

# **APPENDIX 1**

## **Existing Conditions Airflow Survey (TAB)**

- 1. Test Procedure 1A – Exhaust Fans**
- 2. Test Procedure 1B – Laboratories**



CFIA Charlottetown  
TAB - Existing Conditions Airflow Survey  
**Test Procedure 1A - Exhaust Fans**

Perform the following tasks in each laboratory(s) before taking measurements of fans serving that laboratory(s):

Task
1. Ensure that all fume hoods opened to normal maximum position, canopy hoods are on, and BSC's are on.
2. Ensure that controls scheme is in "day time" operating mode.
3. Ensure that doors to laboratory are closed.
4. Ensure that actuator on the VAV box (for room pressure control) has reached equilibrium.

Once above steps are complete for each laboratory, proceed to take TAB fan measurements of fans serving that laboratory. Measure system static pressure at intake to fan bypass plenum. Amperage readings should also be taken as per normal TAB procedures.

Fan ID	Serves Lab #	Fan Type	location	Nameplate Airflow (L/s)	Nameplate SP (Pa)	Equipment served	Variable or Constant System Airflow	Actual Airflow (L/s)	Actual SP (Pa)	Notes
EF-100	M1-02	Exhaust, Strobic	Roof top	566	498	fume hood	variable			
EF-101	M1-04	Exhaust, Strobic	Roof top	566	498	fume hood	variable			
EF-201	M2-15	Exhaust, Strobic	Roof top	472	461	fume hood	variable			
EF-203	M2-13	Exhaust, Strobic	Roof top	472	461	Transfer, General, Old Canopy	variable			
EF-207	M2-11	Exhaust, Strobic	Roof top	472	436	fume hood	variable			
EF-208	M2-12	Exhaust, Strobic	Roof top	321	1071	General, BSC	constant			
EF-209	M2-10	Exhaust, Strobic	Roof top	164	1071	General, BSC	constant			
EF-210	M2-09	Exhaust, Strobic	Roof top	472	1121	fume hood	variable			
EF-210A	M2-09	Exhaust, Strobic	Roof top	212	872	canopy	constant			fan shut down due to poor condition.
EF-212	M2-08	Exhaust, Strobic	Roof top	283	436	canopy	constant			
EF-213	M2-08	Exhaust, Strobic	Roof top	401	423	fume hood	variable			
EF-215	M2-07	Exhaust, Strobic	Roof top	193	1084	General, BSC	constant			
EF-216	M2-06	Exhaust, Strobic	Roof top	320	1071	General, BSC	constant			
EF-219	M2-05	Exhaust, Strobic	Roof top	193	1084	BSC	constant			
EF-220	M2-05	Exhaust, Strobic	Roof top	121	1084	Old BSC (now general)	constant			
EF-221	M2-02	Exhaust, Strobic	Roof top	246	1084	canopy	constant			

## Procedure 1A - Exhaust Fans (continued)

EF-222	M2-02	Exhaust, Strobic	Roof top	525	1188	Old cabinet, general, bench hood	variable			
EF-224	M2-03	Exhaust, Strobic	Roof top	283	914	General, BSC	constant			
EF-226	M2-01	Exhaust, Strobic	Roof top	606	1096	3 BSC's, General, Old BSC	variable			Common plenum (in penhouse) for EF-226 and EF-227.
EF-227	M2-01	Exhaust, Strobic	Roof top	606	1096	3 BSC's, General, Old BSC	variable			Common plenum (in penhouse) for EF-226 and EF-227.
EF-229	chem stg	Exhaust, Strobic	Roof top	873	436	canopy/gen exhaust	constant			
EF-230	chem stg	Exhaust, Strobic	Roof top	756	436	canopy/gen exhaust	constant			
EF-309	M3-26, M3-28, M3-29	Exhaust, Strobic	Roof top	557	1121	2 BSC's, General, Transfer	variable			Common plenum (in penhouse) for EF-309 and EF-310.
EF-310	M3-26, M3-28, M3-29	Exhaust, Strobic	Roof top	557	1121	2 BSC's, General, Transfer	variable			Common plenum (in penhouse) for EF-309 and EF-310.
EF-313	M3-06, M3-07, M3-08, Autoclave	Exhaust, Strobic	Roof top	363	1146	3 BSC's, Autoclave	variable			Common plenum (in penhouse) for EF-313 and EF-314.
EF-314	M3-06, M3-07, M3-08, Autoclave	Exhaust, Strobic	Roof top	363	1146	3 BSC's, Autoclave	variable			Common plenum (in penhouse) for EF-313 and EF-314.
EF-319	M3-03	Exhaust, Strobic	Roof top	387	1226	BSC, General	variable			
EF-320	M3-03	Exhaust, Strobic	Roof top	404	523	fume hood	variable			
EF-217	M2-05	Centrifugal Exhaust Fan	Mechanical Penthouse	-	-	General Ex	variable			Perform total static measurements, RPM, sheave measurements, etc as per normal TAB procedures.
EF-218	M2-05	Centrifugal Exhaust Fan	Mechanical Penthouse	-	-	General Ex	variable			Perform total static measurements, RPM, sheave measurements, etc as per normal TAB procedures.

