

## **Executive Order G-70-23-AC**

### **Exhibit 4**

#### **GASOLINE DISPENSING FACILITY DYNAMIC BACK PRESSURE \***

##### **1. APPLICABILITY**

- 1.1** This procedure is used to verify compliance with the applicable dynamic back pressure limits imposed on the Phase II vapor recovery system. The applicability of the following Alternate Methods is dependent upon the regulatory requirements which apply to the particular configuration in the facility.
  - 1.1.1 Alternate Method 1.** This procedure is applicable if the remote vapor check valves are not part of the Phase II system.
  - 1.1.2 Alternate Method 2 & 3.** These procedures are applicable if a remote vapor check is installed as part of the Phase II system.
- 1.2** Testing for all Methods shall be conducted with the Phase I vapor poppet **open**.
- 1.3** Other Alternate Methods may be used provided that written approval has been granted by the CARB Executive Officer. Such approval shall be based upon demonstrated equivalency of any proposed methodology.

##### **2. PRINCIPLE**

- 2.1** The dynamic back pressure during vehicle fueling is simulated by passing nitrogen through the Phase II recovery system at specified rates. The resultant dynamic back pressure is measured using a pressure gauge, or equivalent device. Alternate Methods 2 and 3 are included for those Phase II systems that utilize both bellows-equipped nozzles and a remote vapor check valve.

##### **3. RANGE**

- 3.1** The minimum and maximum dynamic back pressures that can be measured are dependent upon available pressure gauges. Recommended gauge ranges are as follows:
  - 3.1.1 Alternate Methods 1 and 3.** 0-0.5 and 0-2 inches H<sub>2</sub>O.
  - 3.1.2 Alternate Method 2.** 0-0.5 and 0-1 inches H<sub>2</sub>O.
- 3.2** If mechanical pressure gauges are employed, the minimum diameter of the gauge face shall be four inches, and the minimum accuracy of the gauge shall be three percent of full scale.
- 3.3** If an electronic pressure measuring device is used, the full-scale range of the device shall not exceed 0-10 inches H<sub>2</sub>O with a minimum accuracy of 0.5 percent of full scale. A 0-20 inches H<sub>2</sub>O device may be used provided that the equivalent accuracy is not less than 0.25 percent of full-scale.

\* Reference Bay Area Air Quality Management District Source Test Procedure ST-27

#### 4. INTERFERENCES

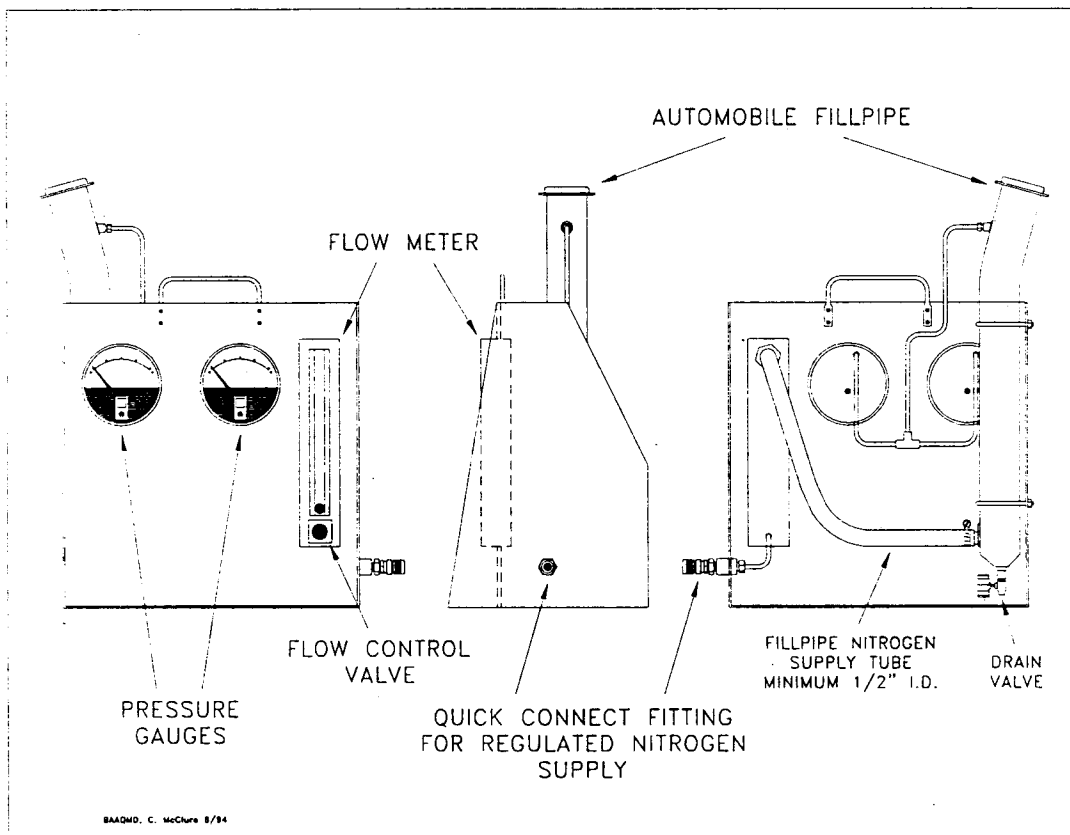
- 4.1 Any leaks in the nozzle vapor path, vapor hose, or underground vapor return piping may result in erroneously low dynamic back pressure measurements.

