California Environmental Protection Agency
Air Resources Board

PUBLIC HEARING ON CERTIFICATION AND TEST PROCEDURES FOR VAPOR RECOVERY SYSTEMS

originally on MAY 21, 1998; postponed to August 27, 1998

Staff's Suggested Changes to the Original Regulatory Proposal

July 14, 1998

The following are corrections to Appendix 1 of the Staff Report:

1. TP.201.3C is incorrectly titled. The correct title is "**Determination of Vapor Piping Connections to Underground Gasoline Storage Tanks (Tie-Tank Test)**."

2. TP 201.5 is incorrectly titled. The correct title is "**Determination (by Volume Meter) of Air-Vapor to Liquid (A/L) Volume Ratio of Vapor Recovery Systems of Dispensing Facilities**."

Before each change below, an outline number and brief description of the change are presented in serif font, followed by the actual change in sans serif font.

The following changes pertain to the certification and test procedures:

Proposed TP-201.5 **Determination (by Volume Meter) of Air-Vapor to Liquid (A/L) Volume Ratio of Vapor Recovery Systems of Dispensing Facilities**

1. All references to "Air-Vapor/Liquid" and "A-V/L" will be changed to "Air/Liquid" and "A/L."

2. Section 4.2 will be re-written for clarity.

   Dispensing rates ~~unable to meet~~ ...

   Dispensing rates below ...

3. A "bag test" will be added to be used as a trouble-shooting aid to determine causes of A/L test failure. This would involve sealing the additional nozzle(s) with plastic bags and tape. Sections 4.4 and 6.2 in the original regulatory proposal will be deleted and replaced with

the following language.

~~4.4 A leaking check valve that allows air to be ingested into the system from a non-operational nozzle, on the same dispenser, precludes the use of this test.~~

~~The bias may be eliminated by bagging the nozzle(s) with leaking check valve.~~

4.4 Bagging or otherwise sealing any nozzle associated with the vacuum pump serving the nozzle being tested, may bias the test results towards compliance. **The A/L test to verify compliance shall be conducted without "bagging" any of the nozzles served by a common vacuum device.** See Section 6.2 for further clarification on this bias.

~~6.2 If more than one nozzle is served by the same vacuum pump, all nozzles other than the nozzle being tested shall be sealed vapor tight, e.g., plastic bags and tape or rubber bands. If leaks in the nozzles/check valves served by the vacuum pump cause the bags to deflate, the problem shall be corrected prior to testing any nozzles serviced by that vacuum pump.~~

6.2 If one or more nozzles share vacuum plumbing with the test nozzle, one trouble-shooting method for a low A/L ratio is to seal all nozzles other than the nozzle being tested, e.g., plastic bags and tape or rubber bands. If leaks in the nozzles/check valves served by a common vacuum pump cause the bags to deflate, the low A/L ratio may have been caused by a leak through an idle nozzle during the test. **The V/L test to verify compliance, however, shall be conducted without "bagging" any of the nozzles.**

4. Section 4.5 will be added.

4.5 If the nozzle being tested introduces liquid into the test equipment, the A/L of that nozzle shall be deemed a failure and the nozzle shall immediately be removed from service.

5. The length of adaptor supply tubing shall be increased to 8 feet in Section 5.1.

5.1 ... the maximum length of the tubing shall be ~~5~~ 8 feet.

6. The portable tank requirements will be revised and a meter calibration sheet will be required to accompany the volume meter for each test.

6.1 The tank shall only be used when it is on the ground, not in the back of a pickup or trailer, unless the pickup or trailer is specifically designed to provide an adequate ground.

6.3 The rotary gas meter shall be calibrated, within 180 days prior to conducting this procedure, at flowrates of 30, 60, and 90 CFH per EPA Method 2A, Measurement of Gas Volume Through Pipes and Small Ducts. A copy of the most current calibration shall be kept with the meter.

7. The tolerance for the dispensing volume in Section 6.4 will be changed. An “adapter leak check” procedure will be added to ensure that the test equipment does not bias test results.

6.4 ... four and one half (4.5 ± ~~0.25~~ 0.3) gallons ...

6.6 Conduct a pre-test leak check of the A/L adaptor by connecting the A/L adaptor to a surrogate spout as shown in Figure 39-4. Raise the test pressure to five inches H_2O, gauge (5.00"WCg). Squirt liquid leak detector solution on interfaces and other potential leak sources while watching for the formation of bubbles. There shall be no formation of bubbles, and no drop in pressure below 4.95 "WCg for three minutes from the start of the test. Any A/L adaptor which fails this pre-test leak check shall not be used to conduct A/L testing for the purpose of determining compliance.

8. Section 6.5 is unchanged as in the Proposed Procedure.

9. Clarify that the test is to be conducted with the P/V valve installed and the Phase I poppets in the closed position, unless the CARB Executive Order specifies otherwise.

6.7 The test shall be conducted with the P/V valve(s) installed and the Phase I poppets in the closed position, unless the CARB Executive Order specifies otherwise.

