam Injection and IFGR systems are in use and operating properly whenever the systems are available. Compliance with the emission limitation in 2.1.1 shall constitute proper operation. The Owner/operator shall operate the IFGR system for each boiler in accordance with manufacturer's recommendations.
- 3.3.1 The IFGR and/or Steam Injection systems are considered available except during periods of planned maintenance or malfunction as defined below or during periods of steam emergency or other abnormal steam demand scenarios.
- 3.3.2 "Malfunction" means any sudden and unavoidable failure of air pollution control equipment or process equipment or of a process to operate in a normal or usual manner, and that causes the source to exceed a technology based emission limitation under the permit, due to unavoidable increases in emissions attributable to the malfunction. An emergency or malfunction shall not include noncompliance to the extent caused by improperly designed equipment, lack of preventative maintenance, careless or improper operation, or operator error.
- 3.3.3 Steam emergency/abnormal steam demand means an upset of the refinery steam header system resulting in the need for operating steam generating sources to significantly or rapidly adjust their loads to attempt to maintain or restore stable operations. Such periods shall not exceed 7 days in duration.
- 3.4 At all times, including periods of startup, shutdown, and malfunction, the owner or operator shall maintain and operate the equipment and processes covered by this Permit, including all structural and mechanical components of all equipment and processes and all associated air pollution control equipment, in a manner consistent with good air pollution control practices for minimizing emissions.

4. Compliance Methodology, Testing and Monitoring Requirements

The Premcor Refining Group Inc.

Delaware City Power Plant – Boilers 3 & 4 Steam Injection Project

"Draft/Proposed" Permit: APC-90/0290-OPERATION (Amendment 139)(FE) – Boiler 3

"Draft/Proposed" Permit: APC-90/0291-OPERATION (Amendment 63)(FE) – Boiler 4

May 19, 2014 Month XX, 2019

Page 5

- 4.1 Compliance with Condition 2.1.1 for Boilers 1-2, 3, 4 and the CCUs shall be demonstrated using a Continuous Emissions Monitoring Systems (CEMS) for NO_x and O₂. The CEMS for Boilers 1-2, 3 and the CCUs shall conform to the applicable Performance Specifications in 40 CFR, Part 60, Appendix "B" and the Quality Assurance/Quality Control (QA/QC) procedures for NO_x CEMS in accordance with 40 CFR Part 60, Appendix "F". The CEMS for Boiler 4 shall conform to the applicable Performance Specifications in 40 CFR, Part 75, Appendix "A" and the Quality Assurance/Quality Control (QA/QC) procedures for NO_x CEMS in accordance with 40 CFR Part 75, Appendix "B". Compliance with Condition 2.1.1 for the 4 package boilers shall be based on annual stack testing of each package boiler in accordance with Condition 4.8 of this permit.
- 4.2 Compliance with Condition 2.1.2 shall be demonstrated using the Refinery Fuel Gas H₂S Continuous Monitoring System (CMS) for emissions from Boilers 1, 2 and 3. The CEMS shall conform to Performance Specification 2 in 40 CFR, Part 60, Appendix "B" and the Quality Assurance/Quality Control (QA/QC) procedures in accordance with 40 CFR Part 60, Appendix "F".
- 4.3 Compliance with Condition 2.1.3 shall be demonstrated by using CEMS on Boiler 2 and by a stack test based emissions factor and fuel flow rate for Boilers 1, 2 and 3. The QA/QC procedures for the CO CEMS shall be established in accordance with the procedures in Appendix "F" of 40 CFR 60. Compliance with Condition 2.1.3 for the 4 package boilers shall be based on annual stack testing of each package boiler in accordance with Condition 4.9 of this permit.
- 4.4 Compliance with Conditions 2.1.4, 2.1.5 and 2.1.6 shall be demonstrated by firing only natural gas or by using annual stack test based emissions factors while firing RFG and RFG fuel flow rates for the boilers.
- 4.5 Compliance with Condition 2.1.7 for Boilers 1-2 and 3 shall be demonstrated by applying the fuel gas monitored H₂S content to the H₂SO₄ conversion factor.
- 4.6 Compliance with Condition 2.1.8 shall be based on firing only natural gas or, desulfurized fuel gas.
- 4.7 Compliance with Conditions 2.2 for Boilers 1-2, 3 and 4 shall be based on COMS. The COMS shall conform to Performance Specification 1 in 40 CFR, Part 60, Appendix "B".
- 4.9 The Company shall conduct the following stack tests for Boilers 1 and 3 annually:
 - 4.9.1 EPA Reference Method 5 for TSP
 - 4.9.2 EPA Reference Method 5B/202 for PM₁₀, including H₂SO₄
 - 4.9.3 EPA Reference Method 10 for CO except for Boiler 2
 - 4.9.4 EPA Reference Method 25 A for VOC
 - 4.9.5 EPA Reference Method 8 for H₂SO₄
 - 4.9.6 Within 90 days after achieving the maximum production rate at which the facility will be operated, but not later than 180 days after initial startup of such facility, the owner or operator shall conduct performance test(s) and furnish the

The Premcor Refining Group Inc.

Delaware City Power Plant – Boilers 3 & 4 Steam Injection Project

"Draft/Proposed" Permit: APC-90/0290-OPERATION (Amendment 130)(FE) – Boiler 3

"Draft/Proposed" Permit: APC-90/0291-OPERATION (Amendment 63)(FE) – Boiler 4

May 19, 2014 Month XX, 2019

Page 6

Department with a written report of the results of such performance test(s) in accordance with the following general provisions:

- 4.9.6.1 One original and 2 copies of the test protocol shall be submitted a minimum of 30 days in advance of the tentative test date to the address in Condition 6.3. The tests shall be conducted in accordance with the State of Delaware and Federal requirements.
- 4.9.6.2 The test protocol shall be approved by the Department prior to initiating any testing. Upon approval of the test protocol, the Company shall schedule the compliance demonstration with the Air Surveillance and Engineering & Compliance Branches. The Department must observe the test for the results to be considered for acceptance, unless the Department determines in advance, in writing, that the test need not be observed. Further, the Department may in its discretion determine based on its observation of the test that it need not observe the entire test.
- 4.9.6.3 The final results of the testing shall be submitted to the Department within 90 days of the test completion. One original and 2 copies of the test report shall be submitted to the addresses below:

Original and One Copy to:

Engineering & Compliance Group
Attn: Assigned Engineer
655 S. Bay Road, Ste. 5N
Dover, DE 19904

One Copy to:

Air Surveillance Group
Attn: Program Manager
715 Grantham Lane
New Castle, DE 19720

Formatted: Space After: 0 pt

- 4.9.6.4 To be considered valid, the final results report shall include the emissions test report (including raw data from the test) as well as a summary of the results and a statement of compliance or non-compliance with permit conditions signed by a member of the Company's Health, Safety and Environment department.
 - 4.9.6.5 The results must demonstrate to the Department's satisfaction that the emission unit is operating in compliance with the applicable regulations and conditions of this permit; if the final report of the test results shows non-compliance the owner or operator shall propose corrective action(s). Failure to demonstrate compliance through the test may result in enforcement action.
 - 4.9.6.6 The Company may petition the Department for less frequent testing if future data shows that testing on an annual basis is unwarranted.
- 4.10 Compliance with Condition 3.1 shall be based on an instrument installed for continuously monitoring and recording the concentration (dry basis) of H₂S in RFG before it is combusted in any fuel burning device. The instrument shall be located downstream of all process steps which impact the composition of RFG prior to its being combusted in any fuel burning device. This instrument shall conform to the QA/QC requirements of Appendix "F" in 40 CFR 60. The H₂S monitor shall conform to Performance Specification

The Premcor Refining Group Inc.

Delaware City Power Plant – Boilers 3 & 4 Steam Injection Project

"Draft/Proposed" Permit: APC-90/0290-OPERATION (Amendment 130)(FE) – Boiler 3

"Draft/Proposed" Permit: APC-90/0291-OPERATION (Amendment 63)(FE) – Boiler 4

May 19, 2014 Month XX, 2019

Page 7

7 of 40 CFR 60, Appendix "B". Method 11 of 40 CFR 60, Appendix "A" shall be used for conducting the relative accuracy evaluations.

- 4.11 Compliance with Condition 3.2 shall be based on the record keeping requirements.
- 4.12 Department representatives shall be given the opportunity to witness all stack emission testing and monitor certification testing including any test audits conducted on the monitors as part of the Quality Assurance Program.
- 4.13 Compliance with Conditions 2.3 and 3.3 shall be based on information available to the Department, which may include, but is not limited to, monitoring results, opacity and process operating data.

5. Record Keeping Requirements

- 5.1 The Company shall maintain all records necessary for determining compliance with this permit in a readily accessible location for 5 years and shall make these records available to the Department upon written or verbal request.
- 5.2 The following records shall be maintained for a period of 5 years:
 - 5.2.1 Log of all operating hours of each boiler clearly showing the hours of operation with different fuel types, i.e., hours of operation with natural gas, refinery fuel gas, and the amount of each fuel type consumed;
 - 5.2.2 Rolling 24-hour heating values of the fuels combusted;
 - 5.2.3 Opacity readings recorded by the COMS;
 - 5.2.5 Log of daily qualitative stack observations for the package boilers
 - 5.2.6 CEMS data including calibration log and results of all Cylinder Gas Audits and all Relative Accuracy Test Audits.