#### 5. APPARATUS

- 5.1 Nitrogen High Pressure Cylinder with Pressure Regulator. Use a high pressure nitrogen cylinder capable of maintaining a pressure of at least 2000 psig and equipped with a compatible two-stage pressure regulator and a one psig relief valve. A ground strap is recommended during introduction of nitrogen into the system.
- 5.2 Rotameter. Use a calibrated rotameter capable of accurately measuring nitrogen flowrate(s) applicable for the imposed dynamic back pressure limits.

Figure 4-1

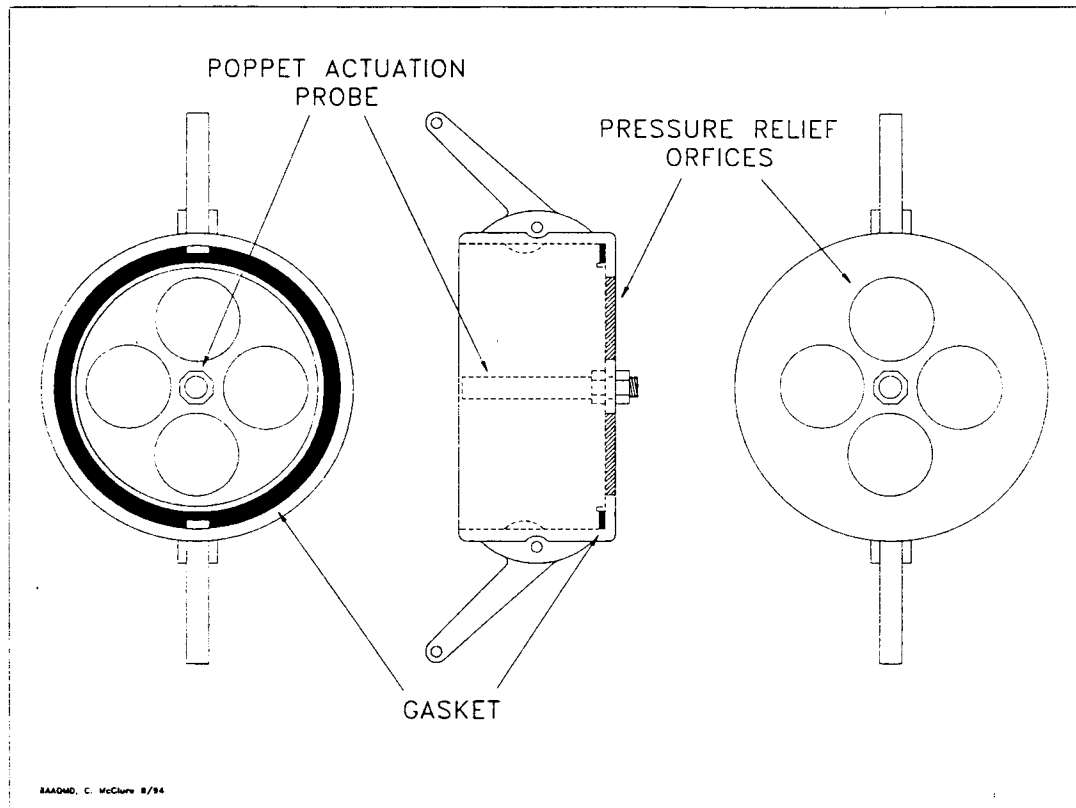
#### Dynamic Back Pressure Test Assembly



