

# Post NGAT TEST GUIDELINE

CONSULT THE WIS Manual for the complete NGAT procedure.

## Appliance Visual Inspection: Refer to the NGAT Action Guidelines Document.

- -USING THE NGAT ACTION GUIDELINES DOCUMENT: MAKE SURE TO USE THE "POST NGAT OWNER" OR "POST NGAT RENTER PAGE DEPENDING ON THE HOME BEING SERVED. CHECK ALL ITEMS ON THE LEFT HAND SIDE OF THE LIST. IF AN ITEM IS FOUND, REFER TO THE COLUMN HEADINGS AND TAKE ACTION AS INDICATED BY THE X MARKED BOXES. EXAMPLE: IF A NON-OPERABLE FURNACE AND/OR WATER HEATER IS FOUND IN AN OWNER OCCUPIED DWELLING—CALL FOR A GSR, INSTALL NIM MEASURES, AND COMPLETE THE REPAIR AND REPLACEMENT ASSESSMENT FORM.

## ROOM AMBIENT CO READ

- Locate all gas appliances. Turn the thermostat down or off; note the "as found" setting.
- Open all interior doors. Close FAF/AWH closet door(s) and fireplace damper.
- Close all exterior doors and windows and turn off all exhaust fans.
- Zero the Monoxer outside.
- Inside Ambient read is taken as close to the center of the home as possible, at least 10' away from any supply registers or gas appliances, and about 6' above the floor. A reading of 10 ppm or more is a fail. Continue on with all remaining phases of the Post NGAT.

## CO APPLIANCE AMBIENT READINGS

- Set home up in "worst case" scenario.
  1. Is there a FAF? If yes, close all interior room doors between the registers and the cold air return. Close FAF/AWH closet doors.
  2. All exhaust fans that can affect the operation of the appliance being tested must be turned on. This includes dryers exhausted outside and FAF fans.
  3. When testing is performed in an unconditioned garage, the door leading into the living area shall be opened to the living space. Note: Garage door shall remain closed for all CO tests taken in the living space.
- Appliance Ambient Reads – Turn on **only the appliance being tested** and let it warm up before reads are taken. Warm up time is 5 minutes for all appliances except cook top burners, which are 1 minute. Begin with the heating appliance, test the range/oven last.
  1. **Wall Heaters / Floor Furnaces / Room Heaters (Including Room Heaters or Incinerators built into older ranges)** – Appliance Ambient reads will be taken in the atmosphere above the draft diverter. Space heaters fail if this reading is higher than the Room Ambient CO read. Note: on warm up counter flow wall heater burner(s) shall be inspected for interference when air handler comes on.
  2. **Ducted Furnaces** – (FAF's & Gravity Heaters) Appliance Ambient reads will be taken inside the supply register nearest the appliance. Appliance fails if this reading is higher than the Room Ambient CO read. On warm up check burner flame for interference when air handler comes on.
  3. **Water Heaters**-Ambient read taken above and around top of tank. Water Heater fails if this reading is 10ppm or more.
  4. **Cook top** (all cook top burners shall be turned on at the same time, with ovens and broilers off) Read will be taken in the center of the kitchen. If readings for cook top are 10ppm or more, appliance fails.
  5. **Oven/broiler** (all cook top burners shall be turned off) All oven/broiler(s) will be turned on separately. Read will be taken in the center of the kitchen. If reading is 10ppm or more, appliance fails.
  6. **Gas Logs**- A FLUE GAS READING SHALL BE TAKEN ON ALL GAS LOGS IN LIEU OF APPLIANCE AMBIENT READ DURING THE POST NGAT. GAS LOG FLUE CO IS A FAIL IF IT IS GREATER THAN 25PPM.
- **Appliance Draft test** – Use smoke to verify the draft diverter is drawing properly on all natural draft open combustion appliances. Includes gas logs and ovens/broilers vented to the outside – log lighters are exempt for all testing.
- **Appliance Examination** - Examine appliance(s) for signs of excessive soot and rust , continuous flame roll-out after initial start up, delayed ignition on start up, cracked heat exchanger(s) on heating appliances, flame interference on FAU's when the air handler comes on, and when any of these items are found refer to GSR.

Record all pass or fail results, CO measurements, and fail codes on the Post NGAT Results Form. Turn in all Post NGAT Results forms to your EPO data input coordinator.