6. Reporting Requirements

- 6.1 Emissions in excess of any permit condition or emissions which create a condition of air pollution shall be reported to the Department immediately upon discovery and after activating the appropriate site emergency plan, in the following manner:
 - 6.1.1 By calling the Department's Environmental Emergency Notification and Complaint number (800) 662-8802, if the emission poses an imminent and substantial danger to public health, safety or the environment.
 - 6.1.2 Other emissions in excess of any permit condition or emissions which create a condition of air pollution may be called in to the Environmental Emergency Notification and Complaint number (800) 662-8802 or faxed to (302) 739-2466. The ability to fax in notifications may be revoked upon written notice to the Company by the Department in its sole discretion.
 - 6.1.3 In addition to complying with Conditions 6.1.1 and 6.1.2 of this permit, the Owner/Operator shall satisfy any reporting required by the "Reporting of a Discharge of a Pollutant or an Air Contaminant" regulation, within 30 calendar days of becoming aware of an occurrence subject to reporting pursuant to these conditions. All reports submitted to the Department shall be submitted in writing and shall include the following information:

The Premcor Refining Group Inc.

Delaware City Power Plant – Boilers 3 & 4 Steam Injection Project

"Draft/Proposed" Permit: APC-90/0290-OPERATION (Amendment 130)(FE) – Boiler 3

"Draft/Proposed" Permit: APC-90/0291-OPERATION (Amendment 63)(FE) – Boiler 4

May 19, 2014 Month XX, 2019

Page 8

- 6.1.3.1 The name and location of the facility;
- 6.1.3.2 The subject sources that caused the emissions;
- 6.1.3.3 The time and date of the first observation of the excess emissions;
- 6.1.3.4 The cause and expected duration of the excess emissions;
- 6.1.3.5 For sources subject to numerical emission limitations, the estimated rate of emissions (expressed in the units of the applicable emission or operational limitation) and the operating data and calculations used in determining the magnitude of the excess emissions; and
- 6.1.3.6 The proposed corrective actions and schedule to correct the conditions causing the excess emissions.

6.1.4— Emissions on the same day from the same emission unit may be combined into one report. Emissions from the same cause that occur contemporaneously may also be combined into one report. The Owner/Operator shall submit an electronic copy of all required reports to the Department's compliance engineer assigned to the Refinery.

6.2 The Company shall comply with the following semi-annual excess emissions reports. The reports for the preceding semi-annual period shall be submitted to the Department by January 31 and July 31 of each calendar year with a summary of all excess emissions for the semi-annual period. The summary shall include:

- 6.2.1 The name and location of the facility;
- 6.2.2 The subject sources that caused the excess emissions;
- 6.2.3 The time and date of the first observation of the excess emissions;
- 6.2.4 The cause and expected duration of the excess emissions;
- 6.2.5 The estimated amount of emissions (expressed in the units of applicable emission limitation) and the operating data and calculations used in determining the magnitude of the excess emissions; and
- 6.2.6 The proposed corrective actions and schedule to correct the conditions causing the excess emissions.
- 6.2.7 All periods of opacity exceedances.

6.3 Send one (1) original to:

The Program Administrator
Division of Air Quality
655 S. Bay Road, Suite 5N
Dover, DE 19901

and one (1) copy of all required reports to:

Program Manager
Engineering and Compliance Group
715 Grantham Lane
New Castle, DE 19720

7. Administrative Conditions

The Premcor Refining Group Inc.

Delaware City Power Plant – Boilers 3 & 4 Steam Injection Project

"Draft/Proposed" Permit: APC-90/0290-OPERATION (Amendment 130)(FE) – Boiler 3

"Draft/Proposed" Permit: APC-90/0291-OPERATION (Amendment 63)(FE) – Boiler 4

May 19, 2014 Month XX, 2019

Page 9

- 7.1 This permit shall be available on the premises.
- 7.2 This permit authorizes the operation of the equipment authorized to be constructed by **Permit: APC-90/0290-CONSTRUCTION (Amendment 10) – Boiler 3** and **Permit: APC-90/0291-CONSTRUCTION (Amendment 3) – Boiler 4** dated July 15, 2103 and supersedes **Permit: APC-90/0290-OPERATION (Amendment 8) – Boiler 3** and **Permit: APC-90/0291-CONSTRUCTION (Amendment 2) – Boiler 4** dated May 26, 2009; **Permit: APC-90/0290-OPERATION (Amendment 10) – Boiler 3, & Permit: APC-90/0291-OPERATION (Amendment 3) – Boiler 4** dated May 19, 2014, and **Permit: APC-90/0290-CONSTRUCTION/OPERATION (Amendment 12) – Boiler 3, & Permit: APC-90/0291-CONSTRUCTION/OPERATION (Amendment 5) – Boiler 4** dated January 15, 2015.
- 7.3 Failure to comply with the provisions of this permit constitutes good cause for suspension or revocation of this permit.

Sincerely,

Paul E. Foster, P.E., Angela D. Marconi, P.E., BCEE
Program Manager
Engineering & Compliance Branch

PEF:CRR:sibADM:LTR
F:\ENGLAND\COMPLIANCE\CRR\err-14026.doe\LTR\ltr19015.doc

pc: Dover Title V File
Dawn Minor
Lindsay Rennie

Formatted: Font: 9 pt

Formatted: Font: 10 pt

March 23, 2017 Month XX, 2019

**"Draft/Proposed" Permit: APC-82/0981-OPERATION (Amendment 132)(NSPS)(F)E
Fluid Catalytic Cracking Unit (FCCU), FCCU Carbon Monoxide Boiler, FCCU COB Selective
Non-Catalytic Reduction (SNCR) System and Wet Gas Scrubber System**

Delaware City Refining Company
Delaware City Refinery
4550 Wrangle Hill Road
Delaware City, DE 19706

ATTENTION: Jose Dominguez Jeffery Coleman
Refinery Manager

Dear Mr. Dominguez Coleman:

Pursuant to 7 DE Admin. Code 1102 Section 2, approval of the Department of Natural Resources and Environmental Control (Department) is hereby granted for the operation of the Fluid Catalytic Cracking Unit (FCCU), its Carbon Monoxide Boiler (COB), its Hamon-Research-Cottrell Selective Non-Catalytic Reduction (SNCR) System in the FCCU COB and the Wet Gas Scrubber (WGS) train consisting of a Belco Pre-Scrubber, an amine based Cansolv Regenerative Wet Gas Scrubber with caustic polisher, hereafter all components are collectively referred to as "the FCCU WGS System" at the Delaware City Refinery, 4550 Wrangle Hill Road in Delaware City, Delaware in accordance with the following:

Formatted: Font: (Default)
Tahoma, 10 pt

- Application submitted on Form Nos. AQM-1, AQM-2, AQM-3.1, AQM-4.9 and AQM-5 dated December 16, 2014 signed by Jose Dominguez.
- Electronic mail with attachment from Larry Boyd to Ravi Rangan dated April 21, 2015 detailing FCCU SNCR NH₃ emissions.
- Electronic mail from Larry Boyd to Ravi Rangan dated April 22, 2015 with comments on the FCCU SNCR Draft Permit.
- Letter from Larry Boyd to Ravi Rangan dated March 13, 2017 detailing compliance methodology for HCN emissions during full burn operation.
- Settlement Agreement dated July XX, 2019.

This permit is issued subject to the following conditions:

1. **General Provisions**

- 1.1. This permit expires five years from the date of issuance.
- 1.2. Representatives of the Department may, at any reasonable time, inspect this facility.
- 1.3. This permit may not be transferred to another person, owner, or operator unless the transfer has been approved in advance by the Department. A request for a permit

"Draft/Proposed" Permit: APC-82/0981-OPERATION (Amendment 132)(NSPS)(FE)

Delaware City Refining Company

FCCU, FCCU COB, FCCU COB SNCR System and Wet Gas Scrubber System

March 23, 2017 Month XX, 2019

Page 2

Formatted: Font: (Default)
Tahoma, 10 pt

transfer shall be received by the Department at least 30 days before the date of the requested permit transfer. This request shall include:

- 1.3.1 Signed letters from each person stating the permit transfer is agreeable to each person; and
- 1.3.2 An Applicant Background Information Questionnaire pursuant to 7 Del. C., Chapter 79 if the person receiving the permit has not been issued any permits by the Department in the previous 5 years.

Approval (or disapproval) of the permit transfer will be provided by the Department in writing.

- 1.4. The owner or operator shall not initiate construction, install, or alter any equipment or facility or air contaminant control device which will emit or prevent the emission of an air contaminant prior to submitting an application to the Department pursuant to 7 DE Admin. Code 1102, and, when applicable 1125, and receiving approval of such application from the Department; except as authorized by this permit or exempted in the Regulations.
- 1.5. The owner or operator shall submit a complete supplement to the Title V permit application pursuant to 7 DE Admin. Code 1130, Section 5(b) within 12 months of the date of issuance of this permit. The application shall address all applicable requirements including those of 40 CFR Part 64 (Compliance Assurance Monitoring) if applicable.

