

Question 22.3

Topic: Reporting of Hourly Heat Input Rate

Question: How do I determine hourly heat input rate for the NO_x affected and NO_x nonaffected units in the configuration described in Question 22.2?

Answer: A. Heat Input Rate Measured at the Main Common Stack Only

For a qualifying configuration under Section A (subtractive apportionment) or Section B (simple apportionment) of Question 22.2, in which heat input rate is measured *only* at the main common stack, apportion the hourly heat input rate at the common stack to each of the units in the configuration (both NO_x affected and NO_x nonaffected units) using Equation F-21a or F-21b in Appendix F of 40 CFR Part 75, for each stack operating hour (i.e., each hour in which fuel is combusted by any unit in the configuration). The summation term in the denominator of these equations must include *all* unit loads (for both the NO_x affected and NO_x nonaffected units).

B. Heat Input Rate Measured at the Main Common Stack and the NO_x Nonaffected Unit(s)

Use the procedures of this section to determine the heat input rate at the NO_x affected units *only* when heat input rate is monitored or measured at both the main common stack and at the individual NO_x nonaffected units (or at a secondary common stack serving only the NO_x nonaffected units).

(1) For all hours in which *any* NO_x affected unit is operating, use Equation SS-3a (see Table 22-4) to calculate the total heat input to the NO_x affected unit(s).

The term on the left side of the minus sign in Equation SS-3a is the hourly total heat input (mmBtu) at the main common stack and is the product of the measured heat input rate and the stack operating time in.

The term on the right side of the minus sign is the total hourly heat input for the NO_x nonaffected units and is the sum of the products of the measured heat input rates (as determined under Question 22.2) and the unit operating times for all of the NO_x nonaffected units.

When a group of NO_x nonaffected units is monitored at a single location, then, for those units, replace the term $HI_{nonaff} t_{nonaff}$ in Equation SS-3a with the term $HI_{cs} * t_{cs}$, where HI_{cs} is the hourly heat input rate measured at the NO_x nonaffected units' monitoring location (designated as a secondary common stack) and t_{cs} is the stack operating time at the secondary common stack.

Use the guidelines in the following three scenarios to ensure proper application of Equation SS-3a:

Scenario #1: For any hour in which the total heat input in mmBtu

measured at the main common stack is greater than the total heat input of the NO_x nonaffected unit(s), use Equation SS-3a to obtain the total hourly heat input for the NO_x affected units.

For each hour in which Scenario # 1 applies, calculate the individual NO_x affected unit heat rates using Equation SS-3b (see Table 22-2).

Note that the summation term in the denominator of Equation SS 3b includes *only* the hourly loads for the NO_x affected unit(s).

Scenario #2: For any hour in which the total heat input at the main common stack is less than or equal to the total heat input for the NO_x nonaffected unit(s), causing Equation SS-3a to give a negative or zero total heat input value for the NO_x affected units, follow these procedures:

- (a) Invalidate the result obtained from Equation SS-3a;
- (b) Consider the heat input rate measured at the main common stack to be correct;
- (c) Disregard all heat input rate(s) measured at the NO_x nonaffected unit(s); and
- (d) Apportion the heat input rate measured at the main common stack to all units (NO_x affected and NO_x nonaffected) in the subtractive stack configuration, using Equation F-21a or F-21b.

Scenario #3: For any hour in which *only* NO_x affected units are operating, set the summation term in Equation SS-3a equal to zero, so that the total heat input for the NO_x affected units equals the heat input measured at the main common stack. Then, use Equation SS-3b to determine the hourly heat input rate for each NO_x affected unit.

(2) For any hour in which *only* NO_x nonaffected units are exhausting to the common stack, do not use Equation SS-3a. Assign a value of zero to the heat input rates for the NO_x affected units. Then, for the NO_x nonaffected units:

- (a) Disregard all measured heat input rate values for the NO_x nonaffected units; and
- (b) Assume that the heat input rate at the main common stack is correct and apportion this heat input rate to the NO_x nonaffected units using Equation F-21a or F-21b.

Table 22-4: Hourly Heat Input Formulas for NO_x Affected Units

Equation Code	Formula	Where
SS-3a	$Hltot_{aff-hr} = HI_{CS}t_{CS} - \sum_{all-nonaff} HI_{nonaff}t_{nonaff}$	<p>$Hltot_{aff-hr}$ = Total hourly heat input for the NO_x affected units (mmBtu)</p> <p>HI_{CS} = Hourly heat input rate at the common stack (mmBtu/hr)</p> <p>HI_{nonaff} = Hourly heat input rate for a particular NO_x nonaffected unit (mmBtu/hr)</p> <p>t_{CS} = Operating time for the common stack (hr)</p> <p>t_{nonaff} = Operating time for a particular NO_x nonaffected unit (hr)</p>
SS-3b	$HI_{aff} = \frac{1}{t_i} \times Hltot_{aff-hr} \times \left(\frac{L_i t_i}{\sum_{all-aff} L_i t_i} \right)$	<p>HI_{aff} = Hourly heat input rate for a particular NO_x affected unit (mmBtu/hr)</p> <p>$Hltot_{aff-hr}$ = Total hourly heat input for all NO_x affected units (mmBtu)</p> <p>t_i = Operating time for a particular NO_x affected unit (hr)</p> <p>L_i = Hourly unit load for a particular NO_x affected unit in the subtractive stack configuration (MW or klb of steam per hour)</p>

References: § 75.16(e)

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