10. The test procedure will be amended to require that the feed hose to the nozzle fitting be 0.75 to 1.0 inch inside diameter and 8 feet or less in length.

See the Figures and Section 5.1 for changes to dimensions.

11. Sections 7.9 through 7.12 will be deleted and replaced by new 7.9 through 7.12 as follows:

~~7.9 If the (A-V)/L Volumetric Ratio, as determined by Equation 9-1 is outside the limits specified in the applicable CARB Executive Order, conduct the following procedures to insure the failure is not caused by leakage between the (A-V)/L adapter and the nozzle spout.~~

~~7.9.1 Check the nozzle spout. If the end of the spout is out of round, grooved or excessively worn, the adapter may not make an adequate seal. The nozzle may need to be replaced to perform the test.~~

~~7.9.2 Disassemble the (A-V)/L adapter and visually inspect the “O” rings. If nicks or cuts are noted, replace the rings and re-test.~~

~~7.9.3 Insure there is adequate grease on the “O” rings to allow for easy nozzle insertion and an adequate seal.~~

~~7.10 If the (A-V)/L Volumetric Ratio, as determined by Equation 9-1 is within the limits~~

~~specified in the applicable CARB EO, the system complies with the specifications of the applicable EO. For the purposes of this procedure, any reference in the EO to an A/L Volumetric Ratio shall also be taken as a reference to an (A-V)/L Volumetric Ratio.~~

~~7.10.1 If the difference between the **minimum allowable** (A-V)/L Volumetric Ratio specified in the EO and the (A-V)/L Volumetric Ratio is greater than 0.10, the system does not comply with the specifications of the applicable EO,~~

~~If the difference between the minimum allowable (A-V)/L Volumetric Ratio specified in the EO and the (A-V)/L Volumetric Ratio is less than or equal to 0.10, conduct the test two additional times, repeating the procedures of Section 7.9 each time the (A-V)/L Volumetric Ratio is outside of the specified limits. Calculate the numerical average of the three test runs. If the average (A-V)/L value of these three test runs is within the allowable limits, compliance has been verified. If the resulting average is outside of the limits, the system does not comply with the specifications in the applicable CARB EO.~~

~~7.10.2 If the difference between the (A-V)/L Volumetric Ratio and the **maximum allowable** (A-V)/L Volumetric Ratio specified in the EO is greater than 0.10, the system does not comply with the specifications of the applicable EO,~~

~~If the difference between the (A-V)/L Volumetric Ratio and the maximum allowable (A-V)/L Volumetric Ratio specified in the EO is less than or equal to 0.10, conduct the test two additional times, repeating the procedures of Section 7.9 each time the (A-V)/L Volumetric Ratio is outside of the specified limits. Calculate the numerical average of the three test runs. If the average (A-V)/L value of these three test runs is within the allowable limits, compliance has been verified. If the resulting average is outside of the limits, the system does not comply with the specifications in the applicable CARB EO.~~

~~7.11 Conduct the (A-V)/L Volumetric Ratio test on each nozzle at the facility, unless otherwise specified in the applicable CARB Executive Order. **Do not conduct this test on a gas grade produced by blending at the dispenser unless otherwise specified in the applicable CARB EO.**~~

~~7.12 After each test is run drain any condensed gasoline from the hose between the rotary gas meter and portable tank assembly.~~

7.9 If the difference between the **minimum or maximum allowable** A/L Volumetric Ratio specified in the CARB EO and the A/L Volumetric Ratio, as determined by Equation 9-1, is outside of the allowable range by **greater than 0.10**, the refueling point does not comply with the specifications of the applicable CARB EO.

If the difference between the **minimum or maximum** allowable A/L Volumetric Ratio specified in the CARB EO and the A/L Volumetric Ratio, as determined by Equation 9-1, is outside of the allowable range by **less than or equal to 0.10**, conduct the test two additional times. Calculate the numerical average of the three test runs. If the average A/L value of these three test runs is within the allowable limits, compliance has been verified. If the resulting average is outside

of the specified limits, the refueling point does not comply with the specifications of the applicable CARB EO.

7.10 If one or more nozzles share vacuum plumbing with the test nozzle, one troubleshooting method for a low A/L ratio is to seal all nozzles other than the nozzle being tested, e.g., plastic bags and tape or rubber bands. If leaks in the nozzles/check valves served by common vacuum pump cause the bags to deflate, the low A/L ratio may have been caused by a leak through an idle nozzle during the test. **The A/L test to verify compliance, however, shall be conducted without "bagging" any of the nozzles.**

7.11 Conduct the A/L Volumetric Ratio test on each nozzle at the facility, unless otherwise specified in the applicable CARB Executive Order.

7.12 Periodically, or as necessary to avoid a build-up of gasoline, drain any condensed gasoline from the hoses between:
(a) the rotary gas meter and portable tank assembly, and
(b) the A/L adaptor and rotary gas meter.

