ENGINEERING EVALUATION
CONOCOPHILLIPS SAN FRANCISCO REFINERY; PLANT 16
APPLICATION 10872

1.0 BACKGROUND

1.1 Regulation

Regulation 9, Rule 10 imposes a refinery-wide NOx emission rate limit for most combustion sources at this facility, and provides special emission calculation procedures for units in "startup or shutdown" or "out of service" conditions. These emission calculation procedures substitute source test emission rates for the unknown emission rate during a startup or shutdown (9-10-301.1), and also allow a facility to take credit for the steady state emission rate of units that are not actually in service (9-10-301.2). The procedure in 9-10-301.2 is necessary because facilities could not maintain compliance with the average emission rate limit if the emissions from large, relatively clean combustion sources were discounted when these units were out of service.

9-10-301 **Emission Limit For Facility, NO_x:** Except as provided in Section 9-10-403, effective July 1, 1997, a person shall not exceed a refinery-wide emission rate from affected units, excluding CO boilers, of 0.033 pounds NO_x per million BTU of heat input, based on an operating-day average. Affected units that are undergoing start-up or shutdown and affected units that are out of service are included in the refinery-wide emission rate as follows:

301.1 Units in **Start-up or Shutdown**: For the purposes of determining compliance with the emission limit of Section 9-10-301, the contribution of each affected unit that is in a start-up or shutdown period shall be calculated from the unit's NO_x emission rate, as measured by the initial source test required by Section 9-10-501 or a more recent compliance source test, for that unit at the capacity during the source test.

301.2 Units **Out of Service**: For the purposes of determining compliance with the emission limit of Section 9-10-301, the contribution of each affected unit that is out of service for repairs, maintenance, and/or inspection shall be taken as the operating-day average of NO_x emissions at the average heat input over the previous thirty (30) day period. This calculation procedure shall be utilized no more than sixty (60) days for any one unit in a calendar year.

Definitions are provided for the terms "out of service" and "startup or shutdown":

9-10-212 **Out of Service:** The period of time during which a unit is in an inactive state following shutdown.

9-10-218 **Start-up or Shutdown:** Start-up is that period of time, not to exceed twelve (12) hours unless specifically extended by a permit condition, during which a unit is brought up to its normal operating temperature from a cold start, initially at zero fuel flow, by following a prescribed series of separate steps or operations. Shutdown is that period of time, not to exceed nine (9) hours unless specifically extended by a permit condition, during which a unit is taken out of service from a normal operating mode to an inactive status following a prescribed series of separate steps or operations.

1.2 Proposal

ConocoPhillips has applied to amend the facility Major Facility Permit, in the form of an administrative amendment, in order to amend Permit Condition 1694 (copy attached) to specify when the

special calculation procedures of Regulation 9-10-301.1 and 301.2 are applicable to specific sources. ConocoPhillips feels this is necessary because the language of the rule is not absolutely precise.

No physical or operational changes are proposed. The proposed changes reflect past practice with regard to startups, shutdowns, and associated periods of idling.

Condition 1694 includes a variety of conditions related to facility combustion sources. ConocoPhillips has proposed to add a new section to this condition:

G. Regulation 9-10 Startup / Shutdown Provisions [Basis: 9-10-301]

For determining compliance with Regulation 9-10-301, the contribution of each affected unit that is in a startup or shutdown condition shall be based on the methods described in 9-10-301.1, and the contribution of each affected unit that is in an out of service condition shall be based on the methods described in 9-10-301.2. Low-firing conditions (no higher than 20% of a unit's rated capacity), including refractory dryout periods, shall be considered out of service conditions subject to the 30-day averaging procedure in Regulation 9-10-301.2, including the 60-day annual limit for this procedure.

1. Heaters S-8 (Unit 240, B-1), S-14 (Unit 240, B-401) and S-44 (Unit 200, B-201) shall be considered to be in normal operation whenever they have detectable fuel flow, and shall be considered to be out of service for the purpose of Regulation 9-10-301 whenever they have undetectable fuel flow.

2. For heaters S-43 (Unit 200, B-202), S-351 (Unit 267, B-601/602) and S-371/372 (Unit 228, B-520/521), the durations of startups, shutdowns and refractory dryout periods are defined in Condition 1694, Part D.2 (S-43), Part B.2 (S-351) and Part C.2 (S-371, S-372).

3. For heaters S-10 (Unit 240, B-101) and S-15 through S-19 (Unit 244, B-501 through B-505), the duration of startups, shutdowns and low-firing periods are defined as follows:

a. startup and shutdown periods are not to exceed 24 hours
b. low-firing periods are not to exceed 72 hours

4. For heater S-13 (Unit 240, B-301), the duration of startups, shutdowns and low-firing periods are defined as follows:

a. startup and shutdown periods are not to exceed 72 hours
b. low-firing periods are not to exceed 72 hours

5. For heaters with no CEMS:

S-2 (Unit 229, B-301)
S-3 (Unit 230, B-201)
S-4 (Unit 231, B-101)
S-5 (Unit 231, B-102)
S-7 (Unit 231, B-103)

S-9 (Unit 240, B-2)
S-11 (Unit 240, B-201)
S-12 (Unit 240, B-202)
S-20 (Unit 244, B-506)
S-22 (Unit 248, B-606)
S-29 (Unit 200, B-5)
S-30 (Unit 200, B-101)
S-31 (Unit 200, B-501)
S-336 (Unit 231, B-104)
S-337 (Unit 231, B-105),

startups, shutdowns, and out of service conditions shall each not exceed 5 days in succession at each source.

