

# Combustion Appliance Safety Report

Test Date \_\_\_\_/\_\_\_\_/\_\_\_\_

Client \_\_\_\_\_ Address \_\_\_\_\_

Outside Air Temp. (F) \_\_\_\_ Wind (mph) \_\_\_\_ Assessor \_\_\_\_\_ Agency \_\_\_\_\_

## GAS LEAKS / DEFECTS?

### AMBIENT CO LEVELS (ppm)

Main Room: \_\_\_\_\_  
FAU Supply Register after 2 min.: \_\_\_\_\_  
Wall or Floor heater: \_\_\_\_\_  
Gas Fireplace: \_\_\_\_\_

### Initial Readings

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

### Post Service/Replacement Readings

n/a

\_\_\_\_\_  
\_\_\_\_\_

n/a

### UNDILUTED FLUE GAS CO LEVELS (ppm)

Main Heater : \_\_\_\_\_  
Second Heater : \_\_\_\_\_  
Water Heater: \_\_\_\_\_  
Oven Termination: \_\_\_\_\_  
Gas Dryer: \_\_\_\_\_

\_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_  
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\_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
n/a

**The following section applies to atmospheric draft appliances that are located within confined spaces**

### COMB. AIR REQUIREMENTS

Input Rating (Kbtu/hr): \_\_\_\_\_  
Location: \_\_\_\_\_  
Comb. Air Source: \_\_\_\_\_  
Amount Existing (cu.ft. or nfva): \_\_\_\_\_  
Amount Added: \_\_\_\_\_

### Furnace / Space Heater

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

### Water Heater

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

### DRAFT TEST RESULTS

Mech. Draft Reading: \_\_\_\_\_ pa.  
Pass Smoke Draft: \_\_\_\_\_

\_\_\_\_\_ pa.  
Y\_\_N\_\_

\_\_\_\_\_ pa.  
Y\_\_N\_\_

**CAZ WORST CASE DEPRESSURIZATION:** ( All exhaust devices must be on for tests.)

Int. Doors Closed – Air Handler On: \_\_\_\_\_ pa.

\_\_\_\_\_ pa.

\_\_\_\_\_ pa.

Int. Doors Open – No Air Handler Present: \_\_\_\_\_ pa.

\_\_\_\_\_ pa.

\_\_\_\_\_ pa.

**FINAL BACK DRAFT OK?**

Y\_\_N\_\_

Y\_\_N\_\_

**FINAL CAZ TEST**

\_\_\_\_\_ pa.

\_\_\_\_\_ pa.

**COMMENTS/RECOMENDATIONS:**

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# Combustion Appliance Safety Report

## Instructions

The Combustion Appliance Safety Report (CASR) must be filled out completely beginning with the client name and address, the outside temperature and wind noted at the time of assessment and the name of the person and the agency they represent that is conducting the assessment.

This report is compiled with data taken from the house, as found, prior to weatherization beginning. If a house or water heater is replaced, CO readings must be taken from the flue termination and appliance ambient. If changes, repairs, or replacements are recommended and approved, they must be completed prior to any sealing or pressure balancing.

### **GAS LEAKS**

During the initial property inspection, all gas fittings must be inspected for gas leaks. This can be done with an olfactory (sniff) test within 6" of the gas line and fittings beginning from the point that they penetrate into the appliance compartment and include all visible and accessible components within the appliance that it serves. If unable to get close enough for an olfactory test, or if you have an impaired sense of smell, you must use an electronic combustible gas tester. If a leak is discovered, a soapy water or commercial leak detection solution should be applied to the suspected fittings to pinpoint the source and get an idea of the severity of the leak.

The occupants shall be made aware of the finding(s). If repairs are necessary, the occupants should be the ones requesting service. Repairs should be performed by persons trained and/or licensed to do such work prior to **any** other work being performed. Repair work should be documented by noting the repair, date, and who performed the repairs.

### **AMBIENT CO TESTING**

CO sampling equipment must be turned on outside of the living space and allowed to stabilize prior to entering the dwelling. Test equipment shall be set to read actual CO present rather than calibrating zero to the outside ambient as some units are capable of. Calibration procedures for the Bacharach Fyrite Pro series can be found in the unit operating manual.