2. **Emission Limitations**

- 2.1. Air contaminant emission levels from the FCCU WGS System through the WGS stack¹ shall not exceed those specified in the Regulations at 7 DE Admin. Code 1100, *et. seq.* and the following²:

2.1.1. Volatile Organic Compound (VOC) Emissions

- 2.1.1.1. VOC emissions shall not exceed 0.40 lb/mmdscf and 41.4 TPY.
- 2.1.1.2. The leak detection and repair requirements to control fugitive VOC emissions from the FCCU shall be in accordance with the requirements in 40 CFR 60, Subpart GGG for existing components in light liquid and gaseous service and in accordance with 40 CFR part 63 subpart CC for new components in light liquid and gaseous service. The leak detection and repair requirements to control fugitive emissions from the FCCU shall be in accordance with the Consent Decree for both new and existing components in light liquid and gaseous service.

2.1.2. Nitrogen Oxide (NO_x) Emissions

- 2.1.2.1 NO_x emissions shall not exceed those prescribed in Condition 3, Table 1e.4.i of Permit: **AQM-0003/00016-Part 2 (Revision 5) renewal 1)(Revision 2)**, dated April 5, 2011~~12~~, 2018.
- 2.1.2.2 NO_x emissions shall not exceed the following at all times:

¹ This permit specifically does not authorize any emissions through the Goggle valve and its bypass stack.

² Tons per year (TPY) is defined as "tons per rolling twelve months" unless otherwise specified.

" Draft/Proposed" Permit: APC-82/0981-OPERATION (Amendment 132)(NSPS)(FE)

Delaware City Refining Company

FCCU, FCCU COB, FCCU COB SNCR System and Wet Gas Scrubber System

March 23, 2017 Month XX, 2019

Page 3

Formatted: Font: (Default)
Tahoma, 10 pt

Formatted: Indent: Left: 0",
First line: 0"

Formatted: Indent: Left:
1.5"

2.1.2.2.1 137.0 ppmvd @ 0% oxygen on a 7-day rolling average basis.
2.1.2.2.2 100.7 ppmvd @ 0% oxygen on a 365-day rolling average basis.

2.1.2.3 NO_x emissions shall not exceed those achieved by proper operation of the SNCR as follows:

2.1.2.3.1 NO_x emissions shall not exceed 108.2 ppmvd @ 0 % oxygen on a 7-day- rolling average basis.

2.1.2.3.2 NO_x emissions shall not exceed 79.6 ppmvd @ 0 % oxygen on a 365-day- rolling average basis.

2.1.3. Particulate Matter (TSP/PM₁₀)

Particulate matter emissions shall not exceed 1 lb/1000 lb of coke burned and 203 TPY.

2.1.4 Sulfuric Acid (H₂SO₄) Emissions

H₂SO₄ emissions shall meet one of the following standards:

2.1.4.1 H₂SO₄/SO₃ emissions shall be reduced by at least 40% across the wet gas scrubber system; or

2.1.4.2 The outlet concentration of H₂SO₄/SO₃ from the stack shall be no greater than 10 ppmvd.

2.1.5 Sulfur Dioxide (SO₂) Emissions

SO₂ emissions shall not exceed 25 ppmvd @ 0% O₂ on a rolling 365 day average, 50 ppmvd @ 0% O₂ on a rolling 7 day average, and 352 TPY.

2.1.6 Carbon Monoxide (CO) Emissions

2.1.6.1 CO emissions shall not exceed 500 ppmvd as a 1 hour average and 3,085 TPY.

2.1.6.2 The Company shall not cause or allow the emission of carbon monoxide from the FCCU unless it is burned at no less than 1300°F for at least 0.3 seconds in the FCCU COB, or combusted in the FCCU regenerator when operating in full-burn mode.

2.1.7 Lead (Pb) Emissions

Pb emissions shall not exceed 4.37 E-04 pounds per thousand pounds of coke burned.

2.1.8 Hazardous Air Pollutant (HAP) Emissions

2.1.8.1 The Company shall comply with all the applicable requirements of 40 CFR Part 63, subpart UUU.

2.1.8.2 Hydrogen Cyanide (HCN): HCN emissions from the FCCU WGS shall not exceed 45 lb/hr.

2.1.9 Ammonia (NH₃) Emissions:

**Delaware City Refining Company
FCCU, FCCU COB, FCCU COB SNCR System and Wet Gas Scrubber System**

March 23, 2017 Month XX, 2019

Page 4

Formatted: Font: (Default)
Tahoma, 10 pt

NH₃ emissions shall not exceed 8.5 lb/hour and 37 TPY

- 2.2. The opacity from the FCCU WGS stack shall not be greater than 20% opacity for an aggregate of more than 3 minutes in any 1 hour or more than 15 minutes in any 24 hour period.
- 2.3. Odors from this source shall not be detectable beyond the plant property line in sufficient quantities such as to cause a condition of air pollution.
- 2.4. In the event that the FCCU COB is bypassed and/or shut down, operation of the FCCU shall be in accordance with Attachment "A" of this permit.

In the event of a planned shutdown of the CO Boiler or in the event of planned operation of the CO Boiler at firebox temperatures less than 1300 deg F, the Owner/Operator shall initiate promoted burn in the FCCU and control CO emissions in accordance with Condition 3, Table 1.e.5.i of Permit: **AQM-003/00016** prior to bypassing/shutting down the CO Boiler and/or reducing firebox temperature below 1300 deg F in the CO Boiler.

- 2.5. The emission limitations in Condition 2.1 with the exception of Conditions 2.1.3, 2.1.4 and 2.1.5, shall not apply during periods when the FCCU COB is combusting refinery fuel gas only and during periods of planned shut downs and planned start ups of the FCCU for a period of time not to exceed 80 hours for each planned shut down and each planned start up event. The planned shut down period shall begin 8 hours prior to the time when there is no feed entering the FCCU reaction section. The planned start up period shall begin when dry-out of the FCCU is commenced. The emission limitations in Condition 2.1 shall apply to each planned start up event after the expiration of the 80 hour period following commencement of FCCU dry-out. In lieu of the emission limitations in Condition 2.1, the following emission limitations shall apply during periods when the FCCU COB is combusting refinery fuel gas only and during planned start ups and shut downs of the FCCU:

- 2.5.1. VOC: 9.5 lbs/hr
- 2.5.2. PM — 500 lbs/hr
- 2.5.3. SO₂: 165 lbs/hr
- 2.5.4. CO — 860 lbs/hr

Compliance with these emission limitations shall be determined based on engineering calculations.

3. **Operational Limitations**

- 3.1. The Company shall comply with the following operational limits:
 - 3.1.1. With the exception of regenerator process offgas, the Company shall not burn any fuel in the FCCU COB that contains hydrogen sulfide (H₂S) in excess of 0.10 gr/dscf (162 ppm);
 - 3.1.2. Except as provided in Condition 3.2, the COB, the Belco pre-scrubber, the amine-based Cansolv regenerative WGS, and the caustic polishing scrubber shall be operating properly at all times when the FCCU is operating.

Formatted: Font: (Default)
Tahoma, 10 pt

- 3.1.3. During planned start ups of the FCCU, the FCCU COB and WGS shall be operating prior to introducing feed into the riser reactor of the FCCU. In the event of a planned shut down of the FCCU, the FCCU COB or the WGS, the Company shall continue to operate the FCCU COB and WGS until there is no feed entering the riser reactor of the FCCU prior to commencing shut down of the FCCU COB and the WGS.

These planned start up and shut down provisions will not apply to the COB if the FCCU regenerator is operating in full burn mode.

3.1.4. SNCR Operation

- 3.1.4.1 Except as provided by Condition 3.1.4.3, the FCCU COB shall not be operated while in partial burn mode unless the SNCR system is in use and operating properly whenever the SNCR system is available. Compliance with the emission limitations in 2.1.2 shall constitute proper operation.
- 3.1.4.2 The owner or operator shall operate the SNCR system in accordance with manufacturer's recommendations and shall be operated at all times that it is available.
- 3.1.4.3 The SNCR system is considered available except during periods of planned maintenance or malfunction as defined in Condition 3.1.4.4
- 3.1.4.4 "Malfunction" means any sudden and unavoidable failure of air pollution control equipment or process equipment or of a process to operate in a normal or usual manner, and that causes the source to exceed a technology based emission limitation under the permit, due to unavoidable increases in emissions attributable to the malfunction. An emergency or malfunction shall not include noncompliance to the extent caused by improperly designed equipment, lack of preventative maintenance, careless or improper operation, or operator error.

