May 9, 2005

J. L. Blatt
Authorized Account Representative
Union Carbide Corporation
P.O. Box 8361
3200/3300 Kanawha Turnpike
South Charleston, WV 25303

Re: Petition to Use a Default F-factor for PVA Vent Gas Combustion in Unit 25 at Union Carbide's South Charleston Plant (Facility ID (ORISPL) 880026)

Dear Mr. Blatt:

This is in response to your January 19, 2005 petition under §75.66, in which Union Carbide Corporation (UCC) requested to use a default F-factor of 1,674 scf CO_2 /mmBtu for PVA vent gas, when this fuel is combusted in Unit 25 at its South Charleston facility. EPA approves the petition, with conditions, as discussed below.

Background

UCC's South Charleston, West Virginia facility consists of three boilers, Units 25, 26 and 27, which are subject to the NO_x Budget Program requirements of the West Virginia Division of Air Quality (WVDAQ) Series 1 regulation. For Units 25, 26 and 27, this regulation requires UCC to continuously monitor and report ozone season[1] nitrogen oxides (NO_x) mass emissions and heat input beginning on May 1, 2003, in accordance with Subpart H of 40 CFR Part 75.

Unit 25 is a coal-fired unit with a rated capacity of 304,000 pounds of steam per hour. The unit combusts primarily bituminous coal and natural gas. Occasionally, process vent gases and liquid residues are co-fired along with the coal and natural gas. Vent gases and liquid residues account for only about 4% of the total heat input to the unit. UCC uses a dilution extractive NO_x-diluent continuous emission monitoring system (consisting of a NO_x monitor and a CO_2 monitor) and a stack flow monitor to meet the NO_x Budget Program monitoring and reporting requirements for Unit 25. The NO_x emission rate (lb/mmBtu) is calculated using Equation F-6 in Appendix F of 40 CFR Part 75, the heat input rate is calculated using Equation F-15, and NO_x mass emissions are determined using Equation F-24.

Equations F-6 and F-15 require the use of a carbon-based F-factor (F_c) to determine the

[1] The ozone season extends from May 1 through September 30.

hourly NO_x emission rate and heat input values. Since F-factors are fuel-specific, special consideration must be given to the F_c value when different types of fuels are co-fired. Under Part 75, for co-fired hours the owner or operator may either: (1) use Equation F-8 in Appendix F of Part 75 to determine an F_c factor, prorated according to the fraction of the total unit heat input contributed by each fuel; or (2) use an alternative F_c value approved by EPA. On December 15, 2003, UCC petitioned EPA for permission to use option (1) because Unit 25 burns a combination of fossil fuels and non-traditional fuels, for which there are no established F-factors listed in Table 1 of Appendix F.

In the December 15, 2003 petition, UCC proposed a method of determining a prorated F_c value for each hour of operation of Unit 25, based on the specific combination of fuels combusted in the unit during the hour. In applying this F-factor proration methodology, UCC proposed to use the standard F_c values for bituminous coal and natural gas from Table 1 in Appendix F of Part 75 (i.e., 1800 scf/mmBtu and 1040 scf/mmBtu, respectively). For the vent gases, UCC proposed to use F_c values derived from data presented to EPA in two previous petition requests for South Charleston Unit 27, dated September 3, 2002 and November 4, 2003[2]. For the liquid residues, UCC proposed to determine the F_c and gross calorific value (GCV) of each residue just prior to combusting it in the unit.

On May 13, 2004, EPA approved UCC's December 15, 2003 petition, with conditions. For three types of vent gases, i.e., DEK, PDO, and POV, approved F_c values were specified in EPA's response. But for a fourth type of vent gas (PVA) which has historically been produced at the facility, UCC did not propose, and EPA did not approve, an F_c value, because UCC planned to shut down the PVA plant before the 2004 ozone season and did not expect to operate the plant in the future.

However, in the January 19, 2005 petition, UCC informed EPA of a change in plans and indicated that the PVA plant was being reactivated. Therefore, in the 2005 ozone season and beyond, UCC plans to occasionally combust PVA in Unit 25. Using the same methodology that was approved by EPA on May 13, 2004, UCC calculated two F_c factors for PVA combustion, one for an isopropanol solvent (1,674 scf CO_2 /mmBtu) and the other for an acetone solvent (1,629 scf CO_2/mmBtu). UCC proposed to use the higher of these two F_c factors for PVA to calculate the hourly pro-rated F_c value for Unit 25.

EPA's Determination

EPA approves UCC's petition to use an F_c factor of 1,674 scf CO_2 /mmBtu for PVA vent gas when this fuel is combusted in South Charleston Unit 25. The basis for this approval is that the proposed F_c value for PVA was calculated using the same previously-approved methodology that was used to determine the F_c values for the other three vent gases (DEK, PDO, and POV).

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[2] On March 25, 2003, EPA approved the analytical and emission calculation methodologies for vent gas combustion in Unit 27, as proposed by UCC in the September 3, 2002 petition. On April 29, 2004, EPA approved the November 4, 2003 petition, in which UCC did not propose to change the analytical or calculation methods, but simply to recalculate the F-factor, because the use of one type of vent gas (PVA) was being discontinued and replaced with another (POV).

Therefore, condition (1) of the May 13, 2004 petition approval is amended by adding the F_c value of 1,674 scf CO_2 /mmBtu for PVA to the list of approved F_c values for the vent gases combusted in Unit 25. The other three conditions of the May 13, 2004 approval are unchanged by this action and remain in effect.

If, at any time in the future, UCC should discontinue the use of any vent gas or liquid residue currently combusted in Unit 25 or should begin combusting additional vent gases or liquid residues, UCC shall provide notice to EPA and to WVDAQ at least 21 days in advance of any such change in operation. UCC shall also provide F_c calculations for any new vent gases combusted in the unit (if applicable). However, no further petitions under §75.66 are necessary for these operational changes unless UCC desires to use an F-factor calculation methodology for vent gas and liquid residue combustion that differs from the methodology approved by EPA on May 13, 2004.

EPA's determination in this letter relies on the accuracy and completeness of the information provided by UCC in the January 19, 2005 petition and is appealable under Part 78. If you have any questions about this determination, please contact Robert Vollaro, at (202) 343-9116. Thank you for your continued cooperation.

Sincerely,

/s/
Sam Napolitano, Director
Clean Air Markets Division

cc: Jerry Curtin, EPA Region III
Laura Crowder, West Virginia DEP, Division of Air Quality
Robert Vollaro, CAMD