- 5.3 Pressure Gauges. Use differential pressure gauges, or equivalent, as specified in the applicable subsection of Section 3.1.
- 5.4 Automobile fillpipe. Use a automobile fillpipe, if applicable, known to be compatible with all bellows-equipped vapor recovery nozzles, and equipped with a pressure tap. See Figure 4-1.
- 5.5 Nitrogen. Use commercial grade nitrogen.
- 5.6 Hand Pump. Use a gasoline compatible hand pump, if applicable, to drain any gasoline from condensate pots.

**Figure 4-2**

**Dynamic Pressure Release Assembly**



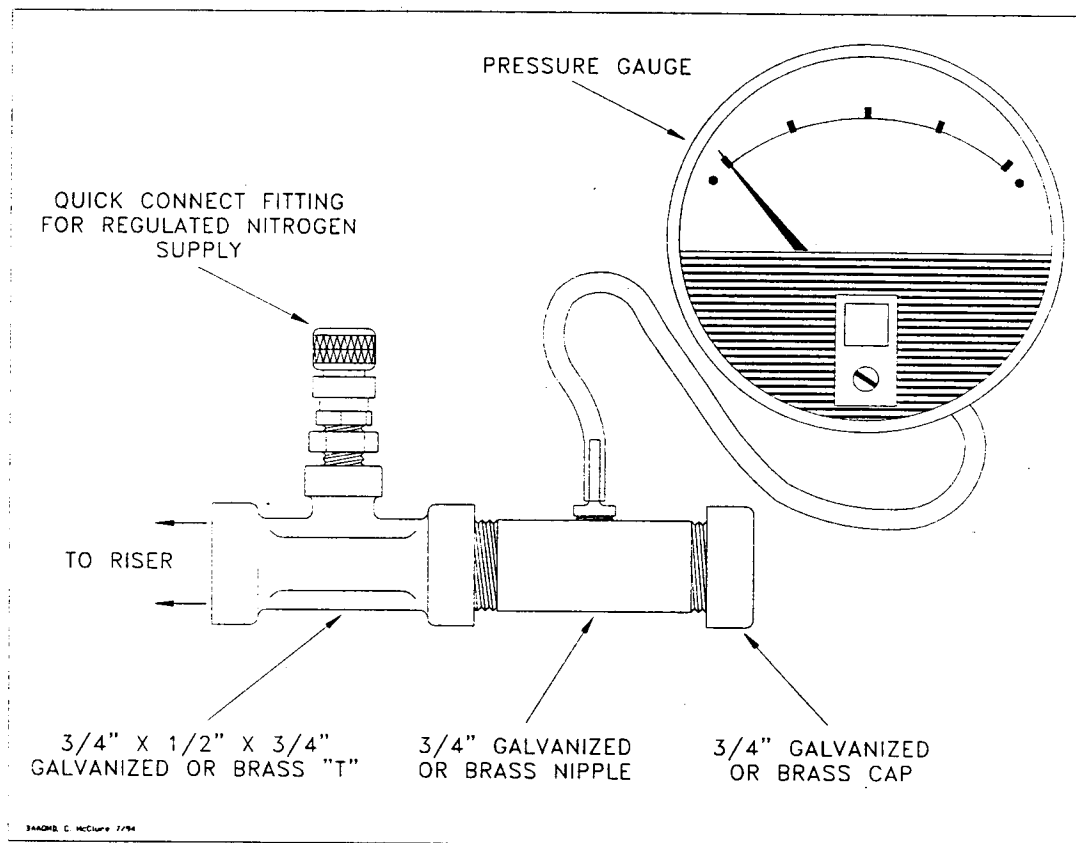
**TESTING**

- 7.1 Alternate Method 1.** Insert the nozzle into the fillpipe of the Dynamic Back Pressure Test Unit, ensuring that a tight seal at the fillpipe/nozzle interface is achieved.
  - 7.1.1** Connect the nitrogen supply to the test assembly.
  - 7.1.2** Open the nitrogen supply, set the delivery pressure to 5 psig, and use the flowmeter control valve to adjust the flowrate to lowest of the required nitrogen flowrates.
  - 7.1.3** A pulsating gauge needle indicates nitrogen passing through a liquid obstruction in the vapor return system. If this occurs, close the flow meter control valve, disengage the nozzle and redrain the nozzle and hose assembly. Re-engage the nozzle, open the flow meter control valve and repeat the test.
  - 7.1.4** The following information shall be recorded on the field data sheet, as shown in Form 4-1:
    - (a) Pump Number and Product Grade
    - (b) Nozzle make and model
    - (c) Nitrogen flowrate, CFH
    - (d) Dynamic back pressure, inches H<sub>2</sub>O
  - 7.1.5** Repeat subsections 7.1.1 through 7.1.4 for all required nitrogen flowrates.
  - 7.1.6** Close and replace the dust cover on the Phase I poppet.

**7.2 Alternate Method 2.** Phase II systems which utilize both bellows-equipped nozzles and a fuel-activated remote vapor check valve may be tested using the following methodology.

- 7.2.1** Disconnect the vapor recovery hose from the remote vapor check valve. Test the nozzle/hose assembly pursuant to Section 7.1.1 through 7.1.4, and record the results on the field data sheet as shown in Form 4-2.
- 7.2.2** Disconnect the vapor check valve from the riser and connect a compatible "T" fitting to the riser as shown in Figure 4-3.

**Figure 4-3**  
**Capped "T" Assembly**



- 7.2.3** Connect the nitrogen supply to the "T" assembly.