- 3.2 Except as provided in Condition 2.4, this Permit does not authorize emissions exceeding the limits set forth in Condition 2 including emissions during periods of any unplanned shutdown of the FCCU, or any unplanned shutdown or bypass of the FCCU COB and SNCR, or the Belco prescrubber or WGS system. Instead, in the event of any unplanned shutdown of the FCCU or any unplanned shutdown or bypass of the FCCU COB and SNCR or Belco prescrubber or the WGS system, the Company shall bear the burden of demonstrating to the Department's satisfaction that the Company's continued operation of the FCCU should not subject the Company to an enforcement action for noncompliance with emission limitations or operating standards included in this Permit or otherwise applicable to the facility under 7 DE Admin. Code 1100. Such demonstration must at a minimum be supported by sufficient documentation and emissions data including all relevant emissions calculations, formulas, and any assumptions made thereof. The Department's evaluation shall consider, the specific circumstances of the event, including without limitation 1) the cause of, and the Company's response to, the unplanned shutdown; 2) whether the Company has taken all reasonable and prudent steps to abide by the emissions limit conditions; 3) whether the Company has taken all reasonable and

Formatted: Font: (Default)
Tahoma, 10 pt

prudent steps to minimize the emissions associated with the plant; 4) the degree to which the Company has reduced throughput to the FCCU, and the basis for such degree of reduction; 5) the estimated emissions associated with a complete shutdown of the FCCU; 6) whether the Company had reviewed all prior similar causes of unplanned shutdowns and had taken all reasonable and prudent actions necessary to avoid future similar outages; and 7) the actual emissions during the period of the unplanned shutdown.

- 3.3 There shall be no emissions of uncondensed VOCs from the condensers, hot wells or accumulators of any vacuum producing system.
- 3.4 During process unit turnarounds the Company shall provide for the following:
 - 3.4.1 Depressurization venting of the process unit or vessel to a vapor recovery system, flare, or firebox.
 - 3.4.2 No emission of VOC from a process unit or vessel until its internal pressure is 136 kiloPascals (kPa) (19.7 pounds per square inch atmospheric [psia]) or less.
- 3.5
 - 3.5.1 At all times, including periods of startup, shutdown, and malfunction, the Company shall, to the extent practicable, maintain and operate the facility including all associated air pollution control equipment in a manner consistent with good air pollution control practices for minimizing emissions.
 - 3.5.2 All structural and mechanical components shall be maintained in proper operating condition.

4. **Compliance Methodology**

- 4.1. Compliance with Conditions 2.1.1.1 (VOCs), 2.1.3 (TSP/PM₁₀), 2.1.4 (H₂SO₄), 2.1.7 (Pb), 2.1.8.1 (HAPs) and 2.1.9 (NH₃) shall be based on stack testing to be conducted in accordance with Condition 5 of this permit. The Company shall ensure adequate test ports are provided to carry out such testing in accordance with Regulation No. 17 section 2.3 in the exhaust stack, and upstream of the Belco pre-scrubber in accordance with EPA RM 1 of 40 CFR Part 60, Appendix "A" to ensure representative isokinetic sampling.
- 4.2. Compliance with Condition 2.1.1.2 for new components in light liquid and gaseous service shall be based on compliance with the standards in 40 CFR 63.162 through 63.177.
- 4.3. Compliance with Conditions 2.1.2, 2.1.5, 2.1.6.1, and 3.1.1 shall be based on continuous monitoring systems.
- 4.4. Compliance with Condition 2.1.6.2 is defined as maintaining a firebox temperature of no less than 1300° F as measured on a minute average basis.
- 4.5. Compliance with Condition 2.1.8.2 shall be based on compliance with Condition 2.1.6.1.
 - 4.5.1 Alternatively, during startup, shutdown, malfunction and hot standby events, compliance may be demonstrated based on the work practice standard to maintain the Oxygen (O₂) concentration in the exhaust gas from the regenerator overhead at or above 1 volume percent (dry basis).

"Draft/Proposed" Permit: APC-82/0981-OPERATION (Amendment 132)(NSPS)(FE)

Delaware City Refining Company

FCCU, FCCU COB, FCCU COB SNCR System and Wet Gas Scrubber System

March 23, 2017 Month XX, 2019

Page 7

Formatted: Font: (Default)
Tahoma, 10 pt

- 4.6. Compliance with Conditions 3.1.2 and 3.1.3 shall be based on the monitoring/testing and recordkeeping requirements.
- 4.7. Compliance with Conditions 3.4 shall be based on either piping the uncondensed vapors to a firebox or incinerator. Alternately, the vapors may be compressed and added to the refinery fuel gas. During process unit turnarounds, the Company shall conduct depressurization venting of the process unit or vessel to a vapor recovery system, flare or firebox. The Company shall monitor the pressure in each process or vessel until its internal pressure is 136kPa or less. These actions shall be documented.
- 4.8. Compliance with the standards in 40 CFR subpart GGG shall be based on the test methods and procedures in 40 CFR 60.592 and compliance with the requirements of 40 CFR Part 63 subpart CC shall be based on the standards in 40 CFR 63.648.
- 4.9. Compliance with Condition 3.5 shall be based on information available to the Department concerning the Company's actions with respect to such events, and shall include the Department's review of all available facts and circumstances including, but not limited to, monitoring results, opacity observations, review of operating and maintenance procedures, and inspection of the source.

5. Testing and Monitoring Requirements

- 5.1 Within 60 days after achieving the maximum production rate at which the facility will be operated, but not later than 180 days after initial startup of such facility, the owner or operator shall conduct performance test(s) and furnish the Department with a written report of the results of such performance test(s) in accordance with the following general provisions:
 - 5.1.1 One original and 2 copies of the test protocol including a "Source Sampling Guidelines and Preliminary Survey Form" shall be submitted a minimum of 30 days in advance of the tentative test date to the address in Condition 6.3. The tests shall be conducted in accordance with the State of Delaware and Federal requirements.
 - 5.1.2 The test protocol shall be approved by the Department prior to initiating any testing. Upon approval of the test protocol, the Company shall schedule the compliance demonstration with the Air Surveillance and Engineering & Compliance Branches. The Department must observe the test for the results to be considered for acceptance, unless the Department determines in advance, in writing, that the test need not be observed. Further, the Department may in its discretion determine based on its observation of the test that it need not observe the entire test.
 - 5.1.3 The final results of the testing shall be submitted to the Department within 90 days of the test completion. One original and 2 copies of the test report shall be submitted to the addresses below:

Original and One Copy to:

Engineering & Compliance Branch
Attn: Assigned Engineer
100 W. Water Street, Suite 6A,
Dover, DE 19904

One Copy to:

Air Surveillance Branch
Attn: Stack Test Engineer
715 Grantham Lane
New Castle, DE 19720

"Draft/Proposed" Permit: APC-82/0981-OPERATION (Amendment 132)(NSPS)(FF)

Delaware City Refining Company

FCCU, FCCU COB, FCCU COB SNCR System and Wet Gas Scrubber System

March 23, 2017 Month XX, 2019

Page 8

Formatted: Font: (Default)
Tahoma, 10 pt

- 5.1.4 To be considered valid, the final results report shall include the emissions test report (including raw data from the test) as well as a summary of the results and a statement of compliance or non-compliance with permit conditions signed by a member of the Company's Health, Safety and Environment department.
- 5.1.5 The results must demonstrate to the Department's satisfaction that the emission unit is operating in compliance with the applicable regulations and conditions of this permit; if the final report of the test results shows non-compliance the owner or operator shall propose corrective action(s). Failure to demonstrate compliance through the test may result in enforcement action.
- 5.2 The QA/QC procedures for the SO₂ CEMS shall be established in accordance with the procedures in Appendix "F" of 40 CFR Part 60. For the purpose of determining the Relative Accuracy of the CEMS, the applicable standard shall be 25 ppmvd.
- 5.3 The NO_x CEMS shall be installed and certified by satisfying the requirements of the applicable Performance Specifications in Appendix "A" of 40 CFR Part 60. The QA/QC procedures for the CEMS shall be established in accordance with the procedures in Appendix "B" of 40 CFR Part 60.
- 5.4 Compliance with PM₁₀ emission limits shall be based on performance testing conducted in accordance with Condition 5.1 and annually thereafter, as follows:
- 5.4.1 H₂SO₄: Compliance with emission limits set in accordance with Conditions 2.1.3.1 and 2.1.4 shall be based on testing in accordance with Reference Method 8 in Appendix "A" of 40 CFR Part 60, or other testing methodology approved by the Department.
- 5.4.2 TSP: Compliance with Condition 2.1.3 shall be based on testing in accordance with Reference Method 5B in Appendix "A" of 40 CFR Part 60, or other testing methodology approved by the Department.
- 5.4.3 PM₁₀: Compliance with emission limits set in accordance with Condition 2.1.3 shall be based on testing in accordance with Methods 5B/202, or other testing methodology approved by the Department.
- The Company may petition the Department to decrease the frequency of PM₁₀ performance tests based on the results of any performance testing.
- 5.5 CO: Compliance testing shall be based on CEMS. The CEMS shall be installed and certified by satisfying the requirements of Performance Specifications No. 4 in Appendix "B" of 40 CFR Part 60. The QA/QC procedures for the CEMS shall be established in accordance with the procedures in Appendix "F" of 40 CFR Part 60.
- 5.6 VOC as CH₄: Compliance testing shall be based on Reference Method 25 A in Appendix "A" of 40 CFR Part 60 every three years thereafter. The Company may petition the Department to decrease the frequency of VOC performance tests based on the results of any performance testing
- 5.7 Pb: Compliance shall be based on the stack test based emission factor in terms of lb/1,000 lb coke burn rate. The Company shall conduct additional performance testing in

"Draft/Proposed" Permit: APC-82/0981-OPERATION (Amendment 132)(NSPS)(FE)

Delaware City Refining Company

FCCU, FCCU COB, FCCU COB SNCR System and Wet Gas Scrubber System

~~March 23, 2017~~ Month XX, 2019

Page 9

Formatted: Font: (Default)
Tahoma, 10 pt

accordance with this condition every three years, unless the Department approves less frequent testing.

