August 4, 2006

Permit: APC-82/0981-CONSTRUCTION (Amendment 6)(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 Road  
Delaware City, DE 19706

ATTENTION: Andrew Kenner  
Vice President and General Manager

Dear Mr. Kenner:

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 following activities at the Delaware City Refinery, 4550 Wrangle Hill Road in Delaware City, Delaware: (1) 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); and (2) installation of low-NOx burners in the COB. These activities shall be conducted 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;
Consent Decrees, including all addenda thereto, lodged with the United States Court for the Southern District of Texas in Civil Action No. H-01-0978, to the extent applicable to the Delaware City Refinery (Consent Decree);
• Secretary’s Order No. 2005-A-0029 issued on May 31, 2005;
• Application submitted on Form No. AQM-4 dated July 6, 2006 signed by Andrew Kenner; and
• Agreement for NO\textsubscript{X} Emission Reductions From FCCU effective July 10, 2006.

This permit is issued subject to the following conditions:

1. **General Provisions**

1.1. This permit expires on May 31, 2008. The construction of the Belco pre-scrubber and amine-based Cansolv regenerative WGS shall be constructed in accordance with the relevant schedules identified in the Consent Decree.

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 authorized by this permit or 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 propose a VOC emission limit within 90 days of completion of the stack test conducted pursuant to Condition 5.1 for incorporation into this permit.

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 (NOx) Emissions

Within 60 days after achieving the maximum production rate at which the facility will be operated following installation of the low-NOx burners, but not later than 180 days after initial startup of the low-NOx burners, the Company shall conduct stack tests to determine the NOx emissions from the FCCU. The Company shall propose short term concentration (parts per million as a 7 day rolling average) and long term (ton/year as a 365 day rolling average) emission limits for NOx, both at 0% oxygen on a dry basis, within 90 days of completion of this test for approval. The Department will subsequently incorporate NOx emission limits into the operating permit for this equipment.

2.1.3. Particulate Matter with an Aerodynamic Diameter Less than 10 Microns (PM$_{10}$) Emissions

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1 Tons per year (TPY) is defined as “tons per rolling twelve months” unless otherwise specified.
2.1.3.1 Within 60 days after achieving the maximum production rate at which the facility will be operated following installation of the low-NOx burners, but not later than 180 days after initial startup of the low-NOx burners, the Company shall conduct stack tests to determine the ammonia concentration in the uncontrolled stack gas stream, the oxidation factor for conversion of SO$_3$ to H$_2$SO$_4$, the organic condensable matter per AP-42, the sulfate/bisulfate formed and the reduction in the potential H$_2$SO$_4$ formation due to competing formation of sulfate/bisulfate. The company shall propose short term (lb/hr) and long term (ton/year) emission limits for H$_2$SO$_4$ within 90 days of completion of this test for approval. The Department will subsequently incorporate H$_2$SO$_4$ emission limits into the operating permit for this equipment. The proposal shall take into consideration the reduction in the SO$_3$ that is available for conversion to H$_2$SO$_4$ and include a revised H$_2$SO$_4$ PTE based on test data.

2.1.3.2 TSP emissions from the FCCU WGS shall not exceed 1lb/1000 lb of coke burned.

2.1.3.3 The company shall propose for approval short term (lb/hr) and long term (ton/year) PM$_{10}$ emission limits (inclusive of H$_2$SO$_4$) following the proposal required pursuant to Condition 2.1.3.1 and in consideration of the estimated organic condensable matter per AP-42. The Department will subsequently incorporate PM$_{10}$ emission limits into the operating permit for this equipment.

2.1.4. **Sulfuric Acid (H$_2$SO$_4$) Emissions**

H$_2$SO$_4$ emissions shall meet one of the following standards:

2.1.4.1 H$_2$SO$_4$ emissions shall be reduced by at least 40% across the wet gas scrubber system; or

2.1.4.2 The outlet concentration of H$_2$SO$_4$/SO$_3$ from the stack shall be no greater than 10 ppmvd.

2.1.5. **Sulfur Dioxide (SO$_2$) Emissions**

SO$_2$ emissions from the FCCU WGS shall not exceed 25 ppmvd @ 0% O$_2$ on a rolling 365 day average, 50 ppmvd @ 0% O$_2$ on a rolling 7 day average, and 361 TPY.