### General Notes:

1. All airflow and pressure measurements to take place before any modifications to system take place.
2. Reference Laboratory Space Existing Conditions, in Appendix 3 of design package for further information on connected equipment.

**END TEST**

## CFIA Charlottetown

### TAB - Existing Conditions Airflow Survey

#### **Test Procedure 1B - Laboratories M2-01, M2-05, M2-09, M2-10, and M2-13**

Description: Verify air flow offsets for laboratory during daytime operations as well as night setback, and verify lab pressure conditions .

Ensure the following for laboratory before taking measurements:

1. Ensure that doors to laboratory are closed.
2. Ensure that actuator on the VAV boxes have reached equilibrium.

Reference:

1. Laboratory Space Existing Conditions, in Appendix 3 of design package for further information on connected equipment

## Laboratory Room M2-01

Test #	Test Description	Test Procedure	Expected and Actual Response
1	Verify offset airflow and room differential pressure with laboratory operating in " <b>daytime</b> " mode.	Ensure that building controls (BAS) is set to <b>daytime</b> operating scheme.	SA VAV box #218 Setpoint position (%) = _____. EA VAV box #262 Setpoint position (%)= _____.
			Actual SA VAV box #218 position (%) = _____. Actual EA VAV box #262 position (%)= _____.
			Measured SA flow to M2-01 including connected small side room (VAV #218) (L/s) = _____.
			Measured room General EA flow (VAV #262 and CAV #258) (L/s) = _____. Measured room BSC EA flow (CAV #259/260A) (L/s) = _____. Measured room BSC EA flow (CAV #260) (L/s) = _____. Measured room BSC EA flow (CAV #261) (L/s) = _____.
			Calculated offset flow (L/s) = _____.
			Differential room pressure Setpoint (Pa) = _____.
			Actual differential room pressure (Pa) recorded from BAS = _____.
			Physical check of air flow direction under door leading to corridor (inward or outward) = _____.
2	Verify offset airflow and room differential pressure with laboratory operating in " <b>night set back</b> " mode.	Ensure that building controls (BAS) is set to <b>night setback</b> operating scheme.	SA VAV box #218 Setpoint position (%) = _____. EA VAV box #262 Setpoint position (%)= _____.
			Actual SA VAV box #218 position (%) = _____. Actual EA VAV box #262 position (%)= _____.
			Measured SA flow to M2-01 including connected small side room (VAV #218) (L/s) = _____.
			Measured room General EA flow (VAV #262 and CAV #258) (L/s) = _____. Measured room BSC EA flow (CAV #259/260A) (L/s) = _____. Measured room BSC EA flow (CAV #260) (L/s) = _____. Measured room BSC EA flow (CAV #261) (L/s) = _____.
			Calculated offset flow (L/s) = _____.
			Differential room pressure Setpoint (Pa) = _____.
			Actual differential room pressure (Pa) recorded from BAS = _____.
			Physical check of air flow direction under door leading to corridor (inward or outward) = _____.

END TEST

## Laboratory Room M2-05

Test #	Test Description	Test Procedure	Expected and Actual Response
1	Verify offset airflow and room differential pressure with laboratory operating in " <b>daytime</b> " mode.	Ensure that building controls (BAS) is set to <b>daytime</b> operating scheme.	SA VAV box #215 Setpoint position (%) = _____.
			EA VAV box #253 Setpoint position (%)= _____.
			Actual SA VAV box #215 position (%) = _____.
			Actual EA VAV box #253 position (%)= _____.
			Measured room SA flow (VAV #215) (L/s) = _____.
			Measured room General EA flow (VAV #253 and CAV #255) (L/s) = _____.
			Measured room BSC EA flow (CAV #254) (L/s) = _____.
			Calculated offset flow (L/s) = _____.
2	Verify offset airflow and room differential pressure with laboratory operating in " <b>night set back</b> " mode.	Ensure that building controls (BAS) is set to <b>night setback</b> operating scheme.	Differential room pressure Setpoint (Pa) = _____.
			Actual differential room pressure (Pa) recorded from BAS = _____.
			Physical check of air flow direction under door leading to corridor (inward or outward) = _____.
			SA VAV box #215 Setpoint position (%) = _____.
			EA VAV box #253 Setpoint position (%)= _____.
			Actual SA VAV box #215 position (%) = _____.
			Actual EA VAV box #253 position (%)= _____.
			Measured room SA flow (VAV #215) (L/s) = _____.
			Measured room General EA flow (VAV #253 and CAV #255) (L/s) = _____.
			Measured room BSC EA flow (CAV #254) (L/s) = _____.
			Calculated offset flow (L/s) = _____.
			Differential room pressure Setpoint (Pa) = _____.
			Actual differential room pressure (Pa) recorded from BAS = _____.
			Physical check of air flow direction under door leading to corridor (inward or outward) = _____.

