Table A1. Spike Data Sheet

Facility name:		Date:		Time:
Unit(s) tested:		Test personnel:		
Analyzer make and model:				
Serial number:				
Calibration range:				

Q_{probe} (lpm)	Q_{spike} (lpm)	DF^1	MC_{native}			Actual Values		DSE (ppmv)
			Pre	Post	Avg	C_{spike}^2 (ppmv)	MC_{spiked}^3 (ppmv)	
							Average	
							SD	

[1] DF must be less than or equal to 10 percent for extractive CEMS.

[2] C_{spike} = Actual HCl concentration of the spike gas, ppmv.

[3] MC_{spiked} = Measured HCl concentration of the spiked sample at the target level, ppmv.

APPENDIX C TO PART 60—DETERMINA-
TION OF EMISSION RATE CHANGE

1. Introduction

1.1 The following method shall be used to determine whether a physical or operational change to an existing facility resulted in an increase in the emission rate to the atmosphere. The method used is the Student's *t* test, commonly used to make inferences from small samples.

2. Data

2.1 Each emission test shall consist of *n* runs (usually three) which produce *n* emission rates. Thus two sets of emission rates

are generated, one before and one after the change, the two sets being of equal size.

2.2 When using manual emission tests, except as provided in §60.8(b) of this part, the reference methods of appendix A to this part shall be used in accordance with the procedures specified in the applicable subpart both before and after the change to obtain the data.

2.3 When using continuous monitors, the facility shall be operated as if a manual emission test were being performed. Valid data using the averaging time which would be required if a manual emission test were being conducted shall be used.

3. Procedure

3.1 Subscripts a and b denote prechange and postchange respectively.

3.2 Calculate the arithmetic mean emission rate, E, for each set of data using Equation 1.

$$E = \sum_{i=1}^{n} E_i = \frac{E_1 + E_2 \ldots + E_n}{n} \quad (1)$$

Where:

E_i = Emission rate for the i th run.
n = number of runs.

3.3 Calculate the sample variance, S^2, for each set of data using Equation 2.

$$S^2 = \frac{\sum_{i=1}^{n}(E_i - E)^2}{n-1} = \frac{\sum_{i=1}^{n} E_i^2 - \left(\sum_{i=1}^{n} E_i\right)^2 / n}{n-1} \quad (2)$$

3.4 Calculate the pooled estimate, S_p, using Equation 3.

$$S_p = \left[\frac{(n_a - 1) S_a^2 + (n_b - 1) S_b^2}{n_a + n_b - 2}\right]^{1/2} \quad (3)$$

3.5 Calculate the test statistic, t, using Equation 4.

$$t = \frac{E_b - E_a}{S_p \left[\frac{1}{n_a} + \frac{1}{n_b}\right]^{1/2}} \quad (4)$$

4. Results

4.1 If $E_b > E_a$ and $t > t'$, where t' is the critical value of t obtained from Table 1, then with 95% confidence the difference between E_b and E_a is significant, and an increase in emission rate to the atmosphere has occurred.

TABLE 1

Degrees of freedom ($n_a = n_b - 2$)	t' (95 percent confidence level)
2	2.920
3	2.353
4	2.132
5	2.015
6	1.943
7	1.895
8	1.860

For greater than 8 degrees of freedom, see any standard statistical handbook or text.

5.1 Assume the two performance tests produced the following set of data:

Test a	Test b
Run 1. 100	115
Run 2. 95	120
Run 3. 110	125

5.2 Using Equation 1—
$E_a = 100 + 95 + 110/3 = 102$
$E_b = 115 + 120 + 125/3 = 120$
5.3 Using Equation 2—
$S_a2 = (100-102)^2 + (95-102)^2 + (110-102)^2/3 - 1$
  $= 58.5$
$S_b2 = (115-120)^2 + (120-120)^2 + (125-120)^2/3 - 1$
  $= 25$
5.4 Using Equation 3—
$S_p = [(3 - 1)(58.5) + (3 + 1)(25) / 3 + 3 - 2]^{1/2}$
  $= 6.46$
5.5 Using Equation 4—

$$t = \frac{120 - 102}{6.46 \left[\frac{1}{3} + \frac{1}{3}\right]^{1/2}} = 3.412$$

5.6 Since $(n_1 + n_2 - 2) = 4$, $t' = 2.132$ (from Table 1). Thus since $t > t'$ the difference in the values of E_a and E_b is significant, and there has been an increase in emission rate to the atmosphere.

6. Continuous Monitoring Data

6.1 Hourly averages from continuous monitoring devices, where available, should be used as data points and the above procedure followed.

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APPENDIX D TO PART 60—REQUIRED EMISSION INVENTORY INFORMATION

(a) Completed NEDS point source form(s) for the entire plant containing the designated facility, including information on the applicable criteria pollutants. If data concerning the plant are already in NEDS, only that information must be submitted which is necessary to update the existing NEDS record for that plant. Plant and point identification codes for NEDS records shall correspond to those previously assigned in NEDS; for plants not in NEDS, these codes shall be obtained from the appropriate Regional Office.

(b) Accompanying the basic NEDS information shall be the following information on each designated facility:

(1) The state and county identification codes, as well as the complete plant and point identification codes of the designated facility in NEDS. (The codes are needed to match these data with the NEDS data.)

(2) A description of the designated facility including, where appropriate:

(i) Process name.

(ii) Description and quantity of each product (maximum per hour and average per year).