- 7.2.4** Repeat Sections 7.1.2 through 7.1.4. In addition to the information required in Section 7.1.4, record both the make and model of the remote vapor check valve.
- 7.2.5** Record on the field data sheet the pressure drop across the remote vapor check valve. This data is available from the manufacturer.
- 7.2.6** Add the dynamic back pressures, for each required nitrogen flowrate, obtained from Sections 7.2.1, 7.2.4 and 7.2.5 as shown in Form 4-2.
- 7.3 Alternate Method 3.** Phase II systems which use both bellows-equipped nozzles and those models of fuel-activated remote vapor check valves which can be disabled by removing the poppet on the fuel side may be tested using the following methodology. Phase II systems using an Emco-Wheaton A-228 remote vapor check valve cannot be tested using this method.

- 7.3.1 Carefully open the fuel side of the remote vapor check valve and remove the fuel poppet. Carefully replace the threaded plug on the fuel side of the valve.
- 7.3.2 Test the Phase II system pursuant to Sections 7.1.1 through 7.1.5, recording the data on the field data sheet shown in Form 4-1.
- 7.3.3 Carefully reassemble the remote vapor check valve by removing the plug on the fuel side and reinserting the fuel poppet. Replace the threaded fuel plug, taking care not to strip the threads.

## **8. REPORTING**

8.1 Results of the dynamic back pressure test shall be reported as shown below:

- 8.1.1 Alternate Method 1      Use Form 4-1
- 8.1.2 Alternate Method 2      Use Form 4-2
- 8.1.3 Alternate Method 3      Use Form 4-1

**Form 4-1**

Distribution:	Executive Order G-70-23-AC Exhibit 4	Report No.: _____ Test Date: _____ Test Times: _____ Run A: _____
	Summary of Source Test Results	
Source Information		Regulatory Representatives
Firm Name and Address	Firm Representative and Title  Phone No. (      )	Test Engineers
Permit Conditions:	Source: <b>GDF Vapor Recovery</b>  GDF # _____ A/C # _____	Permit Services Division/Enforcement Division
		Test Requested By: _____
Operating Parameters:		
Applicable Regulations:		VN Recommended:

### Sources Test Results and Comments:

[illegible]

Results Received by	Date	Results Reviewed by	Date	Results Approved/Disapproved
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[illegible]

Test Received by:	Date:	Test Reviewed by:	Date:	Test Approved/Disapproved:	Date:

