AIR POLLUTION CONTROL DISTRICT
COUNTY OF SAN DIEGO

June 28, 1995

Pat Hutchens, Board Secretary
California Air Resources Board
P.O. Box 2815
Sacramento, CA 95812

PUBLIC HEARING TO CONSIDER CHANGES TO GASOLINE VAPOR RECOVERY CERTIFICATION AND TEST PROCEDURES

On June 29 and 30th, 1995 the Air Resources Board will consider adopting proposed changes to certification and test procedures for gasoline vapor recovery systems. These changes contain some significant improvements, especially with regard to evaluating and considering fuel spillage and the use of engineering analysis when evaluating vapor recovery system components for certification by similarity. However, the San Diego County Air Pollution Control District has several unresolved concerns with these procedures that ARB staff have requested be addressed at a later date. If the Board decides to adopt the proposed changes to the certification and test procedures, prior to addressing the issues enumerated below, it is requested that the Board direct staff to evaluate these concerns in cooperation with the air districts and affected industry and propose additional changes to the procedures, as appropriate, within one year.

1. The "boot" method is being proposed for testing nozzle capture efficiency. In the late 1970's, ARB correctly determined the "boot" method to be inappropriate for balance-type vapor recovery systems because it interfered with the normal way customers handle the vapor recovery nozzle. The District is aware of two instances where certified vapor control system efficiency was degraded by 68% and 20%, respectively, during actual customer refueling operations compared to the certification efficiency that would have been determined if procedures regarding actual customer handling had been followed. This concern applies principally to balance-type vapor control systems because assist-type systems will still recover vapors if there are some gaps at the vehicle-nozzle interface during refueling operations.

2. Actual vapor control system efficiencies cannot be accurately determined using the proposed test procedures because certification test systems are allowed to leak at points other than those being measured during the test. Use of a pressure decay test alone is not adequate to determine system gas tightness because other factors (e.g. air introduced into the system prior to and during testing, differences in fuel volatility and temperature between the underground tank fuel and fuels delivered to the test station prior to or during pressure decay testing) can cause vapor growth in the underground tank that can mask the presence of leaks. Leak testing prior to system efficiency testing should include a

requirement that the system also be checked using an explosimeter (portable gas detector) at all accessible fittings.

3. Actual system efficiencies cannot be determined without considering the influence of the ambient conditions and the volatility, volumes and temperatures of underground tank fuel and the fuels delivered to the certification test station prior to and during testing. These factors can significantly influence efficiency test results and should be monitored immediately prior to and during the certification tests. In addition, all dispensing nozzles at a certification test station should be checked prior to and periodically during certification testing to ensure they are properly operating and recovering gasoline vapors during dispensing.

4. The proposed pressure decay leak test procedure for field checks of certified system installations set allowable pressure decay limits in hundredths of inches of water. These incremental limits are impractical. The allowable pressure decay rates are not adequately founded and should be further evaluated and revised as needed. Factors other than the test can influence pressure decay in a system and overshadow such small pressure changes. These include the additional nitrogen used to repressure the system to test for leaks after repairs are made during an initial test, vapor growth or contraction caused by a prior bulk delivery of gasoline to the service station, effects of solar radiation on above ground tanks, etc. The range of test repeatability may be as high as a half inch of water, rather than in hundredths of inches of water.

5. The proposed pressure decay leak test procedure for field installations allows the liquid fill riser to be capped during the test. The procedure should require removing the caps on both the vapor and fill pipe risers during testing. Capping the riser prevents the identification of leaks in the submerged fill pipe/fill riser assemblies that can aspirate air into the gasoline during bulk gasoline deliveries to the service station. Such air aspiration can cause significant VOC emissions to the atmosphere out of station vents due to vapor growth as gasoline evaporates into this ingested air.

6. The proposed air to liquid (A/L) test is labor intensive, expensive and time consuming. The test needs further evaluation and alternatives should be developed. Many local air districts may be unable to afford the equipment or labor costs to conduct such a test. There are also safety concerns. Air is brought into the underground storage tanks during the test. The State Fire Marshal previously prohibited the use of air in pressure decay leak tests because potential explosive mixtures of gasoline vapor could result. The A/L test can introduce up to 2700 gallons of air into the underground tanks. In addition, for some bootless nozzle systems, gasoline vapors can be emitted in the immediate vicinity of the testers.

It is noted that ARB's Monitoring and Laboratory Division (MLD) developed the certification test procedures because of their specific expertise in testing air contaminant emissions. With the exception of vapor recovery certification testing, the District is unaware of any stationary source testing activities not currently handled by this division. The complexities of the certification tests indicate that MLD should be responsible or, at least, substantially involved in implementing these procedures.

