

TCAC Combustion Safety Worksheet

Project Name: _____ Date: _____

Analyst Name: _____ BPI ID #: _____

Check One: Test-In Test-Out Outdoor Temp (°F): _____

This worksheet is intended to be a guide only. Always reference the BPI Building Analyst Standard.

Either digital versions or scanned field forms are acceptable.

For apartments with multiple CAZ/
CVA requirements or equipment,
enter additional data in this column.

Location Information	Unit number		
	CO monitor installed?	<input type="checkbox"/> Yes/Pass <input type="checkbox"/> No/Fail	<input type="checkbox"/> Yes/Pass <input type="checkbox"/> No/Fail
	Ambient CO (pre-testing ppm)		
	Ambient CO under 35 ppm?	<input type="checkbox"/> Yes/Pass <input type="checkbox"/> No/Fail	<input type="checkbox"/> Yes/Pass <input type="checkbox"/> No/Fail
Gas Oven ¹	Gas line test	<input type="checkbox"/> Pass <input type="checkbox"/> Fail	<input type="checkbox"/> Pass <input type="checkbox"/> Fail
	Oven CO (ppm)		
	Oven CO (ppm)	<input type="checkbox"/> Below 100 ppm/Pass <input type="checkbox"/> Between 101–300 ppm/Pass (recommend service) <input type="checkbox"/> Above 300 ppm and exhaust rate < 100 CFM/Fail	<input type="checkbox"/> Below 100 ppm/Pass <input type="checkbox"/> Between 101–300 ppm/Pass (recommend service) <input type="checkbox"/> Above 300 ppm and exhaust rate < 100 CFM/Fail
	Ambient CO during testing (ppm)		
	Ambient CO under 35 ppm?	<input type="checkbox"/> Yes/Pass <input type="checkbox"/> No/Fail	<input type="checkbox"/> Yes/Pass <input type="checkbox"/> No/Fail
Combustion Ventilation Area	Area volume (cu. ft.)		
	Total combined BTU input		
	CVA required (< 50 CF/1000 BTU)		
	Existing NFV area/opening high (sq. in.)		
	Existing NFV area/opening low (sq. in.)		
	Does CVA meet NFPA 54 code requirement?	<input type="checkbox"/> Yes/Pass <input type="checkbox"/> No/Fail	<input type="checkbox"/> Yes/Pass <input type="checkbox"/> No/Fail
WC Test ²	Base pressure (Pa)		
	Worst case pressure (Pa)		
	Net depressurization (Pa)		
	CAZ depressurization limit exceeded?	<input type="checkbox"/> No/Pass <input type="checkbox"/> Yes/Fail	<input type="checkbox"/> No/Pass <input type="checkbox"/> Yes/Fail
General Equipment Information ³	Equipment type		
	Model number		
	Gas line test	<input type="checkbox"/> Pass <input type="checkbox"/> Fail	<input type="checkbox"/> Pass <input type="checkbox"/> Fail
	Flue inspection	<input type="checkbox"/> Pass <input type="checkbox"/> Fail	<input type="checkbox"/> Pass <input type="checkbox"/> Fail
	Equipment depressurization limit (Pa)		
	Required minimum draft (Pa)		