- 5.8 The Company shall continuously monitor the temperature of the FCCU COB firebox.
- 5.9 The Company shall continuously monitor the pressure drop across the Agglo-filtering modules and Cyclolab Droplet Separators and the quench/pre-scrubber recirculation pump discharge pressure. The determination that the opacity from the FCCU WGS stack, when it is operating, satisfies the requirements of Condition 2.2 shall be based upon the following parametric monitoring:
 - 5.9.1 The minimum delta-P across the Agglo-Filtering modules and Cyclolab Droplet Separators shall be 6 inches of water column, evaluated on a one minute average basis; and
 - 5.9.2 A minimum discharge pressure, evaluated on a one minute average basis, from the quench/pre-scrubber recirculation pumps satisfying the less stringent of:
 - 5.9.2.1 115 psig, or
 - 5.9.2.2 The discharge pressure equivalent to 95% of the average discharge pressure recorded during performance testing performed in accordance with the methods identified in Condition 5.4, provided that such performance testing also includes a demonstration of compliance with the visual emissions standard identified in Condition 2.2 using EPA Method 9.
 - 5.9.3 Notwithstanding Condition 5.9.1 and Condition 5.9.2, if either the differential pressure across the Agglo-Filtering Modules/Cyclolab Droplet Separators or the discharge pressure from the quench/pre-scrubber falls below the minimum levels established under Conditions 5.9.1 and 5.9.2 for greater than 3 minutes in any hour or more than 15 minutes in any 24 hour period, the Company may perform a visual emission test in accordance with EPA Reference Method 9 to establish that the visible emissions do not exceed the opacity standard specified in Condition 2.2 at the reduced parameter level. In such a case, the new minimum value for the parameter in question shall be the average value recorded during the Method 9 test, and shall be used in conjunction with Condition 5.9.1 to evaluate compliance with Condition 2.2.
 - 5.9.4 During periods of full burn operation with the COB bypassed or the COB operating at a reduced level, if visible emissions are observed to be greater than 20% opacity, the Company shall perform a visual emission test in accordance with EPA Reference Method 9 to establish that the visible emissions do not exceed the opacity standard specified in Condition 2.2.
- 5.10 All monitor certifications shall be conducted within 60 days of the unit attaining maximum production but not later than 180 days after unit start up. A "Source Sampling Guidelines and Preliminary Survey Form" must be submitted and found acceptable to the Department at least 30 days prior to the performance testing. Results of the Performance Specification testing shall be submitted to the Department, in triplicate, within 90 days after completion of the testing.

Formatted: Font: (Default)
Tahoma, 10 pt

6. Record Keeping Requirements

- 6.1. The Company shall maintain all records necessary for determining compliance with this permit in a readily accessible location for 5 years and shall make these records available to the Department upon written or verbal request. These records shall include:
 - 6.1.1. CEMS data;
 - 6.1.2. Calibration and audit results;
 - 6.1.3. Stack test results;
 - 6.1.4. The daily FCCU COB fuel usage;
 - 6.1.5. FCCU COB firebox temperature;
 - 6.1.6. Detailed daily records of observations of visible emissions or the absence of visible emissions, or daily visible emissions observations, or other records identified in an approved alternative plan;
 - 6.1.7. Date of each FCCU process unit or vessel turnaround;
 - 6.1.8. Date and duration of seamless bypass operation;
 - 6.1.9. Internal pressure of the process unit or vessel immediately prior to venting to the atmosphere; and
 - 6.1.10. VOC leak repair records required by 40 CFR 60.592 for existing components in light liquid and gaseous service and 40 CFR 63.654 for new components in light liquid and gaseous service.
- 6.2. The rolling 12 month total emissions for each pollutant shall be calculated and recorded for each month in an easily accessible format for each pollutant listed in Condition 2.1.

7. Reporting Requirements

- 7.1. Emissions in excess of any permit condition or emissions which create a condition of air pollution shall be reported to the Department immediately upon discovery by calling the Environmental Emergency Notification and Complaint number, (800) 662-8802.
- 7.2. In addition to complying with Condition 7.1 of this permit, the Company shall satisfy any reporting required by the "**Reporting of a Discharge of a Pollutant or an Air Contaminant**" Regulation, within 30 calendar days of becoming aware of an occurrence subject to reporting pursuant to Condition 7.1. Further the Department may in its discretion require the Company to submit reports not otherwise required by the Regulation. All reports submitted to the Department pursuant to this Condition shall be submitted in writing and shall include the following information:
 - 7.2.1. The name and location of the facility;
 - 7.2.2. The subject source(s) that caused the excess emissions;
 - 7.2.3. The time and date of the first observation of the excess emissions;
 - 7.2.4. The cause and expected duration of the excess emissions;
 - 7.2.5. For sources subject to numerical emission limitations, the estimated rate of emissions (expressed in the units of the applicable emission limitation) and the operating data and calculations used in determining the magnitude of the excess emissions; and
 - 7.2.6. The proposed corrective actions and schedule to correct the conditions causing the excess emissions.

" Draft/Proposed" Permit: APC-82/0981-OPERATION (Amendment 132)(NSPS)(FF)

Delaware City Refining Company

FCCU, FCCU COB, FCCU COB SNCR System and Wet Gas Scrubber System

March 23, 2017 ~~Month XX, 2019~~

Page 11

Formatted: Font: (Default)
Tahoma, 10 pt

- 7.2.7. Emissions on the same day from the same emission unit may be combined into one report. Emissions from the same cause that occur contemporaneously may also be combined into one report.
- 7.2.8. The Company shall submit an electronic copy of all required reports to the Department's compliance engineer assigned to the Refinery.
- 7.3. Semiannual reports for the preceding six month period shall be submitted to the Department by January 31 and July 31 of each calendar year. The semiannual reports required by this section shall be increased in frequency to quarterly reports at the Department's discretion and shall become effective upon request of the Department after reasonable notice to the Company. An electronic copy of all required reports shall be sent to the Department's compliance engineer assigned to the Refinery. The required reports shall contain the following information:
- 7.3.1. A summary of all excess emissions for the six month period;
- 7.3.2. Periods when the FCCU COB firebox temperature fell below 1300° F; and
- 7.3.3. The duration and magnitude of all periods of excess opacity;
- 7.4. Quarterly NO_x CEMS reports for the preceding quarter shall be submitted to the Department for the CEMS required by this permit by January 31, April 30, July 31 and October 31 of each calendar year and shall include the following:
- 7.4.1. Excess emissions and the nature and cause of the excess emissions, if known. The summary shall consist of emission averages, in the units of the applicable standard, for each averaging period during which the applicable standard was exceeded.
- 7.4.2. The date and time identifying each period during which the continuous monitoring system was inoperative, except for zero and span checks, and the nature of system repairs or adjustments.
- 7.4.3. When no excess emissions have occurred and the CEMS have not been inoperative, repaired, or adjusted, such information shall be included in the report.
- 7.5. Quarterly SO₂ and CO CEMS reports for the preceding quarter shall be submitted to the Department by January 30, April 30, July 30 and October 30 of each calendar year and shall include the information required by 40 CFR 60.7(c) and (d).
- 7.6. Annual compliance test reports shall be submitted to the Department within 90 days of completion of the test.
- 7.7. VOC leak repair records shall be submitted to the Department as required by 40 CFR 60.592 for existing components in light liquid and gaseous service and 40 CFR 60.654 for new components in light liquid and gaseous service.
- 7.8. One original of all required reports in hard copy format shall be sent to the address below:
- Air Quality Management Section
Division of Air Quality
Blue Hen Corporate Center
655 S. Bay Road, Suite 5 N State Street Commons
100 W. Water Street, Suite 6A

"Draft/Proposed" Permit: APC-82/0981-OPERATION (Amendment 132)(NSPS)(FE)

Delaware City Refining Company

FCCU, FCCU COB, FCCU COB SNCR System and Wet Gas Scrubber System

~~March 23, 2017~~ Month XX, 2019

Page 12

Dover, DE 199044

One copy of all required reports in hard copy format shall be sent to the address below:

Compliance Engineer
Engineering & Compliance Branch
715 Grantham Lane
New Castle, DE 19720

Formatted: Font: (Default)
Tahoma, 10 pt

8. Administrative Conditions

- 8.1. This permit shall be made available on the premises.
- 8.2. This permit authorizes the operation of the equipment authorized to be constructed by **Permit: APC-82/0981-CONSTRUCTION (Amendment 12)(NSPS)** dated April 23, 2015 and supersedes ~~Permit: APC-82/0981-CONSTRUCTION/OPERATION (Amendment 9)(NSPS) dated April 30, 2012 and Permit: APC-82/0981-OPERATION (Amendment 11)(NSPS) dated October 7, 2014~~ **Permit: APC-82/0981-OPERATION (Amendment 12)(NSPS)** dated March 23, 2017.
- 8.3. Failure to comply with the provisions of this permit may be grounds for suspension or revocation.