Finally, Health and Safety Code Section 43835 specifies that no new 1977 or later model year gasoline-powered motor vehicle may be sold in California unless the vehicle is in compliance with the standardized fill pipe requirements established by the ARB to ensure proper performance of gasoline dispensing nozzles for the purpose of vapor control. There are still a

number of vehicles (e.g. certain Cadillacs and Mazdas) with fill pipes that are incompatible with certified vapor control system nozzles. Incompatible vehicle fill pipes degrade overall vapor control system efficiency and cause other performance and customer acceptance problems. Since this Health and Safety Code section also allows ARB to grant waivers from the standardized fill pipe specification requirement for vehicles ARB determines cannot technologically meet this requirement, it appears such waivers are still being granted (since 1977) or the current requirements are not being actively enforced. This matter needs to be addressed.

R. J. SOMMERVILLE
Air Pollution Control Officer

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95-6-2
6/29/95

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June 21, 1995

Board Secretary
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Ref.: PUBLIC HEARING TO CONSIDER THE ADOPTION, AMENDMENT, AND REPEAL OF REGULATIONS REGARDING CERTIFICATION PROCEDURES AND TEST PROCEDURE FOR GASOLINE VAPOR RECOVERY SYSTEMS, June 29, 1995.

Dear Ms. Hutchins,

On behalf of Gilbarco, I would like to submit the following comments for consideration by the Board.

Most of the comments made by Gilbarco regarding the certification procedure and the test procedures for Phase II vapor recovery have been considered by ARB's staff and are reflected in the draft we received for review in May 1995.

In 1994, we also commented on the severe economic impact that would result if these procedures resulted in the decertification of existing Phase II systems. The proposal before the Board, that the revised certification procedure will not require the recertification of existing Phase II systems, is clearly one that Gilbarco supports.

On the basis of the final working draft that we reviewed, Gilbarco has submitted minor comments of an editorial or technical nature directly to appropriate ARB staff.

This is not to say that the proposed Phase II procedures are perfect; few if any things are. As technology evolves and as environmental conditions change, the Phase II Certification and Test Procedures must also continue to change. With this in mind, Gilbarco suggests that the Board consider undertaking the following short term actions regarding additional improvement of Phase II procedures.

The efficiency test, TP-201.2, while adequate for those with experience in using it , remains hard to follow largely as a result of poor format, lack of illustrations and lack of explanation regarding measurement of vapor volumes at the fill pipe interface, vapor return and storage tank vent. A substantial amount of text and illustrations relate to determination of HC concentrations and we think this should be complimented by an equal amount of emphasis on volume measurement. The format should then clearly delineate each aspect of the efficiency test.

The other area that Gilbarco recognizes as having room for further refinement and improvement is that of determining A/L of vapor recovery systems (TP-201.5). For use as a performance specification, we see little benefit to paragraph 11.3, Alternative Performance Specification. We suggest that for compliance purposes, any A/L reading that is out of the performance range specified in the executive order, be repeated three times and that the average of the three reading be the basis for determining compliance.

Gilbarco also recognizes that the A/L test is complex, costly and difficult to use for compliance purposes. We support the efforts of ARB's staff to develop alternative methods for compliance testing.

The preceding comments on suggested improvements not withstanding, Gilbarco supports approval of the proposed Phase II Certification and Test Procedures.

We appreciate the efforts of ARB's staff to work with all interested parties to effect procedures that update and improve the effectiveness of Phase II vapor recovery.

Thank you for the opportunity to comment on these matters.

Very truly yours,

Hal C. Hartsell Jr.

Hal C. (Craig) Hartsell, Jr., P.E.
Manager, Product Development

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June 22, 1995

95-6-2
6/29/95

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Dear Cindy,

You were copied on a letter I wrote to the Board, dated June 21, that commented on the proposed Stage II certification and test procedures.

In that letter I said that "...Gilbarco has submitted minor comments of an editorial or technical nature directly to appropriate ARB staff." These comments are attached for your review.

By copy of this letter, I am also sending these comments to Laura McKinney.

As you can see, these are primarily intended to increase clarity although a few do relate to procedural issues. I hope you find these helpful in producing the final version of the approved procedures. If Ken Pope (910-547-5028) or I (910-547-5720) can be helpful in clarifying any questions you may have please give us a call.

Sincerely,

Craig Hartsell

Hal C.(Craig) Hartsell, Jr., P.E.
Manager, Product Development

HCH/hch

C: Laura McKinney
Ken Pope

Gilbarco Inc. Comments On The

California Environmental Protection Agency / Air Resources Board
Proposed Certification and Test Procedures for Vapor Recovery Systems

Release Date May 12, 1995

June 21, 1995

PROPOSED TP-201.2 **Determination of Efficiency of Phase II Vapor Recovery Systems of Dispensing Facilities.**

Note: The comments and suggestions below are based on Gilbarco's knowledge of the "100 Car" test as it has been performed in the past.

pg. 3 Section 3.1.2 — Add a provision (5) that would allow the exclusion of vehicles that had an unrepresentative number of premature shutoffs > 3 and or multiple topping off attempts.

pg. 5 Section 5.1 Ph 3 — Clarify "when the efficiency is to be calculated for non-methane hydrocarbon" or define "non-methane hydrocarbon"

Pg. 7 Section 5.7.1 — The "Vehicle Leak Check" does not have to occur at "Test Point 1" (Nozzle Sleeve) section as shown. It is confusing to have it described here. Move it to a "Pre-Test" section.

