DATE

DRAFT Permit: APC-82/0981-CONSTRUCTION (Amendment 5)(NSPS)
Fluid Catalytic Cracking Unit (FCCU), FCCU Carbon Monoxide Boiler, and
Wet Gas Scrubber System

The Premcor Refining Group, Inc.
Delaware City Refinery
4550 Wrangle Hill Rd.
Delaware City, DE 19706

ATTENTION: Michael Pollauf,
Refinery Manager

Dear Mr. Pollauf:

Pursuant to the State of Delaware “Regulations Governing the Control of Air
Pollution”, Regulation No. 2, Section 2, approval of the Department of Natural
Resources and Environmental Control (the Department) is hereby granted for the
construction of a Belco Pre-scrubber and an amine-based Cansolv Regenerative Wet Gas
Scrubber (WGS) with caustic polisher to be installed downstream of the Fluid Catalytic
Cracking Unit (FCCU) Carbon Monoxide Boiler (COB) at the Delaware City Refinery,
4550 Wrangle Hill Road in Delaware City, Delaware, in accordance with the following
documents:

- Application submitted on Form No. AQM–4 dated February 15, 2004 signed by
  Franklin R. Wheeler;
- Letter dated March 17, 2004 addressed to Secretary John Hughes and signed
  jointly by Franklin R. Wheeler for Motiva Enterprises (Motiva) and Bruce Jones
  for The Premcor Refining Group, Inc. (Premcor) requesting transfer of all
  Motiva’s permits to Premcor;
- Letter dated April 23, 2004 addressed to Franklin Wheeler of Motiva Enterprises,
  LLC and Bruce Jones of The Premcor Refining Group, Inc. and signed by
  Secretary John Hughes; and
- Civil Action No. H-01-0978 lodged in the United States Court for the Southern
  District of Texas on March 21, 2001 (the federal CD);
This permit is issued subject to the following conditions:

1. **General Provisions**

   1.1 This permit expires three (3) years from the date of issue. The construction of the Belco pre-scrubber and amine-based Cansolv regenerative WGS shall be completed by December 31, 2006.

   1.2 The project shall be constructed in accordance with the application described above. If any changes are necessary, revised plans must be submitted and supplemental approval issued prior to actual construction.

   1.3 Representatives of the Department may, at any reasonable time, inspect this facility.

   1.4 The applicant shall, upon completion of the construction, installation, or alteration, request that the Department grant approval to operate.

   1.5 A separate application to operate pursuant to Regulation No. 2 does not need to be submitted to the Department for the equipment or process covered by this construction permit. Upon a satisfactory demonstration by an on-site inspection that the equipment or process complies with all of the terms and conditions of this permit, the Department shall issue a Regulation No. 2 Operation Permit for this equipment or process. The conditions in the existing operation permit shall remain in effect until construction authorized by this permit is completed.

   1.6 The provisions of Regulation No. 2 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 following construction, installation, modification, or alteration of the equipment or processes. The applicant shall notify the Department sufficiently in advance of the demonstration and shall obtain the Department’s prior concurrence of the operating factors, time period, and other pertinent details relating to the demonstration.

   1.7 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 Regulation No. 2, and, when applicable Regulation No. 25, and receiving approval of such application from the...
Department; except as exempted in Regulation No. 2 Section 2.2 of the State of Delaware “Regulations Governing the Control of Air Pollution.”

2. Emission Limitations

2.1 Air contaminant emission levels shall not exceed those specified in the State of Delaware “Regulations Governing the Control of Air Pollution” and the following:

2.1.1 Volatile Organic Compound (VOC) Emissions

2.1.1.1 The Company shall conduct a stack test to measure the VOC emissions from this unit by May 31, 2005, in accordance with a protocol approved by AQM. The Company shall propose a VOC emission limit within 90 days of completion of the stack test for incorporation into this permit. The stack test shall be conducted under representative operating conditions that are likely to indicate the highest emission rate.

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. However, the leak detection thresholds for pumps and valves in light liquid service or gaseous service shall be 2000 ppm and 500 ppm, respectively.

2.1.2 Nitrogen Oxide (NO\textsubscript{X}) Emissions

Reserved.

2.1.3 Total Suspended Particulates (TSP, filterable)

TSP emissions shall not exceed 1lb/1000 lb of coke burned.

2.1.4 Particulate Matter with an Aerodynamic Diameter Less than 10 Microns (PM\textsubscript{10}) Emissions

PM\textsubscript{10} emissions (inclusive of H\textsubscript{2}SO\textsubscript{4}) shall not exceed the sum of TSP and H\textsubscript{2}SO\textsubscript{4} emissions on an annual basis.

2.1.5 Sulfuric Acid (H\textsubscript{2}SO\textsubscript{4}) Emissions

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\(^{1}\) Tons per year (TPY) is defined as “tons per rolling twelve months”.

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H₂SO₄ emissions shall be reduced by at least 40% across the Belco pre-scrubber and shall not exceed 70.5 lb/hour and 309 TPY.

2.1.6 **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 361 TPY.

2.1.7 **Carbon Monoxide (CO) Emissions**
2.1.7.1 CO emissions shall not exceed 500 ppmv and 3768 TPY.
2.1.7.2 The Company shall not cause or allow the emission of carbon monoxide from the FCCU unless it is burned at 1300°F for 0.3 seconds in the FCCU COB.

2.1.8 **Lead (Pb) Emissions**
Pb emissions shall not exceed 4.37 E-04 pounds per thousand pounds of coke burned.

2.1.9 **Hydrogen Sulfide (H₂S) / Reduced Sulfur Compounds (RSC)**
H₂S/RSC emissions shall not exceed 3.68 E-05 pounds per thousand pounds of coke burned.

2.1.10 **Hazardous Air Pollutant (HAP) Emissions**
The Company shall comply with all the applicable requirements of 40 CFR Part 63, subpart UUU.

2.2 The opacity from the FCCU WGS stack shall not be greater than twenty (20%) percent opacity for an aggregate of more than three (3) minutes in any one (1) hour or more than fifteen (15) minutes in any twenty-four (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 to be shut down for a period longer than 24 hours, Premcor 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.

3. **Operational Limitations**

3.1 The owner or operator shall comply with the following operational limits:
3.1.1 The FCCU coke burn rate shall not exceed 56,000 lb/hour on a rolling twelve month basis.

3.1.2 The Company shall not burn any fuel that contains hydrogen sulfide (H₂S) in excess of 0.10 gr/dscf (162 ppm);

3.1.3 Except as provided in Condition 3.1.4, the COB, 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.

3.1.4 The Company shall submit alternative operating scenarios for AQM’s approval that address startup and shutdown conditions. This shall be submitted at least six (6) months prior to the startup of the WGS.

3.2 During periods when the Belco prescrubber and the WGS have to be bypassed, steps shall be taken immediately to reduce the FCCU throughput to a level that does not cause a violation of any ambient air quality standard. Within 90 days of issuance of this permit, the Company shall submit a proposed turndown factor for the Department’s approval that will establish the FCCU feed throughput limit for periods of atypical operations. The reduced throughput level shall continue to be applicable during the entire duration of the bypassed operation.

3.3 The FCCU COB firebox shall be maintained at a temperature greater than 1300°F at all times.

3.4 There shall be no emissions of uncondensed VOCs from the condensers, hot wells or accumulators of any vacuum producing system.

3.5 During process unit the Company shall provide for the following:

3.5.1 Depressurization venting of the process unit or vessel to a vapor recovery system, flare, or firebox.

3.5.2 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.

3.6 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.

3.7 All structural and mechanical components of the equipment or process covered by this Permit shall be maintained in proper operating condition.
3.8 Within thirty (30) days of completion of construction of the Belco pre-scrubber, the amine-based Cansolv regenerative WGS, and the caustic polishing scrubber, the company shall submit a document describing the vendor/manufacturer recommended operating parameters that will be indicative of proper operation of the system. At a minimum this document shall include the operating range/s for the following parameters for each section: pressure drop, pH, gas to liquid ratio (G/L) and amine regenerator temperature.

4. **Compliance Methodology**

4.1 Compliance with Conditions 2.1.1.1, 2.1.3 through 2.1.5 and 2.1.8 through 2.1.10 shall be based on an initial stack test to be conducted within 60 days of the unit achieving maximum production rate but not later than 180 days after initial start up and annually thereafter. The Department will use the stack test result and the approved coke burn rate to determine compliance. The Company shall ensure adequate test ports are provided to carry out such testing in accordance with Regulation No. 17 section 2.3. Test ports shall be located 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, 2.1.6, 2.1.7 and 3.1.2 shall be based on CEMS. The annual emissions shall be determined from the pollutant and flow CEMS data.

4.4 The Company shall submit a proposal to measure SO$_2$ emissions during periods when the COB is bypassed to AQM for its approval and incorporation into the permit, at least 60 days prior to the startup of the FCCU WGS.

4.5 Compliance with Conditions 3.1.1, 3.1.3, 3.3, 3.4 and 3.5 shall be based on the monitoring/testing and recordkeeping requirements.

4.6 Compliance with Conditions 3.4 and 3.5 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 136 kPa or less.
4.7 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.

4.8 Determination of whether acceptable operating procedures are being used will be based on information available to the Department which may include, but is 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 sixty (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 tests for all pollutants listed in Condition 2.1 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 (1) original and two (2) copies of the test protocol shall be submitted a minimum of forty-five (45) 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 Branch. The Department must observe the test for the results to be considered for acceptance.

5.1.3 The final results of the testing shall be submitted to the Department within sixty (60) days of the test completion.

5.1.4 The final report of the results shall be submitted in a format approved by the Air Surveillance Branch, and signed by a corporate official, or his designee, whose signature shall constitute his own, and employer’s certification of compliance, clearly indicating each applicable term and condition of the permit, and whether the test(s) fulfilled the permit condition. 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 SO$_2$ CEMS shall be installed and certified by satisfying the requirements of Performance Specifications No. 2 in Appendix “B” of 40 CFR Part 60. The flow CEMS shall be installed and certified by satisfying the requirements 40 CFR part 75, Appendix “A”. The QA/QC procedures for the 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 NO$_x$: NO$_x$ emissions shall be monitored by CEMS. The CEMS shall be installed and certified by satisfying the requirements of the applicable Performance Specifications in Appendix “A” of 40 CFR part 75. The QA/QC procedures for the CEMS shall be established in accordance with the procedures in Appendix “B” of 40 CFR Part 75.