Sincerely,

Angela D. Marconi, P.E.
Acting Program Manager
Engineering & Compliance Branch

ADM:CRR:csADM:LTR
F:/EngandCompliance/CRR/err17014.doc/LTR/ltr19016.doc

pc: Dover Title V File
Mark J. Lutrzykowski, P.E.
Dawn Minor
Lindsay Rennie

Formatted: Font: (Default)
Tahoma, 10 pt

ATTACHMENT "A"

CO Boiler Bypass Events – Conversion to Full Burn

The procedures described herein shall apply during periods of transition when the CO Boiler experiences an unplanned start-up or shut-down event.

Rationale:

DCRC is installing a bypass line around the CO boiler to allow for regenerator flue gas to be treated in the wet gas scrubber (WGS) during periods when the CO boiler is not available or otherwise out of service. When the regenerator flue gas is bypassing the CO boiler, the FCCU will be converted to operate in full burn to minimize CO emissions. However, if the CO boiler were to shutdown unexpectedly, it is not possible to instantaneously convert the regenerator from partial burn operation to full burn operation and, thus, the following provisions address the operation of the FCCU during such transition periods.

Interim Control Measures

The Owner/Operator shall comply with the following interim control measures:

1. Unplanned Start-up and Shutdown of Fluid Catalytic Cracker Unit CO Boiler. In the event that the FCCU COB is to be shut down for a period longer than 24 hours, DCRC shall promptly begin necessary process changes to provide for the complete combustion of carbon monoxide. Full CO combustion operation shall be achieved within 24 hours.
2. If there is an emergency shutdown of the FCCU CO Boiler due to upsets or malfunctions, the refinery will take the following steps:
 - Open the bypass line to allow for treatment of regenerator flue gases in the wet gas scrubber;
 - Immediately begin the necessary process changes to allow for the complete combustion of carbon monoxide in the regenerator; and
 - FCCU throughput and operating conditions will be safely adjusted as necessary (see FCCU Turndown Factor below) to allow full CO combustion operation to be achieved within 24 hours of attainment of appropriate operating conditions.

If there is an unplanned or emergency shutdown of the FCCU CO Boiler, the refinery will conduct an evaluation of the cause of the shutdown. If the CO Boiler can be repaired and brought back on line in less than 24 hours, then the regenerator flue gas may continue to bypass the COB to allow it to be repaired or restarted, and combustion promoter need not be added. Until the FCCU CO boiler is returned to normal operation or until full promoted burn conditions are established in the regenerator, in order to minimize FCCU CO emissions, the FCCU feed rate will be reduced to the minimum operating rate as described in the FCCU Turndown Factor below. During this period (24 hours maximum), the requirements in Condition 2.1.6 and 7 **DE Admin. Code** 1111 shall not apply.

Formatted: Font: (Default)
Tahoma, 10 pt

FCCU Turn Down Factor

These procedures have been incorporated to minimize FCCU CO emissions during time periods that the FCCU COB is bypassed.

1. If the Company's initial assessment indicates that the FCCU COB can be returned to service within 24 hours after the unplanned shutdown or emergency shutdown, or full combustion of CO has been achieved to meet applicable emission limits, then no rate cuts will be initiated and combustion promoter need not be added. The FCCU may continue to operate until the COB is restarted.
2. If the Company's initial assessment indicates that the FCCU COB cannot be returned to service within 24 hours after the unplanned or emergency shutdown, the Company shall take the following actions:
 - a. The Company will promptly begin to reduce the FCCU feed rate at a rate of 5,000 bph until the unit is operating at 55,000 bpd; and
 - b. Combustion promoter will be added to the FCCU regenerator when appropriate operating conditions have been achieved. Fully promoted (complete) combustion will be achieved within 24 hours of the start of the unplanned or emergency shutdown.

July 2, 2014 Month XX, 2019

"Draft/Proposed" Permit: APC-97/0503-CONSTRUCTION/OPERATION (Amendment 110)(NSPS)(FE) – CCUs I and II
Delaware City Refinery
CCU Selective Catalytic Reduction (SCR) System Project

Delaware City Refining Company
4550 Wrangle Hill Road
Delaware City, DE 19706

ATTENTION: Jose Dominguez Jeffery Coleman
Refinery Manager

Dear Mr. Dominguez Coleman:

Pursuant to 7 DE Admin. Code 1102, Section 2.1.3, approval of the Department of Natural Resources and Environmental Control is hereby granted for the modification of two (2) combined cycle units (CCUs) each consisting of a General Electric Model PG6101FA Gas Turbine rated at 780 mmBtu/hour (HHV) with a Natural Gas/Refinery Fuel Gas Fired Duct Burner (DB) rated at 192 mmBtu/hr (HHV), a Nooter Erikson Heat Recovery Steam Generator (HRSG) and electric generator rated at 77 MW nominal by the installation of a Turner Envirologic Inc. Selective Catalytic Reduction (SCR) System downstream of each HRSG located at the Delaware City Refinery's Delaware City Power Plant, Delaware City, Delaware in accordance with the following documents:

- Application submitted on Forms AQM-1, AQM-2, AQM-3.1, AQM-4.9 and AQM-5 dated October 23, 2013 and signed by Herman Seedorf.
- Electronic mails to Ravi Rangan from Larry Boyd dated 03.18.2014 and 03.27.2014 and electronic mail to Ravi Rangan from Thomas Godlewski dated 03.28.2014.
- Settlement Agreement dated July XX, 2019.

This permit is issued subject to the following conditions:

1. **General Provisions**

- 1.1. The CCU SCR Project shall be constructed in accordance with the application and this permit. If any changes are necessary, revised plans must be submitted and supplemental approval issued prior to actual construction. Construction authorization expires 3 years after issuance of this permit.
- 1.2. Representatives of the Department may, at any reasonable time, inspect this facility.

Delaware City Refining Company

"Draft/Proposed" Permit: APC-97/0503-CONSTRUCTION/OPERATION (Amendment 110)(NSPS)(FE) – CCUs I and II

CCU SCR Project

July 2, 2014 Month XX, 2019

Page 2

- 1.3. This permit may not be transferred to another location or to another piece of equipment or process.
- 1.4. This permit may not be transferred to another person, owner, or operator unless the transfer has been approved in advance by the Department. Approval (or disapproval) of the permit transfer will be provided by the Department in writing. A request for a permit transfer shall be received by the Department at least 30 days before the date of the requested permit transfer. This request shall include:
 - 1.4.1 Signed letters from each person stating the permit transfer is agreeable to each person; and
 - 1.4.2 An Applicant Background Information Questionnaire pursuant to 7 Del C, Chapter 79 if the person receiving the permit has not been issued any permits by the Department in the previous 5 years.
- 1.5 A separate application to operate pursuant to 7 **DE Admin. Code** Regulation No. 1102 does not need to be submitted to the Department for the equipment or process covered by this permit. The Company shall notify the Department within 5 days of the completion of the construction of the CCU Modification Project and shall schedule an on-site system inspection within 30 days
- 1.6 The provisions of 7 **DE Admin. Code** 1102, Sections 2.1 and 11.3 shall not apply to the operation of equipment or processes for the purposes of initially demonstrating satisfactory performance to the Department of the Steam System Reliability Improvement Project following construction, installation, modification, or alteration of the equipment or processes.
- 1.7 The Company shall not initiate construction, install, or alter any equipment or facility or air contaminant control device which will emit or prevent the emission of an air contaminant prior to submitting an application to the Department pursuant to 7 **DE Admin. Code** 1102, and, when applicable 7 **DE Admin. Code** 1125, and receiving approval of such application from the Department; except as authorized by this permit or exempted in 7 **DE Admin. Code** Regulation No. 1102 Section 2.2.
- 1.8 The owner or operator shall submit a complete supplement to the Title V permit application pursuant to the 7 **DE Admin. Code** 1130 Section 5.2 within 12 months of the date of issuance of this permit. The application shall address all applicable requirements including those of 40 CFR Part 64 (Compliance Assurance Monitoring) if applicable.

2. Emission Limitations

- 2.1 Air contaminant emission levels from each CCU shall not exceed the following and those specified by 7 **DE Admin. Code** 1100¹:
 - 2.1.1 NO_x:

¹ For the purpose of this condition, "TPY" is defined as "tons emitted in any rolling twelve month period". All lb/mmbtu limits shall be on an hourly basis.

Delaware City Refining Company

"Draft/Proposed" Permit: APC-97/0503-CONSTRUCTION/OPERATION (Amendment 110)(NSPS)(FE) – CCUs I and II

CCU SCR Project

July 2, 2014 Month XX, 2019

Page 3

2.1.1.1 NO_x emissions from each CCU shall not exceed the levels specified in the Table 1 below on an hourly basis following:

2.1.1.1.1 15 ppmvd @ 15% O₂ on an hourly average when CCU fires natural gas without duct firing.

2.1.1.1.2 18 ppmvd @ 15% O₂ on an hourly average when CCU fires natural gas with duct firing.

2.1.1.1.3 3 ppmvd @ 15% O₂ on a 24 hour average when CCU fires natural gas without duct firing.

2.1.1.1.4 3.6 ppmvd @ 15% O₂ on a 24 hour average when CCU fires natural gas with duct firing.

Table 1: NO_x Emission Limits

Scenario	Proposed Limit ppmvd @ 15% O₂
CCU on NG without duct firing	3
CCU on NG with duct firing	3.6

2.1.1.2 The owner/operator must comply with the "Facility-wide Emission Limit for Nitrogen Oxides (NO_x)" contained in Part 1, Condition 3, Table 1.j of Permit: AQM-003/00016.

2.1.1.3 The NO_x Emission Limitation of 2.1.1.1.3 and 2.1.1.1.4 shall not apply during periods of planned maintenance of the SCR, when the SCR is unavailable due to malfunction as defined in Condition 3.2.3, or when a petition has been approved in accordance with Condition 2.1.1.4.3.

2.1.1.4 DCRC may submit to DNREC a petition requesting approval through this permit of an alternative to the NO_x emission limitation found in 2.1.1.1.3 and 2.1.1.1.4 subject to the following limitations:

2.1.1.4.1 DCRC shall electronically submit the petition to the Department within three business days of the facility's determination to operate under a temporary alternative limit pursuant to the provisions of this Condition 2.1.1.6. The petition shall include an explanation of both the basis for and duration of the proposed alternative NO_x emission limit, as well as such back-up information as may be necessary to justify the petition

2.1.1.4.2 The proposed alternative limit shall not exceed 15 ppm on NG without duct firing and 18 ppm on NG with duct firing both at 15% O₂ on an hourly rolling average basis as identified in Condition 2.1.1.1.1 and 2.1.1.1.2.

Delaware City Refining Company

"Draft/Proposed" Permit: APC-97/0503-CONSTRUCTION/OPERATION (Amendment 110)(NSPS)(FE) – CCUs I and II

CCU SCR Project

July 2, 2014 Month XX, 2019

Page 4

2.1.1.4.3 If DNREC approves the petition, the alternative limit proposed by DCRC under 2.1.1.4 shall apply no earlier than 3 business days prior to receipt of the petition containing the information necessary for DNREC to make the determination set out in 2.1.1.4.1 and shall extend through the duration authorized by DNREC.

2.1.1.4.4 Approval by the Department of the petition in whole or in part will not be granted unless the company has demonstrated in detail why a temporarily increased limit, subject to 2.1.1.4.2 will result in the emission of less NOx than alternative measures the refinery may otherwise take under its existing permits; and DNREC determines the temporary increase is appropriate, in its discretion, based on the entirety of the circumstances.

2.1.1.5 Operation in accordance with Condition 2.1.1.3 or 2.1.1.4 shall constitute compliance with Conditions 3.2 and 3.4.

2.1.2 Sulfur Dioxide (SO₂) Emissions:

2.1.2.1 36.5 TPY

2.1.3 Carbon Monoxide (CO) Emissions:

2.1.3.1 0.0202 lb/mmBtu when firing NG in the CCUs

2.1.3.2 0.0261lb/mmBtu when firing NG in the CCUs and RFG in the DBs

2.1.3.3 110.9 TPY

2.1.4 Particulate Matter (PM₁₀) Emissions (including H₂SO₄) as measured by the average of the three stack test runs conducted pursuant to Condition 4.3:

2.1.4.1 0.0074 lb/mmBtu when firing NG in the CCUs

2.1.4.2 0.0099 lb/mmBtu when firing NG in the CCUs and RFG in the DBs

2.1.4.3 67 TPY

2.1.5 Total Suspended Particles (TSP) Emissions as measured by the average of the three stack test runs conducted pursuant to Condition 4.3:

2.1.5.1 0.0115 lb/mmBtu when firing NG in the CCUs

2.1.5.2 0.0112 lb/mmBtu when firing NG in the CCUs and RFG in the DBs

2.1.5.3 47.8 TPY

2.1.6 Volatile Organic Compounds (VOC) Emissions as measured by the average of the three stack test runs conducted pursuant to Condition 4.3:

2.1.6.1 0.0021 lb/mmBtu when firing NG in the CCUs

2.1.6.2 0.0046 lb/mmBtu when firing NG in the CCUs and RFG in the DBs

2.1.6.3 19.8 TPY

2.1.7 Sulfuric Acid (H₂SO₄) Emissions as measured by the average of the three stack test runs conducted pursuant to Condition 4.3:

4.1 TPY

Delaware City Refining Company

**"Draft/Proposed" Permit: APC-97/0503-CONSTRUCTION/OPERATION (Amendment 110)(NSPS)(FE) – CCUs I and II
CCU SCR Project**

July 2, 2014 Month XX, 2019

Page 5

2.1.8 Lead (Pb) Emissions:
0.004 TPY

2.1.9 Ammonia (NH₃) Emissions:
5 ppmvd @ 15 % O₂ and 34.3 TPY

2.2 Neither CCU shall emit visible air contaminants exceeding 20% opacity for an aggregate of more than 3 minutes in any 1 hour period, or more than 15 minutes in any 24 hour period.

2.3 Odors from this source shall not be detectable beyond the plant property line in sufficient quantities such as to cause a condition of air pollution.

3. Operational Limitations:

3.1 Only NG may be fired in the combustion chambers of the CCUs. Only NG or desulfurized RFG with a hydrogen sulfide content less than 0.1 grain/dscf on a 3-hour rolling average may be fired in the DBs.

3.2 Except as provided by Conditions 2.1.1.3, 2.1.1.4, and 3.3.2, the CCUs shall not be operated unless the LNBs and SCR systems (when SCR is available) are operating properly. Compliance with the emission limitations in 2.1.1- shall constitute proper operation.

3.2.1 The owner or operator shall operate the SCR system for each CCU in accordance with manufacturer's recommendations. Each SCR system shall be operated at all times that it is available, excluding periods of startup, shutdown, or malfunction.

3.2.2 The SCR system is considered available except during periods of planned maintenance or malfunction as defined in Condition 3.2.3 of the SCR system.

3.2.3 "Malfunction" means any sudden and unavoidable failure of air pollution control equipment or process equipment or of a process to operate in a normal or usual manner, and that causes the source to exceed a technology based emission limitation under the permit, due to unavoidable increases in emissions attributable to the malfunction. An emergency or malfunction shall not include noncompliance to the extent caused by improperly designed equipment, lack of preventative maintenance, careless or improper operation, or operator error.

3.3 ~~Startup and shutdown exceptions~~ During startup and shutdowns of the combustion turbines and/or duct burners the following exceptions shall apply:

3.3.1 CO emissions concentration limitations specified in Condition 2.1.3 shall not apply for two hours following startup or for two hours preceding shutdown of the combustion turbines and/or duct burners. The Company shall follow good air pollution control practices to minimize CO emissions during these periods.

3.3.2 NO_x emission rates from the CCUs shall not exceed 390 ppmv(dry) at 15 % O₂ for a period of 24 hours after initial start-up of the CCU.

3.4

Delaware City Refining Company

"Draft/Proposed" Permit: APC-97/0503-CONSTRUCTION/OPERATION (Amendment 110)(NSPS)(FE) – CCUs I and II

CCU SCR Project

July 2, 2014 Month XX, 2019

Page 6

- 3.4.1 At all times, including periods of startup, shutdown, and malfunction, the owner or operator shall, to the extent practicable, maintain and operate the facility including associated air pollution control equipment in a manner consistent with good air pollution control practice for minimizing emissions.
- 3.4.2 All structural and mechanical components shall be maintained in proper operating condition.

4. Compliance Methodology, Testing and Monitoring Requirements

- 4.1 Compliance with Condition 2.1.1 shall be demonstrated using a Continuous Emissions Monitoring Systems (CEMS) for NO_x and O₂. The CEMS shall conform to the applicable Performance Specifications in 40 CFR, Part 60, Appendix "B" and the Quality Assurance/Quality Control (QA/QC) procedures for NO_x CEMS in accordance with 40 CFR Part 60, Appendix "F".
- 4.2 Compliance with Condition 2.1.3 shall be demonstrated by using CEMS on the CCUs.
- 4.3 Compliance with Conditions 2.1.4, 2.1.5, 2.1.6, and 2.1.7 shall be demonstrated using annual stack test based emissions factors and fuel flow rates for the CCUs and duct burners.
- 4.4 Compliance with Conditions 2.1.2 and 2.1.8 shall be based on firing only NG in the CCUs and either NG or desulfurized RFG in the DBs.
- 4.5 Compliance with Condition 2.1.9 shall be based on monitoring the stack gas by obtaining weekly grab samples from a location downstream of the SCR system using a department approved method. The Company may request the Department for approval of less frequent monitoring if 24 consecutive sampling events indicate the ammonia slip to be less than 2 ppmvd @ 15 % O₂.
- 4.6 Compliance with Conditions 2.2 shall be based on daily qualitative stack observations to determine the presence of any visible emissions when the units are in operation.
 - 4.6.1 If visible emissions are observed, the Company shall take corrective actions and/or conduct a visible observation in accordance with Paragraph 4.6.3 below.
 - 4.6.2 If no visible emissions are observed, no further action is required.
 - 4.6.3 If required under Condition 4.6.3 above, the Company shall, in accordance with Subsection 1.5(c) of Regulation No. 20, conduct visual observations at fifteen-second intervals for a period of not less than one hour except that the observations may be discontinued whenever a violation of the standard is recorded. The additional procedures, qualification and testing to be used for visually determining the opacity shall be those specified in Section 2 & 3 (except for Section 2.5 and the second sentence of Section 2.4) of Reference Method 9 set forth in Appendix A, 40 CFR, Part 60, revised July 1, 1982.
- 4.7 The Company shall conduct the following stack tests annually:
 - 4.7.1 EPA Reference Method 5 for TSP
 - 4.7.2 EPA Reference Method 5B/202 for PM₁₀, including H₂SO₄
 - 4.7.3 EPA Reference Method 25 A for VOC

Delaware City Refining Company

"Draft/Proposed" Permit: APC-97/0503-CONSTRUCTION/OPERATION (Amendment 110)(NSPS)(FE) – CCUs I and II

CCU SCR Project

July 2, 2014Month XX, 2019

Page 7

- 4.7.4 EPA Reference Method 8 for H₂SO₄
- 4.7.5 Within 90 days after achieving the maximum production rate at which the facility will be operated, but not later than 180 days after initial startup of such facility, the owner or operator shall conduct performance test(s) and furnish the Department with a written report of the results of such performance test(s) in accordance with the following general provisions:

4.7.5.1 One original and 2 copies of the test protocol shall be submitted a minimum of 30 days in advance of the tentative test date to the address in Condition 6.3. The tests shall be conducted in accordance with the State of Delaware and Federal requirements.

4.7.5.2 The test protocol shall be approved by the Department prior to initiating any testing. Upon approval of the test protocol, the Company shall schedule the compliance demonstration with the Air Surveillance and Engineering & Compliance Branches. The Department must observe the test for the results to be considered for acceptance, unless the Department determines in advance, in writing, that the test need not be observed. Further, the Department may in its discretion determine based on its observation of the test that it need not observe the entire test.

4.7.5.3 The final results of the testing shall be submitted to the Department within 60 days of the test completion. One original and 2 copies of the test report shall be submitted to the addresses below:

Original and One Copy to:

Engineering & Compliance Branch

Attn: Assigned Engineer

~~655 S. Bay Road, Suite 5N~~ State Street Commons

Grantham Lane

~~Dover, DE 19901~~ 100 W. Water Street, Suite 6A
Dover, DE 19904

One Copy to:

Air Surveillance Branch

Attn: Program Manager

715

New Castle, DE 19720

- 4.7.5.4 To be considered valid, the final results report shall include the emissions test report (including raw data from the test) as well as a summary of the results and a statement of compliance or non-compliance with permit conditions signed by a member of the Company's Health, Safety and Environment department.
- 4.7.5.5 The results must demonstrate to the Department's satisfaction that the emission unit is operating in compliance with the applicable regulations and conditions of this permit; if the final report of the test results shows non-compliance the owner or operator shall propose corrective action(s). Failure to demonstrate compliance through the test may result in enforcement action.
- 4.7.5.6 The Company may petition the Department for less frequent testing if future data shows that testing on an annual basis is unwarranted.

- 4.8 Compliance with Condition 3.1 with respect to the H₂S concentration in RFG shall be based on a continuous monitoring device. This instrument shall be installed for continuously

Delaware City Refining Company

"Draft/Proposed" Permit: APC-97/0503-CONSTRUCTION/OPERATION (Amendment 110)(NSPS)(FE) – CCUs I and II

CCU SCR Project

July 2, 2014 Month XX, 2019

Page 8

monitoring and recording the concentration (dry basis) of H₂S in RFG before it is combusted in any fuel burning device. The instrument shall be located downstream of all process steps which impact the composition of RFG prior to its being combusted in any fuel burning device. These instruments shall conform to the QA/QC requirements of Appendix "F" in 40 CFR 60.

- 4.9 Compliance with Conditions 3.2 through 3.4 shall be based on the record keeping requirements and on information available to the Department, which may include, but is not limited to, monitoring results, opacity and process operating data.
- 4.10 Department representatives shall be given the opportunity to witness all stack emission testing and monitor certification testing including any test audits conducted on the monitors as part of the Quality Assurance Program.

5. Record Keeping Requirements

- 5.1 The Company shall maintain all records necessary for determining compliance with this permit in a readily accessible location for 5 years and shall make these records available to the Department upon written or verbal request.
- 5.2 The following records shall be maintained for a period of 5 years:
 - 5.2.1 Log of all operating hours of each CCU and DB;
 - 5.2.2 Rolling 24-hour heating value of the RFG combusted;
 - 5.2.3 All 3-hour rolling averages of the H₂S content in RFG as measured by the H₂S analyzer;
 - 5.2.4 CEMS data including calibration log and results of all Cylinder Gas Audits and all Relative Accuracy Test Audits.

6. Reporting Requirements

- 6.1 Emissions in excess of any permit condition or emissions which create a condition of air pollution shall be reported to the Department immediately upon discovery and after activating the appropriate site emergency plan, in the following manner:
 - 6.1.1 By calling the Department's Environmental Emergency Notification and Complaint number (800) 662-8802, if the emission poses an imminent and substantial danger to public health, safety or to the environment.
 - 6.1.2 Other emissions in excess of any permit condition or emissions which create a condition of air pollution may be called in to the Environmental Emergency and Complaint number (800) 662-8802 or faxed to (302) 739-2466. The ability to fax in notifications may be revoked upon written notice to the Company by the Department in its sole discretion.
- 6.2 In addition to complying with Condition 6.1 of this permit, the Owner/Operator shall satisfy any reporting required by the "Reporting of a Discharge of a Pollutant or an Air Contaminant" regulation, within 30 days of becoming aware of an

Delaware City Refining Company

"Draft/Proposed" Permit: APC-97/0503-CONSTRUCTION/OPERATION (Amendment 119)(NSPS)(FE) – CCUs I and II

CCU SCR Project

~~July 2, 2014~~ Month XX, 2019

Page 9

occurrence subject to reporting pursuant to these conditions. All reports submitted to the Department shall be submitted in writing and shall include the following information:

- 6.2.1 The name and location of the facility;
 - 6.2.2 The subject source(s) that caused the excess emissions;
 - 6.2.3 The time and date of the first observation of the excess emissions;
 - 6.2.4 The cause and expected duration of the excess emissions;
 - 6.2.5 For sources subject to numerical emission limitations, the estimated rate of emissions (expressed in the units of the applicable emission limitation) and the operating data and calculations used in determining the magnitude of the excess emissions; and
 - 6.2.6 The proposed corrective actions and schedule to correct the conditions causing the excess emissions.
 - 6.2.7 Emissions on the same day from the same emission unit may be combined into one report. Emissions from the same cause that occur contemporaneously may also be combined into one report.
 - 6.2.8 The Company shall submit an electronic copy of all required reports to the Department's compliance engineer assigned to the Refinery.
- 6.3 Except in circumstances when the owner/operator receives approval for a petition submitted pursuant to Condition 2.1.1.4, the owner/operator shall notify the Department within thirty (30) days of a determination that an SCR system governed by this permit will be unavailable for a period exceeding 2 consecutive calendar days.
- 6.3.1 Such notifications shall include:
 - 6.3.1.1 Reason for unavailability of SCR.
 - 6.3.1.2 Anticipated duration of unavailability of SCR.
 - 6.3.1.3 Steps being taken to minimize duration of unavailability and magnitude of emissions during this period.
 - 6.3.1.4 Alternatives considered.
 - 6.3.1.5 Anticipated effect of unavailability of SCR on compliance with NOx cap.
- 6.4 Send one (1) original to:
Director
Division of Air Quality

~~655 S. Bay Road, Suite 5N
—Dover, DE 19901~~
State Street Commons
100 W. Water Street, Suite 6A
Dover, DE 19904
and one (1) copy of all required reports to:

Program Manager
Engineering and Compliance Branch
Air Quality Management Section
715 Grantham Lane

Delaware City Refining Company

"Draft/Proposed" Permit: APC-97/0503-CONSTRUCTION/OPERATION (Amendment 110)(NSPS)(FE) – CCUs I and II

CCU SCR Project

July 2, 2014 Month XX, 2019

Page 10

New Castle, DE 19720

7. Administrative Conditions

- 7.1 This permit shall be available on the premises.
- 7.2 The Company shall notify the Department in writing prior to making any material changes which cause these units to fall under the authority of Title IV of the Clean Air Act.
- 7.3 Failure to comply with the provisions of this permit constitutes good cause for suspension or revocation of this permit.
- 7.4 This permit authorizes the operation of the equipment authorized to be constructed by Permit: APC-97/0503-CONSTRUCTION (Amendment 10)(NSPS) – CCUs I and II dated July 2, 2014 and supersedes Permit: APC-97/0503-OPERATION (Amendment 8)(NSPS) – CCUs I and II dated July 3, 2012.

Sincerely,

Paul E. Foster, P.E. Angela D. Marconi, P.E., BCEE
Program Manager
Engineering & Compliance Branch

PEF:CRR:sibADM:LTR
F:\ENGandCOMPLIANCE\CRR\crr14020.doc\LTR\ltr19014.doc

pc: Dover Title V File
Dawn Minor
Lindsay Rennie