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TEST RESULTS
ANSI/ASHRAE 110-1995
Method of Testing Performance of Laboratory Fume Hoods

Fume Hood Model HP-606
12/8/2011

This report contains the test results, for the specified fume hood, when tested in accordance with the ANSI ASHRAE 110-1995 "Method of Testing Performance of Laboratory Fume Hoods" test guideline. This method of testing applies to conventional, bypass, add air and VAV fume hoods.

The sub-headings listed below correspond to the sub-headings in the ANSI/ASHRAE 110-1995 guideline.

4. INSTRUMENTATION AND EQUIPMENT

Tracer Gas: 98% Sulfur Hexafluoride

Ejector System: Custom Fabricated Ejector per figures 1-3.

Critical Orifice: Provides a flow rate of 4.0 Lpm at an upstream pressure of 34 psi.
Calibration Date 12-08-11 Calibration Time 9:20 AM

Detector Instrument: Qualitek Q200, S/N 2001950
Range of detection 0 to 18.09 PPM.
Calibration Date 12-08-11 Calibration Time 9:25 AM.
Recalibration Date 12-08-11 Recalibration Time 1:40 PM.
Calibration Variance 0%

Recorder: Readings are recorder with a computer with accuracy of $\pm 0.092\%$ of full scale.

Manikin: Of size and placement as specified in the ASHRAE guideline.

FV Measuring Instrument: (3) Anor AVT55 Anemometes, S/N 03117064, 03117065, 03117066.
Range of detection 25 to 200 FPM
Calibration Date 03-01-11.

Smoke: Local and large-volume generating devices in accordance with the ASHRAE guideline.

5. TEST CONDITIONS

Room Ventilation:	At full normal operation.
Room Description:	The test was conducted at the BMC Test Laboratory. Crosscurrents in the area 5' in front of the hood are far below 30 fpm. Room pressurization is measured and maintained at 0.02 in. w.g. below the static pressure outside the test room.
Background Levels:	The background level is below 10% of control level.
Preliminary Data:	The test laboratory is 18' X 16' X 10' high with a 92" X 36" supply air fixture centered in the 18' wall. The fume hood is centered along the 18' wall opposite the supply air fixture. The room has two doors, one 3' door to the left of the supply air fixture and one 16' overhead door centered behind the hood. The doors remain closed during the test.

HOOD DESCRIPTION

Model No:	HP-606
Baffle Type & Position:	High performance fixed baffle system
Sash Opening:	18" vertical (operating height)
Specified Face Velocity:	80 FPM
Volume:	620 CFM
Static Pressure:	.14"

6. FLOW VISUALIZATION AND VELOCITY PROCEDURE

LOCAL VISUALIZATION CHALLENGE

Smoke was applied to the following locations with the listed results.

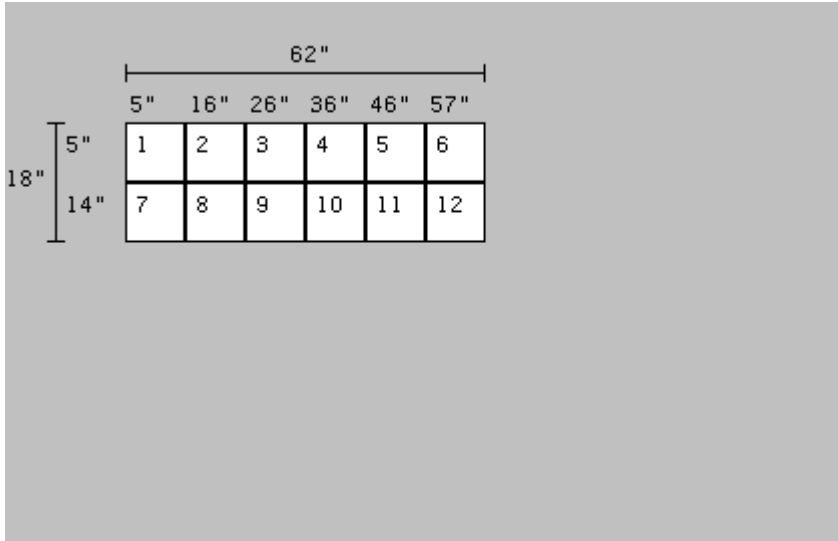
Under the airfoil:	Smoke was exhausted smoothly and was not entrained in the vortex at the top of the hood.
Along both walls:	Positive air movement, no reverse flows.
Along the floor:	Positive air movement, no reverse flows.
8" diameter on back:	Positive air movement, no reverse flows, no dead air space, no visible smoke flow out of the front of the hood.
Along equipment:	There was no equipment present in the hood. Smoke generated at the work top flowed evenly into the lower baffle opening almost immediately.

LARGE VOLUME VISUALIZATION CHALLENGE

Large volume release:	All smoke was rapidly and smoothly exhausted. There was no visible release of smoke from the hood. There was no equipment present in the hood.
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FACE VELOCITY MEASUREMENTS

A grid pattern is formed by equally dividing the hood opening into vertical and horizontal dimensions, not exceeding 12". Face velocity readings were taken at the center of the grid spaces indicated by number. (The dimensions shown below indicate the center of the grid spaces from the edge of the opening.) Four readings were taken at each point at approximately five second intervals.



Position Number	Reading #1	Reading #2	Reading #3	Reading #4	Average
1	83	81	87	86	84
2	80	84	82	77	81
3	77	80	81	79	79
4	80	80	81	80	80
5	83	86	81	83	83
6	78	85	85	83	83
7	88	83	78	84	83
8	80	79	79	77	79
9	76	75	74	75	75
10	78	75	76	75	76
11	78	77	74	76	76
12	77	81	82	80	80

Average Face Velocity: 80
 Highest Reading: 88
 Lowest Reading: 74

TESTED BY:

Brian White

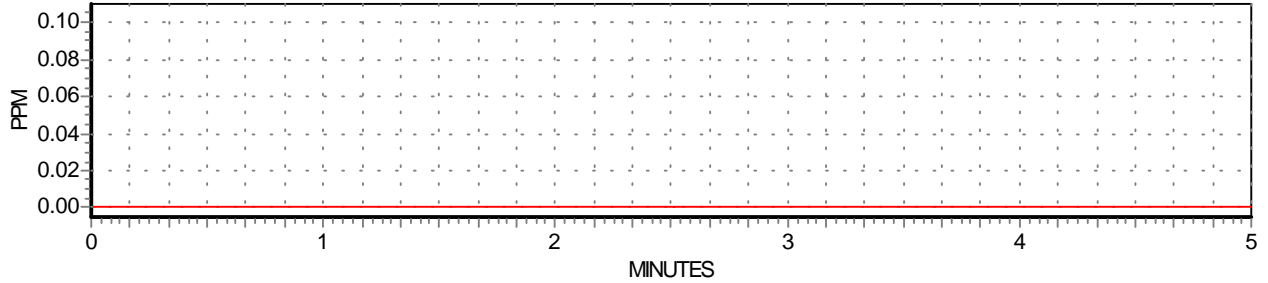
12/8/2011

7.1 TRACER GAS TEST - REPORT #1

Report #1: With the sash set at the specified opening, three five minute tests are performed with the ejector and manikin located in the left, center, and right positions. Ratings for each position and overall hood rating are as shown.

TRACER GAS TEST - Left Position

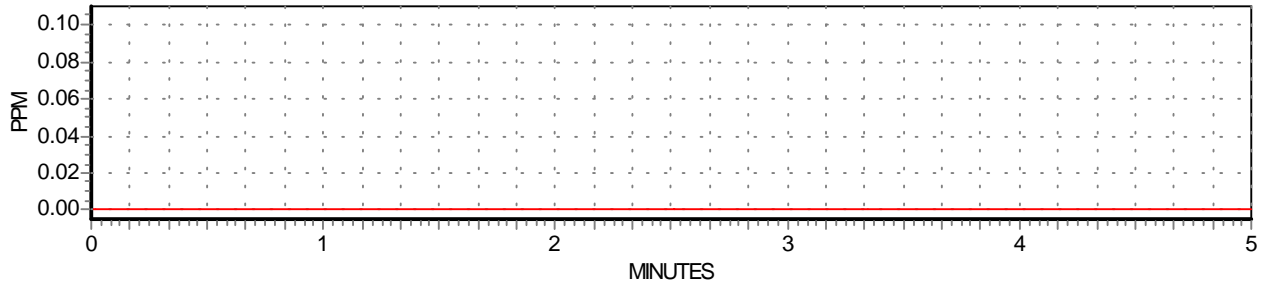
Ejector is located 12" from the left side of the hood. The front of the ejector is 6" from the hood face.