END TEST

## Laboratory Room M2-09 & M2-10

Test #	Test Description	Test Procedure	Expected and Actual Response
1	Verify offset airflow and room differential pressure with fume hood operating at <b>minimum</b> airflow.	Ensure that fume hood sash is <b>closed</b> .	SA VAV box #210 Setpoint position (%) = _____. EA airvalve #247 Setpoint position (%)= _____.
			Actual SA VAV box #210 position (%) = _____. Actual EA airvalve #247 position (%) = _____. Actual measurement of fume hood sash height (cm) = _____.
			Measured room SA flow (VAV #210) (L/s) = _____. Measured room SA flow (CAV #209) (L/s) = _____.
			Measured fume hood EA flow (airvalve #247) (L/s) = _____. Measured canopy EA flow (CAV #248) (L/s) = _____. Measured BSC/General EA flow (CAV #246) (L/s) = _____.
			Calculated offset flow (L/s) = _____.
			Differential room (M2-09) pressure Setpoint (Pa) = _____.
			Actual differential room (M2-09) pressure (Pa) recorded from BAS = _____.
			Physical check of air flow direction under M2-09 door leading to corridor (inward or outward) = _____.
2	Verify offset airflow and room differential pressure with fume hood operating at <b>maximum</b> airflow.	Ensure that fume hood sash is raised to <b>normal maximum</b> position.	SA VAV box #210 Setpoint position (%) = _____. EA airvalve #247 Setpoint position (%)= _____.
			Actual SA VAV box #210 position (%) = _____. Actual EA airvalve #247 position (%) = _____. Actual measurement of fume hood sash height (cm) = _____.
			Measured room SA flow (VAV #210) (L/s) = _____. Measured room SA flow (CAV #209) (L/s) = _____.
			Measured fume hood EA flow (airvalve #247) (L/s) = _____. Measured canopy EA flow (CAV #248) (L/s) = _____ L/s. Measured BSC/General EA flow (CAV #246) (L/s) = _____.
			Calculated offset flow (L/s) = _____.
			Differential room (M2-09) pressure Setpoint (Pa) = _____.
			Actual differential room (M2-09) pressure (Pa) recorded from BAS = _____.
			Physical check of air flow direction under M2-09 door leading to corridor (inward or outward) = _____.

END TEST

## Laboratory Room M2-13

Test #	Test Description	Test Procedure	Expected and Actual Response
1	Verify offset airflow and room differential pressure with laboratory operating in " <b>daytime</b> " mode.	Ensure that building controls (BAS) is set to <b>daytime</b> operating scheme.	SA VAV box #203 Setpoint position (%) = _____.
			EA VAV box #241 Setpoint position (%)= _____.
			Actual SA VAV box #203 position (%) = _____.
			Actual EA VAV box #241 position (%)= _____.
			Measured room SA flow (VAV #203) (L/s) = _____.
			Measured SA flow through transfer duct from connected room MO-12 (l/s) = _____.
			Measured room General EA flow (VAV #241) (L/s) = _____.
			Calculated offset flow (L/s) = _____.
			Differential room pressure Setpoint (Pa) = _____.
			Actual differential room pressure (Pa) recorded from BAS = _____.
2	Verify offset airflow and room differential pressure with laboratory operating in " <b>night set back</b> " mode.	Ensure that building controls (BAS) is set to <b>night setback</b> operating scheme.	Physical check of air flow direction under door leading to <b>corridor</b> (inward or outward) = _____.
			Physical check of air flow direction under door leading to <b>room MO-12</b> (inward or outward) = _____.
			Physical check of air flow direction under door leading to <b>room M2-15</b> (inward or outward) = _____.
			Physical check of air flow direction under door leading to <b>room M2-14</b> (inward or outward) = _____.
			Physical check of air flow direction under door leading to <b>room M2-11</b> (inward or outward) = _____.
			SA VAV box #203 Setpoint position (%) = _____.
			EA VAV box #241 Setpoint position (%)= _____.
			Actual SA VAV box #203 position (%) = _____.
			Actual EA VAV box #241 position (%)= _____.
			Measured room SA flow (VAV #203) (L/s) = _____.
			Measured SA flow through transfer duct from connected room MO-12 (l/s) = _____.
			Measured room General EA flow (VAV #241) (L/s) = _____.
			Calculated offset flow (L/s) = _____.
			Differential room pressure Setpoint (Pa) = _____.
			Actual differential room pressure (Pa) recorded from BAS = _____.
			Physical check of air flow direction under door leading to <b>corridor</b> (inward or outward) = _____.
			Physical check of air flow direction under door leading to <b>room MO-12</b> (inward or outward) = _____.
			Physical check of air flow direction under door leading to <b>room M2-15</b> (inward or outward) = _____.
			Physical check of air flow direction under door leading to <b>room M2-14</b> (inward or outward) = _____.
			Physical check of air flow direction under door leading to <b>room M2-11</b> (inward or outward) = _____.

END TEST