If testing reveals appliance failures which are not correctable by the testing contractor, call PG&E at 1-800-743-5000.

# COMBUSTION VENTILATION AIR FACT SHEET

CVA requirements only apply to open combustion furnaces and water heaters.

**Confined Space** - Is an area designed for the operation of combustion appliances which has a total volume **less than 50 cubic ft. per 1000 Btu's input** of all open combustion appliances within the space.

## Procedure for Determining if an Open Combustion Appliance is Located in a Confined Space.

1. Measure enclosure or room:  $L \times W \times H$  = Existing Area in Cubic Feet.
2. Total Btu's divided by 1000 X 50 cubic = Required Cubic Feet. *Here is an easier method: Divide the total Btu input by 2, and then drop the last zero. Example: 44,000 total Btu input divided by 2 = 22,000. Drop the last zero = 2,200 cu. Ft.*
3. If the sum of 1 is less than 2, CVA **is** required.
4. If the sum of 1 is equal to or greater than 2, CVA is **not** required.

### CVA CALCULATION RULES

*YOU DETERMINE THE REQUIRED NFV AREA, PER OPENING(S), BY TAKING THE TOTAL BTU INPUT AND DIVIDE BY 1000. TAKE THE RESULTS AND DIVIDE BY THE CVA RULE YOU HAVE CHOSEN TO USE. EXAMPLE: THE TOTAL BTU INPUT IS 80,000 BTU'S. YOU HAVE CHOSEN RULE 4. 80,000 DIVIDED BY 1000 = 80. 80 DIVIDED BY RULE 4 = 20 SQ. IN NFV.*

**Rule 1:** Requires two openings. CVA from **conditioned space** requires that each opening shall have a NFV area of at least **1 sq. in. for every 1000 Btu's input**. Each opening, **Minimum 100 sq. in.**

**Rule 2:** Requires two openings. CVA supplied by **horizontal ducts** to the outside (**unconditioned space**). Each opening requires a NFV area of at least **1 sq. in. for every 2000 Btu's input**.

**Rule 3:** Requires one upper opening. CVA to the outside (**unconditioned space**) The opening shall have a NFV area of at least **1 sq. in. for every 3000 Btu's input**. The installed vent must be within 12" of the ceiling.

Note: *If the opening is pre existing and sized correctly, it only needs to be above the draft diverter of the appliance.*

**Rule 4:** Requires two openings. CVA to the outside (**unconditioned space**) **1** upper and **1** lower vertical air opening is required. Each opening shall have a NFV area of a least **1 sq. in. for every 4000 Btu's input**.

Note: *If a combustion air duct is used for lower combustion air, there must be a space at least 3" in depth open to the front or firebox side of the appliance. Such space shall extend from the floor to the ceiling of the appliance compartment. Neither end of the duct shall be screened.*

**Note:** In an **unconditioned** garage when it is considered a confined space, 1 vent either upper and/or lower, equal to 1 sq. in. per 4,000btu input for all applicable appliances is OK. The vent can either be already installed, or installed by the WS Contractor.

### Area of a Circle (sq. in.)

$$\text{Area of a Circle} = \text{Radius} \times \text{Radius} \times 3.14$$
$$\text{Radius} = \text{Half the diameter}$$

3" circle = 7 sq. in.    4" = 12.6    5" = 19.6    6" = 28.3    8" = 50.2    10" = 78.5.    12" = 113

### VENT OPENING MULTIPLIERS

Note: Use **only one** of the following multipliers to calculate nfv. Use the multiplier that will reduce the overall NFV area to the lowest term.

**Mesh, ¼ in. or Larger = 90%** of the actual vent opening.

**METAL LOUVERS = 75%** of the actual vent opening.

**MESH, LESS THAN ¼ in. = 50%** of the actual vent opening.

**WOODEN LOUVERS = 25%** of the actual vent opening.

#### **Wall Furnaces:**

Single sided: 25,000 Btuh

Double sided: 50,000 Btuh

#### **Floor Furnaces:**

Standard (usually 22" wide): 30,000 Btuh

Large (usually larger than 1 floor-joint bay): 60,000 Btuh

#### **Free-Standing Heaters:**

Small: 25,000 Btuh

Standard (24" + 12" deep): 50,000 Btuh

#### **Forced Air Furnace:**

25,000 Btuh per burner

Water Heater: 1000 Btuh per gallon