4.0 AM

TRACER GAS TEST - Center Position

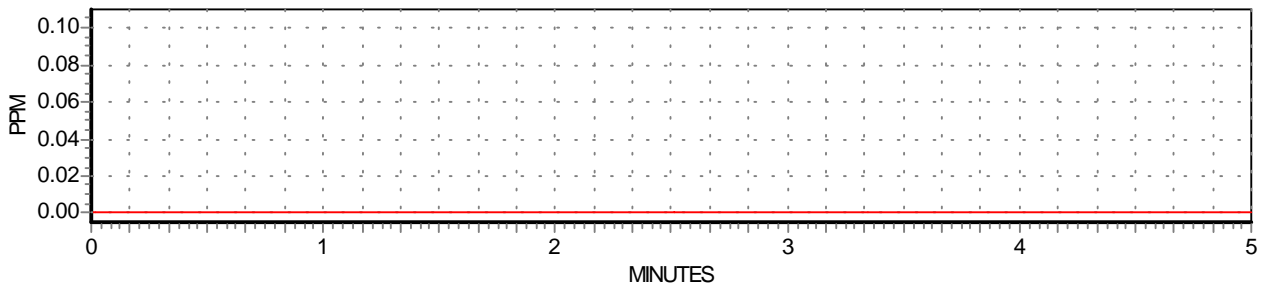
Ejector is located equidistant from either side of the hood. The front of the ejector is 6" from the hood face.



4.0 AM

TRACER GAS TEST - Right Position

Ejector is located 12" from the right side of the hood. The front of the ejector is 6" from the hood face.



4.0 AM

HOOD RATING
4.0 AM 0.000

TESTED BY:

Brian White

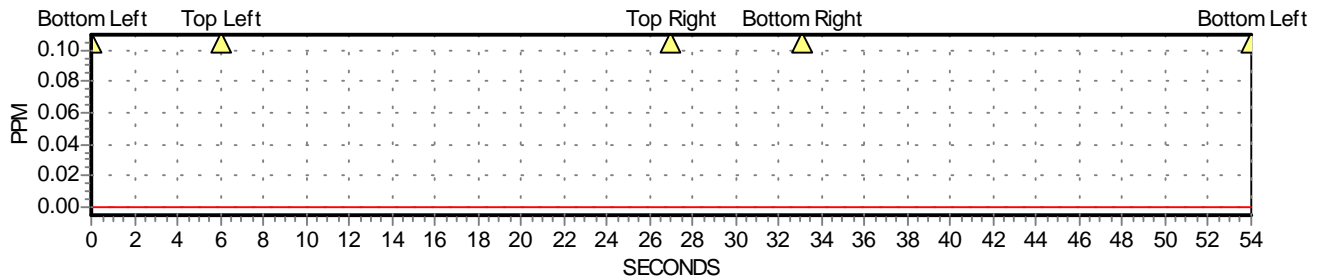
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7.2 TRACER GAS TEST - REPORT #2

Report #2: With the sash set at the specified opening, three short tests are performed with the manikin removed and the ejector located in the left, center, and right positions. The periphery of the hood is traversed and the rating for each position is as shown. Refer to the graph for maximum concentration and location.

TRACER GAS TEST - Left Position

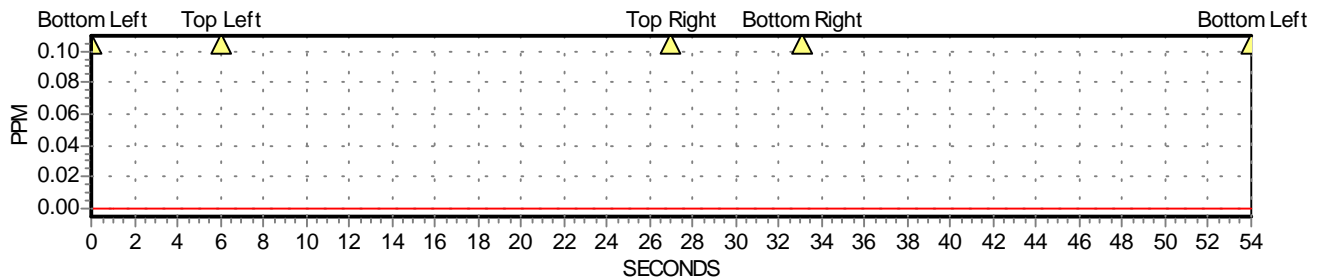
Ejector is located 12" from the left side of the hood. The front of the ejector is 6" from the hood face.