Pg. 9 Section 5.7.3.4 — This refers to FIGURE 2 which is confusing when applied to all three test points. No roots meter is shown in the figure and the pump shown is not specified. Is this the sleeve pump, HC instrument sample pump, or the vapor recovery system pump? A separate figure for each test point may be needed to prevent confusion.

pg. 9 Section 5.7.4.3 — Should this read: "Use a transducer or gauge with an initial design range of 0 - 1.00" W.C. depending on the sleeve tubing chosen." ? The phrase " ...in a manometer or Magnahelic gauge design" is too specific and eliminates electronic pressure tansducers. See Section 5.5

pg. 10 Section 5.8.1.1 — Should item (1) read: "...minimize the length of vapor sampling line between the sample point and HC analyzer." ? There is no sleeve at this test point.

pg. 10 Section 5.8.1.3 — See comment above for Section 5.7.3.4. Also this figure shows a FID schematic which is not normally used at this test point.

pg. 10 Section 5.8.2.1 — Should this read like the first paragraph of 5.9.2.1, why are they different?

pg. 10 Section 5.8.2.3 — Should this read: "Use a transducer or gauge with an initial design range of 0 - 10.0" W.C." ? The phrase " ...in a manometer or Magnahelic gauge design" is too specific and eliminates electronic pressure tansducers. See Section 5.5

pg. 11 Section 5.9.1.2 See comment above for Section 5.7.3.4. Also this figure shows a FID schematic which is not normally used at this test point.

pg. 11 Section 5.9.2.1 2nd paragraph This paragraph is confusing. Can vent emissions be measured this way accurately?

pg. 11 Section 5.9.2.3 Should this read: "Use a transducer or gauge with an initial design range of 0 - 10.0" W.C." ? The phrase " ...in a manometer or Magnahelic gauge design " is too specific and eliminates electroinic pressure transducers. See Section 5.5.

pg. 12 Section 6.3 Please add "...or calibrate pressure transducers in accordance with manufacturers specifications" to the end of this sentence. Static pressure calibration is not practical for current test trailer systems.

pg. 17 Section 8.1.1.3 (2) The idle nozzle test seems redundant. The GDF must pass a leak decay test and the vapor return valves now have a flow versus pressure specification. Also, the second paragraph of Section 8.1.1.3 states that recording can stop when the concentration in the sleeve drops below 100 ppm. If this section is intended to measure fuel that may be evaporating from the hose / nozzle, is this not part of the fugitive emission study.

pg. 22 Section 9.2 This section could be reworded to include: "Calibration gases must be tested and certified by the supplier back to NIST-SRM standards." A "Certificate of Analysis" could be required from the supplier.

pg. 32 Section 12 Details on the form and content of the test report would be helpful. Possibly an outline or check list of required report contents could be included.

PROPOSED TP-201.5 **Determination (by Volume Meter) of Air to Liquid Volume Ratio of Vapor Recovery Systems of Dispensing facilities**

pg. 1 Section 1 Ph 3 Remove or define the word "hybrid" from the second sentence. This is an undefined term.

pg. 2 Section 2 Ph 2 Change to: "...ratio of vapor (mixed with air) to liquid ~~(A/L)~~ *(V/L)*, because doing so is much more ~~precise~~ *consistent* and less...."

pg. 4 Section 8.1 (1) Sealing all nozzles other than the test nozzle could mask or hide leaking vapor return valves and thus affect the A/L reading.

pg. 4 Section 8.1 (4) "Fully engage the dispensing lever and hold for maximum flow rate *between 7 and 10 GPM* of liquid." The flow rate at which A/L is measured can effect the A/L reading on some systems.

pg. 5 Section 8.2 (1) (b) Should this read: "at three flow rates (e.g. minimum, average of minimum and maximum, and ~~average~~ *maximum*.

pg. 5	Section 8.3 (2)	This section is a little vague. It might be easier to understand if it were written: Compare the resulting A/L value with the ~~performance specification interval of allowed A/L values~~ *acceptable values shown in the ARB Executive Order for the system being tested.* Replace the term "allowed interval" with "acceptable range" in the remainder of this section.
pg. 6	Section 11.2	Correct section title
pg. 9	Section 12	Divide this section into two areas "Certification" and "Compliance" reports.