5.4 TSP (filterable): Compliance testing shall be based on an initial Reference Method 5 testing in Appendix “A” of 40 CFR Part 60, and annually thereafter.

5.5 H$_2$SO$_4$: Compliance testing shall be based on an initial Reference Method 8 testing in Appendix “A” of 40 CFR Part 60, and annually thereafter.

5.6 PM$_{10}$: Compliance testing shall be based on an initial Reference Method 5/202 test or other approved testing methodology in Appendix “M” of 40 CFR Part 51, and annually thereafter.

5.7 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.

5.8 VOC as CH$_4$: Compliance testing shall be based on an initial Reference Method 25 A in Appendix “A” of 40 CFR Part 60, and annually thereafter.

5.9 Pb: Compliance testing shall be based on an initial Reference Method 12 testing in Appendix “A” of 40 CFR Part 60. Future compliance shall be based on the stack test based emission factor in terms of lb/1,000 lb coke burn rate. The Department reserves the right to require more frequent testing if warranted.
5.10 H₂S/RSC: Compliance shall be based on an initial Reference Method 15 testing in Appendix “A” of 40 CFR Part 60. Future compliance shall be based on the stack test based emission factor in terms of lb/1,000 lb coke burn rate. The Department reserves the right to require more frequent testing if warranted.

5.11 The Company shall continuously monitor the temperature of the FCCU COB firebox.

5.12 The Company shall monitor the FCCU coke burn rate.

5.13 The Company shall develop an alternate monitoring plan for evaluating visual emissions and submit it to AQM for its approval at least 6 months prior to startup of the FCCU WGS. Should the Company fail to provide an acceptable alternative, the following condition shall be applicable:

The Company shall conduct daily 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 used for visually determining the opacity shall be those specified in Section 2 and 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. In the event visible emissions are observed by reference Method 22, the Company shall conduct a visible emissions evaluation using the procedures described in Regulation 20, section 1.5 (c).

5.14 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 thirty (30) days prior to the performance testing. Results of the Performance Specification testing shall be submitted to the Department, in triplicate, within 60 days after completion of the testing.

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 five (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 COB fuel usage;
6.1.5 The coke burn rate on a 12 month rolling average basis;
6.1.6 COB firebox temperature;
6.1.7 Log of daily visible emissions observations and any other records identified in an approved alternative plan;
6.1.8 Date of every process unit or vessel turnaround;
6.1.9 Internal pressure of the process unit or vessel immediately prior to venting to the atmosphere;
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;
6.1.11 Prescrubber and WGS operating parameters identified by Condition 3.8; and
6.1.12 Bypass stack SO$_2$ emissions as measured by approved alternative methodology during atypical operations and FCCU turndown showing FCCU throughput rates.

6.2 The rolling twelve (12) month total emissions for each pollutant shall be calculated and recorded each month in a log 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, or from outside the State of Delaware, (302) 739-5072.

7.2 In addition to complying with Condition 8.1 of this permit, any reporting required by the “Reporting of a Discharge of a Pollutant or an Air Contaminant” Regulation, and any other reporting requirements mandated by the State of Delaware, the owner or operator shall, for each occurrence of excess emissions, within thirty (30) calendar days of becoming aware of such occurrence, supply the Department in writing with 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.

7.3 Quarterly reports for the preceding quarter shall be submitted to the Department by January 31, April 30, July 31 and October 31 of each calendar year with the following information:

7.3.1 A summary of all excess emissions for the quarter;
7.3.2 A CEMS report to include system calibration and audit results, the actual daily data capture for the period, and details of out of control periods and during periods when the FCCU WGS is bypassed;
7.3.3 Periods when the FCCU COB firebox temperature fell below 1300 deg. F.;
7.3.4 Exceedances of the rolling 30 day limits of FCCU feed throughput and coke burn rates;
7.3.5 A summary of all periods when the FCCU WGS has been bypassed;
7.3.6 Actual hourly SO₂ emissions during periods when the was FCCU WGS bypassed;
7.3.7 The duration and magnitude of all periods of excess opacity;
7.3.8 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.

7.4 Annual compliance test reports shall be submitted to AQM within 90 days of completion of the test.

7.5 One (1) original of all required reports shall be sent to the address below:

Air Quality Management Section
Division of Air and Waste Management
156 South State Street
Dover, DE 19901

One (1) copy of all required reports shall be sent to the address below:

Ravi Rangan, P.E.
Engineering & Compliance Branch
715 Grantham Lane
New Castle, DE 19720
8. **Administrative Conditions**

8.1 This permit shall be made available on the premises.

8.2 Failure to comply with the provisions of this permit may be grounds for suspension or revocation.

Sincerely,

DRAFT

Program Manager
Engineering & Compliance Branch

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