4.0 AM

TRACER GAS TEST - Center Position

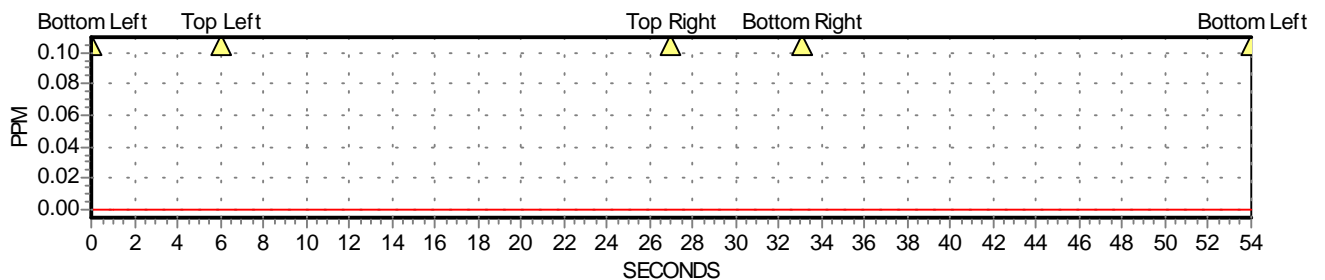
Ejector is located equidistant from either side of the hood. The front of the ejector is 6" from the hood face.



4.0 AM

TRACER GAS TEST - Right Position

Ejector is located 12" from the right side of the hood. The front of the ejector is 6" from the hood face.