12. Sections 8.1 through 8.3 will be deleted and replaced by new 8.1 through 8.5 as follows:

~~8.1 Drain the dispensed product into the appropriate gasoline storage tank at the facility. Do not mix product grades in the portable tank assembly and use caution to drain the portable tank into the correct facility storage tank. If blending valves are utilized to produce product grades which do not have an underground tank and the CARB EO requires testing, product from the blended grade shall be returned to the lower grade tank.~~

~~8.2 Remove the (A-V)/L adapter from the nozzle.~~

~~8.3 At the conclusion of the testing at the facility, the portable tank shall be transported in accordance with all applicable safety requirements.~~

8.1 Remove the A/L adaptor from the nozzle.

8.2 Drain the dispensed product into the appropriate gasoline storage tank at the facility. Do not mix product grades in the portable tank assembly and use caution to drain the portable tank into the correct facility storage tank. If blending valves are utilized to produce product grades which do not have an underground tank, product from the blended grade shall be returned to the lower octane tank.

8.3 At the conclusion of testing at the facility, conduct a post-test leak check of the A/L adaptor by connecting the A/L adaptor to a surrogate spout as shown in Figure 39-4. Raisee the test pressure to five inches H_2O, gauge (5.00"WCg). Squirt liquid leak detector solution on interfaces and othe potential leak sources while watching for the formation of bubbles. There shall be no formation of bubbles, and no drop in pressure below 4.95 "Wcg for three minutes from the start of the test. The data collected during the A/L testing is invalid if the A/L adaptor fails this post-test leak check.

8.4 Prior to transportation, the inlet and outlet of the rotary gas meter shall be carefully

sealed to prevent foreign matter from entering the meter.

8.5 At the conclusion of testing, the portable tank shall be transported in accordance with all applicable safety requirements.

Proposed TP-202.1 Determination of Emission Factors of Vapor Recovery Systems of Bulk Plants

1. The test procedure will be amended to allow turbine meters meeting certain specifications be used in place of a positive displacement meter.

   5.1 Use rotary type positive displacement meter(s) or turbine meter(s), meeting the requirements of EPA Method 2A, and with a back pressure limit (BPL) less than:

2. A procedure will be added for bulk plants which utilize vacuum valves.

   [End of Section 8]

   When bagging valves, do not seal vacuum valves or the vacuum side of pressure/vacuum valves. On any vacuum valves, use a combustible gas detector according to EPA Method 21 calibrated to the lower explosive limit for methane (21,000 ppm).

Proposed CP-203 Certification Procedure for Vapor Recovery Systems of Terminals

1. Language will be added stating that terminal facilities may be subject to a pretest leak check and different leak limits as specified by district and/or federal rules (40 CFR Part 63, Subpart R National Emission Standards for Hazardous Pollutants).

   [End of 1.2]

   Terminal facilities may be subject to a pretest leak check and different leak limits as specified by district and/or federal rules (40 CFR Part 63, Subpart R National Emission Standards for Hazardous Pollutants).

Proposed TP-203.1 Determination of Emission Factors of Vapor Recovery Systems of Terminals

1. The test procedure will be amended to allow turbine meters meeting certain specifications be used in place of a positive displacement meter.

   5.1.1 Positive displacement gas meter(s) or turbine meters ~~which~~ shall be sized to avoid adverse effects on the vapor recovery system.

   Use rotary type positive displacement meter(s) or turbine meter(s), meeting the requirements of EPA Method 2A, and with a back pressure limit (BPL) less than:

2. To ensure consistency with U.S. EPA regulations, the test duration will be a minimum of six (6) hours and the test shall be conducted with a minimum gasoline transfer of 80,000 gallons.

   [End of Section 7]

   To ensure consistency with U.S. EPA regulations, the test duration will be a minimum of six (6) hours and the test shall be conducted with a minimum gasoline transfer of 80,000 gallons.

3. A procedure will be added for testing terminals which utilize vacuum valves.

   [End of Section 8]

   When bagging valves, do not seal vacuum valves or the vacuum side of pressure/vacuum valves. On any vacuum valves, use a combustible gas detector according to EPA Method 21 calibrated to the lower explosive limit for methane (21,000 ppm).

Proposed TP-204.3 Determination of Leak(s)

1. Language will be revised so that specified probe distances are consistent with EPA Method 21.

   8.3.1 **Probe Distance**

   ~~For a mobile leak source (e.g. cargo tank) t~~The detector probe inlet shall be 2.5 cm from the potential leak source. The distance can be maintained during monitoring by putting a 2.5 cm extension on the probe tip.

   ~~For a stationary leak source (e.g. loading rack) the detector probe inlet shall be 1 cm from the potential leak source. The distance can be maintained during monitoring by putting a 1 cm extension on the probe tip.~~

   The probe tip shall be placed at the surface of the suspected leak interface except for a rotating shaft for which the probe tip distance shall be 1 cm.

Proposed TP-205.1 Determination of Efficiency of Phase I Vapor Recovery Systems of Novel Facilities

1. Figure 1 will be corrected to show a Phase I test instead of a Phase II test. The caption will also be corrected.

   See next page for the corrected figure.

FIGURE 1
Test Locations for Novel Facilities