Room ambient levels shall be taken with all combustion appliances off and the CO reading taken while standing central to the the main room of the dwelling, at least 10 feet away from any combustion appliance. Room ambient readings higher than 10 ppm of CO indicate that further investigation of the source is warranted **IMMEDIATELY**. Question the occupants to determine if the oven or stove burners have been operating recently or if another combustion appliance such as a freestanding kerosene heater was/is present and operating. If a garage is attached, inquire if a vehicle was started in the garage.

Appliance ambient CO reading are taken inside the nearest supply register to the furnace on a forced air system or just above the heat exchanger of a wall or floor furnace after 2 minutes of heater operation. Only if an unsealed gas fireplace is being used as a heating device, an ambient reading must be taken 6 inches above the opening after 2 minutes of burner operation. A reading increase greater than the room ambient constitutes a fail and must be corrected.

Share the findings with the occupants and caution them about dangerous practices. Make a note on the CASR as to the findings and repairs needed. Proceed to test the flue gas levels.

## **FLUE GAS CO TESTING**

Flue gas CO tests must be sampled upstream of any dilution air. For atmospheric, natural draft furnaces, a sample should be taken from each burner port termination or from the flue, just prior to the draft hood opening. Closed combustion or induced draft appliances must be sampled at the termination of the flue outside. Ovens must be sampled inside the flue termination that is usually located at the back of the range top or above the doors in the case of a wall unit. In some instances, older ovens are vented to the outside in which case, no testing is necessary.

A visual inspection must be made to determine that all flue and vent piping are in proper alignment, continuous and that outside terminations are located per applicable codes, with the proper distance away from any opening into the living space.

## **COMBUSTION AIR REQUIREMENTS**

Only combustion Furnaces, Space Heaters and Water Heaters that draw their combustion air from the space they occupy, and are inside the living space, or are located in a confined space such as an attached garage or utility room, need to have combustion air calculated. The input rating is what combustion air requirements are based on and should be noted. If the input rating cannot be determined then a default of 25,000 BTU per burner on room air heaters and 10,000 btu/10 gallons of capacity for water heaters shall be used.

Specify where the appliance is located ie, roof, garage, inside closet etc.

Requirements for appliance combustion venting can be found in Appendix F of the Weatherization Field Manual (WFM).

## **DRAFT TEST RESULTS**

Draft tests are required on all atmospheric (natural) draft appliances. Test conditions for appliance flue draft testing are explained in chapter 1, pg.10 of the WFM. Only those located in centrally conditioned areas or areas influenced by exhaust devices must be tested under worst case depressurization conditions. Fluctuations due to windy conditions must be given a 30 second time during testing to determine if sufficient draft exists.

The Nevada WFM does not allow the drilling of flue pipes of induced draft appliances nor do we allow the drilling of double wall flue pipe to take mechanical readings of draft.

Mechanized draft test results must be at, or a greater negative than, the minimum limits of draft for the ambient outdoor temperature to be acceptable. The minimum negative values can be found in Chapter 1, pg. 11 of the WFM.

A smoke generator that generates sufficient smoke may be used to determine the presence of draft visually. The smoke must be drawn into the vent from along the edge of the draft hood in a continuous fashion with no more than a 30 second lapse in draft due to windy conditions.

## **CAZ DEPRESSURIZATION**

Atmospheric draft heaters (water & house) must be checked for high negative appliance zone pressures if they are influenced by exhaust fans or centrally ducted conditioning systems. The space that the appliance sits in must be set up for worst case depressurization. Reading are taken standing within 3 feet of the appliance using a digital manometer, with a reference hose to the outside and set to read in pascals. All exhaust fans, dryer and air handler (if present) must be turned on

If the dwelling has a centrally ducted system, the pressure reading must be taken with interior room doors closed providing that the appliance(s) being tested is(are) open to the main body of the house. With no centrally ducted system present, the interior doors must remain open.

Record the readings in the appropriate line on the CASR. If a negative 3 pascals or higher is observed, the assessor needs to make a determination of, (1) the cause of depressurization and, (2) the appropriate course of action.

## **COMMENTS/RECOMMENDATIONS**

This section is for noting any findings as they relate to CAS testing, or any recommendations regarding correction of deficiencies. This could include but is not limited to; adding combustion air vents, balancing room pressures or appliance repair/replacement.