4.0 AM

HOOD RATING
4.0 AM 0.000

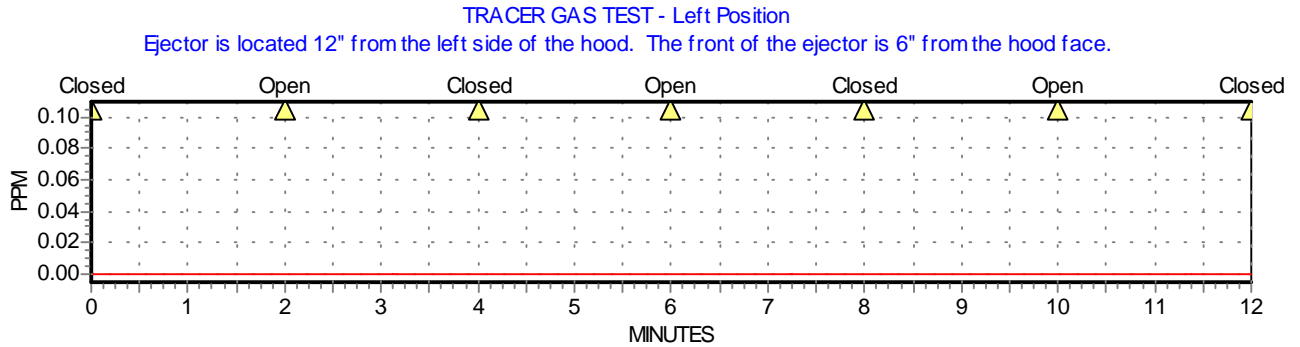
TESTED BY: *B White*

Brian White

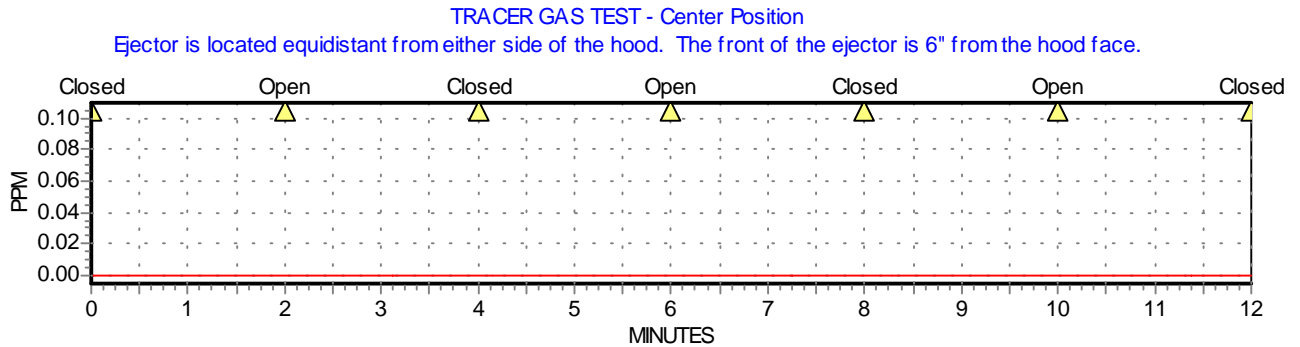
12/8/2011

7.3 TRACER GAS TEST - REPORT #3

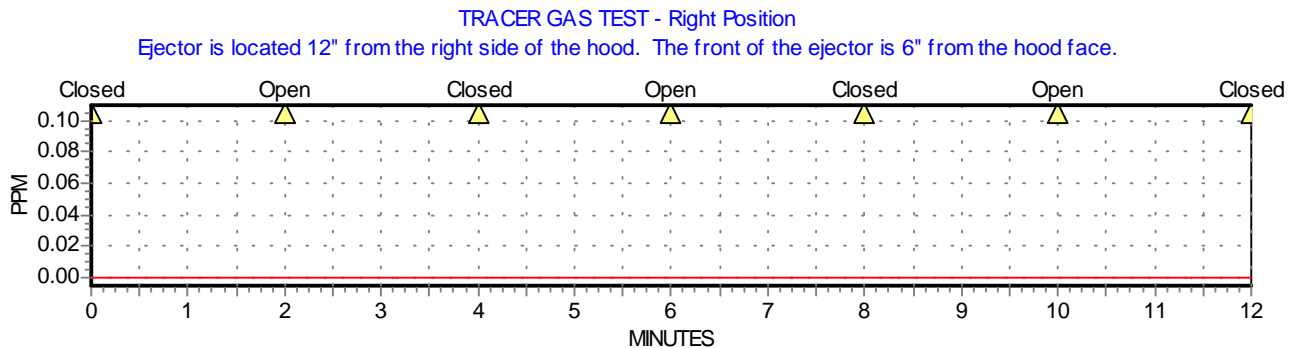
Report #3: With the block valve open and the sash closed, a background check is recorded. After two minutes the sash is opened to the specified opening. Recording continues for another two minutes and the sash is closed. The cycle is repeated three times for each of the three ejector and manikin positions. The timeline on the graph indicates the sash position during the test.



SME AM



SME AM



SME AM

HOOD RATING
SME AM 0.000

TESTED BY: *B White*

Brian White

12/8/2011

BMC

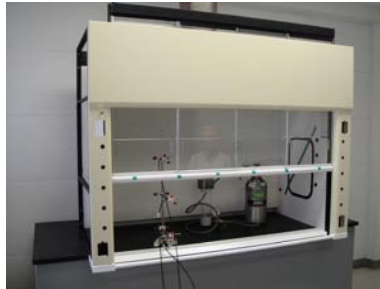
BMC Fume Hood Model HP-606
Sash Position 18" vertical open

LABORATORY FUME HOODS

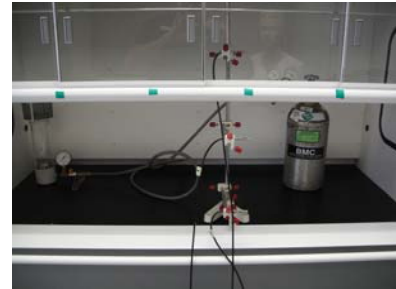
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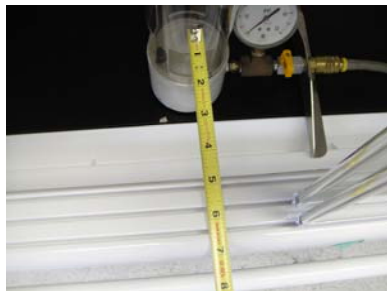
Test Room
Airflow Control



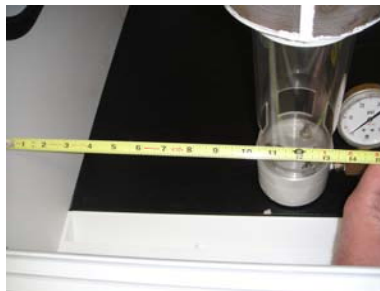
Face Velocity Test



Face Velocity Test



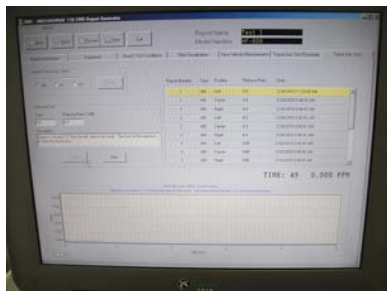
Ejector Position 6" From Plane of
Sash



Ejector Position 12" From Left Inter-
ior of Hood



Manikin Positioning, 3" From Plane
of Sash



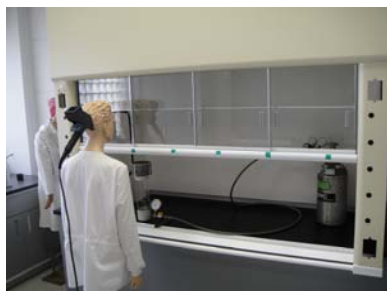
Laptop Computer with ASHRAE Test
Program



Qualitek Q200 SF6 Gas Detector



SF6 Tracer Gas Ejector



Tracer Gas Test, Left Position



Tracer Gas Test, Center Position



Tracer Gas Test, Right Position