2.0 DISCUSSION OF PROPOSAL

Each part of the proposed additions to Condition 1694 will be discussed:

Part G: This part defines "low-firing conditions" (no more than 20% of rated capacity) at units with SCR systems as an "out of service" condition eligible for the calculation procedure in 9-10-301.2. Regulation 9-10 does not address low-firing conditions. Like startup and shutdown conditions, low-firing conditions may not allow optimal operation of burner or SCR systems, resulting in higher-than-normal NOX emission rates. Thus, it is appropriate to allow either the calculation procedure of 9-10-301.1 or 9-10-301.2 for low-firing conditions. The proposal classifies a low-firing condition as an "out of service" condition rather than a "startup" or "shutdown" because a low-firing condition is a short-term steady-state condition, rather than a non-steady state condition like a startup or shutdown. Thus, the substance of this part is a clarification that the NOX emission rate corresponding to the 30-day average heat input may be used for "low-firing conditions" rather than an emission rate from a source test at a fixed heat input (under 9-10-301.1). This definition of "low-firing conditions" and the clarification are consistent with the procedure for "NOx Box" sources in Condition 21235, Part 5b (currently undergoing EPA review).

Part G.1: S-8, S-14 and S-44 do not use SCR and do not require any special calculation methods. Therefore, these sources will be considered to be in normal operation whenever they have detectable fuel flow and will be considered to be out of service when they have non-detectable fuel flow. The calculation procedures of 9-10-301.1 and 301.2 will not be used. Thus, this part interprets 9-10-301.1 and 301.2 as voluntary calculation methods that may be used, if needed, to maintain compliance with Regulation 9, Rule 10, but that are not mandatory.

Part G.2: Heaters S-43, S-351, S-371/372 are equipped with SCR and already have defined durations for startups and shutdowns in Condition 1694, as allowed in 9-10-218. These sources also have defined durations for refractory drying periods. Duration of refractory dryout periods is not addressed in this rule, so it

will be considered valid to rely on a pre-existing duration specified in a permit condition.

Part G.3: Heaters S-10 and S-15 through S-19 are equipped with SCR and are all located at process units in the refinery Unicracker Complex. As such, these heaters operate in an integrated fashion and are started and shutdown in a specific sequence. These sources also require idling periods to perform refractory dryout. For S-10, and S-15 through S-19, a 24-hour startup period and a 24-hour shutdown period is necessary to operate these units in accordance with the SCR system manufacturer's recommendations. Also, these units require up to 72 hours of idling (low-fire condition) with SCR inoperable, while other steps in the startup or shutdown sequence are completed.

Part G.4: Heater S-13 is equipped with SCR and is also located at process units in the refinery Unicracker Complex. For S-13, a 72-hour startup period and a 72-hour shutdown period is necessary to operate these units in accordance with the SCR system manufacturer's recommendations. Also, S-13 requires up to 72 hours of idling (low-fire condition) with SCR inoperable, while other steps in the startup or shutdown sequence are completed.

Part G.5: The sources in this part are all "NOx Box" sources – they are subject to Regulation 9, Rule 10 and are not equipped with NOx CEMs. Thus, they must operate within a "NOx Box" defined by firing rate and exhaust oxygen concentration. The NOx emission rate while operating within this box is determined by source test. The "NOx Box" requirements appear in Permit Condition 21235. Revision 1 of the Major Facility Permit (currently undergoing EPA review) includes the following exemption from use of the "NOx Box" emission rates, when the procedures of 9-10-301.2 may be used:

> *5b. Part 5a does not apply to low firing rate conditions (i.e., firing rate less than or equal to 20% of the unit's rated capacity) during startup or shutdown periods or periods of curtailed operation (ex. during heater idling, refractory dryout, etc.) lasting 5 days or less. During these conditions the means for determining compliance with the refinery-wide limit shall be accomplished using the method described in 9-10-301.2 (i.e. units out of service and 30-day averaging data).*

This exemption has been proposed to be added to Condition 21235 in order to address the need to special calculation procedures as discussed in Section 1.1. The proposed amendment simply adds this same limit (5 consecutive days for startups, shutdowns or out-of-service conditions) to Condition 1694.

3.0 DEMONSTRATION OF ADMINISTRATIVE STATUS

The definition of an administrative amendment appears in Regulation 2-6-201:

2-6-201 Administrative Permit Amendment: A non-substantive amendment to a major facility review permit. The following amendments are administrative amendments: changes in recordkeeping format that are not relaxations of applicable requirements, the correction of

typographical errors, changes in permit format that are not alterations of applicable requirements, changes in source descriptions that are not alterations of applicable requirements, changes in the descriptions of applicable requirements that add detail but do not affect substantive requirements, deletion of requirements containing sunset dates that have passed, the identification of administrative changes at a facility (such as a replacement of the facility's responsible official or a change in ownership or operational control of the facility which involves no physical or operational changes to the facility), the deletion of sources, the approval of a District rule into the SIP, the imposition of more frequent emission monitoring requirements, ***and changes to applicable requirements and related monitoring that are not federally enforceable*****.**

Because the proposed amendments are related to non-federally enforceable provisions of Regulation 9, Rule 10, this is an administrative amendment.

PERMIT CONDITIONS

The changes to permit conditions described in Section 1.2 have been made.

RECOMMENDATION

Approve changes to Permit Condition 1694 in Section 1.2. Related Title V permit application 10871 will be the vehicle for submittal to U.S. EPA.

By: _____

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