2.1.6. **Carbon Monoxide (CO) Emissions**

2.1.6.1. CO emissions from the FCCU WGS shall not exceed 500 ppmv as a 1 hour average and 3768 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.

2.1.7. Lead (Pb) Emissions
Pb emissions from the FCCU WGS shall not exceed 4.37 E-04 pounds per thousand pounds of coke burned.

2.1.8. 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 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 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 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 3.1.3, 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.

3.1.3. The Company shall submit for the Department’s consideration and incorporation at its discretion into the operating permit alternative operating scenarios for AQM’s approval that address startup, shutdown and malfunction conditions. These shall be submitted at least 90 days prior to the startup of the WGS.

3.2. During periods when the Belco prescrubber and the WGS have to be bypassed, the Company shall take steps to immediately respond to safely reduce the FCCU throughput to a level that does not cause a violation of any ambient air quality
standard. No later than 90 days prior to startup of the WGS, 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. 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. At all times, including periods of startup, shutdown, and malfunction, the Company shall maintain and operate the equipment and process 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.

3.6. Within 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 to the Department copies of the operating procedures governing normal operations of the equipment.

4. Compliance Methodology

4.1. Compliance with Conditions 2.1.1.1 (VOCs), 2.1.3 (PM\textsubscript{10}), 2.1.4 (H\textsubscript{2}SO\textsubscript{4}), 2.1.7 (Pb) and 2.1.8 (HAPs) shall be based on stack testing to be conducted in accordance with Section 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 2.1.5, 2.1.6 and 3.1.1 shall be based on continuous monitoring systems.

4.4. The Company shall submit a proposal to calculate SO₂ emissions during periods when the FCCU 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. The Company shall also supply documentation supporting its calculations sufficient to demonstrate their effectiveness and applicability.

4.5. Compliance with Condition 3.1.2 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 136kPa or less. These actions shall be documented.

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. Compliance with Condition 3.6 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 the WGS, the Company shall conduct performance tests for the pollutants listed in Conditions 2.1.1.1 (VOCs), 2.1.3 (PM₁₀), 2.1.4 (H₂SO₄), 2.1.7 (Pb) and 2.1.8 (HAPS) 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 shall be submitted a minimum of 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, 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 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 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 of the owner or operator shall propose corrective action(s). Failure to demonstrate compliance through the test may result in enforcement action.

5.2. The SO₂ 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 of 40 CFR part 75, Appendix “A” and Appendix “B”. 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. NOₓ: NOₓ 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. 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 2.1.3.2 shall be based on testing in accordance with Reference Method 5B in Appendix “A” of 40 C.F.R. Part 60, or other testing methodology approved by the Department.

5.4.3 PM$_{10}$: Compliance with emission limits set in accordance with Condition 2.1.3.3 shall be based on testing in accordance with Methods 5B/202, or other testing methodology approved by the Department.

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 CH$_4$: Compliance testing shall be based on an initial Reference Method 25 A in Appendix “A” of 40 CFR Part 60, and 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 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 Company shall conduct additional performance testing in 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 develop an alternate monitoring plan for evaluating visual emissions and submit it to AQM for its approval at least 90 days prior to startup of the FCCU WGS.

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 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 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. Internal pressure of the process unit or vessel immediately prior to venting to the atmosphere;
6.1.9. 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; and
6.1.10. Bypass stack SO2 emissions as calculated according to Condition 4.4 measured by approved alternative methodology during atypical operations and FCCU turndown showing FCCU throughput rates.

6.2. The rolling 12 month total emissions for each pollutant shall be calculated and recorded 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.

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.;

7.3.3. A summary of all periods when the FCCU WGS has been bypassed;

7.3.4. Actual hourly SO2 emissions during periods when the FCCU WGS bypassed;

7.3.5. The duration and magnitude of all periods of excess opacity;

7.4. Quarterly 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 a report of excess emissions, quarterly audit results, data capture for the period and details of out of control periods.

7.5. Annual compliance test reports shall be submitted to the Department within 90 days of completion of the test.

7.6. 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.

7.7. One original of all required reports in hard copy format 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 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

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,

Paul Foster, P.E.
Program Manager
Engineering & Compliance Branch

PEF:CRR:BAS:ss
F:/Engandcompliance/CRR/06013crr

cp: Dover Tile V File
Ravi, Rangan, P.E.
Bruce Steltzer