Worst Case	Worst Case: Spillage stops before 1 minute	<input type="checkbox"/> Yes/Pass <input type="checkbox"/> No/Test natural	<input type="checkbox"/> Yes/Pass <input type="checkbox"/> No/Test natural
	Worst Case: Pre-dilution CO in flue (ppm)		
	Worst Case: Pre-dilution CO in flue (ppm)	<input type="checkbox"/> Below 26 ppm/Pass <input type="checkbox"/> Between 26–100 ppm/Pass (recommend service) <input type="checkbox"/> Over 100 ppm/Fail	<input type="checkbox"/> Below 26 ppm/Pass <input type="checkbox"/> Between 26–100 ppm/Pass (recommend service) <input type="checkbox"/> Over 100 ppm/Fail
	Worst Case: Draft (Pa)		
	Worst Case: Draft (Pa)	<input type="checkbox"/> Pass <input type="checkbox"/> Test natural	<input type="checkbox"/> Pass <input type="checkbox"/> Test natural
	Pass WC test?	<input type="checkbox"/> Yes/Pass <input type="checkbox"/> No/Test natural	<input type="checkbox"/> Yes/Pass <input type="checkbox"/> No/Test natural
Natural	Natural: Spillage stops before 1 minute	<input type="checkbox"/> Yes/Pass <input type="checkbox"/> No/Fail	<input type="checkbox"/> Yes/Pass <input type="checkbox"/> No/Fail
	Natural: Pre-dilution CO in flue (ppm)		
	Natural: Pre-dilution CO in flue (ppm)	<input type="checkbox"/> Below 26 ppm/Pass <input type="checkbox"/> Between 26–100 ppm/Pass (recommend service) <input type="checkbox"/> Over 100 ppm/Fail	<input type="checkbox"/> Below 26 ppm/Pass <input type="checkbox"/> Between 26–100 ppm/Pass (recommend service) <input type="checkbox"/> Over 100 ppm/Fail
	Natural: Draft (Pa)		
	Natural: Draft (Pa)	<input type="checkbox"/> Pass <input type="checkbox"/> Fail	<input type="checkbox"/> Pass <input type="checkbox"/> Fail
	Pass natural test?	<input type="checkbox"/> Pass <input type="checkbox"/> Fail	<input type="checkbox"/> Pass <input type="checkbox"/> Fail
Result	Overall test results for this unit (Any FAILS checked above constitute failure.)	<input type="checkbox"/> Pass <input type="checkbox"/> Fail	<input type="checkbox"/> Pass <input type="checkbox"/> Fail
NOTES			

¹Gas Oven

Per the BPI Gold Sheet:

1. Remove any items/foil in or on the oven/range top.
2. Make sure the self-cleaning features are not activated.
3. Test the oven in vent sleeve, before dilution air.
4. For 100 ppm to 300 ppm as measured—you must install a carbon monoxide detector, and a recommendation for service must be made to the consumer. For greater than 300 ppm as measured—the unit must be serviced prior to work. If the result is greater than 300 ppm after servicing, exhaust ventilation must be provided with a capacity of 25 CFM continuous or 100 CFM intermittent.

A failure for the ovens is either CO levels of above 300 ppm measured in the oven or ambient CO levels of 25 ppm or more.

²WC Test

Per the BPI Gold Sheet:

1. Measure the Base Pressure: Start with all exterior doors and windows closed and the fireplace damper closed. Set all combustion appliances to the pilot setting, or turn off the service disconnect. Combustion appliances include: boilers, furnaces, space heaters and water heaters. With the home in this configuration, measure and record the baseline pressure of the mechanical room WRT outside.
2. Establish the Worst Case: Turn on the dryer and all exhaust fans. Close all interior doors that make the CAZ pressure more negative. Turn on the air handler if present, and leave it on if the pressure in the CAZ becomes more negative; then, recheck the door positions. Measure the net change in pressure from the CAZ to outside, correcting for the base pressure. Record the “worst case depressurization” and compare to the CAZ Depressurization Limit Table.

³General Equipment Information

Per the BPI Gold Sheet:

3. Measure Worst Case Spillage, Draft, CO: Fire the appliance with the smallest BTU capacity first, test for spillage at the draft diverter with a mirror or smoke test, and test for the CO at the flue at steady-state (if steady state is not achieved within 10 minutes, take the CO readings at the 10 minute mark). If the spillage test fails under worst case, go to Step 4. If spillage ends within 1 minute, test the draft in the connector 1'–2' after the diverter or first elbow. Fire all other connected appliances simultaneously and test the draft diverter of each appliance for spillage. Test for CO in all appliances before the draft diverter.
4. Measure Spillage, Draft, CO Under Natural Conditions: If spillage fails under worst case, turn off the appliance, the exhaust fans, open the interior doors and allow the vent to cool before re-testing. Test for CO, spillage and draft under “natural conditions.” Measure the net change in pressure from worst case to natural in the CAZ to confirm the “worst case depressurization” taken in Step 2 outside. Repeat the process for each appliance, allowing the vent to cool between tests.
5. Ambient CO: Monitor the ambient CO in the breathing zone during the test procedure and abort the test if ambient CO goes over 35 ppm. Turn off the appliance, ventilate the space and evacuate the building. The building may be reentered once ambient CO levels have gone below 35 ppm. The appliance must be repaired and the problem corrected prior to completing the combustion safety diagnostics. If the ambient levels exceed 35 ppm during testing under natural conditions, disable the appliance and instruct the homeowner to have the appliance repaired prior to operating it again.
6. Action Levels: Make recommendations or complete work order for repairs based on test results and the Combustion Safety Test Action Level Tables.